THE RHODODENDRON COLLECTORS: JOSEPH ROCK

Julian Taylor-Whall

The Rhododendron Collectors:

Forrest - F; Kingdon-Ward - KW; Wilson - W; Rock - R; Ludlow and Sherriff - L&S; Cox - C; and Clark - AC: initials and names most rhododendron enthusiasts will be familiar with from avidly seeking out the labels dangling from the lower branches of the plants those collectors introduced, mature specimens of which can be found populating all the principal UK gardens that specialise in the genus and are open to the general public throughout the flowering season.

Yet the exquisite treasures they discovered have never before been gathered together and illustrated within the pages of a single volume, each opus highlighting the work of an individual plant hunter.

So a host of photographs portraying those plants in UK cultivation - images captured over the course of the last three decades on a myriad of visits to the leading horticultural establishments of England, Scotland and Wales - have been gathered together across the heptad, with each volume augmented with pertinent texts and articles, most written at the time the expeditions took place, plus full field number listings of all the species and natural hybrids that were so painstakingly amassed on those trips across the rhododendron-rich regions of Southeast Asia.

THE RHODODENDRON COLLECTORS

Julian Taylor-Whall

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- *Front Cover* -
R 193 - *R. rex* ssp. *fictolacteum*

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- *Contents* -
Joseph Rock garbed in traditional Tibetan cold-weather gear.
Photographed in the Jone Buddhist Monastery, Gansu.

- *Historical Texts* -
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Historical Texts:

J. F. Rock, 1884 - 1962.

by Alvin K. Chock,
Editor of the *Newsletter of the Hawaiian Botanical Society.*

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 recognised throughout the world first as a botanist, then as a 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 (née Hofer) Rock on January 13, 1881, 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. The 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 Zeeland 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 naturalised citizen in May 1913. His health did not improve appreciably and he was advised to go to Arizona. However, he had always had a longing to see the tropics, so against the doctors' 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 honour 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), utilising what was perhaps the first glass bottomed boat in Hawaii which Alexander Hume Ford built for him. He developed the herbarium 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 T*he 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 Phaenogamic 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



Joseph Rock, on campus, editing his book *The Indigenous Trees of the Hawaiian Islands*.

- *left* -
A portrait from around 1910.

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 botanising resulted in the publication, by patronage, of *The Indigenous Trees of the Hawaiian Islands* in 1913. In the preface he apologises 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 in 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* (1888) 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, which were memorialised 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] Warberg). 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 Yunnan 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 Muli, and along the Burma-China border. By 1923 he was far into Yunnan 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 1921 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 (Amne Machin 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 Yunnan 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 the 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 Lamasery 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 Amne Machin 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-



Rock's expedition to Minya Konka assembles at the China Inland Mission.

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 (Moso) tribe, and then in Muli, 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, Yunnan, where he explored the eastern slopes of the Li-chiang Snow Range. In the spring he returned to Muli to explore and map the Minya 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 1928-30, 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.



Rock's campsite beneath the Likiang Snow Range.

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 herbarium specimens from western China, including species of *Rhododendron, Potentilla, Berberis, Meconopsis,* and *Primula,* all of which were distributed by 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 Agricultural Advisor to the Provincial Government of Yunnan. 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 Yunnan 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 on 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, in 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 photostat volumes which Walter Swingle of the USDA. 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 Dtomba, 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 levelled at him. Then 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 Dtomba did not return for fear of reprisals. Rock remained in Lichiang for a month, but 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, the 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.



Rock in his Tibetan cold-weather gear, this time on horseback.
The photograph was taken in the mid 1920s.

- opposite -
Rock with some of his Na-khi (Nashi) assistants, who are often described as his 'outlaw escort', but should more correctly be known as his 'protection detail'. The photograph was taken on June 20th, 1928.

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 botanised 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 botanising 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 specimens are at the Arnold Arboretum, the Gray Herbarium, the New York Botanical Garden, the 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 organisations 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 honoured 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 Francaise, 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 L'Ecole Francaise 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 honour, and today many hundreds of plants and birds bear the specific names of Rockii. In 1913 Anton Heimrl 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 was 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.

The American Rhododendron Society reprinted the above article from the *Newsletter of the Hawaiian Botanical Society,* and expressed their gratitude to Dr. Chock, then of the U.S. Department of Agriculture, Bernice P. Bishop Museum, and University of Hawaii, Honolulu, Hawaii, for allowing such. It originally appeared in *The Quarterly Bulletin of the American Rhododendron Society* spread across two editions, Volume 17, Number 2, and Volume 17, Number 3, which were published during April and July of 1963, respectively.

- *opposite* -
Joseph Rock, in the stone house he used for many years as the base for his wide-ranging journeys of discovery, at Nguluko, Lijiang, SW China.



The Arnold Arboretum Expedition to North Central Asia.

by C. S. Sargent, J. F. Rock, and E. H. Wilson.

In northern Kansu, the northwestern province of China, there is a high mountain region which appears on the map as the Richthofen Range and south of this in northern Tibet there is another region of high mountains (the Amne Machin Range). These two regions are botanically of special interest, for judging by their altitude and latitude the plants which clothe these mountain slopes should flourish in the northeastern United States and Canada, and in northern Europe and northern Japan. The interest in the botanical exploration of these regions is greatly increased by the fact that they are in the only part of the northern hemisphere which has not been more or less carefully worked over botanically, and that if there are anywhere new hardy trees they should be found in this part of central Asia. Much also might be learned here of the northern distribution of some of the important trees which grow farther south on the Chinese-Tibetan border. During the summer of 1924, Mr. J. F. Rock, the distinguished traveler and botanist, came to the Arboretum to discuss Chinese explorations and was enthusiastic about the exploration of the Richthofen and Amne Machin Ranges and willing to undertake it. The Arboretum was fortunate in being able to make a satisfactory arrangement for this expedition in which the Harvard Museum of Comparative Zoology joined in the hope of obtaining additions from this unknown region for its ornithological collection.

Rock sailed from San Francisco on September 30th. He had intended to go first to Peking to discuss his plans with some of the Chinese officials and some of the Americans established there, but political conditions in the Chinese capital at this time caused him to give up this plan and he went by Shanghai and Hong Kong to Haiphong in Tonkin where he arrived on the 5th of November. By rail he went to Yunnan-fu where he was able to gather the skilful collectors and cook who had already been with him in China and who accompanied him northward. From Yunnan-fu his long journey northward by mule commenced. Few men could have survived the dangers and hardships of this journey and retained their cheerfulness and hope of future success. The party was constantly attacked by brigands and with difficulty obtained military protection from the government. From Suifu in the Province of Szechuan, Rock wrote on January 27th:

"After an exasperating trip through a country suffering from famine, we arrived hale and hearty in Suifu. In Chaotung I was delayed ten days by terrible snowstorms. It snowed for nine days and nights without interruption, and as the trail is a horrible one as it is, descending through deep gorges and over mountain passes, it was impossible to go over it covered with several feet of snow, the mules could not negotiate it. There was nothing to do but to wait. We had no more experiences with brigands, thanks to the gods. At Laoyatan I discharged the mulemen and caravan as the road from here on is only possible for coolies and there are no horse inns provided. I was delayed three days in Laoyatan as it was difficult to get coolies; thirty-seven I had to employ. It was only four days from Chinese New Year and people are not willing to spend New Year's on the road".

On March 21st, he wrote:

"After an illness which kept me in the hospital at Chengtu for eight days (I contracted a severe attack of flu and bronchitis with a temperature of 104 Fahr.) I finally left Chengtu on March 16th. I was delayed mainly on account of the fighting and the unsettled condition of northern Szechuan".

Rock reached early in May, the Chinese town of Choni near the Tibetan frontier which will probably be his headquarters for the remainder of the year. Instead of the peaceful condition which he had expected in Kansu he found that serious trouble had broken out between the Chinese Mohammedans and the followers of the Living Buddha, and that under existing conditions it would be impossible to reach, as he expected, the Amne Machin Range by the way of Radja Gomba.

On June 24th he wrote:

"I am leaving with my entourage for the Tebbu country once more crossing a mountain called Lissedzadza much higher than Mt. Koangkei. The former is east of Choni and some 16,000 feet in height. They all say there are immense forests, trees of enormous size, and the country is said to be wonderful. It is inhabited by a savage tribe called the Tebbu. It is possible to reach the Yellow River from there and there are again forests. If we can make it I will go there. We shall then return to Choni and see what turn things have taken, and if at all possible will make a rush to the Amne Machin, so I shall have next year free for the Richthofen Range. We have much material. There are a great many conifers in Tebbu land, many Piceas and Abies and others, some with cones resembling Tsuga but it cannot be Tsuga. On looking over a hillside one can pick out the various species by the size and shape of tree and colour of foliage. My boys are good tree climbers and with our field glasses we can detect the fruits even if only near the very top. We have already several boxes full of plants and we have just begun. I think all in all we shall have a very successful year. We have a few hundred birds all dried and packed. If it will not be possible to get to the Amne Machin we will work Tebbu land and north, of it: by the way, it is practically in the same latitude as the Amne Machin but of course much less high. From what I have seen so far and the climatic conditions the plants from Tebbu land, which is a high mountainous country, the lowest village being about 9600 feet, ought to do well in Massachusetts. I do not mean the lower Tebbu where Purdom worked, but the northern or upper Tebbu, where Purdom did not go. The Choni Prince assured me that no white man has been in his upper Tebbu country and that no collecting had been done there".

On June 29th he wrote:

"In the meantime we will work the Tebbu country. From what I have seen there is a large number of species of Picea and probably Abies. It is impossible that they are all variations of either *Picea Meyeri* or *Picea Wilsonii;* the leaves and cones differ greatly, some are green when semi-mature, others crimson, others purplish black like Abies. Some are white beneath (the leaves), some dark green. The size and shape and arrangement of the leaves are very different in the various species. I think I found at least ten species of Picea. Where we are going now are said to be enormous forests of immense trees. The Pine found on the Minshan is certainly different from the Yunnan Pine; the needles are short and of a deep dark green, very different from the Yunnan Pine. *Pinus Armandi* I have not found here but in the south. Undoubtedly the Tebbu country is rich in conifers and I will endeavour to get seeds of all of them even should we go to the Amne Machin, I shall arrange with a man, a young Tibetan, quite intelligent, and who has been in the Tebbu country with me, to collect the seeds of these various conifers. I shall leave one of my Nashi collectors behind also and then we will be able to get a good series".

On August 9th he wrote (his last letter):

"Yesterday we returned from the trip (second) into the Tebbu land. I was greatly interested in the conifers there, and I am sure you will be surprised to learn of the great number of Abies and Picea found there.

"To be sure, one of the most common Piceas, is *P. Meyeri*.

"It forms forests but is found only on the outer margins of the Minshan. It rarely occurs with Abies and other Piceas but usually forms pure stands. The trees are easily recognised from a distance by their glaucous colour and gray flaky bark. There are Abies 180-200 feet in height in Tebbu land and we felled a few trees in order to secure specimens. There are some with smooth whitish bark recognisable at a long distance. I took many photos of the trunks, branches, etc., but it is very difficult to photograph the trees owing to their height and their not growing in open country singly but in stands, also the terrain is so steep that it is difficult to do much photography of tall conifers.

"I spent several days in these forests and had many trees climbed, such as we could not climb we shot down specimens. We obtained a fine series of these various Abies and Picea. Mr. Rehder in his enumeration of the woody plants of North China says *P. Meyeri* is a very variable species. Here in this part of China there can be no mistake made as to the identity of *P. Meyeri.* The only variation that does exist here is in the colour of the leaves which are glaucous in younger trees and green in old. The cones are at first (just before maturing) green and glossy, and the margins of the scales are reddish to purplish. The cones are often very long and slender but usually somewhat curved. There are a number of small fruited Piceas, some with red cones, some with deep blackish purple, some with small leaves glaucous or white streaked beneath, others uniformly green. The scales of the Abies cones are very different in the various species...

"On the 13th I leave for the Kokonor. I am leaving three men behind to go to the Tebbu country to collect the seeds of all the various conifers and woody plants. There are many Primulas that are pretty and also quite a number of Meconopsis. The *Meconopsis integrifolia* is different here from the Yunnan species. I think we have a few new ones from Tebbu land. I am certain that these conifers and other trees will grow in Massachusetts. During the day we have a temperature of 84 Fahr. but a morning temperature of 30 Fahr. at 6 A. M. There was always ice on our tents every morning - this is August. In the winter the passes into Tebbu land are not negotiable. It is a most wonderful country, and no collecting has been done on the other side. Purdom worked in the Tao River basin and in Lotani which is on the Szechuan border south of Minchow".

Just a year from the time Rock sailed from San Francisco the first fruits of his journey were received at the Arboretum and consisted of five packets of seeds, one of Leptodermis, two of Lonicera, one of Prunus and one of *Viburnum fragrans*.





- a*bove right* -
A staged trail through a defile of the Min-chow Ho beyond Kwan-ting between Min-chow and Kai-chow.
Rock took the photograph on April 12th, 1925.

- *below right* -
A view of the upper part of Cho-ni from above the east wall.
The photograph was taken on July 15th, 1925.

- *overleaf page 20* -
Looking down Koang-kei Shan (or Kwang-ke Shan) from a pass at 13,150 ft. elevation,
northwest of the great shi-men or rock gate of the Min Shan Range.
Rock took the photo on July 30th, 1925.

- *overleaf page 21* -
The great shi-men, or rock gate, seen from the first or outer rock gate leading to Tsa-lu Ku going N,
at an altitude of 11,600 ft. (July 30th, 1925).





From two letters recently received from Mr. Rock, the following extracts are of general interest, describing as they do an almost unknown region and the hardships and difficulties it presents for exploration.

High plateau of the Kokonor, Oct. 9, 1925:

"We have been on the Kokonor plateau for some time and as the Dulanssu (on the map Dulankit) trip proved a very arduous and disappointing one, I decided to give it up and we made our way back to the lake (Kokonor) crossing the sand dunes and thence up a gorge known as the Rako gorge. Looking for trees or even shrubs on the Kokonor is like looking for a needle in a haystack. At Rako, where there are Tibetan and Mongolian encampments (nomads), we found two species of Picea and quite a number of shrubs including Rhododendrons.

"I was very much surprised to find Rhododendrons so far north.

"We thence made our way across the Tapanshan, a high range part of the Nanshan, not a tree in sight, but several bushes, including three species of Rhododendrons at 12,500 ft. elevation. They grow only on the northeastern slopes of the range where the snow does not melt. Not a single bush could be seen on the southwestern slope which receives the afternoon sun and where there is no snow.

"This range is the divide between the central Asian plateau and the Yellow River and is a formidable barrier.

"At Komangssu, called by the Tibetans Serku gombo, and not on any map, we found extensive forests of a single species of Picea, which reaches a height of over 100 ft. with trunk two feet in diameter. A tree 1 to 2 ft. in diameter had 119 rings. The tree much resembles *Picea Meyeri;* there is a slight pubescence on the slender branchlets, the needles are less robust and the cones much smaller. The bark is the same as found on *Picea Meyeri* in the Tebbu country. We collected quite a quantity of seed, which I shall forward from Kanchow in the north later on with a number of seeds of various Berberis, Cotoneaster, Clematis, Lonicera, etc., which formed the underbrush; in this Picea forest only this one species occurs and forms extensive forests.

"Komangssu is one stage from the Tapanshan. We are again in Tibetan grass country camping. It is bitterly cold, the temperature in my tent has been 27 Fahrenheit, and fire is impossible. No charcoal could be bought, not even in Lanchow, where they burn coal. It has been snowing now for a night and a day, and while I write this the snowflakes are whirling down from a dull sky. Camping under such conditions, with no other fuel than Yak dung, and that now soaked with snow, is very trying indeed. Yak dung is difficult to find now as the plain is covered with snow, all the grass is hidden and the animals are having a hard time; we carry beans for the horses and mules, but grass is an essential. We hope it will clear shortly and so we will be able to proceed, otherwise we would have to go south to Peitating, a forlorn walled village, the last place where cultivation is carried on, to remain until the weather clears. We have one high pass yet to cross ere we reach the main Nanshan, which separates us from Kanchow and of which the Richthofen range is a part.

"I sent you various seeds from the Kokonor region which I sent to Tankar to be mailed. I hope you will have received them before this. There are snow ranges on both sides of us, but they are as bare as a rock, not a vestige of plant life is visible.



- right -
The outer or smaller rock gate is an outer barrier 10 li (5 kilometres / 3 miles) from the shi-men gate of the Min Shan Range.
The photograph looks north towards Tsa-lu Ku and was taken on July 30th, 1925.

"The scarcest thing in this country is a tree or a bush, everything is barren, arid; searching for such is indeed an undertaking. The Kokonor region is the bleakest imaginable. Cold winds blow from the Northwest almost continually and my tent - elev. 10,700 ft. - was nearly blown into the lake one night at 2 a. m. had my men not come speedily to my rescue. It blows a veritable gale up there beginning at 10 p. m. and lasting until after 2 a. m. The nomads camp at the very foot hills in sheltered nooks, but when travelling one cannot go very far off the trail, as it would consume a good deal of time every day. The Kokonor region is indeed poor picking for a botanist but rich in bird life. I never saw so many birds in one region as on the Kokonor, we made a large collection, and I suppose the Doctor will be glad to hear about this.

"I have been told by Tibetans that there are forests to southwest of Kanchow which corresponds to the Richthofen range which name is of course not known here. We shall reach the range in about 8 or 10 days, providing the weather clears and the sun melts the snow, as it must, as it is much too early for the real winter to set in, this being only the 9th of October.

"Once while camping on the Kokonor (lake) our camp was visited by Tibetan robbers, sneak thieves, in the night, but they were chased off by our Mohammedan soldiers, without whom it would be impossible to travel in this part of the world. General Machi detailed for me an old hardy Moslem soldier, who knows this region exceedingly well, and who is always out on the plains. He and ten soldiers, Moslems, escorted the Panchen Lama from Taichinere in the northern Tsaidam, to Suchow and Kanchow. He is a remarkable man, absolutely fearless and the Tibetans know him. The chiefs of the various nomad clans pay him great deference. He is to go with me to the Amne Machin next year; he has been there four times and speaks the Ugolok language as well as Tibetan.

"When travellers or geographers speak of the forests of the Kokonor, they can mean no other than the forests on the upper Yellow River, viz. the Amne Machin and below, for there are no forests north of the Amne Machin. General Peirera, whose journal I have, speaks of not seeing either a shrub or a tree until he reached Jekundo, 18 stages from Tankar, and Jekundo is in Eastern Tibet and not in the Kokonor. It is true huge logs are rafted down the Yellow River to Lanchow, but they all come from the upper Yellow river, that is the forests of the Amne Machin. I found out that at Dulanssu was only a grove of trees, one species of spruce and one of oak, facing a monastery. People used to bare hills are apt to call a grove of trees a "a lin ku" or large forest of big trees. Of all the regions of Kansu that I have seen so far, there is none that can compare with the Tebbu country, which is a perfect paradise for a botanist or a dendrologist. The mountains of Sining and the huge divide between the Sining and the Yellow River are absolutely bare of trees, not even shrubs are visible, and Farrer could only have been out for flowering plants such as Primulas, Meconopsis, etc., which are apparently plentiful in the early summer".

