(usually German silver) is very thin and liable to tear or rip off upon the hard, jagged ice edges of a dry glacier. I should imagine a stout aluminium plate of $\frac{1}{16}$ to $\frac{1}{8}$ inch thickness, well screwed on to the wooden runners, would last admirably and prove equally efficient, while not adding vastly to the weight. With sledges such as these I am convinced we could have travelled with the same load fully 8 to 12 miles per day, and in this way one could safely undertake the journey with a very much smaller stock of provisions, and thus travel still faster; a party of two with two small sledges or one large one, and for safety a fortnight's food of the above description, could, given fair average conditions, be pretty certain of travelling a distance of, say, 90 miles along the Jökull within 7 days' actual going. As a matter of fact Muir and myself have in view a journey considerably to the north of our route of last year, in order to enable us to make observations on the Bruar Jökull, which appears to be advancing at a most abnormal rate, and to explore Kverkfjöll, which ought to be well worth a visit from a purely mountaineering point of view. After that we shall probably be content to leave further explorations of Icelandic snow-fields to other enthusiasts.

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## Recent Changes in the Crater of Stromboli.

By TEMPEST ANDERSON.

(Read before the Alpine Club, February 7, 1905.)

STROMBOLI is the most easterly and northerly of the Lipari Islands. It is situated north of Sicily, close to the track of steamers plying between Naples and the Straits of Messina, and is thus an object familiar to passengers to or from Egypt or the East, though comparatively few have landed on its shores. Its almost constant eruptions have gained it the name of the lighthouse of the Mediterranean. It is almost circular, as its old name Strongyle indicates, and rises as an irregular cone out of deep water. On the N.W. side are the crater, and the Sciara or steep slope down which the ejecta roll into the sea.

The summit of the mountain, which is about 3,000 feet high, consists of a crescentic ridge, the Serra di Vancori, open towards the N. It forms part of an old crater ring, and thus presents points of similarity to Somma. Inside the crescentic ridge, and in places joined to it by irregular crests of rock, but mainly separated from it by a valley, 'A

*Tempest Anderson, photo.* *Swan Electric Engraving Co.*

STROMBOLI—THE SCIARA FROM THE NORTH-EAST.

Fossieiedda,' similar to the Atrio del Cavallo of Vesuvius, is another crescentic ridge, connected with the two extremities of which, and immediately overlooking the sides of the crater, are two conspicuous pointed rocks, the Torrelle, which partly obstruct the view of the crater when viewed from the cliffs overlooking the Sciara on its N.E. and S.W. respectively. These Torrelle, being practically unaltered by ordinary eruptions, present good points of comparison for estimating the changes that take place. Between the two Torrelle, in the midst of a sort of amphitheatre formed by them and the crescentic ridge last mentioned, are the crater and its appurtenances, the 'Apparato Eruttivo' of Italian observers. This amphitheatre is open to the N.W., and from its open side beyond the craters the steep slope of the Sciara extends down into the sea. This slope is bounded on each side by two steep cliffs, Filo di Sciara and Filo di Baraona, which are formed, like the Sciara itself, of lava-streams, agglomerates, and dykes; in fact, of almost every kind of compact volcanic material, chiefly of basic composition.

This Sciara, as is well known, is one of the most peculiar features of this volcano. It extends at an angle of about 35°, which is the 'angle of repose' for the kind of material of which it is composed, down into the deep water of the Mediterranean; and though the volcano has certainly been in almost constant eruption during the whole of the historic period, and probably much longer, it has never been able to build up a talus sufficient to rise to the level of the sea, much less to that of the lip of the crater, about which, according to the analogy of other volcanoes, it might have been expected to have built up a cone on this side comparable to the portion on the S. described above. The illustration, 'The Sciara from the N.E.,' from a photograph taken by the author in 1888 from the ridge overlooking the N.E. side of the Sciara, and consequently looking S.W., shows the Sciara extending down to the right of the picture with the Filo di Baraona behind it. The pointed rock to the left of the picture is the eastern Torrella, with a gap to the left of it through which the ejecta are thrown during the larger eruptions, and roll on to the steep slopes in front and down the Sciara into the sea. The western Torrella is just visible in the distance beyond the eastern Torrella. The crater situated between the two was in 1888 a large pit obviously formed by severe explosions. It contained two small secondary cones. One, towards its western part, and close to the edge of the Sciara, was that from which the explosive

eruptions took place several times an hour; the other, towards the eastern part, emitted only smoke.

In 1904, when the author took comparison photographs from nearly the same spot, this large crater was almost entirely filled up, and the slope of the Sciara was continued upwards, so that the cone of ejecta overtopped and was visible behind the eastern Torrella. The activity in this eastern part of the crater still maintained the same quiet character as in 1888. The whole area constantly emitted vapour; there was more than one bocca visible, but they were quite small and only gave very feeble explosions, and these with a rhythm quite independent of those at the western part of the crater.

The illustration, 'Stromboli. An Explosion. Early Stage,' taken by the author on April 20, 1904, from a point to the W. of the crater, and consequently in almost exactly an opposite direction to that showing the Sciara from the N.E., shows the condition of the western part of the crater sixteen years later. The conspicuous rock to the right of the plate is the western Torrella, behind which, in 1888, was the great crater above referred to. The bocca to the left, from which the explosion is taking place, is shown in some of the earlier photographs as situated on the edge of the larger crater at its junction with the Sciara. The great crater is now seen to be filled up by ejecta which prolong the slope of the Sciara upwards over what was previously its site, while the bocca itself remains in all probability really in its former position, though apparently on the slope of the Sciara instead of on its edge.

It will be interesting to future visitors to see whether the volcano will continue to prolong the slope of the Sciara much further upwards, or whether a paroxysmal explosion will occur which will clear the great crater again.

## In the Lipari Islands.

By the EDITOR.

ON April 14, 1904, Tempest Anderson and I, in company with Dr. Cool and Herr Philip, arrived at Milazzo, the ancient Mylæ, a little town at the southern end of the promontory of the same name in the N.E. of Sicily. We drove to the Albergo Genova, where we afterwards spent the night. Half a dozen street arabs pertinaciously thrust their services upon us as baggage-carriers, and amused us much at small expense. The same evening we visited the castle on the hill to the north. On the western side of the promontory, much