

NO. XX.—SPANGO GRANITE. By JOHN SMITH.

With Five Diagrams.

[Read 9th March, 1899.]

THE Spango Granite mass lies between Crawick Water, Duneaton Water, Spango Hill, and Mount Stewart, in Lanarkshire. The exact outline of its boundaries cannot be traced, as the surface is so much covered by peat-mosses that the rock itself is exposed at few places, and it presents neither peaks nor hill-crags to pierce the covering (fig. 1).

At no part of the area did I find the ground clear enough from vegetation and *débris* to allow of an examination of the

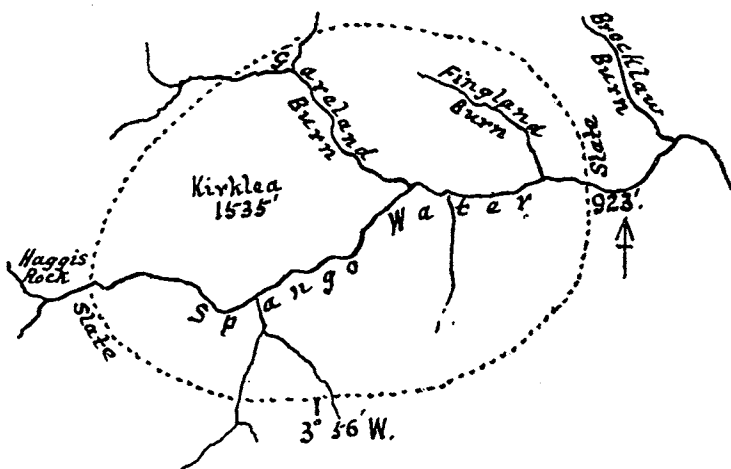


Fig. 1.—The Granitic Area is within the dotted line.

junction of the granite with the adjacent rocks. On the eastern side it must be about 200 yards east of where Fingland burn joins Spango Water, 923 feet above sea-level, and the lowest level at which the granite is seen *in situ*. Here a large outcrop of grey "slate," not unlike some of the Arran slate, is seen, partly in place close to the granite, but mostly as detached boulders on the lower slope of Fingland Rig, where thin veins of fine-grained granite pass through the slate.

A little way west of the slate outcrop the granite is exposed to some extent in position, but mostly as a great mass of blocks, on the hillside, where several springs of water issue from it.

There is also a considerable outcrop of the granite, both reddish and greyish, between the slate outcrop and the mouth of Fingland burn.

This burn and the gills running into it are good places to study the effects of weathering on the granite. In a side gill a 12 feet section of rotted granite is seen, the water running over the solid rock below. It clearly has rotted here in position, and its characteristic jointing is brought out even better than in the solid granite. At other places the rotted granite resembles banks of soft, brownish sand. In some of the gills balls and great nodules of undecomposed rock are seen *in situ* amongst the rotted granite or arkose. A study of these will show, I think, that they are not mere portions of the rock unaffected by decomposition, but that the granite itself is essentially different, and that this is proved by the fact that the nodules themselves are sometimes rotted through, or partially rotted with undecayed centres (fig. 2).

At a small waterfall near the mouth of Fingland burn there is an exposure of solid reddish granite, and near it what is evidently a line of fault, the rock being slickensided, and its felspar converted into porcellanite, doubtless from heat evolved by the friction. Not far W. of the eastern outcrop granite is seen in the bed of the Spango, and, contrary to what



Fig. 2.—Rotted Granite Nodules, some with solid centres.

might be expected, the blocks in place present sharp edges on their upper surfaces, caused, probably, by gravel rolled down the stream during floods, the first impact against the blocks wearing away their sides, though afterwards there seems to have been comparatively little effect produced.

On Spango Water, 200 yards above its junction with Fingland burn, granite in slabs is seen in position, and dips W. at about 80 deg. Near the same place the granite also occurs in detached pillars—the effects of weathering. (Figs. 3 and 4, pp. 258 and 259.)

Above Gareland shepherd's house the valley widens out, and

between that place and Blackgannock, slabs of dark-coloured granite dip E. at about 80 deg. A short distance further up the burn the slate is seen in position, so that its junction with the granite must be hereabouts, though no exposure of it is visible. Opposite Fingland shepherd's house, which is situated on a mound with a ditch, the position being apparently that of an old fort, on the left bank of Spango Water, the "Haggis Rock" is seen in position—a conglomerate of great toughness, made up of small pebbles of quartz, lydian stone, &c.

