

Talking about the 1669 eruption is not easy at all.

It was such a big event to catapult the attention of all of Europe towards Etna, in a period in which certainly there were no means of today's information. An event so destructive that the inhabitants of the time considered it the year of ruin, but to get to that year we must first go through the seventeenth century, and we will see that it is an exceptional century from the point of view of Etna eruptions.

At the beginning of the seventeenth century the activity is confined to the high areas of the volcano, but in 1610 a lateral eruption pushes the lava to an altitude of 800 meters. Then it occurs a very important activity, because it lasts for 10 years: it begins in 1614 and ends in 1624. A surface of Etna, vast 21 square kilometers, it is covered with something like a billion cubic meters of lava.

In 1634 a lava spill begins which lasts two years and arrives near Fleri.

In 1646 the huge cone of Monte Nero was formed on the north side, and a large lava field between 2,000 and 710 meters above the sea is created.

Another long eruption occurs between the years 1651 and 1654, when the lava flows on the Bronte slope. The volume of the lava field is impressive: around 500 million cubic meters. A large slice of the west side is buried, many fields and a part of the town are destroyed.

Already here we can stop to think about what Etna was able to do in just 50 years; a person born in 1601, for example, had already witnessed 5 side eruptions with emission rates very important, which did not overlook any side of the volcano, but what would have happened shortly would have definitively consecrated the seventeenth century as the most destructive century that history remembers.

In 1669 the eruption did not start surprisingly: On February 25<sup>th</sup> people begin to feel earthquakes in the area of Nicolosi, which become stronger since March 8<sup>th</sup>, causing the collapse of many houses.

Today a magnitude of 4 is calculated and we know that the tremors continue for at least three months even during the eruption.

Let's try to imagine the scene: everything around us starts to shake, you can hear glasses breaking, objects falling to the ground ... It happens the first time, then the second, the third ... dozens of earthquakes. Some shake the ground so hard that people cannot manage to stand up, portions of land collapse ... The inhabitants of Nicolosi decide to move away, and this is why during the eruption no one is in the village. Also in other centers they register tremors and damage but there are no victims because many remain outdoors out of fear.

They have already understood that Etna is preparing something serious and many take refuge in Catania, where the shocks are very mild due to the distance.

And what are these earthquakes caused by? From the magma that is under there and that is pushing towards the surface fracturing the rock. Meanwhile the soil of the entire southern slope is probably swelling, but the inhabitants cannot know this because at that time the tools to determine it did not exist. Today a swelling of a few millimeters is recorded immediately.

On March 11<sup>th</sup> the magma manages to reach the surface and presents itself initially as a system of

fractures that cuts across the southern slope. Early in the morning it begins to open up near the summit of Etna, in the area of Monte Frumento Supino, and descends to Piano San Leo, over 9 kilometers long. An intense glow appears along this fracture. It is probably here that the first activity becomes visible, however it is limited only to strong incandescent gas emissions.

In the afternoon the fracture descends again to the area of Monte Nocilla, for a total of 15 kilometers. An eruptive vent activates west of this mountain, and other mouths in contrada Fusara, some open inside cultivated fields. The explosions are so strong as to be felt by Syracuse and Messina.

On the night between March 11<sup>th</sup> and 12<sup>th</sup> the crater of the current Monti Rossi opens at an altitude of 800 meters. It is the seventh mouth and from there a few hours later lava begins to gush. An immense amount comes out: 460 cubic meters per second, but the first center that destroys is not Nicolosi, since at that time it was built in the area of the old monastery of San Nicolò La Rena, then higher.

What erased Nicolosi were in fact first the earthquakes and then the pyroclastic material emitted by the eruptive vents, many meters of material that buried the town completely. And it is likely that the rubble of those houses is still buried there.

Big damage also comes to Pedara Trecastagni and Viagrande, where some roofs collapse due to the weight of the material.

The lava instead goes down towards a cone that still exists today, and that had to appear much higher before the eruption: Mompilieri. The lava surrounds it and during the night it first destroys the small village of Levuli, and then the Guardia, the southernmost district of Nicolosi. It has a front that is more than two kilometers wide.

