

THE SOUTHERN LIMITS OF THE MOHAVE DESERT, CALIFORNIA

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Most geographers can locate the Mohave Desert with little or no difficulty; however, if asked to define its limits, particularly in relationship to the Colorado Desert on the south, most would find it difficult to do so. The purposes of this brief paper are to reassess the varying arguments for the southern limits of the Mohave Desert, to clarify the relationships between certain place names — *e.g.*, the Great Basin, the Sonoran Desert, the Colorado Desert — and the Mohave, and to delimit in a series of maps the desert regions under discussion.

Brewer,¹ writing in 1889, included most of Southern California, with the exception of the Transverse and Peninsular Ranges and of that area immediate to the Colorado River, within what he designated as the "Great Basin" (Figure 1, Plate A). He described the area in these terms:

The Great Basin is the name popularly applied to a region of the Western United States lying between the Sierra Nevada and the Wasatch Mountains. It has no one single character which does not belong to some other portion of the globe, yet it constitutes the most distinctive geographical feature of the North American continent. It is an area of interior drainage, that is, none of the streams flow to the sea.

Fenneman,² in his organization of the physiographic divisions of the United States (Figure 1, Plate B), included Brewer's "Great Basin" within the "Basin and Range Province," which he described in 1931 as follows:

Topographically it [the Basin and Range Province] is distinguished by isolated, roughly parallel mountain ranges separated by desert basins, generally almost level. . . . Much of the area there has slopes on which water runs directly to the sea but it is too arid to supply continuous flow and considerable areas have no run-off at all.

The ostensible anomaly of Brewer's argument for internal drainage and Fenneman's for external drainage is more apparent than real; it is actually a function of the areas included in either delimitation.

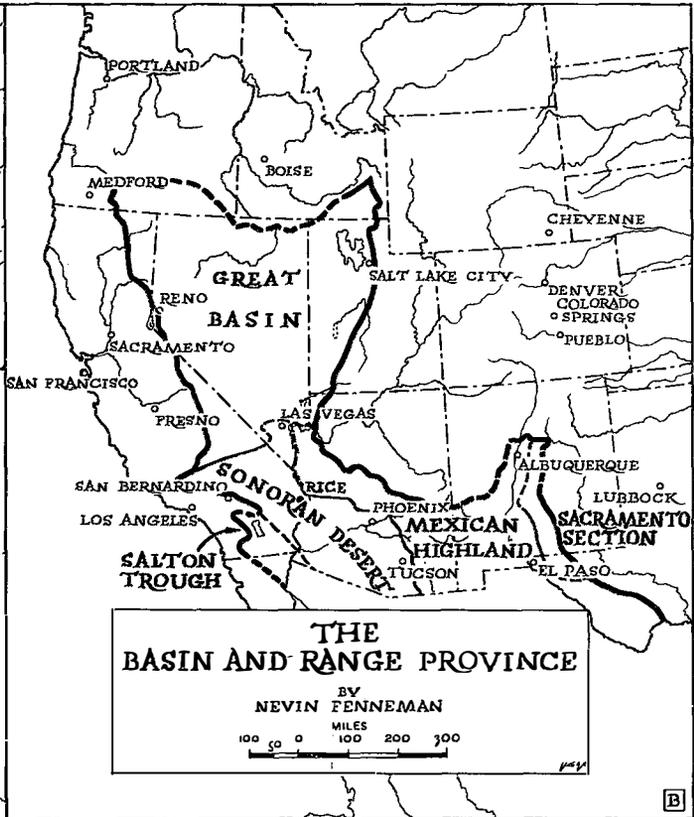
Fenneman's organization, later in time than that of Brewer, was based on a considerably greater body of geologic knowledge of the area and is, consequently, sharper in detail. He divided the Basin and Range Province into five sections (Figure 1, Plate B): the Great Basin, the Sonoran Desert, the Salton Trough, the Mexican Highland, and the Sacramento Section. Our discussion shall be limited to the Sonoran Desert section, which Fenneman³ defined as including the Gila Desert of southwestern Arizona and the

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¹ Wm. H. Brewer, "The Great Basin," *Bulletin of the American Geographical Society*, Vol. 21 (1889), p. 197.

