

PARRY'S FORGOTTEN DISCOVERIES 1849-51

THE SHAW AGAVE, THE TECATE CYPRESS, AND THE ENGELMANN OAK

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Cover photographs:

Engelmann Oak (*Quercus engelmannii*), Cleveland National Forest, Alpine, California

Inset: Charles C. Parry (1823-1890) c. 1865, courtesy Wisconsin Historical Society WHS-46969 (also on facing page)

Also from San Diego Flora:

San Diego County Native Plants, 3d ed. (2011). A comprehensive color field guide to native and naturalized plants of San Diego County, incorporating the latest taxonomy from *The Jepson Manual*, 2d ed.

Parry's California Notebooks, 1849-51 (2014). A transcription of the notebooks of Charles Parry, also including letters to Dr. John Torrey, more than 200 historical and scientific footnotes, appendices, and detailed index.

San Diego County Native Plants in the 1830s, The Collections of Thomas Coulter, Thomas Nuttall, and HMS Sulphur with George Barclay and Richard Hinds (2014). Accounts of the visits of UK naturalists to San Diego County in the 1830s, with detailed footnotes and historical background.



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Figure 1. Dr. Charles C. Parry (1823-1890). Photo c.1865.

Good morning. Thank you for being here today, and thank you to Recon for hosting this event and for the rich selection of plants for sale.

I'm James Lightner, the author of these two books. *San Diego County Native Plants* is a photographic field guide to the native and naturalized plants of our county. The third edition has more than 2,000 photos and identifies around 1,400 taxa. Among the noteworthy plants are the Shaw Agave or *Agave shawii*, the Tecate Cypress or *Hesperocyparis forbesii*, and the Engelmann Oak or *Quercus engelmannii*. All three are native here and considered sensitive because of their limited occurrence or range.

Our second book is *Parry's California Notebooks 1849-51*, which was just published this year. This is an annotated transcription of the notebooks or diary of Charles Parry, the first American doctor, scientist and naturalist to survey widely in San Diego County. **Figure 1** is a picture of Parry in 1865. He came to San Diego in 1849 when he was 26.

Parry spent much of his life in Iowa. I discovered in 2013 that the Iowa State University Library had Parry's original notebooks in its archives and apparently nobody had studied them. So I obtained permission to transcribe and publish them. The librarian at Iowa State was kind to assist me, as the contents are historically significant for us here in California.

The *Notebooks* contains Parry's daily reflections on his work and observations in our area as well as about 200 historical and scientific footnotes, and also transcriptions of Parry's letters to Dr. John Torrey from the same period. Torrey was a medical doctor, chemistry professor, famous plant taxonomist, and Parry's teacher in New York.

We also publish this booklet, *San Diego County Native Plants in the 1830s*, which gives extensive background on an important decade when the territorial government secularized the California missions.

Today I'm going to talk about Parry's discovery of the three above-mentioned plants – where and when he found them, et cetera - and then discuss how and why his discoveries came to be overlooked. But first I will give some historical context.

In 1846 the Mexican-American War got underway and Americans started coming to San Diego in significant numbers. Commodore Stockton came by ship; General Kearny came overland from Santa Fe; the Mormon battalion followed Kearny, and more troops and immigrants followed.

As you know the United States won the war. In February 1848 the two nations signed the Treaty of Guadalupe Hidalgo and a great deal of territory was purchased by the USA, including all of California.

As I said a moment ago, Charles Parry came to San Diego in the summer of 1849 when he was 26. He was a medical doctor who was also a skilled botanist and geologist. *Parry's California Notebooks* starts with a letter Parry wrote to Torrey in January 1849, in which he tells Torrey he intends to join a wagon-train to California if he can't get a job with the government to go there. Like so many Americans, Parry was attracted to California by word of the Gold Rush and the fertile land and climate.

Torrey arranged a job for Parry with the US-Mexico Boundary Commission. Parry traveled by ship to Panama then crossed the Isthmus overland, then took another ship up to California, arriving in San Diego on July 13, 1849. The Commission's task was to mark the new border. Parry's superior was Major William Emory of the Army's topographic corps.