On the evening of March 12<sup>th</sup> the lava reaches Malpasso and in a few hours buries it completely; later it will be rebuilt with the good-luck name of Belpasso.

The pressure is such that the volcano feels the need to open other mouths; some of them of them will join the main ones, others will disappear under the erupted products.

At the foot of Mompilieri was a town of the same name, composed of 700 houses, which will no longer be rebuilt. Less than 24 hours after the start of the eruption 1,400 people are already homeless, but the Mompilieri relief forces the lava splits into two arms: the eastern one on March 13<sup>th</sup> points up to Mascalucia and buries the countryside.

The hot breath of the eruption is already beginning to frighten the inhabitants of Catania, who on the same day they carry the veil of Sant'Agata in a procession ceremony, that stops in Misterbianco where many spend the night in prayer. It is easy to imagine the situation, with people crying or running away from the mountain as much as possible. Many seek refuge precisely in Catania, but soon the city gates are closed, due to the thieves who take advantage of these troubled hours to ruffle what they can. And for those who are caught there is no solution: they are all hanged.

But what did Catania look like in those days? Let's take an imaginary flight over the seventeenth-century city. To begin with, it was much smaller: it had about 20,000 inhabitants versus the 311,000 registered in 2018. Furthermore it was not an open space like today, but it was contained within the defensive walls that surrounded it completely. Part of these walls consisted of existing dunes that stretched along most of the coast, a relief that made it even safer the fortifications of the city; and then

there was the cathedral, with his high tower that reached 100 meters.

Let's go back to the eruption. On March 14<sup>th</sup> the flow increases from the mouth of the eruption: 630 cubic meters of lava come out per second, and the lava river quickly reaches down to 450 meters of altitude, and here begins to enter the territory where there are the cultivated fields and the houses of San Pietro and Camporotondo.

We are only two days after the beginning of the eruption and two weeks after the first earthquakes, the first warnings. It makes us reflect on how much this really happened in a short time.

Between March 15<sup>th</sup> and March 17<sup>th</sup> the easternmost arm reaches the town of San Giovanni Galermo, which is partly destroyed, then splits into two big rivers and stops at an altitude of 300 meters, after traveling almost nine kilometers.

The westernmost arm between March 17<sup>th</sup> and March 18<sup>th</sup> reaches Valcorrente. Here it can no longer continue because it is located at the foot of some hills. It looks for the slightest slope to move forward but can't get very far. It stops, after traveling 10 km and from here on, the focus is on the central arm.

At 600 meters of altitude, due to the morphology of the area, different ramifications form that stop after a short distance, all except one, which instead is channeled towards the city of Catania.

On March 25<sup>th</sup> the lava has already traveled nine kilometers from the effusive mouth but for a moment the focus is on the summit of Etna, when from the crater, which was unusually silent both during the previous period and during the lateral eruption, a strong explosion occurs, which causes the collapse of a part of the cone, probably due to activity freato-magmatic connected to the emptying of the lava duct.

Let's go back down. On March 29<sup>th</sup> the flow reaches Misterbianco (4,730 inhabitants), which was further north than it is now. The lava first surrounds it and then buries it, advancing further until it reaches the southern margins of Etna, and also here the flow meets a relief, in this case it is about Monte Pò, therefore the only way to continue advancing is represented by the natural change of direction of the flow eastwards. In front of it there is Catania.

In the early days of April the flow is in the area between Nesima and San Null. In Catania the inhabitants are already preparing to leave.

On April 4<sup>th</sup>, 1669, the lava reaches the Gurna of Nicito, a vast inland plain where usually rain and torrential waters gathered, forming a real lake. It was up to 8 meters deep, one kilometer wide and with a perimeter of three kilometers, which was thought it could slow the advance of the lava. But the lava begins to devour the lake 200 meters per day. According to some it takes a week to cover the entire lake, according to others the lake disappears in just six hours.

But it comes naturally for the lava flow to also intercept the course of the Amenano river, which originated from the lake, and flowed over the surface for a long stretch. The lava flow walls the river, and today it is visible only a small portion of it in the fountain called "Dell'Amenano" and inside the Villa Pacini in the center of Catania.

