

THE COYLES OF MUICK.

BY JOHN MILNE, LL.D.

THE Spring Excursion of the Club was held on Monday, 2nd May last, to the Coyles of Muick. The south Deeside road from Ballater was followed till the bridge over the Muick was reached. Steep banks of glacial stony clay on the south side of the road are the remnants of the lateral moraine of the great glacier which filled the valley of the Dee in the Glacial Epoch. The bare face of Craighendarroch on the north side of the river tells of severe rasping of the hill-side by the blocks of granite from Ben Muich Dhui embedded in the left side of the glacier. These appearances remind us of what was going on at Ballater many thousands of years ago; a small haugh, recently converted into a garden, between the road and the river is a more modern work. It had not begun to be formed till the Glacial Epoch had passed away, and also the great floods caused by the melting of the ice-sheets on the mountains and the glaciers in the valleys. For probably more than a hundred years, about the close of the Glacial Epoch, the Dee was normally as large as it is now in its greatest spates. During this time the bed of the river had been excavated to its present depth, which may be lower than that of the glacier of the Dee. When the time of the floods was over and the Dee had shrunk to its present ordinary volume, the river meandered over a broad, stony bed, extending from the hills on the one side of the valley to those on the other. Grass began to spring up in tufts among the stones, winter spates buried the tufts of grass in sand and mud, summer saw them green again and spreading wider; and so on the process went till the once bare, stony bed was deeply covered with fine alluvial soil caught by grass from muddy water flowing over it in spates. The site of Ballater is

part of the same little haugh at the road-side above the bridge, but now that it is not protected by grass the fine soil would be in danger of being swept away if within the reach of a winter spate.

Turning up the valley at the bridge over the Muick without crossing the burn, the road led through a wood where the ground was strewn with innumerable blocks of stone which, in the Glacial Period, the glacier filling the valley of the Muick had brought from the cliffs of Lochnagar and the hollows it excavated in its progress to join the Dee glacier. The stones embedded in the lower part of the glacier had frequently come in contact with the rocky bottom over which they passed, and had turned over many times, getting their sharp corners rubbed off and at last sticking in the bed, letting the glacier pass over them.

The Coyles came in sight, three sharp-pointed hills on the left side of the Muick, in front of us. The striking difference between the shape of the three tops called the Coyles and that of all other Scottish hills at once suggests that there must be some peculiarity in their geological structure or in the rock of which they are composed. In Scotland there are no mountains so high but that their summits were over-run with the ice-sheet in the Glacial Period. The passage of the ice-sheet over the hills has rounded down the summits of most of them, and often but for a cairn it would not be easy to pick out the very highest spot. In a few instances, as Clochnaben, Bennachie, and the Buck, solid masses of rock have withstood the tremendous pressure bearing against them by the ice-sheet in its slow progress to the sea. On the Buck the pressure came from the north-west, for the long, upright stones on the summit, though not dislodged from their sockets, have yielded so far that their tops lie to the south-east. On Bennachie several of the tops are rocky, the softer surrounding parts having been eroded by the moving ice. On two of them, the Oxen Craig and Craig Shannoch, is seen a structure like what has been recently described as observable at Mount Pelée, in

Martinique, since the great earthquake and eruption in 1903. A well-spring of molten matter has been pouring out lava in a plastic state, which does not run away like water but consolidates on the outside, while the spring still continues to discharge at the centre. The result is the piling up of a lofty conical mass of lava in layers, sloping gently from the centre to the circumference. On the two tops mentioned, layers of granite are seen sloping downwards in all directions from a central point, though there is no vent or difference there in the appearance of the rock. In the Glacial Epoch the straight course of the Aven on the north side of Clochnaben gave a freer outlet for the ice than the tortuous valley of the Dye, hence there was a flow of ice out of Glendye into Glenaven, round the south-east and east sides of Clochnaben. This caused great erosion on the south-east shoulder of the mountain, and the formation of a deep trench between it and Mount Shade. This gorge must have relieved the pressure on the great mass of rock, about 100 feet high, on the summit of Clochnaben, and saved it from being worn away.

