first tree was discovered in 1826 at about 136 feet from the surface. It measured about 40 feet long, by 3 feet in diameter at its thickest part. A portion of this tree is now lying in front of the Museum of Science and Art. A *second* tree was discovered in 1830, measuring 47 feet long, by 5 feet round at the base; a *third* in 1833, which measured 30 feet long by 3 feet; a *fourth* in 1854, the length of which was 23 feet, and its greatest girth 10 feet; and, *lastly*, one was laid open in 1873, the measurements of which were 22 feet long, and at its base $3\frac{1}{2}$ feet in diameter. This last one was found in the north-west part of the quarry at a depth of 186 feet from the surface, and lying at an angle of about 45 degrees across the strata, dipping south-east, which is also the dip of the beds. Its symmetry was not well preserved, as was the case with all the fossil trees discovered here, and the measurements given are those of the parts uncovered or laid open. The interior substance was so hard as to strike fire with steel, and the last discovered was found in pure siliceous compact sandstone with flagstones and shaley partings. The bark was converted into a black carbonaceous matter. The trees discovered in 1826 and 1830 were analysed, and found to consist for the most part of carbonate of lime, with oxide of iron, magnesia, and small portions of earthy matter. They all belong to the Family *Coniferæ*. The last discovered tree has been sent off to the British Museum, London.

The following Gentleman was elected a Fellow of the Society:—

ROBERT LOCKHART, Junior, Seed Crusher, 17 North Merchiston Place.

Thursday, 17th April 1873.

D. MILNE HOME, Esq. of Milnegraden, LL.D., Vice-President,
in the chair.

The following Communications were read:—

- I. *On the Eruption of Mount Vesuvius in 1872.* By W. T. BLACK. With Specimens of Vesuvian Lavas; Photographs of the Crater and Cone, and also of the Eruption; and with the Admiralty Chart of the locality.
- II. *Notes on the Glaciers of Glen Spean, and their Relations to Glen Roy.* By WILLIAM JOLLY, H.M. Inspector of Schools, Inverness.

Abstract.

The writer has for several years passed some time in Glen Roy and its neighbouring valleys, in examining the remarkable

phenomena there exhibited. In October last, he spent a week at the same fascinating work, with our Vice-President, Mr Milne Home. On that occasion, he came to a very determinate conclusion that the glacial theory of Agassiz and Jamieson is the true one; and it is to certain points of evidence, more or less new, which seem to shed fresh light on this hypothesis, that the Society's attention is now directed.

The glaciers of the Treig and the Laire were first minutely described. Next, proofs were adduced of the greater extension of the ice in the valley of the Spean—(1.) From glaciated surfaces, smoothed, grooved, and striated; (2.) From perched blocks; and (3.) From moraines.

The paper then proceeded to consider the nature of certain high lines of debris on the sides of Glen Spean, specially mentioned in Chambers's "Ancient Sea Margins." They occur on both sides of the glen—above the Roman Catholic chapel, and above Tulloch and Murlaggan, on Ben Chlunaig, Craig Choinichte, and Craig Dhu, and on Craig Dearg above Fersit. These lines resemble, but are not, the famous "Parallel Roads" of Glen Roy. That they are not due to the same producing cause will appear from the following considerations:—(1.) The relation they bear to the hill-face on which they lie is altogether different from that of the roads. (2.) The sectional outline of the lines and roads is different, and points to different producing agents. (3.) The almost absolute equality of the dimensions of the roads, not only throughout the course of each individual road, but relatively to each other, is another characteristic feature; whilst these lines vary continually in breadth, being sometimes broad and high, and thinning away rapidly. (4.) The horizontal contour of the roads and lines differs greatly. (5.) The continuity of the roads is a special feature; these lines are more or less fragmentary. (6.) The roads preserve the same absolute level on both sides of the valley, each to each; these lines do not. (7.) The horizontality of the roads is a striking feature; these lines are not horizontal, or only roughly so. (8.) The roads "contain fewer well-rounded pebbles than would be expected on any theory of their origin;" these lines contain debris more or less rounded, and frequently striated. (9.) The loose materials of which the roads are formed have evidently descended from the hill above, probably by weathering; these lines have embedded in their debris a large proportion of foreign materials, brought from a distance. (10.) The roads entirely disappear where crossing any part of the mountains at which the base rock is exposed; this does not hold good of these lines. And (11.) the roads entirely disappear when crossing any part which is gently-inclined; whilst, as to the lines, the slope does not seem to affect their existence.

The writer then stated that, after examination, he had come

to the conclusion that these lines of debris are the lateral moraines of the ice-stream which once moved along Strath Spean from Loch Treig and Glen Laire down towards the sea. The grounds on which he based this opinion were these:—(1.) The existence of well-marked striæ and rock-polishing on both sides of the Spean, on Craig Dhu, and Bén Chlìnaig, to a height above these lines, is a proof that Strath Spean was occupied from side to side by an immense body of ice, which moved towards the sea. These lines are the lateral moraines of this great glacial stream. (2.) Their form and outline are those of moraines, being frequently rounded, hummocky, and undulating in outline, and presenting the same general appearance as the undoubted moraines in the bottom of the valley, at the mouths of the Treig and Laire. (3.) Their composition is that of moraine debris. (4.) These lines are *continuous with the moraines* that sweep round from Craig Dearg, at the entrance of Loch Treig to Craig Choinnichte, east of Craig Dhu, where they do not end, but rise up the hillside and run onwards to Craig Dhu. This is a very important point. (5.) Their existence on both sides of the glen, at corresponding but not absolutely horizontal levels, was to be expected, and they are so found. And, (6.) The composition of these lines furnishes further proof of their nature and origin, the same very distinctive rocks being found embedded in their debris as are found in the undoubted moraines at the mouths of the Treig and the Laire.

The extent of the moraines found in the glens here was next considered, as also the height of the lines before referred to. (Chambers's "Sea Margins," p. 125.) The following deductions were drawn from the whole evidence adduced:—1st, If these lines are moraines, we are furnished with new and specific proofs of the height and extent of the ice-barrier which is required, according to the Ice theory, to dam back the old lake in Glen Roy and Glen Spean. (1.) The ice-stream, as indicated by them, was of sufficient *height* to be the barrier required. (2.) The *area* over which these moraines extend is also that required for the necessary ice-barrier. 2d, If these lines are moraines, we get rid of the difficulty under the Lake theory of having barriers for the water at these high levels, which are required if they are fresh-water terraces. And, 3d, If these lines are moraines, Chambers's reasoning in favour of the Marine theory is invalid, inasmuch as it is based on their being the same in kind, character, and producing causes with the "parallel roads." The author purposes investigating the subject under this idea more fully, especially farther west towards Corry N'oin and the glens in its neighbourhood, where he expects to find additional proofs.