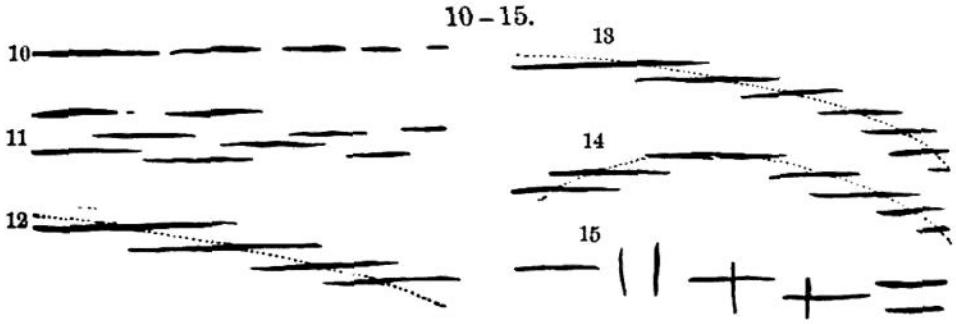
the steepest of volcanic cones. The lofty volcanoes of the Andes are not steeper than in Fig. 8, although often represented with angles of 40° to 50°.

With a clinometer (see Fig. 89, page 100) held between the eye and the mountain, the angle of slope may be approximately measured. When no instrument is at hand, it is easy to estimate with the eye the number of times a vertical, as AB in Fig. 5, is contained in the semi-base, BC; and, this being ascertained, the angle of slope may be easily calculated. The ratio 1 : 1 corresponds to the angle 45°; 1 : 2 to 26° 34′; 1 : 3 to 18° 26′; 1 : 4 to 14° 2′; 1 : 5 to 11° 18½′; 1 : 6 to 9° 28′; 1 : 7 to 8° 8′; 1 : 8 to 7° 7½′; 1 : 9 to 6° 20½′; 1 : 10 to 5° 42½′; 1 : 12 to 4° 46′; 1 : 15 to 3° 49′; 1 : 20 to 2° 52′. The inclinations corresponding to these ratios may be easily put into a diagram.

For altitudes over the United States, see Bulletin No. 76, U. S. Geol. Survey, by H. Gannett, 1891.

(*b*) *Ridges.*—The ridges of a chain vary along its course. After continuing for a distance, they may gradually become lower and disappear; and while one is disappearing, another may rise to the right or left; or the mountain, for scores of leagues, may be only a plateau without a high ridge, and then new ranges of elevations may appear. The Rocky Mountains well exemplify this common characteristic, as may be seen on any of the recent maps. The Sierra Nevada dies out where the Cascade Range begins; and each has minor examples of the same principle. The Andes are like the Rocky Mountains; only the parts are pressed into narrower compass, and the crest ranges are hence continuous for longer distances. The Appalachian ridges rise and sink along the course of the chain.



The general idea of this composite structure is shown in Figs. 10 to 15, where each series of lines represents a series of ridges in a composite range. In Fig. 10 the series is simple and straight; in Fig. 11 it is still straight, but complex; in Fig. 12 the parallel parts are so arranged as still to make a nearly straight composite range; while in Figs. 13 and 14 the succession forms a curve; and in Fig. 15 there are transverse ridges in a complex series. In ridges or ranges thus compounded, the component parts may lie distinct, or they may coalesce so as not to be apparent.

River systems.—Plateaus and mountains are the sources of rivers. They pour the waters along many channels into the basin or low country toward which they slope; and the channels, as they continue on, unite into larger channels and trunks which bear the waters to the sea. The basin and its surrounding slopes make up a river system or drainage area. The