AN APPARENT ANGULAR UNCONFORMITY IN WESTERN CONNECTICUT

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Abstract

The recent extension, to the north, of the U. S. Route 7 'superhighway' in the town of Brookfield, Connecticut has involved the excavation of crystalline bedrock of lower Paleozoic to upper Proterozoic age in the area. The road cuts produced by this excavation have exposed some interesting features of structure and lithology. An outcrop, observed by the authors off the east side of route 7, at grid coordinates 41.482444 N, 73.415307 W is of particular interest. It appears, to the casual observer to be an angular unconformity. Maps and publications regarding this area of Western Connecticut support the likelihood of observing an angular unconformity at, or around this location. However, further investigation in the vicinity of the outcrop indicates that what is seen here is not an angular unconformity but rather a concordant intrusive contact between the Ordovician Brookfield Diorite and the Cambro-Ordovician Stockbridge Marble formation. The exposed marble unit is mostly gently bedded; however in places displaying complex folding and pyritic filling. Stratigraphically and geochemically, the marble unit resembles Inwood marble of the New York City area (some workers consider the Inwood to be a member of the Stockbridge formation), and is mostly calcitic in composition with some dolomitic horizons and sporadic silicate mineral assemblages. The timing of the diorite intrusion relative to the Taconic Orogeny needs to be established and further field and geochemical investigations are underway. The apparent unconformity seems to be due to a pattern of jointing in the Brookfield Diorite which is at an angle to the bedding and foliation in the Stockbridge formation. This illustrates that, in science, as in so many other things, first impressions may not always be correct and that one should always look for data to confirm or, as in this case, correct one's initial hypothesis.

Figure 1

Figure 2

Figure 3

Figure 5 York's Geology Students Gathering Structural Data

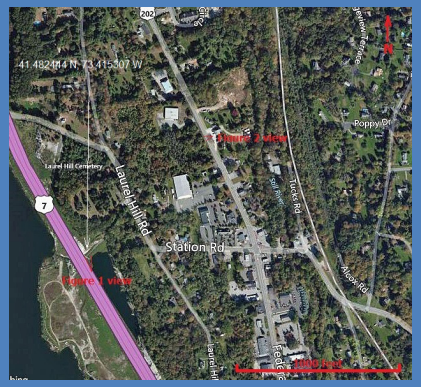

Figure 4 Location Map

Discussion

Excavation pursuant to the extension of U. S. Route 7 in the area of Brookfield and New Milford Connecticut has exposed outcrops of Paleozoic crystalline rocks that attracted the attention of the authors of this article.

Figure 3 is a hybrid map and aerial view Formation adjacent to the contact with the Brookfield Diorite, is showing the location of the outcrops under consideration in this article. Figure 1, looking northward from the eastern shoulder of Route 7, shows what appears to be an angular unconformity between the light colored Stockbridge formation on the upper left and the darker rocks on the lower right of the image. However, further investigation shows that the surface between these two rock units is actually an intrusive contact. The foliation in the Stockbridge at this location, which is parallel to the contact is striking north-south and dipping 45 degrees to the west. The darker rock unit has been identified as the Brookfield Diorite. What appears to be bedding at an angle to the contact in the first casual observations of the outcrop was shown, with subsequent investigation, to be a pattern of jointing within the Brookfield Diorite? Figure 2, a photographic image taken looking westward from U. S. Route 202 (location shown in figure 3) shows an outcrop of the Stockbridge marble with foliation also striking north-south and dipping 50 degrees to the west. This outcrop, over 1000 feet to the east and north of the contact shown in figure 1, confirms that this contact is not an unconformity.

Continuing work will attempt to establish the timing of the emplacement of the Brookfield Diorite relative to the Taconic Orogeny through geochemical investigation. Petrographic study will look for contact metamorphism in the Stockbridge Formation near the contact.
It has been noted that, although the foliation in the Stockbridge relatively planar and unfolded, other outcrops of the Stockbridge in the area show considerable intraformational folding and crenulation. The authors hypothesize that lack of folding and crenulation near the contact may be due to the higher relative competency of the Brookfield Diorite compared to the Stockbridge Marble. Further work will investigate this hypothesis.

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