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Mildred E. Mathias

University of California, Los Angeles

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THE FASCINATING HISTORY OF THE EARLY BOTANICAL
EXPLORATION AND INVESTIGATIONS IN
SOUTHERN CALIFORNIA

MILDRED E. MATHIAS

*Department of Biology, University of California
Los Angeles, California 90024-1606*

ABSTRACT

Information on plant collectors in southern California is scattered through a number of publications, some of them obscure or not well known to botanists. This paper gives a selective account of major collectors from 1793 to 1930. The appendix lists the plant collectors with references to biographical material concerning each. It is hoped that this preliminary account will stimulate further historical studies.

Key words: southern California, botany, plant, collectors, collections, exploration.

To appreciate the history of botanical collections in southern California one has to understand the geographical setting, isolated from the north by the Transverse Ranges and from the east and south by deserts, with the only ready access by sea. Before the mid-19th century it was often bypassed since the more usual pattern by sea was for ships to go from Acapulco to Hawaii and then to the northwest coast. In contrast, northern California was frequently visited along the coast by ships hunting for the Northwest Passage or marine mammals; overland from the north was comparatively easy by way of the Sacramento River. Consequently, for many years there was much more botanical activity from Monterey north.

Although the Spanish padres had crossed the southern part of the state, they left only descriptions of the country traversed and no collections exist from their travels.

SPANISH AND COLONIAL PERIOD
(1793-1847)

The first botanical visitors to the southern California coast were almost uniformly unlucky, arriving in San Diego, San Pedro, Ventura, and Santa Barbara during the months from September to November, not the best time of year for collecting and certainly disappointing to those who had seen the coastal areas to the north.

The first plant collections in southern California were made by Archibald Menzies, the Scotch naval surgeon and botanist-naturalist on the Vancouver Expedition, who arrived in Santa Barbara on November 10, 1793 (McKelvey 1955). On November 12th Menzies obtained permission from the Commandant at the Presidio to explore the hills to the east

for the purpose of collecting Plants & examining the natural produce of the Country; the day was favorable for my pursuit, but the season of the year & the arid state of the Country was much against it. . . .¹

On this trip he admired the beautiful groves of *Quercus agrifolia* Née but states

[I] was able to receive but little pleasure or advantage from my excursion.²

On November 15th he went westward to collect *Salicornia* L. in the extensive salt marshes and on the 16th he was delighted to find flowering plants of *Diplacus longiflorus* Nutt. [*Mimulus longiflorus* (Nutt.) Grant] which he preserved. Although he visited the mission of Buenaventura, there is no indication that he collected plants in the vicinity. On November 27th the ships anchored opposite the Presidio in San Diego harbor and on the 29th Menzies was able to go ashore where he ascended a ridge from which there was an extensive view that he describes:

The whole presented a naked dreary arid prospect in which there was not a tree to be seen in any direction within our view. The soil on this ridge was sandy & exceedingly dry & scorched, yet it was mostly covered with shrubbery & brushwood, amongst which I saw a vast variety of Plants that were entirely new to me, but to my no small mortification I met with only two plants in flower & very few in Seed during the whole excursion, there were . . . a new species of *Euphorbia* [*Euphorbia misera* Benth.] & another of *Colutea* [*Astragalus leucopsis* Torr.]—I also saw the *Mesembryanthemum edulis* [*Mesembryanthemum aequilaterale* Haw.] & five or six species of the Genus *Cactus* . . .³

[*Ferocactus viridescens* (Nutt.) Britt. & Rose, *Bergerocactus emoryi* (Engelm.) Britt. & Rose, *Mamillaria dioica* K. Bdg., *Opuntia littoralis* (Engelm.) Ckll., *Opuntia parryi* Engelm. var. *serpentina* (Engelm.) L. Benson, and *Opuntia prolifera* Engelm.]

On November 30th

On the Sandy Beach near . . . the entrance of the Harbour I found a new plant in flower which I named *Morinda glauca* [*Heliotropium Curassavicum* L.], its trailing branches with glaucous leaves contrasted with globular heads of light blue flowers were extremely ornamental to such a barren situation where a plant could hardly be expected to vegetate; I found nothing else in this excursion that I could ascertain what they were.⁴

The padre of the San Diego Mission sent Menzies

. . . a branch in bloom of the *Cassia* [*Parkinsonia aculeata* L.] which I conceivd had been originally brought here from Mexico as I believe all the genus are tropical plants. He sent me also a quantity of fruit [*Simmondsia californica* Nutt.] in Kernels which he said were the natural produce of this Country, they were about the size of small kidney beans & in their taste somewhat like bitter Almonds; to these he ascribed many virtues . . . but what was most pleasant to me, he sent along with them some of the Plants that produced them, which were immediately planted in the frame on the quarter deck & I have the pleasure to add were brought alive to England & placd in his Majesty's Royal Garden at Kew, & as there were many other Plants growing on shore . . . which appeard new & ornamental, I employd two men this & the following day in digging them up & planting them in the same frame, till all the vacant space was filled up with such plants as were likely to be a valuable acquisition to the same royal collection.⁵

The expedition left San Diego on December 8, 1793.

The next collector to visit the south was Paolo Emilio Botta on the ship *Heros* (McKelvey 1955). His interests were primarily in collecting birds and reptiles for the Museum of Natural History in Paris but he did collect a few plants. Botta visited Santa Barbara, San Pedro, Los Angeles, and San Diego from January 1827

to August 1828. Of interest are his observations on the introduced mustard in the vicinity of Los Angeles

. . . Leaving the prairies we met with only a forest of mustard, with stems higher than a rider's head, and forming what seemed like dense walls on both sides of the way. In the last few years this plant has become a formidable scourge in a part of California. It has invaded the fine pastures and threatens to extend over the entire country. The inhabitants might have fought this enemy at the outset by exterminating in their entirety the first troublesome plants; but, neglecting to do so, the pest has grown in a manner scarcely to be corrected by such a small population. Even fire has proved ineffectual. When the stalk is dry enough to burn it has already sown a great part of its seed, and fire only makes the soil more suitable for the reproduction of the plant which it was intended to destroy.⁶

David Douglas, the collector for the Royal Horticultural Society, made one expedition to southern California in 1831 (McKelvey 1955; Davies 1980). Douglas had arrived in Monterey by ship from Fort Vancouver on December 22, 1830. During the next 18 months he explored the coast region from Fort Ross to Santa Barbara. Unfortunately, his journals of this period were lost and we have records only from his extensive correspondence with Hooker. In the end of April 1831 he left Monterey for the south following the trail of the missions—Soledad, San Antonio, San Miguel, San Luis Obispo, La Purissima, and Santa Ynez to Santa Barbara—arriving in the middle of May and returning to Monterey in late June. On November 23, 1831 he wrote Hooker:

My whole collection of this year in California, may amount to five hundred species, a little more or less. This is vexatiously small, I am aware; but when I inform you that the season for botanizing does not last longer than three months, your surprise will cease. Such is the rapidity with which spring advances . . . the plants bloom here only for a day. The intense heats set in about June, when every bit of herbage is dried to a cinder. The facilities for travelling are not great, whereby much time is lost; this, as a matter of course, is the case in all new countries. It would require at least three years to do anything like justice to the Botany of California, and the expense is not the least of the drawbacks.⁷

In this same letter Douglas wrote:

Since I began this letter, Dr. Coulter, from the Central States of the Republic of Mexico, has arrived here, with the intention of taking all he can find to De Candolle at Geneva. He is a man eminently calculated to work, full of zeal, very amiable and I hope may do much good to Science. As a salmon-fisher he is superior even to Walter Campbell, of Islay, Esq., the Izaak Walton of Scotland; besides being a beautiful shot with a rifle, nearly as successful as myself!⁸

Thomas Coulter was thus eminently qualified to be the first botanist to travel overland between Santa Barbara and San Diego, and also the first to cross the desert to the Colorado River (Coville 1895; McKelvey 1955). It is interesting to look at his path and the time it took him on what must have been a strenuous journey. He left Monterey March 10, 1832, reaching Santa Barbara after 16 days on April 6; on the 23rd he was at San Gabriel; on April 30 he was at Pala probably travelling between the San Bernardino and the Santa Ana Mountains; leaving Pala on April 30 he arrived at the ford on the Colorado River eight days later on May 8, having travelled by way of San Felipe and Carrizo Creek. He remained at the river for nine days and returned to Santa Barbara on July 5, by essentially

the same route. It was probably on the return trip that he made side-trips to San Diego, San Luis Rey, San Pedro, and Pueblo (Los Angeles). This Irish botanist well deserved commemoration in *Romneya coulteri* Harv. and *Pinus coulteri* D. Don.