The back cover of the Parry book lists a few of the interesting adventures he wrote about while in California. I particularly enjoy his account of riding by mule from San Diego up to Monterey; his visits there around Monterey; his climbing Cuyamaca Peak to see the Sugar Pines and then camping with Indians in today's Cuyamaca State Park; venturing out southeast of Jacumba to discover the Four-leaf Pinyon Pine there; climbing Palomar Mountain alone with an Indian guide from Pauma Valley at a time when there were Grizzly Bears in San Diego County; and his trips across the Colorado Desert to Yuma and back. And of course his discovery of plants such as those that are the subject of this talk. On all Parry's expeditions he made extensive notes and collected plants.

So the Boundary Commission was tasked with fixing two points, one at the coast and one at the Colorado River, then marking a line between them. **Figure 2** is a close-up of Emory's map from the Commission's Report of the 1850s, showing the two points and the boundary line.

The first point was 3 miles south of San Diego Bay, on the south side of the Tijuana River mouth. The second point was at the junction where the Gila River flows into the Colorado River. The Colorado carried a lot of water in those days before dams and agriculture and our metropolis.

Parry worked with Emory's team here in Imperial Beach and was part of the expedition that traveled across the desert to the Colorado River in the autumn of 1849 to mark the Gila-Colorado junction. Many emigrants were moving west across the desert at the time.



Figure 2. 1850s Boundary Commission Map showing new boundary line.

After those two points were agreed with the Mexicans, the Americans had to find the azimuth and conduct astronomical surveys to mark the line. Parry was not much involved in that part of the work or in setting monuments. So he had a bit of time for exploring in 1850.

We are now able to trace Parry's botanical collections from 1849-51 by cross-referencing the *Notebooks* with the *Botany of the Boundary*, a comprehensive list of plants collected by members of the Mexican Boundary Commission, which was compiled by Torrey and published by the US government in 1859.

Discovering the Coastal Agave

Agave shawii is a rare Agave native on the coast of San Diego County and northern Baja California. Its thick triangular leaves have a beautiful green color and form attractive upward whorls. When it blooms in winter it sends a striking inflorescence straight up several feet (**Figure 3**).

We know from pages 11, 12, and 102 of the *Notebooks* that Parry discovered this coastal Agave near the mouth of the Tijuana River on August 7, 1849. He visited it again on July 15, 1850 and wrote a detailed description at that time, which is reproduced on page 12.

Unfortunately, Parry's original specimen was almost certainly lost in March 1850 along with dozens of his collections while being shipped to Torrey in New York. Parry's second collection of the Agave, from July 1850, apparently consisted of dried fruits alone. On the herbarium sheet for that collection at the Missouri Botanical Garden there is no leaf, flower, or anything but dried capsules and seeds, and the label on the sheet gives little information other than the year 1850 and Parry's name (**Figure 4**).

Looking at dates in the *Notebooks*, Parry was unable to confirm that his original specimens were lost until the end of July 1850. As he made his second collection of the Agave on July 15, he probably didn't bother to cut the spiny leaves or other parts of the plant because he still hoped his first collection would reach its destination.

There is no entry for Parry's coastal Agave in the *Botany of the Boundary*; without adequate specimens Torrey did not include it. It is unclear whether Torrey was aware of Parry's own description. Probably he never saw it, as Parry wrote in his personal notebook.

If you look up *Agave shawii* today, the authority for the species is George Engelmann from an 1875 publication. Engelmann had this to say about the plant then:

"On the arid hills which overlook the sandy strand of the Pacific in the southwest corner of California, where the boundary is marked by the initial monument, this fine species, growing together with *Cereus* [*Bergerocactus*] *emoryi*, was discovered by Dr. Parry in 1850 and a full description made. From his memoranda Messrs. Parker and Hitchcock of San Diego rediscovered it a few months ago and supplied

me with most instructive photographs and excellent specimens. Last summer Dr. Palmer collected it with immature fruit, and in November the above-named gentleman found it in full bloom and sent fresh bunches to St. Louis. This is the short history of this remarkable species, which will flourish, highly esteemed by amateurs as one of the most striking and beautiful Agaves, and commemorate, among all who love horticulture in other climes, the name of Henry Shaw, already so highly esteemed in St. Louis as the founder and donor of the Missouri Botanical Gardens, grand at present and promising a future as useful as it will be magnificent."



