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Panorama of the base of the Sierra Nevada Mts., in the vicinity of Jawbone Canyon. The entrance to Jawbone Canyon is represented by the low portion of the range. To the left of the canyon are the granitic basement complex, and the Paleozoic basement complex as indicated. On the right are the Ricardo sandstone beds. The Cameron fault runs from the mouth of the canyon, to the left, along the scarp in the granitic rocks.
INTRODUCTION.

The work on the Jawbone Canyon area was taken at the suggestion of Dr. J. P. Buwalda, with the intention of working out the physical, aerial and historical relations as completely as possible. The problem was carried on by Mr. G. A. Schroeter and myself as partial fulfillment of the requirements for the degree of Bachelor of Science.

Operations began about the middle of January, 1928, and lasted until the first of June of the same year. The total time spent in the field amounted to approximately twenty-six days, since but two days of each week were available for this work.

LOCATION.

Jawbone Canyon is located in Kern County, California, at the base of the Sierra Nevada Mountains, on the northwestern edge of the Mojave Desert. It lies eighty-two miles northeast of Los Angeles by air line, or a distance of one hundred thirty-five miles by road. It may be reached conveniently from either Los Angeles or Bakersfield by train or auto. There are good macadam roads leading from both points to Mojave, from which a smooth, well-packed dirt road leads to the area. See Plate I. Within the area itself the roads are of little consequence. The main one goes up Jawbone Canyon, with
ROAD MAP
SHOWING
HIGHWAY SYSTEMS
- AND -
PRINCIPAL POINTS

SCALE 1 IN. = 1 MILE

Plate I.
a branch which enters Blue Point Canyon. There are also a few short roads constructed at the time the Los Angeles Aqueduct was built, which are of little value to the geologist. They are all dirt roads, poorly kept, and practically impassable in places. However the one up Jawbone Canyon, being the best of the lot, served admirably for reaching the interior of the area.

The area worked comprises about forty-five square miles of this region, being a rectangle with dimensions of approximately 5½ x 8 miles. There being no distinct natural boundaries the area was laid out by drawing lines directly North to South and East to West so as to include Jawbone Canyon and small portions on each side of it.

METHOD OF INVESTIGATION.
The first two days in the field were spent in making a general survey of the area in order to facilitate the future work. Beginning the detailed study of the area we started at the mouth of Jawbone Canyon and worked northward. The country being very rough, even dangerous, it was necessary for both parties to work close together. This method also proved practical in settling questions which arose at various times regarding the problem.
The topographic map used was a regular United States Geological Survey map, surveyed in 1913. The scale of this map is 1/125000, with a contour interval of 100 feet. The scale being too small for practical detailed field work it was necessary to have the Jawbone portion enlarged to just five times its original dimensions. This gave a map with a scale of one inch equal to 2000 feet. This map proved quite serviceable with the exception that the enlarging lessened the accuracy of the topographic representation. As a result of this it was necessary to use triangulation in most cases for locating points.

The region has practically no cultural development with the exception of the roads mentioned, a few poor homesteaders and the Los Angeles Aqueduct. The aqueduct passes through the eastern portion of the area in a general north-south direction. There is a caretaker's house at the point where the aqueduct crosses Jawbone Canyon. This point, being about the center of the area, proved of great value as a source of water.

GEOGRAPHY

TOPOGRAPHY.

The average relief of the area is approximately 3000 feet, rising to its maximum height of 5175 feet at Cross Mountain in the southwest corner, and dropping to its lowest level of 2070 feet in the southeast corner. The old Paleozoics have by far the greatest relief.
exist Cross and Chuckwalla Mountains rising to heights of over 3000 feet. The sides of the peaks are steep, dropping almost vertically in places to form steep-walled canyons. Going northward from the Paleozoics the granitic basements rocks are encountered. Although the elevation of these rocks is much less than that of the Paleozoics, they, nevertheless, present a topography which is in many places identical with it. These rocks reach a maximum height in the northwest corner of the field. Here the elevation is about 4000 feet. In general the walls of the canyons of this basement complex have faces, which although steep, have considerable more slope to them than those of the Paleozoics. The valleys in these granites are broad across the bottom giving a modified "U" shape in contrast to the distinct U-shaped valleys present in the old basements. The Ricardo sandstones and conglomerates have a maximum elevation of 3000 feet. In general they present a typical bad-lands topography, steep faces existing where the beds have been cutoff perpendicularly to the dip, with gentle slopes following back the plane of the dip. As a result of the low elevation of this region the valleys are filled with
large quantities of alluvial material which give them a cross-section like the arc of a circle.