Not many of the Scottish hills when seen against the sky show their sides concave, but the Coyles do so. They have quite the look that volcanoes usually have in woodcuts in books, and it is probably from their ideal mountain-like look that they have received their name, Coyles, which must have been an old Celtic word coming from the same Aryan root as Latin *collis*, a hill. That there must have been in the old Pictish language, from which modern Gaelic is directly descended, a word *col*, or *coyl*, with liquid *l*, no one will deny who remembers the number of hills, great and small, in whose names this syllable forms a part, such as Coleshill, Coilsmore, Collylaw, Collie (now Cowie), Glaschoil, Colleopard. It is no objection to this etymology to say that no word like *col* or *coil*, meaning a hill, is found in Gaelic dictionaries. The dictionaries were compiled from printed books, chiefly the Gaelic Bible and Macpherson's *Ossian*, and many colloquial words escaped notice. One of the most recent

editors, Macbain, gives *coileag*, a cole of hay, and he derives it from the Scottish word *cole*, a haycock. He should have known better than to put the Gaelic termination *eag*, meaning little, to a Scottish word, and should have given it as a hitherto unrecognised Gaelic word meaning a hill. The Coyles of Muick are emphatically "the hills of Muick".

The Muick was crossed at Mill of Sterin, over two miles from Ballater. This name may have been given to the spot from there having been there at one time a row of stepping-stones, from Gaelic *stair*. Bridges taking the place of stepping-stones are frequently called Star-bridge. Birkhall itself was formerly called Sterin, and the stepping-stones might have been there. After following the road on the west side of the Muick for a mile or so, the weather, which had been rather wet, began to improve, and it was resolved to go to the middle Coyle, the highest of the three. So the burn-side was left and the ascent was begun. Half-way up the hill a small stream was crossed, called the Tombreck, a Gaelic term meaning the spotted hill—the burn taking its name from the hill on which it rises. It runs down a slight hollow on the hill-side between the middle top and its neighbour on the north. At the end of the Glacial Period, when the ice-sheet had disappeared from the low country, and the glaciers in the valleys of the Dee and the Muick had melted away, there still remained for a time a thick coat of snow on the hill-tops, and some small glaciers in the hollows coming down from them. One of these retreating glaciers occupied the hollow between the middle and the north Coyles, bringing with it many large, rounded granite stones which had come originally from the hills beyond the Girnock. The point where it had long ended before finally melting away is marked by the most advanced of the stones which it had brought with it.

Here some of the party took the straight line to the hill-top; others, not so springy in the step or not so brawny in the leg, took a longer but easier way to the crest of the ridge connecting the two northern tops, and gained

the summit from the north. The distance from Ballater to the summit is under five miles. When the rock of which the hill is composed became first visible it was seen to be an igneous rock of black colour and greatly decomposed. In many blocks there were empty fissures out of which something had been dissolved, probably by the action of water at a high temperature charged with carbon dioxide. The decomposition had taken place when the rock was at a great depth below the surface of the ground and raised to a high temperature by the internal heat of the earth. By the solvent action of hot water and carbon dioxide some of the constituents of the rock had been removed, and only silica and magnesia had been left. These combining together had made silicate of magnesia, and formed the rock called serpentine. Owing to different degrees of decomposition the rock is often in alternate narrow bands of green and yellow, resembling the markings on the sides of some serpents; hence it gets its name. In some blocks the cracks and cavities had been filled up with green, glassy-looking pure silicate of magnesia which had been deposited from water. In others the cracks contained chrysotile, a yellow mineral composed of silky fibres crossing the cracks. Serpentine is not a hard rock: it can be scratched and scraped with a good steel knife. When the thick ice-sheet was passing over the Coyles their summits had been worn down like the bald, round heads of the granite mountains in the Grampian range; but when the cold period began to go off and the mountain tops peeped through their snowy covering, the eroding action continued on the soft sides of the Coyles after it had ceased to affect the hard flanks of the neighbouring granites. Partly by erosion, and partly by the action of frost on water in the numerous cracks in the serpentine, the Coyles have acquired their peculiar volcano-like shapes. Another peculiarity of the Coyles is their greenness compared with the heath-clad granite mountains. Heather does not grow on rocks containing the alkaline earths, lime and magnesia, and this restricts the vegetation to

grasses and other green-leaved plants. Magnesia seems to favour the growth of ferns, which abound on the Green Hill in Glen Nocht, which is composed of serpentine, but few ferns were seen on the Coyles, though they were looked for.

The central top rises to 1956 feet above sea, and 1000 feet above the Muick below it. The south-east top, Craig Bheag, the little Craig, is 1700 feet high and 440 yards distant from the middle top. The north top, Loinmuie, meaning the beautifully-shaped hill, is 1679 feet high, and distant from the middle top 600 yards.