Kanchow, Oct. 25, 1925:

"After much hunting for trees we reached Kanchow on the Mongolian border, to replenish our provision boxes, to buy beans for the horses, etc. From our camp in the snow, whence the previous epistle was written, we proceeded to Obo and thence went west between the North Kokonor barrier range and the Richthofen range.

"Obo is a dot in a sea of grass where live a few Mohammedans who buy wool from the Tibetans. Nothing could be bought there as they bring their own supplies up either from Sining or down from Kanchow. A stream flows between these two mighty snow ranges, both called the Nanshan by the Chinese, the northern one facing the North Kokonor barrier range being our Richthofen range.

"The mountains for four days journey were absolutely bare. The grass country between the ranges being dotted here and there by Nomads. We came on to a Tibetan nomad wedding and it seemed so absurd in this wild country to see the women dressed in the finest and overladen with silver jewellery, the furs they wore were exquisite. I finally spied in a deep rocky gorge a dying forest of spruce and we went directly thither and pitched our camp. It was indeed a dying forest.

"The nomads had been cutting and cutting; we secured only a few seeds here. We were told by the nomads that on a mountain further west called Ngiusinshan, and on which a Mongol tent lamasery, Arketassu, is situated, are to be found extensive forests.

"We made our way to Arketassu and pitched our tents on the edge of the mighty spruce forests. The most extensive forest was on this huge mountain 18,000 ft. in height, but strange to say it consisted of a single species of Picea. We camped there several days and searched the mountain up and down, but everywhere we were greeted by the same species. Above the spruce forest, which extends to 11,500 ft. (stunted trees) there is only willow scrub 3 ft. tall, stiff Caragana and *Potentilla fruticosa* bushes, no Abies. On the North Kokonor barrier range facing the Richthofen range there grows a Juniper of a fairly large size; it takes the place of Abies above the Picea forest.

"We went on and on following the Babo ho where it is joined by a stream coming from the mountains north of the Karanor, called the Heho. There we found forests but the same species of Picea. We collected specimens naturally for comparison but every tree is alike. We followed the Babo ho as far as we could. It becomes a big river, cuts through the Richthofen range and out to the plain west of Kanchau. The stream zigzagged and was unfordable. It entered a gorge about 7,000 ft. deep and disappeared between snow-capped mountains. It was impossible to proceed further, no trail, no nomads, nothing but rocky cliffs with Juniper trees. The hills were now bare and composed of Red Sandstone.

"We returned.

"The North Kokonor barrier range and the Richthofen join here in one mighty mass of bare ranges through which the river has cut its way. We impressed a nomad Tibetan to guide us across the mountain, which separates us from the plains of Mongolia. For four days we wandered over the mountains, down gorges, and up passes, sleeping as high as at 12,500 ft. elevation, with a temperature of 6 Fahr. in the tent and not a stick of wood, as we could only take enough along, when we did find any, to cook two meals a day.

"On the northern slopes, in a rocky gorge which we descended on to the plain - the Hung shui k'ou - we found Picea forests, but only small trees, perhaps the locality had something to do with the size. They grew on rocky dry slopes, but appeared to be the same species as found on the North Kokonor barrier range and on Ngiusinshan. These Picea forests have no under-shrubs whatever, moss covered the ground and the stands are of a pure single species. I have many photographs to illustrate this region. We shall continue west; there are large tracts of forest and I shall satisfy myself in regard to the trees of which they are composed and shall of course collect the seeds. It will not be possible to go the whole northern length or rather to the extreme west of the Richthofen range on the northern slopes this year, as it is getting too cold and camping at such altitudes in such a latitude, exposed to the cold winds of the Mongolian desert, is more than I can at present endure. Had political circumstances permitted my coming here earlier all could have easily been done, but fates were against us. This region is terribly expensive, grass or hay is sold by the pound. It is also difficult to hire animals to go to these out of the way places, as the muleteers are used to travel only on the big roads from inn to inn.

"It is hard on the animals, to spend night after night out in the open, in snow and ice,



Rock’s camp at the foot of Niu-hsin Shan. The mountains opposite are part of the Kan-chow Nan Shan or Richthofen Range.

with a temperature as low as 2 and 4 Fahrenheit, and with inadequate fodder, as often one is forced to camp where there is no grass. Camels cannot go where there is ice and steep hillsides, as they slip easily and break their legs, so it is quite a problem, and the only way I could get mulemen to go was to commandeer them through the officials, and then state we are going there and there, and finish by saying no word can be said and they must go. They whine continuously then and groan, so it gets on one's nerves, and to make things unpleasant they go so slow, one is glad to get rid of them when possible. They are all alike".

During the two years Mr. J. F. Rock has been engaged in exploring the flora of north central China for the Arboretum he has visited the high, nearly barren Richthofen Range in Kansu, the Kokonor region, the high and barren Amne Machin Range, the valley of the Yellow River and its heavily wooded ravines in Tibet. He made last year a partial exploration of the Tebbu country in southwestern Kansu, and during the late summer and early autumn of 1926 he extended his exploration of this region of which he wrote as follows, on September 9th, from the Wantsanggomba Monastery, Lower Tebbu country:

"I have never in all my life seen such magnificent scenery. If the writer of Genesis had seen the Tebbu country he would have made it the birthplace of Adam and Eve, for besides an endless variety of Conifers there are even Apple trees 40 to 60 feet tall but the apples are not the kind that would have tempted Eve. I am sorry to report, however, that the Conifers are on an off year this season, they are not fruiting. There is an incredible variety of Conifers the like I have never seen. We located three species which we had as yet not collected, which have this year's cones and seeds shall be collected of these species to be added to the Arnold Arboretum Conifers. Between the upper and lower Tebbu there are magnificent forests of Conifers some of which we have never seen before, and I am glad to report that they are all loaded with fruit. Unfortunately one has to pass a gorge called Tsaraku which leads to the grass country and a monastery of thieves called Datso Lhoma; the place and the gorge has an evil reputation. When we passed it there were Tibetans hiding in the bushes with their rifles and had they cared they could have made an end of the Arnold Arboretum expedition. The gorge is outside of the Choni prince's domain arid is in no man's land; it leads to the uncontrolled grass country. People few in numbers are usually attacked here. There is one consolation, no Chinese "Patriots" will dare venture to this beauty spot for they do not care about scenery or forest, their only object is to plunder and should they chance to come over they would find themselves not the plunderers but the plundered, and I doubt if their hide would remain on their patriotic frames. To be more serious, I may state that I might be able to predict a good "end-all" in the shape of many parcels of seeds and many specimens of both plants and birds".

On September 14th he wrote:

"In continuation of my letter of September 9th from this place I will just add a few lines, saying that I made a tour of the Wantsang valley to 10,000 feet elevation. The forests are perfectly wonderful. At 8,500 feet we came across a species of Populus; it is certainly one of the finest Poplars I have ever seen. It is associated with Picea, Abies, Acer, Sorbus and Betula. This Poplar rivals the Spruces and Abies, the Spruces and one species of Abies reaching a height of from 100 to 450 feet. These Poplar trees grow scattered among the conifers, and have straight poles 4 feet in diameter, clothed in a drab to greyish brown bark deeply corrugated, but have for 50 to 60 feet from their base not a single branch; they then spread into a huge crown with large leaves dark green above and greyish green pubescent beneath; from a distance the leaves appear white.

"It is however, not that species with tomentose white leaves which we observed near Kouchow.

"I am sending you cuttings of this wonderful tree whose wood is much valued by the Tebbus but is not planted by them. On the banks of the Peshwekiang in the rocky gorges at 6,500 feet elevation near the Wantsang monastery grows another Poplar in shape of the Lombardy Poplar. Of this I am sending you also cuttings. It does not occur in Choni or on the other side of the Minshan".

In a letter from Mr. Rock from Choni, Kansu, dated September 24th, he writes:

"In the Tebbu country we found various Hydrangeas, Viburnums, many Acer, some huge trees, huge Quercus, enormous Malus, Sorbus, even Meliosma, a few Koelreuteria with large compound leaves, a species of Padus, a tree 60 feet tall with trunks 2 feet in diameter, glabrous glaucous leaves; this species I have only observed in the dense Abies and Spruce forests to 9,500 feet elevation; the racemes bearing orange to brown small cherries are about a foot or more long. It must be a handsome tree when in flower. Acanthopanax, a lovely species with long drooping peduncles bearing large umbels of black fruit, the whole inflorescence being over a foot long in some individuals.

"There are large panicle-bearing Aralias, and beautiful Syringas in the drier regions, large Ailanthus trees, with huge clusters of red fruits, several interesting Cornus and Ribes, Deutzia, Philadelphus, Caragana, Betula - we observed four distinct species - Cotoneaster, Tilia, Juniper, Evonymus, Prunus, Lonicera, among them a tree 15-20 feet tall, with shaggy papery bark of a pale flesh color, Jasmine, Crataegus, not the *C. pinnatifiday* Xanthoxylum, Rhododendron different from what we sent before, Populus, Salix, Rosa, Rubus, Berberis and last but not least the Abies and Picea".

Since the receipt of these letters, fifty-two packages of seeds and two packages of Poplar cuttings collected in the Tebbu region have reached the Arboretum in good condition.

Friends of the Arnold Arboretum and of Mr. J. F. Rock will be glad to learn of the safe arrival of the Expedition at Shanghai.

News is just to hand that all the collections have arrived in good order and are being sent forward.

Mr. Rock sailed for San Francisco on the S. S. President Madison on August 5th. Much anxiety has been felt for the safety of Mr. Rock and the Expedition and its successful termination is a welcome and happy relief to all concerned. The only regret is that Professor C. S. Sargent did not live to learn the good tidings. To the last his interest in the expedition was unabated and Mr. Rock's jeopardy was a source of great worry to him. Mr. Rock deserves high commendation for the manner in which he has successfully brought the hazardous undertaking to a successful end.

Mr. Rock spent the whole of the winter of 1926-27 at Choni under the friendly protection of the native prince, a man of character and friendly disposed towards Mr. Rock. The internecine struggle in China delayed departure and at one time it looked as if there was no possible way out of these back blocks. However, Rock determined on leaving Choni by a south-westerly route crossing into Szechuan and hence as circumstances offered. He left Choni on March 10th en route for Sungpan Ting by way of the Lower Tebbu-land. The journey lay through wild, mountainous country where roam lawless tribesmen.

On the way they were attacked by robbers who suffered fatalities, but fortunately Rock and his party escaped with minor injuries.





Canyons of conglomerate (a reddish-purple gravel) at the back of Radja Gomba,
with Picea and Juniper trees growing at an elevation of 11,510 ft. (May 22nd, 1926).

- *left* -
Joseph Rock and the Prince of Choni.

- *opposite page 27* -
Left: looking upstream in the Jupar Valley, showing spruces growing on the northern slopes,
eight days north of Radja at an elevation of 10,600 ft (June 27th, 1926).

Right: the limestone cliffs on the way to Drakana in the huge gorge,
which cuts across the western Min Shan Range, showing birch, spruce and firs (August 26th, 1926).

- *overleaf page 28*-
The Jupar Valley, Tibet, showing the northern slopes of the range and the view upstream. The trees are mainly *Picea asperata* and those along the stream are *Sorbus trianshanica* and *Salix* (June 27th, 1926).

- *overleaf page 29* -
In the valley of Chatseti, the last camp in lower Tebbu land (September 17th, 1926).

- *overleaf page 30* -
The enormous limestone gate, which leads into Drakana, upper Tebbu land.
The valley is forested up to the very steep slopes of the limestone cliffs with Abies, Betula, Picea, Rhododendron and Salix,
and was photographed from an elevation of 11,000 ft., on August 26th, 1926.


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On March 28th, Rock reached Sungpan Ting from whence he writes:

"First of all greetings from Sungpan which we reached safely yesterday. It was a long and hard pull through the wilds. The greatest obstacle proved to be the Da he la (Chinese Yangpu shan), a high mountain, which is the border of the Choni (Szechuan) territory. The trail across the pass was covered by terrific snowdrifts and it took a day, 25 men working with shovels and picks, to make a trail across it. These men were Tebbus from the village of Yangpu, the last in the Choni Prince's territory. From Yangpu shan we descended a deep gorge called the Tasheku which debauches into the Hei ho. This river flows in terrific gorges down which we travelled for two days then turned up a larger river, called Peho. This river we followed to its source, which is the northern slope of the Konke la, two days north of Sungpan. While making our way up to the Konke la a blizzard raged for two days which made the crossing of the Konke la somewhat difficult.

"The Konke la is a large pass, not high, 11,300 feet. It consists of an alpine meadow 3 miles long and is the happy hunting ground of robbers but evidently the blizzard kept them off. At the junction of the Hei ho and the Peho we met a bunch of robbers, Tibetans, hiding behind rocks. We spied them, surrounded them and disarmed them. There were eighteen in the bunch. They were armed with flint-lock rifles, swords and huge clubs, one end of which was crowned by a metal cap with sinuations like those of a cog wheel. One knock on the head with a club like that is sufficient to kill a man. We took their arms away from them at the point of four 45 colt automatics and two rifles and two shot guns.

"Before leaving Choni I bought an extra rifle from the Choni Prince with 200 rounds of ammunition for 300 Taels. Rifles are expensive in this part of the world. We marched the robbers off to the nearest village and then made them cross the river and go down on the other side. Not very far beyond we met another bunch. They had, however, wind of the affair and made for the hills on our approach. We stayed with the caravan the whole day and slept that night very lightly in a lonely house up that gorge. It was a hard and exciting journey, one I would not care to make again.

"As bare as the region of Sungpan is, as densely forested is the northern slope of the Konke la - the forests are immense; I wonder if Wilson has worked that region? - it is void (practically) of Rhododendrons. I saw only three bushes on the whole journey while the northern slopes of the Yangpu shan is rich in Rhododendrons, many of which do not occur in the Upper Tebbu country or on the Min-shan in general. I enclose seeds of two species from the habit of which I judge them to be yellow flowered. They reach a height of 8 to 10 feet and form a dense, round, shrubby growth at an elevation of 10,000 feet and higher. I wished I could have extended our exploration to this huge mountain - the end of Tebbu-land.

"However, with the Amne Machin and Richthofen range journeys we had too many irons in the fire. The territory we covered was rather extensive, you will admit, and it takes time in this part of the world to cover ground especially with yak and camel, which can hold pace with a snail. I had my misgivings about Sungpan, but I received a welcome reception. The officials are very friendly and they received official notice from the Chengtu governor to protect us and help us on our way. It will therefore not be necessary for us to go into Tibetan country as to Kanze and then Tatsienlu".

From Sungpan, Rock descended by the main road through the gorges of the Min River to Kuan hsien and then across the plain to Chengtu where he arrived on April 15th. At Chengtu he found that all the foreigners except the Japanese had been evacuated. He writes in haste:

"We reached Chengtu without mishap. The officials here are very friendly and are helping me by wiring to Chungking for protection, etc. As it happens the Japanese are now evacuating Szechuan and the Japanese Consul is leaving Chengtu this a.m. and I arranged to go with him. I am sending my 11 Nashi boys overland to Yunnan and I myself and my cook are going overland to Chungking. The water way would be more agreeable but fighting is going on south of Suifu and the official insists on our going overland. All the Japanese are going that way and, of course, we shall have to too. I hope we will get out now. The danger is in the lower Yangtze.

"I am writing this at 4 a.m. I have to leave everything behind except just what I shall actually need on the road. I have been in Chengtu only two days and, of course, it has been impossible to sell things at such short notice. The horses I sold to the Governor and the rifles I presented to him. Everything stays here. I cannot help it. There is now only this one Japanese boat on the Yangtze waiting to take off the Japanese and me. After that nothing more and all exits would be closed".

Leaving Chengtu with the Japanese Consul he travelled overland to Chungking and thence by steamer down the Yangtze to Shanghai, which was reached on May 7th. At Chengtu, Rock had to abandon all surplus personal belongings and travel as lightly as possible. His cook accompanied him but his collectors, whom he had taken from western Yunnan, were dispatched overland.

It is not to be surprised that after undergoing such long and severe hardships and mental strain Mr. Rock should be in poor physical condition when he reached Shanghai. However, he at once set out for Yunnan fu, to repatriate his cook, and assure himself of the safe arrival of his collectors who had served him loyally and well. He reached Yunnan fu on the 23rd of May. The last letter received at the Arnold Arboretum was written from Yunnan fu, dated June 29th, part of it is as follows:

"I am just now in receipt of a letter dated June 17th from the American Express Company of Shanghai in which they say in part as follows:

'I am sure you will be interested to know that all the packages (boxes) for Harvard University have all been received by us in good condition and are being duly forwarded and our Shipping Department will give you full particulars with the next few days'.

"This is a great relief to me to know that nothing has been lost. If you consider the times and the conditions under which we have been working I must say that we certainly had good luck. We have lost nothing, not one cent of money, not a single package of seeds or a negative nor a specimen of bird or plant and what I am still more thankful for not a single life, at least not connected with my immediate party. Since I left my men, or rather 11 of them, in Chengtu from which place they found their way alone to Yunnan fu, several have been ill. They had no one to look after them and the fear and anxiety through the robber infested country alone, without protection, at least part of the time, all told on them. Four of them are in the hospital here in Yunnan fu but I hope they will soon be well and about."

The above account originally appeared as four updates across four editions of *The Journal of the Arnold Arboretum:* Volume 6, Number 4, written by Charles Sprague Sargent, and published in 1925; Volume 7, Number 1, by Sargent and Joseph Rock, in 1926; Volume 7, Number 4, by Sargent, in 1926; and Volume 8, Number 3, written by Ernest Wilson, which went to print in 1927.

Some of the Experiences of a Plant Hunter in China.

A lecture given by Dr. Joseph Rock to members of the American Rhododendron Society on September 16th, 1954, in Portland, Oregon.

Members of the American Rhododendron Society, Ladies and Gentlemen:

The Chinese have a saying that a picture is worth ten thousand words. I will speak very little, and then show pictures in the form of slides, and later moving pictures of the way natives cross the deep rivers and gorges on inflated skins and bamboo hawsers or ropes.

Most of my expeditions started in Indo-China and Siam. We left Siam and after a train passage of five days we boarded a boat for three days, for elephants had torn up the tracks at night.

One of my first expeditions was for the finding of the Chaulmoogra tree. This tree produces an oil used in the treatment of leprosy. Formerly this oil was imported in many different grades of quality, and this search was undertaken to find this tree, and establish a uniform grade of the drug by controlling the process right from the start. Another early expedition was for the United States Department of Agriculture to get a blight resistant chestnut, for many of the large forests of these trees were dying out in the eastern part of the United States. We went to Bangkok overland to Chinmi, and up into Burma. In this part of the country we heard that a single white man was living amongst the natives. When we arrived there we were told that he was not there but had left. Since these natives were only a generation or two away from being headhunters, and they could not marry until they had taken a head, we thought the answer about his absence quite interesting.