CLIMATE.

This region has a typical arid climate, the average precipitation over a period of years being close to five inches. The rainfall occurs almost entirely in the winter months. Cloud bursts are frequent in this vicinity, and when they occur, tremendous quantities of debris is carried by the floods as they rush down the steep canyons into the Mojave Basin. The temperature of this locality varies greatly between summer and winter. Temperatures as high as 130° are not infrequent during the summer months, while at night during the winter, freezing temperatures often occur. This extreme variation in temperature is an important erosional agency. It affects especially the basement rocks in which expansion and contraction causes a network of fractures to form on their surfaces, thereby lessening their resistance to other erosional agencies.

High winds are frequently experienced, often-times reaching velocities of forty miles per hour. At this speed the pressure is close to eight pounds per square
inch, hence the value of wind in this region as an erosional agent and transporter cannot be over-estimated. It is especially notable in the Ricardo sandstones and conglomerates, where the wind by abrasion has produced pothole-like forms in the face of the rocks.

DRAINAGE.

The drainage pattern of the area is quite simple. Jawbone Canyon, an intermittent stream, which flows from west to east across the middle of the area, forms the principal outlet for the run-off. Feeding into Jawbone are numerous smaller streams, the largest of which is the one that runs north from Jawbone up Blue Point Canyon. This stream drains a large area of granitic and Ricardo rocks. The other streams are relatively short and empty with a steep grade into Jawbone. All of the water from this area, after entering Jawbone, runs down onto the Mojave Basin at the base of the range. Here the material carried by the flow is gradually dropped as the velocity of the water lessens, until finally a practically loadless stream of water reaches Kane Lake.

VEGETATION.

With the exception of the plants common to an arid climate there is practically no vegetation in this region.
The principal forms which exist the year round are cactii, yucca, greesewood and squaw tea. In the winter and spring months a mantle of short, wiry grass and vividly-colored desert flowers appear. However they are short-lived and disappear at the first sign of dryness. On the higher elevations, such as Cross Mountain, where the winter snows remain for some time, a few pine and oak trees occur. Where sufficient water is available fruit trees are grown with considerable success, but the scarcity of water has prevented such ranching to any important degree.

EXPOSURES.

The slopes of this arid region are swept clean by the high winds and heavy rains, and as a result, almost the entire area is one great exposure of naked rocks. In places it is possible to trace contacts for many miles without interruption. Practically the only soil mantle encountered, with the exception of the alluvial deposits in the canyon bottoms was the Quaternary old alluvium, which occurs only sparsely, resting on the Ricardo beds in the northeast section of the area.

STRATIGRAPHY and PETROGRAPHY.

It is convenient to divide the rocks of the Jawbone Canyon area into four major divisions. The highly
PLATE II.

GEOL O GIC T I ME S CA LE
OF THE JAWBONE CANYON REGION

<table>
<thead>
<tr>
<th>SYSTEM</th>
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<tr>
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<td>Upper</td>
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</tr>
<tr>
<td></td>
<td>Pliocene</td>
<td></td>
<td></td>
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<tr>
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<td>Upper-Lower</td>
<td>Ricardo Agglomerate</td>
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</tr>
<tr>
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<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Lower</td>
<td>Ricardo Tuffs</td>
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<td></td>
<td></td>
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<tr>
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<td>Lower</td>
<td>Ricardo Ss. &amp; Cong.</td>
<td>4300 †</td>
</tr>
<tr>
<td></td>
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<td></td>
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<tr>
<td><strong>UNCONFORMITY</strong></td>
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<td>Basement Marbles Quartzites</td>
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metamorphosed basement complex rocks, Paleozoic in age, are present in the southwest portion of the area. The Mesozoic basement granites, which form about five-tenths of the area, are found in the central, extreme north, and western portions. On these basement granites lie the Tertiary Ricardo and basalt formations. The Ricardo sandstones and conglomerates exist mainly in the north-east section of this locality. Following in sequence to the Ricardo are the Jawbone basalts, the Quaternary old alluvial deposits, consisting of Sierran debris, and the Quaternary recent alluvial deposits, an erosional product of the present ranges.

