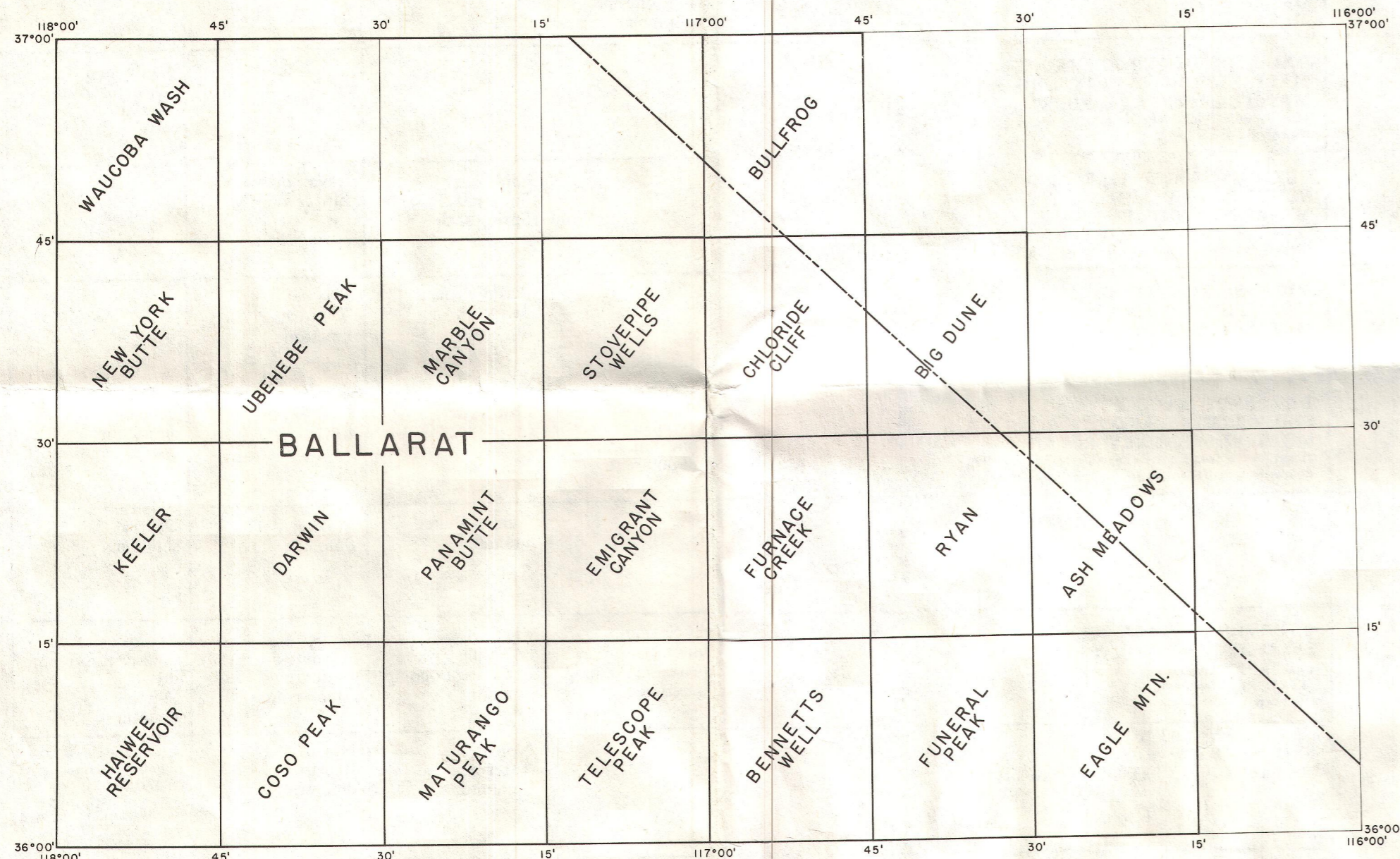


TOPOGRAPHIC QUADRANGLES
WITHIN THE DEATH VALLEY SHEET
AVAILABLE FROM THE U. S. GEOLOGICAL SURVEY
1958



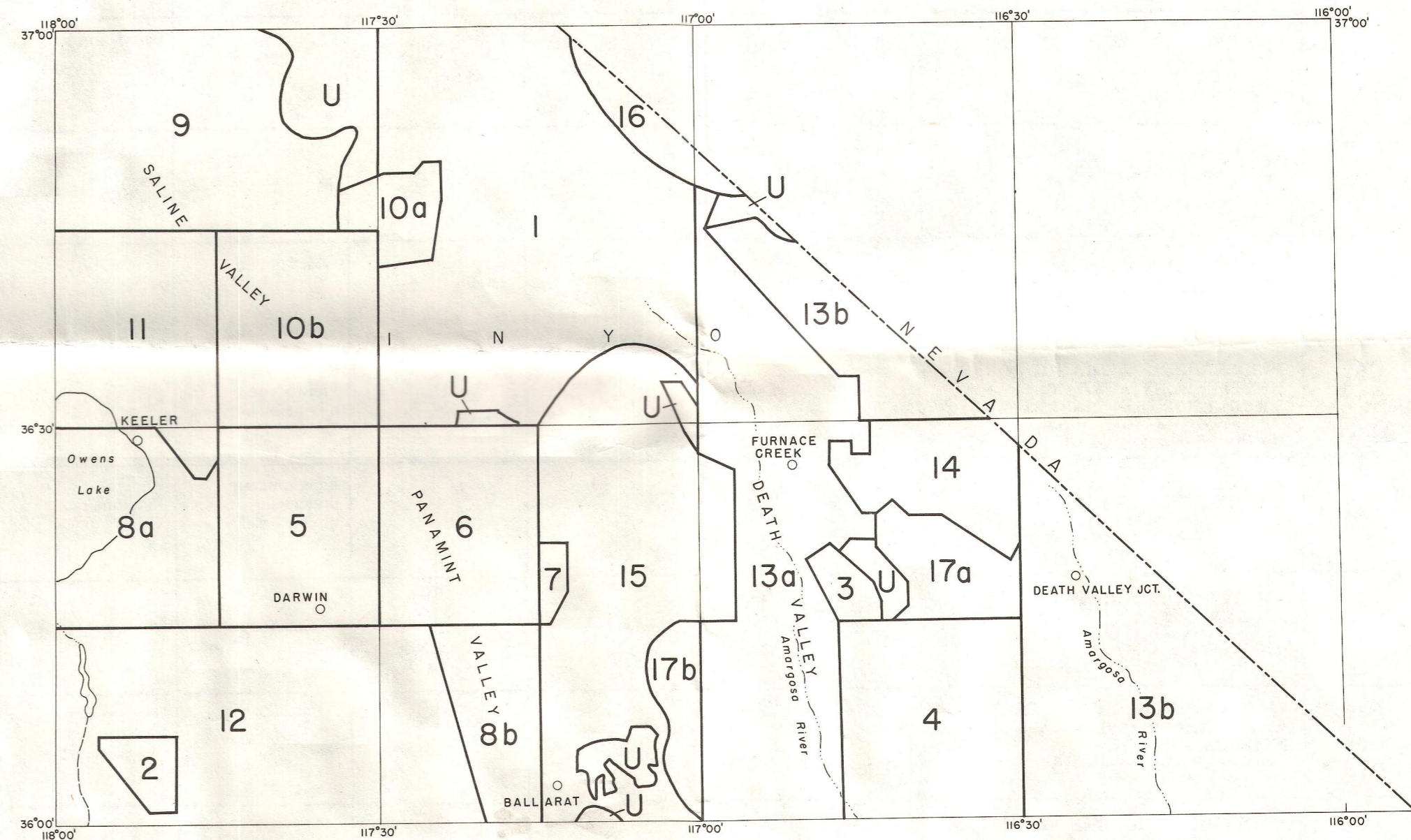
View eastward at the mouth of Furnace Creek Wash with Furnace Creek Inn in foreground. The bluff upon which the Inn is built marks a recent fault scarp. Behind Inn northeast-dipping beds of Funeral fanglomerate overlie similarly dipping strata of Furnace Creek formation. Ridge on skyline is composed of Lower Cambrian strata, which are in fault contact with Furnace Creek strata at Furnace Creek fault zone along base of ridge. Spence Air Photos Published in Division of Mines Bulletin 170.