In Gareland burn—flowing over the granitic area for some 2 miles—no massive granite is exposed, but at the base of Liffshaw Hill there is a coarse-grained granite vein 1 foot wide in the slate, which has the peculiarity that it breaks easily into splintery fragments, somewhat like the enclosing slate. This slate—where not rotted, as it usually is to some depth—is soft, bluish in colour, and contains glittering specks of iron pyrites between it and the adjoining granite.

Going up Gareland burn from this point we meet first with dull-purple shales, and afterwards with great high crags of dull-purple felstone conglomerate which extends for a considerable distance, the well-rounded blocks in it reaching up to a size of 3 feet in diameter. It is not always a simple matter to determine the dip of a conglomerate, but this one seemed to me to dip W. at the high angle of about 80 degrees. If

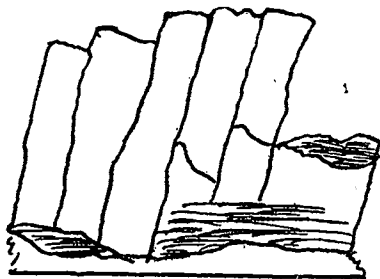


Fig. 3.—Granite Slabs, the whole about 13 feet wide. (See p. 257.)

this observation is correct, it may perhaps show what influence the granite has had on the dip of the rocks at this place, but still it is more likely that the dip is owing to the close proximity of the great boundary fault.

In trying to work out the relationship of the granite slabs to the surrounding rocks possibly not much can be made of their dip, as they are exposed at only two places, viz., near the E. and W. boundaries of the granitic area, but it is worth

noting that at both places the slabs dip towards it—which is peculiar, and different from the way they dip in Arran. The width of the area here is about 21 furlongs from E. to W., while in the opposite direction, N. to S., it cannot be so exactly determined, but is, probably, somewhat less. I may remark that the strike of the granite slabs, where exposed, does not conform to that of the Silurian rocks, but the dip angles of both are equally high.

In the Spango granite I saw no inclusions, and in this respect it agrees with the granite of Arran, which, so far as I have seen, is also free from them. But it thus differs from the granite of Loch Doon, where nearly every block has one or more inclusions. On the west slope of Spango Hill, where the rock is Silurian, there is a great mass of large boulders ;

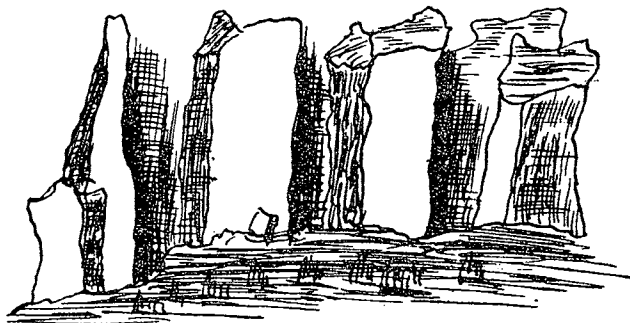


Fig. 4.—Spango Granite in the form of Pillars. (See page 257.)

and this is the more remarkable, as the greywackés of the district seldom furnish large blocks. Perhaps the influence of the granite had something to do in hardening the rock here. It is difficult to decide whether these blocks have been moved and worn during the drift period, or are the remains of rock weathered *in situ*. Spango Valley, right up to the granitic area, appears to be choked with drift of some depth, and on the granite itself, both of the “Spank” (the native pronunciation of Spango) and its principal tributary, Gareland burn, there may be much drift in the bottoms of the valleys, although little appears above the level of the streams. Between Brockley burn and Fingland burn, on the left bank of the Spango, and

not on the granitic area, though near it, there is a bank, 20 feet-high, full of boulders, mostly of granite, and as water flows over the top of the bank, it is likely to be Boulder-clay.

On the granitic area there is very little drift to be seen, but at certain parts there are great accumulations of granite boulders. A mass near the eastern boundary has already been noted; on the right bank of the Gareland burn, near its mouth, there is another mass; half a mile below Gareland shepherd's house, on the left bank of the Spango, there is a great mound of blocks; on the south-western side of Bught Hill there are many; at the base of the same hill, and below a fresh-looking "sheugh," a great many boulders are seen lying on the level ground at the hill-foot, where they have, perhaps, been conveyed by a waterspout. The hill-side being pretty steep, such a force seems quite adequate for the work, and the blocks have, to all appearance, come out of the "sheugh."

