

Thursday, 15th April 1869.

JAMES GOWANS, Esq., Vice-President, in the Chair.

The following Communications were read :—

- I. *Letter from* GEORGE ANDERSON, *Inverness, addressed to* ARCHIBALD GEIKIE, F.R.S., *President of the Society, dated Inverness, 30th March 1869, on "Vitrified Forts, with description of Craig Phadrich, near Inverness."* Communicated by Mr PANTON, Honorary Secretary.

"I have delayed answering your letter requesting some notes from me as to our *Vitrified Forts*, and especially as to the *columnar* structure assumed by some of the fused materials in cooling, till I could search the celebrated site of Craig Phadrich in the neighbourhood of this town for new specimens, as I had given away the last of my old ones. I have now examined the hill afresh, but have found only a few specimens, showing a mere *tendency* to the *columnar* structure, recent visitors having broken most of the exposed vitrified masses into small portions, without noticing the *columns*, which I used to discover by letting large masses of the vitrified rock fall gently on the ground, when the fragments generally resolved themselves into pieces more or less regularly *columnar*.

"I send you herewith a few specimens* showing at least a tendency to a regular shape (and a water-colour drawing† of one fine and large mass from Knockfarrel near Dingwall, which was given me for a local institution, and with which I cannot part), with several others, which prove the great heat to which the stones had been subjected, some of the masses of gneiss and granite being reduced to mere cinders, others rendered light and vesicular, and one covered with a white enamel as if resulting from melted felspar.

"In a few lime kilns in this district, I have noticed somewhat similar effects produced on the stones, in the walls directly opposite the entrance (where the blast and heat were the strongest), but I have never observed in these, masses so run together and scorified as in our ancient hill or vitrified forts; and I am not aware of its having as yet been ascertained what degree of heat was requisite to produce the *columnar* form.

"As might be expected, the fragments of gneiss and granite are the most fused or run together—the felspar in them, perhaps aided by ferns and sea-weed, having acted as a flux; and the loose masses of hornblende rocks (derived from beds and veins of the Silurian strata) are only scorified and rendered open or porous, while the

* The series of specimens here referred to are deposited in the Museum of the Society, and may be seen there.

† This was painted by Mrs Anderson, and is now in the Society's Library.

Old Red Sandstone fragments are in general only burnt like brick, and made lighter in colour, but were almost never melted.

"A short examination of the vitrified walls of Craig Phadrich (which is a comparatively modern ecclesiastical name, the Gaelic Highlanders knowing it only by the appellation—*Larach Thaigh More*, or the site of the Great House or Castle) satisfies me that the whole of these vitrified forts should be carefully explored afresh and opened up, and the peculiarities of each, and its connection with other similar structures in sight of it, carefully noted down. This will be manifest from the following short description of Craig Phadrich, which the late Sir Andrew Leith Hay of Keithhall, who lived in the neighbourhood of the celebrated vitrified structure on the "Tap o' Noth" in Aberdeenshire (made by him his peculiar study), considered one of the largest and most important of the vitrified sites in our north country. It occupies the terminal rocky ridge (about 520 feet high) of the long chain of mountains which skirt the west of the Great Glen of Scotland, and with the frontlet opposite to it on the Ross-shire coast (that of the old hill of Keppoch, also a vitrified fort) it constitutes the advanced beacon stations on the Moray Firth, from which signals might be passed by all the links of the chain of natural telegraphs stretching away into the recesses of the country beyond the head of the Beaully Firth in Ross-shire, Glen Strathfarar, and Strathglass, as well as in the Great Glen. Six or seven vitrified summits are visible from Craig Phadrich; and if the ordinary hill forts, having huge ramparts of stone round their tops, though not known as yet to contain vitrified substances, belong to the same class of antiquities, that number might be nearly doubled. On the western or easiest approach to the summit of the Ord Hill of Keppoch, we meet a wall of loose stones (now much thrown down) fully 15 feet thick, and it is not very long ago that I discovered flanking low walls on each side of it now grass grown, which are distinctly vitrified; and similar burnt masses, I believe, will yet be found on other forts which have not been thoroughly explored. In ascending Craig Phadrich we go along the bulging sides of an ordinary hill of the Old Red Sandstone, till we arrive suddenly at the base of an enormous cap or summit of hard conglomerate, with precipitous frontlets on the north and south sides, and steep ridges of approach on the west and east. These approaches were traversed and guarded by two walls or embankments,—one a very strong and high one on the summit, composed of loose stones and sand and gravel, with a thinner wall about 50 feet lower down the slope, but which is the most highly vitrified. The pathway or ascent by the west side is extremely narrow, and is flanked all along by projecting masses of rock, from which loose stones could be thrown down on an invading foe; and there are besides many

large loose masses which could easily be tossed over. The main entrance was by the eastern slope or approach, but the pathway ascends by a steep incline, and it then winds in a tortuous manner between the two ramparts to the gate at the summit, which could thus be easily guarded, and which was further protected by projecting walls or bastions. Both the walls are now much grass-grown, and it is at present difficult to say to what extent they were vitrified, or how far they have been overthrown or destroyed, as they undoubtedly were in other hill forts. In the upper rampart, which has only been partially opened up or excavated, I have not been able to observe a continuous coating of vitrified matters, but the vitrified stones occur intermixed with other stones not affected by fire, and with sand and gravel, quite irregularly, though in some spots in patches of considerable size. In the lower or outer wall, and especially on the south side, where a long trench has been cut along its face, there is more of the appearance of a continuous sheet or coating of vitrified matter, consisting of pieces of gneiss, granite, mica slate, and quartz rock, with some bits of sandstone all attached together and fused into one another. Beneath the vitrified crust, which is seldom above 12 or 14 inches thick, the rampart consists, as I have said, of loose stones, earth and gravel; and in Craig Phadrich I have not observed, as in some similar structures, long strings of melted matter running down like one's fingers into the heap below. Another fact seems worth recording, that while the wall or rampart appears invariably to thin out as it approaches a cliff or mass of the native conglomerate rock, *no* part of that rock itself has been vitrified, or at all affected by fire.

"Near the east end, and between the two walls, there is a deep hollow or pit, which is believed to have contained a well, and adjoining it a beautiful little plain which is called the burying ground. The area on the summit encloses about two acres of ground, which is covered with rich grass, beneath which are layers of charred wood, peat, and burnt bones, composing a bed of pure loam about 5 or 6 feet deep, in which a few holes were made many years ago, and which has never been fully searched for animal remains, or for stone or metal implements.

"Whether the ramparts of Craig Phadrich were ever purposely in part broken up and destroyed, as seems to have been the case in other hill forts, or have only sunk from long exposure to the weather, it is difficult to determine; or whether the oval enclosure on the summit had within it any hut circles or eird houses, or covers any stone or bronze weapons, cannot be ascertained till the whole hill is again properly examined and the grass removed from the walls, so as completely to expose their structure and composition, and that at sight of the proprietor and of a deputation from some of your learned societies in the south."