EXPLANATORY DATA
DEATH VALLEY SHEET
GEOLOGIC MAP OF CALIFORNIA

OLAF P. JENKINS EDITION
Compiled by Charles W. Jennings, 1958

(Fourth Printing, 1973)

INDEX TO GEOLOGIC MAPPING
USED IN COMPILATION OF THE DEATH VALLEY SHEET



1. Ball, Sydney, 1907. A geologic reconnaissance in southwestern Nevada and eastern California: U. S. Geol. Survey Bull. 308, 218 pp., Pl. 1: Geologic reconnaissance map of portions of southwestern Nevada and eastern California, scale 1:250,000. (Modified in part by L. F. Noble, L. A. Wright, W. E. Hall, and S. Muessig, personal correspondence, 1957; and by California Div. Water Resources, Reconnaissance of geology and ground water in the Lahontan area, scale 1:250,000, unpublished 1955.)
2. Chesterman, Charles W., 1956. Pumice, pumicite, and volcanic cinders in California: California Div. Mines Bull. 174, 119 pp., Pl. 3: Geologic map of the Coso Pumice area, scale 1" = 3,000 feet.
3. Curry, H. Donald, 1954. Turtlebacks in the central Black Mountains, Death Valley, California: California Div. Mines Bull. 170, Chapt. IV, Contr. 7, pp. 53-59, Fig. 3: Geologic map of Badwater Turtleback and adjacent areas, scale approx. 1:48,000.
- Curry, H. Donald, Reconnaissance map, central Black Mountains, Death Valley, California, scale approx. 3" = 1 mi., unpublished.
4. Dreves, Harold D., Geologic map of the Funeral Peak quadrangle and eastern part of Bennetts Well quadrangle, California, scale 1:62,500, U. S. Geol. Survey, unpublished work in progress (1957).
5. Hall, Wayne E., and MacKevett, Edward M., Geologic map of the Panamint Butte quadrangle, California, scale 1:62,500, U. S. Geol. Survey, unpublished (1954).
6. Hall, Wayne E., and Stephens, H. G., Geologic map of the Furnace Creek quadrangle, California, scale 1:62,500, U. S. Geol. Survey, mapping in progress (1957).
7. Hopper, Richard H., 1947. Geologic section from the Sierra Nevada to Death Valley, California: Geol. Soc. America Bull., vol. 58, pp. 393-432, Pl. 1: Structure section and accompanying geologic map, Sierra Nevada to Death Valley, scale approx. 3/4" = 3 mi. (Modified in part by W. E. Hall, personal correspondence, 1957.)
- 8a. Jennings, Charles W., and Strand, Rudolph G., Geologic reconnaissance map of the Keeler quadrangle, California, scale 1:62,500, California Div. Mines, unpublished (1957).
- 8b. Jennings, Charles W., and Strand, Rudolph G., Geologic reconnaissance map of eastern part of the Maturango Peak quadrangle, California, scale 1:62,500, California Div. Mines, unpublished (1957).
9. Lombardi, Oreste W., Geologic reconnaissance maps of the Waucoeba Wash and southern part of the Dry Mtn. quadrangles, California, scale 1:62,500, unpublished (1955).
- 10a. McAllister, James F., 1952. Rocks and structure of the Quartz Spring area, northern Panamint Range, California: California Div. Mines Special Rept. 25, 38 pp., Pl. 1: Geologic and topographic sketch map of the Quartz Spring area, Panamint Range, California, scale 3/4" = 2,000 feet.
