

Bedrock Geology of Woodstock, Vermont, by Peter J. Thompson
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Summary of results

1. The basic sequence of units mapped by Chang and others (1965) in the town of Woodstock is confirmed by my mapping. I have shifted the contact between Northfield and Waits River Formations somewhat to the east and expanded the area that is dominated by schist in the upper part of the Waits River. Graded beds in the latter confirm a topping direction east toward the Standing Pond Volcanics. Rocks east of the Standing Pond are similar to those mapped as Gile Mountain Formation around the Pomfret dome (Lyons, 1955).
2. Woodstock is situated geologically on the east flank of the Green Mountain anticlinorium, in a structural saddle between the north-plunging end of the Chester dome (Thompson, 1950; Ratcliffe, 2000) and the south-plunging end of the Pomfret dome (Lyons, 1955). The domes (D3) deform an older set of folds (D2) that are overturned toward the east. A major anticline in this system passes through the town, and where the stratigraphy is nearly vertical, wells drilled into bedrock may provide either exceptionally high or low yields, for example in the village of South Woodstock as reported by George Spear (pers. comm.). Where the stratigraphy is more nearly horizontal or inclined at moderate angles, bedrock wells will penetrate alternating layers of schist and calc-silicate and thus be less likely to have low yields.
3. The dominant S1 foliation is parallel to the axial planes of isoclinal folds that are preserved only in the more ductile calc-silicate layers, and no evidence was found for map-scale D₁ isoclinal recumbent nappes. Rather, the map pattern is the result of interference between D2 and D3. Reconnaissance mapping in adjacent quadrangles suggests that the Standing Pond Volcanics in the Hartland quadrangle are on the overturned limb of the major D2 anticline that passes through Woodstock, and that the volcanics in Reading north of the Chester dome are in a counterpart D2 syncline beneath the anticline. These conclusions have implications for recently published structural versus depositional interpretations of interlayered volcanics, schists and calc-silicates south of Mt. Ascutney (for example Walsh, Armstrong and Ratcliffe, 1996).
4. Almost every outcrop contains at least one joint oriented roughly east-west (between N70E and S70E) and this is reflected as a strong preferred orientation in the rose diagrams of joints measured in Woodstock. Through-going, planar joints in schist are most likely to be in that position; joints in calc-silicates and curved joints show much more variation in orientation. A second set of joints trending northeast is apparent in many outcrops, approximately parallel to the trend of the Ottauquechee River.