Figure 3. Shaw Agave near San Diego Bay, Cabrillo National Monument. Parry discovered the plant in August 1849 near the mouth of the Tijuana River and wrote a detailed description in July 1850.



Figure 4. Herbarium sheet courtesy of Missouri Botanical Garden showing Parry's sparse specimen of fruits of *Agave shawii*, collected in July 1850.

We can see from Engelmann's text why he named the Agave for Henry Shaw. We can also see that Engelmann knew of Parry's discovery. Parry and Engelmann were friends; they came to San Diego together in 1852. Some time before 1875 Parry informed Engelmann that he had found the coastal Agave and forwarded to him what Engelmann called "memoranda" on the plant. Those notes led to the collections of the 1870s that enabled Engelmann to name and describe the species.

The Tecate Cypress according to Parry and Torrey

Very near the time Parry discovered the coastal Agave, he made a difficult hike to a summit in the Otay Mountains. It was there, I believe, that he discovered the Tecate Cypress (*Hesperocyparis forbesii*).

The Tecate Cypress is a hardy, shrubby conifer that grows in a dozen or so wild populations in Southern California and northern Baja California at elevations under 5,000 feet (Figure 5). The largest known population lives on and around Otay Mountain. Like many Cypresses it grows in the wild on mafic soils but can be cultivated in other soil-types. It has a more yellow-green color and tends to be shrubbier and less resinous than *H. arizonica* and *H. guadalupensis*, with which it has been associated.



Figure 5. Tecate Cypress growing on Guatay Mountain in south-central San Diego County, elevation approximately 4,000 feet.

According to the *Notebooks*, on August 11, 1849 Parry and a few colleagues made the hike in the Otay Mountains. The route they took is unclear but they passed through several shrubs that grow in those mountains today. While Parry did not mention the Cypress in his journal that day, we can infer he collected it because on May 11, 1850, when he was up the coast in Monterey, he wrote that the fruit of the Monterey Cypress was "like a specimen I found on the cordillera east of Camp Riley [in Imperial Beach], probably the same". I should note it is also possible Parry collected the Cypress on December 9-10, 1849 while traveling west past Tecate Peak and south of the Otay Mountains.

Torrey included Parry's Tecate Cypress in the *Botany of the Boundary*. Parry's original specimen is stored at the New York Botanical Garden herbarium (**Figure 6**). Interestingly, instead of calling it a new species Torrey referred to it as an example of the existing Gowen Cypress, which grows primarily in Central California (**Figure 7**). Here is Torrey's entry:

"*Cupressus goveniana* – (Gordon in Jour. Hort. Soc. London l.c. p.295, cum icon. xylogr.) On the mountains east of San Diego, California; Parry. A shrub 6 to 10 feet high, slender, and moderately branched. Leaves as in *C. macrocarpa*, except that they are less appressed. Ster-

