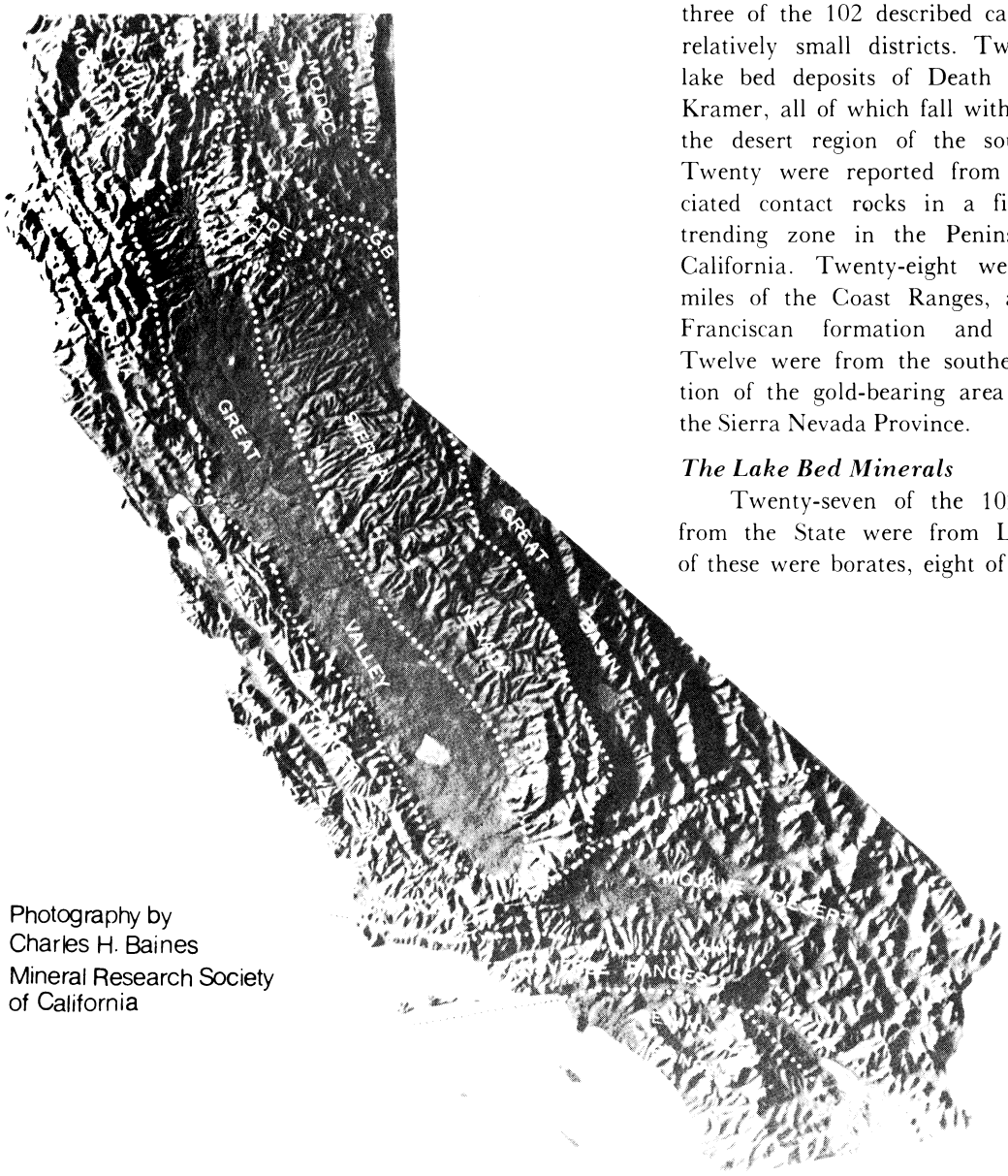
NEW MINERALS FROM CALIFORNIA



Photography by
Charles H. Baines
Mineral Research Society
of California

In the 104 years from 1867 through 1970, 102 minerals have been described as new species from California. Seventy-four remain as recognized species. The other 28 have been shown to be identical to previously described species, varieties, mixtures, or of doubtful composition and validity.

The first new mineral described from the State was partzite, which Arents (1867) described from the Blind Spring Hill silver district near the northern end of the Owens Valley in Mono County. It was no sooner described than it was questioned (Blake, 1867) as probably a mixture. However, more recent work by Mason and Vitaliano (1953) supports the validity of the species - so it stands as number 1.

The large number of new minerals described from California during the following century is due to the diversity of the geologic provinces of the State. Eighty-three of the 102 described came from four well-defined, relatively small districts. Twenty-three came from the lake bed deposits of Death Valley, Searles Lake, and Kramer, all of which fall within a radius of fifty miles in the desert region of the southern part of the State. Twenty were reported from the pegmatites and associated contact rocks in a fifty mile long north-south trending zone in the Peninsular Ranges of southern California. Twenty-eight were from the central 200 miles of the Coast Ranges, an area dominated by the Franciscan formation and associated serpentinites.. Twelve were from the southern, NW-SE trending, section of the gold-bearing area along the western side of the Sierra Nevada Province.

The Lake Bed Minerals

Twenty-seven of the 102 new minerals described from the State were from Lake bed deposits. Sixteen of these were borates, eight of which came from the Fur-

nace Creek Wash and the eastern edge of the Black Mountains in Death Valley National Monument. All eight species are currently considered valid. Four of the 16 borates, along with two associated sulphides, gerstleyite and greigite, were described from the massive borate deposit at Kramer. One of these, lesserite, is now considered identical with inderite. Two borates, neocolemanite and veatchite, were found in the Tick Canyon borate deposit of Los Angeles County. Neocolemanite was found to be identical with colemanite. Teepleite was described from Borax Lake in Lake County in the Northern part of the State.

