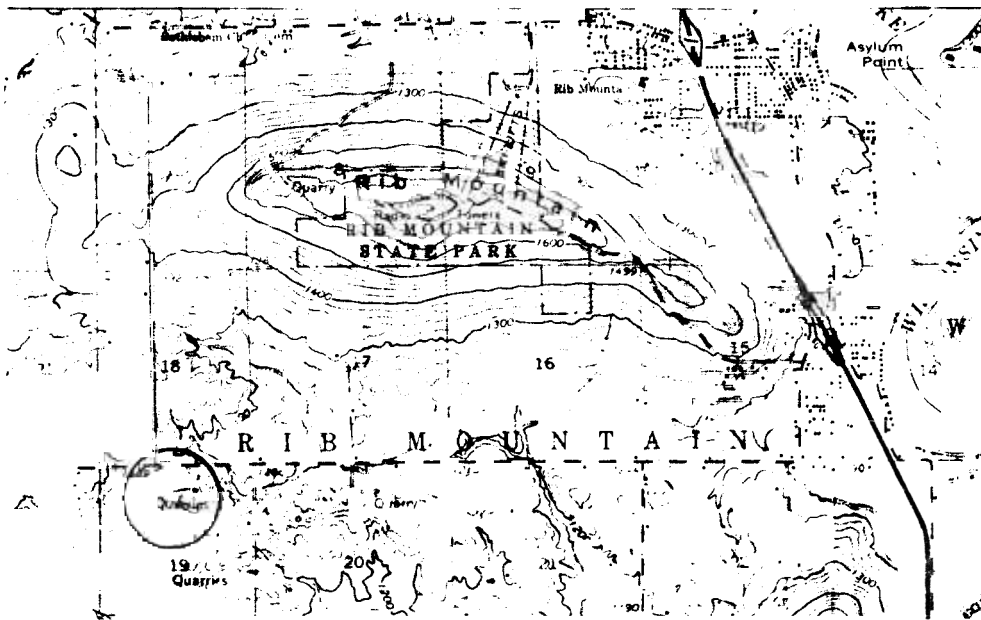


TITLE: "Rotten Granite"

LOCATION: NE 1/4, NW 1/4, Sec.19, T28N., R7E., Wausau 15' Quadrangle



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SUMMARY OF FEATURES:

This outcrop of Ninemile granite (1500 ± 50 m.y.) exemplifies the "rotten" granites which are used for road construction throughout Marathon county. Their friability is at least partly a result of extensive chemical weathering. The time and exact nature of the weathering are not known. Other factors, such as original shapes of grains, effects of shearing, and tectonic "unloading" may have had a contributory influence. Because of their importance as a local resource, their occurrence and mode of formation assume special significance.

Examine the "fresh" and weathered granite under a hand lens. What are the shapes of the grains? Compare grain shape in fresh granite with that in weathered granite fragments. Do the grains have interlocking boundaries? To what extent has grain shape been modified by weathering? The Ninemile granite north of here forms large areas of low outcrop which stand topographically higher than areas underlain by other rock types such as greenstone, quartz diorite, schist and syenite. In the quarry, resistant knobs of relatively fresh, non-friable granite are enveloped by exfolia of fragmental granite. The deep red color of "rotten" granites also must signify a unique set of weathering conditions, such that ferric ion has been leached from biotite and deposited in and around kaolinized K-feldspars.

These rocks closely resemble "saprolites" of the Piedmont province of eastern United States, where granitic rocks showing faithful preser-

vation of textures are so water-saturated and decomposed that they can be shoveled from an "outcrop". Deep circulation of groundwater and leaching of silica are common processes today in sub-tropical regions of lateritic weathering. Circulating groundwaters would preferentially leach sharp projections, corners, and edges of quartz grains and reduce intergranular adhesion. Dott and Batten (Evolution of the Earth, 2nd ed., 1976, p. 213) indicate that Wisconsin was at tropical latitude during the Cambrian period, when this region suffered prolonged exposure. Several questions persist, however. For instance, there appears to be a subtle spatial association between location of "rotten" granite quarries and shear zones. Did shearing locally weaken the granites? How? To what degree has modern groundwater circulation been responsible for the formation of these "rotten" granites? Were these areas relatively untouched by Pleistocene glacial scour?

Thesis anyone? It's a beauty!