

VESUVIUS

THE ERUPTION OF MOUNT VESUVIUS,

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The writer's first near view of the volcano after the eruption of this year was on the afternoon of April 24, when he took his way toward Dr Matteuci's observatory.

The electric train was pushing slowly with its cogged wheels upward toward the observatory station; beyond that point the road was destroyed. The fields outside of Naples showed one or two inches of dust, brown, gray, and gray-green, but most of the vegetable gardens had been cleared of it.

A little farther the pines as in a snowstorm. It was three inches deep on the walls. It had drifted in places to a depth of two or three feet. On nearing the observatory the lava fields of 1872 and 1898 were found buried under 5 or 6 inches of sand and dust, which formed a heavy mantle, but not sufficient to wholly disguise the slaggy contortions beneath. The whole cone of Vesuvius became cleared of clouds in the course of the afternoon and it was seen to be covered with straight sand slides of whitish-gray color which occasionally slipped downward as on the steeper slopes of a dune.

Pure white steam boiled up slowly from the crater. In one instance it burst out radially over the edge of the crater, showing a ring on the border, a dome of cumulus above and within, and a second still higher outer ring made of an older rain-cloud which had been punctured and pushed up bodily.

The effect was like a hat on the mountain's crown. At night the cone was clear and entirely without luminosity. Professor Matteuci was found on his return from an ascent, in which he had been accompanied by Dr Sjogren, of Stockholm, and Mr Perret, a graduate of the Brooklyn Polytechnic. They had been in the clouds, and their faces were most picturesquely plastered with blown dust, but they had been unable to see anything, so dense was the fog of steam and sand.

The next morning, with a strong west wind, we started up. Besides the writer, the party consisted of three members of the Alpine Club of Great Britain and a guide.





The Alpineers were Dr. Tempest Anderson and Messrs Yeld and Brigg, all of Yorkshire. The steam was settling down in clouds on the summit from time to time, in alternation with clear spells. The route followed the extension of the tramway to the place where the lower Funicular station had been, and then the western profile of the cone was followed straight up. The rails along the foot of the cone had been twisted and torn by landslides.

Most of the old track and the lower station were buried, but not under lava. No new lava was anywhere visible on this side of the mountain. Everything was covered with pebbles, sand, and dust. Vesuvius was never more completely a "cinder cone" in outward appearance than it is at the present time.

