

J. F. ROCK

1884 - 1962

Alvin K. Chock (Honolulu)*

Almost sixty years ago a young Austrian left his homeland to see the world and regain his health. His trip around the world was to be postponed for a decade, for he made a prolonged stopover in Hawaii. During his lifetime he made his home in Hawaii and China. This energetic, versatile, and legendary scientist became recognized throughout the world first as a botanist, then as plant collector, naturalist, and explorer. His explorations and his remarkable linguistic ability led him to become a geographer, orientalist, philologist, and anthropologist. His contributions were legion and they enlightened, increased, and diffused mankind's knowledge about the flora of the Hawaiian Islands and the natural history of Western China and Eastern Tibet.

Dr. Joseph Francis Charles Rock (Josef Franz Karl Rock) was born to Franz and Francisca (Hofer) Rock on January 13, 1884, in Vienna, Austria. His mother died when he was only six years old and his older sister and father cared for him. His family felt that his destiny lay in the Church and directed his early training toward the priesthood. His own inclinations, however, did not point in this direction. Even as a young child he developed a lively curiosity about strange lands and their strange tongues, triggered by a visit to Egypt with his father at age 10. In Egypt he learned to speak Arabic so fluently that at age 16 he taught the language at the University. At home he taught himself Chinese, studying it by candle light after the household had retired. This conflict between his father's and sister's plan for his life and his own interests in the world about him led him to leave home as soon as his formal education at the Vienna Schoten Gymnasium and Vienna University were completed.

He wandered about Europe and was in Antwerp when he decided to spend the summer in England. However, he missed the channel steamer and on impulse bought passage for the United States, leaving Antwerp on board the SS Zealand and arriving in New York on September 9, 1905. After a short stay in New York, his health forced him to seek a warmer and drier climate and he went to Texas where he attended the University to gain greater proficiency in English. This set the linguistic pattern for the rest of his life, for from that time on all of his writing was done in English. Forsaking the land of his birth, he became a naturalized citizen in May 1913. His health did not improve appreciably and

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J. F. Rock, August 1959

he was advised to go to Arizona. However, he had always had a longing to see the tropics, so against the doctor's advice that he had but three months to live unless he sought dry desert air, he set off for Hawaii. An interesting fact is that Dr. William Hillebrand, who preceded him as resident botanist, was also afflicted with tuberculosis. Like his predecessor, Rock recovered in Hawaii's salubrious climate and regained his health.

His first position upon his arrival in Honolulu in 1907 was as one of the three full-time teachers at Mills School. The following year the school became known as Mid-Pacific Institute. In September 1908 Rock resigned for reasons of health in order to be out-of-doors, and was placed on official leave of absence by the school. That same month he went on a botany trip with Charles N. Forbes, Assistant in Botany at the B. P. Bishop Museum, who had arrived in June. Rock showed him a tree which he had seen two months before. In Forbes' first publication of new Hawaiian plants, he named that tree *Euphorbia Rockii* in honor of Rock.

In October 1908 he joined the Division of Forestry, Board of Commissioners of Agriculture and Forestry, Territory of Hawaii (now Forestry Division, Department of Land and Natural Resources, State of Hawaii), first as Botanical Collector, and later as Botanical Assistant. His assignment as the first and only Botanist of the Board consisted of collecting seeds of rare Hawaiian trees and shrubs for exchange purposes and of establishing a herbarium. His botanical knowledge was largely self-taught, but his tremendous capability made the task easy. He applied himself by studying the available botanical literature and quickly became thoroughly familiar with the native flora by spending most of his time in the field on the different islands pursuing his studies. His interest in botany was not limited to the woody plants. He made a complete fern collection and at Waikiki Beach collected *limu* (algae), utilizing what was perhaps the first glass bottomed boat in Hawaii which Alexander Hume Ford built for him. The herbarium he developed from his own Hawaiian plant collections and from exchanges with mainland U.S. and European herbaria. Such specialists as O. Beccari, E. B. Copeland, C. de Candolle, A. Heimerl, F. L. Lewton, U. Martelli, L. Radlkofer, and A. Zahlbruckner, collaborated with him in the identification of Hawaiian plants and published many new species from his collections. The forestry and botany exhibit which he prepared for the Alaska-Yukon-Pacific Exposition in 1909 won a gold medal. He wrote many reports in the Board's *Biennial Reports* and *The Hawaiian Forester and Agriculturist*. His early scientific publications comprise the entire *Botanical Bulletin* series of the Board.

On September 1, 1911, he was transferred to the College of Hawaii as Botanist since the Board of Agriculture & Forestry's funds for botanical purposes were limited. Arrangements for the transfer of the herbarium to the College on an indefinite loan basis were completed the following summer when the College's first permanent building was constructed. Despite the changeover, he continued his relationship with the Board in an honorary capacity as Consulting Botanist until 1921. At the four year old College, which had that year changed its name from the College of Agriculture and Mechanic Arts to the College of Hawaii, Rock was placed in charge of the herbarium.