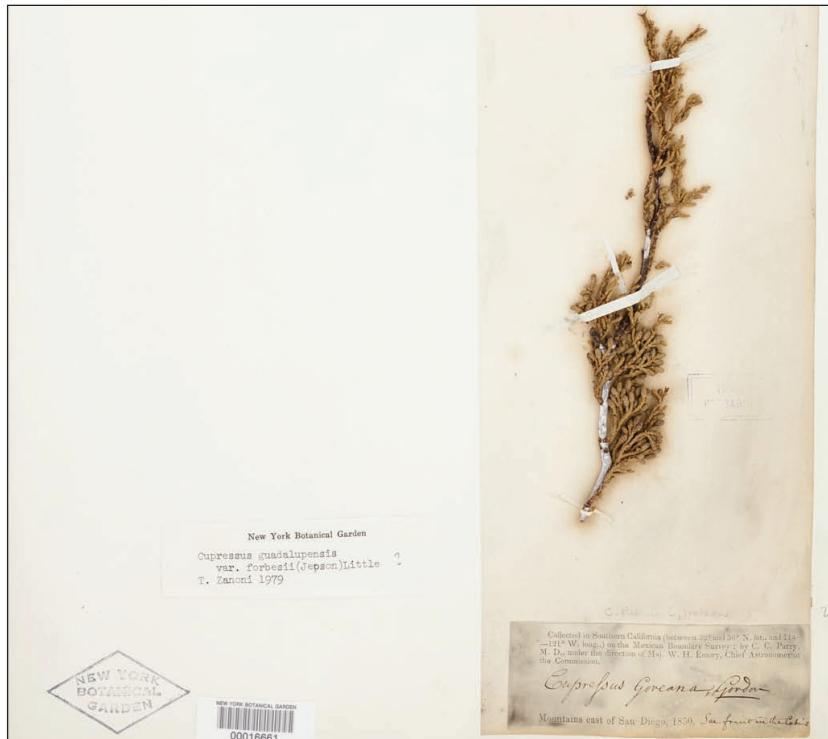


Figure 6. Herbarium sheet courtesy of New York Botanical Garden showing Parry's Cypress specimen collected in San Diego County in 1849-50.

ile aments numerous, oblong. Fruit 4 to 6 lines in diameter; scales 10, mucronate in the depressed centre. Dr. Parry thinks he has seen forms intermediate between this and the last species [*C. macrocarpa*], but none such were among his specimens."

Gordon's *C. goveniana* was based on an 1849 collection by Hartweg from the Monterey area. The Gowen Cypress and the Tecate Cypress are indeed similar in color and habit; Torrey evidently lacked information to distinguish Parry's specimen from Gordon's description of Hartweg's. Today the principal morphological differences are said to be in the bark and in the presence of pits on the leaves of Tecate Cypress. The remark "Dr. Parry thinks he has seen forms intermediate..." suggests Parry recognized the variability of the genus but did not study the Cypresses closely.

Unfortunately, once Torrey classified Parry's Tecate Cypress as *C. goveniana*, the collection disappeared to botanists of Southern California.

When we look up the Tecate Cypress today Willis Jepson is the original authority from 1923, with no prior reference. Jepson called the plant *Cupressus forbesii* after his student Charles Forbes, who collected it in Cedar Canyon on the northern side of Otay Mountain on December 30, 1907, according to the website conifers.org.



Figure 7. In the 1850s Torrey classified the Tecate Cypress (R) as synonymous with the Gowen Cypress (L). Image L courtesy L.Dittmann/calflora.

The Engelmann Oak Before and After Greene

The Engelmann Oak is a spreading, drought-tolerant tree with pale, coarse, scaly bark and flat, oblong, blue-grey leaves that grows naturally in the foothills and upland mesas of Southern California at elevations between 500 and 4000 feet (**Figure 8 and Cover photo**). In San Diego County a few old specimens grow on the western edge of the Colorado Desert, as at the base of Banner Canyon on the road to Scissors Crossing.

According to the *Notebooks*, Parry collected the Oak on June 12, 1850 while riding by mule between Ramona and Santa Ysabel. Torrey received Parry's specimen and identified it as the Sonoran Blue Oak, *Quercus oblongifolia*, which grows scattered across the American Southwest and northern Mexico. Torrey wrote this in the *Botany of the Boundary*:

"*Quercus oblongifolia* – (Torr. in Sitgreaves Report p. 173, t. 19. *Q. grisea*, Liebm. l.c. p. 171.) Mountains of the Limpio, Texas (Bigelow), and westward to the range east of San Diego, California; Parry. In Texas and western New Mexico [Arizona] this oak is commonly a shrub 6-15 feet high; but in California it sometimes attains the height of 20 or 30 feet. It has pale bark and spreading branches. The acorns vary considerably in form. To this species I refer No. 665 and 1866, Wright."



Figure 8. Engelmann Oak growing in boulders, Cleveland National Forest.

Torrey developed his earlier description of *Q. oblongifolia*, in the botany section of the Sitgreaves Report, from specimens collected in 1851 by an Army expedition that rode from Santa Fe to Yuma via the Zuni and Colorado Rivers (**Figure 9**). That Arizona collection thus post-dated Parry's Santa Ysabel collection. Here is Torrey's original description from 1853:

"*Q. oblongifolia* : folues coriaceis (perennantibus) oblongis utrinque obtusis integerrimis glabris apice muticis; fructibus sessilibus solitariis; cupula hemispherica turbinata, squamis ovatis convexis; glande ovata cupulam triplo superante obtusa cum umbone parvo conico.

Western New Mexico [Arizona]. This very neat species of live-oak I am obliged to describe as a new species, as I cannot find that it has been hitherto noticed."

