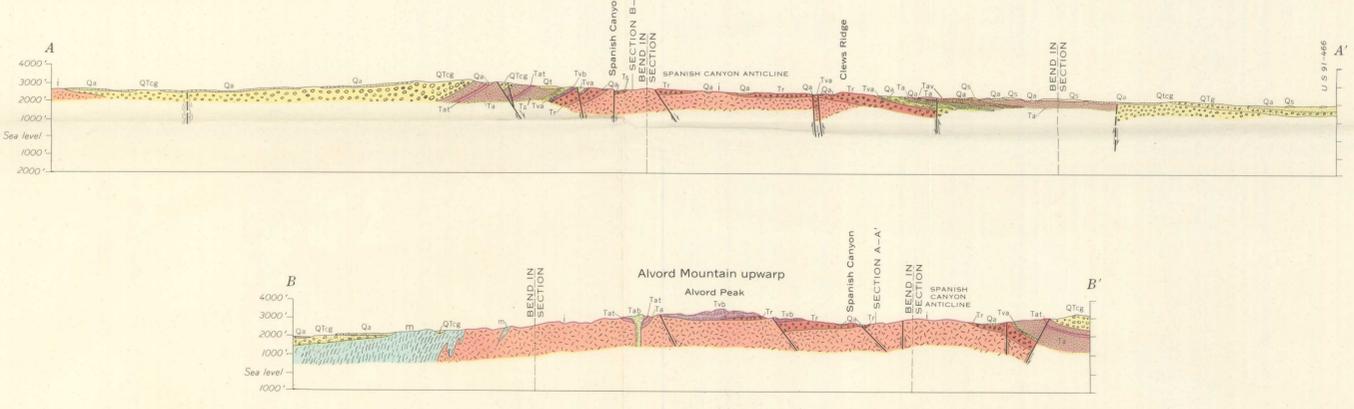


Base map by U. S. Geological Survey
Topography from aerial photographs by multiplex methods. Aerial photographs taken 1946. Field check 1948

INTERIOR—GEOLOGICAL SURVEY, WASHINGTON, D. C. 498 1988

Geology by F. M. Byers, Jr., assisted by Clifford H. Gray, Jr., 1953



EXPLANATION

<p>Recent</p> <p>Qc Clay and silt Deposits of recent playa lakes</p> <p>Pleistocene</p> <p>Qmg Qmc Qms Manix lake beds Gravel bar at shoreline of Lake Manix, Qmg; silt and fine sand, Qmc; beach ridge composed largely of windblown sand at shoreline of Lake Manix, Qms</p> <p>QTob Olivine basalt Subophitic basalt with 20 percent olivine</p> <p>QTib QTic Volcanic rocks of Lane Mountain Rhyolitic tuff-breccia, QTib; dacite, intrusive into tuff-breccia, QTic; tuffaceous sediments, in whole or in part correlative with tuff-breccia, QTis</p> <p>Pliocene(?)</p> <p>QT Breccia and fanglomerate Coarse breccia with angular blocks up to about 10 feet in diameter derived chiefly from dark mafic igneous and metamorphic rocks; commonly occurs at and near fault</p> <p>Miocene</p> <p>ac Arkosic conglomerate</p>	<p>Qd Windblown sand Sand deposits of present dunes</p> <p>Qso Older windblown sand Partly dissected sand dunes, slightly cemented with calcium carbonate, at north end of Coyote Lake</p> <p>Qt Terrace deposits on bedrock</p> <p>Ql Landslide and talus deposits Large and small blocks derived from lava flows upslope</p> <p>Qb Basalt flows Gently arched; moderately dipping adjacent to Bicycle Lake fault zone</p> <p>QTha Hornblende andesite Gray lava containing basaltic hornblende</p> <p>UNCONFORMITY</p> <p>QTcg Granitic fanglomerate Fanglomerate and gravel composed largely of light-gray quartz monzonite boulders; locally contains dioritic boulders near base</p> <p>LOCAL ANGULAR UNCONFORMITY</p> <p>Tab Barstow formation Mainly light-gray arkosic sandstone and pebble-cobble conglomerate, Ta; locally contains tuffaceous middle member, Ta1, which separates upper member from lower member; lower member includes three flows of olivine basalt, Tav; intrusive and extrusive basalt, Tab, is equivalent to upper member in northeastern Alvord Mountain. Formation contains middle Miocene vertebrate fossils</p> <p>Tva Spanish Canyon formation* White tuffs and tuffaceous sandstone in lowermost part of formation; two olivine basalt flows and interbedded arkosic sandstone in upper part of formation</p> <p>Tvb Alvord Peak basalt* Dense dark-gray nonporphyritic basalt and subordinate andesite, Tvb; intrusions, Tv; flows include minor interbedded pyroclastic rocks. Includes some flows that may be slightly younger in age</p> <p>Tr Clews fanglomerate* Moderate reddish-brown fanglomerate, largely derived from local basement rock. Includes reddish-to purplish-gray bentonitic clays, silts, and gray limestone in lowermost part. In Spanish Canyon contains white tuff bed near top</p> <p>MAJOR UNCONFORMITY</p> <p>d r Dikes Granodiorite porphyry, d, and rhyolite, r</p> <p>Plutonic rocks Porphyritic quartz monzonite, granodiorite, and mafic border facies, principally diorite.</p> <p>am Amphibolite Coarse-grained greenish-black amphibolite with more than 70 percent hornblende</p> <p>m ml Metamorphic rocks and migmatite Metamorphic and igneous complex, m, consists mainly of quartz-feldspar gneisses and mica schists intruded by granitic dikes. Carbonate rocks, ml, are largely recrystallized limestone with minor dolomite</p> <p>--- Contact, showing dip Dashed where approximately located; short dashed where indefinite; dotted where concealed</p> <p>--- Fault, showing dip Dashed where approximately located; dotted where concealed. U, upthrown side; D, downthrown side. Arrows indicate relative movement, where known</p> <p>--- Hypothetical fault Dotted beneath Quaternary</p> <p>--- Shear zone in pre-Tertiary rocks</p> <p>--- Mineralized fault breccia</p> <p>--- Anticline Showing position of crest line. Dashed where approximately located; dotted where concealed</p> <p>--- Syncline Showing position of trough. Dashed where approximately located; dotted where concealed; queried where doubtful</p> <p>--- Strike and dip of beds</p> <p>--- Strike of vertical beds</p> <p>--- Horizontal beds</p> <p>--- Strike and dip of schistosity Approximately parallel to bedding</p> <p>--- Strike of vertical schistosity</p> <p>--- Horizontal schistosity</p> <p>--- Vertical shaft</p> <p>--- Mine adit</p> <p>--- Prospect pit</p> <p>--- U. S. Geological Survey locality</p> <p>* New formation</p>	<p>QUATERNARY</p> <p>PLIOCENE</p> <p>MIOCENE</p> <p>PRE-TERTIARY</p>
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GEOLOGIC MAP AND SECTIONS OF THE ALVORD MOUNTAIN QUADRANGLE SAN BERNARDINO COUNTY, CALIFORNIA

Scale 1:62,500
Contour intervals 20 and 40 feet
Datum is mean sea level