Description of new borates has followed the progressive development of the borax industry in the State. Tincalconite, the pentahydrated alteration of borax, was the first borate described from the State. It was identified by Shepard (1878) only as "from California." The exact type locality might have been Death Valley, Searles Lake, or Borax Lake, each being known before 1878 as source of borax.

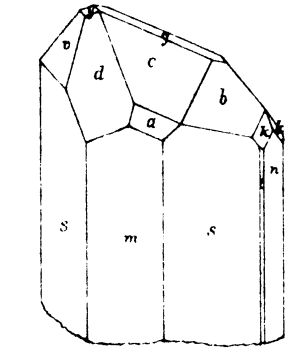
Colemanite, the second new California borate, was described in 1883, only a year after the rich colemanite beds were found in the Furnace Creek district. These deposits were not worked intensively until the early 1900's. Then in 1903 bakerite was described and, in 1914, inyoite and meyerhofferite - all from the Furnace Creek district.[1] In 1927 the rich kernite and borax deposits of Kramer were discovered, followed by the identification of kernite (1927) and probertite (1929). Increased professional development in the industry and detailed investigation of borate resources by the U.S. Geological Survey produced seven new minerals from the Furnace Creek and Kramer deposits between 1956 and 1970.

Nine of the new lake-bed minerals were from Searles Lake (in the northwest corner of San Bernardino County, twenty miles southwest of Death Valley, and about 45 miles north of Kramer). Of the nine, four are sulphates, four are carbonates, and one is a borosilicate. All are considered valid species.

The salts of Searles Lake were first mined in 1873 when borax was scraped from the mud along the margin of the main salt area. In 1884, hanksite, the first new mineral from the district, was described. In 1887, drilling was started in the lake bed. Intensive study of the cores has resulted in the identification of eight additional new minerals during the ensuing fifty years.

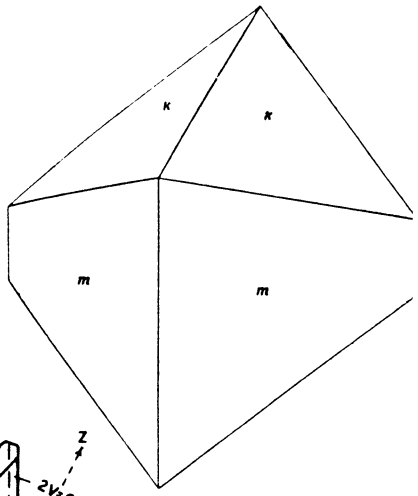
The Central Coast Ranges

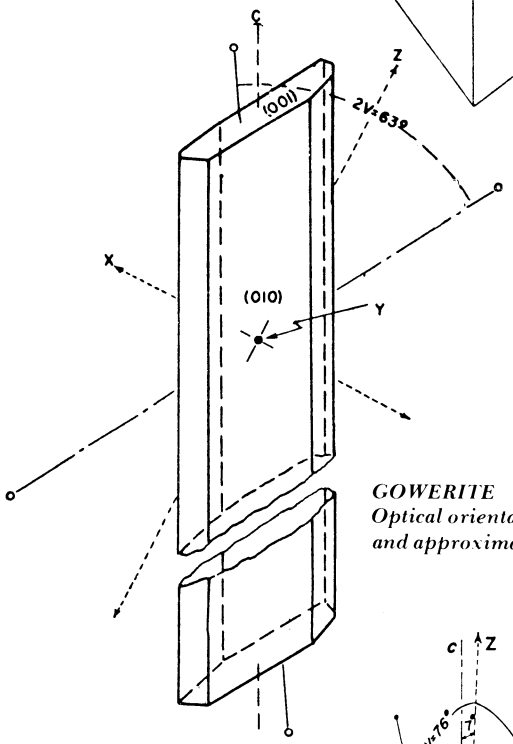
TheCoast Ranges Province extends along the Pacific shore for nearly 600 miles, from the Oregon line to the Transverse Ranges which cut east and west just north of Santa Barbara and Los Angeles. The central 200 miles of the Province are dominated by the Franciscan formation and associated serpentinites.



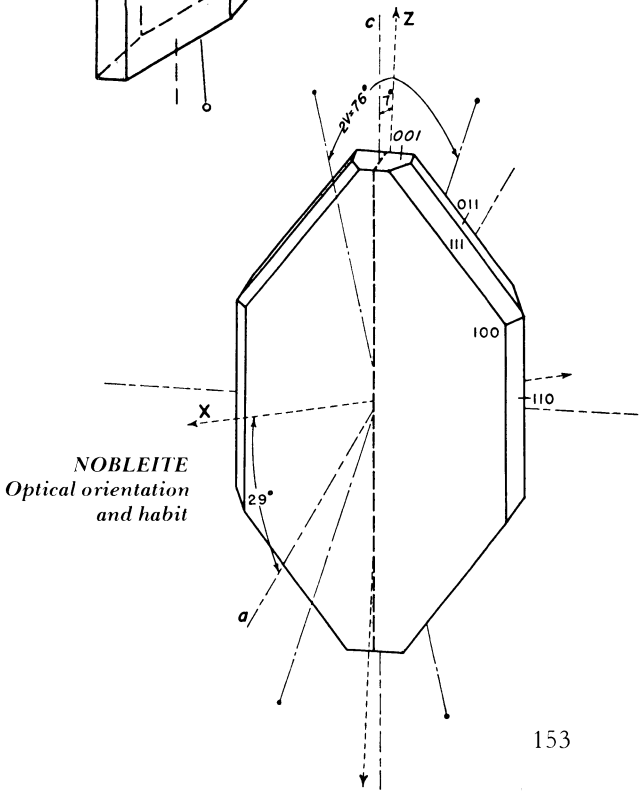
COLEMANITE *
(Jackson, 1885)