Thomas Nuttall came overland to the Columbia River with the Wyeth Expedition, spent two winters in Hawaii, and in March 1836 came to California where he travelled by boat south from Monterey to Santa Barbara remaining there much of April, and collecting 65 species of plants including the type specimens of *Paeonia californica* Nutt., *Cercocarpus betuloides* Nutt. and *Rhus laurina* Nutt.⁹ Two species were collected at San Pedro and 44 at San Diego where he arrived on April 16th for a stay of 24 days. The San Diego collections contained the type specimen of the new genus and species *Isomeris arborea* Nutt., and the types for *Clematis lasiantha* Nutt. and *Calandrinia maritima* Nutt. (Coville 1899; McKelvey 1955).

Richard Henry Dana mentions him frequently in *Two Years Before The Mast*:

I had left him quietly seated in the chair of Botany and Ornithology, in Harvard University, and the next I saw of him, was strolling about San Diego beach, in a sailor's pea-jacket, with a wide straw hat, and barefooted, with his trowsers rolled up to his knees, picking up stones and shells.¹⁰

He boarded the *Alert* for the return east around Cape Horn. The ship's crew were puzzled as to why a rich man should be dressed as he was and come to such a remote place. An old salt who had seen a bit of life ashore replied to them

You don't know anything about them craft. I've seen them colleges, and know the ropes. They keep all such things for cur'osities, and study 'em, and have men a'purpose to go and get 'em. The old chap knows what he's about. He a'n't the child you take him for. He'll carry all these things to the college, and if they are better than any that they have had before, he'll be head of the college. Then, by-and-by, somebody else will go after some more, and if they beat him, he'll have to go again, or else give up his berth. That's the way they do it. This old covey knows the ropes. He has worked a traverse over'em, and come 'way out here, where nobody's ever been afore, and where they'll never think of coming.¹¹

Richard Brinsley Hinds, the surgeon-naturalist on the voyage of the *Sulphur*, visited Santa Barbara, Buenaventura, San Pedro, and San Diego during the month of October 1839, the fourth botanical visit to San Diego (McKelvey 1955). George Barclay was the official collector (Raven 1964). Hinds described the vegetation of southern California:

As characteristic peculiarities of the region may be mentioned, its great aridity, general scarcity of trees, superior prevalence of cactae, compositae, and euphorbiaceae, great number of plants with lactescent juices, and with fragrant foliage, the frequent development of the flowers and leaves at different periods, and the general small range of its species. The negative features consist in the scarcity of ferns, mosses, and fungi, none of which exist in the southern part, except perhaps the latter during the rains. Lichens, with sickly aspects, occasionally cling to the trees or rocks.¹²

William Gambel was the first collector to arrive overland, entering southern California with the Workman party through Cajon Pass and reaching Los Angeles in 1841 (McKelvey 1955). Several collections were made around Los Angeles, San Gabriel, San Pedro, and Santa Barbara. Noteworthy were eight specimens

from Catalina Island. Gambel was primarily an ornithologist, and we remember him with Gambel's quail.

Significant collections were made by John Charles Fremont, who had been "indoctrinated" by John Torrey with directions for collecting and preserving plant specimens (McKelvey 1955; Twisselmann 1967). On April 14, 1844, the Fremont Expedition crossed the Tehachapi Mountains into the desert where they described Joshua trees and creosote bush. Their route led them through the Antelope Valley where they came upon

fields of flowers . . . which consisted principally of the rich orange-colored California poppy, mingled with other flowers of brighter tints . . . nightshade, and . . . buckwheat . . . attracted our attention. . . .¹³

On the 17th they reached Elizabeth Lake, continued along the base of the San Gabriel Mountains, camping near Littlerock, ascending Cajon Pass, and then going north and east following the Mojave River, reaching the Nevada line probably about May 2, 1844. They collected the type specimens of *Nicolettia occidentalis* Gray, *Franseria dumosa* Gray [*Ambrosia dumosa* (Gray) Payne], *Anisocoma acaulis* T. & G., *Hymenoclea salsola* T. & G., *Coleogyne ramosissima* Torr., *Lepidium fremontii* Wats., *Chaenactis fremontii* Gray, and *Oxystylis lutea* Torr. & Frem.

The last collections of the Mexican and colonial period in California were made by Norman Bestor with the Emory Expedition (McKelvey 1955). On November 25, 1846, they entered California at the ford below the mouth of the Gila River. They made their way across the sand dunes to the Alamo River, which they followed to the Salton Sink, then moved around the southern end to Carrizo Creek, up Vallecito Creek to San Felipe and Warner's Ranch. Emory's report has comments on the vegetation to this point but ceased after this since the Mexicans were still in control in the south. On December 4th the "Army of the West" moved to the "rancheria of San Isabel," on the 5th to the "rancheria Santa Maria," and on the 6th met the enemy at San Pasqual. There were two more battles, one on January 8, 1847, at the ford of the San Gabriel River, another on January 9th on the elevated land between the Rio San Gabriel and Rio San Fernando, in both of which the Californians were defeated. Emory was then ordered to San Diego from where he sailed on January 25. His "Reconnaissance" ends with a botanical comment:

The season of the year at which we visited the country was unfavorable to obtaining a knowledge of its botany. The vegetation, mostly deciduous, had gone to decay, and no flowers nor seeds were collected. The country generally, is entirely destitute of trees. Along the principal range of mountains are a few live oaks, sycamore and pine. . . . Wild oats every where cover the surface of the hills, and these, with the wild mustard and carrots, furnish good pasture. . . .¹⁴

THE TRANSITION YEARS (1848-1870)

The discovery of gold and statehood had significant influence on botanical collecting in California. Important for the south were collections made on the Mexican Boundary surveys and the Pacific Railroad surveys.

Noteworthy among the collectors was Charles Christopher Parry, the botanist

on the Emory boundary survey (McKelvey 1955). Parry joined the expedition at San Diego in July 1849, having come west by ship from New Orleans to Panama and then up the coast. On the 11th of September he left San Diego and made a round trip to the mouth of the Gila River. Unfortunately, the specimens collected were lost in transit by boat to the east coast, presumably by a fire in Panama. In 1850 he went overland as far as Monterey. In the spring of 1850 and 1851 he collected around San Diego and along the western end of the boundary as far east as San Felipe, obtaining the type specimens of *Cereus emoryi* Engelm. [*Bergerocactus emoryi* (Engelm.) Britt. & Rose], *Cereus engelmannii* Parry [*Echinocereus engelmannii* (Parry) Lem.], *Opuntia parryi* Engelm., and *Echinocactus cylindraceus* Engelm. [*Ferocactus acanthodes* (Lem.) Britt. & Rose]. Parry left California in 1851 not to return for 25 years.