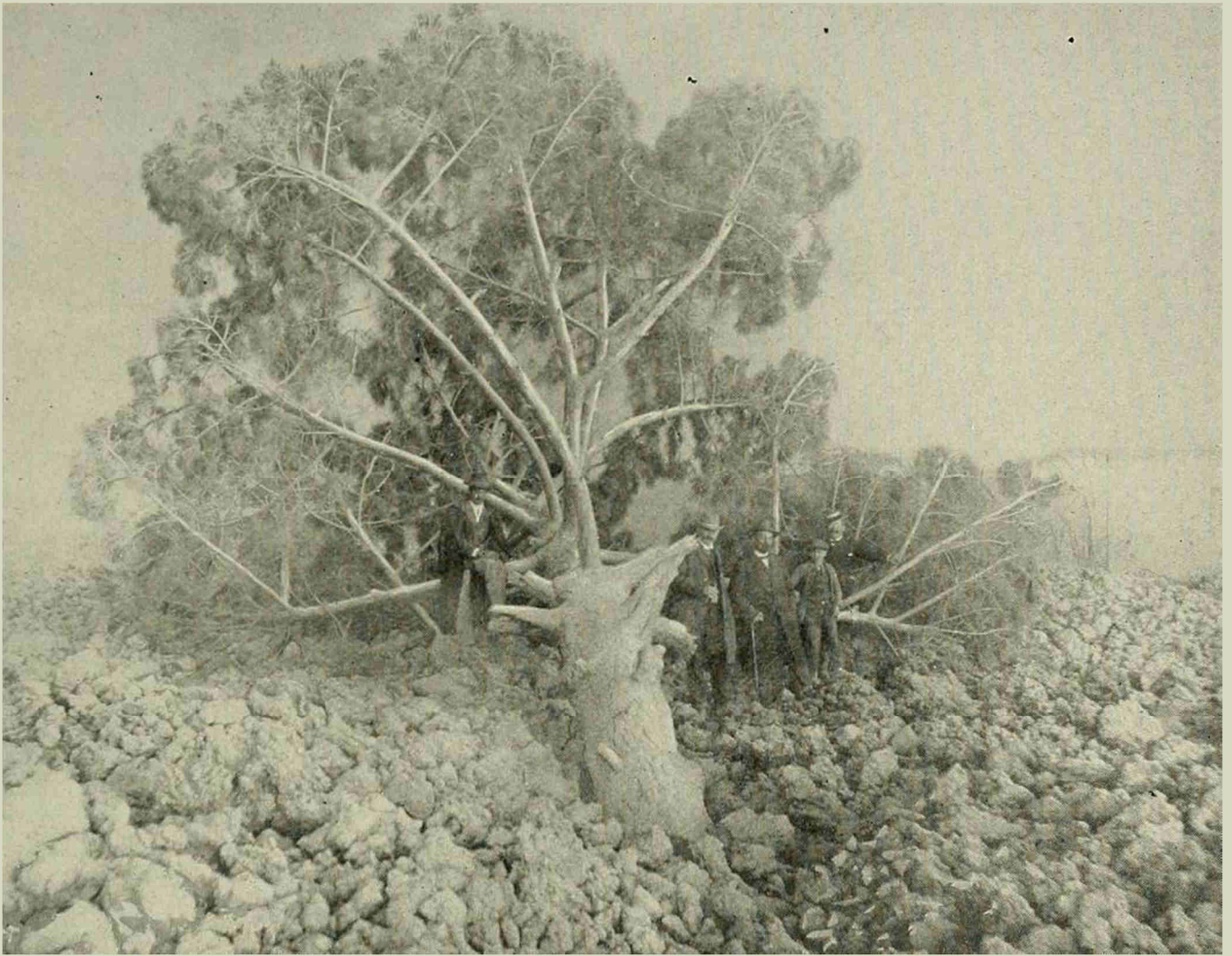
The slope of the main cone averages about 29°, and the ejecta seem to have slipped down this slope to form thick taluses at the bottom. Here and there large angular pieces of hard rock have fallen, up to 5 feet in diameter.

Climbing the cone was not especially difficult, though it was very steep in places. By making a somewhat zigzag track and keeping on the radial elevations rather than in the shallow troughs, hard pan could be found to walk upon. Some of this was scoured old hard lava, otherwise it was closely wedged or plastered fragments, whereas the gullies were filled with deep sand. It was necessary to be very cautious to avoid starting rocks down on those below. The steepness increased up to a point near the edge of the crater, and then it became slightly less.

The edge of the crater itself is the upper rim as seen below; there are no intervening ridges.

Therefore the abruptness of the fall-off, when we finally came to it, was startling in the extreme.

The wind had steadily increased and was pelting our necks with stinging sand grains which surged in whirling clouds all about us.



It was impossible to face this bombardment except during lulls in the gale; hence photography was accomplished under difficulties and the flying dust was ruinous to cameras. Only occasionally did the dim sunlight sift through the mixture of sand, steam, and cloud. In those lucent intervals, however, we could make out an inward slope of 35 or more degrees, covered with hot sand and broken rock fragments, terminated about 120 feet (vertically) below by jutting ledges which appeared to be precipitous. Beyond was steam and sulphurous heat and obscurity.

The ledges fumed in places. No noise could be heard above the howling of the wind. The curvature of the crater edge was irregular with embayments, and it showed much irregularity in height. We could not see the opposite side of the cauldron, but from the curvature it was estimated that the crater could not be less than from one-fourth to one-half mile in diameter—unusually large for Vesuvius.

