

ated from each other by valleys of variable width and depth. The height of these hills may be stated in a general way as ranging from five hundred to five thousand feet above the level of the sea. They attain their greatest development in the States of Pennsylvania, Virginia, North Carolina and Tennessee where they have been most successfully studied by the brothers Professors W. B. and H. D. Rogers. The results of the observations of these two eminent geologists are given in a masterly paper read before the American Association for the Advancement of Science in 1842 and recently in a more matured form by H. D. Rogers in his magnificent work on the geology of Pennsylvania.

According to Professor Rogers the Appalachians consist nearly altogether of stratified rocks of palæozoic age including all the American formation from the base of the Silurian up to the top of the carboniferous. These rocks were deposited in nearly horizontal strata on a sea bottom, which in the region now occupied by the mountains in question, kept constantly subsiding during the whole period of their accumulation. South-east there existed in the place of the present Atlantic Ocean a vast continent from the waste of whose shores the material out of which the strata were formed was derived. In consequence of their proximity to the shore the formations on the south-east accumulated more rapidly than they did towards the south-west. For this reason there is now found a much greater thickness of the same rocks in Pennsylvania, Virginia, and other north eastern States than in those which lie further west such as Ohio, Indiana, Illinois and Iowa. The strata remained in their nearly horizontal position, perhaps sloping gently towards the south-west, until the close of the Carboniferous era. Then by some great disturbance of the equilibrium of the forces of nature they were thrown into a series of vast wave like undulations. The profile of these waves immediately after their elevation must have been somewhat similar to the following figure.



Fig. 1.

Fig. 1.—ideal section across the Appalachians. The dotted space is intended to represent the rock of the original bottom of the ocean. The black undulated line represents the stratified rocks after having been