



*Tempest Anderson, photo.*

VESUVIUS. AN EXPLOSION AT SUNRISE.

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living under canvas we could not help knowing whether there was rain or not.'

What delightful memories we all have of the week spent at Gjövik—bonny Gjövik—on the Kjosfjord! What jolly hours we spent in the garden with our genial host and hostess and their children!

Farvel, Gjövik, farvel; but may I sometime grasp that hand again, friend Gjæver, and hear your cheery voice say, 'Velkommen tilbage!'

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VESUVIUS: A NOTE ON THE ERUPTION OF SEPTEMBER 1898.

By TEMPEST ANDERSON, M.D.

THE end of August 1898 found me in Switzerland with Yeld. We had brought a very satisfactory holiday to a close by visiting Champex, and were thinking of returning home, when we saw in the papers that Vesuvius was in eruption. Here clearly was an opportunity not to be missed, though as the heat was great even in Switzerland it would be probably much greater at Naples. However, the reports of the eruption continued, so on September 2 I crossed the St. Bernard to Aosta, where I found the climate of a Turkish bath. At Turin it was even worse—that of an oven, at least. What must it be at Naples? Luckily these gloomy forebodings were unfounded. The voyage from Genoa was genial; the heat at Parker's Hotel, Naples, quite bearable, with a pleasant breeze in the evening, and at the Hermitage on Vesuvius the weather was delightful. Through the kindness of Dr. Linden, of the Aquarium, I got excellent quarters here, and both Mr. Faerber, Messrs. Cook's agent, and Mr. Noble Fell, who was engineering the railway extensions on the mountain, showed me many kindnesses. The latter especially gave me much information, of which I have availed myself freely in the following notes. Here I stayed more or less from September 7 to 13, exploring the mountain in the daytime and spending every evening on the top of the observatory close by, which commanded a full view of the eruption.

Most members of the Club will scarcely need to be reminded that in the great eruption of A.D. 79, which overwhelmed Pompeii and Herculaneum, and cost Pliny the elder his life, a great part of the then mountain was blown away by an explosion comparable to that of Krakatoa in 1888, and a vast crater ring, perhaps two miles in diameter, was formed, of which Monte Somma still remains as a great crescentic moun-

tain with a precipice several hundred feet deep overlooking the Atrio del Cavallo, the valley where the horses used to be left for the ascent of the cone of Vesuvius itself, which has since been formed in the S.E. portion of the Plinian crater. The observatory and Hermitage stand on another elevated fragment of the old crater ring, separated from Somma by a deepish valley, the *fossa retrana*. The rest of the old crater ring was lower, and has been mostly covered by *ejecta* from Vesuvius, though traces of it are still evident, and are called the *pedimentina*.

The last great eruption was in 1872. Mouths opened in the Atrio del Cavallo at the foot of the great cone, from which floods of very hot fluid lava escaped with great rapidity; so rapidly, in fact, that several spectators were overtaken and overwhelmed. The lava descended both by the *fossa retrana* and also by the *fossa grande*, at the other side of the observatory, and destroyed several villages in the course of two days. Don Filippo, the custodian of the observatory, gave me a graphic account of the grandeur of the scene and the heat which radiated from the molten lava. He and others stayed at the observatory, rightly considering that they were safer up on the hill than in the valley below, though practically surrounded by molten lava. These beds are now crossed by the road up to the observatory and the station of the Funicular Railway.

The present eruption has taken place from a point to the S.W. of that of 1872, and has thrown up a large lava cone at the entrance of the Atrio del Cavallo, the slopes of which reach to the foot of Somma on the W. side, the cone of Vesuvius on the E., and nearly to the hill of the observatory on the S.W., a prolongation of which, the *Crocella*, described as of great beauty, has been entirely covered up. The eruption had been going on gently for about two years in this locality, but had never been very active. Small streams of lava had been almost constantly poured out, but they had all cooled and solidified before reaching the foot of the mountain, though several had got some distance down the *fossa retrana* and *fossa grande*, where the carriage road to the Funicular Railway had more than once been covered. Consequently the greater part of the lava had solidified near the point of its eruption, and had accumulated into a cone of respectable size, perhaps 400 or 500 feet high above its base.

