

represented (3.4-m dip slip assuming 50° dip). However, the scarp heights at most sites along the 8-km central section of maximum displacement adjacent to Oued Fodda were about 1.0 to 1.4 m, and a more representative estimate of dip slip at the surface thus would range from 2 to 3 m. The surface expression of thrusting died out a few kilometers northeast of a change in strike to N68°E along the main break. That bend in the fault trace coincided with a similar change in the trend of the base of the slope marking the northwest side of Oued Chélif valley.

An irregular zone of secondary normal faulting and extensional features such as grabens developed roughly parallel to the central and northeast sections of the main thrust break within 1 to 2 km to the northwest, and extended for about 15 km along the same trend, beyond the northeast end of the surface expression of thrust faulting. Scarps along the normal faults above the shallow part of the thrust were generally more conspicuous, if not larger, than those along the trace of the main break.

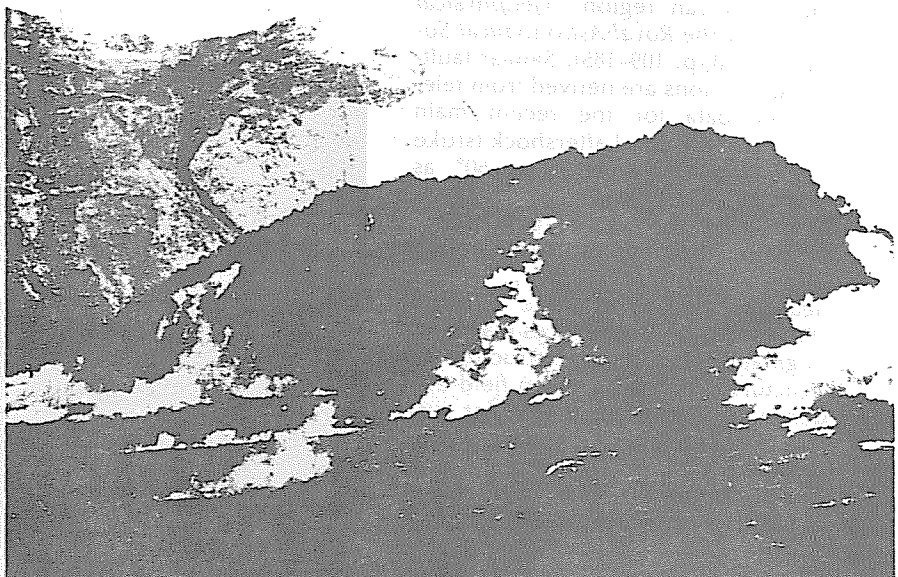
A complex zone of predominantly normal faulting occurred in the vicinity of the village of Beni Rached, within the hanging-wall block of the thrust, about 6 to 7 km northwest of the main thrust break. Most of the surface fractures in that area were probably produced by secondary faulting, although a few are related to landslides. Scarp heights produced as a result of slip on normal faults just west of Beni Rached typically were slightly less than 1 m (vertical offset) but ranged up to 1.26 m. The arcuate pattern of surface breaks near Beni Rached, associated with the 1980 earthquake sequence, nearly duplicates the fracture pattern mapped by Jean-Pierre Rothé and his colleagues ('Le tremblement de terre d'Orléansville et la sismicité de l'Algérie', *La Nature* n. 3237, p. 1-9, January 1955)



On the main thrust break north of Oued Fodda (3a) a southeast-facing scarp 2.5 m high suggests that the maximum dip slip at the surface is 5 m.



The magnitude-7.3 earthquake that struck Algeria last October caused surface faulting over a wide area. (Photo by Alvaro F. Espinosa.)



This view to the northeast (2) looks along a zone of surface breaks caused by thrusting and associated normal faulting. The hills at the upper left form the southwest end of a ridge 200 m high, which lies along the southeast edge of a hanging-wall block north of Oued Fodda. (Photos by Robert O. Burford.)



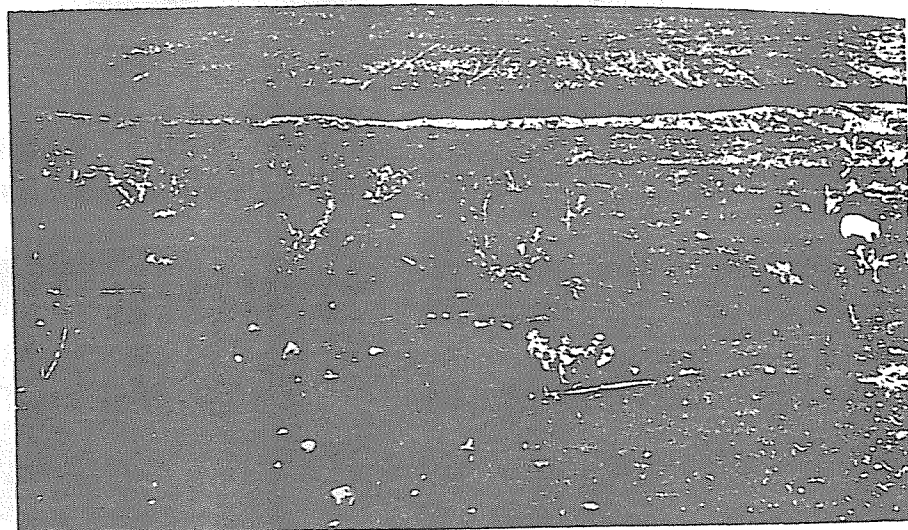
Normal-fault scarps appear on the southeast slope of the northeast-trending ridge northwest of Oued Fodda (3b). Other scarps developed along parts of the subdivided thrust break (middle foreground). (Photo by Robert O. Burford.)

during a field investigation of the 1954 earthquake sequence. Several of the recently reactivated fractures showed displacements in the same sense and of similar amplitude to those noted 26 years ago.

A fault-plane solution for the main shock in 1954 indicated thrusting on a northwest-dipping surface having a northeast strike, according to Dan McKenzie ('Active tectonics of the Mediterranean region,' *Geophysical Journal of the Royal Astronomical Society*, v. 30, p. 109-185). Similar fault-plane solutions are derived from teleseismic data for the recent main shock and principal aftershock (strike $N42^{\circ}E$, dip to NW at 55° to 60° , as reported by S.T. Harding). Those solutions reinforce the suggestion, based on the observed regeneration of the pattern of surface fractures near Beni Rached, that the 1954 and 1980 earthquake sequences may have originated on the same structure or structures, even though no field evidence was reported in 1954 for surface breakage along the trace of the thrust fault.

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Near Beni Rached (5), the normal-fault scarp is 1.26 m high. (Photo by Robert O. Burford.)

PDR #
 BLOW-
 15.0
 10.0
 5.0
 0.0
 ARB. SCALE
 -5.0
 -10.0
 -15.0