In June 1913 with a Bishop Museum Expedition he made a trip to Palmyra Island which produced the flora of Palmyra. During the 1913-14 school year he made a trip around the world at his own expense, but his trip was not a selfish one. He collected seeds and plants for the reforestation of Mauna Kea and Haleakala for the Board of Agriculture and Forestry; bamboos from the Himalayan area for planting in the Panama Canal Zone at the request of the Bureau of Plant Industry, U.S. Department of Agriculture (which association was to continue in a Collaborator status until 1944); and examined Hawaiian herbarium specimens in European and American institutions for the College. While at the Botanisches Museum at Berlin-Dahlem, Rock obtained permission to take 1,000 sheets of fragments and duplicates from the type collections of

William Hillebrand, M. D., which were made during his residence in the islands in 1851-71. This was fortunate since the museum's herbarium was destroyed on March 1, 1943, during World War II. Portions of the type specimens of Hawaiian plants described by Dr. Asa Gray were also obtained from the Gray Herbarium at Harvard University, and photographs of Hawaiian specimens were made at the Harvard, Berlin, Vienna, and Paris museums. He developed the herbarium further by securing Hawaiian plant collections and specimens from Australia, Ceylon, Cuba, Central and South America, Java, Mauritius, New Zealand, and the Philippines through exchanges with other institutions. He subsequently made several other plant introduction trips, all at his own expense: in 1916 to the Philippines, Java, and Singapore; in 1917 to southern California; and in 1919 to Siam, Malaya, and Java.

After 1914 he was listed in the college's catalog as the only instructor of the Systematic Botany Division's courses: "Botany 10. Systematic Botany for Advanced Students" (first and second semesters, three credits) and "Botany 11. Advanced Research Work in Phanerogamic Botany" (credits arranged). In 1919 he was officially appointed Professor of Systematic Botany. One of his former students, Edwin H. Bryan, Jr. (now Curator of Collections, and Manager, Pacific Scientific Information Center, B. P. Bishop Museum), who was then a part-time Assistant in Entomology at the Museum, recalls that he was the only student in Rock's systematic botany class in 1919-20. Rock would lecture informally in Latin or English, and Bryan transcribed these notes. Bryan was secretary, laboratory assistant, and mounter for several hours each day during these informal "class" sessions, and assisted in the descriptions and bibliographic data for *Pritchardia*, *Plantago*, and other plant groups. Rock's memory was phenomenal—there were piles of books and specimens all over his small work room since there were few shelves and cabinets, but he knew where everything was in spite of the apparent disorder. Before Rock left Hawaii, he and Bryan arranged and cataloged the herbarium.

In 1914 Rock was appointed to the Buildings and Grounds Faculty Committee, and placed in charge of the plantings for the twenty acres allotted for the campus as a botanical garden. According to the President's Report for 1915-17, "In order properly to develop these plantings we have prepared a permanent plan for placing the buildings and drives so that no valuable plants need be planted in situations which will later be needed for other purposes." By 1918 Rock had planted 500 different species on the campus. These plants were from Asia, Indonesia, America, and Hawaii. All of the native plants were grown from seeds, and many of them were from Rock's type collections of new species.

During his residence in Hawaii, this thorough and dynamic plant collector explored all the major islands, staying at each for weeks and months. He took with him his botanical equipment and a view camera with glass plates. He enlisted local residents as collecting assistants and as subscribers to publish his books. His botanizing resulted in the publication, by patronage, of *The Indigenous Trees of the Hawaiian Islands* in 1913. In the preface he apologizes for his construction of sentences, since English was not his native language, and thereby committed what is perhaps the only grammatical error. Another tome followed four years later, *The Ornamental Trees of Hawaii*. Both volumes were profusely illustrated with his photographs. He made a list of plants located in Mrs. Mary E. Foster's estate in Nuuanu Valley, Honolulu. This was significant because most of the plants were introduced by Hillebrand whose home this once was. The site later became Foster Botanical Garden under the jurisdiction of the Department of Parks and Recreation, City and County of Honolulu.

Dr. Rock was a member of the Advisory Committee, Experiment Station of the Hawaiian Sugar Planters' Association. Because of the need for water to irrigate the sugar cane fields, he cooperated with them on water development since the watersheds

are contained in the forest reserves. They in turn published his treatise, *The Leguminous Plants of Hawaii*.

Regarding his affiliation with the Bernice P. Bishop Museum during these years, both Rock and the Museum several times contemplated a more permanent relationship although none was consummated until 1955. There was, nevertheless, beginning in 1908 a cooperative relationship between the two. In 1908 Forbes and Rock collected in several localities on Oahu. In 1913 Dr. C. Montague Cooke, Jr., and Rock went to Palmyra Island to collect shells and plants for 16 days. The museum published two of his monographs in the *Memoirs* series. The first, on the Lobelioids in 1919, was one in which the Director, Dr. W. T. Brigham had expressed a keen interest 11 years before. On the day the monograph was issued, Rock told the museum that it was his hope "that every family would eventually be worked up in a similar style, the whole forming an Illustrated Flora of the Hawaiian Islands." Two years later a monograph on *Pritchardia* was published with Odoardo Beccari as co-author. As in his earlier works, both of these illustrated the various taxa. Shortly after Rock left Hawaii he donated to the museum his photographs and the manuscript of Hillebrand's *Flora of the Hawaiian Islands* (1838) which he had obtained in Washington, D.C., from Hillebrand's son.

In 1920, at the time of the transition of the College of Hawaii to University status, a reciprocity agreement between the University and the Museum was made and, by legislation, the Museum became the Territory's depository for systematic collections. The Museum was to maintain the collections with the University assisting in the actual collecting. In 1922 the herbarium of 28,000 specimens which Rock had amassed for the herbaria of the Board of Agriculture and Forestry and the University of Hawaii was transferred to the Bishop Museum, which at that time had only 53,000 specimens. In 1941 the remainder of the Board's herbarium of 529 specimens, of which 315 were Rock's, and in 1958 the Hawaiian Sugar Planters' Association Herbarium of 3,000 specimens (about 10% having been collected by Rock) were given to the Museum. Rock himself was to deposit the specimens he collected after 1953 in the Museum.