George Thurber, botanist with the Mexican Boundary and other surveys, collected between the Colorado River and the coast from late 1851 to July 1852 (McClintock 1965; Thomas 1969). Samuel Washington Woodhouse collected for the Sitgreaves Expedition, which crossed the Salton Sink to San Felipe and went by way of Santa Ysabel to San Diego in 1851 (Brendel 1880a). From July 1853 to January 1854, Adolphus Lewis Heermann and William Phipps Blake were with the Williamson Survey from Tulare to the mouth of the Gila and return to San Diego (Twisselmann 1967). In November 1854 to the end of May 1855 Heermann was the naturalist on the Parke Expedition surveying from San Francisco to Los Angeles and by way of Cajon Pass and Soda Lake to the mouth of the Gila and return to San Diego (Brendel 1880a; Palmer 1928; Thomas 1969). His associate, Thomas Antisell, geologist and naturalist, was responsible for the first published list of southern California plants, *Synoptical Table of Botanical Localities*, that included 104 species from "Los Angeles, San Gabriel and San Bernardino plains"¹⁵ and ten from the deserts of the Colorado (Kelly and Burrage 1928; Thomas 1969). John Milton Bigelow, a Boston physician and correspondent with George Engelmann, was the botanist with the Pacific Railroad Survey led by Amiel Weeks Whipple in 1853–54 on which he was joined by William Phipps Blake, who had been the geologist on the Williamson Survey (Jepson 1962; Kelly 1929; Thomas 1969). John Strong Newberry collected with the Ives Expedition along the Colorado River in 1857–58 and found the type of bigcone spruce [*Pseudotsuga macrocarpa* (Vasey) Mayr] between Banner and Julian (Britton 1893; Thomas 1969).

Several army posts supported surgeon-naturalists. In 1853 Leander Ransom made the first collections at Fort Tejon (Twisselmann 1967) to be followed by János Xántus who collected 122 plants for the Smithsonian while stationed there in 1857–58. Asa Gray honored him with *Solanum xanti* Gray (Feleky 1936; Gray 1861; Hume 1942; Twisselmann 1967). George Henry Horn made additional collections at Fort Tejon in 1862–64.

John Jeffrey, for whom Jeffrey pine [*Pinus jeffreyi* Grev. & Balf. in A. Murr.] was named, travelled across the desert from San Diego to Yuma in early 1854 and disappeared on the return trip. Any collections he made were presumably lost (Brewer 1880; Coville 1897; McClintock 1965).

The State Geological Survey was organized under Josiah Dwight Whitney in 1860. James Graham Cooper, geologist, was with the survey from December 1860 to April 1862, collecting plants in coastal San Diego, San Pedro, Santa Barbara, and on the coastal islands. In 1861 he collected at Camp Cady in the central

Mojave Desert and in Cajon Pass and the Colorado Valley near Fort Mohave (Brewer 1880; Hume 1942). George Henry Horn collected for the State Geological Survey at Yuma and Warner's Ranch (Brewer 1880; Essig 1931). In 1860 William Henry Brewer was appointed assistant in the botanical department of the survey and during the next four years explored extensively throughout the state. His journal published under the title of *Up and Down California (1860-64)* is a classic (Brewer 1949). He returned east in 1864 by way of Nicaragua to become professor of agriculture at the Sheffield Scientific School at Yale where he collaborated with Watson and Gray in the preparation of the two volume *Botany of California*. Many collectors throughout the state were responsible for checking distributions and contributing to that publication which became the standard reference for the west coast.

Henry Nicholas Bolander was the state botanist after Brewer resigned in late 1864 and until 1873 botanized throughout the state coming as far south as the Cuyamaca Mountains and San Felipe Canyon (Brewer 1880; Jepson 1898).

In addition to the organized expeditions and surveys there were many individual collectors. One of these, John Boardman Trask, described as physician and surgeon, chemist, mineralogist, seismologist, geologist, paleontologist, and botanist, trained at Yale and arrived in San Diego in November 1849 en route to the gold rush. He served briefly as state geologist in 1853-54 and was responsible for the introduction of *Lavatera assurgentiflora* Kell. from Anacapa Island (Jepson 1934a). William Allen Wallace of Los Angeles sent specimens to Asa Gray in 1854 and later. Asa Gray designated his collection from the "Island of Catalina, off San Pedro, California" as the type of what he called *Solanum xanti* var. *wallacei* Gray [*Solanum wallacei* (Gray) Parish] (Brewer 1880; Hollombe 1988a). Edward Palmer was in San Diego in 1861 (McVaugh 1956); in 1865 John Torrey collected plants at Santa Barbara where he had been sent as an assayer of the United States assay office at New York (Rodgers 1942; C. F. Smith 1976); Alphonso Wood collected from San Diego to the Oregon border in 1866 (Brewer 1880).

Collections of plants that had not been taken to Europe were sent to Asa Gray, John Torrey, George Engelmann, and Sereno Watson for identification and description of new species. With the founding of the California Academy of Natural Sciences in San Francisco in April 1853, later to become the California Academy of Sciences, this practice continued to some extent, but Albert Kellogg, one of the founders of the Academy, began to describe some of the new plants that he collected primarily in the north and also in travels along the coast as far south as San Diego (Greene 1887).

COMING OF AGE (1870-1930)

John Gill Lemmon arrived in Sierra Valley (Sierra County in the northern Sierra Nevada) after the Civil War, sending plants to Bolander who forwarded them to Asa Gray (Jepson 1933b; Rodgers 1944). Parry returned to the state in May 1876 and he and Lemmon conceived a plan to collect from the San Bernardino Mountains to the Columbia River (Parish 1909b; Jones 1930b). They were joined briefly by Edward Palmer and made their headquarters at Crafton, a ranch east of Redlands, where they collected *Chorizanthe parryi* Wats. They

travelled through San Gorgonio Pass to the western borders of the Colorado Desert, collecting at Arroyo Blanco (Whitewater) and Agua Caliente (Palm Springs). As Parry rode along the alluvial fan of Whitewater Canyon he collected the type of *Phacelia parryi* Torr. and seed to send to England. *Condalia parryi* Weberb. [*Condaliopsis parryi* (Torr.) Suesseng.] was found in Morongo Canyon; *Pinus parryana* Engelm. [*Pinus quadrifolia* Parl. ex Sudw.] was collected along what is now the upper Pines to Palms Highway (State Hwy. 74); *Lilium parryi* Wats. was collected in mid-altitude moist shaded canyons of the San Jacinto and San Bernardino Mountains as well as 17 other plants named for Parry. Collections were made by Lemmon, Parry, and Palmer through Cajon Pass to the desert base of the San Bernardino Mountains as far as the Mojave River finding *Gilia parryae* Gray [*Linanthus parryae* (Gray) Greene], *Gilia lemmonii* Gray [*Linanthus lemmonii* (Gray) Greene] and the type of the monotypic genus *Lemmonia* Gray. On May 29, 1876, Parry, Palmer, Lemmon, and eleven friends ascended San Bernardino Peak via Mill Creek. In July Bear Valley was visited via City Creek to Holcomb Valley and two days were spent making collections that included the types of *Allium parryi* Wats. [*Allium fimbriatum* Wats. var. *parryi* (Wats.) Ownbey & Aase.] and *Calyptridium parryi* Gray. Lemmon returned later that year to Sierra Valley by way of Santa Barbara. It is perhaps at that time that he met Sara Allen Plummer, a local plant collector, whom he later married. In 1879 he was made botanist for the State Board of Forestry.

Edward Lee Greene, an ordained Episcopalian, arrived in California in 1874, to serve at a parish in Vallejo. He wrote Ludwig Kumllein, his former teacher, from Vallejo in September 1874

What a time I have had since I saw you, ranging over the wonderful plains . . . and the cactus desert . . . and now at last have been six months on the Pacific coast. I have naturally added somewhat to my knowledge of botany and have a splendid collection of western plants. . . .¹⁶

On the occasion of the celebration of his 70th birthday he recalled one of his early journeys in southern California, travelling on foot from San Diego to Santa Fe, New Mexico, in 1877 when there was no railroad and only a stage. Before leaving San Diego he visited an old cemetery at the Mission where he found a white marble slab with the inscription "Edward L. Greene" and dates of birth and death. That Greene had died at Dr. Greene's own age and he wondered if this were an omen. Fortunately, it was not. On this trip he collected plants and carried only a portfolio and a few changes of socks, sending his money ahead by stage in postal money-orders.¹⁷ In 1885 and 1886 he was back in the south making some of the first collections on the Channel Islands.

Parry continued to collect in the south from Santa Monica to the Colorado River. During the winter he was headquartered at Colton and with a railroad pass was able to collect in the Mojave desert and east to Yuma. From December 1881 to March 1882 he was in San Diego where he was joined by Marcus E. Jones who had arrived by steamer from Wilmington, California.

