
UPLAND FLATS IN EASTERN OHIO—PENEPLAIN OR ONE-CYCLE EROSION SURFACE? Locally extensive, relatively flat uplands in eastern Ohio, such as the upland surface shown in figure 1, have commonly been interpreted as remnants of a peneplain (Fenneman, 1938: 300-301; Stout and Lamb, 1938). This interpretation demands a two-cycle geomorphic history: a first cycle during which erosion completely reduced the land to a relatively smooth surface truncating both hard and soft rocks equally (the peneplain), followed by a second cycle of dissection initiated by uplift. The upland flats are considered to be inherited, almost intact, from that original beveled surface.

Investigation of the geologic setting of a few of the upland flats (stratigraphic information courtesy of G. H. Denton, H. R. Collins, B. E. Smith, R. M. DeLong,



FIGURE 1. View showing nature of peneplain-like upland surface; picture taken one mile west of Rockbridge in Goodhope Township, Hocking County, looking north up Hocking valley.

M. T. Sturgeon, and E. W. Wolfe) shows each to be underlain by a relatively thick sandstone, as illustrated in figure 2. See figure 3 for location of the following areas:

- (1) near Malaga in Monroe County, the Permian Marietta sandstones (Denton, Collins),
- (2) east of Woodsfield in Monroe County, the coalesced Permian Waynesburg, Mannington, and Washington sandstones (Denton),
- (3) east of Chesterhill in Washington County, the coalesced Pennsylvanian-Permian Arnoldsburg, Gilboy, and Waynesburg sandstones (Smith), and
- (4) south of Lancaster in southern Fairfield and northern Hocking counties, the Mississippian Black Hand sandstone (Wolfe), the area illustrated in figures 1 and 2.

Where the resistant layers of sandstone crop out only below the general upland level, striking rock terraces or local rock-controlled benches are produced on the sides of the hills, as shown in figure 4. In such areas or in areas where the sandstone at the level of the upland is thinner, persistent upland flats are absent; the



FIGURE 2. View showing same flat upland surface illustrated in figure 1 with underlying Mississippian Black Hand sandstone believed to be responsible for the development of the surface; picture taken from route US 33 near Sugargrove in southern Berne Township, Fairfield County, looking northwest.

EXPLANATION OF FIGURES 3 AND 4

FIGURE 3. Map showing locations of four areas listed in text which are characterized by a peneplain-like upland flat underlain by a relatively thick sandstone.

FIGURE 4. View of terraces or benches along sides of hills created by the presence of resistant sandstone layers below the level of the upland; picture taken south of Stafford in Elk Township, Noble County, looking southeast

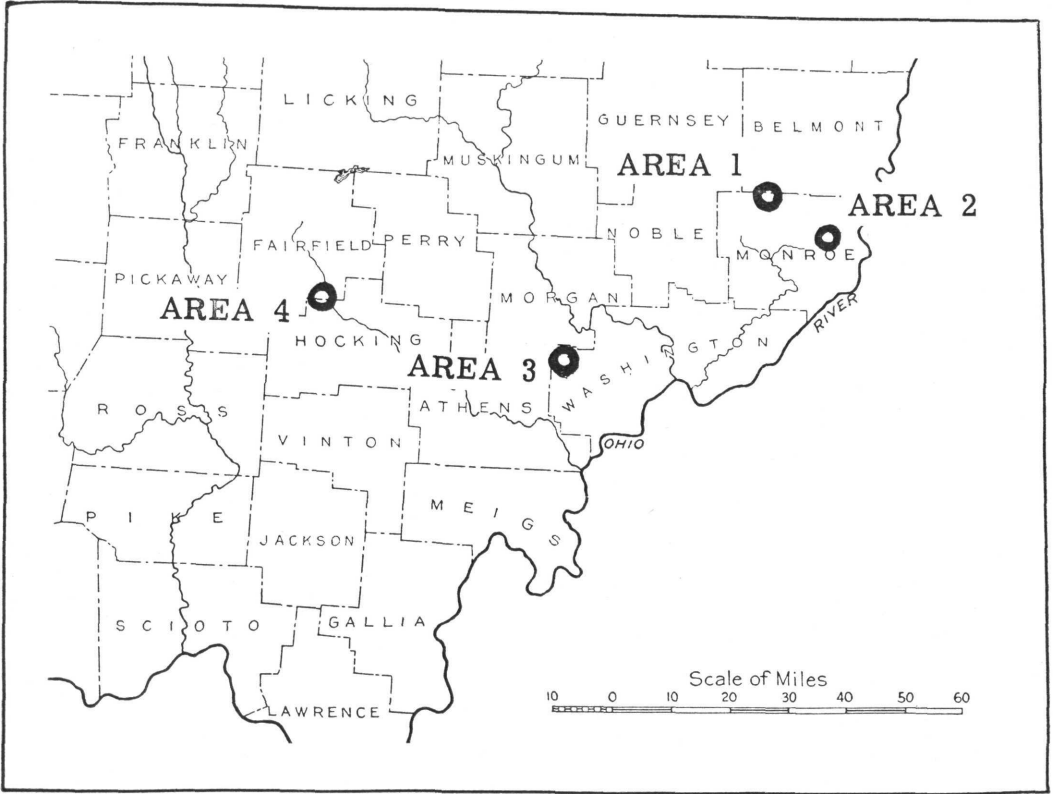


FIGURE 3



FIGURE 4

land surface seems unquestionably to be controlled by the nature of the underlying bedrock.

Additional evidence usually cited in support of the peneplain interpretation is the general accordance of summits (fig. 1). However, stream spacing and slope angles both tend to be more or less uniform under the same conditions of bedrock, climate, and vegetation, with the result that, even according to the hypothesis of a single cycle or erosion, summits should appear generally accordant within an area where the geology stays as uniform as is generally true in Ohio. A similar interpretation is reached by Hack and Goodlett (1960: 60) in a study of an area in northern Virginia in the central Appalachians.

Thus, it appears to be the presence of more resistant bedrock, rather than a previous erosion cycle, that has been critical in the development of these upland flats and, in these cases, the hypothesis of an earlier erosion cycle (peneplain) seems to represent only an unnecessary complication. Perhaps the whole concept of peneplain interpretation in eastern Ohio needs re-evaluation?—JANE L. FORSYTH, *Ohio Geological Survey, Columbus, Ohio.*

LITERATURE CITED

- Fenneman, N. M.** 1938. Physiography of eastern United States. McGraw-Hill Book Company, Inc., New York. p. 290-304.
- Hack, J. T., and J. C. Goodlett.** 1960. Geomorphology and forest ecology of a mountain region in the central Appalachians. U. S. Geol. Surv. Prof. Pap. 347. 66 p.
- Stout, Wilber, and G. F. Lamb.** 1938. Physiographic features of southeastern Ohio. Ohio J. Sci. 38: 49-83.
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