Later during our stay we were shown how human heads were taken, and the natives would grin and say just like cutting off a human head while slaughtering mutton. Much of this country was only two hundred and fifty feet above sea level and abounded in tigers and leopards. The terrain was a vast jungle with many tropical plants and vines. This area is split by one of the large rivers of the district, and the people belong to a water tribe, that never work more than two hours a day. A mission from the United States was started there, and it was brought to the natives' attention to cut wood and do other tasks. The natives replied: “Why should we work, we are not hungry”.

We followed the Black River for ten days and saw much of the very poor grade of tea being raised along the bottom lands. This tea is sent into Tibet by immense Yak caravans, where it is highly prized. I never liked it, and even when our supply of good tea was low I could not make myself believe it was good. The entire stalk and leaves are baled and since some of these stalks are over twenty feet high one may have an idea of the low quality of the product. I must mention here one of the tea parties that I attended when we were camping on the Chonakh River, a tributary of the Htse Chu. In the centre of the big tent a fire was roaring in a mud stove. Out of curiosity many nomads followed us into the tent, they were husky for in this severe country only the fittest survive. One of the old native women brought out some dishes from a pile of sheep manure, which was also being used for fuel. She took some of this dry manure in her hand and scoured the cups. As a finishing touch she polished them with a dirty old cloth that hung at her side. Then as a matter of fact she also dipped into the container with her dirt encrusted hands and passed us a cup of tea.

At the source of the Red river we found our first rhododendron, *R. rubiginosum,* an evergreen shrubby type at 14,000 ft. Most of these plants were ten feet high, but some grew to over twenty-five feet in height. Here we also found an entire mountain of *R. fastigiatum*. I will show a picture slide of it later in the evening. We also found *R. magnificum* which makes a very tall tree.

Tali, a part of the Tali Range, was George Forrest’s botanical garden, “Forrest’s Reserve” as he referred to this area. Forrest lived here for six years at what is known as the Snow Village. The Jade Dragon mountain is here, its elevation is over 20,000 feet. Most of the natives in this area are not Chinese but rather Siamese, and each tribe has a different language. Each day’s travel of twenty or thirty miles finds one in an area where the language is changed. Most of these people are aborigines, and little has been done since they were nationalised in 1728.

The Yangtze or Yangtze-kiang river is the principal river in China and it is 3,200 miles long from its beginning to where it empties into the East China sea. This is one of the most awesome sights, where this stream cuts through the high mountains in tremendous gorges. This wild river drops 1,000 feet per mile through gorges 10,000 feet deep. One follows this river, and by crossing at 5,000 feet and then dropping down to the water level repeated times, the miles up and down are many, but the forward progress is slight. Rhododendrons and primulas along with meconopsis are in great evidence.

We crossed the Yangtze on 150 inflated goat skins. With the help of 22 of the best swimmers we managed to cross the terrific torrent of the mighty Yangtze to the Likiang side. We lost only one mule.

The ninety day journey took us a good many days of hard travel, we passed by the Op’n Fan peak over 21,000 ft. (I will later show this fantastic mountain in my pictures).

We passed through rhododendrons for days to the source of the Mekong and Yellow River and near three peaks over 17,000 feet and not shown on any map.

We arrived at the Muli Kingdom, which is a theocracy, and the king has absolute power over all his subjects. The novel way he has of picking a guilty person is unique to say the least. Several names are put in a bowl, and the king draws one or more names. The hapless person is then put into a dungeon and kept there, with chains about his neck, or as I will show later, placed in stocks. I visited these, and was told why they were there. In order to take a picture I pushed the long hair away from the prisoners face with a stick. I requested that these men be relieved from the torture of the stocks, and my request was granted for when I returned some months later they were only fastened by a light chain. I was considered a good friend of the Muli King, and in order to travel about in his kingdom, it was necessary to get permission so that robbers could be warned not to molest those whom the king favoured. Robbers seeking permission to rob were told by the Muli King to rob North, South, East or West, but not in the province. Since much free gold is present in Mull everyone is eyed with suspicion, and the fantastic story of permission to hunt plants was never believed. The King nodded approvingly when I presented him with an American twenty dollar gold piece, but he thought I could see through the mountains and see precious stones that I would gather later. The Muli King's Secretary was robbed, but the bandits kept their word, and did not rob or molest us.

The travel went on for days up and down, and in some cases almost perpendicular. Some times when the mountains are covered with snow the Gentians are in bloom, for areas will be washed free of snow by the great rains. The area is rich botanically, and is covered with willow, scrub oak, and fir. There is however no firs above 20,000 ft. Later we went farther north to the Richthofen range in Outer Mongolia.

I met a General who walked from Lhassa to China with thrombosis in his leg, and he told me of a country, which was ruled by a Queen of the territory. This person was not a real Queen, but was rather a fake, for a Moslem had taken her into his home and they had a baby. As a reward he made her a Queen. The King terrified the people and made them pay taxes, which they consented to do if the soldiers left. When the tax collectors returned, the Tibetans killed them.

I visited the Muli King several days, and had lunch with him. He sat at his little table, and I at mine. There were bits of mutton, beef, fried eggs, and usually a dish of sour yak cream. I spoke in Chinese, which was interpreted by a Tibetan. This interpreter was the only lama in Kulu who understood Chinese. He would humbly stand for hours in a bowed position even while we were eating. I remarked to the King about his hungry appearance. The King was gleeful and dropped a few tidbits as if feeding his favourite hound. The King made mention of his uncle who was in the room, and when I asked farther, he replied that the uncle was a dried mummy who sat in a golden chorten where we had dined.

I have been asked what we take on those expeditions, and I will list most of the important items. Furs, warm bedding, mules, tents, folding chairs, many trunks, tables, photographic supplies, cut film color plates, coffee, tinned milk, cocoa, salt, sugar, canned vegetables, fruit, and sugar. The men carried dirty salt, butter and flour. For our botanical work we took paper made of bamboo, which would act as dryers for the botanical specimens. Also we took a case of medicines, for in this area a fever is present, and we wished to guard against it. This fever runs rampant in Tibetan country and the previous year I had lost some men with it. Mules are usually used as a means of transportation, but on one trip over a pass it snowed heavily during the night, and when we awoke the next morning our camp was almost buried. I will show the slides of this crossing with Yaks. These Yaks will plow a trail through deep snow and progress can be made.

I spent nine years of my life in the Snow Village, but I cannot forget a most beautiful spot where I spent a few months. This place was on the Islet of Nyorophu in Youngning Lake. Later we left the Yalung River and explored this river where it forms the border between Kwapieh territory and Muli.

I was the first white man to travel across this rugged country. Most of this country is excessively rich, botanically speaking. There were beautiful forests of spruce, willows, and copper birch, along with primulas, and rhododendrons. I collected seeds here, and have heard that only the spruce is still growing in Massachusetts. The synonymy of the Chinese spruce is in a mess as they have been collected before maturity, and have died, and are in herbariums, and of course, look entirely different than the mature specimen.

These moving pictures show the single rope bridge that crosses the Yalung at Baruong.

The Yalung is a formidable stream at this point, the steep banks and the fierce current would make an ordinary crossing very dangerous, not that our method was safe. As I mentioned earlier in my talk, this rope is made of bamboo and is about 200 yards long. The Hsifan natives were in the act of putting a new rope across which was all right with us since our caravan was of considerable size. One of the natives tied himself to a wooden slider and crossed slowly, pulling the new rope behind him. When the new bridge was complete, my men were lashed on this aerial tramway, and soon they were going at express speed to land on the other side. Persons who were not heavy would not slide as far on the rope. Heavy objects and the mules would have the speed to carry them longer up the swaying rope to the other side. This scene shows the mules crossing, and you will notice that two mules take up so much slack in the rope that they will hit the water. We then returned to Kulu.

This set of pictures shows the dancers of the God of Death, as he begins his dance. He gyrates slowly to the beat of drums and cymbals. The Lamas do not like the people who have crowded into the courtyard and you will notice how the monks use long clubs to beat them back. This fiendish dance of whirling is done by Balden Lhamo. From her mouth hangs the miniature corpse of her son whom legend states she devoured. This solo dance is done by Showa The Deer. You will note the antlers on his head. His dance represents him as a messenger of Yama, an underworld character. Take note of his shabby costume in comparison to the wonderful silks and brocades of the others.

Much of the area of China is still unexplored, and maps are inaccurate as is this map. Mountains and their peaks are still uncharted, and rivers are unknown. As to future botanising, the picture is very dark indeed. Since the communists have taken over, the difficulties have increased many times over. I am reminded of areas that have never been searched over, and which abound in rhododendron, anemone, primula.

I am glad to have had the opportunity of addressing the gathering here tonight, and I wish to thank you.

The transcript of Dr, Rock's lecture was published in *The Quarterly Bulletin of the American Rhododendron Society* (Volume 8, Number 4), on October 15th, 1954.



Joseph Rock near his home at Nguluko, Lijiang.

The Story of Joseph Rock.

by Gwen Bell.

Citation:
"Be it resolved by the Board of Directors of the American Rhododendron Society, the award of the highest honour of the Society to Dr. Joseph Francis Rock in grateful acknowledgement of his horticultural work as a plant explorer and achievement in the discovery of new and valuable species of the genus Rhododendron".

So spoke C. I. Sersanous as he presented the ARS Gold Medal to Dr. Rock on April 23, 1954, in Seattle, Washington. Joseph Rock had demonstrated that he was an extraordinary man.

He was born in Vienna, Austria, on January 13, 1884. His early years were not filled with the happy, carefree experiences of most young children for his comfortable, loving mother died when he was just six years old. Two weeks later, his Hungarian grandmother, who had tried to bring some kind of security to his world, also died. Karolina, his thirteen-year-old sister, was forced into the roll of 'mother' and his stern, grief-stricken father, Franz, actually engendered more fear than love, for he was excessively religious, superstitious and possessed an erratic temper. He was determined that young Joseph should become a priest. So troubled and unhappy was Joseph at that time that he exhibited the first signs of turning inward, of becoming a 'loner'.

The Rock family lived in downstairs quarters in the winter home of Count Potocki where Franz acted as steward. Here, Joseph observed an elegant way of living that stayed with him throughout his life. School was too easy for he learned so quickly and remembered so well that he must wait patiently for slower students to catch up. He played hooky frequently, strolling around the Prater watching as the sword swallowers and Arab Fakirs performed their unusual ceremonies. Joseph was a curious boy and soon began to pick up some of those strange-sounding Arab words, then to read about far-away lands. China became the focus of his dreams and at age thirteen, he struggled to teach himself one of the languages of China. His father was annoyed at this waste of time but Joseph persisted, reading and studying at night after his family had gone to bed. He collected little cards with intricate Chinese characters inscribed upon them. He developed an intense love for music.

The break with his family occurred in 1902, after he received his diploma from school. Standing firm against joining the priesthood, he resolved to leave home without his father's blessing. The next three years were spent traveling, supporting himself at times acting as a guide to tourists or as a seaman. Always he added to his knowledge of languages. That facility with languages proved to be the great talent of his early years and of immense importance to his later years.

His diary tells us that in 1905 he purchased a ticket to Aix-la-Chappelle, but missed the train. Acting on impulse that same day, he signed on as a cabin steward aboard the S.S Zeeland bound for New York. There, having almost no money, he sold his uniform for fifty cents, then immediately searched out odd jobs, among them dishwashing. With the onset of winter in New York, his health deteriorated as he developed tuberculosis. Doctors advised him to seek a warmer, drier climate. One year after his arrival in New York, he was on his way to Texas - by way of Havana, Cuba, and Mexico! Determined to improve his English, he enrolled at Baylor University. He became so proficient that he spoke English with only the faintest trace of an accent. His health improved, but was still precarious, so Arizona was suggested as a better place for him to live. One of the character traits that he displayed was that of ignoring, frequently, the advice of others. It is not surprising then that he by-passed Arizona, moving on to San Francisco. There he spent a short time observing the destruction left by the disastrous earthquake.

He decided that he would like to see the tropics and with considerable anticipation, took passage on a ship sailing to Honolulu. He was carrying some small change and one gold piece. On this voyage, he learned one of those character-influencing lessons. A Chinese passenger organised a dice game and Rock was enticed into betting his precious gold. You guessed it - he lost it in almost less time than it takes to tell the story. That Chinese entrepreneur lost everything that he possessed. He slit his throat. It is said that that was the first and last time that Joseph Rock gambled with his money.

Upon arrival in Honolulu, he stood 5' 8" tall, was fair-haired and fair-complexioned and wore glasses. It is interesting to note that although he had no academic degrees at this time, his first job in Hawaii was as a teacher, a teacher of Latin which he had learned in Vienna and of natural history which he learned one step ahead of his students. His interest in botany grew and he threw himself into learning from living plants by day and from reading botanical studies at night. He appears to have been the first person to use a glass-bottomed boat, using it to collect algae. By 1911, as an instructor at the college of Hawaii, he published books and monographs that are considered classics. Another skill acquired at this time was in the collection and preservation of herbarium specimens. He learned to use a camera, glass plates and film. He became a superb photographer.

Joseph Rock made a serious decision in 1913 when he decided to become an American citizen. Though he had found a field of work that satisfied him, he was still a very private person. He was subject to quick changes of temper, was often moody, yet he could expend great charm and was a much sought-after dinner guest. Quietly, he wrote, "In spite of all my friends, I was dreadfully lonely".

During the next few years, whenever he had sufficient funds, he took short trips to the Philippines, to the China coast and to Ceylon (Sri Lanka), always collecting.

Following a difference of opinion with the College of Hawaii in 1920, Rock left the Islands, returning to the mainland. Timing was perfect, for the United States Department of Agriculture wished to import seed of the Chaulmoogra tree, native to southeast Asia and valuable in the treatment of leprosy. Rock jumped at the chance, knowing that he was right for the job, and in the fall shipped out as an agricultural explorer. Carefully, he collected seeds from widely differing locations in Burma, Assam and what was then Siam, insuring a variety of environmental factors. He collected other plant material as well. This expedition tested his ability as an explorer, as a collector and as a preserver and shipper of herbarium specimens. His knowledge of languages, German, French, Greek, Italian, Chinese and Arabic, began to prove useful. Very important too, was the acquisition of another sponsor, the National Geographic Society.

In December of 1921, Joseph Rock stood poised on the threshold of his dream. He made his first incursion into western China. China had been virtually closed to the West following the Opium Wars of 1842 and 1860, although Robert Fortune led a large-scale expedition along the coast in 1843. Few foreigners had penetrated into the interior until Ernest Wilson made four expeditions and set off a wave of competition for Chinese ornamentals. Next came George Forrest, Reginald Farrer, Frank Kingdon Ward and in 1921 and 22, Joseph Rock.

He set up a base of operations near Likiang, a city of 50,000 in northern Yunnan near a well-traveled caravan route to northern Burma and Tibet.

- *opposite* -
Rock with his Na-khi (Nashi) assistants (an alternative version post a costume change for the leading man).
Described as his 'outlaw escort', the five were actually his 'protective detail'.
The photograph was taken on June 20th, 1928.



Rock employed a number of Nakhi tribesmen to help him as collectors and as servants. He compared these Nakhis - he called them aborigines - to the Indians of America and he felt greater kinship and more sympathy for them than for the Chinese. Years later as his collecting declined, he worked on manuscripts recording the history of the Nakhi people and, eventually, produced an impressive dictionary of Nakhi pictography script.

That summer Forrest, Ward and Rock met in the field, but no rapport was established. Each seemed wary of the other and jealous of the territory. In the fall, Rock swept through the Shweli Valley searching for blight resistant chestnuts.

During part of 1923, Rock explored the Mekong Valley and along the Salween River. “Never in the world were there such mountains”, he wrote. And again, “We passed through rhododendrons for days to the source of the Mekong and Yellow Rivers”. From that trip, he sent thousands of herbarium specimens and seeds, some never before introduced, and the skins of 1600 birds and 60 mammals to the Museum of Natural History at the Smithsonian.

Completing his collections in this field, he was without a contract, his future uncertain. Before leaving China, he planned a quick trek through rough up-and-down terrain to Muli, a small semi-independent kingdom in the southwest corner of Szechwan. Lack of time limited his collecting. Muli was, indeed, mountainous with peaks up to 17,000 ft., and passes at 14,000 ft. As he neared Muli, he sent a messenger ahead to carry his card to the king for “it would never do to arrive unheralded”. A decidedly unkempt lama appeared at dawn with an invitation to visit the King of Muli. Chote Chaba, the king, was a very impressive man. He stood six foot two inches tall, weighed at least 300 pounds and was garbed in red robes over gold and silver brocade. Rock said that “his only exercise is clapping his hands when he wants one of his slaves to approach him”. Lamas hovered, but were not permitted to sit in his presence. Chote Chaba exhibited great good humour and a lively curiosity about a wide range of subjects. They spent hours in conversation, so it was fortunate that Rock was allowed to sit. He was entertained lavishly, though at one point, it was necessary to eat what appeared to be a sweet, but was actually well-aged yak butter laced with hair. Rock encountered many strange foods in China, sometimes to the detriment of his stomach. Of Chote Chaba he wrote, “I doubt whether until that time (the King of Muli) had known of the discovery of America. He did not have the slightest idea of the existence of an ocean and thought all land contiguous, for he asked if he could ride horseback from Muli to Washington and if the latter was near Germany”. At their parting, Chote Chaba urged Rock to return.

Regretfully, Joseph Rock emerged from that vast back country of China and by 1924, was in Washington identifying some 60,000 to 80,000 specimens that he had forwarded to the museum.

Civilisation soon palled and he sought a new sponsor. Ernest Wilson had collected successfully for British firms and for Harvard's Arnold Arboretum, but had suffered a severe leg injury. Charles S. Sargent, director of the arboretum, recognised an opportunity to replace Wilson with a collector already experienced. He wished to import material from farther north than Yunnan, ornamentals hardy enough for Massachusetts. Sargent and Rock negotiated a three-year contract to explore unknown areas along the Amne Machin, a mountain range rising to 20,000 ft., with the Yellow River curling at its base, and the Richthofen Range near the Tibetan-Mongolian border. Here, Rock must make his own maps and calculate all distances and altitudes.

Before leaving for China, he purchased tents, a folding canvas bathtub, aneroid barometers, cameras, guns and ammunitions. Other items essential to his expedition were furs, warm bedding, trunks, photographic supplies, paper made from bamboo for drying



Joseph Rock and Chote Chaba, the lama king of Muli.

specimens, medicines and for transportation mules and, sometimes, yaks. He revealed a distinct preference for such luxuries as canned foods and collapsible bathtubs.

Edgar Snow, who traveled with him a time or two, wrote, "During the march, his tribal retainers divided into a vanguard and a rearguard. The advance party, led by a cook, an assistant cook, and a butler would spot a sheltered place with a good view, unfold table and chairs on a leopard-skin rug and lay out clean linen cloth, silver and napkins. By the time we arrived our meal would be almost ready. At night, it was several courses ending with tea and liqueurs". Rock kept the same cooks with him on most of his expeditions and even taught them Austrian recipes.

