NO. XXIII.—A STROLL ALONG A TRAP DYKE IN THE PARISH OF
BEITH, Ayrshire. By JAMES S. M'LENNAN, Hon. Librarian.

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THE study of local history, whether from its historical, domestic, or scientific side, has always been attractive to many enquirers, and especially to those connected with the particular localities by birth or other ties. The small rural English parish of Selborne would, in all likelihood, have remained a mere name, but for the observant eye and graceful pen of the Rev. Gilbert White, the curate of this his native place, whose "Natural History of Selborne" has become a classic of English literature, and has given the district a world-wide fame.

Amongst the members of our own Society there have been not a few who, to our great advantage, have recorded the characteristic geological and other interesting features of the districts with which they were best acquainted, and have thus considerably added to the available records of local science.

Our late, and much regretted, member, Robert Craig, who, during a long and busy life, gave a large share of time and study to the geology of Beith, his native parish, did much to make its name well-known amongst geologists, and he latterly became one of the leading authorities on the geology and palæontology of Northern Ayrshire. A number of his papers have been published in the Society's *Transactions*, and, as will be seen, some of them have been of use to me in the present paper.

That portion of the parish of Beith which abuts on Renfrewshire consists largely of igneous rock, contemporary with those of Calciferous Sandstone age. It forms part of the Renfrewshire and Ayrshire hills which extend from near the town of Beith to Darvel and Strathaven, and rises like a long island through the Carboniferous limestones, whose lower beds are tilted up, and rest against it. "Thus," says Mr. D. Bell, "on the southern side of these hills we have the Lower Limestones of Beith succeeded by the overlying Coals and Ironstones of Dalry, and these again

by the 'Upper Coals' of Kilwinning and Kilmarnock; just as on the northern side we have the Lower Limestones of Howwood and Barrhead succeeded by the overlying Coals and Ironstones of Johnstone and Govan, and these, again, by the 'Upper Coals of Rutherglen, Hamilton, and Airdrie.'**

The same igneous rocks also extend over nearly all the parishes of Dunlop, Stewarton (upper part), and Fenwick, into Renfrewshire, and much of the surface in this widely-extended region is covered by moss and moorland. South of the elevated exposure of trap-rock in Ayrshire there is a thick expanse of Carboniferous limestone, rich in the remains of marine fishes and molluscs, with overlying beds of coal and clayband ironstone which have been worked in several places, as at Caldwell, Balgray, Barr, Bogston, Barkip, and the Den.

The valley east of Beith, through which the Lugton Water flows, separating it from Dunlop parish, is traversed on its western side by the road from Irvine to Glasgow, locally known as the Lochlibo road; and where it crosses that from Beith to Dunlop, near the small village of Burnhouse, I propose to begin our "Stroll along a Trap Dyke," one of those many long well-defined dykes of dolerite, or fine-grained basalt, which traverse the central valley of Scotland, generally with a north-west and south-east trend.

The dyke on which our present course lies, stretches from near the villa of Burnhouse to the farm-steading of Craighouse, a distance of $3\frac{1}{2}$ miles, and so nearly north-west to south-east. Its bare and rocky upper surface has been used as a natural highway from the days of pack-horses, or before then, down to the present time. On its northern side for most of the way there is a steep escarpment, but on the south one it meets the surface-level. At the eastern end, where it has been quarried, close to the farmhouse of Giffen, it forms a circular height which rises a hundred feet above the plain, and once bore on its summit the ancient castle of Giffen. Below this the dyke has a narrow fringe of trap-tuff. To the north the traps of Calciferous Sandstone age extend for half a mile, when they are overlaid by the limestones.

The Castle of Giffen itself is now only a name. The height on

* From No. III. of a series of papers—"With the Geologists"—by the late Mr. Dugald Bell, F.G.S., printed in the *Evening Times* in 1883.

which it once stood is composed of a dark-coloured, clean-cutting trap, which in some places encloses masses of shale and sandstone. It is being quarried for road-making purposes, so that now the very site of this interesting old relic of bygone times has nearly disappeared. The old building, whose walls were 30 feet square, 6 feet thick, and 40 feet high, ceased to be inhabited about the middle of the eighteenth century, but having fallen into a ruinous condition, the western wall was broken down, probably to furnish building material for farmhouses and cottages, a common fate of such remains of antiquity till within the last half century, since which time they have been usually treated with more respect. The remaining walls are said to have fallen with a loud crash on 12th April, 1838. The castle and the surrounding lands belonged to a branch of the Eglinton family from A.D. 1370 to 1722. Amongst them was Sir Henry Montgomery, whose wife, a correspondent of the well-known Samuel Rutherford, was life-rented in it for fifty years after the death of her husband; but the most famous member of the family was Francis Montgomery, who took an active part in the Union of Scotland with England in 1707, and was afterwards member for Ayrshire in the United Parliament.

A short way west of this was "The Moot," now called Greenhills, where the Baronry Court was held, and here also were the joiner's and the blacksmith's shops, and it is worthy of note that these industries still survive on the same spot. A fine modern schoolhouse has recently been built on the dyke at this place, and makes a feature in the landscape.