On May 25, 1920, Rock left Hawaii to spend the next three decades in active exploration and research in Asia. During this period he was to collect thousands of botanical, ornithological, and zoological specimens; to introduce thousands of Asiatic plants to the United States; to map and photograph heretofore unknown regions; to translate volumes of native literature; to do research on the peoples, culture, folklore, religion, and geography of western China and eastern Tibet memorialized through innumerable books, articles in scientific journals, and in the *National Geographic Magazine*.

Rock had always had a desire to travel in the Orient and the Office of Foreign Seed and Plant Introduction, Bureau of Plant Industry, U.S. Department of Agriculture first provided this opportunity for him. In 1920 he was sent to Indo-China, Siam, Burma, and India to find seeds of the chaulmoogra (*Hydnocarpus kurzii* (King) Warburg). In 1918 Dr. A. L. Dean, President of the College of Hawaii, had prepared constituents of the chaulmoogra oil in large quantities for clinical use and established them as the first useable cure for Hansen's disease. Due to the success of Rock's exploration, a plantation of 2,980 trees of this and related species were planted in the Waiahole Forest Reserve on Oahu in 1921-22.

In 1922 Rock took up his residence in Li-chiang, the heart of the Na-khi country. His interest in these aboriginal people and their unique culture led him to make, a decade later, his life work the study of the Na-khi tribe of northwest Yün-nan Province, China. Using Li-chiang as a base, Rock explored and collected plants on the nearby Snow Range to the 17,000 foot level, in the Kingdom of Mu-li, and along the Burma-China border. By 1923 he was far into Yün-nan Province in southwest China, and the National Geographic Society took over the sponsorship of his explorations for more than a year. He continued

his work in the mountain ranges in the vicinity of the Mekong and Yangtze Rivers, searching for new plant material. During this period he collected over 80,000 plant specimens, as well as seeds of many Asiatic ornamentals as yet not introduced into the Western World. He also collected 1,600 skins of birds which were presented to the U.S. National Museum.

In 1924 Rock returned to Washington, D.C., visiting the Arnold Arboretum that summer. Professor C. S. Sargent, Director, expressed his interest in sending a botanist to collect seeds of woody plants from two little known mountain ranges (Amnye Ma-chhen and Richthofen) near the Yellow River. As a result of this conference, Rock was selected to do this under the sponsorship of Harvard University. In addition to collecting for the Arnold Arboretum, the Museum of Comparative Zoology directed the collecting of ornithological specimens from northwest China and Tibet. Rock returned to Yün-nan Province and secured the help of his former Na-khi assistants. In spite of bouts with flu and bronchitis, and with his expedition repeatedly threatened with brigand attacks, the Arboretum received the first packet of seeds one year after he left San Francisco. More were sent later. These were distributed to all principal botanical and horticultural institutions in the northern parts of North America and Europe. Rock explored the Yangtze River country, along the Kansu-Szechuan border, the Tebbu region in southwestern Kansu, and the Koko Nor Lake at 10,700 ft. elevation in northeast Tibet. He searched for plant material in the Richthofen Range, only to discover that it was almost bare of vegetation. Nevertheless, he collected as much seed as he could. In later years it was discovered that the conifer seeds which he collected proved to be important in the reforestation of areas with a severe climate. He spent the winter of 1925-26 in the Lamasary of Cho-ni on the Kansu Steppes. There he observed the Butter Festival and the Mystery Plays of this almost unknown tribe. In the spring he made a reconnaissance of the Amnye Ma-chhen Range, hurried because of hostile Golock tribesmen, followed by several months exploring the Tebbu country, an area rich in wild mountain scenery and beautiful flora where no Caucasian had ever before set foot. He wintered in Cho-ni again. In the spring of 1927 he left in a southwesterly direction to Kuan-hsien, crossed the plain to Chengtu, and took the overland route to Chungking before proceeding by steamer to Shanghai, arriving there in May 1927. On this botanical and zoological expedition, he collected 20,000 herbarium specimens in addition to the many packets of propagative material, and 1,000 skins of birds, although the latter collection was a secondary task.

In 1927 after a short rest in the United States the National Geographic Society appointed him to direct their Southwest China Expedition, a three year task. By May 1928 he was in Yung-ning, home of the Hli-khin (Mo-so) tribe, and then in Mu-li, Szechuan Province, before exploring and collecting on the 14,000 and 17,000 ft. levels of the Konka Risumgongba Range. The winter was spent in Nv-lv-k'ö, Yün-nan, where he explored the eastern slopes of the Li-chiang Snow Range. In the spring he returned to Mu-li to explore and map the Minya Konka Range. During the late summer and fall he was in the valleys and ranges of the great river trenches of Asia: the Yalung, Mekong, Salwin, and Yangtze Rivers. There some of the canyon walls were over two miles above the rivers. He returned to Nv-lv-k'ö for the winter of 1929-30, continuing the survey of the eastern slopes of the Li-chiang Snow Range. Along with the thousands of plant specimens and seeds collected, he sent 1,700 birds to the U.S. National Museum.

In 1930 Rock returned to the United States for a short visit and was sent back to China for two years, this time by the Harvard Museum of Comparative Zoology. During this period he faced many difficulties for the country was filled with bandits. Again with his Na-khi assistants, he explored the Mekong and Salwin valleys and the Irrawaddy headwaters, collecting 1,800 skins of birds. The University of California Botanical Garden undertook Rock's research in 1932-33. Again he collected thousands of seeds and her-

barium specimens from western China, including species of *Rhododendron*, *Potentilla*, *Berberis*, *Meconopsis*, and *Primula*, which were distributed by the University to many other botanical gardens, including the Royal Botanic Garden at Edinburgh.

