southwest of Allentown. This creek has prominent bluffs of limestone in many places. The occasional flood plains indicate that the stream is beginning a new cycle of peneplanation, but has made little progress as yet in the reduction of the limestone areas to a new level of erosion.

**Are There One, Two Three or More Peneplanes in Lehigh County?**

In the foregoing pages, descriptions have been given of three separate and distinct peneplanes. This is the view held by the writer, although he recognizes the value of the arguments advanced by other workers who interpret the existing topographic features differently.

There has been repeated questioning of the existence of the Somerville peneplane. The writer, himself, for several years maintained that the development of this flat surface of erosion did not result from any uplift of the region and subsequent reduction by stream action, but was simply the lowering by solution of that portion of the Harrisburg peneplane underlain by limestone. Ward has furnished an excellent discussion of the problem.

The fact that the Somerville peneplane is distinctly limited to the limestone areas is the principal argument against the generally accepted view. In addition, the numerous examples of solution such as sink holes, underground channels, and caves and the absence of stream gravels over the uplands furnish corroborative evidence.

The evidence for the Somerville peneplane of fluvial erosion accompanied by solution and the development of a base level of degradation is the regularity of the surface. The various rocks in which the plane has been cut have been folded, faulted and shattered locally to a remarkable degree. The writer doubts that the region could have been so regularly reduced by solution alone without base leveling. These variables must have influenced the rates of lowering by the underground circulation and should have developed a much more irregular surface than now exists. Of course, no one will deny that solution has been an important agent. The question does not admit of a positive decision and it is expected that different points of view will continue.

Recently, Ashley has proposed the elimination of all but the Schooley peneplane of fluvial base level erosion. He believes that all the present topographic features are the result of differential erosion. The Cambro-Ordovician limestones were least resistant, the Martinsburg slates somewhat more and the Shawangunk conglomerates and sandstones most. Therefore, the surfaces described as the Harrisburg and Somerville peneplanes do not imply different stages of base-leveling and subsequent uplifts.

A similar objection to that offered for the elimination of the Somerville peneplane of stream erosion (and solution) can be advanced against Ashley's proposal. With the complicated structures and varying hardness of the strata of both the Martinsburg slates and the Cambro-Ordovician limestones, it does not seem to the writer that differ-

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