

gravel, at a height in some cases of several hundred feet above the present level of the sea. Typical examples of such phenomena, resulting in the modification of the drainage of the country, have been described by Professor James Geikie as occurring on the slopes of the Eaglesham and Strathavon Hills, and by Professor Kendall and Mr Bailey on the northern declivity of the Lammermuir Hills.

At certain localities in Scotland, as for instance at Clava, near Inverness, and on the west coast of Kintyre north of Machrihanish, deposits of clay with arctic shells are found beneath boulder clay, which differ in character and origin from the shelly boulder clay of Caithness, Orkney, Ayrshire, and Wigtownshire. The shelly clays at the former localities are marine deposits, which indicate a depression of the land before the maximum extension of the ice, while the shelly boulder clays have been formed by land ice, which in its onward march had previously passed over a portion of a sea floor.

LATER GLACIATION

During the later glaciation the centres of ice dispersion were wholly changed. Instead of three great areas of distribution on the mainland, each mountain group seems to have nourished its own system of glaciers. It is true that for a time the glaciers became confluent, and that the ice passed over intervening cols from one line of drainage to another. But as a rule the direction of the ice-flow coincided with the trend of the valley system. Thus we find that in certain areas the ice moved in a direction precisely opposite or oblique to that during the continental ice-phase. A change so marked seems to afford reasonable ground for maintaining that these glacial epochs may have been separated by an inter-glacial period.

The phenomena characteristic of the later glaciation are typically developed in the Highlands. All the main valleys were filled with trunk glaciers fed by innumerable tributaries draining the various mountain groups. In the tract lying to the north-west of the Great Glen the glaciers seem to have reached the sea-level in nearly all the firths of the East Coast, and in nearly all the sea-lochs and sounds on the western seaboard. On the north shore of Sutherland the ice apparently moved out to sea, and formed a more or less continuous ice-front extending from the borders of Caithness westwards as far as the Kyle of Tongue, while lobes of ice occupied Loch Eireboll and the Kyle of Durness. What may be conveniently described as ice-cauldrons were set up in Central Sutherland, and in the district of Loch Monar on the borders of Ross-shire and Inverness-shire.

Even the remote Orkney and Shetland Isles, and the hills of Lewis and Harris in the Outer Hebrides, nourished their own independent glaciers.