Charles Russell Orcutt arrived from Vermont in 1879 and later became a professional natural history collector (Jepson 1929c; Rodgers 1944). For ten years beginning in 1884 he published a monthly journal, *The West American Scientist*, with contributions from Parry, Greene, Eastwood, and others. In 1901 Orcutt published his *Botany of Southern California, A Checklist of plants, ferns, marine*

algae, etc., known to occur in San Diego, Riverside, San Bernardino, Orange and Los Angeles counties, California, and North Baja California, with notes and descriptions of many species, ALL THIS IN 172 PAGES. He was described as simple-minded and naive in business but devoted to field work. Ewan described him as “a zealous worker of poor judgment.”¹⁸

Another contemporary was Daniel Cleveland, who arrived in San Diego in May 1869 (Jepson 1929*b*). He was particularly interested in ferns but made many other collections, including the types of *Penstemon clevelandii* Gray, *Audibertia clevelandii* Gray [*Salvia clevelandii* (Gray) Greene], *Dodecatheon clevelandii* Greene and the genus *Clevelandia* Greene ex Brandegee [*Orthocarpus* Nutt.]. In spite of ill health, or perhaps because of it, he took good care of himself, dying at 91 years of age in 1929. He helped found the San Diego Society of Natural History and in 1890, with the aid of Orcutt, tried to establish a “museum on a *scale greater than the National Museum.*”¹⁹

Edward Palmer was collecting in San Diego in 1888 and the first *Contribution from the United States National Herbarium* was a “List of Plants Collected by Edward Palmer in 1888 in Southern California,” prepared by George Vasey and Joseph Nelson Rose.

To the north near San Bernardino Samuel Bonsall Parish arrived in 1872 with his brother, William Fletcher Parish, after a prospecting trip from Kansas (Jepson 1932; Rodgers 1944). Parish purchased a California ranch which during the next 48 years was a haven for botanists. In the early days he was visited by Edward Palmer, Edward Lee Greene, Cyrus Guernsey Pringle, and George Engelmann. Lemmon was brought to the ranch by William Greenwood Wright, entomologist and amateur botanist. Parry, wintering nearby at Colton, was a frequent visitor and companion on many collecting expeditions. Asa Gray and Mrs. Gray visited the Parishes in 1885. The Grays had come by what he called a “long circumbendibus”²⁰ route through Mexico City and Orizaba and by rail to San Diego. They found the coast too cool and damp and went to spend two nights with Parish. In later days Charles Sprague Sargent, Michael Schuck Bebb, Volney Spaulding, Hugo de Vries, Ellsworth Huntington, Joseph Nelson Rose, Harvey Monroe Hall and his wife Carlotta, William Skinner Cooper, Willis Linn Jepson, and many others were made welcome. Many of these joined Parish in collecting trips.

Parish had built a specially strong wagon, with a low-hung body and broad tires adequate to hold hay, barley, water, food, and camping gear, and used it for collecting west to the sea beaches, east in the San Jacinto and San Bernardino mountains, and into the deserts both north and east. Jepson published a biography in 1932 that included a general list of Parish localities and a bibliography of his more than 100 scientific papers, notes, and reviews. It is unfortunate that the Parish manuscript on the Mojave flora was destroyed in the Berkeley fire in 1923. Parish was careful to document his writings with herbarium specimens and amassed a large herbarium that was sold to Stanford University in 1917. His extensive library was purchased by Pomona College. Parish’s comments on nomenclature in his letter to Greene during the 1890s period of the American codists are enlightening:

It seems to me that all the time and learning that have of late been so lavishly bestowed on studies of nomenclature produce a very inadequate return. However interesting they

may be historically they do not advance our knowledge of things in the least. If one discovers that a spade was first called by some other name it does not assist us in understanding the nature of a spade.

Names seem to me to be mere tools, handles by which we get hold of things—the most convenient and certain are the best. . . .

Rules which lead to changes may be proposed by anyone, but they are mere individualisms or provincialisms until they are adopted by representatives not of a single country, but of the whole botanical world.²¹

Parish, without question, was a major figure not only in southern California botany but throughout the state. As Jepson stated

It may truly be said that Samuel Parish was much beloved. His happy wit, his irresistible good humor and sound sense, his appreciative sympathy with common joys and sorrows engaged deeply the affections of all botanists who knew him. In him and for him Californians have only prideful and happy memories.²²

Another major contributor to the botany of the period was Mary Katharine Layne Curran Brandegee who, after the death of her first husband Hugh Curran in 1874, received an MD from the University of California in 1878. She joined the California Academy of Sciences about 1880 and studied botany under Herman Behr. In 1883 she became curator of botany at the Academy. In the next year, with the aid of railroad passes, she began her extensive collections going from Bakersfield to Lancaster, Amboy, and Yucca. The following year she was in Santa Barbara, Gaviota, Ventura, and San Luis Rey. In 1889 she married Townshend Stith Brandegee who had first come to California in 1886–87 to collect tree trunks for the wood collection at the American Museum of Natural History. He had been a student of Eaton at Yale, where he graduated in engineering. He collected on the Channel Islands, visiting Santa Cruz and Santa Rosa islands in 1888 (Ewan 1942; Setchell 1926).

The Brandegee honeymoon was overland on foot botanizing from San Diego to San Francisco. In 1894 Katharine left the Academy and the couple moved to San Diego where they established their residence

. . . high on the mesa above the town, with a brick building to house their herbarium and a small but well-stocked botanical garden. . . .²³

From 1894 to 1908 the Brandegees made collections in southern California. In 1902–03 they prepared a *List of Plants in Western San Diego County*, containing about 1000 names. Unfortunately, this was never published (John Thomas, personal communication). Between 1890 and 1908 they published their own journal, *Zoe*. Marcus E. Jones thought very highly of Katharine Brandegee writing

. . . I am prepared to say that she was the greatest woman botanist that ever lived, a genuine genius for research. . . . Her worst sin was excessive caution, which led her to put off publication too long.²⁴

Setchell also thought highly of Katharine Brandegee writing

She was thorough in analysis, extremely critical in her attitude, and keen even to sharp as to her comment on the published errors of others.²⁵

Jones described the couple

Brandegee should have been born a woman and Mrs. Brandegee should have been a man. So their marriage could hardly help being a success.²⁶

When Katharine Brandegee moved to San Diego in 1894 her place at the Academy was taken over by Alice Eastwood, who had been a curatorial assistant for the previous two years (Wilson 1953*a*, 1955). Alice Eastwood had botanized in San Diego as well as in Los Angeles, Pasadena, and Sawtelle in the winter and spring of 1890–91 and had met the Brandegees on a visit to the Academy that same year. It is interesting to note that Albert Kellogg in August 1853 had said

Resolved that we highly approve the help of females in every department of natural history and earnestly seek their cooperation.²⁷

Alice Eastwood continued her botanizing and publications alone and with many companions. After John Thomas Howell joined the Academy staff they collected together throughout California and elsewhere (Thomas 1969). There are records of collections in southern California from 1893 on. She died in 1953 at the age of 94.

Alice Eastwood had a genuine interest in people. She encouraged young and old in collection and critical study of plants. She loved music and was a regular attendee at the symphony. When my children were born in Berkeley she crocheted for each a butterfly pattern jacket, an indication of her thoughtfulness.

Marcus Eugene Jones collected in southern California from 1882 until his death in 1934 in an automobile accident (Lenz 1986). He met the Brandegees in July 1902 and as noted earlier he was particularly impressed by Katharine Brandegee. I knew Jones in the winter of 1930–31 when I carried on research on Umbelliferae at the Pomona College herbarium. My desk was next to that of Jones and he had long had an interest in the umbels.