From a little west of Greenhills, where it reaches its greatest elevation, a fine view of the valley of the Dusk is to be had. Looking north we see the upper part, with the woods surrounding the old castle of Hessilhead, the birth-place of Alexander Montgomery, author of "The Cherry and the Slae." It is a romantic spot, with its low cliffs, and the ivy-clad ruins, the more recent of which bears the date of 1608.

Where a quarry has been recently opened near this height, the northern side of the dyke is almost quite perpendicular. The limestone seems to have been very little changed by contact with the trap, which also shows small traces of any alteration from the enclosing limestone. On the southern side the basalt has been

considerably broken up and denuded away, and here we pass a patch of trap of long prior date.

Proceeding down the eastern side of the valley, where the rock has been long quarried, we reach the bridge carrying the new Lanarkshire and Ayrshire Railway across the highway. Near by, and a little way above Giffen Mill, a fine exposure of black shale is cut into, and this, according to the Officers of the Geological Survey, is surrounded by the trap of the dyke.

It should here be noted that a little way eastward from this railway bridge the dyke crosses the "Great Fault" which extends from Ardrossan up the Dusk Valley and through Ayrshire into Renfrewshire, causing a downthrow of 200 fathoms near Dalry, which has let down the Dalry coalfield, and so, fortunately, preserved it from denudation. It has also caused a great break in the ridge of trap-rocks to the north of Lugton, and along this line the various denuding agencies have hollowed out the glen through which the Glasgow road runs.

Crossing the Dusk in our westward march, we pass a linen-thread factory, and the little village of Barrmill, with, to our left, a small triangular enclosure containing the graves of twenty of its inhabitants who died of cholera in the year 1846. We now reach the Limestone Series, with its seams of coal and ironstone. The coal was wrought here for many years before 1870, and further north pits were sunk in the lands of Balgray, but ceased operations over fifty years ago. At present, a clayband ironstone pit close to Barrmill Station is being worked.

Beyond the little burial-ground at Barrmill the land rises, and on the northern side the dyke has a steep escarpment, where its upper part, of dark-coloured, fine-grained rock, has been quarried for many years. Here there once lay, at the base of the cliff, a small, narrow lake, which is now drained, and its bed converted into moss land. On the south side coal has been mined in several places, as at South Bar, Drumboy, Bogston, and the neighbourhood of Bankhead.

Some fine examples of slickensides may be seen on the right-hand side of a passage cut through the shale surrounding the dyke on the northern side, so that it might be quarried at a lower level. In some places, this shale, which mostly lies in its natural position, the layers being only slightly tilted up, has been affected

by the heat from the trap, which has driven off its carbon, leaving it nearly white. On the southern side a sandstone, also lying nearly horizontal, has been cut through.

Away to the south-west an extensive overflow of trap of Carboniferous age separates the Coal-measures proper from the Limestone Series. It forms a ridge running four miles to the south, and having, in the vicinity of Giffen House at that end, a high bank, which is the most prominent feature in the landscape, and is seen throughout the entire area of Giffen Baronry. A considerable extent of land near the base of this escarpment is overlaid by peat-moss, but the coal and ironstone seams underlying it and the surrounding district are now nearly exhausted, having been mined for more than fifty years.

Passing the farmhouse of North Barr, built on the dyke, we reach a small circular elevation, composed of loose and sandy clay, and surmounted by a clump of tall beech-trees, which, in bygone days, contained the only rookery in the district. From this the dyke slopes gradually, but is not exposed to view till it reaches "The Belcraig," where its ridge is seen running parallel with the road from Barrmill to Beith. Here, where it has been quarried, its upper portion is seen to be coarser in grain than the rock further to the east. For the next half mile its course is not visible. On its southern side, near Windyhouse, the clayband ironstone was once wrought for a very short time.

North of this the wide expanse of limestone has been quarried in various places for a long period, being extensively used as a flux at the Glengarnock Ironworks. The quarry in its beds near Dockra, and others in the neighbourhood, were for many years "the happy hunting-ground" of the West of Scotland fossil-collectors, and one of Mr. Craig's papers,* read before the Society, gives an exhaustive list of the genera and species found in them.

In the Hand-books issued for the Meetings of the British Association in Glasgow in 1876 and 1901 there will also be found extensive lists of the fossils found in these strata, with descriptive notes on the various localities.

Proceeding westwards we soon reach the ridge on the eastern side of the basin of the Powgreen (Marshland) Burn, where there

* "Sketch of the Carboniferous Basin of Dalry, Ayrshire." *Trans.*, vol. iii., part 2, 1869, page 271.

is a fine view of the Spiers' Academy School, a handsome building erected and endowed by the late family of Spiers, of Beith. A short way beyond this stands the parish church, which, from its conspicuous position, has long been locally known as "The Visible Church."

Close to the burn the dyke is exposed in a quarry near the Tarroof, and makes its last appearance at the farmhouse of Craighouse, where its dark escarpment can be traced for some distance till it ends its course about 400 yards to the west. Throughout the whole way of $3\frac{1}{2}$ miles its breadth varies extremely little, never much exceeding 200 yards. For most of the distance it traverses either the limestone, or one of the members of the Limestone Series, though for a very short space on the north side at Giffen, and again at Greenhills on the south, it cuts through patches of trap rock of much older date.