In the *Botany of the Boundary* Torrey allowed for substantial variation within *Q. oblongifolia*, noting that plants tended to be larger in California, where it is found primarily on cismontane slopes that gain significant winter rainfall, and expanding the species to include what Liebmann in 1854 called *Quercus grisea*, the Gray Oak of Texas, New Mexico and eastern Arizona. Following Torrey (1796-1873), both George Engelmann (1809-1884) and Albert Kellogg (1813-1887) classified the California trees as part of *Q. oblongifolia*, though the latter authorities segregated *Q. grisea*.

Then in May 1889 - after Torrey, Engelmann and Kellogg had all died - Edward L. Greene (1843-1915) separated the California trees from *Q. oblongifolia*, classifying them as *Quercus engelmannii*, and suggested the rest of *Q. oblongifolia* belonged in *Q. grisea* (**Figure 10**). In his book *Illustrations of West American Oaks* Greene wrote:

"*Quercus engelmannii*. Bibliography: *Quercus oblongifolia*, Engelmann, Bot. Calif. ii. 96, in part; not of Torrey in Sitgreaves Report.

Description: A tree of middle size, twenty-five to forty feet high, with light-colored and rather smooth bark, a trunk from two to three feet thick, the branches spreading to form a well rounded scarcely depressed head: leaves short-stalked, oblong two or three inches long, entire, or sometimes with a few coarse teeth, obtuse or retuse at apex, rounded or slightly cordate at base, those of young shoots sometimes acutish at both ends and coarsely serrate-toothed throughout, texture coriaceous, almost without reticulation, downy-pubescent when young, glabrous when old: acorns sessile or peduncled; cup hemispherical, tuberculate; nut oblong, an inch long, lineate.

Habitat: Mountains of southern California, from the mesas east of San Diego northward to Kern County; locally known as the Evergreen White Oak, and Live Oak. Remarks: This oak appears to be exclusively Californian and peculiar to the southern portion of the State. It is quite as distinct from the true *Q. oblongifolia* (which I have already referred to as a form of *Q. undulata grisea*), as the Californian *Q. dumosa*