**PALEozoIC BASEMENT COMPLEX.**

This formation is composed chiefly of metamorphosed marbles, quartzites and biotite gneiss. They vary in color from white to dark gray. The marble contains pebbles of limestone, many of which have been lengthened out into lense-like forms due to the metamorphism. The marble in places has a laminated structure and at a distance has the appearance of an augen, as a result of the bending of the lamenations around the contained limestone pebbles.

Going up S. B. Canyon from the Horseshoe Mining
Claims one encounters several felsite dykes. They occur in the white marbles present here, and the largest one, a rhyolite, which is from fifteen to twenty feet in thickness dips off at a steep angle toward the north. The rhyolite has a dark, reddish color and is composed chiefly of large orthoclase phenocrysts, and a small amount of quartz. It is practically the only rhyolite of this character present. There are also some small basic dykes present. They are very dark in color and apparently consist of augite and plagioclase.

The secondary biotite gneiss of this region is found in contact with the marble, occurring along the numerous small fault planes, where considerable movement has taken place. Its origin must have been sedimentary as indicated by its close proximity to the marble. It is platy, containing considerable micà, feldspar and a little quartz. The feldspar occurs as phenocrysts with granular aggregates of quartz about them. In general, these old basement complex rocks have a gray to brownish appearance on weathered surfaces. They break down into rather fine, sharply-angled material. This erosion is aided by the extensive fracturing which has occurred in this region.
GRANITIC BASEMENT COMPLEX

The composition of this basement rock varies considerably over the whole region but in general consists of quartz, orthoclase, and biotite with minor amounts of pyrite and plagioclase. In places, as along the north side of Jawbone Canyon, it is found to be seam quite extensively with orthoclase or microcline. At points of contact it is usually locally altered, the alteration products being mainly kaolin, limonite, and serpentine.

On fresh surfaces it is gray in color which changes to a dark gray, brown or green with weathering. The brown being the predominate weathered color in this region. At contacts with basalts and agglomerates, when it is not altered, it is found to be stained to a dull red.

A phaneritic texture predominates throughout these granites. The mineral grains are of uniform size and are evenly distributed throughout the mass. The rock as a whole, is badly jointed and fractured, breaking up into particles of variable size.

The areal distribution of these rocks is very general throughout the region, They occupy the whole area west of the Ricardo formation and north of the Paleozoic basement rocks, with the exception of a
small area near the center where basaltic flows and Ricardo tuffs and agglomerates occur. As stated before, they represent approximately one-half of the rocks of the area.

Topographically they are about half way between the very rugged Paleozoic and the more gentle, bad-lands topography of the Ricardo sandstones and conglomerates. They are apparently in the late youthful stage of erosion. See plate III.

TERTIARY RICARDO FORMATION

Unconformably on the Mesozoic granitic basement rocks lies the Ricardo formation. The Ricardo consists of three distinct rock types. The first the Ricardo sandstones and conglomerates, the second the Ricardo tuffs, and the third the Ricardo agglomerates.

RICARDO SANDSTONES AND CONGLOMERATES

The major portion of these sandstones and conglomerates is made up of granite pebbles, particles of rhyolite and tuffs. The granite particles constitute the largest constituent. They vary in size from that of fine sand, which with feldspar acts as a cementing material, to that of a man's head, with color ranging from light brown to gray. The rhyolite and tuff particles are much less numerous and more uniform in size. The
PLATE III.

Looking downstream in Water Canyon. Showing the deeply incised canyon and trenching effects. Also typical, large and distinct granitic outcrops.
rhyolites have a rather persistent greenish color, while the tuffs are generally light red to gray.

Taking the Ricardo formation as a whole the principle color is a dull red to gray, depending on the relative proportions of minerals present and the weathering. The particles vary in shape from sub-angular to well rounded, the rounded ones being the most numerous. The beds are well stratified and possess an arkosic matrix. The hardness however, varies considerably in the different beds, so that the less resistant ones form well rounded hillocks, while the harder ones stand out in bold relief.

The sandstones and conglomerates comprise about two-tenths of the total area and are present in the northeastern portion, with a small outcrop in the tuffs and basalts of the central portion.

The outcrops of these beds are distinct and numerous, excepting where the less resistant ones have been covered by a detrital mantle. As previously stated, the outcrops of the harder beds are represented bold bluffs and other characteristic bad-land features.