The summit was 4,000 feet above the sea by Aneroid, or some 350 feet lower than before the eruption, according to the data furnished us by the officers of the observatory. The east-west diameter is much greater than the north-south. The depth of the crater is at least 150 feet and no one knows how much more. There is a great notch or caving-in on the northeast rim of the crater, where thousands of tons of gravel and sand were hurled clear over the crest of Monte Somma and fell on Ottajano and San Giuseppe with most disastrous results. On the south side of the cave, toward Boscotrecase, a radial rift opened, letting lava escape from different elevations progressively, lower until finally the great outflow came from a mouth or "bocca" only 2,000 feet above tidewater, half way down the mountain, and quite below the cone proper. The history of the eruption, as gleaned from the accounts of men of science who were on the spot, is briefly as follows. In 1904 there was a lava flow which stopped in September of that year. In May, 1905 lava flowed from a split in the northwest side of the cone and continued in active motion throughout the year.



It ceased flowing at the time when the present eruption opened a new vent on the south side of the cone. On April 4 1906, a splendid black "cauliflower" cloud rose from the crater. On April 4, 5, 6, and 7 lava mouths opened along the southern rift above mentioned, first 500 feet below the summit, then 1,300 feet lower, and finally 600 feet lower still, all in the same radial line. The lowest mouth was more than half way down the mountain, and from this orifice came the destructive streams.

It should be borne in mind that these flows are not floods of lava which cover the whole slope of the mountain, but relatively narrow snakelike trickles, none the less deadly when they push their way through a closely built town. The molten rock crusted over and cracked, making a tumble of porous boulders at its front. At 8 p. m., April 7, a column of dustladen steam shot up four miles from the crater vertically. The cloud snapped with incessant lightnings. New lava mouths opened and the flows moved forward, crushing and burning and swallowing parts of Boscotrecase, the stream forking so as to spare some portions of the town.

Meantime torrents of ashes fell on Ottajano on the opposite side of the volcano, and many roofs collapsed and lives were lost. At the observatory Dr Matteuci and his colleagues were obliged to retreat, as the observatory was rocking violently and heavy stones were falling.

They went only half way down the mountain, however, and returned to their posts next day. The observatory was uninjured, although stones had fallen weighing as much as five pounds. The stones and sand of the eruption are mostly composed of ancient lavas broken up by the steam blast.

On April 8 the electrical dust cloud still hung over the volcano, but thereafter through a fortnight the explosions diminished in violence until only quiet steam rose. On the 18th bad gases were blown downward on the observatory by a strong southeast wind, and some persons nearly lost their lives by asphyxiation.



The gases were probably both carbon dioxide and sulphuretted hydrogen.

Boscotrecase was ruined wholly by lava; Ottajano by falling gravel. Boscotrecase is traversed in two places by the clinkery lava stream and in some cases houses were literally cut in two. The stream of lava had forked about a spur of the mountain, leaving the higher land with its vineyards untouched. The lower land with its town was invaded. There is so little timber in the Italian masonry construction that the uninvaded part of the town was not burned at all.

At Ottajano the roofs fell in under the weight of sand and gravel. The roofs were largely flat or slightly sloping tiled affairs. The ash and lapilli reached a depth of three feet on level surfaces. The roofs carried the walls with them in many cases, but there was no significant earthquake.

There was no fire, destructive lightning, nor strong wind. The persons who perished were all found in the houses, where the sole cause of death was entombment in the ruins.

In both these towns suitable rebuilding might avert a similar catastrophe in the future. Arches and domes are the architectural forms best fitted to shed the sand-fall. Rebuilding on higher land and avoidance of the bottoms might do much to protect such a town as Boscotrecase from another attack of lava. The Japanese have made systematic experiments to test the resistance of different forms of masonry to earthquake shocks. Similar experiments might well be made on volcano-proof construction, if human beings continue to insist on living within the five-mile limit of an active crater.

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