Upon arrival in Yunnan-fu (Kunming) he found that the cost of an escort had increased exorbitantly due to rising tensions. It was his custom to travel with an entourage large enough to deter attacks from bandits. The caravan set out, but on the fifth day they were ambushed. Rock wrote, "We met a large band of brigands. They were on a hill directly in front of us. We retreated immediately on a pine-wooded hill opposite the brigands, who had numerous dogs. We held the hill, guns in hand and I watching through my field glasses". Then, prudently, the bandits turned aside and robbed another less-well-defended caravan. Suddenly, as in a western movie when the cavalry arrives, native soldiers dashed on to the scene and before the eyes of Rock's party, dispersed the bandits. Later he was told that 600 brigands were ravaging the caravans and the villages. There was terrible poverty in the area and lands that should have been producing food were planted with opium poppies.

"I shall be glad to get into Kansu and into the wilds which is the safest place one can go to. Where there are only tribe people and no Chinese, there is nothing to rob and no ex-soldier brigands". In May of 1925, he marched into Choni in the Province of Kansu with considerable relief. It had been a long, frustrating, arduous journey. Rock was dismayed to find that, here, bitter hostilities were being waged between the large population of Moslems and the Tibetans. They blocked his path to the north. Three times he tried to move north to the Amne Machin, but three times was forced to turn back. He spent some time photographing and writing for the National Geographic, then decided to make a fast sweep into heavily wooded areas to the south and east of Choni, carefully avoiding the hostile Tebbus of Upper Tebbuland. He used trained collectors in the manner of George Forrest, but not to the same extent.

Frustrated and impatient, he went boldly to General Ma, the vigorous and cruel leader of the Moslem faction, asking for safe passage. Surprisingly, his request was granted and General Ma even provided an escort.

Crossing the Yellow River east of the Amne Machin range, he stumbled into lovely valleys clothed in spruce and juniper and carpeted with primulas and meconopsis. He wrote, "The whole region between the Yellow River and the Amne Machin is one great zoological garden". Some areas he could not reach, except by camera. He could see the main range of the awesome Amne Machin, rugged and steep. Even the floors of the valleys were higher than 15,000 ft. Without the modifying effects of the monsoons, he concluded that these mountain conditions were too harsh to produce useful ornamentals. And of the Kokonor he said, "There are snow ranges on both sides of us, but they are as bare as a rock, not a vestige of plant life is visible". One morning very early, while camped at 10,700 ft., the cold winds blew so strongly that it nearly blew his tent, his possessions and himself into a nearby lake. His men rescued him. Though bleak, he termed the Kokonor "as rich in birdlife, but poor pickings for a botanist, with only the seeds of some herbaceous alpines worth collecting". The conifer seeds that he sent back, later, proved superior in the reforestation of very cold regions.

Again Rock was disappointed when he found that the Richthofen Ranges were, also, bare with little more than grasses to see.

1926 proved both exhilarating and depressing for Rock. He worked his way into lower Tebbuland and there was rewarded for all his efforts. "I have never in all my life seen such magnificent scenery. If the writer of Genesis had seen Tebbu country, he would have made it the birthplace of Adam and Eve". He amassed 20,000 herbarium specimens and uncounted bags of plant material and seeds, plus the skins of 1000 birds.

Returning to Choni, he found miserable conditions for there had been a crop failure. Anti-Christian sentiment was building against missionaries and Rock feared that there was little to distinguish him from a white missionary. He was growing short on provisions and ammunition. Despondent he wrote, "I can definitely say that if I get out alive, China will see me no more". In fact, he packed up part of his retinue, but moved only as far as Tebbuland. The next time that he saw Choni, even his former friends were hostile. Sargent wrote that it was time for him to leave China and come home.

But before Rock could return, Charles S. Sargent died. Ernest Wilson was appointed his temporary successor. He sent a stiff, impersonal letter to Joseph Rock explaining that he was curtailing expenses and demanding that Rock leave the field.

Once again looking for a sponsor, he turned to the National Geographic Society. Relations had become strained between them at one point, but after much discussion and some apologies, agreement was reached and another China expedition was in the works. An assistant editor, Ralph Graves, was heard to say, "Rock is one of the world's finest photographers and is a resourceful explorer and geographer. At the same time, he is one of the most cantankerous of humans".

Few know that he gave generously of his medicines and his skill in treating simple illnesses to the people of the villages and farms. He was scrupulous about paying for whatever was acquired from them.

In 1927, Rock marched back into Muli as a guest and friend of the king. Chote Chaba interceded on his behalf for safe conduct from the notorious Konkaling bandits who crossed his kingdom to raid the caravans. Rock remained wary. While investigating the slopes of Mt. Jambeyang, their holy mountain, he met, unexpectedly, the party of the fierce bandit leader, Trashi, who was moving in the opposite direction. They paused, they shared tea and then Trashi explained that he was on religious custom, circumambulating the mountain, and would not bother Rock's party at this time. Later, a devastating hailstorm hit their holy mountain destroying the barley crops of the farmers who lived nearby. They held Rock responsible for his party had been moving in the wrong, or cursing, direction.

Can you imagine that Rock told one of his audiences once that "he did not think of the hardships encountered on his expeditions, but preferred to look upon them as perpetual picnics".

- overleaf page 38 -

"Pale red sand stone mountains, absolutely bare and deeply eroded as if sculpted, in a valley back of Kansu, which is situated directly in the valley of the Yellow River, west of Shun Hoa".
Rock took the photograph on November 24th, 1925.

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"An alpine meadow at the summit of Tsarekika", Joseph Rock wrote, "the last pass across the Minshan to the valleys debauching into the Tas River. It was here that our party was attacked last year by Tebbu brigands and one of my men badly wounded. It is a rendezvous place of Upper Tebbu robbers as three trails converge there".
Photographed at an altitude of 11,250 ft., on September 18th, 1926.





Rock with his armed escort on the Konkaling Mountains.
The cairn of stones behind the group was built-up over centuries by pilgrims visiting the three sacred peaks.

Joseph Rock committed one great blunder in the eyes of the National Geographic Society. He had seen from afar a great, shining mountain towering above all the rest amid the Konka Range. No European had been close to it and he hoped to be the first, as soon as time and his collecting permitted. On February 27, 1930, he sent a wire, "Minya Konka Highest Peak On Globe, 30,000 feet".

What a furore of excitement that must have created!

Unfortunately, by October, after having visited the great granite mountain, he was forced to reduce its height to 25,600 ft. In 1932, an American party of climbers calculated its true height as 24,981 ft. Minya Konka was and is not higher than Everest, but is clearly the highest peak in China. Rock was not a trained cartographer, even so he was forever embarrassed by his error in judgment and avoided discussion about it whenever possible.

He had collected 163 species of rhododendrons out of 317 varieties of plants, 30,000 herbarium specimens, bird skins and magnificent photos in black and white and colour.

Back in Washington in 1932, now forty-eight years old and greying, he was tired and unprepared for the shock of finding that Ernest Wilson had been unfairly critical of his collecting. He had written to Wilson from the field many times and had wondered why his letters were never answered. He was stunned to learn the seriousness of the financial climate in the United States at this time. He failed to find another sponsor and eventually, sold some of his Chinese and Tibetan artefacts, then dipped into his personal savings to finance another journey.



Two of Rock's Nakhi assistants at his house in Nguluko changing the drying paper on herbarium specimens.

One bright spot in this visit home was an invitation from Baylor University to invest him with an honorary degree. Now he had the right to be called 'Doctor' Rock. Admiring audiences stimulated him to expound brilliantly on the adventures, the hazards and the achievements of his travels.

Returning to Likiang, he encountered no bandits, but did hear that George Forrest was, also, heading for Likiang. Quickly, he moved farther north, avoiding Forrest, while collecting orchids.

Disaster hit China in 1937 when the Japanese invaded. Peking, one of his favourite cities, was evacuated, Tientsin was captured and Shanghai threatened. Rock stayed stubbornly in the interior until 1938 when he yearned to see his family again. He was very disturbed by what he saw in Berlin, for he could see and feel the militaristic fervour there. After his return to Yunnanfu, his current home, he kept a radio watch on world events. Hitler was far away, but the Japanese were not. On September 28 at 9:00 a.m. he heard the boom and the thud of bombs and saw the pursuit of a brave lone student flyer. His city was defenceless. He began to pack his 4000-book library, gave his Nakhis money to see them home and left the country to sit out a year in Indo-China. Once more he flew back into Yunnanfu but health problems plagued him continuously and he finally deemed it in his

own best interests to accept a post at the University of Hawaii.

Before leaving Calcutta on his way out, however, he met quite by accident some members of the American military personnel. They recognised immediately the tremendous help that he could offer from his experiences in China. American flyers were risking their lives daily flying over that Minya Konka Range that he had mapped, flying a dangerous airlift from India to Chungking over the 'Hump'. Rock was placed aboard a top priority plane and sent to Washington where he was employed as an expert consultant with the Army Map Service.

It was unfortunate that he suffered a grave loss at this time. His belongings were on board a ship that was torpedoed by a Japanese submarine in the Arabian Sea. Manuscripts, translations, years of work sank to the sea bottom. Now only three volumes remained for they had been photostated, then placed in the Library of Congress.

It was the fall of 1946 before he was free again to return to China and this time, the Harvard Yenching Institute agreed to underwrite his Nakhi research.

By 1948, the Communists and the Nationalists were competing for power in northeast China. Though it had not affected Yunnan as yet, Rock recognised that his China Adventure was almost at an end. He proposed one last expedition to members of the American Rhododendron Society, offering to spend two months in the field. He asked only $2500 to buy supplies and to hire porters. From this exclusively American collection came quantities of rhododendron seed from 165 varieties. He collected seed from prostrate 'repens' to plants the size of 'sinogrande'. E.H.M. Cox noted that seed sent home by Rock was cleaner, had fewer rogues and a better percentage of germination than from any other collector.

Chinese villagers told Rock that he was no longer welcome. They cursed his retainers as slaves of a foreign devil and depicted the United States as the great enemy of the Chinese people. It was enough. He decided to leave China. Later he wrote, "I will see how things go during the next year and if all is OK, will go back to Likiang to finish my work. I want to die among those beautiful mountains rather than in a bleak hospital bed all alone". He had never married and had not maintained consistently good relations with his family.

Though he stayed, hopefully, in India for a time, political conditions did not improve. He flew to the United States. To implement his income, he sold his library to the Far East and Russian Institute at the University of Washington in Seattle for $25,000. Dr. Rock was appointed an Honorary Research Associate and spent some time there.

Later, he went out to the Islands to botanise and to edit his Nakhi studies. He made short trips to Europe, to South America and to the Orient - but never to China! While living with friends, he suffered heart failure on December 5, 1962, in Hawaii, as S.B. Sutton put it, "half way between West and East".

So ends this story of Joseph Rock, plant explorer.

Gwen Bell gave this lecture presentation to members of the American Rhododendron Society at their National Convention in Portland, Oregon. She received such tremendous applause that the editor of *The Journal American Rhododendron Society* felt all members in the Society should have the benefit of her paper and it was published in the fall of 1983 (Volume 37, Number 4).



- *right* -
Joseph Rock's camp at the foot of the great shi-men or rock gate, in the Min Shan Range.
The trees are Abies, while the undershrubs are Rhododendron.
The photograph was taken at an altitude of 11,750 ft., on July 31st, 1925.

The Rock Plant Hunting Expeditions:

The 1923-1924 SE Tibet & NW Yunnan Collections:

R 6002	yunnanense	R 6743	thymifolium / delavayi
R 6031	yunnanense	R 6744	neriiflorum
R 6073	rubiginosum	R 6745	edgeworthii
R 6232	unidentified species	R 6826	yunnanense
R 6249	sinogrande	R 6827	racemosum
R 6253	taliense / roxieanum Cucullatum	R 6828	rubiginosum
R 6254	unidentified species	R 6829	vernicosum
R 6259	irroratum	R 6830	hippophaeoides
R 6269	haematodes	R 6831	fictolacteum
R 6270	heliolepis	R 6832	traillianum
R 6273	cyanocarpum	R 6999	edgeworthii
R 6274	trichocladum	R 7075	unidentified species
R 6291	scabrifolium	R 7077	unidentified species
R 6294	irroratum	R 7272	unidentified species
R 6295	fictolacteum	R 7376	sidereum
R 6296	bureavii	R 7377	edgeworthii
R 6308	irroratum	R 7381	sinogrande
R 6309	fictolacteum	R 7577	stamineum aff.
R 6323	cephalanthum	R 7640	rubiginosum
R 6334	fastigiatum	R 7646	leptothrium
R 6335	neriiflorum	R 7648	facetum
R 6346	lacteum	R 7649	zaleucum
R 6353	riparioides	R 7650	neriiflorum
R 6354	campylogynum	R 7651	sulfureum
R 6357	jucundum	R 7658	habrotrichum
R 6364	haematodes	R 7662	fulvum
R 6365	taliense / roxieanum Cucullatum	R 7663	apodectum
R 6369	edgeworthii	R 7664	anthosphaerum
R 6370	crassum	R 7665	fulvum
R 6450	hemitrichotum	R 7666	neriiflorum
R 6451	hemitrichotum	R 7667	unidentified species
R 6460	thymifolium	R 7794	adenogynum
R 6524	unidentified species	R 7795	beesianum
R 6525	rigidum	R 7796	traillianum
R 6656	delavayi	R 7865	edgeworthii
R 6681	decorum	R 7866	stamineum

R 7906	peramoeunum	R 10913	praestans
R 7907	peramoeunum	R 10914	chryseum
R 7911	delavayi	R 10915	setiferum
R 7935	delavayi	R 10916	beesianum
R 7954	pseudociliipes	R 10917	hypolepidotum
R 10276	x haemaleum (NH)	R 10918	chaetomallum
R 10545	cephalanthum	R 10919	hypolepidotum
R 10550	oreotrephes	R 10920	roxieanum
R 10551	vernicosum	R 10921	fictolacteum
R 10552	cuneatum x ? (NH)	R 10922	sanguineum
R 10553	telmateium	R 10923	x triplonaevium (NH)
R 10572	tatsienense	R 10924	cephalanthum
R 10882	vernicosum	R 10925	wardii
R 10883	dryophyllum	R 10926	sanguineum
R 10884	brevistylum	R 10927	sanguineum
R 10885	unidentified species	R 10928	sanguineum
R 10893	sanguineum	R 10929	selense
R 10894	sanguineum	R 10930	selense
R 10895	x haemaleum (NH)	R 10931	fulvoides
R 10896	beesianum	R 10932	x eudoxum (NH)
R 10897	sanguineum	R 10933	x dictyotum
R 10898	x eudoxum (NH)	R 10934	sanguineum
R 10899	sanguineum	R 10935	cephalanthum
R 10900	x didymoides (NH)	R 10936	dryophyllum
R 10901	sanguineum	R 10937	chasmanthum
R 10902	sanguineum	R 10938	sanguineum
R 10903	x didymoides (NH)	R 10939	eclecteum
R 10904	x didymoides (NH)	R 10940	x didymoides (NH)
R 10905	horaeum	R 10941	temenium
R 10906	x himertum (NH)	R 10942	anthosphaerum
R 10907	x eudoxum (NH)	R 10943	rubiginosum
R 10908	beesianum	R 10944	x bellatulum (NH)
R 10909	temenium	R 10945	sanguineum
R 10910	x bellatulum (NH)	R 10946	citriniflorum
R 10911	x haemaleum (NH)	R 10947	x haemaleum (NH)
R 10912	martinianum	R 10948	haematodes

R 10950	x eudoxum (NH)	R 10987	beesianum
R 10951	x himertum / temenium Gilvum	R 10988	beesianum
R 10952	temenium	R 10989	chaetomallum
R 10953	x didymoides (NH)	R 10990	beesianum
R 10954	oreotrephes	R 10991	hypolepidotum
R 10955	coriaceum	R 10992	crinigerum
R 10956	roxieanum	R 10993	forrestii
R 10957	praestans	R 10994	forrestii
R 10958	martinianum	R 10995	praestans
R 10959	floccigerum	R 10996	floccigerum
R 10960	crinigerum	R 10997	forrestii
R 10961	selense	R 10998	proteoides
R 10963	selense	R 10999	floccigerum
R 10964	forrestii	R 11000	oreotrephes
R 10965	martinianum	R 11001	saluenense
R 10966	praestans	R 11002	sanguineum
R 10967	crinigerum	R 11003	x chamaethauma (NH)
R 10968	crinigerum	R 11004	beesianum
R 10969	mekongense	R 11005	saluenense
R 10970	crinigerum	R 11006	megeratum
R 10971	crinigerum	R 11007	praestans
R 10972	crinigerum	R 11008	praestans
R 10973	crinigerum	R 11010	saluenense
R 10974	crinigerum	R 11011	sanguineum
R 10975	crinigerum	R 11012	saluenense
R 10976	crinigerum	R 11013	praestans
R 10977	crinigerum	R 11014	oreotrephes
R 10978	crinigerum	R 11015	lukiangense
R 10979	roxieanum	R 11016	fulvoides
R 10980	crinigerum	R 11017	beesianum
R 10981	crinigerum	R 11018	sanguineum
R 10982	crinigerum	R 11019	cephalanthum
R 10983	crinigerum	R 11020	roxieanum
R 10984	chaetomallum	R 11021	beesianum
R 10985	chaetomallum	R 11022	x haemaleum (NH)
R 10986	oreotrephes	R 11023	fulvum

R 11024	sanguineum	R 11060	x bellatulum (NH)
R 11025	x bellatulum (NH)	R 11061	eclecteum
R 11026	selense	R 11062	selense
R 11027	x bellatulum (NH)	R 11063	selense
R 11028	selense	R 11064	selense
R 11029	sanguineum	R 11065	selense
R 11030	x bellatulum (NH)	R 11066	selense
R 11031	x bellatulum (NH)	R 11067	x erythrocalyx (NH)
R 11032	eclecteum	R 11068	beesianum
R 11033	forrestii	R 11069	coriaceum
R 11034	fulvoides	R 11071	rubiginosum
R 11035	eclecteum	R 11072	heliolepis
R 11036	chamaethomsonii	R 11073	floccigerum
R 11037	x bellatulum (NH)	R 11074	forrestii
R 11038	eclecteum	R 11075	uvariifolium
R 11039	sanguineum	R 11076	proteoides
R 11040	x bellatulum (NH)	R 11077	selense
R 11041	x bellatulum (NH)	R 11078	x eudoxum (NH)
R 11042	chamaethomsonii	R 11079	mekongense
R 11043	fictolacteum	R 11080	eclecteum
R 11044	fulvoides	R 11081	chaetomallum
R 11045	uvariifolium	R 11082	x haemaleum (NH)
R 11046	x haemaleum (NH)	R 11083	crinigerum
R 11047	x haemaleum (NH)	R 11084	roxieanum
R 11048	fulvoides	R 11085	x agglutinatum (NH)
R 11049	x haemaleum (NH)	R 11086	tapetiforme
R 11050	x bellatulum (NH)	R 11087	dryophyllum
R 11051	eclecteum	R 11088	tapetiforme
R 11052	x didymoides (NH)	R 11089	cephalanthum
R 11053	x bellatulum (NH)	R 11090	dryophyllum
R 11054	x bellatulum (NH)	R 11091	tapetiforme
R 11055	x bellatulum (NH)	R 11092	tapetiforme
R 11056	x bellatulum (NH)	R 11093	tapetiforme
R 11057	x bellatulum (NH)	R 11094	esetulosum
R 11058	selense	R 11095	selense
R 11059	eclecteum	R 11096	dryophyllum