Ewan has described his first meeting with Jones

When I met Marcus E. Jones the first time in June of 1931 he was late returning to Cruikshank Hall from a morning tennis game with Pomona College students. Very hot from the sport, his frayed and not-a-little-dirty clothes in disarray, he stepped into the herbarium work room gay and eager, to settle down over *Astragalus* collections of mine for three hours. His contagious vitality was very appealing to students about the campus, who in addition took keen delight in hearing his yarns of days in the open in the Great West.²⁸

Jones had special instructions for his expeditions

you must travel light, with the least toggery. So I take a first-class post-card camera, a strong tripod, a color screen, a fine field glass, a barometer, a pick with long handle, a pocket folding Coddington lens, a heavy pair of overalls with plenty of pockets, a wool shirt, a cork hat, heavy socks, and tennis shoes, and let the dudes have the rest.²⁹

Keck also mentioned his collecting habits

He made collecting trips always alone in his old model-T Ford wearing a black suit, vest and all, and a brown woolly cap with a large visor and looking still larger because within it was a bath sponge, larger than a baseball, to absorb the perspiration from his bald head.³⁰

He was a man with few inhibitions. His first question each day to me and to other women students was invariably a very personal one—"Have you had a bowel movement today?" We carried on an infrequent correspondence beginning in 1928 until his death. His letters invariably began "Dear Mrs. Razzle-Dazzle: Are there any little razzle-dazzles yet?"

Willis Linn Jepson succeeded to Greene's position when Greene left for Washington in 1895 (Ewan 1947; Heckard et al. 1967). Ewan wrote that Jepson

determined from the day that he met Albert Kellogg in the rooms of the California Academy of Sciences on old Market Street in San Francisco that henceforth he would devote his life to California botany.³¹

He collected throughout the state and had more influence on western botany than any other of his generation with numerous students, who collected for him, and particularly with the publication of his Manual. From various accounts it was evident that he had a following of adoring young lady students although he never married. He enjoyed the acquaintance of some as is indicated in the intriguing and poetic dedication of volume two of the Flora

ABBY LOUISA WATERMAN—Daughter of the desert and of a race of sages, penetrating observer of the arid wastes of mesa and playa, protector of the desert men against the errant flow of circumstance, to her is inscribed this dedication page of the second volume of the Flora of California by the botanical traveler, who, driven from pitiless ranges and stone-dry hidden valleys in the year nineteen hundred and fifteen, found elemental shelter at Waterman Ranch in the heart of the Mohave.³²

The years from the 1880s to the 1920s were exciting ones for botany in California. LeRoy Abrams in 1904 published his master's thesis from Stanford University, the *Flora of Los Angeles and Vicinity* (Wiggins 1957). A "Supplemental Edition" was issued in 1911 and reprinted in 1917. He crisscrossed southern California on mule or burro, in a wagon, or on foot, from Santa Barbara to Yuma, from Needles to San Diego, the Salton Sea to the mountain tops of San Geronio, San Antonio, San Jacinto and Pinos, collecting sets of ten to earn money. His doctorate thesis, submitted to Columbia University in 1910, was *A Phytogeographic and Taxonomic Study of the Southern California Trees and Shrubs*. Harvey Monroe Hall lived near Riverside where he knew Parish (Babcock 1934). His master's thesis in 1899 at the University of California was the *Botanical Survey of the San Jacinto Mountains*, still an important document. His doctorate thesis in 1906 at the same institution was on the *Compositae of Southern California*. Millspaugh and Nuttall in 1923 published the *Flora of Santa Catalina Island*, based on the 1884 collection by William Scrugham Lyon and Joseph Cook Nevin, the collections of Blanche Trask on the island from 1895 to 1907, and those of the Brandegees from 1884 to 1916, among others (Barnhart 1965; Humphrey 1961; Jepson 1931a). Anstruther Davidson, a dermatologist, made early studies of the plants of southern California beginning in 1890 and extending over a period of approximately forty years (Essig 1931; Thomas 1969). He was visited by Joseph Ewan shortly before his death at 72 years in 1932:

He sat in his easy rocker—the old cherry-wood sort with stationary base—and between draughts on his made-as-needed cigarettes, foiled rather carelessly and twisted in the manner of taffy wrappers, he told of other days and California botany. His terse phrases concerning Hasse, Greata, Parish and others were flavored with personal understanding and accented with measured strokes of his goatee.³³

Three months prior to Ewan's interview, Davidson had been struck by a car and the resulting injuries probably caused his death. Jepson wrote after Davidson's death

Plant lovers are fundamentally pedestrians and we feel impelled to urge upon our fellow botanists such precautions for safety as would be needed in another age, euphemistically called 'savage,' where life was daily in danger from carnivorous animals or some similar menace.³⁴

The names of many other collectors are well known: Hermann Edward Hasse, surgeon at the Soldiers Home in Sawtelle with a particular interest in lichens (Barnhart 1965); Rufus Davis Alderson in San Diego County from 1891 to 1896 (Moran 1962); Harvey Pierce Chandler in western San Diego County from 1901 to 1912 (Jepson 1929*b*); Joseph Cook Nevin, a retired missionary, collecting in Los Angeles, Orange, Ventura, and San Diego counties from 1878 until 1913 and a companion of Lyon on the first botanical visit to San Clemente Island in April 1885 (Jepson 1931*a*); Louis Augustin Greata and William Allen Wallace collecting near Los Angeles and elsewhere (Desmond 1977; Hollombe 1988*a*); Susan Gabriella Stokes, a biology teacher in Salt Lake City who retired to San Diego, collected occasionally with Jones (Howell 1955); Mary Fisk Spencer came from Munich to Palm Springs each year until the outbreak of World War I when she moved to San Diego and from 1915 to 1928 collected some 3000 specimens in the more arid regions of San Diego County (Grover 1941; Jaeger 1949); Frederick Morris Reed, an orange grower and botanist in Riverside who had his own herbarium building on his ranch and was secretary of the Riverside Botanical Club (Reed 1940); Ralph Hoffmann, director of the Santa Barbara Museum of Natural History, fell to his death on San Miguel Island while on a collecting expedition (C. F. Smith 1952, 1976); Ivan Murray Johnston, a student at Pomona College, tested the new biology instructor, Philip Alexander Munz, on a four day hiking and camping trip in the San Gabriel Mountains north of Claremont in August 1917, and Johnston's first major paper was entitled *The flora of the pine-belt of the San Antonio Mountains of southern California* (Correll 1961; Munz 1961); Frank Warrington Peirson and his sister Mabel, residents of Altadena from 1902 to 1951, maintained a private herbarium with extensive collections from the San Gabriel Mountains and elsewhere in southern California (Munz 1952); Ira Waddell Clokey, a mining engineer and plant pathologist (Mason 1950); Marshall French Gilman, grandson of the first white couple to settle in San Geronio Pass at what is now Banning, and a companion of Coville on the Death Valley Expedition (Munz 1945); Ethel Bailey Higgins with collections primarily in San Diego County for over 80 years and curator of botany at the natural history museum for almost 30, died in 1963 at age 96 (Lindsay 1963); Edmund Carroll Jaeger, an authority on the California desert, died in 1983 at the age of 96 (Barnhart 1965; Smith 1978); Ira Loren Wiggins whose doctorate thesis in 1929 from Stanford University, a *Flora of San Diego County, California: a phytogeographic and taxonomic study*, was unfortunately never published because of the depression and the fact that Munz was already working on the *Manual of the Botany of Southern California* (John Thomas, personal communication). The list goes on and on.

Collections multiplied as transportation improved—railroads, then good roads, automobiles, and improved maps; as specialists became available for identifications; as floras and check-lists appeared; as academies of sciences flourished and botanical societies were organized. The early Riverside Botanical Club, for example, drew people from as far away as Daggett and Claremont and made forays into the mountains. Their meeting date was set on the "Friday evening nearest

the full moon for the benefit of members from out of town, from October to June of each year."³⁵ Not a bad idea!!

The limited collections made prior to 1850 have been augmented by the activities of many professionals and amateurs. Some were medical doctors, some entomologists, others ornithologists. Their contributions have formed the basis for current studies of the rich and diverse flora of southern California.

