

MEANING IS SEDIMENT  
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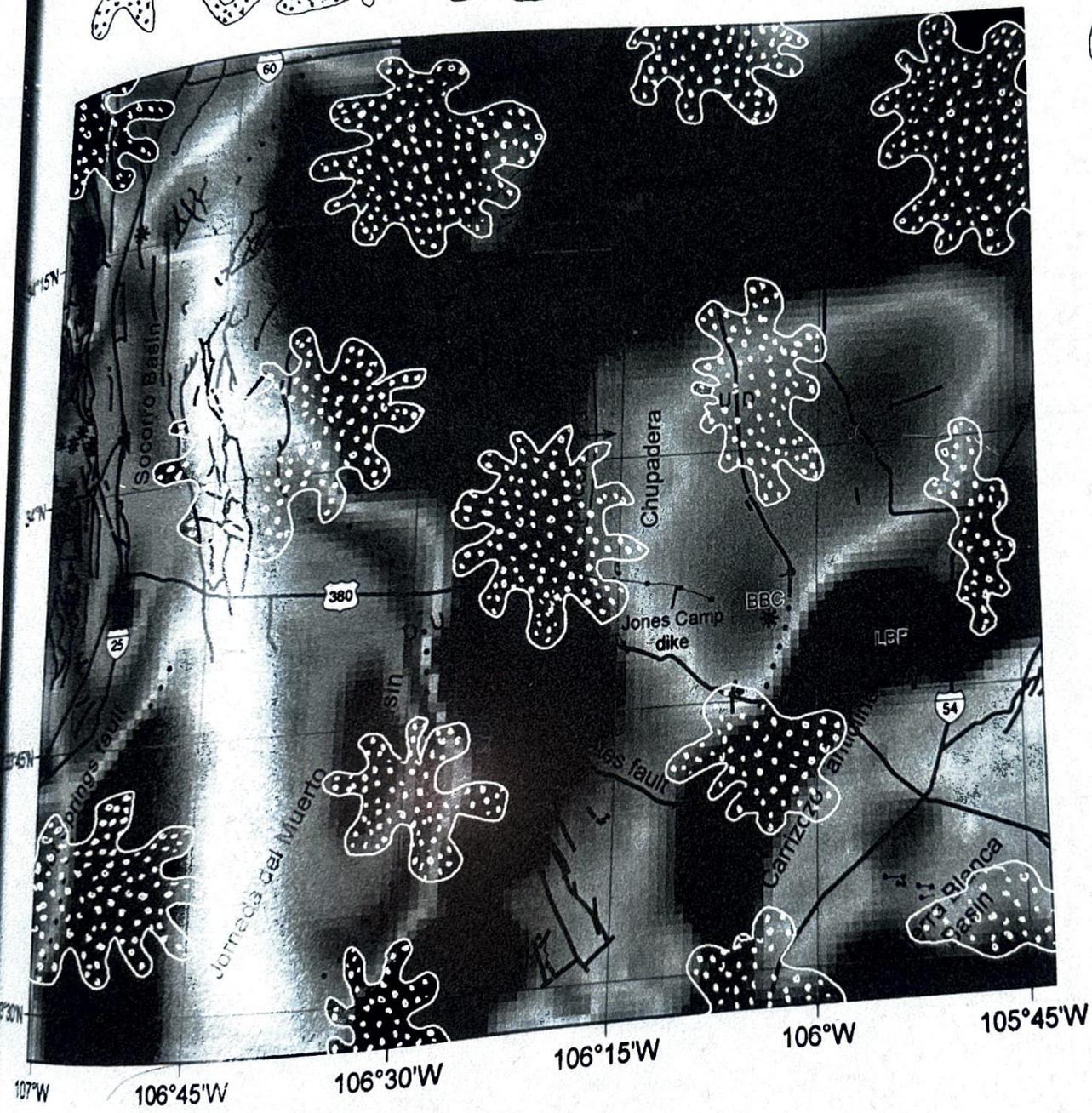
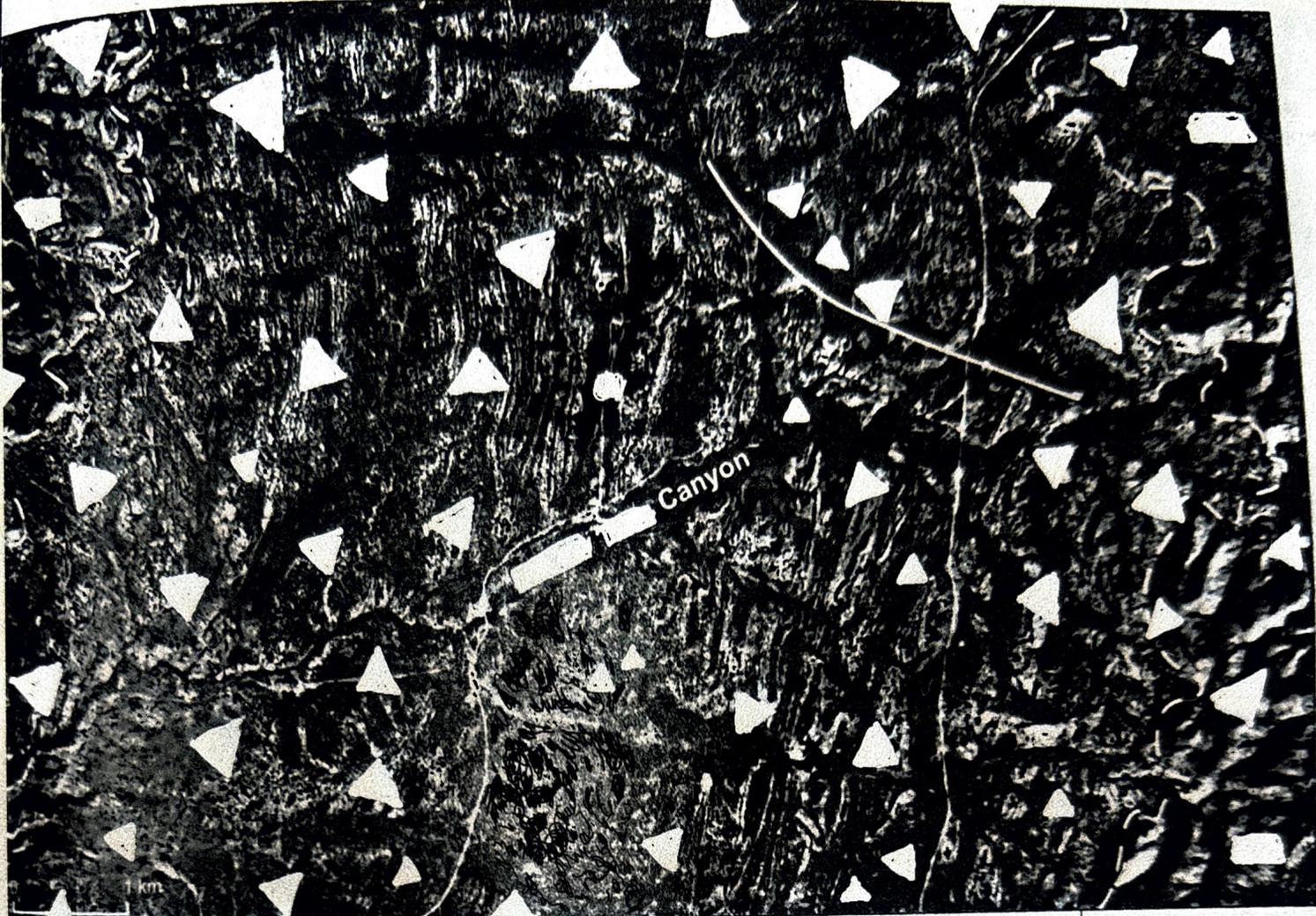