R 11097	aganniphum	R 11134	adenogynum
R 11098	tapetiforme	R 11135	aganniphum
R 11099	beesianum	R 11137	wardii
R 11100	roxieanum Globigerum	R 11138	lukiangense
R 11101	x russotinctum (NH)	R 11139	lukiangense
R 11102	dryophyllum	R 11140	lukiangense
R 11103	dryophyllum	R 11141	oreotrephes
R 11104	dryophyllum	R 11142	crinigerum
R 11105	dryophyllum	R 11143	x flavorufum (NH)
R 11106	dryophyllum	R 11144	roxieanum
R 11106a	roxieanum Globigerum	R 11145	wardii
R 11107	dryophyllum	R 11146	x tritifolium (NH)
R 11108	x agglutinatum (NH)	R 11147	wardii
R 11109	tapetiforme	R 11148	chryseum
R 11110	beesianum	R 11149	dryophyllum
R 11111	selense	R 11150	x flavorufum (NH)
R 11112	beesianum	R 11151	x flavorufum (NH)
R 11113	x tritifolium (NH)	R 11152	wardii
R 11114	wardii	R 11153	x flavorufum (NH)
R 11115	roxieanum	R 11154	citriniflorum
R 11116	x iodes (NH)	R 11155	pocophorum
R 11117	x tritifolium (NH)	R 11156	chaetomallum
R 11118	x schizopeplum (NH)	R 11157	horaeum
R 11119	dryophyllum	R 11158	sanguineum
R 11120	dryophyllum	R 11159	fictolacteum
R 11121	dryophyllum	R 11160	campylogynum
R 11122	x russotinctum (NH)	R 11161	sanguineum
R 11123	x tritifolium (NH)	R 11162	x hemidartum (NH)
R 11124	unidentified species	R 11163	pocophorum
R 11125	aganniphum	R 11164	chaetomallum x ? (NH)
R 11126	chryseum	R 11165	arizelum
R 11127	selense	R 11166	crassum
R 11128	oreotrephes	R 11167	leptocarpum
R 11130	tapetiforme	R 11168	fulvum
R 11132	oreotrephes	R 11169	forrestii
R 11133	x flavorufum (NH)	R 11170	chaetomallum x ? (NH)

R 11172	brachyanthum	R 11209	selense
R 11173	sinogrande	R 11210	haematodes
R 11174	coryanum	R 11211	unidentified species
R 11175	chaetomallum	R 11212	sanguineum aff.
R 11176	sanguineum	R 11213	setiferum
R 11177	x haemaleum (NH)	R 11214	temenium
R 11178	sanguineum	R 11216	didymum
R 11179	x hemidartum (NH)	R 11217	anthosphaerum
R 11180	eclecteum	R 11219	virgatum
R 11181	sanguineum	R 11222	megacalyx
R 11182	x hemidartum (NH)	R 11223	arizelum
R 11183	sanguineum	R 11225	fulvoides
R 11184	chaetomallum	R 11227	chaetomallum
R 11185	catacosmum	R 11228	tephropeplum
R 11186	horaeum	R 11233	nuttallii
R 11187	fictolacteum	R 11238	saluenense
R 11188	keleticum	R 11239	sinogrande
R 11189	crinigerum	R 11240	beesianum
R 11190	bainbridgeanum	R 11241	selense
R 11191	keleticum	R 11242	fictolacteum
R 11192	crinigerum	R 11243	rupicola
R 11193	crinigerum	R 11244	fictolacteum
R 11194	setiferum	R 11246	traillianum
R 11195	bainbridgeanum	R 11247	wardii
R 11196	crinigerum	R 11248	unidentified species
R 11198	chryseum	R 11249	telmateium
R 11199	sanguineum aff.	R 11250	roxieanum Cucullatum
R 11200	moulmainense	R 11251	roxieanum
R 11201	pocophorum	R 11252	roxieanum Cucullatum
R 11202	genestierianum	R 11253	roxieanum Cucullatum
R 11203	horeaum aff.	R 11254	clementinae
R 11204	chaetomallum	R 11255	clementinae
R 11205	martinianum	R 11256	anthosphaerum
R 11206	horeaum aff.	R 11257	anthosphaerum
R 11207	arizelum Rubicosum	R 11257a	x pallescens (NH)
R 11208	x haemaleum (NH)	R 11258	oreotrephes

R 11259	dasycladum	R 11294	russatum
R 11260	trichostomum	R 11295	russatum
R 11261	roxieanum	R 11296	russatum
R 11262	oreotrephes	R 11297	irroratum
R 11263	rubiginosum	R 11298	oreotrephes
R 11264	racemosum	R 11299	xanthostephanum
R 11265	racemosum	R 11300	oreotrephes
R 11266	irroratum	R 11301	roxieanum
R 11267	rigidum	R 11302	roxieanum Oreonastes
R 11268	rigidum	R 11303	fastigiatum
R 11269	dasycladum	R 11304	telmateium
R 11270	dasycladum	R 11305	campylogynum
R 11271	cuneatum	R 11306	pronum
R 11272	lukiangense	R 11307	roxieanum Cucullatum
R 11273	irroratum	R 11308	xanthostephanum
R 11274	irroratum	R 11309	roxieanum Cucullatum
R 11275	lukiangense	R 11310	irroratum
R 11276	crassum	R 11311	roxieanum
R 11277	edgeworthii	R 11312	roxieanum
R 11278	edgeworthii	R 11313	traillianum
R 11279	delavayi	R 11314	traillianum
R 11280	yunnanense	R 11315	fimbriatum
R 11281	yunnanense x ? (NH)	R 11316	molle
R 11282	delavayi	R 11317	leptothrium
R 11282a	delavayi	R 11318	russatum
R 11283a	brevistylum	R 11319	scintillans
R 11284	russatum x rupicola (NH)	R 11321	wardii
R 11285	roxieanum Oreonastes	R 11322	cephalanthum
R 11286	fictolacteum	R 11323	dryophyllum
R 11287	cuneatum	R 11324	phaeochrysum
R 11288	rigidum	R 11325	vernicosum
R 11289	dasycladum	R 11326	vernicosum
R 11290	fictolacteum	R 11328	dryophyllum
R 11291	roxieanum	R 11329	vernicosum
R 11292	roxieanum	R 11331	vernicosum
R 11293	roxieanum	R 11333	dryophyllum

R 11334	beesianum	R 11372	traillianum
R 11335	x agglutinatum (NH)	R 11373	traillianum
R 11336	aganniphum	R 11376	anthosphaerum
R 11337	beesianum	R 11376a	bureavii
R 11338	dryophyllum	R 11377	anthosphaerum
R 11339	x schizopeplum (NH)	R 11377a	bureavii
R 11339a	aganniphum	R 11378	fictolacteum
R 11340	x agglutinatum (NH)	R 11379	beesianum aff.
R 11341	x agglutinatum (NH)	R 11380	irroratum
R 11341a	aganniphum	R 11381	irroratum
R 11342	dryophyllum	R 11382	bureavii
R 11342a	x flavorufum (NH)	R 11383	beesianum aff.
R 11343	x agglutinatum (NH)	R 11385	dasycladum
R 11343a	aganniphum	R 11386	uvariifolium
R 11344	dryophyllum	R 11387	oreotrephes
R 11345	x agglutinatum (NH)	R 11388	glischrum
R 11346	anthosphaerum	R 11389	wardii
R 11348	sinogrande	R 11390	anthosphaerum
R 11349	beesianum	R 11391	uvariifolium
R 11351	fulvoides	R 11392	cuneatum
R 11352	unidentified species	R 11393	cuneatum
R 11354	anthosphaerum	R 11395	fictolacteum
R 11355	wardii	R 11396	traillianum
R 11357	lukiangense	R 11397	fictolacteum
R 11358	anthosphaerum	R 11401	trichostomum
R 11362	lepidotum	R 11403	racemosum
R 11363	hippophaeoides	R 11404	decorum
R 11364	hippophaeoides	R 11408	vernicosum
R 11365	hippophaeoides	R 11415	racemosum
R 11366	anthosphaerum	R 11418	yunnanense
R 11367	adenogynum	R 11419	oreotrephes x ? (NH)
R 11368	cuneatum	R 11421	traillianum
R 11368a	heliolepis	R 11422	hormophorum
R 11369	anthosphaerum	R 11424	racemosum
R 11370	bureavii	R 11429	oreotrephes
R 11371	traillianum	R 11430	lepidotum

R 11434	rupicola	R 11502	praestans
R 11452	fictolacteum	R 11503	praestans
R 11453	brevistylum	R 11504	uvariifolium
R 11454	traillianum	R 11505	lukiangense
R 11455	cephalanthum	R 11506	saluenense
R 11459	traillianum	R 11507	selense
R 11460	traillianum	R 11567	wardii
R 11461	traillianum	R 11597	chamaethomsonii
R 11463	beesianum	R 11634	praestans
R 11465	telmateium	R 11635	selense
R 11468	primuliflorum	R 11636	beesianum
R 11469	impeditum	R 11640	rex
R 11470	traillianum	R 11642	rex
R 11471	adenogynum	R 11644	coriaceum
R 11473	unidentified species	R 11702	dryophyllum
R 11476	racemosum	R 11703	unidentified species
R 11500	dryophyllum	R 11704	heliolepis
R 11501	beesianum	R 11706	leptothrium

- *opposite* -
Rhododendron vernicosum, growing at 11,000 ft in the Sa-ba glacier gorge,
on the eastern slopes of Yulung Shan (Jade Dragon Mountain) in northwestern Yunnan.



R 10276 - *R. x haemaleum*

R 10893 - *R. sanguineum*

R 10893 - *R. sanguineum*

R 10893 - *R. sanguineum*

R 10897 - *R. sanguineum*

R 10900 - *R. x didymoides*

R 10903 - *R. x didymoides*

R 10903 - *R. x didymoides*

R 10903 - *R. x didymoides*

R 10903 - *R. x didymoides*

R 10903 - *R. x didymoides*

R 10904 - *R. x didymoides*

R 10905 - *R. citriniflorum* ssp. *horaeum*

R 10905 - *R. citriniflorum* ssp. *horaeum*

R 10906 - *R. x himertum*




R 10906 - *R. x himertum*


R 10906 - *R. x himertum*


R 10906 - *R. x himertum*

R 10913 - *R. praestans*

R 10922 - *R. sanguineum*

R 10922 - *R. sanguineum*

R 10922 - *R. sanguineum*



R 10922 - *R. sanguineum*

R 10947 - *R. x haemaleum*

R 10947 - *R. x haemaleum*


R 10950 - *R. x eudoxum*


R 10950 - *R. x eudoxum*


R 10950 - *R. x eudoxum*


R 10950 - *R. x eudoxum*

R 10950 - *R. x eudoxum*



R 10959 - *R. floccigerum* ssp. *floccigerum*

R 10960 - *R. crinigerum* var. *crinigerum*



R 10960 - *R. crinigerum* var. *crinigerum*



R 10971 - *R. crinigerum* var. *crinigerum*

R 10973 - *R. crinigerum* var. *crinigerum*

R 10983 - *R. crinigerum* var. *crinigerum*

R 10983 - *R. crinigerum* var. *crinigerum*

R 10983 - *R. crinigerum* var. *crinigerum*

R 10992 - *R. crinigerum* var. *crinigerum*

R 10992 - *R. crinigerum* var. *crinigerum*



R 10999 - *R. floccigerum* ssp. *floccigerum*



R 10999 - *R. floccigerum* ssp. *floccigerum*



R 10999 - *R. floccigerum* ssp. *floccigerum*

R 11005 - *R. saluenense* var. *saluenense*

R 11005 - *R. saluenense* var. *saluenense*

R 11025 - *R. x bellatulum*

R 11027 - *R. x bellatulum*

R 11027 - *R. x bellatulum*

R 11031 - *R. x bellatulum*

R 11045 - *R. uvariifolium* var. *uvariifolium*



R 11045 - *R. uvariifolium* var. *uvariifolium*

R 11045 - *R. uvariifolium* var. *uvariifolium*

R 11050 - *R. x bellatulum*

R 11050 - *R. x bellatulum*

R 11052 - *R. x didymoides*

R 11052 - *R. x didymoides*

R 11069 - *R. coriaceum*

R 11069 - *R. coriaceum*

R 11069 - *R. coriaceum*

R 11069 - *R. coriaceum*



R 11083 - *R. crinigerum* var. *crinigerum*



R 11100 - *R. roxieanum* Globigerum Group

R 11106 - *R. phaeochrysum* var. *dryophyllum*



R 11106 - *R. phaeochrysum* var. *dryophyllum*

R 11111 - *R. selense* ssp. *selense*

R 11111 - *R. selense* ssp. *selense*



R 11111 - *R. selense* ssp. *selense*

R 11111 - *R. selense* ssp. *selense*

R 11169 - *R. forrestii* var. *forrestii* Repens Group

R 11169 - *R. forrestii* var. *forrestii* Repens Group

R 11179 - *R. x hemidartum*

R 11179 - *R. x hemidartum*

R 11188 - *R. calostrotum* ssp *keleticum*



R 11189 - *R. crinigerum* var. *crinigerum*

R 11189 - *R. crinigerum* var. *crinigerum*



R 11189 - *R. crinigerum* var. *crinigerum*


R 11189 - *R. crinigerum* var. *crinigerum*


R 11189 - *R. crinigerum* var. *crinigerum*


R 11189 - *R. crinigerum* var. *crinigerum*

R 11189 - *R. crinigerum* var. *crinigerum*

R 11196 - *R. crinigerum* var. *crinigerum*

R 11196 - *R. crinigerum* var. *crinigerum*



R 11207 - *R. arizelum* ssp. *arizelum* Rubicosum Group

R 11207 - *R. arizelum* ssp. *arizelum* Rubicosum Group



R 11223 - *R. arizelum* ssp. *arizelum*

R 11223 - *R. arizelum* ssp. *arizelum*

R 11225 - *R. fulvum* ssp. *fulvoides*

R 11238 - *R. saluenense* var. *saluenense*

R 11238 - *R. saluenense* var. *saluenense*

R-11238 - *R. saluenense* var. *saluenense*

R 11265 - *R. racemosum*

R 11265 - *R. racemosum*

R 11265 - *R. racemosum*

R 11265 - *R. racemosum*

R 11265 - *R. racemosum* ‘Rock Rose’ AM 1970 & AGM 1993

R 11265 - *R. racemosum* ‘Rock Rose’ AM 1970 & AGM 1993

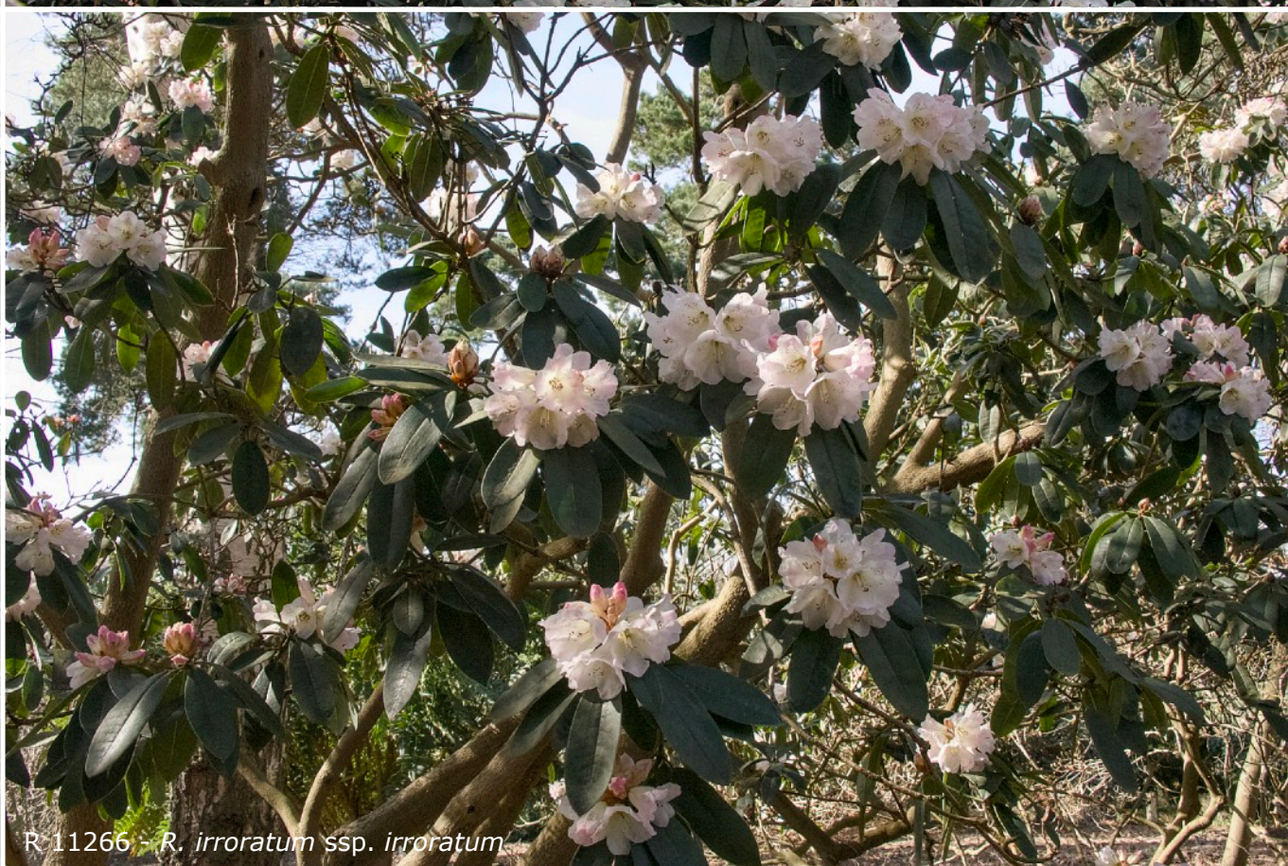
R 11265 - *R. racemosum* ‘Rock Rose’ AM 1970 & AGM 1993