NEOCOLEMANITE



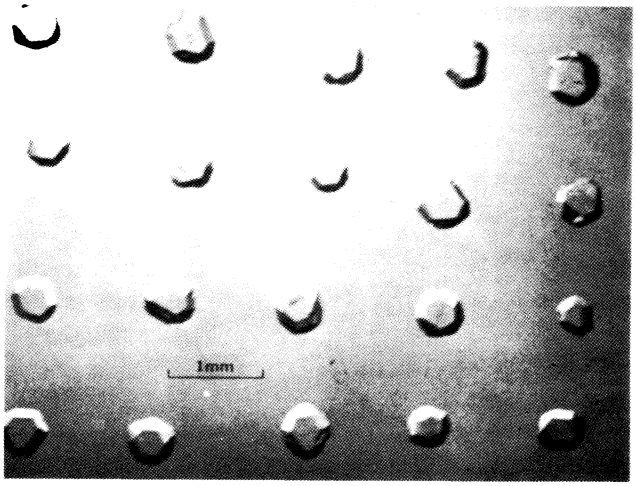


GOWERITE
Optical orientation and approximate habit

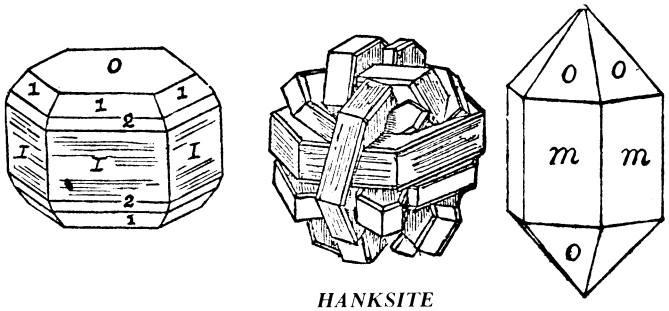


NOBLEITE
Optical orientation and habit

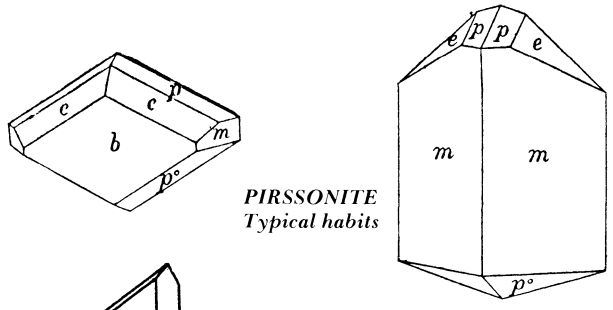
[1] See Pemberton, 1971, for recognition of Death Valley as type locality for bakerite.



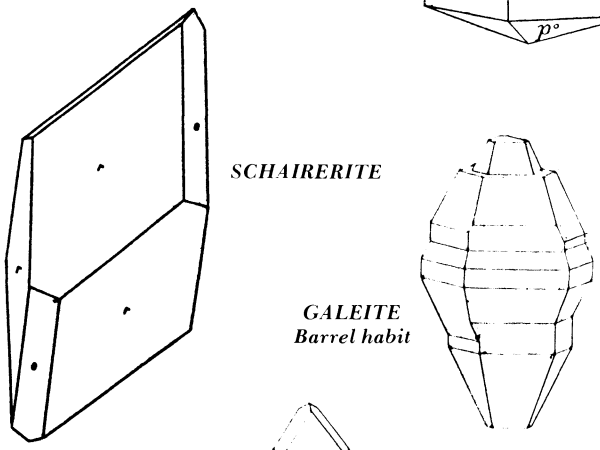
MACALLISTERITE
Synthetic crystals



HANKSITE
Drawing on right from Pratt (1886)

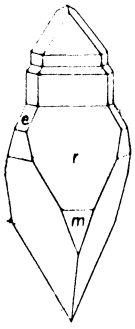


PIRSSONITE
Typical habits



SCHAIRERITE

GALEITE
Barrel habit



SCHAIRERITE-GALEITE POLYCRYSTAL
Forms labelled on schairerite part only

This central section has been the source of 28 of the new mineral descriptions from the State.

Apparently the earliest descriptions were mainly the result of prospecting for and mining of mercury, still an important activity in this part of the Province. Metacinnabar was the first (1870). After this good start the batting average was below par. Aragotite (1873), a hydrocarbon, is of doubtful validity; trautwinite (1873) and stibioferrite (1873) are mixtures; the hydrocarbons, posepnyte (1877) and napalite (1888), are probably mixtures; sonomaite (1877) is identical with pickeringite and knoxvillite (1890) is a magnesian copiapite. Redingtonite (1890) is still recognized as a species but may, on further study, prove to be a Ni-Cr halotrichite in which some Ni substitutes for Fe^{II} and Cr replaces some Al. This uncertain sequence in which nine minerals were described, of which only two remain as recognized species, was ended in 1903 with the description of the valid species, boothite, and of palacheite, which was found to be identical with botryogen.

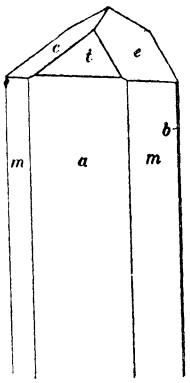
Four other minerals have been described from the mercury districts in more recent years. Two are hydrocarbons: curtisite (1930), which is identical with idrialite, and pendletonite (1967), which was found to be the same as the earlier-named carpathite when the latter mineral was properly described. The other two are the valid species schuetteite (1959) and buddingtonite (1964).

Thirteen additional minerals have been described from the central coastal ranges: three from the benitoite deposit near the headwaters of the San Benito River, two of which remain valid (benitoite, joaquinite), and one (coalingite) from the serpentinite body just east of the Gem mine. Six of the remaining nine are from the schists of the Franciscan formation. Five of these are recognized species, and the sixth, crossite, is an iron-rich glaucophane. The other three are iddingsite, a mixture, and rosenhahnite and kempite, both found in boulders in the Franciscan zone but of uncertain origin.

