Because these granitoids can be utilized potentially as possible markers of fault movement, the results of recent geochemical, petrochemical, and geochronological studies are considered. These investigations include the water-saturated phase equilibrium relationships of granitoids from the Coast Ranges, Transverse Ranges, Mojave Desert, and Central Sierra Nevada Batholith, California, determined to 10 kbar water pressure. The data are compatible with about 500-km offset along the San Andreas fault zone since Cretaceous time.

PIWINSKII, A. J., Ants in the moon to 250 km, invited lecture, University of California, Santa Barbara, April 27, 1975. [UCRL-76784, Abstract]

A new model is proposed for the structure of the lunar interior to about 250 km. The outer 250 km is composed of plagioclase-bearing rocks, and the 65-km seismic discontinuity represents the appearance of garnet. We envisage a variety of rock types composed mainly of plagioclase, pyroxene, olivine, and garnet. The model requires that at least half of the outer 250 km of the moon be composed of plagioclase in order to dominate the electrical conductivity. It is suggested that this model is more in concert with recent petrological and electrical conductivity results and does not violate velocity-depth profiles obtained from elastic wave studies of lunar and terrestrial materials.

PIWINSKII, A. J., 'Granites' and granites: the nexus between magmatism and tectonic settings, invited lecture, University of California, Santa Barbara, April 23, 1975. [UCRL-76785, Abstract]

Granitoid rocks belong to one of two distinct associations: orogenic, associated with crustal shortening by subduction of lithosphere, or nonorogenic, associated with areas of rifting, either oceanic or continental. Rock associations and compositions differ in the two cases. The characteristics of each type serve to place constraints on the proposed petrogenetic scheme. Partial melting of "wet" peridotite and repetition of crystallization and remelting in response to ascent of an aqueous fluid, which contributes heat as well as alkalis, silica, and alumina, are thought to provide a working hypothesis for orogenic suites. The bimodal associations of gabbro and granite in nonorogenic suites can best be explained by partial melting of "dry" peridotite, fractional crystallization of a basic melt yielding an iron-enrichment trend in shallow magma reservoirs, and gaseous transfer followed by remelting of the granitoid concentrate to give a homogeneous,