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ORIGINAL ARTICLES.

I.—NOTES ON THE VOLCANIC ERUPTIONS IN ICELAND.

By G. POULETT SCROPE, F.R.S., F.G.S., etc., etc.

ICELAND—that land of Frost and Fire, an island which, though as large as Ireland, is, apparently, but a crust of hardened lava over a seething cauldron of the same substance, bearing on its frozen surface eternal snows and glaciers—has been this year in extraordinary commotion, socially and politically, as well as physically. It has celebrated the millenary of its colonization, and for the first time in this long period received a visit from its sovereign; while it has been so devastated of late by frequent fiery eruptions, the ashes from which destroy its pasturage—the only resource of the islanders—as to have driven them, it is said, to the desperate resolve to emigrate *en masse*, and leave their native land for a safer, at least, if not a more genial residence, in the far North-West of the American Continent.

Within the last month intelligence has arrived of eruptions of a more than ordinary violence having occurred in the high snowy district to the north of Vatnajökull.

The following extract from the *Scotsman*, under date of May 21st, is “from an occasional correspondent” of that paper:

“The volcanic disturbances in the north of Iceland (mentioned in the *Scotsman* in April) still continued when the last mail from that part of the island reached Reykjavik. There seems to be a line of volcanic activity all the way from Vatnajökull to Skjalfandaflói, a distance of about 100 miles. Volcanic outbursts on this line have been frequent during the last four years. They have, however, been confined to the south end of the line in Vatnajökull till the present year. During the first three months of this year the volcanic outbursts have continually been moving northwards, but always continuing in the same line. They are just now traversing the sandy deserts lying between the inhabited district Mijvatns sveit on the west and the river Jökulsá on the east.

On the 12th of March, the spot where one of these outbursts occurred was visited by some of the inhabitants of Mijvatns sveit. This spot is close to the outburst mentioned in the *Scotsman*, just about a mile further to the north. There were fifteen different craters close to each other, and during forty-eight hours they had thrown up a wall, or ridge, of lava about sixty feet high, and further covered the ground round about them with heaps of lava, thus forming a lava tract about five miles long, and half a mile broad.

Another visit was made to the volcanic line on the 4th of April. The locality visited on this occasion was south-east of a hill called Búrfell, and a short distance west of the river Jökulsá. Here three large craters were found, and on the west side of them a large rift had been formed and the ground sunk about 18 feet. The craters were here, as at the other place, in a straight line from north to south, the northernmost being the largest. This crater had an oblong form. Its mouth, or the opening from which the fire issued, reached the enormous length of 600 yards.

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From different parts of this wide opening *columns of liquid fire were continually rising to the height of 300 feet*. Sometimes as many as thirty such columns rose together at a short distance from each other. The outbursts were intermittent. At one time many columns suddenly rose at the same time, then subsided, and after a few minutes rose again. Inside the enormous cauldron there seems to be a lake of liquid fire, which the steam throws up to the height mentioned. The columns seem quite solid until they have reached their greatest height, then the tops spread out and scatter a rain of molten lava all round. The volcano seemed to act on the same principle as the hot springs, with this difference, that the volcano sent forth *columns of liquid fire, or molten lava*, instead of hot water, and the columns rose to a far greater height than that of the hot springs. That it was steam which sent the liquid fire into the air is further proved by the fact that the outbursts were accompanied by a tremendous roar, as if hundreds of steam-boilers were acting together, and continual reports were heard in the crater when the steam bubbles were bursting. This eruption was accompanied by no smoke, or discharge of ashes, but a semi-transparent steam-cloud rested over the whole.

As this eruption has to this time been confined to the uninhabited parts, and has not discharged any ashes, it has not done any damage; but should the outbursts follow up the same line much further to the north, both the Mijvatns sveit and the districts further north will be in the greatest danger.

On the 29th of March an outburst took place somewhere in the interior, most probably near the sources of the Jökulsá, and a large quantity of ashes, to the depth of three inches, fell in the east of Iceland, in the districts on both sides of the river, or rather lake, called Lagarfjót, and in the middle of the day the whole neighbourhood was enveloped in total darkness. The ashes from this outbreak were carried as far as Norway. This eruption, although further away from the inhabited parts, has caused much more damage than the other ones, because the pastures have been destroyed in the districts where the ashes fell, and the sheep have to be driven away to other districts.