PLATE 3. Isostatic gravity anomaly map for central New Mexico (Kucks et al., 2001), with selected faults (black lines), folds, dikes (dotted red lines), place centers (red asterisks), place names, and highways (modified from New Mexico Bureau of Geology, 2003). GQ, Gran Quivira; LBP, Little Blaine Peak; BBC, Broken Back crater.





Landsat image of strongly folded beds of the Formation and contact. in the central part of the anticline. Note gently dipping limbs of anticline and undeformed igneous dike. Dashed line is

Formation thickness of This is significantly than the unfaulted section exposed at to the ( thick; . The ng anticline thus may also be related in part to tectonic ing of the Formation. Satellite imagery shows the e of anomalously folded beds in the the anticline, reminiscent of those in the lera anticline. The anticline folds ut predates the sediments that bury the of the anticline. Thus it may have developed during the de or magmatism. greatest known thickness of the Formation in occurs in the anticline. The Formation is thick in the of and Formation to the an maximum thickness of and stratigraphic formation anywhere what thicker than it

to systematically thicken toward the late basin, but are not unusually thick in the anticline. The great thickness of the strata in the anticline is, at least in part, the result of tectonic thickening. The For- strata near the center of the in mation and penetrated strata in the anticline. A continuous dipmeter log from this well shows strongly disturbed bedding attitudes associated with thick evaporite beds throughout much of the Formation and locally in the underlying (logs are available from the This disturbed bedding is presumably the result of folding and faulting similar to that exposed in the anticline to the The strong deformation of the Formation in the anticlin indicates the unusual thickness of the unit cannot be explained solely by syndepositional thickening, although it is possible that weak strata deposited in an evaporized subsequent tectonic thick STRATIGRAPHY(1) ave loca

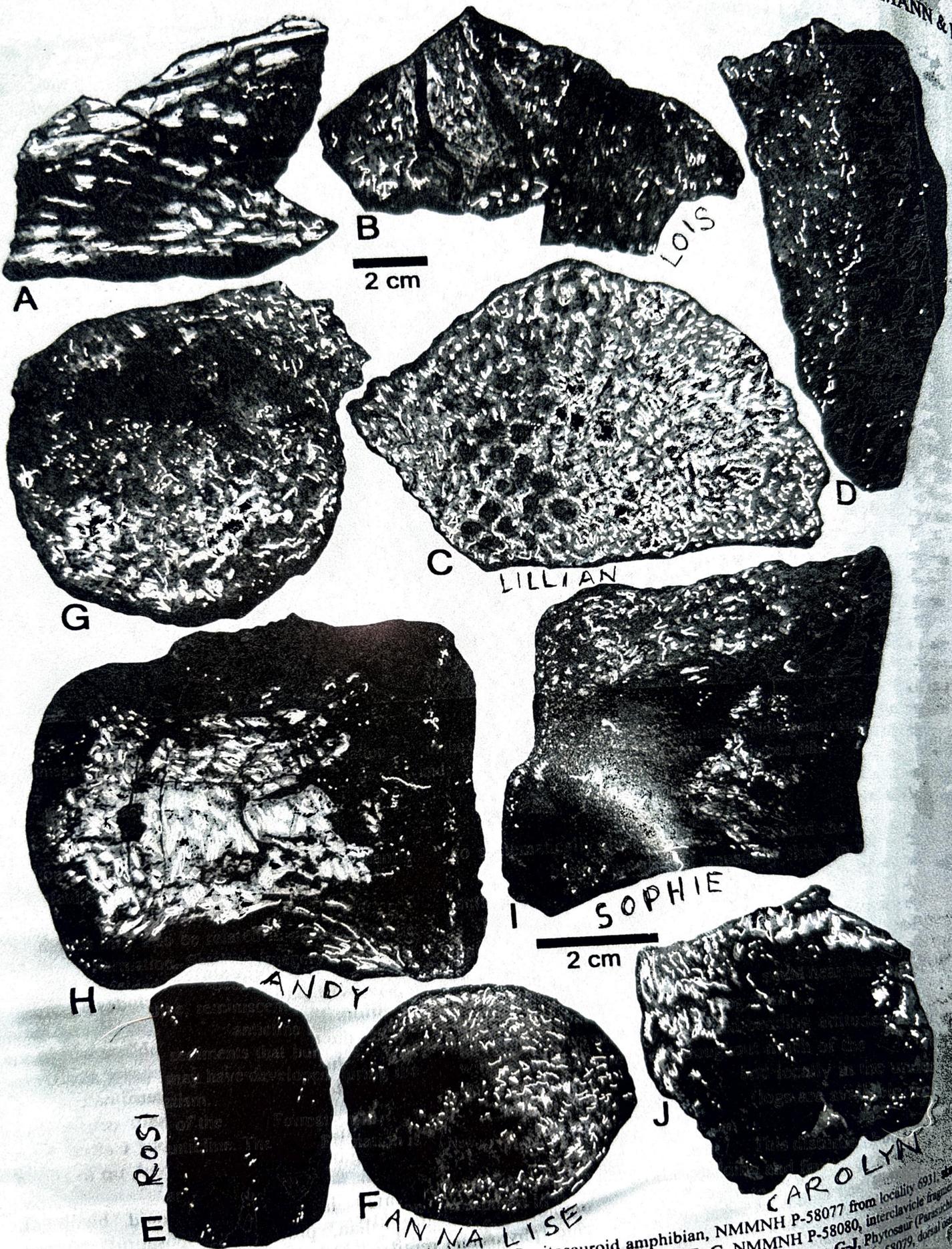


FIGURE 6. Triassic vertebrates from Socorro County. A-B, Capitosauroid amphibian, NMMNH P-58077 from locality 6931. and natural casts of dermal bone. C-F, Metoposaurid amphibians from locality 6937. C, NMMNH P-58080, interclavicle fragment in ventral view. G-J, Phytosaur (Parasuchonius) dermal bone cast. G, NMMNH P-58079, dorsal view. H, ventral and I, right lateral view. J, NMMNH P-58079, dorsal view.

