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THE CLAREMONT HERBARIUM

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In the administration building of the Rancho Santa Ana Botanic Garden are housed two herbaria: (1) that of Pomona College with somewhat over 300,000 sheets and (2) that of the Botanic Garden with about 200,000. These two collections are in the process of being integrated and duplicates are being removed. The two will thus constitute a single herbarium, which I think of as "The Claremont Herbarium." I believe it worth while to tell briefly something of the history and makeup of this collection of one-half million specimens. Each sheet is stamped with the name of the institution to which it legally belongs. The whole is housed in about 500 steel cases, of which about one-half belong to the Botanic Garden. The others were recently purchased by Pomona College under a grant from the National Science Foundation.

I. THE POMONA COLLEGE HERBARIUM.

A. *The C. F. Baker Herbarium.*—When I arrived in Claremont in 1917 to teach botany at Pomona College I found an already sizable herbarium which had been presented by Charles Fuller Baker and which represented the result of his botanical activity before he went to the Philippine Islands to become Dean of the College of Agriculture at Los Baños. The Baker Herbarium contained first of all his own collections which had been gathered rather widely in the Americas. A graduate of the Michigan Agricultural College at East Lansing, Michigan, he had been trained under Professor C. F. Wheeler and had begun field operations as a student. In 1897 he was in the Alabama Biological Survey with S. F. Earle and S. M. Tracy. In 1898–9 he was botanist in an expedition to the Santa Marta Mountains of Colombia. In 1899–1901 he taught in St. Louis, Missouri, and gathered plants in that region. In 1902 he was on the staff of the Colorado Agricultural and Mechanical College at Fort Collins, Colorado, and made important collections thereabout and in southern Colorado and northern New Mexico, again partly with Earle and Tracy. He then went to Stanford University to work for his master's degree and his herbarium grew with many representatives from Santa Clara County, California, and from Mt. Tamalpais, as well as from western Nevada. From 1904 to 1907 he was at the Estación Agronómica, Las Vegas, Cuba. There he put up many thousands of sheets of Cuban plants which even now have been only partly identified, but which give a notable representation of the species of at least part of that island. In 1908 he spent a year at the Museu Goeldi at Pará, Brazil, and made quite extensive

collections. He had visited Nicaragua in 1903 and taken many hundreds of specimens. In that same year he had been on the faculty of Pomona College to which he returned in 1909, but his collections from the vicinity of Claremont are rather limited. He distributed sets made by T. S. Brandegee about San Diego, but there are relatively few collections of his own from Claremont and the neighboring San Antonio Canyon. In 1918 he left for the Philippine Islands where he spent the remainder of his life. By his own efforts and those of his trainee Julian Hernandez (a Cuban whose life he is supposed to have saved and who worked for him thenceforth), he amassed altogether tremendous collections of insects, fungi, lichens, mosses and higher plants. His own specimens represent the floras of quite diverse regions.

But during this period of twenty years he had exchanged widely as can be seen by the C. F. Baker collections in many large herbaria of America and Europe. He obtained in return extensive Mexican collections made by such men as T. S. Brandegee, C. A. Purpus, A. W. Anthony, as well as Gaumer, Ehrenberg and others; West Indian plants (Jamaica, Puerto Rico, etc.) by Sintenis; scattering South American sheets by Sello, Schomburgk, Fiebrig; many from Florida by Curtiss, Fredholm; many eastern and southeastern species of the United States by H. H. Bartlett, A. A. Heller (especially from Texas, which state is represented also by Lindheimer, Reverchon); New Mexican by Wootton; Wyoming by Aven and Elias Nelson; other western ones by L. N. Goodding, L. R. Abrams and many others.

In the same way he assembled much European material, apparently through such agencies as the Berlin Botanical Exchange and Keck of Austria, so that Germany, France, Switzerland, Austria and Italy are pretty well represented. I may insert here that more recently we have obtained many other, particularly more northern specimens, which are important in understanding Linnean names and are useful for comparing Old and New World material of circumpolar complexes. Baker got also some quite surprising exchanges from Asia (Assam, Burma, the Himalaya, etc.) through the Botanical Garden at Calcutta. One occasionally finds specimens taken by J. D. Hooker and Thomson. There is also in the Baker Herbarium considerable Philippine material, especially ferns, which he had obtained from his friend E. B. Copeland, whom he was to succeed at Los Baños.