According to the last accounts from the north, all the volcanic vents which have been opened this year seemed to be in full activity. The glare of the fire was seen in districts more than a hundred miles distant from the actual seat of the volcanoes, and even in the south some slight shocks of earthquake are felt. The weather still continues uncommonly mild and fine, and by some this is attributed to the volcanic fires."

This statement does not appear to emanate from any scientific authority; and in some respects it is not quite clear. The main features of the phenomena described, and the most remarkable, are:

1. The arrangement of the points of eruption in lines stretching from south to north, on one of which no less than fifteen different craters (cones) were thrown up close to each other.

2. On a continuation of the same line the further production of three large crater-cones, one of them having an oblong form, marking a trench or rent no less than 600 yards in length, filled with liquid fiery lava which was thrown up in columns of liquid fire, from successive points, to the height of 300 feet; as many as thirty such columns rising together at a short distance from each other at the same time.

Such an eruption must have given rise, not so much to separate regular cones of scoriæ, as to a continuous ridge-shaped hill, of which examples not unfrequently occur in volcanic districts.

3. This eruption, which is said to have been in activity on the 4th April, discharged *no ashes*; while on the 29th March another outburst, more to the east, produced clouds of ash which not only covered the east of the island, but were carried as far as Norway and Sweden. This latter fact is confirmed by Prof. Kjerulf, of Christiania, who examined the dust, and found it to consist of finely

comminuted pumice, proving the lava, from the triturati-  
on it proceeded, to have been a highly siliceous trachyte. The apparent  
absence of ash-clouds from the first-named eruptions may perhaps  
be attributed to the winds prevailing at the time having driven them  
in the direction contrary to the observer's line of sight, since it is  
difficult to suppose that continuous explosions of fragmentary lava,  
at first liquid, but soon of course consolidated in that cold climate,  
should not, by the repeated hurtling together and trituration of their  
substances in the air, as they rose and fell successively, have produced  
considerable clouds of ash, that is, of comminuted lava or pumice.

We shall look with some interest to the further and more detailed  
accounts of these Icelandic eruptions, which may be expected to  
arrive before long; especially as several English explorers, and par-  
ticularly Mr. Watts, who last year penetrated the Vatnajökull, which  
no one, it is supposed, not even a native Icelfander, had ever trodden,  
are at present re-exploring the same interesting district.

## II.—ON THE GAULT *APORRHAIÐÆ*.

By J. STARKIE GARDNER, F.G.S.

(PLATE VII.).

(continued from page 203.)

Group 4 (continued).—*APORRHAIÐÆ* PARKINSONI, var. *Cunningtoni*,  
Gardner. Pl. VII. Fig. 1.

Shell elongated, spire composed of many convex whorls, which are  
very finely striated, 2 or 3 of the striæ being very distinct and wide  
apart in front of the sutures. The last 2 whorls have 10 or 11 and  
the other whorls have 14 or 16 well-marked ribs, with occasional var-  
ices. On the last whorl there is a slight angularity in place of keel.  
The wing exactly resembles that of *A. Parkinsoni*, and in this may  
be distinguished from that of *A. Mantelli*. The anterior canal is  
moderately long.

The form here described is intermediate in character between *A.*  
*Parkinsoni* and *A. Mantelli*, differing in the number and development  
of the ribs from the former and in the shape of the wing from the  
latter. The specimen was obtained by Mr. Cunnington from the  
Upper Greensand at Devizes, and is now in the British Museum.

The next species described cannot be placed satisfactorily with  
any of the groups just indicated. From the species being founded on  
an unique shell, it is just possible that it may be an abnormal  
variety.

*APORRHAIÐÆ* MACROSTOMA, Sowerby. Pl. VII. Fig. 2.

*Description*.—Shell elongated, spire composed probably of 7 or 8  
convex whorls. Each whorl has two principal keels, which are pro-  
longed on the last into ridge-like supports to the wing. The first  
whorl remaining on the specimen now described (probably the 3rd  
or 4th from the apex) is strongly ribbed transversely, and the two  
carinæ are very salient; the next whorl has only traces of the ribbing  
left in the form of widely separated tuberculations on the carinæ. On