² N. M. Fenneman, *Physiography of Western United States*, (New York, 1931), p. 326.

³ *Ibid.*, p. 367.



Mohave Desert of southeastern California, and which he distinguished from the other four sections of the province on the basis of the following criteria

In common with the Great Basin, this extensive area is characterized by basin ranges and intervening desert plains. In contrast, however, the altitude is lower, the ranges are smaller and occupy not more than a fifth of the area. Rock pediments are much more prevalent and undrained basins are less general.

An insignificant portion of the plain surface lies above 3,000 ft. and more than half of it is below 2,000. A large fraction lies between sea-level and the 1,000-ft. contour. In a very general way the level declines from all directions toward the Gulf of California.

At this point it is well to note that Fenneman's Salton Trough section has been variously described (Figure 2) by other scholars as the Colorado Desert. Blake,⁴ in a report to the Congress in the early 1850's, noted that the Colorado Desert

... extends from the base of Mount San Bernardino to the head of the Gulf of California and is separated from the coast-slope by the Peninsula Mountains. The limits of the plain on the north and northeast are determined by ranges of mountains which extend from San Bernardino Mountain to the mount of the Gila and beyond into Sonora.

This view was restated by Orcutt⁵ in 1890, Barrows⁶ in 1900, Cecil-Stephens⁷ in 1901, and Cockerell⁸ in 1945. Cecil-Stephens' delimitation of the eastern boundary of the Colorado Desert is somewhat more sharply drawn⁹ than those of other scholars; he delimits it from "... a spur of the Sierra Madre, which runs south-easterly about 180 miles to the Colorado River, at an average altitude of 4,000 feet." Jaeger¹⁰ suggested that the Colorado Desert encompasses not only the Salton Trough (of Fenneman's classification) but also that segment of the Sonoran Desert which Fenneman refers to as the Mohave Desert sub-section of the Sonoran Desert. He further argued that

The Colorado Desert includes not only the area immediately contiguous to the Colorado River but also the Salton Basin and the rather low-lying bordering areas which drain into the Salton Sink. This agrees well with the conception of W. P. Blake, who first gave the Colorado Desert its name in 1853. From the biological standpoint the northern limit of the Colorado Desert may be arbitrarily placed as far north as a line drawn from the Morongo Pass [i.e., between the San Bernardino and the Little San Bernardino mountains] easterly to the Colorado River.

Thus far we have shown that Fenneman's Salton Trough may be termed the Colorado Desert and that, whatever the name, this area is used

⁴ Wm. P. Blake, in *Exploration and Surveys for Pacific Railroads in 1853-54*, House Exec. Doc. 91, 33rd Congress, 2nd Session, (Washington, D. C., 1855), Vol. 5, Pt. 2., California Route, p. 228.

⁵ Charles R. Orcutt, "The Colorado Desert," *Annual Report of the Calif. Mining Bureau*, Vol. 10 (1890), p. 899.

⁶ David P. Barrows, "The Colorado Desert," *National Geographic Magazine*, Vol. 11 (1900), p. 340.

⁷ B. A. Cecil-Stephens, "The Colorado Desert and Its Recent Flooding," *Bulletin of the American Geographical Society*, Vol. 23 (1901), p. 367.

⁸ Theodore D. A. Cockerell, "The Colorado Desert, Its Origin and Biota," *Transactions of the Kansas Academy of Science*, Vol. 48 (1945), p. 3.

⁹ Cecil-Stephens, *op. cit.*, p. 367.

¹⁰ Edmond C. Jaeger, *The California Deserts*, (Stanford, 1955), pp. 3-4.