Many times during these different expeditions Rock was thought to be "lost". As Honorary Collaborator for the U.S. National Museum, his research encompassed ethnology, botany, and zoology. He was also Collaborator with the Harvard-Yenching Institute and Agriculture Advisor to the Provincial Government of Yün-nan. This portion of his life is vividly depicted in a series of ten highly pictorial articles which he contributed to the *National Geographic Magazine* (1922-35).

On his way to Europe in 1933, he told Honolulu newspaper reporters that he now considered himself "too old" for exploration and living in the wilds, for it was a month's journey to the nearest physician. However, after spending the holidays in Vienna, he went back to China in 1934 via the United States and Hawaii. The exploration portion of his life was now behind him and he continued, on his own, his studies of the Na-khi peoples which he had begun two years before. For nearly 12 years he studied and translated religious texts of the Na-khi tribe of northeast Yün-nan Province. He had agents scouring China for rare classics and texts. In 1935 because of the conflict between the Chinese Nationalists and Communists he evacuated his library to Indo-China, returned it to Kunming, and had to repeat this the following year for the same reasons. Many times during this period at the urging of his friends he thought of returning to Hawaii because of the political unrest in China. During 1938-40 he held the position of Research Professor in Chinese Culture at the University of Hawaii. In 1938 the Japanese bombed Kunming and for the third time he sent his library to Indo-China. Except for a brief period in Europe, he was almost continuously in Dalat, South Annam from 1938 until 1940, when he directed the U.S. National Museum's ornithological expedition to Annam and Cambodia. In 1941, the Japanese bombing of Shanghai destroyed the plates of a four volume work in the process of printing. By this time he had published six articles and two books about the Na-khi people.

His research was further interrupted by World War II. In 1944 he was evacuated by plane to the United States, becoming Expert Consultant and Geographic Specialist and later, until 1945, Research Analyst for the U.S. Army Map Service in Washington, D.C. As the only authority of that region, he prepared maps of western China for military use. The Minya Konka Range which he had mapped and explored for the National Geographic Society in 1929 was the route which American pilots flew between India and Chungking, China.

The culmination of twelve years of research was lost when the ship carrying his manuscripts from Calcutta to the United States was sunk by Japanese torpedoes in the Arabian Sea. All that was left were three photostated volumes which Walter Swingle of the U.S.D.A. had insisted be deposited in the Library of Congress in 1934. At this time he was offered a Research Associate position at the University of Hawaii but chose instead to return to China to continue his research.

As Research Fellow of the Harvard-Yenching Institute from 1945 to 1950, he was finally able to return to China at the end of 1946. He again resided in Li-chiang to continue his translations of the pictographic and syllabic scripts of the Na-khi tribe. In 1948 he was forced to go to Boston for a brief period because of illness. In May 1949 a band of 4,000 bandits threatened to capture Li-chiang and he was forced to flee to Kunming and the Na-khi Dto-mba, who was assisting Rock with his translations, fled to his home. When the bandits were defeated a month later, he returned to Li-chiang by plane and was greeted by an army with machine guns leveled at him. There he found that the day before his arrival, the town had been taken over by Communists. After they searched his possessions for arms, they left. He was told by the villagers that Americans were no

longer wanted in China. The Na-khi Dto-mba did not return for fear of reprisals. Rock remained in Li-chiang for a month. After being proclaimed as one of the public enemies by the Communists, he was finally forced to leave his beloved China forever.

He went to Rome to confer with Professor Guiseppe Tucci, President of the Italian Institute of the Middle and Far East about continuing his work. The Institute undertook publication of several of his volumes in their *Oriental Series*. He spent the next two years between England and India, still with the hope of being able to return to China.

During and after his residence in China, he collected and translated key volumes of over 8,000 books of the original literature of the Na-khi tribe, wrote many articles and books about the Na-khi, and took the first natural color photographs of the Tibetan borderland regions. He introduced into the Western World 493 species of *Rhododendron*, more than had been previously known in America. Plants were distributed by his sponsoring institutions and planted in the Golden Gate State Park in San Francisco, the University of California Botanical Garden, the Puget Sound Area, the eastern coast of the United States, Canada, the Arnold Arboretum, Kew Gardens, and the Royal Botanic Gardens at Edinburgh. He also introduced blight-resistant chestnuts from China which were widely distributed by the USDA in the hopes of restoring this plant to the American forests. During one trip he collected 6,000 chestnut plants. He also brought back many conifer seeds, including spruce, fir, hemlock, pine, and juniper, as well as hundreds of flowering plants. His thousands of herbarium specimens and birds and scores of mammals were deposited in the U.S. National Museum, Arnold Arboretum, and the Harvard Museum of Comparative Zoology. Portions of his plant collections were sent to European herbaria for determinations and duplicates are found there and in other American institutions.

His valuable Oriental library, once at the University of Hawaii, and at different times in storage or in transit, was eventually purchased by the University of Washington for \$25,000. Because of his outstanding contributions to the knowledge of western China through his numerous publications, he was appointed permanent Honorary Research Associate at the University of Washington's Far East & Russian Institute in 1954.

Increased interest in the establishment of a botanical garden in Hawaii eventually returned him to his beloved Hawaiian Islands. For a time he made his headquarters with his contemporary, Dr. Harold L. Lyon, Director Emeritus of the HSPA Experiment Station. During his visit in 1953, he had prints made of Hillebrand's types of Hawaiian plants. The following year he spent most of his time on the island of Maui. In 1955-56 he botanized on Kauai and Hawaii, and 1956-57 on Hawaii.