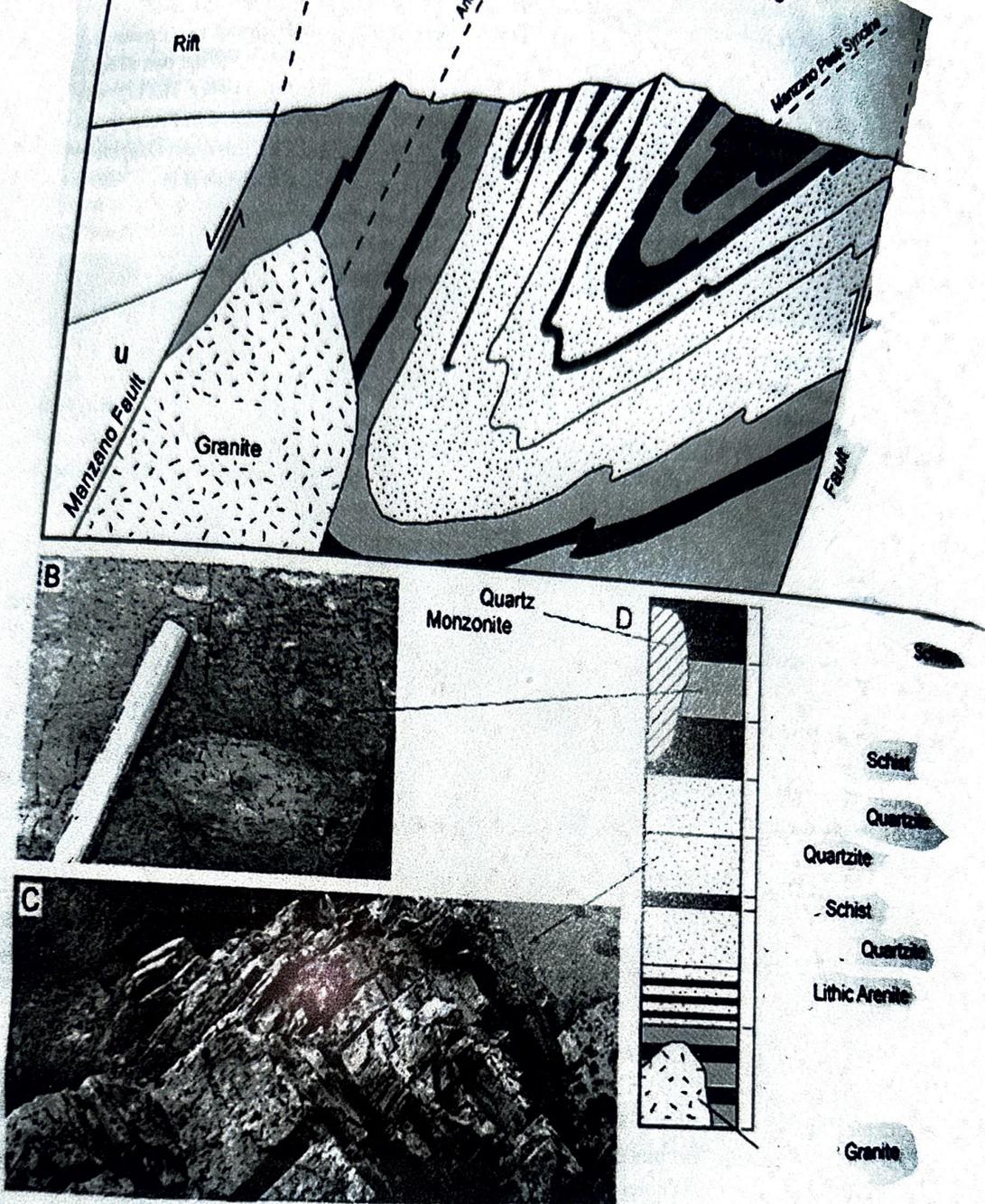


FIGURE 1. A. Schematic cross section of the Manzano Mountains. B. Photograph of rock outcrop. C. Photograph of rock outcrop. D. Schematic structure section of the Manzano Mountains.