- 10b. McAllister, James F., 1956. Geology of the Ubehebe Peak quadrangle, California: U. S. Geol. Survey, Geologic quadrangle map, GQ 95, scale 1:62,500.
11. Merriam, Charles W., and Smith, Ward C., Geologic map of the New York Butte quadrangle, California, scale 1:62,500, U. S. Geol. Survey, unpublished, 1951. (Saline Valley geology by O. W. Lombardi, personal correspondence, 1955.)
- Bateman, Paul C., and Merriam, Charles W., 1954. Geology of the Owens Valley region, Inyo County, California: California Div. Mines Bull. 170, map sheet 11, scale 1:250,000. (Quaternary geology modified by C. W. Jennings and R. G. Strand, California Div. Mines, unpublished 1957.)
12. Nelson, C. A., Photogeologic interpretation of the Haivee Reservoir, Coso Peak, and western part of Maturango Peak quadrangles, scale 1:62,500, University of California, Los Angeles, unpublished (1952).
- 13a. Noble, Levi F., and Wright, Lauren A., 1954. Geology of the central and southern Death Valley region, California: California Div. Mines Bull. 170, Chapt. II, Contr. 10, pp. 143-160, Pl. 7: Generalized geologic map of the central and southern Death Valley region, California, scale 1:250,000. (Includes unpublished mapping of Ryan area and Greenwater Range by T. P. Thayer, U. S. Geol. Survey, 1939, 1954. Modified in part by L. F. Noble, L. A. Wright, J. F. McAllister, B. W. Troxel and C. B. Hunt, personal correspondence, 1957.)
- 13b. Noble, Levi F., and Wright, Lauren A., Geologic reconnaissance maps of parts of the Nopah Range, Resting Spring Range, and Funeral Mountains, scale 1:62,500, California Div. Mines, unpublished (1957).
14. Richards, Carroll A., Geology of a part of the Funeral Mountains, Death Valley National Monument, California, scale 1:31,250, University of Southern California, unpublished M. S. thesis, 1957.
- Richards, Carroll A., Geologic reconnaissance map of the northeastern part of the Ryan quadrangle, California, scale 1:62,500, personal correspondence, 1957.
15. Sears, David H., Geologic map of central Panamint Range, scale 1:62,500, unpublished (1954).
16. Stock, Chester, and Bode, Francis D., 1935. Occurrence of lower Oligocene mammal-bearing beds near Death Valley, California: Nat. Acad. Sci. Proc., vol. 21, pp. 571-579, Pl. 1: Reconnaissance map showing geologic relations of Titus Canyon formation in Grapevine and Funeral Mts., scale approx. 1:528,000.
- 17a. Wright, Lauren A., and Troxel, Bennie W., Geologic reconnaissance map of the southern part of the Ryan quadrangle, California, scale 1:62,500, California Div. Mines, unpublished (1957).
- 17b. Wright, Lauren A., and Troxel, Bennie W., Geologic reconnaissance map of the east side of Telescope Peak quadrangle, California, scale 1:62,500, California Div. Mines, unpublished (1958).

