

view of this evidence, the phenomena presented by these plateau basins may be satisfactorily explained by the action of land ice.

VALLEY ROCK-BASINS

Valley rock-basins are more important topographical features, and the question of their origin has excited keener controversy. One condition of prime importance in the formation of such basins is the production of graded valley floors, reduced to a base-level either with regard to the sea or to barriers of hard rock with intervening weaker strata. These flat reaches might then be converted into rock-basins either by differential crustal movements with or without lateral compression, or by land ice, which is capable of eroding below the action of running water, as suggested by Sir A. C. Ramsay. It need hardly be pointed out that aqueous erosion is incapable of producing the characteristic phenomena of valley rock-basins.

The soundings of the Lake Survey have established certain points which are highly suggestive in connection with the question of the origin of such basins. They show (1) that these depressions are U-shaped in cross-section, like the contour of the glaciated valleys in which they lie; (2) that there is a lack of adjustment between the large valley rock-basins and tributary streams, the relation between them being analogous to that between trunk streams and tributary hanging valleys; (3) that while the large lakes have usually comparatively flat floors, many of them have several distinct basins; (4) that the deepest soundings frequently occur where the constriction of the valley is greatest; (5) that the steepest slopes are often found at concave bends in the larger rock-basins, where it can be shown that the differential erosion of the ice must have been most powerful.

All these phenomena indicate that valley rock-basins present many of the features which are characteristic of glacial action. But in addition to these points we will now proceed to show that the distribution and form of many of the rock-basins in Scotland are produced under complex local conditions dependent on the geological structure, pre-glacial topography, and differential ice-erosion of the particular regions in which they occur.

A study of an orographical map of Scotland shows that valley rock-basins are almost confined to those highly dissected regions where deep through valleys have been established between high mountains, and where the cols form low divides or passes in the existing watershed of the country. In the section dealing with topography we have endeavoured to point out that the westerly and northerly flowing streams have, by capture, reversed the drainage and produced a series of through valleys. Such features are specially developed in the western portions of the Northern, Central, and Southern