Outside of the granitic area Spango granite is found in all directions in the shape of boulders; in the Spango Water down to its junction with Crawick Water, 780 feet above sea-level, they are in the greatest number. But this state of matters will not always remain, as when I was there they were being broken up and carted away for building purposes. They are mostly pale red in colour, the outside surfaces being of a ruddier hue than those of freshly-broken faces. In Crawick Water, both above and below its junction with the Spango, there are many blocks; in Wanlock Water they occur sparingly, up to at least 920 feet; Duneaton Water, and its tributary, Sheriffcleugh burn, have blocks up to 4 feet 6 inches in diameter, those in the latter lying on felstone.

On the granitic area I saw a few foreign blocks, consisting principally of groywackés and traps, the latter, perhaps, being derived from dykes traversing the granite, though I saw none during my examination.

Going further afield we find Spango granite in Glendyne, and to have reached that place in a straight line it must have come over ground just a little lower than the highest part of the granitic area, which at Kirklea Hill is 1535 feet above sea-level. Of course it may not have come straight across country. In the thick drift of the lower reaches of the deep

narrow valley of Cog Water there is some Spango granite; on Mount Stewart, at 1250 feet, there is some; as also in the valleys of the Guelt, the Glenmore, the Douglas, and the higher reaches of Ayr Water; so that it seems to have been dispersed from the massive rock in all directions.

These Spango granite boulders are called "Beerman" by the natives, which is probably a form of, or corruption of, the Gaelic word for *hill-blocks*.

In the solid granite I saw no fine-grained veins, but in the boulders I detected a few.

Lying in Kiln or Orchard burn, a branch of Crawick Water, there is a famous granite boulder of large size, known in the country-side as "Mungo Girr." It measures 13 feet long by 5 feet 8 inches wide, by 7 feet high, and has two veins of

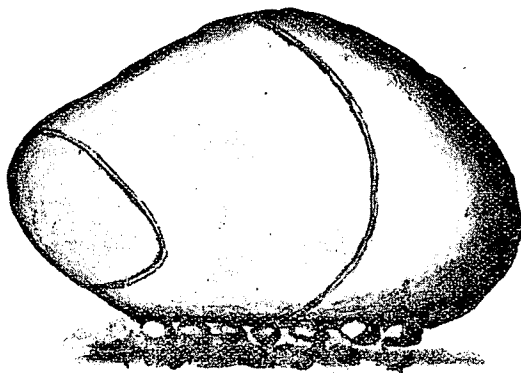


Fig. 5.—Granite Block, "Mungo Girr," with two fine-grained veins, in Kiln Burn

fine-grained granite running through it and projecting from its surfaces. There is a local tradition that it once rested on the top of a neighbouring hill, and one day when a dishonest packman called "Mungo Girr" was sitting on the big stone, the devil gave it a kick and sent it rolling to the bottom of the glen where it now lies. The unfortunate packman was, of course, killed, and the veins which we still see projecting from the boulder are believed to be his petrified entrails. The name is probably a corruption of the Gaelic for "the stone with the 'girr' or band." I did not ascertain whether this boulder is Spango granite or not.

From what we have seen as to the nature of Spango granite it is quite possible that the great bulk of the boulders were weathered into shape and ready for transport long before the glacial epoch, so that although most of these we see scattered over the surrounding country are well-rounded, we cannot attribute their shape, with any certainty, to the attrition they may have undergone by the action of the ice-borne material.

If all the decay observed in Spango granite (12 feet deep in one section, without the undecomposed rock being seen) has taken place since glacial times, it must have rotted at a comparatively rapid rate compared with some other granites. Messrs. Kinahan and Nolan have estimated that the granite of Oughterard in Ireland has decayed only to the extent of $\frac{1}{2}$ inch to $1\frac{1}{2}$ inch since glacial times, their calculations being based upon the height that unweathered veins stand up above the mass of the rock which they traverse.

Redscar Heugh is a prominent feature in the lower reaches of Spango Valley, where the stream has cut sideways into Spango Hill since the glacial period, and has exposed a great corrie of splintery, rust-coloured shale of Silurian age.

As already remarked, the hill-tops in the Spango granite area possess no rocky peaks, nor even exposures of the solid rock itself, and when viewed from a distance their contours so closely resemble those of the neighbouring Silurian hills that there are no salient features by which the geologist can distinguish them from those of the surrounding greywackés.

The "great boundary fault," which traverses the full breadth of Scotland from sea to sea, passes along the northern edge of the Spango granite mass, which is probably "thrown" by it.