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BISECTION OF MOUNTAIN BLOCKS IN THE GREAT BASIN REGION.

BY CHARLES R. KEYES.
(Abstract).

An interesting phase of mountain structure has recently come to notice among the block ranges of the basin region of the southwest. As is well known, most of the basin ranges are long, narrow tilted blocks, arranged subparallel to one another, with intervals of twenty to forty miles of flat country between. These mountain blocks are fifty to one hundred miles in length and are tilted to heights of 3,000 to 5,000 feet.

In central New Mexico there are three ridges—the Sandia-Manzano, the Oscura-San Andreas, and San Cristobal-Caballos—which are essentially parts of single uplifts, but which are cut in two by deep canyons which connect the plains on either side. Why these ridges should be cleft in their highest parts has been puzzling. However, an interesting solution has been found.

In each of the three areas mentioned profound faulting has manifestly taken place since the time when the mountains were upraised, and the trend of the later dislocation has been transverse to the major faulting parallel to the axis of the range. This has enabled, in each case, an insignificant stream to cut down a deep narrow canyon directly through the heart of the mountain block.

In the Sandia-Manzano block the bisection is at the Tijeras canyon, where the faulting and relationships of the strata are very clearly disclosed. The displacement can not be less than 1,000 feet. The Tijeras fault extends far beyond the foot of the range, being marked by a con-

spicuous ridge in which the beds stand on end. A geological section along the line of the canyon is represented below (figure 5):

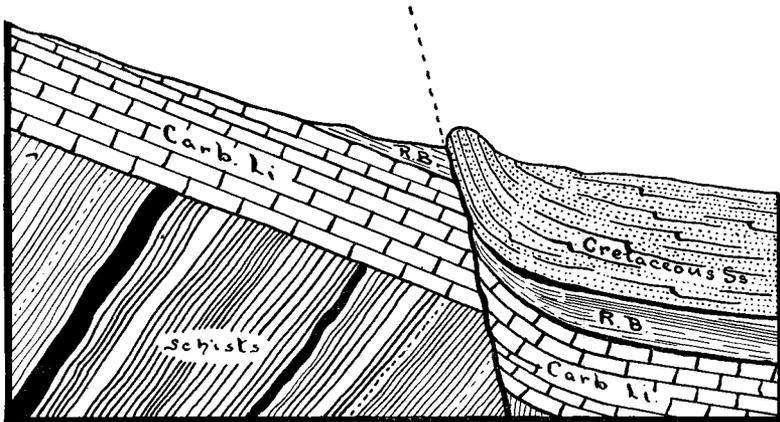


FIG. 5. Tijeras Canyon Fault. Displacement 1,000 feet.

In the Sierra de los Caballos range, 100 miles to the southward, the two parts of the mountain block are divided by the Palomas canyon—a narrow, deep cleft, the bottom of which is over two thousand feet below the crest of the ridge. The side of the canyon, where the latter makes a sharp bend, is represented as in figure 6.

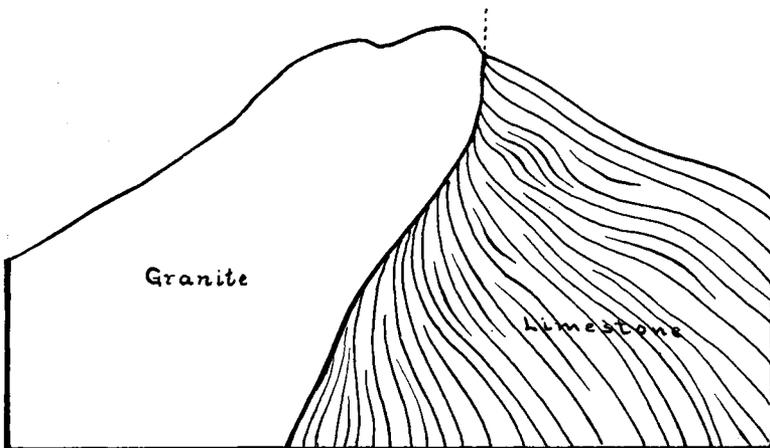


FIG. 6. Palomas Canyon Fault. Displacement 2,000 feet.

The Sierra Oscura-San Andreas range presents some features which are quite different from those already mentioned, which may be partly due to faulting at the time the blocks were tilted. The two parts of the range overlap somewhat, and dip in opposite directions. The major fault plane along which the block was upraised lies on different sides of the two parts of the range. Between the two parts is a flat plain, several miles wide, which, however, is considerably elevated above the plains on either side of the great ridge. The mountains are capped by Carboniferous limestones; so also is the small plain between. The section appears to be as follows (figure 7):

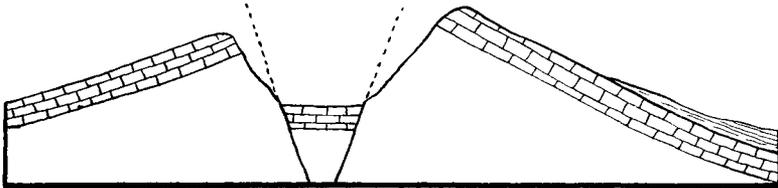


FIG. 7. Fault Block between the Sierra Oscura and San Andreas Range
Displacement 2,500 feet.

GEOLOGICAL STRUCTURE OF THE JORNADA DEL MUERTO AND ADJOINING BOLSON PLAINS.

BY CHARLES R. KEYES.

The recent visits of a number of the members of the Academy to the Tulerosa district and contiguous plains in New Mexico makes it seem worth while to call attention to some of the major geologic structures of the region.

The section represented below is in an east and west direction through the station of Engle on the Atchison, Topeka & Sante Fe railroad, reaching beyond Alamagordo on the El Paso & Northeastern railroad.