The Baker Herbarium as above constituted consisted of probably something less than 100,000 sheets, unmounted, but arranged in the Engler and Prantl sequence and tied up in neat bundles with the names of the families and genera on the outside. It was housed in tight wooden cases and had been kept fumigated by my predecessor D. L. Crawford. There were about two cases of local mounted material which had been assembled largely by Professor Crawford and his students, one of whom was Ivan M. Johnston. I began immediately adding to this local herbarium and, as we collected and duplicates became available, we began new exchanges or carried on those begun by Crawford. The most notable of the latter was with J. H. Maiden of Sydney, Australia, for material from New South Wales. This exchange seemed important, since so many woody plants of that region are in cultivation in California.

B. The Marcus E. Jones Herbarium.—This was purchased for Pomona College in 1923 by Miss Ellen B. Scripps of La Jolla, California, through the collabora-

tion of her attorney Mr. J. C. Harper. Marcus Jones had begun collecting in Iowa as a student in the 1870's so that when his herbarium came to Claremont, it represented half a century of work on his part. A student at Iowa (later Grinnell) College, Mr. Jones had assembled a good representation of the prairie flora of his region, although his labels left much to be desired. In 1878 he went to Colorado and made sets for sale, securing very desirable material, much of it from high altitudes and with printed, hence more legible labels. These and later sets were widely sold to eastern and European herbaria. From that time he worked largely in the West, moving to Salt Lake City in 1880. There is not a single western state in which he did not do considerable work and at a time when the flora was not much interfered with by man. For example, he was in Pasadena, California, in 1882 when that city was largely a crossroads with orange groves and a few stores. It was called the Indiana Colony.

Jones travelled often by railroad pass and took along a bicycle, on which he loaded his plant presses as he walked through areas like Death Valley and other mining regions. His travels extended into Mexico a number of times, going as far south as Colima, Coahuila, Baja California. His own collecting centered in the Great Basin and the Rocky Mountains, but was from the prairies of Iowa and Texas westward to the Pacific Coast. Altogether his herbarium had about 100,000 numbers, a single number often consisting of several duplicates, many of which I used as exchange.

Jones, like Baker, exchanged widely and had an excellent representation of European species. From North America he had notable collections such as those by Cusick in Oregon, Elias and Aven Nelson in Wyoming, John Macoun in western Canada, Elihu Hall in Texas, E. L. Greene in eastern New Mexico, Metcalfe in New Mexico, Townsend and Barber in Chihuahua, Leiberg and Sandberg in the Northwest—to name but a few.

After moving to Claremont, when his herbarium came here, Mr. Jones lived for ten years during which he was actively collecting in California, Baja California and Texas, adding many thousands of sheets from those areas. Altogether he is supposed to have described about 1,000 new taxa during his many years as a working botanist, so that his herbarium is rich in types. Each sheet in his original herbarium, i.e. up to 1923, is stamped with his name.

When I came to Pomona College we called the herbarium the Baker Herbarium, but after adding an equally large collection by the purchase of the Jones Herbarium, it was decided to use the name Pomona College Herbarium. This means that some sheets are stamped with the one name, others with the latter.

I was on the staff of Pomona College for twenty-seven years and during that time I did what collecting I could as permitted by a heavy teaching and committee schedule and I did fairly wide exchanging. For example, through Mrs. Roxana S. Ferris of Stanford we traded about 15,000 sheets, we receiving early Dudley and Lamb, A. D. E. Elmer, L. R. Abrams and later Wiggins, Ferris and other collections. Other exchanges were with the University of California, the California Academy of Sciences, University of Arizona, University of Colorado, University of Wyoming, University of Montana, University of Oklahoma, University of Texas, etc. as well as with large eastern herbaria and with individuals like I. W. Clokey, George E. Osterhout and many others. In this way we added perhaps 50,000 to 60,000 sheets.

Since his coming to Claremont in 1944, Dr. Lyman Benson, the present curator of the Pomona College Herbarium, has given his own collection of many thousand specimens, with an especially strong representation from Kern and Lake counties, California.

