

partially filled with glacial drift and because post-Glacial erosion throughout the plateau has been so insignificant that dissection has scarcely commenced even in the unconsolidated glacial and post-Glacial deposits. Furthermore, if the valleys had been excavated by the erosive action of the continental glaciers it might be assumed that wherever the rock was of a uniform character the valleys would trend parallel to the direction of movement of the glacial ice and that whatever divergence from parallelism occurred in localities where the rocks were not uniform would be closely related to rock structure. But the valleys are wholly unrelated to rock structure, are not parallel, and, in many cases, trend at right angles to the direction of movement of the glacial ice-sheets. It follows, therefore, that the "trench" valleys of the Laurentian plateau are probably not of glacial origin and hence must be remnants of pre-Glacial topography, presumably pre-Glacial river valleys.

Much evidence has been cited in discussing the physiographic history of the plateau, which indicates that its surface has not been greatly denuded during the interval which has elapsed since the Palæozoic submergence, and that the present surface corresponds very closely to the pre-Palæozoic peneplain.¹ This would also indicate that the plateau has not been greatly eroded by the glacial ice-sheets.

The cuesta ridges of Palæozoic sediments which parallel the southern margin of the plateau stand up in places with abrupt northward facing scarps. These pre-Glacial forms could scarcely have survived if the glacial ice-sheets had been capable of general deep denudation.

In the light of the preceding discussion, the topographic effect produced by the erosive action of the continental ice-sheets must be regarded as largely modifications of previously existing forms rather than the production of an entirely new topography. A summarized statement of these modifications follows:

- (1). Removal of the pre-Glacial soil cover of the plateau.
- (2). Production of "hogback" surfaces on the stoss side of the rock exposures.
- (3). Formation of grooves and glacial striae.
- (4). Excavation of undrained rock-rimmed basins.
- (5). Development of scarps by glacial plucking.
- (6). Overdeepening of pre-Glacial valleys.
- (7). Modification of pre-Glacial valleys to U-shaped valleys.
- (8). Rejuvenation and partial disorganization of the pre-Glacial drainage of the plateau.

Deposition. With the final retreat of the continental glaciers from the Laurentian plateau, glacial debris was left scattered irregularly over the plateau surface in the form of moraines, outwash plains, kames

¹ Lawson, A. C., Bull. Geol. Soc. Am., vol. 1, 1890, pp. 163-173.

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