**TEERTIARY RICARDO TUFFS**

The Ricardo tuffs occur in beds of variable thickness, in places associated with a breccia. They are aphanitic and contain basaltic particles which look like phenocrysts in the growing mass. The tuffs in the vicinity of Painted Canyon have a creamy color while those near Blue Point are
green. The breccias are darker and more resistant than the tuffs. See Plate IV.

The tuffs are distributed locally about the extrusives in Painted Canyon and the basalts at Blue Point. They are quite resistant, especially at Blue Point where a large spur is formed by their projection into Jawbone Canyon.

TERTIARY RICARDO AGGLOMERATE

The Ricardo agglomerate consists of a heterogenous mass of various sized granitic and basaltic particles in a sandstone-like matrix. These particles are all angular to sub-angular. Those of granite are gray to brown in color while those of basalt are dark red.

The general appearance of this formation on a weathered surface is a dark brown to red. Its texture is coarse, andphaneric, the constituent particles ranging in from very fine to the size of a baseball or larger. In places it seemingly has slight indications of stratification but no distinct bedding lines could be found. With weathering it darkens and assumes a pitted appearance as the rock particles are eroded away. It is quite resistant and often projects out beyond the adjacent rocks. This formation is found associated with the Ricardo tuffs throughout the region and is often intercalated with the tuff beds. It weathers into typical hog-backs.

See Plate V.
PLATE IV.

Tuff-breccia beds at Blue Point. Quarry in foreground where greenish tuffs are mined. Darker beds are breccia and most resistant.

PLATE V.

Looking northwest from Blue Point showing Ricardo agglomerates with typical hog-back weathering.
TERTIARY JAWBONE BASALTS

The Jawbone basalt flows occur principally in the vicinity of Blue Point. There are some three or four distinct flows here which are nearly identical in character. These flows are usually reddish in color on a weathered surface and gray when fresh. They exhibit a distinct flow structure and in places are very vesicular. The texture varies from aphanitic to aphanitic porphyrytic. The phenocrysts which are found are uniform in size and composed of either quartz or orthoclase. With weathering these basalts break off of the edges of the main flow in large pieces, oftentimes having a pseudo-columnar structure.

Since these flows lie on the surface they are a large outcrop in themselves. Their surfaces are practically clean of any detrital material and their contacts may be followed with little difficulty. See Plate VI.

At the head of Painted Canyon a basalt flow occurs which is quite different from those at Blue Point. This flow overlies a creamy-colored volcanic ash. It is yellow on weathered surfaces and gray on fresh. The texture is aphanitic porphyrytic, in places distinctly vesicular and at times amygdaloidal. A distinct, banded structure is present throughout the mass. The phenocrysts of quartz, orthoclase, biotite, limonite or kaolinite are embedded in a dense, firm, yellowish-brown ground mass. This flow is badly shattered and broken considerably throughout.
Looking west from Blue Point, showing the dip of the Jawbone basalts. No-Name Mt. in the background.

Looking further west from picture above, showing basalts and tuffs in the vicinity of NoName Mt.
QUATERNARY OLD ALLUVIUM

The Quaternary old alluvium deposits are composed chiefly of angular to sub-angular granite particles. They range in size from fine sand to those the size of a pea. The color of this formation is from dark gray to light red. It is not stratified and is poorly cemented. With weathering it usually lightens considerably in color and erodes much the same as common alluvium.

This formation is found lying on the Ricardo sandstones and conglomerates, in contact with the granites, in the area just north and east of Jawbone Canyon proper. Its total area is not more than five or six square miles. It is dissected slightly but in general forms a broad plain dipping slightly to the south.

QUATERNARY ALLUVIUM

The Quaternary alluvial deposits found, in the canyon bottoms and on the Mojave basin to the east of the area, offer a very heterogenous mixture of material. In it are found angular to sub-angular granite particles, metamorphics, basalts and rounded boulders from the Ricardo conglomerates. The granite particles make up the larger part of this formation. It is uncemented and unstratified, except locally in places, and has a predominate gray color. It is spread out at the mouths of canyons in the form of fans, some of which have been recently dissected showing thicknesses of fifty feet or over.
STRUCTURE

The structure of the Jawbone region presents a very interesting problem to the geologist since the field relations, tho easily discernable, are nevertheless complicated. The structural and historical relations of the formations of the Mojave Desert region have been studied considerably by previous investigators and they all agree fairly closely on these subjects.