In December 1955 Dr. Rock was appointed Honorary Associate in Botany at the Bernice P. Bishop Museum and later published four papers on new species discovered, mainly in the *Lobeliaceae*. All of the Hawaiian specimens which he collected were deposited in the Bishop Museum, as well as his Hawaiian collection note books, photographs, and glass plates which he made 40 years ago. He, in turn, was given a copy of his own out-of-print book, *The Indigenous Trees of the Hawaiian Islands*, for he had none at this time.

During these later years he confined most of his botanizing to the "roadside" category, taking advantage of the jeep roads built during World War II. He found that it was now easy to visit areas formerly inaccessible. He discovered that many of the species with which he was familiar over 35 years ago had vanished to extinction, remaining only as "dried corpses in the herbaria". Even though he had been absent for a long period from Hawaii, he still knew the plants and where they grew.

Rock was considered by many to be the "Father of Hawaiian Botany", whereas his predecessor, Hillebrand, was the "Grandfather". His plant collections were prolific, for he collected everywhere and extensively in the Hawaiian native forests. Duplicate spec-

imens are at Arnold Arboretum, Gray Herbarium, New York Botanical Garden, U.S. National Museum, and other herbaria. He described hundreds of new species and varieties in his 56 publications resulting from his Hawaiian residence. He was considered the specialist of Hawaiian *Pritchardia*, *Lobeliaceae*, and other native plant groups. To his Hawaiian intimates he was known as *Pohaku*, the Hawaiian word for Rock.

His linguistic ability was outstanding. German was his native language, but as a youth he had learned Hungarian from his grandmother, and Chinese at the age of 15 by self-study. He had taught Arabic at the age of 16 at the Vienna University. He was fluent in Italian, French, Spanish, Tibetan, Latin, Greek, and the various languages of the aboriginal peoples of West China. He had a reading knowledge and comprehension of Japanese, Hindi, and Sanskrit. When he visited countries such as Iceland, he was able to quickly comprehend the language and converse with the people. He spoke English without a Germanic accent.

Dr. Rock was a member of many organizations and received many awards. In 1930 Vienna University in Austria and Baylor University in Waco, Texas, awarded him Doctor of Laws degrees, and in April 1962 the University of Hawaii honored him with a Doctor of Science degree, *honoris causa*. He was awarded the Gold Medal by the Royal Horticultural Society at the 200th anniversary celebration at Kew Gardens; the Stanislaus Julien Award of the Institut des Belles Lettres by the Academie Française, Paris, in 1948; and the Gold Medal by the American Rhododendron Society in 1954. He was honorary life member of the National Geographic Society (1925), Harvard Travellers Club, Rhododendron Association (London), and the North American Lily Society; fellow of the American Geographical Society, Royal Geographical Society (London), and Royal Asiatic Society of Bengal; corresponding member of the Ecole Française d'Extreme Orient, Hanoi (1938); member of the Royal Asiatic Society of North China, Botanical Society of America, Torrey Botanical Club, West China Border Research Society, Washington Biological Society, American Primrose Society, California Horticultural Society, Seattle Rhododendron Society, and the Alpine Garden Society. In Hawaii he was honorary member of the Hawaiian Botanical Society, Friends of Foster Garden, and Hawaiian Botanical Gardens Foundation, Inc., and Honorary Chairman of the University of Hawaii's Campus Beautification and Landscaping Faculty Committee (1962-63). One of the University's campus drives is named *Rock Road*. He was listed in *Who's Who in America* for thirty years and in the *American Men of Science*. In 1909 Forbes was the first to name a new species in Rock's honor, and today many hundreds of plants and birds bear the specific name of *Rockii*. In 1913 Anton Heimerl established the genus *Rockia*, with one species, *R. sandwicensis* (Family *Nyctaginaceae*). This was done to distinguish Rock as a collector and because he collected the first, best, and sometimes the only specimen of the newly described taxon.

Shortly before his death he was in Europe classifying Na-khi manuscripts. His two volume dictionary of the language is now in press, finally completed, in spite of years of difficulties caused by forced evacuations, bandits and communists, war, bombing, inflation, cholera and other illnesses, and the loss of his manuscripts. This dictionary is the culmination of his long years of exhaustive and painstaking research of a culture almost entirely vanished from the rapidly changing scene of Asia.

He had suffered a heart ailment for several years and moved to Hawaii for health reasons once more. He was stricken with a heart attack shortly after arising on December 5, 1962, at the home of Mr. and Mrs. A. Lester Marks in upper Nuuanu Valley, Honolulu. He had made his home with them since 1957. His greenhouses there were filled with native and exotic plants, including Hawaiian Lobelioids which he had grown from seed. Some of the Hawaiian plants are for future planting on the Bishop Museum grounds. This year he donated 80 species of plants to the University of Hawaii, adding further to

the original campus tropical botanical garden which he founded 50 years ago.

Although for 40 years his interests lay mainly in western China, he confessed to the writer last year that he would be delighted if anyone brought him a Hawaiian Lobelioid. This was indicated by the last botanical paper published before his death, entitled *Hawaiian Lobelioids* (B. P. Bishop Museum Occasional Papers XXIII (5): 64-75, August 17, 1962). That his heart still lay in Botany was confirmed by his presence at the Hawaiian Botanical Society lecture (co-sponsored with the Friends of Foster Garden, Hawaiian Academy of Science, and Hawaiian Botanical Gardens Foundation, Inc.), "Plant Collecting in the Andes", just two days before his death. This expert on plant collecting in Hawaii and China had planned to make a botany trip to the island of Hawaii two weeks later.