R 11265 - *R. racemosum* ‘Rock Rose’ AM 1970 & AGM 1993

R-11265 - *R. racemosum* 'Rock Rose' AM 1970 & AGM 1993


R 11266 - *R. irroratum* ssp. *irroratum*


R 11266 - *R. irroratum* ssp. *irroratum*


R 11266 - *R. irroratum* ssp. *irroratum*

R 11266 - *R. irroratum* ssp. *irroratum*

R 11271 - *R. cuneatum*

R 11271 - *R. cuneatum*

R 11273 - *R. irroratum* ssp. *irroratum*

R 11273 - *R. irroratum* ssp. *irroratum*

R 11275 - *R. lukiangense*

R 11275 - *R. lukiangense*



R 11284 - *R. russatum* x *rupicola*

R 11284 - *R. russatum x rupicola*

R 11285 - *R. roxieanum* Oreonastes Group

R 11285 - *R. roxieanum* Oreonastes Group


R 11285 - *R. roxieanum* Oreonastes Group


R 11285 - *R. roxieanum* Oreonastes Group


R 11285 - *R. roxieanum* Oreonastes Group

R 11288 - *R. rigidum*

R 11288 - *R. rigidum*

R 11288 - *R. rigidum*

R 11288 - *R. rigidum*

R 11288 - *R. rigidum*

R 11295 - *R. russatum*

R 11295 - *R. russatum*

R 11296 - *R. russatum*

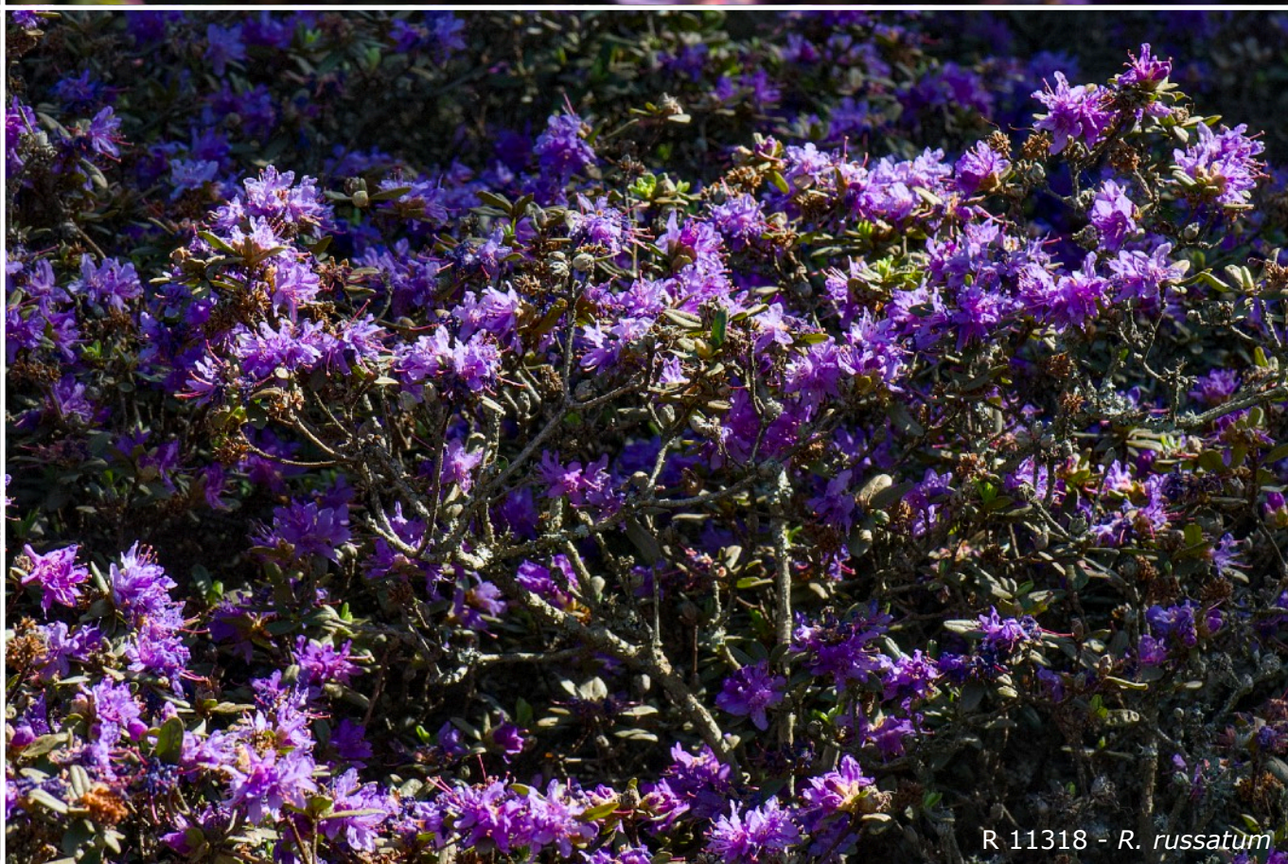
R 11296 - *R. russatum*

R 11300 - *R. oreotrephes*

R 11300 - *R. oreotrephes*


R 11318 - *R. russatum*


R 11318 - *R. russatum*


R 11318 - *R. russatum*

R 11335 - *R. aganniphum*

R 11335 - *R. aganniphum*

R 11335 - *R. aganniphum*

R 11354 - *R. anthosphaerum* Gymnogynum Group

R 11354 - *R. anthosphaerum* Gymnogynum Group

R 11354 - *R. anthosphaerum* Gymnogynum Group

R 11354 - *R. anthosphaerum* Gymnogynum Group

R 11357 - *R. lukiangense*

R 11357 - *R. lukiangense*

R 11357 - *R. lukiangense*

R 11357 - *R. lukiangense*

R 11363 - *R. hippophaeoides* var. *hippophaeoides*

R 11363 - *R. hippophaeoides* var. *hippophaeoides*

R 11363 - *R. hippophaeoides* var. *hippophaeoides*

R 11363 - *R. hippophaeoides* var. *hippophaeoides*

R 11370 - *R. bureavii*

R 11370 - *R. bureavii*

R 11376 - *R. bureavii*

R 11377 - *R. bureavii*

R 11378 - *R. rex* ssp. *fictolacteum*

R 11378 - *R. rex* ssp. *fictolacteum*



R 11378 - *R. rex* ssp. *fictolacteum*



R 11378 - *R. rex* ssp. *fictolacteum*

R 11380 - *R. irroratum* ssp. *irroratum*

R 11381 - *R. irroratum* ssp. *irroratum*



R 11381 - *R. irroratum* ssp. *irroratum*

R 11381 - *R. irroratum* ssp. *irroratum*

R 11385 - *R. rex* ssp. *fictolacteum* ‘Cherry Tip’ AM 1953

R 11385 - *R. rex* ssp. *fictolacteum* ‘Cherry Tip’ AM 1953



R 11390 - *R. anthosphaerum*

R 11390 - *R. anthosphaerum*

R 11392 - *R. cuneatum*

R 11392 - *R. cuneatum*

R 11471 - *R. adenogynum* Adenophorum Group

R 11471 - *R. adenogynum* Adenophorum Group



R 11471 - *R. adenogynum* Adenophorum Group ‘Kirsty’ AM 1976



R 11471 - *R. adenogynum* Adenophorum Group ‘Kirsty’ AM 1976

R 11476 - *R. racemosum*

R 11476 - *R. racemosum*

R 11476 - *R. racemosum*

R 11476 - *R. racemosum*

The 1925-1926 NW Gansu Collections:

R 13278	przewalskii	R 13649	rufum
R 13279	anthopogonoides	R 13650	rufum
R 13302	przewalskii	R 13674	capitatum
R 13303	thymifolium	R 13675	rufum
R 13357	chaetomallum aff.	R 13676	przewalskii
R 13596	capitatum	R 13677	przewalskii
R 13597	anthopogonoides	R 13678	rufum
R 13598	thymifolium	R 13679	przewalskii
R 13599	rufum	R 13680	rufum
R 13600	capitatum	R 13681	przewalskii
R 13601	rufum	R 13682	rufum
R 13605	capitatum	R 13683	rufum
R 13610	anthopogonoides	R 13684	rufum
R 13611	capitatum	R 13685	przewalskii
R 13612	przewalskii	R 13686	przewalskii
R 13613	rufum	R 13688	capitatum
R 13622	capitatum	R 13691	rufum
R 13628	rufum	R 13692	rufum
R 13629	przewalskii	R 13693	rufum
R 13630	rufum	R 13694	przewalskii
R 13634	capitatum	R 13695	przewalskii
R 13635	capitatum	R 13696	rufum
R 13636	anthopogonoides	R 13697	rufum
R 13640	rufum	R 14928	rufum
R 13643	rufum	R 15004	micranthum
R 13645	rufum	R 15014	rufum
R 13647	rufum		

- *right* -
R. przewalskii on the Min Shan Range, north of Tebbu land (July 31st, 1925).

- *page 205* -
R. rufum at Koang-kei Shan (or Kwang-ke Shan), Tebbu land (June 12th, 1925).

- *page 206* -
R. capitatum on the Min Shan Range, Tebbu land, west of Adjuan. at around 10,500-11,000 ft (July 5th, 1925).

- *page 207* -
Left:
R. dryophyllum (foreground) on the Mekong-Salween divide at 12,000 ft (October 1923).

Right:
R. rufum at Koang-kei Shan (or Kwang-ke Shan), Tebbu land, growing at 11,500 ft (June 12th, 1925).







The 1929 NW Yunnan Collections:

R 18119	rubiginosum	R 18180	sphaeroblastum
R 18125	unidentified species	R 18181	primuliflorum
R 18138	dryophyllum	R 18182	sphaeroblastum
R 18139	vernicosum	R 18185	x simulans aff. (NH)
R 18139a	vernicosum aff.	R 18186	roxieanum Cucullatum
R 18140	oreotrephes	R 18187	chryseum aff.
R 18141	dryophyllum	R 18189	rubiginosum
R 18142	cookeanum	R 18222	intricatum
R 18143	unidentified species	R 18223	impeditum
R 18144	intricatum	R 18224	unidentified species
R 18149	beesianum	R 18226	adenosum
R 18150	beesianum	R 18227	wardii
R 18152	aganniphum	R 18228	adenosum
R 18153	balfourianum	R 18234	rex
R 18155	roxieanum Cucullatum	R 18275	racemosum
R 18156	balfourianum	R 18277	unidentified species
R 18157	roxieanum Cucullatum	R 18281	uvariifolium
R 18158	balfourianum	R 18331	sinogrande
R 18159	dryophyllum	R 18332	wardii
R 18160	balfourianum	R 18333	wardii
R 18161	roxieanum	R 18336	arizelum
R 18162	adenogynum	R 18337	arizelum
R 18163	unidentified species	R 18338	semnoides
R 18164	balfourianum	R 18339	fulvum
R 18168	dryophyllum	R 18341	megeratum
R 18169	cookeanum	R 18350	stewartianum
R 18170	balfourianum	R 18351	oreotrephes
R 18171	dryophyllum	R 18352	aperantum
R 18172	roxieanum Cucullatum	R 18353	campylocarpum
R 18173	balfourianum	R 18354	aperantum
R 18174	roxieanum Globigerum	R 18355	chaetomallum aff.
R 18175	balfourianum	R 18356	chaetomallum aff.
R 18176	roxieanum Cucullatum	R 18357	chaetomallum aff.
R 18177	balfourianum	R 18359	chaetomallum
R 18178	sphaeroblastum	R 18365	rupicola
R 18179	dryophyllum	R 18366	roxieanum Cucullatum
R 18367	rupicola	R 18412	tephropeplum
R 18369	mekongense	R 18413	tephropeplum
R 18373	caloxanthum	R 18415	eclecteum
R 18375	stewartianum	R 18416	eclecteum
R 18376	stewartianum	R 18418	zaleucum
R 18377	stewartianum	R 18420	glischrum
R 18378	stewartianum	R 18421	martinianum
R 18379	aperantum aff.	R 18424	unidentified species
R 18380	riparioides	R 18433	rothschildii
R 18381	riparioides	R 18434	crassum
R 18382	haematodes	R 18435	roxieanum
R 18383	caloxanthum	R 18436	roxieanum
R 18384	rubiginosum	R 18437	traillianum
R 18385	coriaceum	R 18438	traillianum
R 18386	glischrum	R 18439	traillianum
R 18387	glischrum	R 18440	beesianum
R 18388	mekongense	R 18441	traillianum
R 18389	chaetomallum	R 18442	rupicola
R 18390	semnoides	R 18443	beesianum
R 18391	basilicum aff.	R 18444	traillianum
R 18395	sulfureum	R 18445	beesianum
R 18396	semnoides	R 18446	clementinae
R 18397	semnoides	R 18447	fictolacetum
R 18399	nuttallii	R 18448	clementinae
R 18400	unidentified species	R 18449	glischrum
R 18402	crinigerum	R 18450	chameunum
R 18403	unidentified species	R 18451	fictolacteum
R 18404	crassum	R 18452	fictolacteum
R 18405	caloxanthum	R 18453	riparioides
R 18406	chaetomallum	R 18454	riparioides
R 18407	coriaceum	R 18455	wardii
R 18407a	lanigerum	R 18456	oreotrephes
R 18408	tephropeplum	R 18457	oreotrephes
R 18409	xanthospethanum	R 18458	fimbriatum
R 18410	zaleucum	R 18459	fictolacteum
R 18411	zaleucum	R 18460	orthocladum x ? (NH)

R 18462	russatum	R 18471	leptothrium
R 18463	horaeum	R 18473	leptothrium
R 18464	x didymoides (NH)	R 18474	unidentified species
R 18465	floccigerum	R 18475	leptocarpum
R 18466	weihsiense	R 18476	unidentified species
R 18467	weihsiense	R 18477	euadenium
R 18468	weihsiense	USDA 4021	vernicosum
R 18469	floccigerum / sperabile		



The Baragong (Balagong) Pass, Yunnan, on the Mekong-Nujiang traverse from Cizhong to Dimaluoi, with large-leaved rhododendrons in the foreground.

- *right* -

Rhododendron traillianum, growing on the Li-Chiang Range in N.W. Yunnan.
Elevation 11,500 ft. Age of tree approximately 150 years.



R 18139 - *R. vernicosum*

R 18139 - *R. vernicosum*

R 18139 - *R. vernicosum*



R 18139a - *R. vernicosum* aff.



R 18139a - *R. vernicosum* aff.



R 18139a - *R. vernicosum* aff.

R 18160 - *R. balfourianum* Aganniphoides Group

R 18162 - *R. adenogynum*

R 18162 - *R. adenogynum*

R 18162 - *R. adenogynum*

R 18174 - *R. roxieanum* Globigerum Group

R 18174 - *R. roxieanum* Globigerum Group

R 18223 - *R. fastigiatum* ssp. *impeditum*

R 18226 - *R. adenosum*

R 18228 - *R. adenosum*

R 18228 - *R. adenosum*

R 18228 - *R. adenosum*

R 18228 - *R. adenosum*

R 18234 - *R. rex* ssp. *rex*

R 18234 - *R. rex* ssp. *rex*



R 18234 - *R. rex* ssp. *rex*

R 18234 - *R. rex* ssp. *rex*

R 18234 - *R. rex* ssp. *rex* ‘Quartz’ AM 1955



R 18234 - *R. rex* ssp. *rex* 'Quartz' AM 1955

R 18375 - *R. stewartianum*



R 18376 - *R. stewartianum*

R 18384 - *R. rubiginosum*

R 18384 - *R. rubiginosum*

R 18391 - *R. basilicum* aff.

R 18391 - *R. basilicum* aff.

R 18437 - *R. traillianum* aff.

R 18437 - *R. traillianum* aff.

R 18446 - *R. sphaeroblastum* var. *sphaeroblastum*

R 18447 - *R. rex* ssp. *fictolacteum*

R 18448 - *R. clementinae*

R 18453 - *R. riparioides*

R 18462 - *R. russatum*

R 18462 - *R. russatum*

R 18465 - *R. floccigerum* ssp. *floccigerum*

R 18465 - *R. floccigerum* ssp. *floccigerum*

R 18465 - *R. floccigerum* ssp. *floccigerum*

R 18465 - *R. floccigerum* ssp. *floccigerum*

R 18466 - *R. weihsiense*

USDA 4021 - *R. vernicosum*

USDA 4021 - *R. vernicosum*



USDA 4021 - *R. vernicosum*

The 1932 Yunnan Collections:

R 21993	x haemaleum (NH)	R 22058	chaetomallum
R 21994	sperabiloides	R 22059	chaetomallum
R 21995	bainbridgeanum	R 22063	rupicola
R 21997	saluenense	R 22064	sanguineum
R 21999	bainbridgeanum	R 22065	chaetomallum
R 22000	crinigerum	R 22066	chaetomallum
R 22001	pocophorum	R 22069	chaetomallum
R 22002	pocophorum	R 22070	dealbatum
R 22003	eclecteum	R 22090	mekongense
R 22004	chaetomallum	R 22091	fictolacteum
R 22005	stewartianum	R 22092	fulvoides
R 22006	genestierianum	R 22094	arizelum
R 22007	xanthostephanum	R 22095	anthosphaerum
R 22013	genestierianum	R 22096a	uvariifolium
R 22014	xanthostephanum	R 22096b	uvariifolium
R 22019	edgeworthii	R 22097	fulvoides
R 22021	fictolacteum	R 22100	eclecteum
R 22023	fictolacteum	R 22102	setiferum
R 22024	arizelum Rubicosum	R 22106	arizelum aff.
R 22025	fictolacteum	R 22108	arizelum
R 22028	selense	R 22110	arizelum Rubicosum
R 22029	selense	R 22111	fulvoides
R 22030	selense	R 22112	crinigerum
R 22031	bainbridgeanum	R 22117	fictolacteum
R 22032	selense	R 22119	martinianum
R 22033	selense	R 22120	megeratum
R 22034	x haemaleum (NH)	R 22121	floccigerum
R 22037	fictolacteum	R 22122	sperabiloides
R 22038	fictolacteum	R 22123	martinianum
R 22039	fictolacteum	R 22126	floccigerum
R 22040	beesianum	R 22183	didymum
R 22041	beesianum	R 22184	hypolepidotum
R 22042	uvariifolium	R 22187	chaetomallum
R 22045	virgatum	R 22188	chaetomallum
R 22050	chamaethomsonii	R 22189	horaeum
R 22056	monanthum	R 22191	citriniflorum
R 22192	horaeum	R 22233	fictolacteum
R 22193	horaeum	R 22234	beesianum
R 22194	horaeum	R 22235	temenium Gilvum x ? (NH)
R 22196	horaeum	R 22236	x haemaleum (NH)
R 22197	chaetomallum	R 22237	selense
R 22198	sanguineum	R 22238	x haemaleum (NH)
R 22199	chaetomallum	R 22269	eclecteum
R 22201	sanguineum	R 22271	temenium Gilvum
R 22202	sanguineum	R 22272	temenium Gilvum
R 22203	sanguineum	R 22277	citriniflorum
R 22204	sanguineum	R 22279	fictolacteum
R 22205	horaeum	R 22288	tapetiforme
R 22206	horaeum	R 22289	campylogynum
R 22207	horaeum	R 22290	temenium Gilvum
R 22208	horaeum	R 22291	selense
R 22210	citriniflorum	R 22292	temenium Gilvum
R 22211	chaetomallum	R 22293	sanguineum
R 22212	horaeum	R 22295	x eudoxum (NH)
R 22213	horaeum	R 22297	saluenense
R 22214	leptocarpum	R 22298	temenium Gilvum
R 22215	x himertum x ? (NH)	R 22301	floccigerum
R 22216	nuttallii	R 22302	fletcherianum
R 22219	fictolacteum	R 22303	floccigerum
R 22220	fictolacteum	R 22304	chaetomallum
R 22221	beesianum	R 22305	chaetomallum
R 22222	eclecteum	R 22306	chaetomallum
R 22223	beesianum	R 22307	fictolacteum
R 22224	eclecteum	R 22345	brevistylum
R 22225	selense	R 22440	megacalyx
R 22226	x erythrocalyx (NH)	R 22465	catacosmum
R 22227	fictolacteum	R 22466	chaetomallum
R 22228	crinigerum	R 22634	virgatum
R 22229	rex	R 22649	anthosphaerum
R 22230	eclecteum	R 22657	habrotrichum aff.
R 22231	fictolacteum	R 22659	fletcherianum
R 22232	arizelum	R 23294	chaetomallum