The serpentine area in which the Coyles stand lies between the Muick and the Girnock; it is of an oval shape, about a mile long from north-east to south-west, and about three-quarters of a mile broad. From the north-west side issue two long projections, narrow at first but gradually widening out and curving round to the east, one on either side of the Corrie Burn, which enters the Muick above Birkhall. These two projections were at one time one broad band, but a glacier coming down the Corrie Burn hollow had cut through the serpentine in the middle, making two narrow bands.

Probably from this hollow came some well-smoothed, ice-scratched stones composed of serpentine which were found in the grey, glacial stony clay in which the sewer tunnel under St. Fittock's road was made. On this supposition they were taken off by the Corrie Burn glacier, which delivered them over to the Glen Muick glacier. By it they were conveyed to the Dee glacier, and after a journey extending over a hundred years or more, embedded in the glacier and rubbing on the rocks on its right side, they reached Aberdeen. Here the glacier had split up into two, one part holding straight out to sea, and the other, in which were the serpentines, diverging to the right to the Bay of Nigg by a passage then open but now blocked by the debris brought down by the glacier. Though these stones never reached the sea, many that did may be seen lying in the edge of the sea on the north side of the Bay of Nigg.

Serpentine is composed of silicate of magnesia, which had its origin in some other rock of which silicate of magnesia in other forms was a chief constituent. There are several igneous rocks which may be decomposed by the agency of hot water containing carbon dioxide. One of these is saxonite, or olivine-enstatite, a black, heavy rock, not so hard but that it may be indented with a hammer, but tough and ill to break. This rock has yielded the serpentine of the Coyles. It is found in Belhelvie near the Tarves road. It occurs also in the upper part of Glen Clova, and on the left side of the Capel Pass road large blocks of it may be seen in a long line on the hill-side, having been left there by the edge of the glacier which came down from Glen Doll.

At the very summit of the Coyle there were lying here and there blocks of ice-worn granite, which had come from the hills beyond the Girnock embedded in the moving snow sheet, but, touching ground on the Coyle top, had been stranded there.

Owing to the weather the view from the summit was not extensive; but Morven, covered with snow, was seen on one side and Lochnagar on the other. All the brows of the surrounding hills in the neighbourhood were covered with snow. Had the visit been made on the following morning a splendid view would have been got. On the morning of 3rd May the sky was clearer than it had been any previous day this year, and the higher mountains in the west of Aberdeenshire were completely covered with snow, a beautiful sight when seen against the clear sky.

After a rest on the summit, a straight course was taken to the Linn of Muick, about a mile distant. The descent was very steep at first, but not without interest. There were many fragments of felsite, quartz, and granite, which had been left by the ice-sheet long ago, and in cracks in the serpentine there were seams of chrysotile, a golden yellow mineral composed of silky fibres filling the cracks cross-wise.

The Linn was soon reached, and the great volume of water afforded a sight which in some measure compen-

sated for the inconvenience caused by the rain. The Linn is a little over 1000 feet above the sea. The rock at the fall is too hard for the burn bed to have been excavated by running water, and the fall must be credited to the Muick glacier which was able to pick up and carry off loose blocks too heavy for the burn to move.

The Muick was crossed by a wooden foot-bridge below the fall, and the return journey continued, a digression from the road being made at Aucholzie for afternoon tea. By the side of the path through a wood there were, near the Muick, deposits of sand which had been left by the burn when it had not excavated its bed so deep as it is now. The indications of this lay in the height of the sand beds above the water, and the accumulated depth of thin layers of fine sand which must have been laid down by shallow water in many successive spates, and not by one great, roaring flood.

The name Aucholzie perhaps means the place near the burn, from Gaelic *achadh*, a field, and *willt*, the genitive of *allt*, a ravine, or a burn with precipitous banks. The name is not spelled in such a way as to indicate its pronunciation, the *z* standing for an old Anglo-Saxon letter shaped like *z* but sounded like a guttural *y*. In most words where it formerly had a place it is now made *y* and sounded like *y*, as in *year*, formerly *zeir*; in others it remains *z* but is sounded like *y*, as in *Dalziel*; and in others, as *Mackenzie*, it has remained *z* and is sounded like *z*.

After leaving Aucholzie, an hour of smart walking completed the five miles between the Linn of Muick and Ballater. There was still plenty of time for dinner before taking the train for Aberdeen, and the journey was completed with the feeling that notwithstanding the unpropitious morning an enjoyable excursion had been accomplished.