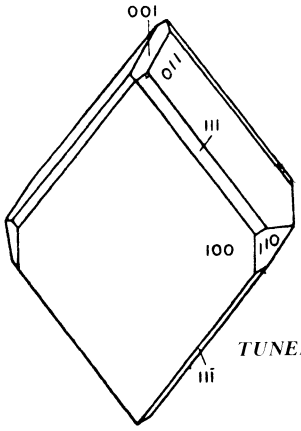
The Pegmatites and Associated Rocks of the Peninsular Ranges

The Peninsular Ranges pegmatites and associated contact zones, from which twenty of the new mineral descriptions have come, lie in a narrow NW-SW trending zone about 50 miles long, in the western part of of Riverside County and the northern border area of San Diego County. Fifteen of these minerals were from Crestmore, four from the Pala pegmatites, and one (nuevite, from a small quarry near Nuevo) which was later found to be identical with samarskite.

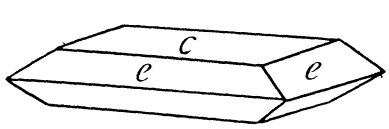
The earliest descriptions from this area were phosphates from the lepidolite and tourmaline mines of the Pala District. Mining started there about 1902 and attracted the attention of W. T. Schaller, who published his first paper on the area in 1903. His studies of the district continued and in 1912 he described four new phosphates from the area: salmonsite, sicklerite, stewartite,

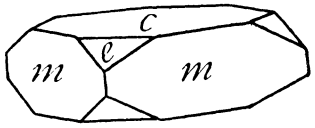


KERNITE

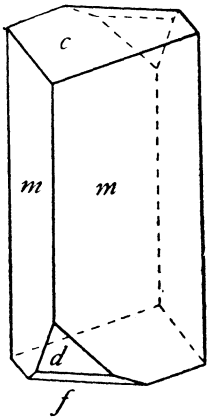


TUNELLITE

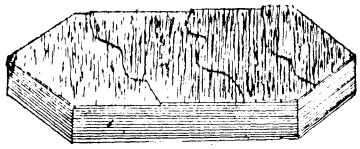




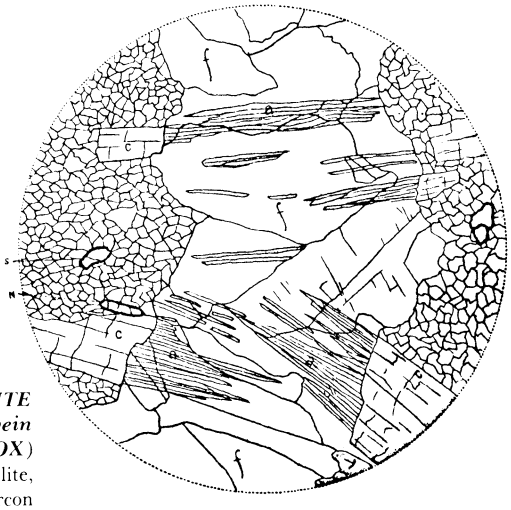
TEEPLEITE
Borax Lake (left), Artificial (right)



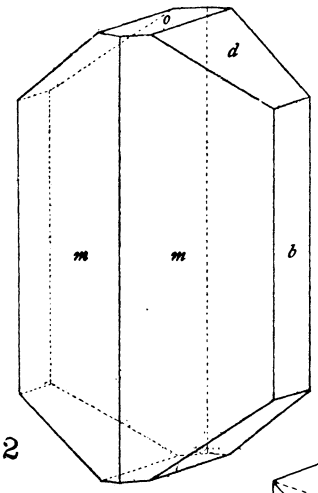
KRAUSITE



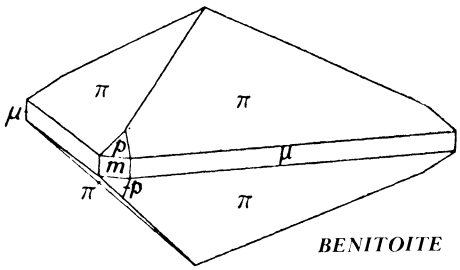
IDDINGSITE
Cleavage fragment



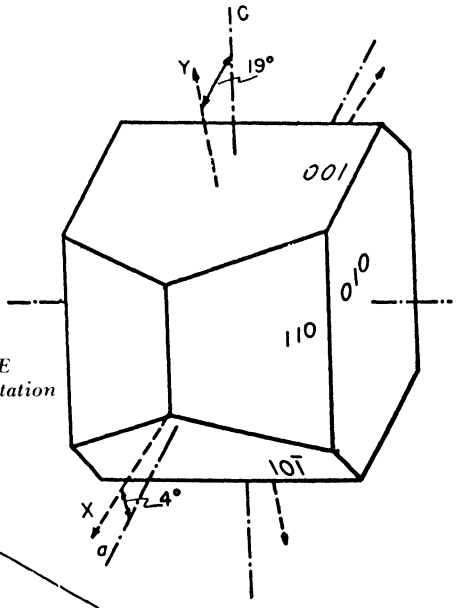
CROSSITE
Cross section of vein traversing the rock (10X)
f = albite, s = sphene, a = actinolite, c = crossite, n = zircon