A PARTIAL LIST OF PLANT COLLECTORS IN
SOUTHERN CALIFORNIA, 1793-1930

- Abrams, LeRoy (1874-1956)*. Barnhart 1965; Ewan and Ewan 1981; Ferren 1985; Higgins 1959; Keck 1959; McGregor 1965; Munz 1935; C. F. Smith 1952; Stafleu and Cowan 1976; Thomas 1969; Twisselmann 1967; Wiggins 1957.
- Adams, John Quincy (1826-1911)*. Hollombe, personal communication.
- Alderson, Rufus Davis (1858-1932)*. Barnhart 1965; Higgins 1959; Moran 1962; Munz 1935; Thomas 1969.
- Allen, Oscar Dana (1836-1913)*. Hollombe, personal communication.
- Alverson, Andrew Halstead (1845-1916)*. Barnhart 1965; Ewan 1963; Stafleu and Cowan 1976.
- Angier, Belle Sumner (Mrs. Walter L. Burn) (1870-1948)*. Higgins 1959; Hubbs and Whitaker 1972.
- Anthony, Alfred Webster (1865-1929)*. Barnhart 1965; Ewan and Ewan 1981; Hall 1902; Mearns 1907; Raven 1963.
- Antisell, Thomas (1817-1893)*. Barnhart 1965; Brendel 1880a; Brewer 1880; Desmond 1977; Ewan and Ewan 1981; Higgins 1959; Kelly and Burrage 1928; Munz 1935; Thomas 1969.
- Asher, Robert Haley (1868-1953)*. Hollombe, personal communication.
- Babcock, Ernest Brown (1877-1954)*. Barnhart 1965; Keck 1959; Millspaugh and Nuttall 1923; Stebbins 1955.
- Baker, Charles Fuller (1872-1927)*. Barnhart 1965; Essig 1931; Ewan and Ewan 1981; Higgins 1959; Millspaugh and Nuttall 1923; Mollis 1971; Stafleu and Cowan 1976; Thomas 1969.
- Baker, Milo Samuel (1868-1961)*. Barnhart 1965; Cantelow and Cantelow 1957a; Ewan and Ewan 1981; Keck 1959; Mason 1962; C. F. Smith 1976; Thomas 1969.
- Barber, John H.* Barnhart 1965.
- Barclay, George (fl. 1830s-1840s)*. Barnhart 1965; Brewer 1880; Desmond 1977; Higgins 1959; Raven 1964; Thomas 1969.
- Barrows, David Prescott (1873-1954)*. Barrows 1967.
- Bartlett, Mrs. A. P. (1830-1887)*. Brewer 1880; C. F. Smith 1962, 1976.
- Berq, N. K. (fl. 1904)*. Hollombe, personal communication.
- Bestor, Norman Scott (1820-1904)*. Barnhart 1965; Brewer 1880; Ewan and Ewan 1981; Higgins 1959; McKelvey 1955; Thomas 1969.
- Bethel, Ellsworth (1863-1925)*. Barnhart 1965; Cockerell 1926; Ewan and Ewan 1981.
- Bigelow, John Milton (1804-1878)*. Barnhart 1965; Brendel 1880a; Brewer 1880; Ewan and Ewan 1981; Geiser 1937; Jepson 1962; Keck 1959; Kelly 1929; McClintock 1965; Munz 1935; Stafleu and Cowan 1976; Thomas 1969.
- Bingham, Caroline P. Lord (Mrs. Richard Fitch Bingham) (b. 1831-1932)*. Barnhart 1965; C. F. Smith 1952, 1976.
- Blake, William Phipps (1826-1910)*. Barnhart 1965; Brendel 1880a; Brewer 1880; Ewan and Ewan 1981; Geiser 1937; MacDougal 1914; Merrill 1929; Thomas 1969.
- Blasdale, Walter Charles (1871-1960)*. Barnhart 1965; Keck 1959.
- Blochman, Ida May Twitchell (Mrs. Lazar E. Blochman) (1854-1888)*. Barnhart 1965; Cantelow and Cantelow 1957a; Crum 1931; Munz 1935; C. F. Smith 1976.
- Bolander, Henry Nicholas (1831-1897)*. Barnhart 1965; Brewer 1880; Ewan 1955; Higgins 1959; Jepson 1898; Keck 1959; Munz 1935; Rodgers 1944; Stafleu and Cowan 1976; Thomas 1969.
- Botta, Paolo Emilio (1802-1870)*. Alden and Ifft 1943; Barnhart 1965; Brewer 1880; Ewan 1955; McKelvey 1955; Munz 1935; Palmer 1928.
- Brandege, Mary Katharine Layne Curran (1844-1920)*. Barnhart 1965; Cantelow and Cantelow 1957a; Ewan 1942, 1953, 1955; Herre (undated); Higgins 1959; Hoover 1970; Jones 1929a, 1935; Keck 1959; Millspaugh and Nuttall 1923; Munz 1935; Setchell 1926; C. F. Smith 1952, 1976; Stafleu and Cowan 1976; Thomas 1969; Thorne 1967; Twisselmann 1967.

- Brandegee, Townshend Stith (1843–1925)*. Barnhart 1965; Cantelow and Cantelow 1957*a*; Ewan 1942, 1953, 1955; Ewan and Ewan 1981; Higgins 1959; Humphrey 1961; Jones 1929*a*; Keck 1959; Millspaugh and Nuttall 1923; Munz 1935; Peattie 1929; Raven 1963; Rodgers 1944; Setchell 1926; C. F. Smith 1952, 1976; Stafleu and Cowan 1976; Thomas 1969; Thorne 1967; Twisselmann 1967.
- Brannan, Samuel Jr. (ca. 1845–1931)*. Twisselmann 1967.
- Braunton, Ernest (1867–1945)*. Barnhart 1965; Desmond 1977; Munz 1935.
- Brewer, William Henry (1828–1910)*. Barnhart 1965; Brewer 1880, 1949; Chittenden 1929; Ewan 1953, 1955; Ewan and Ewan 1981; Hoover 1970; Keck 1959; Munz 1935; Rodgers 1944; C. F. Smith 1952, 1976; Thomas 1969.
- Burbeck, Anna (Annie) Leora (Mrs. Albert Carleton Copeland) (1861–1935)*. Barnhart 1965; Higgins 1959.
- Burlew, Fred E. (1863–1954)*. Barnhart 1965; Munz 1935.
- Burt-Davy, Joseph* see Davy, Joseph Burt.
- Bush, Mrs. Anne E. (ca. 1826–1909)*. Twisselmann 1967.
- Camp, Charles Lewis (1893–1975)*. Hollombe, personal communication.
- Canby, William Marriott (1831–1904)*. Anonymous 1892; Barnhart 1965; Ewan and Ewan 1981; Keck 1959; Rose 1904.
- Chandler, Harley Pierce (1875–1918)*. Barnhart 1965; Higgins 1959; Jepson 1929*b*; Keck 1959; Munz 1935.
- Chase, Mary Agnes Merrill (1869–1963)*. Barnhart 1965; Henson 1981; Keck 1959; Millspaugh and Nuttall 1923; C. F. Smith 1952.
- Child, Henry Stephen (1884–1885/88)*. Munz 1935.
- Cleveland, Daniel (1838–1929)*. Barnhart 1965; Brewer 1880; Higgins 1959; Jepson 1929*b*; Munz 1935; Rodgers 1944; Thomas 1969.
- Clokey, Ira Waddell (1879–1950)*. Barnhart 1965; Ewan and Ewan 1981; Keck 1959; Mason 1950; Munz 1935; Reifschneider 1964; Thomas 1969.
- Cobb, Benjamin (1863–1928)*. Hollombe, personal communication.
- Connor, William James (1854–1922)*. Hollombe, personal communication.
- Cooper, James Graham (1830–1902)*. Anonymous 1902; Barnhart 1965; Brewer 1880; Cooper 1870; Ewan 1955; Ewan and Ewan 1981; Grinnell 1930; Higgins 1959; Hume 1942; Keck 1959; Munz 1935; Palmer 1928; Thomas 1969.
- Cooper, Sarah Paxon Moore (Mrs. Elwood Cooper) (1824–1908)*. Barnhart 1965; Brewer 1880; Munz 1935; C. F. Smith 1952, 1976.
- Coulter, Thomas (1793–1843)*. Alden and Ifft 1943; Barnhart 1965; Brendel 1880*b*; Brewer 1880; Coats 1969*a*, 1969*b*; Coville 1895; Desmond 1977; Eastwood 1939; Ewan 1955; Higgins 1959; Hoover 1970; McClintock 1965; McKelvey 1955; Munz 1935; C. F. Smith 1952, 1976; Stafleu and Cowan 1976; Thomas 1969.
- Coville, Frederick Vernon (1867–1937)*. Barnhart 1965; Cantelow and Cantelow 1957*a*; Ewan and Ewan 1981; Humphrey 1961; Keck 1959; Munz 1935; Stafleu and Cowan 1976; Thomas 1969; Twisselmann 1967.
- Curran, Mary Katharine*, see M. K. Brandegee.
- Davidson, Alice Jane Merritt (1859–post 1918)*. Barnhart 1965; Millspaugh and Nuttall 1923; Thorne 1967.
- Davidson, Anstruther (1860–1932)*. Barnhart 1965; Desmond 1977; Essig 1931; Ewan 1934; Hall 1902; Keck 1959; Millspaugh and Nuttall 1923; Munz 1935; Thomas 1969; Thorne 1967; Twisselmann 1967.
- Davidson, George (1825–1911)*. Barnhart 1965; Desmond 1977; Dugan 1930; Twisselmann 1967.
- Davy, Joseph Burt (1870–1940)*. Barnhart 1965; Desmond 1977; Keck 1959; Munz 1935; Stafleu and Cowan 1976; Twisselmann 1967.
- Deane, George Clement (1854–1930)*. Allen 1930; Barnhart 1965; Higgins 1959.
- Douglas, David (1798–1834)*. Alden and Ifft 1943; Barnhart 1965; Brendel 1879, 1880*b*; Brewer 1880; Coats 1969*a*, 1969*b*; Davies 1980; Desmond 1977; Eastwood 1939; Ewan 1955; Ewan and Ewan 1981; Harvey 1947; Hoover 1970; Keck 1959; McClintock 1965; McKelvey 1955; Morwood 1973; Munz 1935; Palmer 1928; C. F. Smith 1952, 1976; Stafleu and Cowan 1976; Thomas 1969.
- DuBarry, Beekman (1828–1901)*. Barnhart 1965; Brewer 1880.
- Dudley, William Russel (1849–1911)*. Abrams 1930; Barnhart 1965; Hoover 1970; Humphrey 1961; Keck 1959; Munz 1935; Thomas 1969; Twisselmann 1967.