Some contain foliations parallel to magmatic foliations and shear zones, whereas some are found in unfoliated regions of the pluton.

regional orogenesis longer lasting than previously thought.

zircon  
 rhyolite indicates the Group  
 deposition from  
 orogeny is interpreted to have continued through because this uppermost sequence contains the foliation and also folds. Prior studies interpret the time period from as a tectonic lull, based on the lack of ages from this time period.

Two possible interpretations of these data are that the orogeny waned soon after the final stages of orogenesis or that no tectonic gap exists and orogenesis continued from either a protracted orogenic event, Rev. or a protracted period of extensional tectonics. The latter interpretation is favored because of the presence of steeply dipping folds. However, the quartzite in the Manzano Mountains is not a typical extensional tectonic quartzite.

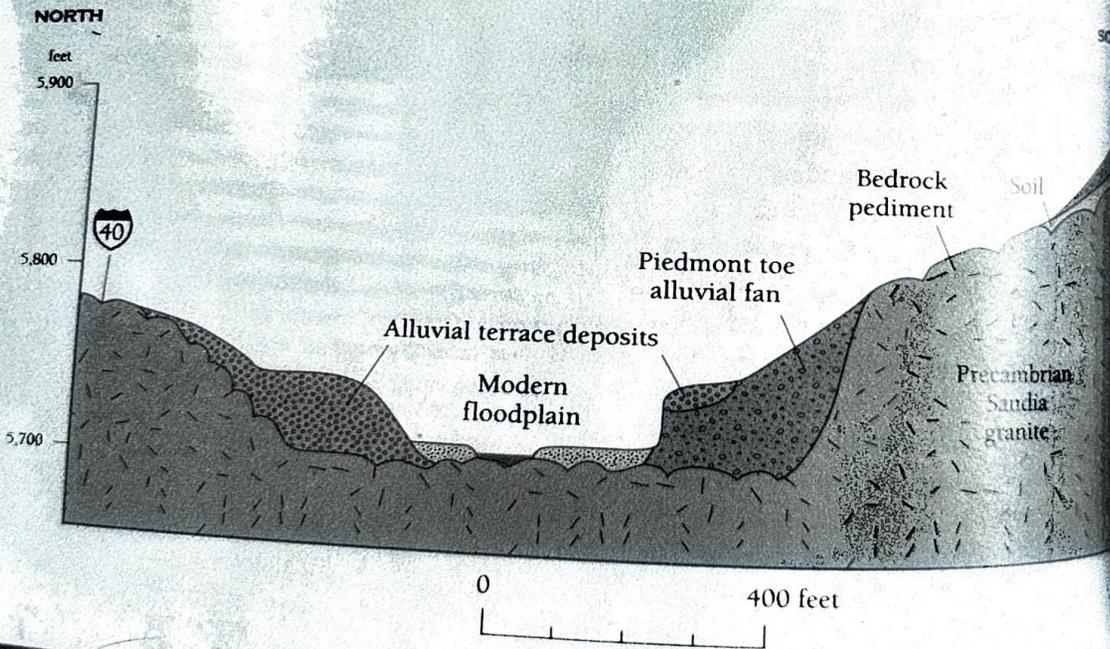
10.6 The ridges are held up by a backbone of high Precambrian quartzite. Quartzite is a metamorphic rock that originated as a quartz sandstone. During metamorphism the quartz grains recrystallize. The quartzite ridge stands out because it is more resistant to erosion than the surrounding rock, a process known as differential erosion. Along the slopes, the quartzite is mostly

