occurred before the base level had been extended and the slates and
other harder rocks lowered to the new base level developed in the lime-
stone areas.

The peneplane developed on the Cambrian and Ordovician limes-
stones of the region, and on which portions of Bethlehem and Easton
are built, is known as the Somerville peneplane. At times it has locally
been called the Bethlehem peneplane. The features of this peneplane
have been described on an earlier page. It is of much less extent than
either of the other peneplanes and, being younger, has undergone less
change subsequent to its formation.

Are There One, Two or Three Peneplanes in Northampton County?

In the foregoing pages, descriptions have been given of three sepa-
rate and distinct peneplanes. This is the view held by the writer al-
though 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 Somer-
ville 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 Harris-
burg peneplane underlain by limestones. Ward\(^{10}\) 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 ac-
cepted 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 accom-
panied by solution and the development of a base level of degrada-
tion 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.

\(^{10}\) Ward, P., The role of solution in peneplanation: Jour. of Geol., vol. 38, pp. 232-270.
1930.