

In the region situated between the Great Glen and the Midland Valley, glaciers occupied the main valleys, and formed in certain areas lobes of ice on the plain. They reached the sea-level in most of the western fjords, but not on the East Coast. An ice-cauldron was established on Rannoch Moor—an area surrounded by lofty mountains—which was drained by a few principal gaps.

In the Southern Uplands there was only a limited development of valley glaciers. In the Lammermuir Hills and the Moorfoots no deposits characteristic of this period have been detected. Westwards we find evidence of small ice-streams in the valleys draining Broadlaw, Hartfell, and Ettrick Pen, the Lowther and Queensberry Hills, and the mass of high ground culminating in Cairnmore of Carsphairn, between Sanquhar and the sources of the river Ken. The great cauldron between the Kells and Merrick ranges was so thickly filled with ice that glaciers issued from all the main gaps, bearing granite boulders for a considerable distance from their parent source. The greatest confluent glacier of this period in the Southern Uplands was formed by the ice that issued from the central cauldron by Glen Trool, which, uniting with the Minnock glacier, fed by various tributaries on the western declivity of the Merrick range, spread far over the plain.

There is a marked difference between the conditions of erosion of the continental ice-sheet and those of the valley glaciers. During the former phase, as already indicated, the ice-sheet was largely independent of the existing watershed, and the movement was frequently across the valleys. No rock debris could fall on to the surface of the *mer de glace* on the mainland, and the main escape of the melt-water was beyond the limits of the present land surface. During the later phase the glaciers mostly radiated from the main mountain groups and followed the trend of the valleys. At the same time the prominent crags furnished materials which were borne downwards to lower levels on the surface of the ice. The glaciers interrupted the drainage of bare areas and thus received a supply of water, which doubtless raised the temperature of the ice to the critical melting-point relative to pressure, thus ensuring more rapid flow. This water, combined with that set free from the ice, often under great hydrostatic pressure, must have circulated on the floor in hollows below water-level, thereby abstracting the "flour of rock," increasing the erosive action of the ice. These phenomena show that during the later glaciation ice-erosion was mainly concentrated on the valley floors, which would tend to over-deepen the main valleys and produce rock-basins in them.

The glacial accumulations characteristic of this period are well defined. Where the great valley glaciers debouched on the plains,