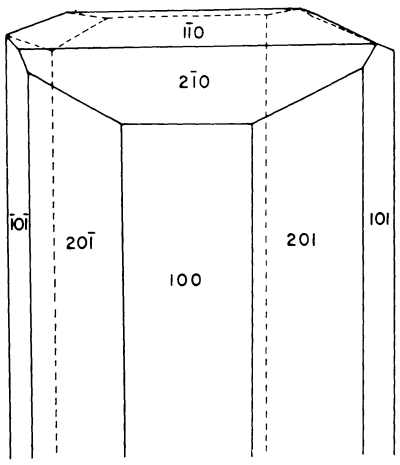
LAWSONITE



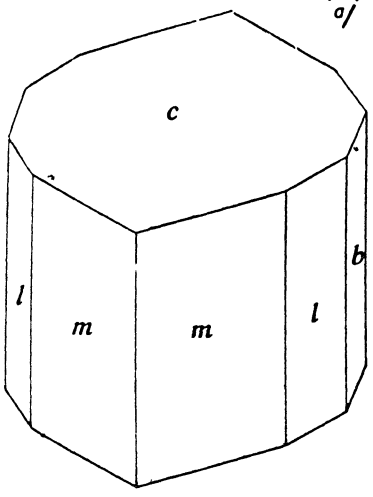
BENITOITE



BUDDINGTONITE
Typical habit and orientation

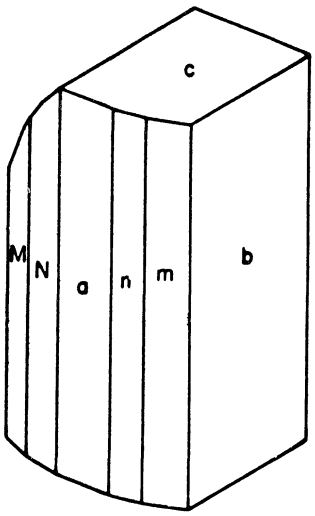


PENDLETONITE

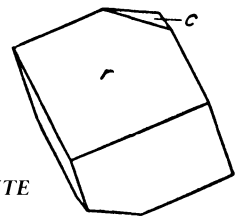


PALACHEITE

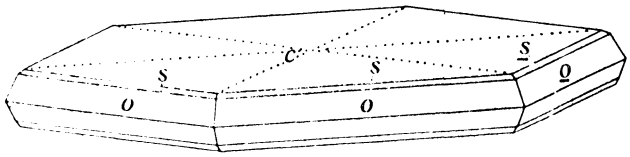
*crystal drawings are from the original description of the mineral except as otherwise referenced.



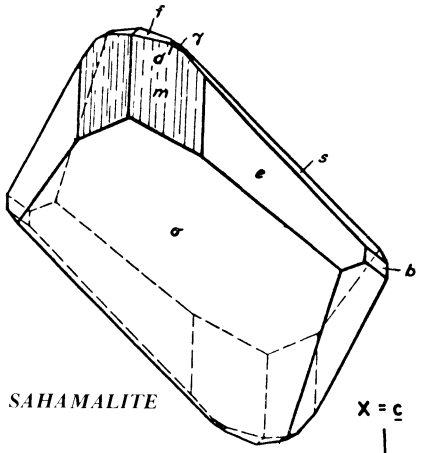
ROSENHAHNITE



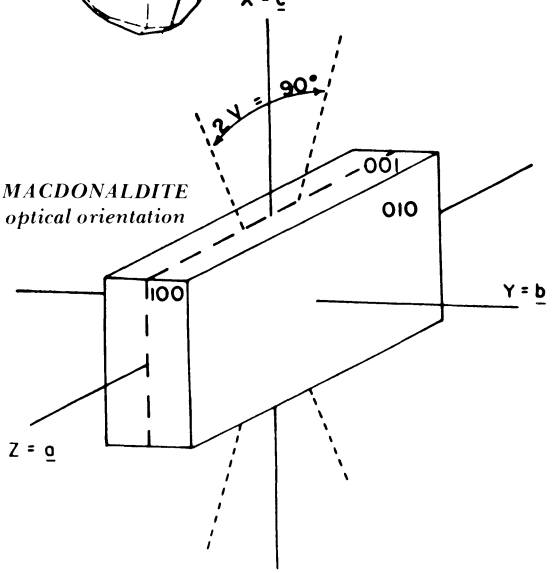
WOODHOUSEITE



ARCANITE



SAHAMALITE



MACDONALDITE
Typical habit and optical orientation

and palaite. The last named was found later to be hureaulite.

The quarries at Crestmore have been the source of more new mineral descriptions (15) and more currently recognized new species (10) than any other California locality. The mining of the crystalline limestone for cement started there in 1909. In 1914 A. S. Eakle called attention to the many contact minerals occurring in the deposit and described the first new species from there, wilkeite. Since then the quarries have been studied by many distinguished mineralogists who have identified in the neighborhood of 150 species in the deposit and added nine new ones to Eakle's first.

The Sierra Nevada Province

Twelve of the 102 new mineral descriptions from California were from the southern half of the 250 mile long gold-bearing district on the western slopes of the Sierra Nevada Province. All were found in the metamorphic formations near the massive intrusive granites which form the backbone of the Sierra. Eleven of the twelve are considered valid species. The twelfth is mariposite, a chromian variety of muscovite.

Four of the twelve were found in the gold veins: the tellurides, melonite and calaverite, from the rich Carson Hill lode; and the micas, mariposite and roscoelite, associates of the gold-bearing quartz. The other eight are barium silicates: sanbornite and seven recently described associates of that mineral from the Big Creek District in northern Fresno County.

The Professional Leadership

Without doubt, the wide potential of the varied geologic provinces as sources of new minerals has been a basic factor in the large number of new descriptions from California. However, the professional leadership capacity within the State to take advantage of this potential has been a companion factor.

Professional interest in California's minerals started the first year of its statehood, 1850. The first legislature created the post of State Geologist and appointed Dr. John B. Trask, after whom the new, rare barium silicate, traskite, was named. Dr. Trask, a physician deeply interested in mineralogy and geology, was given a three year appropriation to make a survey of the State's geology and mineral resources. The results of Trask's one-man study were published between 1853 and 1856 as reports to the legislature covering the geology of the Sierra Nevada, the Coast Ranges and northern and southern California.