R 23301	brevistylum	R 23453	fictolacteum
R 23302	brevistylum	R 23467	rupicola
R 23304	chaetomallum	R 23477	chasmanthum
R 23305	chaetomallum	R 23480	crinigerum
R 23306	chaetomallum	R 23481	eclecteum
R 23307	x schizopeplum (NH)	R 23482	martinianum
R 23308	beesianum	R 23483	megeratum
R 23310	ramosissimum	R 23485	crinigerum
R 23314	wardii	R 23487	fulvoides
R 23321	x agglutinatum (NH)	R 23488	fulvoides
R 23322	primuliflorum	R 23489	crinigerum
R 23324	x agglutinatum (NH)	R 23490	crinigerum
R 23325	x agglutinatum (NH)	R 23491	oreotrephes
R 23326	fargesii	R 23492	selense
R 23328	aganniphum	R 23494	unidentified species
R 23330	chameunum	R 23495	floccigerum / sperabile
R 23331	aganniphum	R 23496	praestans
R 23332	hormophorum	R 23497	fulvoides
R 23333	x doshongense (NH)	R 23498	chamaethomsonii
R 23338	x doshongense (NH)	R 23502	fulvum
R 23348	unidentified species	R 23506	floccigerum / sperabile
R 23350	dryophyllum	R 23508	fulvum
R 23360	chryseum	R 23509	eclecteum
R 23369	dryophyllum	R 23510	eclecteum
R 23371	aganniphum	R 23511	eclecteum
R 23394	dryophyllum	R 23512	eclecteum
R 23398	chryseum	R 23513	mekongense
R 23400	primuliflorum	R 23514	rubiginosum
R 23401	aganniphum	R 23515	unidentified species
R 23405	aganniphum	R 23516	eclecteum
R 23406	dryophyllum	R 23517	uvariifolium
R 23407	unidentified species	R 23518	beesianum
R 23408	wardii	R 23520	praestans
R 23410	nigropunctatum	R 23521	beesianum
R 23414	wardii	R 23524	sanguineum
R 23452	beesianum	R 23526	roxieanum
R 23527	beesianum	R 23619	beesianum
R 23528	beesianum	R 23620	saluenense
R 23529	sanguineum	R 23621	eclecteum
R 23530	beesianum	R 23622	sanguineum
R 23540a	chryseum	R 23625	beesianum
R 23540b	proteoides	R 23626	unidentified species
R 23545	saluenense	R 23627	saluenense
R 23546	chameunum	R 23628	sanguineum
R 23548	saluenense	R 23629	temenium
R 23553	hypolepidotum	R 23630	eclecteum
R 23555	fictolacteum	R 23631	sanguineum
R 23556	saluenense	R 23632	eclecteum
R 23559	cephalanthum	R 23633	cephalanthum
R 23560	campylogynum	R 23634	saluenense
R 23561	roxieanum	R 23635	x himertum (NH)
R 23562	x iodes (NH)	R 23636	x didymoides (NH)
R 23563	sanguineum	R 23637	x haemaleum (NH)
R 23564	citriniflorum	R 23638	citriniflorum
R 23569	brevistylum	R 23639	x haemaleum (NH)
R 23575	x iodes (NH)	R 23640	temenium Gilvum
R 23578	unidentified species	R 23641	sanguineum
R 23579	citriniflorum	R 23642	x haemaleum (NH)
R 23580	sanguineum	R 23643	sanguineum
R 23581	citriniflorum	R 23645	x himertum (NH)
R 23586	fictolacteum	R 23646	x eudoxum (NH)
R 23587	praestans	R 23647	citriniflorum
R 23588	floccigerum	R 23648	campylogynum
R 23589	coriaceum	R 23649	horaeum
R 23590	rubiginosum	R 23650	sanguineum
R 23591	lukiangense	R 23651	x flavorufum (NH)
R 23592	edgeworthii	R 23652	x flavorufum (NH)
R 23593	temenium	R 23653	x flavorufum (NH)
R 23615	mekongense	R 23660	x iodes (NH)
R 23616	nigropunctatum	R 23661	adenogynum
R 23617	temenium	R 23662	adenogynum
R 23618	x agglutinatum (NH)	R 23663	x eudoxum (NH)

R 23664	sanguineum	R 24366	x agglutinatum (NH)
R 23666	brevistylum	R 24368	wardii
R 23669	citriniflorum	R 24369	impeditum
R 24278	impeditum	R 24381	balfourianum
R 24280	sphaeroblastum	R 24382	balfourianum
R 24281	balfourianum	R 24383	balfourianum
R 24282	rufescens	R 24384	impeditum aff.
R 24283	rubiginosum	R 24385	nigropunctatum
R 24284	x agglutinatum (NH)	R 24395	x agglutinatum
R 24285	primuliflorum	R 24403	dryophyllum
R 24295	x agglutinatum (NH)	R 24404	oreotrephes
R 24296	proteoides	R 24406	balfourianum
R 24299	roxieanum Cucullatum	R 24410	x agglutinatum (NH)
R 24302	x agglutinatum (NH)	R 24413	sphaeroblastum
R 24304	primuliflorum	R 24414	x agglutinatum (NH)
R 24306	x agglutinatum (NH)	R 24418	dryophyllum
R 24307	beesianum	R 24421	yunnanense
R 24309	aechmophyllum	R 24432	aechmophyllum
R 24310	sphaeroblastum	R 24433	decorum
R 24311	sphaeroblastum	R 24434	vernicosum
R 24314	dryophyllum	R 24439	trichostomum
R 24317	phaeochrysum	R 24440	cookeanum
R 24319	telmateium	R 24445	dryophyllum
R 24320	thymifolium	R 24446	intricatum
R 24321	trichostomum	R 24446	x intricatum (NH)
R 24322	cookeanum	R 24457	dryophyllum
R 24325	sphaeroblastum	R 24458	unidentified species
R 24336	telmateium	R 24459	dryophyllum
R 24339	wardii	R 24460	impeditum
R 24343	sphaeroblastum	R 24461	dryophyllum
R 24350	sphaeroblastum	R 24464	impeditum
R 24359	x agglutinatum (NH)	R 24471	cookeanum
R 24360	wardii	R 24481	sphaeroblastum
R 24361	telmateium	R 24487	wardii
R 24363	x agglutinatum (NH)	R 24489	primuliflorum
R 24365	x agglutinatum (NH)	R 24495	wardii

R 24501	proteoides	R 25302	rupicola
R 24503	roxieanum	R 25303	prostratum
R 24512	x agglutinatum (NH)	R 25305	adenogynum
R 24524	x agglutinatum (NH)	R 25306	fictolacteum
R 24531	hemitrichotum	R 25308	adenogynum
R 24540	primuliflorum	R 25313	sphaeroblastum
R 24541	hemitrichotum	R 25314	phaeochrysum
R 24544	trichostomum	R 25326	rubiginosum
R 24569	impeditum & rex	R 25327	hormophorum
R 24573	rex	R 25328	traillianum
R 24582	beesianum	R 25329	rubiginosum
R 24583	beesianum	R 25331	vernicosum
R 24591	aechmophyllum	R 25334	lepidotum
R 24592	aechmophyllum	R 25340	anthosphaerum
R 24599	rubiginosum	R 25345	beesianum
R 24602	yunnanense	R 25349	adenogynum
R 24604	uvariifolium	R 25350	primuliflorum
R 25233	unidentified species	R 25352	uvariifolium
R 25234	scabrifolium	R 25368	traillianum
R 25235	unidentified species	R 25370	yungningense
R 25236	unidentified species	R 25372	rubiginosum
R 25237	spinuliferum	R 25373	vernicosum
R 25238	unidentified species	R 25375	adenogynum
R 25239	microphyton	R 25376	primuliflorum
R 25240	unidentified species	R 25377	drumonium
R 25246	adenogynum	R 25381	hormophorum
R 25247	rubiginosum	R 25384	traillianum
R 25251	uvariifolium	R 25386	irroratum
R 25252	traillianum	R 25387	adenogynum
R 25258	rupicola	R 25388	semnoides aff.
R 25259	traillianum	R 25389	semnoides
R 25260	dasycladum	R 25390	roxieanum Globigerum
R 25272	preptum aff.	R 25391	wardii
R 25277	rupicola	R 25393	basilicum
R 25278	lepidotum	R 25394	semnoides
R 25301	traillianum	R 25395	irroratum

R 25396	fictolacteum	R 25441	fictolacteum
R 25398	dasycladum	R 25442	bureavii
R 25400	irroratum	R 25443	scabrifolium
R 25401	clementinae	R 25444	fictolacteum
R 25402	hippophaeoides	R 25445	bureavii
R 25405	roxieanum Cucullatum	R 25446	scabrifolium
R 25406	roxieanum Cucullatum	R 25447	fictolacteum
R 25407	roxieanum Cucullatum	R 25448	fictolacteum
R 25414	fictolacteum	R 25451	irroratum
R 25417	fastigiatum	R 25452	roxieanum
R 25418	fictolacteum	R 25453	edgeworthii
R 25419	uvariifolium	R 25454	edgeworthii
R 25421	uvariifolium	R 25455	roxieanum Cucullatum
R 25422	roxieanum	R 25458	pronum
R 25423	roxieanum	R 25459	campylogynum
R 25424	fictolacteum	R 25462	roxieanum Cucullatum
R 25425	fulvoides	R 25463	roxieanum Cucullatum
R 25426	fulvoides	R 25464	roxieanum
R 25428	dasycladum	R 25465	xanthostephanum
R 25429	oreotrephes	R 25466	fictolacteum
R 25430	clementinae	R 25467	wardii
R 25431	fulvoides	R 25468	fulvoides
R 25432	clementinae	R 25470	x agglutinatum (NH)
R 25435	bureavii	R 25472	sphaeroblastum
R 25436	bureavii	R 25474	dryophyllum
R 25437	balfourianum	R 25476	cookeanum
R 25438	rubiginosum	R 25478	sphaeroblastum
R 25439	bureavii	R 25480	sphaeroblastum
R 25440	cephalanthum	R 25482	phaeochrysum

- opposite -
Joseph Rock out collecting in the field.





R 22070 - *R. temenium* var. *dealbatum*

R 22070 - *R. temenium* var. *dealbatum*

R 22106 - *R. arizelum* ssp. *arizelum* aff.

R 22106 - *R. arizelum* ssp. *arizelum* aff.

R 22106 - *R. arizelum* ssp. *arizelum* aff.

R 22106 - *R. arizelum* ssp. *arizelum* aff.

R 22236 - *R. x haemaleum*

R 22236 - *R. x haemaleum*



R 22302 - *R. fletcherianum*

R 22302 - *R. fletcherianum*

R 22302 - *R. fletcherianum*

R 22302 - *R. fletcherianum*



R 23314 - *R. wardii* var. *wardii*

R 23314 - *R. wardii* var. *wardii*

R 23314 - *R. wardii* var. *wardii*

R 23314 - *R. wardii* var. *wardii*

R 23512 - *R. eclecteum*

R 23634 - *R. saluenense* var. *saluenense*



R 23634 - *R. saluenense* var. *saluenense*

R 23636 - *R. x didymoides* Roseotinctum Group

R 23636 - *R. x didymoides* Roseotinctum Group

R 24278 - *R. fastigiatum* ssp. *impeditum*

R 24278 - *R. fastigiatum* ssp. *impeditum*

R 24278 - *R. fastigiatum* ssp. *impeditum*



R 24446 - *R. intricatum* x *unknown* (Natural Hybrid)



R 24446 - *R. intricatum* x *unknown* (Natural Hybrid)

R 25303 - *R. saluenense* var. *chameunum*

R 25303 - *R. saluenense* var. *chameunum*

R 25303 - *R. saluenense* var. *chameunum*

R 25303 - *R. saluenense* var. *chameunum*


R 25305 - *R. adenogynum*


R 25305 - *R. adenogynum*


R 25305 - *R. adenogynum*

R 25305 - *R. adenogynum*

R 25377 - *R. telmateium* Drumonium Group

R 25377 - *R. telmateium* Drumonium Group

R 25388 - *R. semnoides* aff.

R 25388 - *R. semnoides* aff.

R 25391 - *R. wardii* var. *wardii*

R 25391 - *R. wardii* var. *wardii*

R 25393 - *R. basilicum*




R 25401 - *R. clementinae*


R 25401 - *R. clementinae*

R 25422 - *R. roxieanum*

R 25436 - *R. bureavii*

R 25439 - *R. bureavii*

R 25444 - *R. rex* ssp. *fictolacteum*

The 1948-1949 Tibet & Yunnan Collections:

R 1	caloxanthum	R 37	eclecteum
R 2	crinigerum	R 38	crinigerum
R 3	crinigerum	R 39	chaetomallum
R 4	unidentified species	R 40	chaetomallum
R 5	chameunum	R 41	chaetomallum
R 6	dealbatum aff.	R 42	beesianum
R 6a	sanguineum aff.	R 42a	unidentified species
R 6b	x eudoxum (NH)	R 43	unidentified species
R 7	unidentified species	R 44	didymum
R 8	beesianum	R 45	didymum
R 9	fulvoides	R 46	sanguineum
R 10	floccigerum	R 47	martinianum
R 11	sanguineum	R 48	bainbridgeanum
R 12	hypolepidotum	R 49	floccigerum
R 13	chaetomallum	R 50	fulvoides
R 14	arizelum	R 51	unidentified species
R 15	xanthostephanum	R 51a	arizelum
R 16	arizelum	R 52	chaetomallum
R 17	virgatum	R 53	didymum
R 18	sanguineum	R 54	didymum
R 19	x iodes (NH)	R 56	chameunum
R 20	crinigerum	R 57	martinianum
R 21	mekongense	R 58	keleticum
R 22	chaetomallum	R 59	sanguineum
R 23	sanguineum	R 60	dealbatum
R 24	sanguineum	R 61	didymum
R 25	arizelum	R 62	didymum
R 26	fulvoides	R 63	x iodes (NH)
R 27	sanguineum	R 64	x iodes (NH)
R 28	rubiginosum	R 65	didymum
R 29	eclecteum	R 69	unidentified species
R 31	x haemaleum (NH)	R 70	genestierianum
R 32	floccigerum	R 71	rubiginosum
R 33	eclecteum	R 72	lukiangense
R 34	unidentified species	R 73	uvariifolium
R 36	beesianum	R 92	forrestii
R 93	hypolepidotum	R 128	didymum
R 94	proteoides	R 129	heliolepis
R 95	megeratum	R 131	eclecteum
R 96	oreotrephes	R 132	campylogynum
R 97	arizelum	R 133	crassum
R 98	crinigerum	R 134	fulvoides
R 100	crinigerum	R 135	edgeworthii
R 101	temenium Gilvum aff.	R 136	sanguineum
R 101a	x haemaleum aff. (NH)	R 137	rubiginosum
R 102	arizelum aff.	R 138	roxieanum
R 103	praestans	R 139	x iodes (NH)
R 104	martinianum	R 140	coriaceum
R 105	campylogynum	R 141	x iodes (NH)
R 106	sanguineum	R 142	roxieanum
R 107	aganniphum	R 143	fulvoides
R 108	citriniflorum	R 144	floccigerum
R 109	beesianum	R 145	brevistylum
R 110	saluenense	R 146	mekongense
R 111	sanguineum aff.	R 147	proteoides
R 112	sanguineum	R 148	eclecteum
R 113	temenium	R 149	sanguineum
R 114	temenium	R 150	sanguineum
R 115	unidentified species	R 150	x eudoxum (NH)
R 116	unidentified species	R 151	proteoides
R 117	beesianum	R 152	saluenense
R 118	praestans	R 153	praestans
R 119	citriniflorum aff.	R 154	selense
R 120	coriaceum	R 155	beesianum
R 121	anthosphaerum	R 158	uvariifolium
R 122	mekongense	R 159	leptothrium
R 123	eclecteum	R 161	fulvum
R 124	citriniflorum aff.	R 162	glischrum
R 125	sperabiloides	R 163	anthosphaerum
R 125a	temenium	R 164	beesianum
R 125b	sanguineum	R 165	oreotrephes
R 126	sanguineum	R 166	chaetomallum

R 167	rothschildii	R 174	unidentified species
R 169	stewartianum	R 175	chameunum
R 170	rothschildii aff.	R 176	beesianum
R 171	temenium	R 177	weihsiense
R 172	annae	R 178	riparioides
R 173	uvariifolium	R 180	fulvoides

R 182	sinogrande	R 189	rubiginosum
R 184	rubiginosum	R 190	rubiginosum
R 185	irroratum	R 191	unidentified species
R 186	rubiginosum	R 192	irroratum
R 187	rubiginosum	R 193	fictolacteum
R 188	fastigiatum	R 199	hardyi



The people of Chingshui, Kansu, are gathered in front of the inn where Joseph Rock was staying, listening to his phonograph playing the sextet from *Donizetti's* 'Lucia di Lammermoor'. Soldiers of his escort are guarding the entrances to the inn. Photographed on April 11th, 1925.

R 1 - *R. campylocarpum* ssp. *caloxanthum*
(Note: the specimen shown on pages 304-307 grows at the Royal Botanic Garden,
Edinburgh, who classify and label it as Rock 1A - *R. campylocarpum* ssp. *campylocarpum.*
However, the revision/addition does not feature in *The Rhododendron Handbook 1998* Collectors' Numbers listings).

R 1 - *R. campylocarpum* ssp. *caloxanthum*

R 1 - *R. campylocarpum* ssp. *caloxanthum*

R 1 - *R. campylocarpum* ssp. *caloxanthum*

R 2 - *R. crinigerum* var. *crinigerum*

R 2 - *R. crinigerum* var. *crinigerum*

R 6 - *R. temenium* var. *dealbatum* aff.