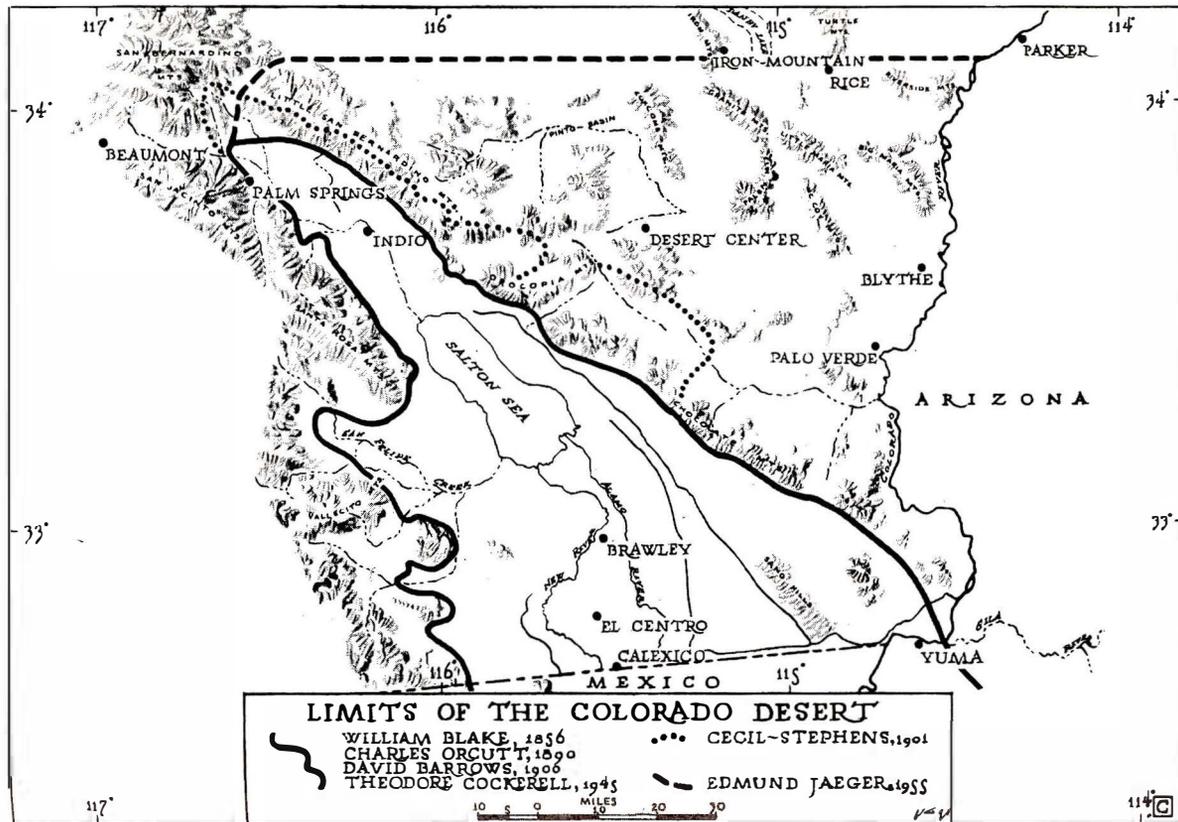


Figure 2

by Fenneman to represent the southwestern boundary of the Sonoran Desert section.

Other scholars, however, have not been able to clearly define the southwestern boundary of the Sonoran Desert (*i.e.*, Mohave Desert) (Figure 3). For example, Loew,¹¹ in 1876, delimited the Mohave Desert as "... comprising southeastern California and the southwestern corner of Mexico. Lower California, although a portion of Mexico, belongs geographically to the Mohave Desert." He included to the Salton Trough (or Colorado Desert) within the Mohave Desert. Baker,¹² writing in 1911, asserted that

The Mohave Desert Region comprises the extreme southwestern portion of the Great Basin. It lies entirely within the State of California and includes within its limits portions of the four counties of San Bernardino, Inyo, Kern and Los Angeles. Its boundaries on the northwest are the Tehachapi Range; on the southwest are Sawmill Mountain, Liebre Mountain, the Sierra Pelona, with their southeastern continuation to the head of the Santa Clara River, and the San Gabriel Range; on the south are the San Bernardino Range and the Colorado Desert; on the southeast the natural boundary is the divide between the drainage tributary of the Gulf of California and interior drainage of the Great Basin.