Pohaku was laid to rest with the plants he loved on December 10th, one week after his last public appearance, in Nuuanu Valley's Oahu Cemetery.

BIBLIOGRAPHY OF J. F. ROCK¹

1909

A new Hawaiian *Scaevola* (*S. Swezeyana*). *Bul. Torrey Bot. Club* 36: 645-646, fig. 1.

A new Hawaiian shrub. *Hawn. For. & Agr.* 6 (12): 503.

1910

Some new Hawaiian plants. *Bul. Torrey Bot. Club* 37: 297-304, figs. 1-5.

1911

Report of the Botanical Assistant. Hawaii, Bd. Commrs. Agr. & For., Rep., bien. per. end. Dec. 31, 1910: 67-88, pls. 10-22.

New and noteworthy Hawaiian plants. Hawaii, Bd. Agr. & For. Bot. Bul. 1: 1-14, pls. 1-6 (with L. Radlkofer).

Notes upon Hawaiian plants with descriptions of new species and varieties. *Col. Hawaii Bul.* 1: 1-20, pls. 1-5.

A synopsis of the Hawaiian flora. *Thrum's Hawn. Ann.* (1912): 115-116.

1912

Mauna Loa on Feb. 17, 1912. *Hawaii Vol. Obs.*, (first) rep.: 73, 1 pl.

Indigenous trees of the Hawaiian Islands (Synopsis of a new forthcoming book). *Thrum's Hawn. Ann.* (1913): 115-116.

1913

The ferns of Hawaii. *Friend* 71 (2): 28-30, 40.

List of tree seeds adaptable for planting in Hawaiian forests, with especial adaptation to altitude, climate and soil conditions. (*In:* Giffard, W. M. Some observations on Hawaiian forests and forest cover in their relation to water supply (pp. 28-47). Hawaii, Bd. Commrs. Agr. & For., Rep., bien. per. end. Dec. 31, 1912: 44-47, pls. 2-5.

Report of the Consulting Botanist. Hawaii, Bd. Commrs. Agr. & For., Rep., bien. per. end. Dec. 31, 1912: 95-99, pls. 18-20.

(An account of the herbarium and a forthcoming book, *In:*) Report of the Department of General Science. College of Hawaii, Report of Bd. of Regents to the Legislature of 1913. *Col. Hawaii, Col. Rec.* 9: 21-24.

*The indigenous trees of the Hawaiian Islands. v + 518 pp., 218 pls. Honolulu.

List of Hawaiian names of plants. Hawaii, Bd. Agr. & For., Bot. Bul. 2: 1-20.

¹ Compiled by Alvin K. Chock, E. H. Bryan, Jr., and Mrs. Loy Marks.

* Books.

Descriptions of new species of Hawaiian plants. Col. Hawaii Bul. 2: 39-47, pls. 9-12.

Remarks on certain Hawaiian plants described by H. Léveillé in Fedde Repertorium X. 10/14 (1911): 156-157. Col. Hawaii Bul. 2: 48-49.

1914

Revisio plantarum Hawaiiensium a Léveillé descriptorum. Fedde, Rep. Spec. Nov. Reg. Veg. 13: 352-361.

1915

Report of the Consulting Botanist, Hawaii, Bd. Commrs. Agr. & For., Rep. bien. per. end. Dec. 31, 1914: 81-84.

Vegetation der Hawaii-Inseln. Eng. Bot. Jahrb. 53 (1-2): 275-311 (translated by K. Krause).

A new Hawaiian *Cyanea*. Bul. Torrey Bot. Club 42: 77-78, pl. 8.

(Report of) Systematic botany. College of Hawaii, Report of Bd. of Regents to the Legislature of 1915. Col. Hawaii, Col. Rec. 12: 29-32.

1916

Palmyra Island, with a description of its flora. Col. Hawaii Bul. 4: 1-53, pls. 1-20, 1 fig., 1 map (with O. Beccari, A. Zahlbruckner, U. Martelli, H. L. Lyon, and M. A. Howe).

Preliminary list of plants growing in Mrs. Mary E. Foster's grounds, Nuuanu Avenue, Honolulu. Haw. For. & Agr. 13 (4): 113-123, pls. 1-4.

Some plants of Hawaii. Mid-Pac. Mag. 11 (6): 578-583, 3 figs.

A new species of *Pritchardia*. Bul. Torrey Bot. Club 43: 385-387, pl. 21, fig. 1.

The sandalwoods of Hawaii. A revision of the Hawaiian species of the genus *Santalum*. Hawaii, Bd. Agr. & For. Bot. Bul. 3: 1-43, pls. 1-13.

1917

Sandalwoods in Hawaii. Mid-Pac. Mag. 13 (4): 356-359, 3 figs.

Report of the Consulting Botanist, Hawaii, Bd. Commrs. Agr. & For., Rep., bien. per. end. Dec. 31, 1916: 60-62.

Notes on Hawaiian *Lobelioideae*, with descriptions of new species and varieties. Bul. Torrey Bot. Club 44: 229-239, pls. 9-16.

The *ohia lehua* trees of Hawaii. A revision of the Hawaiian species of the genus *Metrosideros* Banks, with special reference to the varieties and forms of *Metrosideros collina* (Forster) A. Gray subspecies *polymorpha* (Gaud.) Rock. Hawaii, Bd. Agr. & For. Bot. Bul. 4: 1-76, pls. 1-31.