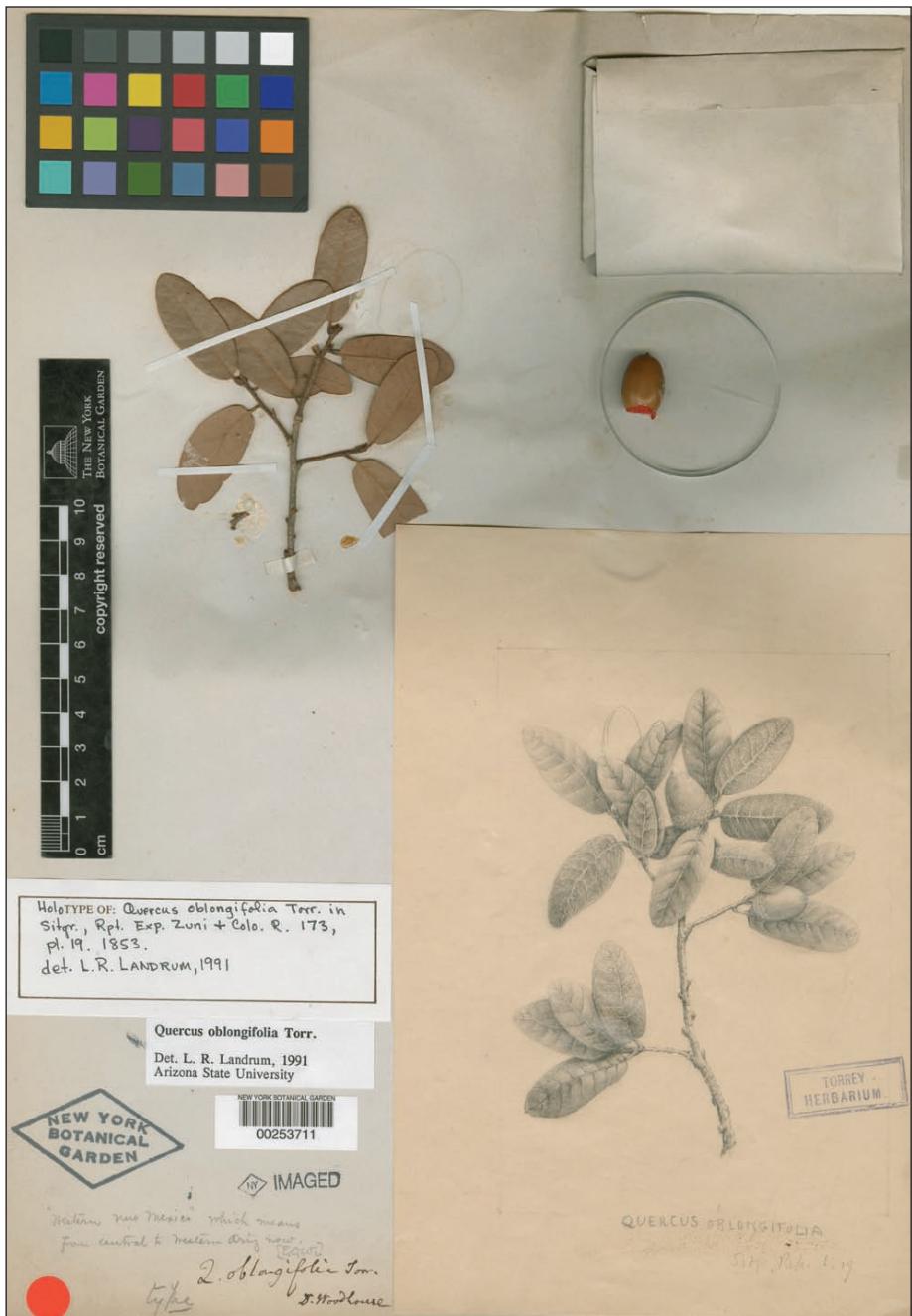


Figure 9. Type specimen for *Quercus oblongifolia*, the Sonoran Blue Oak, a species first described by Dr. John Torrey in 1853 from a collection in Arizona taken on the Sitgreaves Expedition. Courtesy NYBG Herbarium.



Figure 10. Specimen of *Quercus oblongifolia* taken by Hayes at Santa Ysabel in San Diego County in 1858. This plant was reclassified by Edward Greene in 1889 as *Quercus engelmannii*. Courtesy NYBG Herbarium.

is from its New Mexican counterpart *Q. undulata*. Its best specific character is found in the large striped acorn; those of the more easterly species with which it has hitherto been confounded being less than half as large and in no degree lineate. The lineation has been well brought out by Dr. Kellogg notwithstanding that he followed Dr. Engelmann in the confusing of the two species. The Californian tree is much larger in all its parts, and the leaves are quite commonly retuse or emarginate. The suggestion that our tree is specifically different from the original *Q. oblongifolia* was favorably entertained by Dr. Engelmann, to whose memory I dedicate it."

For his description of *Quercus engelmannii* Greene repeated much of Engelmann's description of *Q. oblongifolia* from Brewer's and Watson's *Botany of California*. Greene's "Remarks" justifying the new classification may seem bold today. His primary rationale for the species was the presence or not of stripes on acorns, a character not recognized today; discounting that trait, there was little that Torrey had not already noted. Greene implied that Engelmann would have wanted to create *Q. engelmannii* but did not explain why Engelmann left things alone.

In his book Greene also revised *Quercus acutidens* [*Quercus x acutidens*], a Scrub Oak collected by Parry in 1850 near San Luis Rey and listed by Torrey as a new species in the *Botany of the Boundary* (Figure 11). Torrey believed *Q. acutidens* was sufficiently distinct from *Q. oblongifolia* and from Nuttall's original *Q. dumosa* to warrant its own taxon. Greene disagreed:

"In the *Botany of the Boundary*, under *Q. acutidens*, mention is made of trees 20 ft. high... The plate of *Q. acutidens* ...represents only a vigorous and rather large-leaved *Q. dumosa* and is, in so far as I can learn, the only figure of the species which has, until now, been published."