- Dunkle, Meryl Byron (1888–)*. Keck 1959.
- Dunn, George Washington (1814–1905)*. Barnhart 1965; Essig 1931; Higgins 1959; Jepson 1934f; Munz 1935; C. F. Smith 1952, 1976.
- Dutton, Harry Arnold (1873–1957)*. Hollombe, personal communication.
- Eastwood, Alice (1859–1953)*. Barnhart 1965; Dakin 1954; Ewan 1953, 1955; Ewan and Ewan 1981; Higgins 1959; Hoover 1970; Keck 1959; Millspaugh and Nuttall 1923; Munz 1935; Reifschneider 1964; C. F. Smith 1952, 1976; Stafleu and Cowan 1976; Thomas 1969; Thorne 1967; Twisselmann 1967; Wilson 1953a, 1953b, 1955.
- Elmer, Adolph Daniel Edward (1870–1942)*. Barnhart 1965; Keck 1959; Munz 1935; C. F. Smith 1952.
- Emory, William Hemsley (1811–1887)*. Barnhart 1965; Brendel 1880a; Carey 1931; Ewan and Ewan 1981; Geiser 1937; Higgins 1959; McKelvey 1955; Munz 1935; Stafleu and Cowan 1976.
- Engelmann, George (1809–1884)*. Barnhart 1965; Brendel 1880a; Ewan and Ewan 1981; Humphrey 1961; Keck 1959; Moore 1931; Munz 1935; Stafleu and Cowan 1976.
- Epling, Carl Clawson (1894–1968)*. Barnhart 1965; Ewan and Ewan 1981; Higgins 1959; Keck 1959; Mathias 1970.
- Estes, Frederick Earle (1902–1977)*. Barnhart 1965; Keck 1959.
- Evermann, Barton Warren (1853–1932)*. Barnhart 1965; Cantelow and Cantelow 1957a; Ewan and Ewan 1981; Raven 1963.
- Fitch, Augustus (1794–1874)*. Barnhart 1965; Brewer 1880.
- Fleming, Guy L. (d. 1958)*. Hubbs and Whitaker 1972; Munz 1935.
- Forbes, Charles Noyes (1883–1920)*. Anonymous 1921; Barnhart 1965; Higgins 1959; Munz 1935.
- Fosberg, Francis Raymond (1908–)*. Barnhart 1965; Higgins 1959; Keck 1959.
- Fox, Charles James, Jr. (1875–1933)*. Hollombe, personal communication.
- Fremont, John Charles (1813–1890)*. Barnhart 1965; Brendel 1880a; Brewer 1880; Coats 1969a; Eastwood 1939; Ewan 1955; Ewan and Ewan 1981; Keck 1959; McClintock 1965; McKelvey 1955; Munz 1935; Nevins 1931; Parish 1908; Reifschneider 1964; C. F. Smith 1976; Stafleu and Cowan 1976; Thomas 1969; Twisselmann 1967.
- Froebel, Julius (1805–1893)*. Barnhart 1965; Ewan and Ewan 1981; Geiser 1937; Munz 1935.
- Gambel, William (1821–1849)*. Barnhart 1965; Beidleman 1958; Brendel 1880a; Brewer 1880; Ewan 1955; Ewan and Ewan 1981; Harshberger 1899; Higgins 1959; McKelvey 1955; Millspaugh and Nuttall 1923; Munz 1935; Palmer 1928; C. F. Smith 1952, 1976; Thomas 1969; Thorne 1967.
- Geis, Helen Dudu (ca 1873–1955)*. Hollombe, personal communication.
- Gilman, Marshall French (1871–1944)*. Barnhart 1965; Ewan and Ewan 1981; Munz 1945; Palmer 1928; Thomas 1969.
- Grant, Adele Gerard Lewis (1881–1964)*. Barnhart 1965; Cantelow and Cantelow 1957a; Ferren 1985; Keck 1959; Munz 1935.
- Grant, George Barnard (1849–1917)*. Barnhart 1965; Ewan and Ewan 1981; Higgins 1959; Keck 1959; Locke 1931; Millspaugh and Nuttall 1923; C. F. Smith 1952; Thomas 1969; Thorne 1967.
- Gray, Asa (1810–1888)*. Barnhart 1965; Brendel 1880a; Dupree 1959; Ewan and Ewan 1981; Genzmer 1931; Humphrey 1961; Keck 1959; Munz 1935; Rodgers 1944; C. F. Smith 1952; Stafleu and Cowan 1976; Thomas 1969.
- Greata, Louis Augustin (1857–1911)*. Barnhart 1965; Desmond 1977; Munz 1935.
- Greene, Edward Lee (1843–1915)*. Barnhart 1965; Bartlett 1916; Brewer 1880; Cantelow and Cantelow 1957a; Ewan 1953, 1955; Ewan and Ewan 1981; Greene 1880, 1881; Higgins 1959; Humphrey 1961; Jepson 1931b; Jones 1929b; Keck 1959; McIntosh 1983; McVaugh 1983; Munz 1935; Reifschneider 1964; Ricker 1914; Rodgers 1944; C. F. Smith 1952, 1976; Stafleu and Cowan 1976; Thomas 1969; Twisselmann 1967.
- Gregg, Josiah (1806–1850)*. Barnhart 1965; Brendel 1880a; Ewan and Ewan 1981; Ghent 1931; Munz 1935.
- Gregory, Eva G. Austin (Mrs. Lyman) (1845–1902)*. Hollombe, personal communication.
- Griffuhs, David (1867–1935)*. Barnhart 1965; Desmond 1977; Ewan and Ewan 1981; Higgins 1959; Humphrey 1961; Keck 1959; Stafleu and Cowan 1976; Taylor 1935.
- Grinnell, Fordyce Jr. (1882–1943)*. Barnhart 1965; Cantelow and Cantelow 1957a; Munz 1935.
- Hall, George Reuben (1878–1957)*. Barnhart 1965.
- Hall, Harvey Monroe (1874–1932)*. Babcock 1934; Barnhart 1965; Cantelow and Cantelow 1957a;

