A REINTERPRETATION OF THE ANTICLINAL STRUCTURE EXPOSED IN THE NORTHWEST FACE OF PUSCH RIDGE, SANTA CATALINA MOUNTAINS, ARIZONA[1/]

By

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INTRODUCTION

The large anticline exposed on the northwest face of Pusch Ridge is one of the most striking structural features of the Santa Catalina Mountains and can be seen readily from U.S. Highway 89 between Tucson and Oracle Junction, Ariz. It is formed from the layered gneissic rock that composes the bulk of the southern Santa Catalina Mountains. New data lead to an interpretation of the shape and trend of this fold that is significantly different from previously published descriptions.

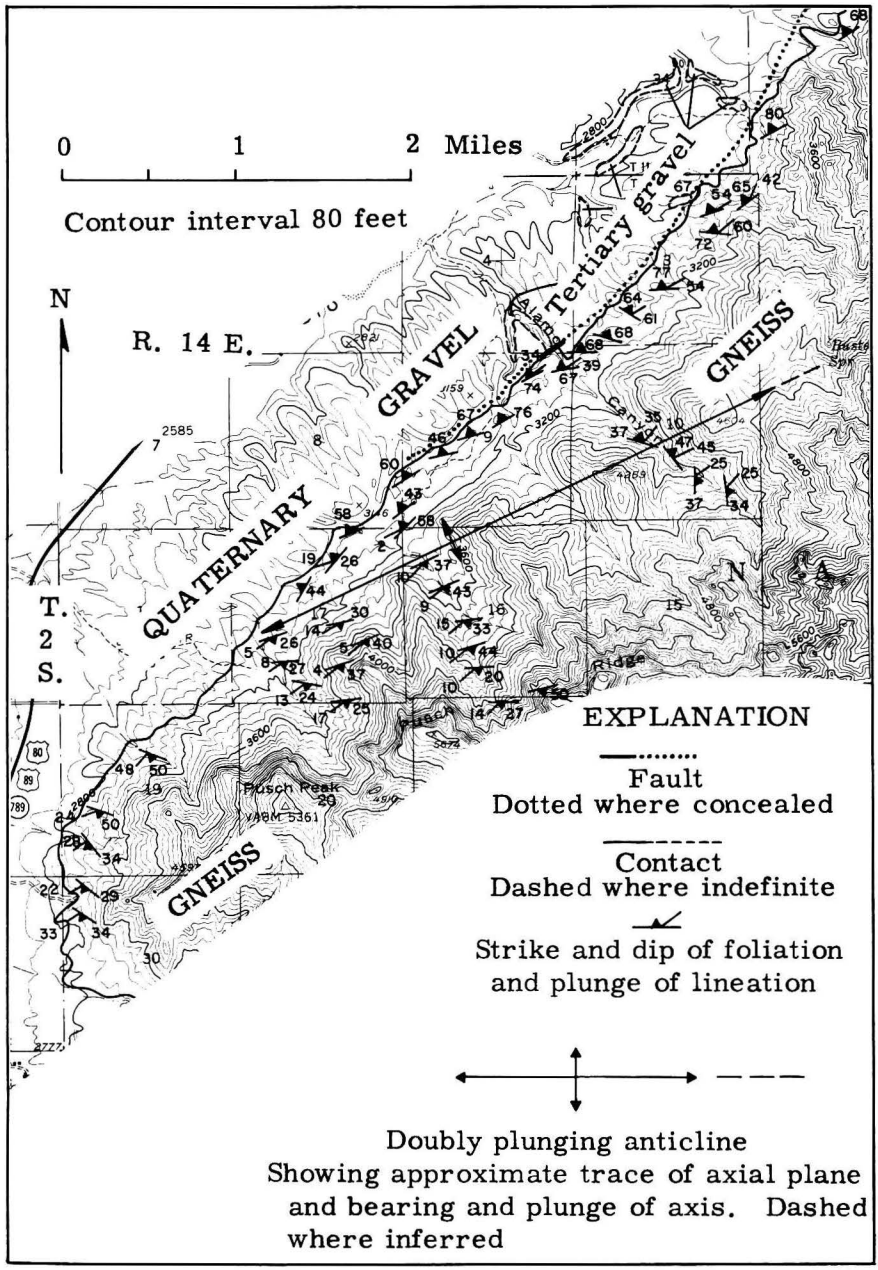
PUBLISHED DESCRIPTIONS

Hernon (1932, p. 13) described the fold as an "***asymmetrical anticline whose axis strikes W. N. W." Bromfield (1952, p. 54) describes it as "***an asymmetrical anticline with a gentle south limb and a steeply dipping to overturned north limb." This latter interpretation would also require that the axis strike northwesterly, which is in agreement with Pilkington (1962, p. 15), who states that the axes of all the folds in the gneiss of the Santa Catalina Mountains trend west-northwest, although he did not map or describe the fold under discussion.

REINTERPRETATION

The new data that led to the author's reinterpretation are plotted on figure 1. The attitudes of the foliation (layering) of the gneiss reveal that the fold is a doubly plunging anticline whose axis trends approximately N. 65° E. The point of culmination of the axis is in or near the NW-1/4 sec. 16, T. 12 S., R. 14 E. The foliation measurements indicate that the northwest limb is not overturned but that it does seem to dip somewhat more steeply than the southeast limb.

1/ Publication authorized by the Director, U.S. Geological Survey.



Base from U. S. Geological Survey topographic sheet, Mt. Lemmon, Ariz., 1957

Geology by E. F. Pashley, Jr., 1963

Figure 1.--Reconnaissance geologic map of the northwest front of the southern Santa Catalina Mountains, Arizona.

Extensive erosion has removed nearly all the rocks of the northwest limb from the mountain face south of Alamo Canyon, but remnants of it can be seen forming the lower half of the mountain face north of Alamo Canyon. The upper cliffs of Pusch Ridge are carved from massive layers of gneiss, which are located entirely to the southeast of the fold axis and are part of the southeast limb of the anticline.

Figure 2 is a photograph taken at right angles to the mountain front and oblique to the fold axis. It gives the observer the impression that he is looking at the steeply dipping to overturned north limb of an anticline. The view of the fold as seen from this angle has strongly influenced previous descriptions of it.

Figure 3 is a photograph of the same fold taken more nearly parallel to the fold axis. This view gives an accurate impression of the dip of each limb and the symmetry of the fold.

CONCLUDING STATEMENT

Mapping of the structure of the gneissic rocks of the Rincon, Tanque Verde, and southern Santa Catalina Mountains by the author over the past few years has revealed a series of doubly plunging anticlines and synclines whose axes trend approximately N. 60°-65° E. (Pashley, 1963). The fold exposed in the northwest face of Pusch Ridge is similar in shape and trend to these other folds.

LITERATURE CITED

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Photo by Tad Nichols

Figure 2.--The view is at a right angle to the northwest face of Pusch Ridge. The apparent dips of the layers of gneiss suggest a steeply dipping to overturned north limb of an anticline. Alamo Canyon is to the right of center.

Photo by Tad Nichols

Figure 3.--A view nearly parallel to the axis of the doubly plunging anticline exposed on the northwest face of Pusch Ridge.