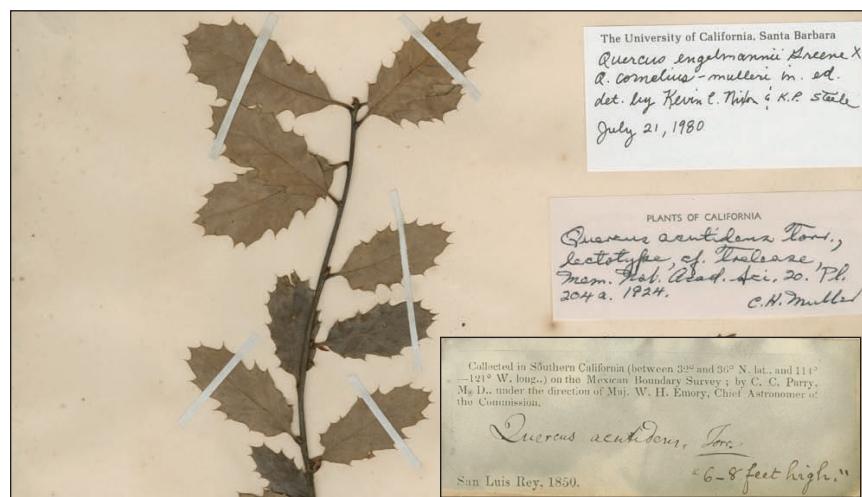


Figure 11. Parry's specimen of *Q. acutidens*, courtesy NYBG Herbarium.

One might wonder whether Greene (who emphasized "not of Torrey in Sitgreaves Report...") was inclined to doubt the deceased doyen of American botany. He disassembled Torrey's classification of two common Oaks Parry discovered. Today *Q. oblongifolia* continues to be recognized, and we know *Q. engelmannii* is very closely related to it if not synonymous. We also view *Q. (x) acutidens* as distinct from Nuttall's *Q. dumosa*. *Q. x acutidens* is believed to derive from *Q. engelmannii* X *Q. cornelius-mulleri*, and it reproduces widely. Torrey did not recognize *Q. cornelius-mulleri* in the *Botany of the Boundary*; he only listed *Q. acutidens* and *Q. dumosa*. But Parry probably discovered it. He wrote of "at least three species of evergreen Scrub Oak" on the way back from Yuma (*Notebooks* pg. 50).

A more reliable perspective on the Engelmann Oak than Greene's may be gained from the current *Flora of North America* (efloras.org). The following text accompanies the description of *Quercus engelmannii* authored by Kevin Nixon of Cornell University:

"*Quercus engelmannii* is closely related to and possibly conspecific with *Q. oblongifolia*. The cups of *Q. engelmannii* are larger, deeper, and generally more tuberculate than those of *Q. oblongifolia*, and the scales are usually larger. Based on available samples, the nuts of *Q. engelmannii* are consistently larger than those of *Q. oblongifolia*, apparently with little, if any, overlap in diameter. Considerably more variation occurs within *Q. engelmannii* in leaf form, possibly reflecting introgression from other white oak species such as *Q. cornelius-mulleri*, *Q. dumosa*, and *Q. durata* (see treatment)... Putative hybrids between *Q. engelmannii* and *Q. cornelius-mulleri* are common in areas of contact between the two species in Riverside and San Diego counties... Such a population was the basis for *Q. acutidens* (Torrey) [*Q. dumosa* var. *acutidens* (Torrey) Wenzig]... Variable in leaf form and stature, those intermediates form extensive populations and are probably best disposed of under the name *Q. x acutidens*."

Given the Engelmann Oak's significance in San Diego County, a fresh study would be of interest comparing *Q. oblongifolia* and *Q. engelmannii*, including molecular relationships. Such a study could resolve whether the Engelmann Oak is a species or a regional subspecies of *Q. oblongifolia*.

That Parry's 1850 discovery of the Engelmann Oak has been obscured by the difficulties of Oak classification is a pity. The story of the discovery transports one to a marvelous time in history, when large areas of San Diego County were wild and unexplored.

On the day he found the Oak, Parry was on his way to explore Volcan Mountain, San Felipe and all around Cuyamaca. On page 84 of the *Notebooks* he wrote, "Camp about 2 miles from Santa Isabel in a pretty nook shaded with a species of Oak, evergreen but very different in leaf & habit from [Q. agrifolia]..." Those who know Santa Ysabel can imagine Parry rolling out his bed-roll there in a grassy patch under an Engelmann Oak.