Another delimitation of the Mohave Desert was provided by Abrams¹³ who noted that it

... extends from the eastern base of the Sierra Nevada eastward through the Death valley region to the Virgin River Valley, in the extreme southwestern part of Utah and the northwest corner of Arizona. To the southward it spreads over the great barren wastes of the desert slopes of the San Bernardino Mountains and their eastern spur, the Chuckawalla Mountains.

In 1929, Thompson¹⁴ expanded upon Abrams' nomenclature, to wit:

It is desirable ... to have a term by which the entire region ... can be designated. For convenience, therefore, the term "Mohave Desert Region" is used as applying to the entire region [*i.e.*, as far south as the 34th parallel] ... except the settled region south of the San Gabriel and San Bernardino Mountains.

A few years later Gale¹⁵ produced a relief map on which physiographic regions of California were shown. Therein the Mohave Desert included that portion of California south of the Garlock fault, north of the San Andreas fault, and north of the East Mesa of the Imperial Valley (southern edge of the Little San Bernardino and Chocolate Mountains):

¹¹ Oscar Loew, "Report of the Physical and Agricultural Features of Southern California and Especially of the Mohave Desert," *U. S. Geographical Surveys West of the 100th Meridian*, (Wheeler), *Annual Report for 1876* (Washington, D. C. 1876), Appendix H, pp. 216-218.

¹² Charles L. Baker, "Notes on the Later Cenozoic History of the Mojave Desert Region in Southeastern California," *University of California Bulletin of the Department of Geological Science*, Vol. 6 (1911), p. 335.

¹³ Leroy Abrams, *The Deserts and Desert Floras of the West: Nature and Science of the Pacific Coast*, Pacific Coast Committee of the AAAS (1915), p. 172 as quoted by David G. Thompson, *The Mohave Desert Region, California; Geographic, Geologic, and Hydrologic Reconnaissance*, U. S. G. S. Water-Supply Paper 578 (Washington, 1929), p. 5.

¹⁴ Thompson, *op. cit.*, p. 6.

¹⁵ Hoyt S. Gale, "Southern California," *15th Guidebook*, 16th International Geological Congress, (1933), p. 1.

In more recent years three scholars in a symposium study of Southern California attempted delimitations of the desert region. Hewett¹⁶ delimited the Mohave in its southwestern portion by the San Andreas fault, but did not attempt to define the southeastern boundary. Jahns,¹⁷ in the fashion of Gale, distinguished between the Colorado Desert and the Mohave on the basis of the southern edge of the Little San Bernadino-Chocolate Mountains line. By means of a line roughly corresponding to the 115th meridian and the 34th parallel, McCulloch¹⁸ delimited, respectively, the eastern and southern bounds of the Mohave Desert.

After nearly a century of inquiry there is still little unanimity of opinion. Two boundary lines continue to be argued as representing the southern extent of the Mohave Desert subsection of Fenneman's Sonoran Desert section: 1) along the 34th parallel, and 2) along the southern face of the Little San Bernardino and Chocolate Mountains. In contrast, there seems to be more agreement that the Little San Bernardino-Chocolate Mountains line sets the northern limit of the Colorado Desert.

¹⁶ D. F. Hewett, "General Geology of the Mahave Desert Region, California," in *Geology of Southern California*, edited by R. H. Jahns, Division of Mines, Bulletin 170 (Sacramento, 1954), Chapter II, p. 5.

¹⁷ R. H. Jahns, "Investigations and Problems of Southern California Geology," *Ibid.*, Chapter I, pp. 10-11.

¹⁸ T. H. McCulloch, "Problems of the Metamorphic and Igneous Rocks of the Mohave Desert," *Ibid.*, Chapter VII, p. 6.