PALEOZOIC BASEMENT COMPLEX

The old Paleozoics, as previously stated, lie in the southwest portion of the area. They consist mainly of highly folded and faulted metamorphic rocks. They are cut by numerous dykes, both acidic and basic. The majority of these dykes are rhyolites which dip sharply to the west and are cut by smaller, almost vertical, dykes of acidic rock.

The faults in this formation lie at all imaginable angles, a large number of them being horizontal. Along these faults gneisses and sometimes schists are found, the fault plane being clearly marked by slickensides.

Approximately four square miles of these metamorphics were mapped in the vicinity of S.B. Canyon and they apparently continue some distance to the west beyond this point.

GRANITIC BASEMENT ROCKS

The metamorphics just described and the granitic base-
ment rocks are separated by a series of intrusive rhyolites which have apparently come up through the faults developed between the two rock bodies. These rhyolites are highly mineralized and were intruded subsequent to the last movement between the basements as indicated by the numerous, continuous shoots which branch from them.

These granitic basement rocks which lie north of the Paleozoics are undoubtedly the core of a great fault batholith that forms a part of the Tehachapi and Great Sierran ranges. These granites are badly fractured by fracture systems which cut the rock into sharply angled blocks.

RICARDO FORMATION.

Lying unconformably on the granite basement are the Ricardo sandstones and conglomerates. They dip approximately twenty degrees to the west and butt into the granites at fault contacts. The contacts are formed by the Cameron Fault just south of the entrance to Jawbone Canyon and by the Tentic fault north of this point. The beds are crossed by a series of minor faults which have a general north to south strike. This faulting has resulted in a system of tilted beds with bluff-like faces toward the east and more gentle dip slopes to the west.

RICARDO TUFFS

In the vicinity of Blue Point occur the Ricardo tuffs and agglomerates. They dip to the west at an angle of twenty degrees and have a total thickness of about twenty eight hundred feet. They are recurrent, which postulates
the possibility of a fault up the canyon to the immediate
left of Blue Point. See cross section B-B'. Also plate VIII.

TERTIARY BASALTS

Unconformably on the Ricardo tuffs and agglomerates
lie the Tertiary basalt flows, covering also some of the
adjacent granites. They are thought to have been extruded
during Pliocene time. A mosaic fracture system has
broken them considerably and in places they present a
columnar structure. See Plate VII.

OTHER TERTIARY EXTRUSIVES.

The Tertiary extrusives occur locally along both the
Cameron and Tintic faults. They cover a little less
than one square mile and have evidently been extruded
through conduits developed along these faults.

QUATERNARY OLD ALLUVIUM

Cutting the Ricardo sandstones and conglomerates are
the old Quaternary alluvial deposits. They lie nearly
horizontal with their base contact at the granites formed by
the Tintic Fault. At the Punchbowl their thickness was
approximately fifty feet.

QUATERNARY AND RECENT ALLUVIUM

This alluvial formation is found mainly in the
canyon bottoms and in the Mojave Basin where it is
known to be several hundred feet thick. In Jawbone Canyon
near Blue Point it is found adhering to the recently
uplifted granites which form the walls of the canyon.
Structure in Jawbone Basalts showing dip surface. These basalts lie unconformably on the Ricardo tuff-breccias.

Looking west at tilted Ricardo tuffs and agglomerates. Here the granite is overlain unconformably by Ricardo agglomerate. The top line marks a basaltic cap.
FAULTING

This region possesses three major faults, the Cameron, the Tintic and the Jawbone respectively and several minor ones such as the Blue Point and Cross Mt. faults.

CAMERON FAULT

The Cameron Fault may be followed from the base of the Paleozoic northward along the base of the granites to Jawbone Canyon thence along the base of the Ricardo sandstones and conglomerates until it intersects the Garlock Fault at Red Rock Canyon. These two faults, the Cameron and the Garlock form the boundaries of the Great depressed Mojave Basin. The total movement along the Cameron Fault is thought to be better than twenty-five thousand feet. It has evidently been produced by tension, most of the movement having taken place along the hade. In places, as at Jawbone Canyon, there are evidences of thrusting as indicated by the presence of ground water, the clear topographic expression along the through, the repetition of beds and the dipping of the beds into the fault plane at an angle of about twenty degrees.