Revision of the Hawaiian species of the genus *Cyrtandra*, section *Cylindrocalyces* Hillebr. Am. Jour. Bot. 4: 604-623, figs. 1-5.

*The ornamental trees of Hawaii. v + 210 pp., 79 pls., 1 color pl. Honolulu.

Hawaiian trees - - - a criticism. Bul. Torrey Bot. Club 44: 545-546.

Trees recommended for planting. Haw. For. & Agr. 14 (11): 331-337 (1917) and Haw. Pl. Rec. 18: 414-421 (1918).

1918

Pelea and *Platydesma*. Bot. Gaz. 65 (3): 261-267, 1 pl.

New species of Hawaiian plants. Bul. Torrey Bot. Club 45: 133-139, pl. 6.

Cyrtandreae Hawaiienses, sect. *Crotoncalyces* Hillebr. Am. Jour. Bot. 5: 259-277, pls. 18-23.

1919

Cyrtandreae Hawaiienses, sections *Schizocalyces* Hillebr. and *Chaetocalyces* Hillebr. Am. Jour. Bot. 6: 47-68, pls. 3-8.

One government forest. Reserve lands at Kulani, Hawaii described. Haw. For. & Agr. 16 (2): 39-40, 3 pls.

*A monographic study of the Hawaiian species of the tribe *Lobelioideae*, family *Campanulaceae*. B. P. Bishop Mus. Mem. 7 (2): i-xvi, 1-395, frontisp., pls. 1-217.

Report of the Consulting Botanist. Hawaii, Bd. Commrs. Agr. & For., bien. per. end. Dec. 31, 1918: 51-53.

Cyrtandreae Hawaiiensis, section *Microcalyces* Hillebr. Am. Jour. Bot. 6: 203-216, pls. 29-32.

The arborescent indigenous legumes of Hawaii. Hawaii, Bd. Agr. & For. Bot. Bul. 5: 1-53, pls. 1-18.

The Hawaiian genus *Kokia*, a relative of the cotton. Hawaii, Bd. Agr. & For. Bot. Bul. 6: 1-22 pls. 1-7.

1920

Poisonous plants of Hawaii. Hawn. For. & Agr. 17 (3): 59-62 and 17 (4): 97-101.

The genus *Plantago* in Hawaii. Am. Jour. Bot. 7 (5): 195-210, pl. 13.

*The leguminous plants of Hawaii, being an account of the native, introduced, and naturalized trees, shrubs, vines, and herbs belonging to the family *Leguminosae*. Hawn. Sugar Pl. Assn. Expt. Sta. x + 234 pp., 93 pls.

The forest of Mt. Gedeh, West Java. Hawn. Pl. Rec. 22 (2): 67-104, illus.

1921

*A monographic study of the genus *Pritchardia*. B. P. Bishop Mus. Mem. 8 (1): 1-77, pls. 1-24, fig. 1 (with Odoardo Beccari).

The *akala* berry of Hawaii. Jour. Hered. 12 (4): 147-150, 3 figs.

1922

The *chaulmoogra* tree and some related species. A survey conducted in Siam, Burma, Assam and Bengal. U.S.D.A. Bul. 1057: 1-29, pls. I-XVI (with David Fairchild and Frederick B. Power).

Hunting the *chaulmoogra* tree. Nat. Geog. Mag. 41: 243-276, 39 pls., 1 map.

1923

Expedition to Tibet of the National Geographic Society. Sci., n.s. 58: 460.

1924

Banishing the devil of disease among the Nashi: weird ceremonies performed by an aboriginal tribe in the heart of Yunnan Province, China. Nat. Geog. Mag. 46: 473-499, 26 pls., 1 map.

1925

Land of the yellow lama: National Geographic Society Explorer visits the strange Kingdom of Muli, beyond the Likiang Snow Range of Yunnan Province, China. Nat. Geog. Mag. 47: 447-491, 39 pls., 1 map.

Experiences of a lone geographer: an American Agricultural Explorer makes his way through brigand-infested Central China en route to the Amne Machin Range, Tibet. Nat. Geog. Mag. 48: 331-347, 16 pls., 1 map.

Field notes of the Rhododendrons collected by Rock in 1923/4. Rhod. Assn.: 151 pp. (with L. N. de Rothschild).

1926

Through the great river trenches of Asia: National Geographic Society Explorer follows the Yangtze, Mekong, and Salwin through mighty gorges, some of whose canyon walls tower to a height of more than two miles. Nat. Geog. Mag. 50: 133-186, 47 pls., 1 map.

1928

Life among the Lamas of Choni: describing the mystery plays and butter festival in the monastery of an almost unknown Tibetan principality in Kansu Province, China. Nat. Geog. Mag. 54: 569-619, 34 pls., 16 color pls., 1 map.

Field notes of Rhododendrons collected by Rock in 1925 and 1926. Rhod. Assn.: 17 pp.

1929

The voyage of the Luka to Palmyra Island. Atlantic Mo. 144 (9): 360-366.

- Choni**—the place of strange festivals. Ill. *London News* 175 (4718): 494-497, 520, illus.
 A demon dance by Tibetan Lamas. Ill. *London News* 175 (4719): 530-531, illus.
 Demon dancers of Choni. Ill. *London News* 175 (4719): 549-551, illus.
 Butter as a medium of religious art: gods and "pagodas". Ill. *London News* 175 (4721): 636-639, illus.