- Ewan and Ewan 1981; Ferren 1985; Hall 1902; Higgins 1959; Keck 1959; Millspaugh and Nuttall 1923; Munz 1935; C. F. Smith 1952; Stafleu and Cowan 1979; Thomas 1969; Twisselmann 1967.
- Harford, William George Washington (1825–1911)*. Barnhart 1965; Brewer 1880; Essig 1931; Ewan 1953; Jepson 1933c; Munz 1935; C. F. Smith 1976.
- Harwood, Aurelia Squire (1863–1928)*. Hollombe, personal communication.
- Harwood, Robert Daniel (1899–)*. Barnhart 1965; Munz 1935.
- Hasse, Hermann Edward (1836–1915)*. Barnhart 1965; Hall 1902; Millspaugh and Nuttall 1923; Munz 1935; Stafleu and Cowan 1979.
- Hayes, Sutton (fl. 1858, d. 1863)*. Barnhart 1965; Desmond 1977; Higgins 1959; Munz 1935.
- Hazard, Barclay (fl. 1880s–1890s)*. Barnhart 1965; C. F. Smith 1976.
- Heermann, Adolphus Lewis (1827–1865)*. Barnhart 1965; Brendel 1880a; Brewer 1880; Ewan 1953; Ewan and Ewan 1981; Geiser 1937; Hume 1942; Munz 1935; Palmer 1928; Stone 1907; Thomas 1969; Twisselmann 1967.
- Heller, Amos Arthur (1867–1944)*. Barnhart 1965; Cantelow and Cantelow 1957a; Ewan and Ewan 1981; Keck 1959; Millspaugh and Nuttall 1923; Munz 1935; Stafleu and Cowan 1979; Twisselmann 1967.
- Heller, Emily Gertrude Halbach (1869–1939)*. Barnhart 1965; Ewan and Ewan 1981.
- Henshaw, Henry Wetherbee (1850–1930)*. Barnhart 1965; Ewan and Ewan 1981; Nelson 1932; Palmer 1930.
- Herre, Albert William Christian Theodore (1868–1962)*. Barnhart 1965; Stafleu and Cowan 1979.
- Higgins, Ethel Phoebe Bailey (1866–1963)*. Barnhart 1965; Lindsay 1963; Thomas 1967.
- Hinds, Richard Brinsley (1812–1847)*. Alden and Ifft 1943; Barnhart 1965; Brewer 1880; Desmond 1977; Eastwood 1939; Ewan 1955; Higgins 1959; McKelvey 1955; Stafleu and Cowan 1979; Thomas 1969.
- Hitchcock, Albert Spear (1865–1935)*. Barnhart 1965; Chase 1936; Ewan and Ewan 1981; Humphrey 1961; Keck 1959; C. F. Smith 1952; Stafleu and Cowan 1979.
- Hitchcock, Charles Leo (1902–1986)*. Barnhart 1965; Higgins 1959; Keck 1959; Munz 1935; Stafleu and Cowan 1979.
- Hoffmann, Ralph (1870–1932)*. Barnhart 1965; Cantelow and Cantelow 1957a; Ferren 1985; Keck 1959; Munz 1935; C. F. Smith 1952, 1976; Twisselmann 1967.
- Horn, George Henry (1840–1897)*. Barnhart 1965; Brewer 1880; Essig 1931; Ewan 1955; Howard 1932; Kelly and Burrage 1928; Munz 1935; Twisselmann 1967.
- Howell, John Thomas (1903–)*. Barnhart 1965; Cantelow and Cantelow 1957a; Ewan and Ewan 1981; Higgins 1959; Keck 1959; Reifschneider 1964; Stafleu and Cowan 1979; Thomas 1969.
- Hubby, Frank W. (fl. 1890s)*. Barnhart 1965; Munz 1935; C. F. Smith 1976.
- Ives, Joseph Christmas (1828–1868)*. Stafleu and Cowan 1979.
- Jaeger, Edmund Carroll (1887–1983)*. Barnhart 1965; Ewan 1987; Munz 1935; Reifschneider 1964; L. M. Smith 1978; Stafleu and Cowan 1979.
- Jared, Lorenzo Dow (1832–1909)*. Barnhart 1965; Cantelow and Cantelow 1957a; Hoover 1970; Jepson 1934c; C. F. Smith 1976.
- Jasper, Mrs. William (ca. 1854–1925)*. Cantelow and Cantelow 1957a; Twisselmann 1967.
- Jeffrey, John (1826–1854)*. Barnhart 1965; Brewer 1880; Coats 1969a, 1969b; Coville 1897; Desmond 1977; Eastwood 1939; Ewan 1955; Ewan and Ewan 1981; McClintock 1965; Munz 1935; Stafleu and Cowan 1979; Thomas 1969.
- Jepson, Willis Linn (1867–1946)*. Barnhart 1965; Cantelow and Cantelow 1957a; Constance 1947, 1974; Ewan 1947; Fritz 1948; Hall 1902; Heckard et al. 1967; Higgins 1959; Humphrey 1961; Keck 1948, 1959; Mason 1947; Millspaugh and Nuttall 1923; Munz 1935; Rodgers 1944; C. F. Smith 1952; Stafleu and Cowan 1979; Thomas 1969; Thorne 1967.
- Johnston, Ivan Murray (1898–1960)*. Barnhart 1965; Correll 1961; Ewan and Ewan 1981; R. A. Howard 1961; Johnston 1919; Munz 1935, 1961; Stafleu and Cowan 1979; Thomas 1969.
- Jones, Marcus Eugene (1852–1934)*. Barnhart 1965; Cantelow and Cantelow 1957a; Ewan and Ewan 1981; Higgins 1959; Howell 1965; Jepson 1934e; Jones 1965; Keck 1959; Lenz 1986; Munz 1935; Reifschneider 1964; Rodgers 1944; Stafleu and Cowan 1979; Thomas 1969.
- Jones, Philip Mills (1870–1916)*. Hollombe, personal communication.
- Keck, David Daniels (1903–)*. Barnhart 1965; Higgins 1959; Keck 1959; Munz 1935; Raven 1963; Stafleu and Cowan 1979.

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FOOTNOTES

- ¹ McKelvey (1955), p. 51.
- ² l. c.
- ³ *ibid.*, p. 52.
- ⁴ l. c.
- ⁵ *ibid.*, p. 53.
- ⁶ *ibid.*, p. 361.
- ⁷ Davies (1980), p. 159.
- ⁸ *ibid.*, p. 160.
- ⁹ Coville (1899).
- ¹⁰ McKelvey (1955), p. 618.
- ¹¹ *ibid.*, p. 619.
- ¹² *ibid.*, p. 652.
- ¹³ *ibid.*, p. 872.
- ¹⁴ *ibid.*, p. 1008.
- ¹⁵ Parish (1909b), footnote, p. 4.
- ¹⁶ Rodgers (1944), p. 55.
- ¹⁷ Ricker (1914), pp. 111–112, reprint p. 3.
- ¹⁸ Ewan (1950), p. 136.
- ¹⁹ Rodgers (1944), p. 293.

- ²⁰ *ibid*, p. 236.
- ²¹ Jepson (1932), p. 432.
- ²² *ibid*, p. 437.
- ²³ Setchell (1926), p. 160.
- ²⁴ Lenz (1986), p. 201.
- ²⁵ Setchell (1926), p. 165.
- ²⁶ Ewan (1953), p. 55.
- ²⁷ Wilson (1953), p. 58.
- ²⁸ Ewan (1950), p. 86.
- ²⁹ *ibid*, p. 86–87.
- ³⁰ Keck in Lenz (1986), p. 179.
- ³¹ Ewan (1947), pp. 414–415.
- ³² Jepson (1936), dedication to volume.
- ³³ Ewan (1934), p. 124.
- ³⁴ Jepson (1934*b*), p. 120.
- ³⁵ Howell (1929), p. 214.