JAWBONE FAULT

Beginning at the head of Jawbone Canyon and following along the base of the granites on the left side then crossing at Blue Point and following the right side is the Jawbone Fault. This fault is undoubtedly a very old one and it is probable that it was the direct cause for the development of Jawbone Canyon. It is the phan...
granite masses, on each side of the canyon, takes place. That movements within the past in this fault have been extensive is indicated by the fact that the granite masses are only part of the core of a once great batholith which by periods of upraise and erosion has been gradually eroded down to its present state. The presence of uplifted, slightly dissected, alluvial fans, along the base of the granites also indicates a recent movement. These fans measure over one hundred feet from top to bottom. See Plate IX.

TINTIC FAULT

The Tintic Fault intersecting the Jawbone Fault at the head of the canyon runs northward for fifty miles where it joins the great Owens Valley Scarp. It is a normal fault throughout, with Ricardt and Quaternary alluvium beds dipping into it at an angle of about twenty degrees. The direction of applied stresses is apparently from the north as indicated by fracture of the granite and the displacement along the strike is approximately two hundred and twenty five feet.

OTHER FAULTS

Branching to the north and to the southwest of the Jawbone Fault are the Blue Point and Cross Mt. faults respectively.

Indirect evidence of the existence of the Blue Point Fault was found, excepting that there is a repetition of Ricardt tuff and agglomerate beds at Blue Point. This fault, if present, evidently follows the west bank of the
Recently uplifted and slightly dissected alluvial fans just north of Blue Point in Jawbone Canyon. They were produced by the Jawbone Fault.
small canyon to the immediate high of Blue Point. The Cross Mt. Fault forms the contact between the basalt flows and the granites on the south side of Jamestown. The plane of the fault dips forty degrees to the southeast and does not vary over five degrees in the entire distance traced. Its presence is indicated by slickensides, rock debris along its surface, an acidic lava feeder and typical spur saddles developed by faults. See Plate X.

HISTORICAL GEOLOGY

The old Paleozoic basement complex rocks were originally sandstones, quartzite, conglomerates, and limestones. They have suffered a tremendous metamorphic action and as a result have been recrystallized to form the present rocks. Subsequent to or during the metamorphism were intruded dykes, both acidic and basic, many of which still persist.

Following the metamorphism was the intrusion of a great granite batholith, of which, the present granite basement rocks are a part. At the same time extrusive flows were occurring. The granites and the extrusives were then eroded with the result that the present Ricardo beds were formed. Next there was a tilting of the Ricardo beds and subsequent peneplanation. When the next cycle of deformation occurred the peneplained surface of the Ricardo was covered with a thin mantle of detrital derived from the basement rocks. Further uplift of the basement
Typical spur saddle developed by faulting. Solid line is fault trace and dotted one is reconstructed spur. This type of spur is found on both the Cameron and Cross Mt. Faults. The one above is on the Cameron Fault west of the town of Cinco.
rocks caused the dissection of the old alluvial deposits and the Ricardo beds. Contemporaneous with the last uplift was the development of the present fault system which follows the base of the Sierra Nevada Mts.

**ECONOMIC GEOLOGY**

Along the walls of the rhyolite dykes and the necks of the intrusive flows in the old metamorphics occur mineralized "shoots" formed by secondary enrichment. The minerals found are chiefly gold, copper, lead, and a little silver. In the past many attempts, some of them successful, have been made to mine these deposits. The region is so badly faulted and cut up that in general it has not proved profitable. The cost of "hunting" for lost veins usually exceeds the amount of mineral produced.

The tuffs have found use as a clay and scouring ingredient and consequently are being mined quite extensively for such purposes.

**SUMMARY**

The oldest known rocks in this region are the Paleozoic metamorphics. Next in age, thought to be Mesozoic, are the granite basement complexes rocks. These basement rocks furnished the material of which the Ricardo sandstones and conglomerates are composed and subsequently the material
for the old alluvial deposits. Following the deposition of the alluvium there was a period of deformation during which the granites were uplifted and dissection of the alluvial material and the tilted Ricardo beds set in.
1. More care needed in spelling
2. Some sections of report should be in greater detail - a more complete statement
3. Cameron and Jambone faults do not turn but doubtless continue as straight faults. Fault continues S of Jambone Canyon.
4. Would not use reversed order in sentences as often (verb before subject.)
GEOL OGY OF PART OF
T EHACHAPI MTS.
IN THE VICINITY OF JAWBONE CANYON
CALIFORNIA
1928.
NATURAL SCALE

BY
G. A U S T I N S C H R O T E R

CONTACT-KNOWN
CONTACT-OBSCURED
LIVE FAULT
DEAD FAULT
SUPPOSED FAULT