The eruption attained its maximum at and soon after the time of my visit in September 1898, and at that time pre-



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NEW CONE, September, 1898.



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CORDED LAVA, VESUVIUS.

sented a most striking spectacle when viewed from the top of the observatory after dark. The streams of lava were mostly 20 or 30 yards wide, and during the day the fresh ones could be distinguished by the clouds of thin vapour which hung over them, and by the masses of solidified lava which kept rolling down their ends as they slowly crept along, but no fire was visible. At night all was changed; several streams invariably showed themselves red-hot, and often two or three white-hot, but every night they were different; the moving streams of yesterday having usually cooled and solidified while new ones had taken their place. With a field-glass we watched the red-hot masses falling down with a constant clattering noise; then a stream would perhaps make its way down among the woods of Somma and two or three trees would catch fire and blaze up. I tried to make the hot streams photograph themselves by their own light, and with partial success, but the exposure required was very long (a quarter to half an hour), and even then I don't think I got all of those only faintly glowing. It was the *festa* of the Virgin at Naples and fireworks were let off every evening, which we could see by turning our backs to the mountain, but they could not compare in grandeur with the natural fireworks in front.

The lava in the earlier part of the eruption had been of the corded variety, but the crust had in many places been broken up into great slabs and rocks like miniature séracs. That which was being poured out in September was scoriaceous, or cindery. A broken lavafield never affords easy walking, and broken as some of these were it would have been easy to lose oneself in a labyrinth; but I had taken with me my trusty guide, Sylvain Pession, of Valtournanche, and he found a path among the great blocks as easily as he would on a crevassed glacier. One night we went up to the molten lava after dark with torches, and Sylvain gained great renown by bringing back a party of sightseers whom we had found entangled among the big stones. The local guides, so-called, are utterly useless in a place like this; moreover, in other respects they hardly inspire confidence. Messrs. Cook have done much to promote order among them, but they still hold undisputed sway on the top of Vesuvius above the railway station. They even demanded payment for Sylvain as a visitor, and rather than have a disturbance I paid them something.

Though the lava welled out as above described near the foot of the great cone, the greater part of the vapour, which is the motive power in these eruptions, escaped at the main crater at the summit of the great cone. It was sometimes

a steady column like smoke, but more usually varied by a series of explosions carrying up with them volumes of ashes and masses of pasty, red hot lava. One day when things were pretty quiet, Sylvain and I went to the top, and, having 'squared' the official guides, began to observe the crater. A small explosion brought a shower of lava round us. Sylvain stood still and watched the projectiles, ready to dodge them. I was trying for a snapshot when the two local villains seized me by the arms with the cry 'È molto pericoloso,' an interruption which called forth remarks more forcible than polite. However, I soon found they were more easily led than driven, and the exhibition of a bottle of wine enabled me to get as many snapshots as I pleased. The great crater was in 1888 nearly filled up, and had a small cone near the middle from which small explosions were taking place. In 1898 I found all this had been blown out, and there was a large crater 200 or 300 yards in diameter and of considerable depth. The bottom was invisible owing to clouds of vapour, but I got views of the sides of the crater, showing the usual disposition of the beds dipping outwards in all directions. The great cone seems to be permeated with hot vapour in all directions. It issues from cracks and crevices all up and down the inside of the crater, and there are several active *fumaroles* on the top of the cone just outside the lip. There are also some large ones half-way down on the W. side.

I hope that these brief notes, with the accompanying illustrations, will give some idea of what Vesuvius was like in September 1898.

The full-page illustration shows an explosion from the main crater of Vesuvius just at the moment when the sun was rising behind the cone. Notice the ring of halation round the sun. The photo was taken from below the observatory in an unfavourable position. There was, of course, no time to choose a better, and the mountain is consequently foreshortened.

The second shows the new cone from the top of the observatory, with the numerous small lava streams, molten and solid, described above. The main cone of Vesuvius is to the right and Monte Somma to the left.

The third shows the details of one of the smaller lava streams of the earlier part of the eruption. It gives a good idea of the appearance of corded lava.