1930

- Seeking the mountains of mystery: an expedition on the China-Tibet frontier to the unexplored Amnyi Machen Range, one of whose peaks rivals Everest. *Nat. Geog. Mag.* 57: 131-185, 54 pls., 1 map.
 Glories of the Minya Konka: magnificent snow peaks of the China-Tibetan border are photographed at close range by a National Geographic Society Expedition. *Nat. Geog. Mag.* 58: 385-437, 35 pls., 24 color pls., 1 map.

1931

- Konka Risumgongba, holy mountain of the outlaws. *Nat. Geog. Mag.* 60: 1-65, 36 pls., 43 color pls., 1 map.
 Field notes of Rhododendrons collected by Rock 1929. *Rhod. Assn.*: 22 pp.

1933

- Land of the Tebbus. *Geog. Jour.* 81: 108-127.

1935

- Rock Rhododendrons. Supplement to the Rhododendron Association Year Book 1935: 202-245.
 The story of the flood in the literature of the Mo-so (Na-khi) tribe. *Jour. W. China Border Res. Soc.* 7: 64-80, pls. I-VII, fig. 1.
 Sungmas, the living oracles of the Tibetan Church. *Nat. Geog. Mag.* 68: 475-486, 1 pl., 12 color pls.

1936

- The origin of the Tso-la books, or books of divination of the Na-khi or Mo-so tribe. *Jour. W. China Border Res. Soc.* 8: 39-52, 6 figs., 1 pl.
 Hä-la or the killing of the soul as practiced by Na-khi sorcerers. *Jour. W. China Border Res. Soc.* 8: 53-58, 2 pls., 1 fig.

1937

- Nichols Mo-so manuscripts of the American Geographical Society. *Geog. Rev.* 27 (2): 229-239, 4 figs.
 *Studies in Na-khi literature. I. The birth and origin of Dto-mba Shi-lo, the founder of the Mo-so shamanism, according to Mo-so manuscripts. II. The Na-khi Ha zhi P'i, or the orad the gods decide. *Bul. Ecole Fran. Extreme-Orient* 37 (1): 1-119, pls. I-XLI.
 The birth and origin of Dto-mba Shilo, the founder of Mo-so shamanism, according to Mo-so manuscripts. *Artibus Asiae* 7 (1-4): 1-85, pls. 1-16.

1939

- *Romance of Ka-ma-gyu-mi-gky: a Na-khi tribal love story translated from Na-khi pictographic manuscripts. *Bul. Ecole Fran. Extreme-Orient* 39 (1): 1-155, pls. I-XXXII.

1947

- *The ancient Na-khi kingdom of southwest China. (2 vols.) Harvard-Yenching Inst. Monograph Ser. 8: i-xx, 1-274, pls. 1-152 and 9: 275-554, pls. 153-256, 4 maps.

1948

- *The Múan Bpö ceremony or sacrifice to heaven as practiced by the Na-khi. *Mon. Ser.* 13 (1): 1-160, pls. I-IV. *Jour. Orient. Stud. Cath. U. Peking.* (Reprinted in *Mon. Ser.* 13 (1948), Tokyo and *Ann. Later.* 16: 9-158 (1952). Rome.)

1952

- *The Na-khi Nāga cult and related ceremonies. (2 vols.) Ser. Orient. Roma 4 (1): i-xi, 1-383, frontisp., pls. A-F, I-XXX and 4 (2): i-xii, 384-806, frontisp., pls. G-L, XXXI-LVIII. Is. M. E. O., Rome.

1953

Excerpts from a history of Sikkim. *Anthropos* 48: 925-948, 1 pl.

1954

Some of the experiences of a plant hunter in China. *Amer. Rhod. Soc., Quart. Bul.* 8 (3): 149-151, 1 pl.

1955

The D'a Nv funeral ceremony with special reference to the origin of Na-khi weapons. *Anthropos* 50: 1-31, 5 pls.

*The Zhi-mā funeral ceremony of the Na-khi of southwest China. *Stud. Inst. Anthropos* 9: i-xvi, 1-230, pls. 1-10. Vienna-Möding.

1956

List of Collectors' Numbers: *Rock. Rhododendron Handbook* 1956: 155-170. *Rhod. Gp., Roy Hort. Soc.*

*The Amnye Ma-chhen Range and adjacent regions; a monographic study. Ser. Orient. Roma 12: i-xi, 1-194, pls. I-LXXX, 5 maps. Is. M. E. O., Rome.

1957

A new variety of silversword. *B. P. Bishop Mus. Occ. Pap.* 22 (4): 31-33, fig. 1 (with Marie C. Neal).

Some new Hawaiian Lobelioids. *B. P. Bishop Mus. Occ. Pap.* 22 (5): 35-66, figs. 1-14.

1959

Contributions to the shamanism of the Tibetan-Chinese borderland. *Anthropos* 54: 796-818, 6 pls.

Some photographs from Dr. J. F. Rock. *Am. Rhod. Soc., Quart. Bul.* 13 (2): 68-72, figs. 16-20 and 13 (3): 136-139, figs. 35-40.

1962

Campus trees and plants. University of Hawaii. 28 pp., map. (with V. J. Krajina and Harold St. John).

A new Hawaiian *Pritchardia*. *B. P. Bishop Mus. Occ. Pap.* 23 (4): 61-63, fig. 1.

Hawaiian Lobelioids. *B. P. Bishop Mus. Occ. Pap.* 23 (5): 66-75, figs. 1-5.

1962-1963

*A Na-khi-English Encyclopedic Dictionary. (2 vols.) Ser. Orient. Roma 28: i-xliii, 1-508, frontisp., pls. I-XXVIII and XXIX: 1-589, frontisp., pls. XXIX-LVII. (in press). Is. M. E. O., Rome.