Further appropriations were not made until 1860 when the legislature reestablished the office and appointed as State Geologist Josiah D. Whitney, a nationally known scientist. Whitney gathered around him "...a small group of scientists who, in their ability and dedication, immediately placed the California Survey in the front rank, if not perhaps in the top spot, among all State Surveys of that time...such men as Clarence King

Andrew C. Lawson
1861 - 1952
University of California, 1892 - 1952*
President, Geological Society of America, 1925

George D. Louderback
1874 - 1957
Ph.D., University of California, 1899
University of Nevada, 1900 - 1906
University of California, 1906 - 1944

Charles Palache
1869 - 1954
Ph.D., University of California, 1894
Harvard University, 1896 - 1941
President, Mineralogical Society of America, 1921
President, Geological Society of America, 1937

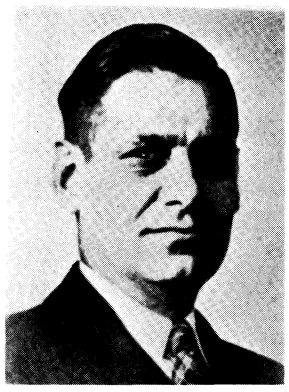
Waldemar T. Schaller
1882 - 1967
B.A., University of California, 1903
U.S. Geological Survey, 1903 - 1905
President, Mineralogical Society of America, 1926

Frederick L. Ransome
1868 - 1935
Ph.D., University of California, 1896
U.S. Geological Survey, 1897 - 1924
University of Arizona, 1924 - 1927
California Institute of Technology, 1927 - 1935

Arthur S. Eakle
1862 - 1931
University of California, 1901 - 1930
President, Mineralogical Society of America, 1925

Adolph Knoph
1882 - 1966
Ph.D., University of California, 1909
U.S. Geological Survey, 1905 - 1920
Yale University, 1920 - 1951
Stanford University, 1951 - 1966
President, Geological Society of America, 1944

Esper S. Larsen
1878 - 1961
B.S., University of California, 1906
Ph.D., University of California, 1918
University of California, 1907 - 1908
U.S. Geological Survey, 1909 - 1923, 1949 - 1958
Harvard University, 1923 - 1949
President, Mineralogical Society of America, 1928

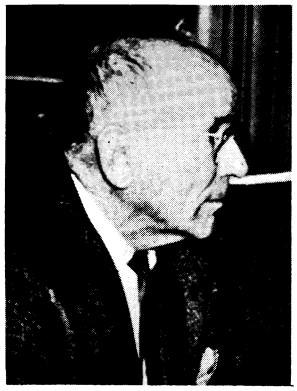


William F. Foshag
1894 - 1956
Ph.D., University of California, 1923
Smithsonian Institution, 1919 - 1956
President, Mineralogical Society of America, 1940

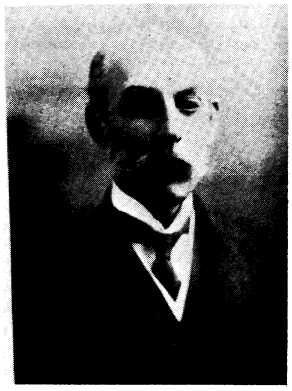
Alfred O. Woodford
1890 -
Ph.D., University of California, 1923
Pomona College, 1923 - Emeritus

Adolf Pabst
1899 -
Ph.D., University of California, 1928
University of California, 1927 - Emeritus
President, Mineralogical Society of America, 1951

Austin F. Rogers
1877-1957
Stanford University, 1902 - 1942
President, Mineralogical Society of America, 1927



Joseph Murdoch
1900 -
University of California at Los Angeles, 1928 - Emeritus
President, Mineralogical Society of America, 1959



George F. Becker
1847 - 1919
University of California, 1871 - 1878
U.S. Geological Survey, 1879 - 1919
President, Geological Society of America, 1914

Waldemar Lindgren
1860 - 1939
U.S. Geological Survey, 1884 - 1912
Massachusetts Institute of Technology, 1912 - 1933
President, Geological Society of America, 1924

(later to become the first Director of the U.S. Geological Survey), Arnold Hoffman (later to become Chief Topographer of the USGS), W. H. Brewer (later to become a professor at Yale and to be recognized as the 'father of soil science'), and W. H. Dall (later to become one of the country's foremost paleontologists and Director of the Philadelphia Academy of Sciences)" (Campbell, 1966, p. 14). With this staff Whitney produced a series of mineralogical and geological reports through the early 1870's.

The first systematic report on California minerals was a review published in 1866 by William P. Blake, professor of mineralogy, geology and mining at the College of California, parent to the University of California at Berkeley. Blake first came to the State in 1853 as geologist for a railroad survey party and, between then and the end of the century, published many reports and papers on the mineralogy of the State.

In 1892 a new era began in California mineralogy. In that year Andrew C. Lawson was appointed as professor of geology at the University of California, Berkeley. With George D. Louderback, who was one of his earliest students, he built the department to an outstanding position. Their students and associates included Waldemar T. Schaller, Fredrick A. Ransome, Charles Palache, Arthur S. Eakle, William F. Foshag, Adolph Knopf, Esper S. Larsen, Alfred O. Woodford, and Adolph Pabst. This leadership from the Berkeley Department was joined in 1902 by professor Austin F. Rogers at Stanford University, and 1928 by Joseph Murdoch at the University of California, Los Angeles.

These thirteen distinguished mineralogists, all born during the latter decades of the 19th century, have been author or coauthor of 50 of the 82 new mineral descriptions from the State since 1890. They have authored or coauthored over 300 publications on California min-

* Except as otherwise noted University of California refers to the Berkeley campus

erals. Eight have served as President of the Mineralogical Society of America, and three as President of the Geological Society of America, with Charles Palache serving in both roles.

