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A FOLDED OVERTHRUST FAULT AND
SEDIMENTS DERIVED FROM THE SCARPS
OF OVERTHRUST AND NORMAL FAULTS IN THE
TORTILLA MOUNTAINS, ARIZONA

by

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ABSTRACT

On the east flank of the Tortilla Mts., ten miles south of Ray, Arizona, one obtains the casual impression of narrow bands of Paleozoic and older rocks, and giant breccias composed of these rocks, interbedded with steeply east dipping Gila conglomerate. The older rocks have been so emplaced in two manners: (1) On overthrust faults, almost parallel to the bedding whereon the older rocks override the Gila and (2) deposition as interbeds in the Gila of giant breccia derived from the erosion of the advancing overthrust block where it broke through to the then existing surface of the Gila.

Subsequent uplift of the central mass steeply folded the originally flat overthrust and induced considerable tilting of the Gila on the east side of the range. Such uplift was relieved, on the western flank of the mountains, by normal faulting causing, on that side of the range, no appreciable tilting of the Gila sediments. Erosion of this normal fault scarp, during this stage B, in places furnished distinctive horizons conformable with the underlying Gila which, thus, must still have been essentially flat.

Further movement of the central mountain mass in an easterly direction, an underthrust relative to the overlying fault block to the east, further steepened the Gila sediments and the overthrust plates on the east side of the range. Further, the eastern movement of the central block permitted the west block to sag to the east along the normal fault, which sagging produced moderate east dips in the Gila. Hence it is proposed that the steep east dips on the eastern side of the range are due to compression, the more moderate east dips on the west to tension.

Erosion of the footwall of the normal fault, during stage B, permitted deposition of sediments over the fault outcrop, the shore being the erosional scarp. Hence examination of the Gila-basement contact shows no faulting whereas it is believed the significant large relationship between these rocks was caused by normal faulting of considerable magnitude. It is a matter of the youngest Gila capping the fault plane along which older Gila has been displaced.

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