R 6b - *R. x eudoxum*


R 6b - *R. x eudoxum*


R 6b - *R. x eudoxum*

R 10 - *R. floccigerum* ssp. *floccigerum*

R 12 - *R. brachyanthum* ssp. *hypolepidotum*

R 12 - *R. brachyanthum* ssp. *hypolepidotum*

R 12 - *R. brachyanthum* ssp. *hypolepidotum*



R 16 - *R. arizelum* ssp. *arizelum*



R 25 - *R. arizelum* ssp. *arizelum*

R 25 - *R. arizelum* ssp. *arizelum*

R 25 - *R. arizelum* ssp. *arizelum*



R 26 - *R. fulvum* ssp. *fulvoides*



R 26 - *R. fulvum* ssp. *fulvoides*

R 31 - *R. x haemaleum*

R 31 - *R. x haemaleum*

R 38 - *R. crinigerum* var. *crinigerum*

R 41 - *R. haematodes* ssp. *chaetomallum*



R 49 - *R. floccigerum* ssp. *floccigerum*

R 49 - *R. floccigerum* ssp. *floccigerum*

R 50 - *R. fulvum* ssp. *fulvoides*

R 50 - *R. fulvum* ssp. *fulvoides*



R 50 - *R. fulvum* ssp. *fulvoides*



R 50 - *R. fulvum* ssp. *fulvoides*

R 50 - *R. fulvum* ssp. *fulvoides*

R 58 - *R. calostrotum* ssp. *keleticum*

R 58 - *R. calostrotum* ssp. *keleticum*

R 58 - *R. calostrotum* ssp. *keleticum*

R 58 - *R. calostrotum* ssp. *keleticum*

R 73 - *R. uvariifolium* var. *uvariifolium*



R 73 - *R. uvariifolium* var. *uvariifolium*

R 73 - *R. uvariifolium* var. *uvariifolium*

R 73 - *R. uvariifolium* var. *uvariifolium*



R 93 - *R. brachyanthum* ssp. *hypolepidotum*

R 93 - *R. brachyanthum* ssp. *hypolepidotum*


R 94 (or R 147, or R 151) - *R. proteoides*


R 94 (or R 147, or R 151) - *R. proteoides*


R 94 (or R 147, or R 151) - *R. proteoides*



R 96 - *R. oreotrephes*



R 96 - *R. oreotrephes*



R 96 - *R. oreotrephes*



R 97 - *R. arizelum* ssp. *arizelum*

R 97 - *R. arizelum* ssp. *arizelum*

R 97 - *R. arizelum* ssp. *arizelum*

R 97 - *R. arizelum* ssp. *arizelum*

R 100 - *R. crinigerum* var. *crinigerum*

R 100 - *R. crinigerum* var. *crinigerum*

R 102 - *R. arizelum* ssp. *arizelum*

R 102 - *R. arizelum* ssp. *arizelum*

R 103 - *R. praestans*

R 103 - *R. praestans*

R 104 - *R. martinianum*

R 104 - *R. martinianum*

R 106 - *R. sanguineum*

R 106 - *R. sanguineum*

R 108 - *R. citriniflorum* ssp. *citriniflorum*

R 108 - *R. citriniflorum* ssp. *citriniflorum*

R 111 - *R. sanguineum* aff.

R 113 - *R. temenium* var. *dealbatum*

R 113 - *R. temenium* var. *dealbatum*

R 113 - *R. temenium* var. *dealbatum*

R 114 - *R. temenium* var. *temenium* Gilvum Group



R 114 - *R. temenium* var. *temenium* Gilvum Group

R 121 - *R. anthosphaerum*

R 121 - *R. anthosphaerum*



R 125a - *R. temenium* var. *temenium* Gilvum Group



R 125a - *R. temenium* var. *temenium* Gilvum Group

R 128 - *R. sanguineum*

R 128 - *R. sanguineum*

R 138 - *R. roxieanum*

R 138 - *R. roxieanum*

R 138 - *R. roxieanum*

R 138 - *R. roxieanum*

R 140 - *R. coriaceum*

R 140 - *R. coriaceum*

R 143 - *R. fulvum* ssp. *fulvoides*

R 143 - *R. fulvum* ssp. *fulvoides*

R 150 - *R. sanguineum*

R 150 - *R. sanguineum*

R 150 - *R. x eudoxum* (Seed Pan Rogue)

R 153 - *R. praestans*



R 173 - *R. uvariifolium* var. *uvariifolium*

R 176 - *R. beesianum*



R 180 - *R. fulvum* ssp. *fulvoides*



R 180 - *R. fulvum* ssp. *fulvoides*



R 180 - *R. fulvum* ssp. *fulvoides*

R 180 - *R. fulvum* ssp. *fulvoides*



R 184 - *R. rubiginosum*



R 184 - *R. rubiginosum*



R 184 - *R. rubiginosum*

R 187 - *R. rubiginosum*

R 187 - *R. rubiginosum*

R 187 - *R. rubiginosum*

R 187 - *R. rubiginosum*

R 193 - *R. rex* ssp. *fictolacteum*

R 193 - *R. rex* ssp. *fictolacteum*

R 193 - *R. rex* ssp. *fictolacteum*

R 193 - *R. rex* ssp. *fictolacteum*

R 199 - *R. augustinii* ssp. *hardyi*

R 199 - *R. augustinii* ssp. *hardyi*

R 199 - *R. augustinii* ssp. *hardyi*

R 199 - *R. augustinii* ssp. *hardyi*



R 199 - *R. augustinii* ssp. *hardyi*



R 199 - *R. augustinii* ssp. *hardyi*

R 199 – *R. augustinii* ssp. *hardyi*

Photographic Acknowledgements:

Mirroring the first three volumes, details of where each of the plant portraits was photographed is set out below, along with the website details of those collections visited. Thanks is again extended to each establishment for allowing images taken in a private-use capacity, to be reproduced here. Gratitude is also due the institutions, organisations and individuals who allowed the portrait photographs of historical and noted figures associated with the genus to appear alongside the text.

Key: AL - above left; AC - above centre; AR - above right; BL - below left; BC - below centre; BR - below right; L - left; R - right.

Arnold Arboretum:
https://arboretum.harvard.edu/
p. 19 AR - a staged trail through a defile of the Min-chow Ho beyond Kwan-ting between Min-chow and Kai-chow (April 12th, 1925); p. 19 BR - a view of the upper part of Cho-ni from above the east wall. The photograph was taken on July 15th, 1925; p. 20 - looking down Koang-kei Shan (or Kwang-ke Shan) from a pass at 13,150 ft. elevation, northwest of the great shi-men or rock gate of the Min Shan Range (July 30th, 1925); p. 21 - the great shi-men, or rock gate, seen from the first or outer rock gate leading to Tsa-lu Ku going N, at an altitude of 11,600 ft., (July 30th, 1925); p. 22 R - the outer or smaller rock gate is an outer barrier 10 li (5 km or 3 miles) from the shi-men gate of the Min Shan Range. The photograph looks north towards Tsa-lu Ku (July 30th, 1925); p. 24 - Rock's camp at the foot of Niu-hsin Shan. The mountains opposite are part of the Kan-chow Nan Shan or Richthofen Range (October 18th, 1925); p. 26 AR - canyons of conglomerate (a reddish-purple gravel) at the back of Radja Gomba, with Picea and Juniper trees growing at an elevation of 11,510 ft. (May 22nd, 1926); p. 27 L - looking upstream in the Jupar Valley, showing spruces growing on the northern slopes, eight days north of Radja at an elevation of 10,600 ft (June 27th, 1926); p. 27 R - the limestone cliffs on the way to Drakana in the huge gorge, which cuts across the western Min Shan Range, showing birch, spruce and firs (August 26th, 1926); p. 28 - the Jupar Valley, Tibet, showing the northern slopes of the range and the view upstream. The trees are mainly *Picea asperata* and those along the stream are *Sorbus trianshanica* and *Salix* (June 27th, 1926); p. 29 - in the valley of Chatseti, the last camp in lower Tebbu land (September 17th, 1926); p. 30 - the enormous limestone gate, which leads into Drakana, upper Tebbu land. The valley is forested up to the very steep slopes of the limestone cliffs with Abies, Betula, Picea, Rhododendron and Salix, and was photographed from an elevation of 11,000 ft., on August 26th, 1926; p. 38 - "Pale red sand stone mountains, absolutely bare and deeply eroded as if sculpted, in a valley back of Kansu, which is situated directly in the valley of the Yellow River, west of Shun Hoa". Rock took the photograph on November 24th, 1925; p. 39 - "An alpine meadow at the summit of Tsarekika", Joseph Rock wrote, "the last pass across the Minshan to the valleys debauching into the Tas River. It was here that our party was attacked last year by Tebbu brigands and one of my men badly wounded. It is a rendezvous place of Upper Tebbu robbers as three trails converge there". Photographed at an altitude of 11,250 ft., on September 18th, 1926; p. 41 R - Joseph Rock's camp at the foot of the great shi-men or rock gate, in the Min Shan Range. The trees are Abies, while the undershrubs are Rhododendron. The photograph was taken at an altitude of 11,750 ft., on July 31st, 1925; p. 204 - *R. przewalskii* on the Min Shan Range, north of Tebbu land (July 31st, 1925); p. 205 - *R. rufum* at Koang-kei Shan (or Kwang-ke Shan), Tebbu land (June 12th, 1925); p. 206 - *R. capitatum* on the Min Shan Range, Tebbu land, west of Adjuan at around 10,500-11,000 ft (July 5th, 1925); p. 207 R - *R. rufum* at Koang-kei Shan (or Kwang-ke Shan), Tebbu land, growing at 11,500 ft (June 12th, 1925); p. **XXX** - the people of Chingshui, Kansu, are gathered in front of the inn where Joseph Rock was staying, listening to his phonograph playing the sextet from *Donizetti's* 'Lucia di Lammermoor'. Soldiers of his escort are guarding the entrances to the inn. Photographed on April 11th, 1925.

Benmore Botanic Garden, Argyll:
https://www.rbge.org.uk/visit/benmore-botanic-garden/
p. 50; p. 51; p. 58; p. 59; p. 88; p. 89; p. 122; p. 123; p. 130; p. 131; p. 132; p. 133; p. 151; p. 152; p. 153; p. 160; p. 161; p. 238; p. 239; p. 246; 247; p. 248; p. 249; p. 252; p. 253; p. 260; p. 261; p. 262; p. 263; p. 266; p. 267; p. 269; p. 282; p. 283; p. 297-L, AR, BR; p. 316; p. 317; p. 318; p. 319; p. 320 - L, R; p. 325; p. 326; p. 327; p. 328 - L, R; p. 329; p. 334; p. 335; p. 336; p. 337; p. 338; p. 339; p. 342; p. 343; p. 344; p. 345; p. 350; p. 351; p. 370; p. 373; p. 374; p. 375; p. 377; p. 378; p. 379; p. 381; p. 384 - L, Ar, BR; p. 385; p. 397; p. 398 - L, R; p. 399; p. 406 - BL.

Branklyn Garden, Perth:
https://www.nts.org.uk/visit/places/branklyn-garden
p. 340 - AL, BL, R.

Dawyck Botanic Garden, Stobo, Peebles:
https://www.rbge.org.uk/visit/dawyck-botanic-garden/
p. 72 - AL, AR; p. 73; p. 251; p. 299.

Exbury Gardens, Hampshire:
https://www.exbury.co.uk/
p. 134 - L; p. 135; p. 198; p. 199.

Glendoick Gardens Ltd, Perth:
https://glendoick.com/
p. 148; p. 149; p. 150 - L, AR, BR; p. 163; p. 164; p. 165; p. 330; p. 331; p. 356; p. 357.

Muncaster Castle Gardens, Ravenglass, Cumbria:
https://www.muncaster.co.uk/
p. 9; p. 115; p. 116; p. 117; p. 118 - L, AR, BR; p. 119; p. 406 - AR.

National Geographic Society:
https://www.nationalgeographic.org/society/
p. 7 - Joseph Rock garbed in Tibetan cold weather gear. Photographed in the Jone Buddhist Monastery, Gansu; p. 13 AL - Rock's expedition to Minya Konka assembles at the China Inland Mission; p. 13 AR - Rock's campsite beneath the Likiang Snow Range; p. 14 - Rock with some of his Na-khi (Nashi) assistants, who are often described as his 'outlaw escort', but should more correctly be known as his 'protection detail'. The photograph was taken on June 20th, 1928; p. 15 - Rock in his Tibetan cold-weather gear, this time on horseback. The photograph was taken in the mid 1920s; p. 17 - Joseph Rock, in the stone house he used as the base for his wide-ranging journeys of discovery, at Nguluko, Lijiang, SW China; p. 26 L - Rock with the Prince of Choni in 1925; p. 33 BR - Joseph Rock near his home at Nguluko, Lijiang; p. 35 - Rock with his Na-khi (Nashi) assistants (an alternative version post a costume change for the leading man). Described as his 'outlaw escort', the five were his 'protective detail'. The photograph was taken on June 20th 1928; p. 36 R - Joseph Rock

with Chote Chaba, the lama king of Muli; p. 40 AL - Rock with his armed escort on the Konkaling Mountains. The cairn of stones behind the group was built-up over centuries by pilgrims visiting the three sacred peaks; p. 40 AR - two of Rock's Nakhi assistants at his house in Nguluko changing the drying paper on herbarium specimens; p. 48 - *Rhododendron vernicosum,* growing at 11,000 ft in the Sa-ba glacier gorge, on the eastern slopes of Yulung Shan (Jade Dragon Mountain) in northwestern Yunnan; province; p. 207 L - *R. dryophyllum* on the Mekong-Salween divide at 12,000 ft (October 1923); p. 209 L - The Baragong (Balagong) Pass, Yunnan, on the Mekong-Nujiang traverse from Cizhong to Dimaluoi, with large-leaved rhododendrons in the foreground; p. 209 R - *Rhododendron traillianum,* growing on the Li-Chiang Range in N.W. Yunnan. Elevation 11,500 ft. Age of tree approximately 150 years; p. 257 - Joseph Rock out collecting in the field. All seventeen images are reproduced herein courtesy of the Joseph F. Rock / National Geographic Image Collection.

Nymans Garden, Handcross, West Sussex:
https://www.nationaltrust.org.uk/nymans
p. 185.

Public Domain:
p. 11 left - Joseph Rock, a portrait from around 1910; p. 11 right - Joseph Rock, on campus, editing his book *The Indigenous Trees of the Hawaiian Islands.*

Ray Wood, Castle Howard, North Yorkshire:
https://www.castlehoward.co.uk/visit-us/the-gardens/the-woodland-garden
p. 66; p. 67; p. 94; p. 95; p. 112; p. 113; p. 406 - BR.

Royal Botanic Garden, Edinburgh:
https://www.rbge.org.uk/visit/royal-botanic-garden-edinburgh/
p. 1; p. 5; p. 43; p. 49; p. 52; p. 53; p. 55; p. 56; p. 57; p. 60; p. 61; p. 62; p. 63; p. 64 - L, AR, BR; p. 65; p. 70; p. 71; p. 72 - BL, BR; p. 74; p. 79; p. 80; p. 81; p. 84 - AL, BL, R; p. 87; p. 93; p. 96; p. 97; p. 110; p. 111; p. 114; p. 127; p. 128; p. 129; p. 140; p. 141; p. 146; p. 147; p. 154; p. 155; p. 158; p. 159; p. 162 - L, AR, BR; p. 166; p. 167; p. 176; p. 177; p. 194; p. 195; p. 203; p. 210; p. 211; p. 212; p. 220; p. 223; p. 224; p. 225; p. 234; p. 235; p. 243; p. 244; p. 245; p. 258; p. 259; p. 264; p. 265; p. 268; p. 270; p. 271; p. 272; p. 273; p. 274; p. 275; p. 276; p. 279; p. 280; p. 281; p. 284; p. 285; p. 286; p. 287; p. 288 - L, AR, BR; p. 289; p. 292; p. 293; p. 294; p. 295; p. 298; p. 300; p. 301; p. 304; p. 305; p. 306; p. 307; p. 310; p. 311 - L, AR, BR; p. 312; p. 313; p. 314; p. 315; p. 321 - L, R; p. 323; p. 333; p. 341 - L, AR, BR; p. 346; p. 347; p. 352; p. 353; p. 354; p. 355; p. 358; p. 359; p. 360; p. 361; p. 362; p. 363; p. 364; p. 365; p. 366; p. 367; p. 368; p. 369; p. 380; p. 382; p. 383; p. 386 - AL, BL, R; p. 387; p. 388 - L, R; p. 389; p. 390; p. 391; p. 392; p. 393; p. 394; p. 395; p. 396.

Royal Botanic Garden, Wakehurst Place:
https://www.kew.org/wakehurst
p. 85; p. 86; p. 190; p. 191; p. 226; p. 227; p. 228; p. 332; p. 371.

Royal Horticultural Society, Wisley:
https://www.rhs.org.uk/gardens/wisley
p. 137; p. 229.

Savill Garden, Windsor Great Park:
https://www.windsorgreatpark.co.uk/en/experiences/the-savill-garden
p. 213 - AL, BL, R; p. 372.

Sir Harold Hillier Gardens, Ampfield, Romsey:
https://www.hants.gov.uk/thingstodo/hilliergardens
p. 134 - R; p. 136.

Valley Gardens, Windsor Great Park:
https://www.windsorgreatpark.co.uk/en/experiences/the-valley-gardens
p. 54; p. 68; p. 69; p. 75; p. 76; p. 77; p. 78; p. 82; p. 83; p. 90; p. 91; p. 92; p. 98; p. 99; p. 100; p. 101; p. 102; p. 103; p. 104; p. 105; p. 106; p. 107; p. 108; p. 109; p. 120; p. 121; p. 124; p. 125; p. 126; p. 138 - L, AR, BR; p. 139; p. 142; p. 143; p. 144; p. 145; p. 156; p. 157; p. 168; p. 169; p. 170; p. 171; p. 172; p. 173; p. 174; p. 175; p. 178; p. 179; p. 180; p. 181; p. 182; p. 183; p. 184; p. 186; p. 187; p. 188; p. 189; p. 192; p. 193; p. 196; p. 197; p. 200; p. 201; p. 202; p. 214; p. 215; p. 216; p. 217; p. 218; p. 219; p. 221; p. 222; p. 230; p. 231; p. 232; p. 233; p. 236; p. 237; p. 240; p. 241; p. 242; p. 250; 277; p. 278; p. 290; p. 291; p. 296; p. 308; p. 309; p. 322; p. 324; p. 348; p. 349; p. 376; p. 406 - AL.

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About the Author.

Julian Taylor-Whall was born in Lowestoft at the end of November, 1957. He received a grammar school education before embarking on a three-decades-long career with the BBC at Television Centre. During that time he worked on many of the now classic shows made in the production facilities there, the studios at Lime Grove and Elstree, and at the Television Theatre.

He retired early in 2008, moving to a small village in West Cumbria, just outside the Lake District National Park.

His interests include landscape and plant photography, music, film, writing, and of course, the cultivation of rhododendrons. His previous multivolume treatise on that genus can be freely downloaded at:

https://www.rhodogroup-rhs.org/publications/books/temperate-rhododendrons.

- above -
Atop Great Gable, a self portrait against cloud.

- *back cover* images -

R 11354 - *R. anthosphaerum* Gymnogynum Group	R 11189 - *R. crinigerum* var. *crinigerum*
R 18465 - *R. floccigerum* ssp. *floccigerum*	R 11179 - *R. x hemidartum*