U = Unmapped

For a complete list of published geologic maps of this area see Division of Mines Special Report 52.

STRATIGRAPHIC NOMENCLATURE — DEATH VALLEY SHEET

LEGEND DEATH VALLEY SHEET			DATA FROM SELECTED PUBLISHED SOURCES USED TO COMPILE THE DEATH VALLEY SHEET Numbers Refer to Index on Reverse Side of Sheet						
AGE	STATE MAP SYMBOL	STATE MAP UNIT	Ball 1	Bateman and Merriam 11	McAllister 10a	McAllister 10b	Noble and Wright 13a, b (In part unpublished)	Stock and Bode 16	
CENOZOIC	Recent	Qs	RECENT SAND DUNES (Sand dunes, wind-deposited sediments)	Sand dunes			Wind-deposited sediments		
		Qal	RECENT ALLUVIUM (Alluvium, fan deposits)	Alluvium		Alluvium and older gravel	Alluvium, fan deposits	Quaternary alluvium	
		Qst	QUATERNARY SALT DEPOSITS (Salt deposits)					Salt deposits	
	QUATERNARY	Pleistocene	Ql	QUATERNARY LAKE DEPOSITS (Lake deposits, playa deposits)				Lake deposits	Lake deposits
			Qc	PLEISTOCENE NONMARINE SEDIMENTARY DEPOSITS (Older gravel, older alluvium)				Older gravel	
			Qpv, Qpv ^r , Qpv ^b	PLEISTOCENE VOLCANIC ROCKS: UNDIFFERENTIATED—Qpv; RHYOLITIC—Qpv ^r ; BASALTIC—Qpv ^b (Undifferentiated volcanic rocks—Qpv; rhyolite—Qpv ^r ; basalt—Qpv ^b)				Pliocene or Pleistocene olivine basalt	
		QP	PLIOCENE-PLEISTOCENE NONMARINE SEDIMENTARY DEPOSITS (Coso fm., Funeral fanglomerate, Nova fm., unnamed Plio-Pleistocene fanglomerates)				Fanglomerate underlying olivine basalt	Funeral fanglomerate	
		Pliocene	☼	QUATERNARY AND PLIOCENE CINDER CONES (Cinder cones of Coso and Argus Ranges)					
			Pv ^a , Pv ^b , Pv ^p	PLIOCENE VOLCANIC ROCKS: ANDESITIC—Pv ^a ; BASALTIC—Pv ^b ; PYROCLASTIC—Pv ^p (Andesite—Pv ^a ; basalt associated with Funeral fanglomerate—Pv ^b ; pyroclastic agglomerate and tuff—Pv ^p)					Basalt associated with Funeral fanglomerate
			Mc	UNDIVIDED MIOCENE NONMARINE SEDIMENTARY ROCKS (Furnace Creek fm., younger Tertiary sedimentary rocks)					Younger Tertiary sedimentary rocks including Furnace Creek fm.
	Mv, Mv ^r		MIOCENE VOLCANIC ROCKS: UNDIFFERENTIATED—Mv; RHYOLITIC—Mv ^r (Undifferentiated Miocene volcanic rocks, Greenwater volcanics—Mv; rhyolite and tuff—Mv ^r)					Younger Tertiary volcanic rocks	Undifferentiated rhyolites and tuffs
	TERTIARY	Oligocene	Φc	OLIGOCENE NONMARINE SEDIMENTARY ROCKS (Titus Canyon fm., "chaos rocks" of Curry)				Older Tertiary sedimentary rocks including Titus Canyon fm.	Titus Canyon fm.
			Φv	OLIGOCENE VOLCANIC ROCKS (Artist Drive fm. (may be partly or wholly post-Oligocene), older Tertiary volcanic rocks)				Older Tertiary volcanic rocks including Artist Drive fm.	
		Undivided	Tc	TERTIARY NONMARINE SEDIMENTARY ROCKS (Younger Tertiary lake beds and fanglomerate)	Older alluvium (designated as Plio-Pleistocene by Ball)				Younger Tertiary lake beds and fanglomerate
	UNDIVIDED	UNDIVIDED	Tv ^r	TERTIARY VOLCANIC ROCKS: RHYOLITIC (Tertiary rhyolite and latite of Ball)	Late Miocene-Pliocene rhyolite and latite flows				
Qtc			CENOZOIC NONMARINE SEDIMENTARY ROCKS (Late Tertiary to Recent travertine and thermal spring deposits in Saline Valley)						
Qtv ^b		CENOZOIC VOLCANIC ROCKS: BASALTIC (Basalt and basic andesite)	Basalt and basic andesite						
UNDIVIDED		gr	MESOZOIC GRANITIC ROCKS (Undifferentiated granitic rocks, Hunter Mtn. quartz monzonite, Little Chief porphyry)	Granite, quartzite, monzonite, syenite	Undifferentiated granitic rocks, quartz monzonite, albite-orthoclase granite	Syenite and associated intrusive rocks	Hunter Mtn. quartz monzonite	Post-Triassic granite	
		Jrv	JURASSIC AND TRIASSIC METAVOLCANIC ROCKS (Metavolcanic rocks)			Middle Triassic metavolcanic rocks			
TRIASSIC	r	TRIASSIC MARINE SEDIMENTARY AND METASEDIMENTARY ROCKS (Marine shale and limestone)				Lower Triassic marine shale and limestone			

