

Fig. 1 is a small sample from a topographic sheet in central Pennsylvania, on a scale of (almost exactly) a mile to an inch, or 1:62,500 of nature. Heights are indicated by level contour lines (brown), marking vertical intervals of 20 feet. Note how they are crowded together on the steep sides of the rectilinear Mahantango mountain, five of them for every 100 feet of height; see how they are spread apart on the gentler slopes of the adjoining valleys; remark the sharp-cut notch where the contours run crosswise, on either side of the transverse stream (blue). Few persons realize that the Allegheny moun-

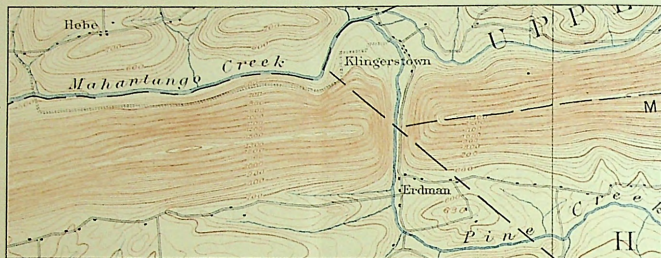


FIG. 1. PART OF LYKENS QUADRANGLE, PA. SCALE, 1:62,500; CONTOUR INTERVAL, 20 FEET

tains are so straight and even crested as this one here appears; yet so they extend obliquely across the State for tens of miles together. Their steep slopes have a thin, stony soil, not worth clearing for cultivation. They are uninhabited, forested barriers separating the fertile valleys on either side; and the stream notches are like gates, where roads may pass through.

Now contrast this straight, even-crested, steep-sided, sharply notched mountain with the endless irregularities of the hilly country in southeastern Ohio, Fig. 2, where the branching spurs interlock in the most complex, systemless fashion with the branching valleys. The narrow ridge crests, often fol-

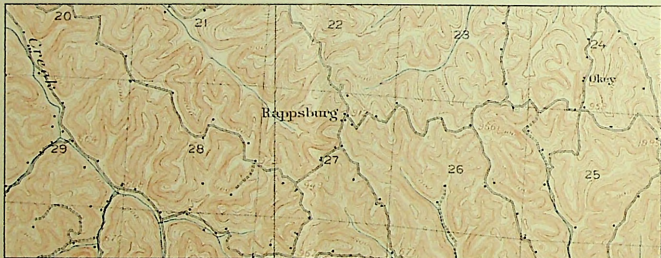


FIG. 2. PART OF ATHALIA QUADRANGLE, OHIO SCALE, 1:62,500; CONTOUR INTERVAL, 20 FEET

lowed by roads, are as wandering as the streams (blue) in the valleys. Nearly all the surface is occupied by hillside slopes, and the slopes are so steep as to make cultivation difficult. The population is scattered because both the upland ridges and the valley bottoms are narrow. Villages are few and small. It is difficult to find one's way in such a district, because there is no systematic trend in the ridges and valleys, and because there can be no good landmarks where all the ridges and valleys are so much alike.

The topographic maps are a storehouse of facts, an encyclopedia of geographic information. To study them is like exploration without travel. An immense deal can be learned by "reading" the published maps, each of which measures about 13 by 17 inches, corresponding to a "quadrangle" of as many miles on the largest scale of 1:62,500; of 26 by 35 miles on the intermediate scale of 1:125,000;

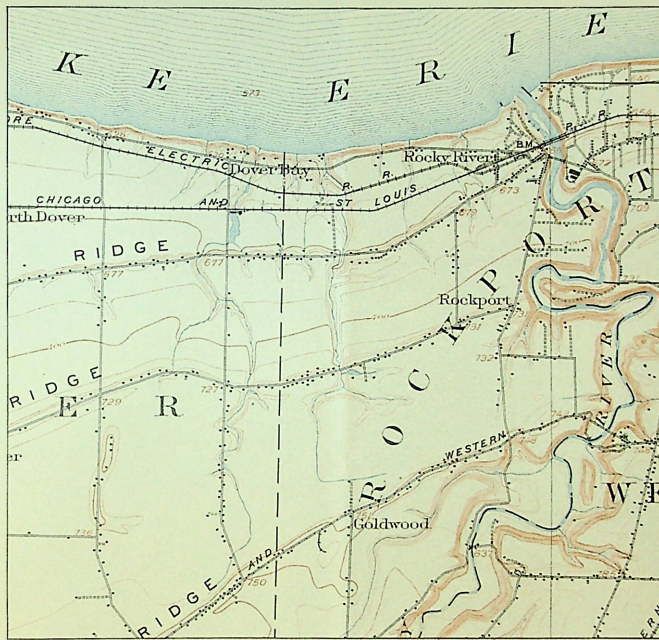


FIG. 3. PART OF BERA QUADRANGLE, OHIO SCALE, 1:62,500; CONTOUR INTERVAL, 10 FEET

and of 52 by 70 miles on the smallest scale of 1:250,000, or four miles to an inch. An appetite for more maps is whetted by studying the published sheets; one becomes impatient to see the maps for areas not yet surveyed. Yet at present, large areas inland from our coasts and along our frontiers remain unmapped and practically unknown except to the people there resident. The lack of good maps in the unsurveyed parts of the country seriously retards industrial development.

Look next at the plain of northern Ohio, of which a small part is shown in Fig. 3, gently sloping to the top of the lake-shore bluff, where a sudden descent of 50 feet is made to the harborless lake shore. Here the vertical interval of the contours is only 10 feet, yet they are from a quarter of a mile to a mile apart on the plain, except at the low bluffs or "ridges" which mark former shore lines of Lake Erie, now followed by roads and dotted with houses; and except in the sharply incised valley of Rocky river, where the winding stream has undercut the valley sides and widened the valley floor, thus producing a narrow flood plain. How unlike is the opportunity for agriculture and for road-making here, and in the hills of southeastern Ohio, Fig. 2, or on the mountains of central Pennsylvania, Fig. 1. How direct is the course of the railway on the plain near the lake shore; it makes only two curves in ten miles.

A few lessons of this sort are useful in showing, first, how much we have to learn about the detailed features of our country, and second, how easily our ignorance can be converted into knowledge by resorting to the remedy at hand in these admirable maps; for the best of it is that the map-sheets cost only ten cents each, or \$3.00 for fifty, as will be further explained on the last page. Yet most of our people do not know that the maps exist, much less that they can be had at so low a price.