During all of these years of strong California-based professional study of California minerals, there has been constant interest and help from the U.S. Geological Survey staff. The first annual report of the Survey (1880) included an article on the San Francisco, Eureka, and Bodie districts by George F. Becker. Becker began his career as a professor of mining and metallurgy at the University of California, Berkeley, and in 1879 joined the USGS where he remained for 40 years. In 1914 he served as President of the Geological Society of America. His studies of the mercury deposits of the State are classic.

Waldemar Lindgren joined the staff of the Survey in 1884 and published his first paper on California minerals in 1887. His associate at the Survey was another noted geologist, Henry W. Turner, and these two men became leading authorities on the gold districts of the State. Their combined publications about California minerals came to 52. Lindgren served as President of the Geological Society of America in 1924.

In more recent years Survey studies of minerals resources in the State have produced particularly significant studies of the chromium and manganese deposits (in cooperation with the California Division of Mines and Geology), the borate deposits of Death Valley and Kramer, and the salts of Searles Lake.

A final significant factor in the study of California minerals has been the development of the State Division of Mines and Geology since the founding of the parent organization in 1850. The growth of the department has been sometimes hesitant but since the 1920's has been sure and strong. The Division currently publishes several professional series on the geology and mineralogy of California: Bulletins - the most recent No. 195, Geology of the San Andreas 15 minute quadrangle, Calaveras County; Special Reports - the most recent No. 101, Geology of the Elysian Park - Repetto Hills Area, Los Angeles County; County Reports, detailing the mines and mineral resources of each county; Geologic Maps with accompanying text, usually covering mineral deposits; and the monthly, *California Geology*.

California has been truly blessed with professional leadership in mineralogy and geology.

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New Mineral Descriptions from California

No.	Mineral	Author and Year	Locality	Present Status
1	Aragotite	F.E. Durand, 1873	New Almaden	A mixture
2	*Arcanite*†	A.S. Eakle, 1908	Trabuco Canyon	
3	*Bakerite*	W.B. Giles, 1903	Death Valley	
4	*Benitoite*	G.D. Louderback and W.C. Blasdale, 1907	Headwaters of San Benito River	
5	*Boothite*	W.T. Schaller, 1903	Leona Heights	
6	*Buddingtonite*	R.C. Erd, D.E. White, J.J. Fahey, D.E. Lee, 1964	Sulphur Bank	
7	*Burkeite*†	W.F. Foshag, 1935	Searles Lake	
8	*Calaverite*	F.A. Genth, 1868	Carson Hill	
9	Carlosite	G.D. Louderback and W.C. Blasdale, 1907	Headwaters of San Benito River	= Neptunite
10	Chromrutile	S.G. Gordon and E.V. Shannon, 1928	Washington	Redefined as redledgeite
11	*Coalingite*	F.A. Mumpton, H.W. Jaffe, C.S. Thompson, 1965	Idria	
12	*Colemanite*	R. Neuschwander, 1883	Death Valley	
13	Crestmoreite	A.S. Eakle, 1917	Crestmore	= tobermorite
18	Crossite	C. Palache, 1894	Berkeley	Iron-rich glaucophane
15	Curtisite	F.E. Wright, E.T. Allen, 1926	Skaggs Springs	= Idrialite
16	*Deerite*	S.O. Agrell, M.G. Brown and D. McKie, 1965	Laytonville	
17	Eakleite	E.S. Larsen, 1917	Santa Inez, 1917	= xonotlite
18	*Ellestadite*	D. McConnell, 1937	Crestmore	
19	*Foshagite*	A.S. Eakle, 1925	Crestmore	
20	*Fresnoite*	J.T. Alfors, M.C. Stinson, R.A. Matthews and A. Pabst, 1965	Big Creek	
21	*Galeite*	A. Pabst, D.L. Lewis and G.S. Switzer, 1955	Big Creek	
22	*Gerstleyite*	C. Frondel and V. Morgan, 1956	Kramer	
23	*Gowerite*	R.C. Erd, J.F. McAllister, H. Almond, 1959	Death Valley	
24	*Greigite*	B.J. Skinner, R.C. Erd and F.S. Grimaldi, 1964	Kramer	
25	Griffithite	E.S. Larsen and G. Steiger, 1917	Cahuenga Pass	Ferroan saponite
26	*Haiweeite*	T.C. McBurney and J. Murdoch, 1959	Haiwee Reservoir	
27	*Hanksite*	W.E. Hidden, 1885	Searles Lake	
28	*Hectorite*	W.F. Foshag and A.O. Woodford, 1936*	Hector	
29	*Howieite*	S.O. Agrell, M.G. Brown and D. McKie, 1965	Laytonville	
30	Iddingsite	A.C. Lawson, 1893	Carmelo Bay	A mixture
31	*Inyoite*	W.T. Schaller, 1914	Death Valley	
32	Ionite of Allen	V.T. Allen, 1927	Ione	= Kaolinite
33	Ionite of Purnell	S. Purnell, 1878	Ione	A mixture
34	*Jennite*	A.B. Carpenter, J.A. Gard, K. Speakman and H.F.W. Taylor, 1966	Crestmore	
35	*Joaquinite*	G.D. Louderback and W.C. Blasdale, 1909	Headwaters of San Benito River	
36	Jurupaite	A.S. Eakle, 1921	Crestmore	= Xonotlite
37	*Kempite*	A.F. Rogers, 1924	San Jose	
38	*Kernite*	W.T. Schaller, 1927	Kramer	
39	Knoxvillite	G.F. Becker, 1888	Knoxville	Magnesian copiapite
40	*Krausite*	W.F. Foshag, 1931	Calico Mts.	
41	*Krauskopfite*	M.C. Stinson and J.T. Alfors, 1964	Big Creek	
42	*Lawsonite*	F. Ransome, 1895	Tiburon	
43	Lesserite	C. Frondel, V. Morgan and J.L.T. Waugh, 1956	Kramer	= Inderite
44	*Macallisterite*	W.T. Schaller, A.C. Vlisidis and M.E. Mrose, 1965	Death Valley	
45	*Macdonaldite*	M.C. Stinson and J.T. Alfors, 1964	Big Creek	
46	*Maghemite*	R.B. Sosman and Posnjak, 1927**	Iron Mountain	
47	Mariposite	B. Silliman, 1868	Sierra gold belt	Chromian muscovite
48	*Melonite*	F.A. Genth, 1867	Carson Hill	