STRATIGRAPHIC NOMENCLATURE — Continued

AGE	STATE MAP SYMBOL	STATE MAP UNIT	Ball 1	Bateman and Merriam 11	McAllister 10a	McAllister 10b	Noble and Wright 13a, b (In part unpublished)	Stock and Bode 16
PALEOZOIC	UNDIVIDED	IP	PALEOZOIC MARINE SEDIMENTARY AND METASEDIMENTARY ROCKS (Undifferentiated Paleozoic rocks)	Limestone (Designated as Pennsylvanian in part and Ordovician in part by Ball)		Undifferentiated metamorphic Paleozoic rocks	Undifferentiated Paleozoic rocks	Paleozoic and pre-Paleozoic limestone, quartzite and shale
		R	PERMIAN MARINE SEDIMENTARY AND METASEDIMENTARY ROCKS (Bird Spring (?) fm., undivided Carboniferous and Permian rocks)		Carboniferous and Permian shale, limestone, sandstone and conglomerate		Bird Spring (?) fm.	
		C	UNDIVIDED CARBONIFEROUS MARINE SEDIMENTARY AND METASEDIMENTARY ROCKS (Undivided Carboniferous marine rocks of Nopah Range)					Undivided Carboniferous marine sedimentary rocks
	PENNSYLVANIAN	CP	PENNSYLVANIAN MARINE SEDIMENTARY AND METASEDIMENTARY ROCKS (Keller Canyon fm., Rest Spring shale, Tihviah limestone, lower member Bird Spring (?) fm.)			Tihviah limestone, Rest Spring shale		Lower member Bird Spring (?) fm., Rest Spring shale
		CM	MISSISSIPPIAN MARINE SEDIMENTARY AND METASEDIMENTARY ROCKS (Perdido fm., Tin Mtn. limestone)			Perdido fm., Tin Mtn. limestone	Perdido fm., Tin Mtn. limestone	
	DEVONIAN	D	DEVONIAN MARINE SEDIMENTARY AND METASEDIMENTARY ROCKS (Lost Burro fm., Lost Burro fm.-Hidden Valley dolomite undifferentiated, Sultan limestone)		Silurian and Devonian sandstone, limestone and dolomite	Lost Burro fm.	Lost Burro fm.	Sultan limestone
		S	SILURIAN MARINE SEDIMENTARY AND METASEDIMENTARY ROCKS (Hidden Valley dolomite, Silurian dolomite)			Hidden Valley dolomite	Hidden Valley dolomite	Silurian dolomite
	ORDOVICIAN	O	ORDOVICIAN MARINE SEDIMENTARY AND METASEDIMENTARY ROCKS (Ely Springs dolomite, Eureka quartzite, Pogonip limestone)		Ely Springs dolomite, Eureka quartzite, Pogonip limestone	Ely Springs dolomite, Eureka quartzite, Pogonip limestone	Ely Springs dolomite, Eureka quartzite, Pogonip limestone	Ely Springs dolomite, Eureka quartzite, Pogonip (?) dolomite
		E	CAMBRIAN MARINE SEDIMENTARY AND METASEDIMENTARY ROCKS (Bonanza King fm., Cadiz fm., Cornfield Springs fm., Death Valley fm., Nopah fm., Racetrack dolomite, Wood Canyon fm., undifferentiated Cambrian sedimentary rocks)			Nopah fm., Racetrack dolomite	Nopah fm., Racetrack dolomite	Undifferentiated Cambrian sedimentary rocks, Nopah fm., Cornfield Springs fm., Bonanza King fm., Cadiz fm., Wood Canyon fm.
	PRECAMBRIAN	E?	CAMBRIAN-PRECAMBRIAN MARINE SEDIMENTARY AND METASEDIMENTARY ROCKS (Hanaupah fm., Johnnie fm., Noonday dolomite, Radcliff fm., Redlands dolomitic limestone, Sentinel dolomite, Stirling quartzite)					Stirling quartzite, Johnnie fm., Noonday dolomite
		pE	UNDIVIDED PRECAMBRIAN METAMORPHIC AND GRANITIC ROCKS (Undivided Precambrian metamorphosed sedimentary rocks)					
		lpE	LATER PRECAMBRIAN SEDIMENTARY AND METAMORPHIC ROCKS—Algonkian ON SOME MAPS (Pahrump series [Beck Spring dolomite, Crystal Spring fm., Kingston Peak fm.] Marvel dolomitic limestone, Middle Park fm., Mtn. Girl quartzite, Sourdough limestone, Surprise fm., Wildrose fm.)					Pahrump series
		epE	EARLIER PRECAMBRIAN METAMORPHIC ROCKS—Archean on some maps (Panamint metamorphic complex, World Beater porphyry)					



View of northwest slope of Sugarloaf Mountain, a perlite dome with a steep-sided lava flow on its right flank. Southwestern Coso Range, near U.S. Highway 395. Photo by C. W. Chesterman.