Virginia southwestward, along a series of Taconic geosynclines that ended in the making of a series of Taconic ranges, on a line east of the Appalachian Range. See further, pages 531, 532.

4. *Geanticlines corresponding to the geosynclines.* — It is not always easy to identify the one or more geanticlines that the sinking of a geosyncline may have produced. In the case of the Taconic and Appalachian ranges little doubt exists. When the Taconic Range was completed, already a low geanticline had risen above the continental sea, making two large islands between southern Ohio and Alabama, one over the region of Cincinnati and part of Kentucky, and the other in the same line over Tennessee. The region, often called that of the *Cincinnati uplift*, was first identified as a Middle Silurian emergence by J. S. Newberry and J. M. Safford. Moreover, an eastern geanticline also showed itself; for the whole Atlantic border from New York southwestward through Virginia and beyond became emerged at the same time, and continued so, with probably increasing height through the Upper Silurian, Devonian, and Carboniferous eras, when the making of the Appalachian Range took place; and also after this, through the Triassic and Jurassic periods until the Middle Cretaceous; for through all this time no beds with marine fossils were formed over this great area.

The contraction theory of mountain-making, as is seen, appeals to an all-pervading force that must have been at work from the time the earth first had a solid exterior. Already in later Archæan time it had made Archæan mountain ranges; and it is manifest, from succeeding events, that throughout all time one system of evolution was in progress. Moreover, the theory has the virtue of explaining the facts, which is not true of the gravitation theory. No other adequate explanation has been proposed. If the calculations of physicists do not give a sufficient depth for the results to the "level of no strain," then the calculations may be believed to be in error until some other adequate cause of the great faults and flexures has been brought forward.

5. *Relations of mountain ranges to denudation.* — Carving, gouging, and leveling through denudation go on very rapidly in elevated regions of even a moderate amount of rain, and have gone on through long ages since the rocks were made, so that the original forms of the anticlines and synclines of mountain ranges have disappeared, generally leaving ridges where synclines once existed.

Yet the geologist may still have little difficulty in tracing out the plications, even if the region over which they extend is now a level plain. The investigator looks for evidence of folds in change of dip. If, on his way westward over a region, he finds eastward dips changed to westward, he has passed the axis of an anticline; and if, going farther, he finds westward dips changed to eastward, he sees proof that he has reached the axis of a syncline. Complexities are added by the great faults, making difficulties which can hardly be surmounted without the aid of fossils.

From the facts presented in the above review of the structure of moun-