†—First occurrence in nature

*Described but not named. Later recognized as a species and named by Strese and Hofmann, 1941

**Described but not named, Later named by Wagner (1927).

No.	Mineral	Author and Year	Locality	Present Status
49	*Merwinite*	E.S. Larsen and W.F. Foshag, 1921	Crestmore	
50	*Metacinnabar*	G.E. Moore, 1870	Knoxville	
51	*Metahaiweeite*	T.C. McBurney and J. Murdoch, 1959	Haiwee Reservoir	
52	*Meyerhofferite*	W.T. Schaller, 1914	Death Valley	
53	*Muirite*	J.T. Alfors, M.C. Stinson, R.A. Matthews and A. Pabst, 1965	Big Creek	
54	Napalite	G.F. Becker, 1888	Pope Valley	A mixture
55	*Nekoite*	J.A. Gard and H.F.W. Taylor, 1956	Crestmore	
56	Neocolemanite	A.S. Eakle, 1911	Tick Canyon	= Colemanite
57	*Nissonite*	M.E. Mrose, R. Meyrowitz, J.T. Alfors and C.W. Chesterman, 1966	Panoche Valley	
58	*Nobleite*	R.C. Erd, J.F. McAllister and A.C. Vlisidis, 1961	Death Valley	
59	*Northupite*	W.M. Foote, 1895	Searles Lake	
60	Nuevite	J. Murdoch, 1946	Nuevo	= Samarskite
61	Palacheite	A.S. Eakle, 1903	Knoxville	= Botryogen
62	Palaite	W.T. Schaller, 1912	Pala	= Hureaulite
63	*Partzite*	A. Arents, 1867	Blind Spring	
64	Pendletonite	J. Murdoch and A.T. Geissman, 1967	Idria	= Carpathite
65	*Pirssonite*	J.H. Pratt, 1896	Searles Lake	
66	Plazolite	W.F. Foshag, 1920	Crestmore	= Hibschite
67	Posepnyte	J.V. Schrockinger, 1887	Sulphur Bank	A mixture
68	*Probertite*	A.S. Eakle, 1929	Kramer	
69	*Redingtonite*	G. Becker, 1888	Knoxville	
70	*Redledgeite*	H. Strunz, 1961	Washington	
71	*Riversideite*	A.S. Eakle, 1917	Crestmore	
72	*Roscoelite*	J. Blake, 1875	Coloma	
73	*Rosenhahnite*	A. Pabst and E.B. Gross, 1967	Cloverdale	
74	*Sahamalite*	H.W. Jaffe, R. Meyrowitz and H.T. Evans, 1953	Mountain Pass	
75	*Salmonsite*	W.T. Schaller, 1912	Pala	
76	*Sanbornite*	A.F. Rogers, 1932	Incline	
77	*Schairerite*	W.F. Foshag, 1931	Searles Lake	
78	*Schuetteite*	E.H. Bailey, F.A. Hildebrand, C.L. Christ and J.J. Fahey, 1959	Sulphur Bank	
79	*Searlesite*	E.S. Larsen and W.B. Hicks, 1914	Searles Lake	
80	*Sicklerite*	W.T. Schaller, 1912	Pala	
81	Sonomaite	E. Goldsmith, 1877	The Geysers	= pickeringite
82	*Stewartite*	W.T. Schaller, 1912	Pala	
83	Stibioferrite	E. Goldsmith, 1873	Santa Clara Co.	A mixture
84	*Sulphohalite*	W.E. Hidden and J.B. Mackintosh, 1888	Searles Lake	
85	*Teepleite*	W.A. Gale and M. Vonsen, 1938	Borax Lake	
85	*Tilleyite*	E.S. Larsen and K.C. Dunham, 1933	Crestmore	
87	*Tincalconite*	C.U. Shepard, 1878	California	
88	*Traskite*	J.T. Alfors, M.C. Stinson, R.A. Matthews and A. Pabst, 1965	Big Creek	
89	Trautwinite	E. Goldsmith, 1873	Monterey Co.	A mixture
90	Treanorite	A.O. Woodford, J.D. Laudermilk and E.H. Bailey, 1940	Crestmore	= Allanite
91	*Tunellite*	R.C. Erd, V. Morgan and J.R. Clark, 1961	Kramer	
92	*Tychite*	S.L. Penfield and G.S. Jamieson, 1905	Searles Lake	
93	*Veatchite*	G.S. Switzer, 1938	Tick Canyon	
94	*Verplanckite*	J.T. Alfors, M.C. Stinson, R.A. Matthews and A. Pabst, 1965	Big Creek	
95	*Vonsenite*	A.S. Eakle, 1920	Crestmore	
96	*Walstromite*	M.C. Stinson and J.T. Alfors, 1964	Big Creek	
97	*Wardsmithite*	R.C. Erd, J.F. McAllister and A.C. Vlisidis, 1970	Death Valley	
98	*Wightmanite*	J. Murdoch, 1962	Crestmore	
99	*Wilkeite*	A.S. Eakle and A.F. Rogers, 1914	Crestmore	
100	Woodfordite	J. Murdoch and R. A. Chalmers, 1958	Crestmore	= Ettringite
101	*Woodhouseite*	D.M. Lemmon, 1937	White Mts.	
102	*Zussmanite*	S.O. Agrell, M.G. Brown and D. McKie, 1965	Laytonville	