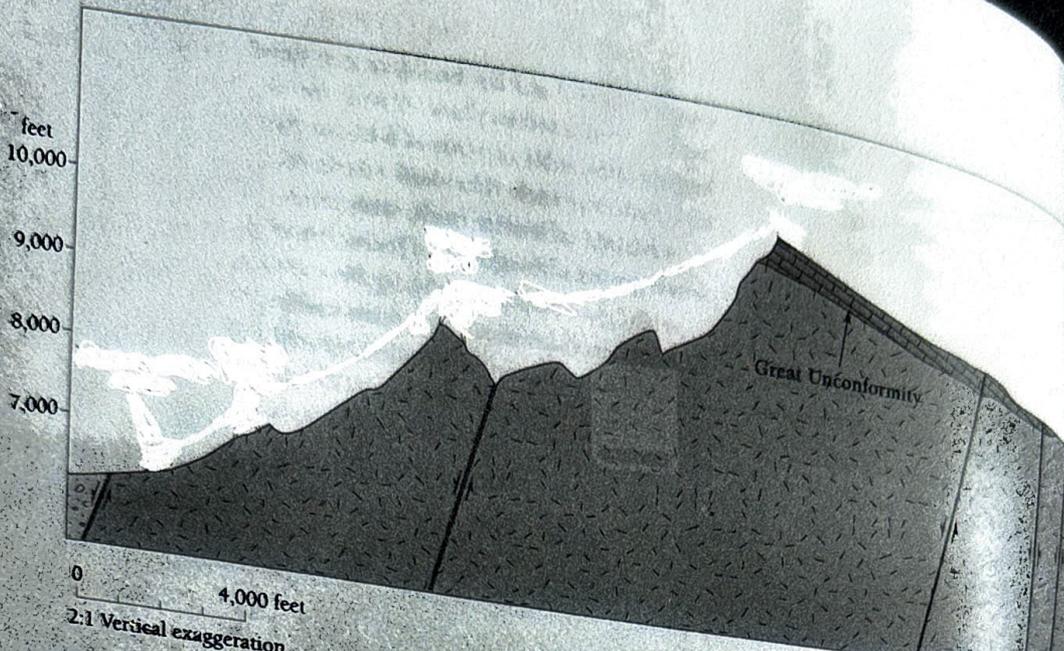
road at... ing into (and run... (east-trending Tijeras fault zone, under the creek alluvium on the fractured rocks of the fault zone. Unfractured rock followed the fault canyon on... anyon. Across the small alluvial fans formed from debris that has eroded from the hillslopes. (0.6)

10.5 A greenish, 4-5-foot-thick lamprophyre dike is visible

left. Lamprophyre is a group of dark-colored igneous rocks that contain minerals, such as biotite and pyroxene. These dikes probably intruded along fractures probably Tertiary in age. The dark-green lamprophyre on the canyon slope of the Tijeras greensand is a volcanic rock that erupted Precambrian landscape several years ago. After erupting, the rock was buried and metamorphosed. The greenstone and sandstone lies under Perry rocks of the Madison north of the road, a formation lies on top of the sandstone. The greenstone and sandstone south of Tijeras Canyon is several hundred feet co-

Cross section along Tijeras Arroyo.





2:1 Vertical exaggeration

Alluvium  
Limestone

wilderness is split  
wilderness, a strip of non-

The thrill of the comfortable ride to the top of the mountain is due largely to the sheer granite cliffs and pinnacles that rise close to the tramway, and the feeling of dangling so high above the ground. In less than 15 minutes the car rises from 6,559 feet to 10,378 feet, in a horizontal distance of 2 miles at a speed of 12 miles

at the hill to the north, armored with great boulders formed by weathering of the sharp edges and corners of large jointed blocks of granite. The residual, spherical boulders give way upward to angular blocks and sharp angular outcrops.

As you approach the second tower, of the car near the top of the ridge, a light-colored smooth surface marks a landslide scar where a lightning bolt knocked down some 4,000 tons of rock in 1936.

If you look out of the front or back of the car at the suspending cables, you will see orange-colored numbered markers (slat carriers) that are spaced about a minute apart. There are 11 such markers along the route. The second tower, at 8,750 feet, stands on a sharp, precipitous ridge. The cable now levels off as it swings across Baca Canyon tributaries and descends to the crest in a single span 7,700 feet in length. Over the deepest canyon

about marker 10), it hangs above the ground.

To the southwest you can see the new mouth of Baca Canyon. Canyons south of this are Pleistocene. North of the car, about mid-noon, you pass two imposing buttes, one between marker 8 and the other at 9. These buttes were formed by huge slabs of granite that have slipped away along great fractures (normal faults). The distance from the car to the first butte is about 300 feet; to the second about 200 feet.

Past the second butte, the road leads steadily toward the crest, and soon the Great Unconformity comes into view. The crags of the granite give way to brush-covered slopes in the Permian rocks. More than 100 million years elapsed between the time the granite cooled and crystallized deep beneath the sea and the time it was covered by the Pennsylvanian sea.

Look closely at the Permian rocks ahead. Notice how they are divided into four major layers (sandstone, limestone) that are separated by easily eroded layers. The shales represent the shallowest water environment, and the shales represent the deep water environment, and the shales represent the intermediate environment of the ancient sea. The records have been correlated with sea-level changes throughout the world. In America, probably due to the same causes, the sizes of corals decrease in the southern continents.