II. THE RANCHO SANTA ANA BOTANIC GARDEN HERBARIUM.

Since the Botanic Garden was founded for the study of the native plants of California, the herbarium at first was to consist of specimens collected within the state. But it soon became evident that plants of adjoining states had to be represented to make understandable those from California. As a student at Stanford University Dr. Carl B. Wolf had begun collecting through the Southwest while travelling about for the study of the genus *Rhamnus* on which he prepared his doctoral thesis. His private herbarium of 4,000 sheets was presented to the Botanic Garden and thus began the out-of-state concept. When I joined the Garden staff in 1946, the herbarium consisted of 31,000 mounted sheets and there were about as many unmounted duplicates for exchange. Since then exchanges have been with more than sixty different herbaria in all parts of the world. After moving to Claremont in 1951 and having the Pomona and Garden collections under one roof, more and more attention has been given to building a representative North American herbarium, emphasizing, of course, temperate North America and the western part of that, above all the state of California. Quite early in its history, the Garden had purchased several hundred sheets of Lake County, California, plants from J. W. Blankinship. Later we were able to buy others like a rather large C. G. Pringle Mexican set from the Philadelphia Academy. Miss Mabel Peirson of Pasadena presented the Frank W. Peirson Herbarium, noteworthy for its southern California representation and the eastern slopes of the Sierra Nevada. Mr. J. Rupert Barneby deposited here his *Astragalus* collection of about 4,000 sheets, many with very carefully drawn dissections. Dr. Peter H. Raven, for a short time on the Garden staff, has been very active in our behalf.

In more recent years the present curator of the Garden herbarium, Dr. Robert F. Thorne, has emphasized not only Upper and Lower California, our southeastern states, and the middle part of the country, but also the Pacific Islands, Australia, New Guinea, New Caledonia, Malaysia, Philippines, Indonesia, etc. He has been aided in this by Dr. Sherwin Carlquist, for both have botanized widely in the above areas. Through their efforts a real attempt has been made to have tropical families and genera well represented, especially for phylogenetic and teaching purposes. A special effort has been made to obtain representation of nearly all families of vascular plants, including wood, pollen, fruit and seeds as well as herbarium sheets. As a whole the herbarium has become quite cosmopolitan in scope, but always retaining California and our western states in focus. I may say that Dr. Thorne agrees with this last concept and has himself added many thousands of numbers to the local and western collections.

III. THE PRESENT CONDITION OF THE CLAREMONT HERBARIUM.

As has been brought out in the above pages, the herbarium of half a million sheets is strongest in temperate western North America, but has a fairly good

representation of other parts of our country and a less ample one of north-western Mexico. It has outstanding collections of certain groups:

- (1). *Cactaceae of North America* north of Mexico, in which group Dr. Lyman Benson has long worked.
- (2). *Onagraceae of the New World*—the accumulation of many years through my own work and that of Dr. Peter Raven.
- (3). *Polemoniaceae*, through the interest of Marcus E. Jones in earlier years and of Doctors Verne and Alva Grant (Day) in later ones.
- (4). *Astragalus* of North America, beginning with the widely gathered collections by Marcus E. Jones in the preparation of his treatment of the genus and supplemented by the very fine addition of 4,000 sheets by Mr. Rupert Barneby assembled in writing his recent monograph.
- (5). *West American species of Iris*. Through the efforts of Dr. Lee W. Lenz and his student Professor Homer Metcalfe we have one of the most extensive and representative herbaria of western *Iris*.
- (6). *North American Ranunculus*. Another group studied through the years by Dr. Lyman Benson.
- (7). *North American species of Cupressus*. Dr. C. B. Wolf carried on, as one of the major research projects of the Botanic Garden, an extensive study of this group.
- (8). *Australian vascular plants*. Doctors Thorne and Carlquist and their student Mr. Mark Parratt have assembled through their collections and exchanges ten to fifteen thousand sheets, particularly rich in Tremandraceae endemic to Australia and being revised by Mr. Parratt; Goodeniaceae and Stylidiaceae being studied by Dr. Carlquist; and rain-forest, marine and "primitive" angiosperms of special interest to Dr. Thorne.