

Glenville Quadrangle Bedrock Geology Explanation

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Explanation

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PROGRESS REPORT ON THE GLENVILLE QUADRANGLE

by

Leo M. Hall

INTRODUCTION

Fifty days were spent mapping the bedrock in the Connecticut portion of the Glenville quadrangle during the summer of 1966. Parts of the New York portion of the Glenville quadrangle were mapped by me in previous years. The geologic map that accompanies this report summarizes the present status of knowledge of the bedrock geology of the Glenville quadrangle.

STRATIGRAPHY

Seven major rock units have been mapped in the Glenville quadrangle (see geologic map). Three of these units, Fordham formation, Manhattan formation, and Hartland formation have been subdivided as indicated on the geologic map. Subdivisions of the Inwood formation are known in the area but are not shown on the geologic map.

The age of the Harrison gneiss and the Hartland formation as well as the stratigraphic relationship of these units to the other

rock units in the area is unknown. This constitutes what is apparently the most important stratigraphic problem in the area.

Hopefully, further mapping will lead to a solution of this problem.

Lack of bedrock exposure near the contact between the Hartland and Manhattan formations obscures their relationship. In places where bedrock exposure is abundant the contact between them is difficult to define.

STRUCTURAL GEOLOGY

New York City Group rocks in the western part of the quadrangle (see geologic map) are complexly folded. This same folding style is not apparent in the Hartland formation although further mapping may reveal its presence. Such an apparent discontinuity is suggestive of faulting.

The outcrop pattern of the Hartland formation-Harrison gneiss contact reveals a large scale fold. Tentative interpretation of minor structural features leads to the conclusion that this is a regionally refolded isoclinal fold. The early stage isoclinal

folding is associated with linear elements that plunge slightly west of south. Later stage folding is associated with northeasterly plunging linear elements. The convex northward curved contact between the Hartland formation and Harrison gneiss in the southeast quarter of the quadrangle (see geologic map) is evidence of the gentle northeasterly plunging later folding. The two "prongs" of Harrison gneiss that extend south of the quadrangle boundary apparently close to the south in the Mamaroneck quadrangle and represent the south plunging early isoclinal fold that has been re-folded.