The rest of the river runs underground buried by the lava flow of 1669, and there is one impressive curiosity: some tell of how somehow the lava could heat the groundwater to such an extent that you could not drink water from the wells and springs until it cooled down.

At this point the flow of lava flow has already decreased a lot and it settles at 30 cubic meters per second; still this is enough for the lava to continue advancing, thanks to the lava tunnels formed during the first two weeks of the eruption, which protect it from the air by allowing it to keep the heat needed to make long stretches of road.

On April 16<sup>th</sup> it takes place the impact with the city walls, which are 12 kilometers away from the point of eruption, and the first stretch to be struck is that between the Bastione del Tindaro and the Bastione degli Infetti, a structure that was used to host cholera patients who were not allowed to enter the city.

Failing to overcome that high wall the lava is forced to flow along it and submerges the ruins of the Naumachia and the Circus Maximus, Roman buildings located just outside the walls.

Meanwhile, people are closing the access roads to the city with large boulders and prop up the walls to provide greater resistance, while the lava surrounds the walls of the Castello Ursino, which was then located near a beach.

The lava reaches the sea in the middle of the night on April 23<sup>rd</sup>, 1669.

When a lava flow reaches the sea the first thing that happens is the raising of an enormous quantity of steam. Then you have to imagine the atmosphere that you had to live in the city in those days, with the lava kept out only by the walls, the fear of losing your home at any moment, and in the meantime a thick haze that envelops you, confuses you, clouds the streets ... Even the noise must have been impressive, the rocks that roll into the sea, the explosions due to the water-lava contact, there were certainly hissing sounds, like something frying, a pressure cooker ... really something scary.

Initially the lava enters the sea divided into several arms, which then join and spread out like a fan; what is called "lava delta". It hadn't happened for 500 years that the lava of Etna reached the sea; the last time it was around 1160, always in Catania, in the Ognina area.

But the lava flowing into the sea also means the addition of a new piece of coast and this lava flow added 800 more meters, for a length of one and half kilometers, in short, the size of a neighborhood; but where is that coast today? Where is today the most advanced front of that lava flow that ended up into the sea? Nothing is left. In its place there is a road: Via Domenico Tempio, which run parallel to the port.

At this point the lava flow of 1669 stopped, inside the Gulf of Catania, but of that cliff, full of both scientific and naturalistic interest, today nothing is visible.

But let's go back to the days of the eruption, where the worst is yet to come, because when the lava spreads it destroys many cultivated fields and then buries the 36 Canali Della Marina, where the waters of the Amenano had been channeled for public use.

And the situation becomes dangerous even within the city, because the lava is so embanked by the high walls; but this leads it to grow into height, until its weight wins by knocking down a part of the wall, where it had initially arrived, between the Bastione Degli Infetti and Del Tindaro for a length of 57 meters, and so on April 30<sup>th</sup> the lava comes into the city and burns down the garden of the Benedictine Monastery.

In the following days it rests on the structure, which resists, then begins to destroy churches and streets along the Corso district, and it is at this point that we see how people try to react to this natural event.

They begin constructing stone embankments in front of the lava flow to try to slow down the pace, some structures are even torn down, specifically to protect more important buildings; but to enter the history of this Etna activity is the work of 200 inhabitants of Pedara, led by the governor of the country Don Diego Pappalardo: on May 6<sup>th</sup> they go to near Malpasso where they attack the now cold bank of the lava trying to divert the lava flow, making it come out of its natural flowing channel; in this way the lava front could no longer advance and it would stop. An intuition that denotes a knowledge of volcanic phenomena on the part of the men of the time that today leaves us surprised. They are armed with shovels and iron picks, and try to protect themselves from the very high temperature wearing animal skins, but the heat is still such that the workers are forced to work in shifts, alternating after just a couple of shavelings.

This is one of the first documented attempts to deviate a lava flow on Etna. To have a subsequent one we will have to wait until 1983.

They almost succeed, but 500 of the inhabitants of Paternò, having learned of the attempt, and frightened by the fact that the lava deviation may reach their territory, depart in the direction of the Pedaresi to stop their action. At this point though intervenes the Prince of Campofranco, who literally orders "do your best to save what remains of the regal city", considering Catania much more important of the other inhabited centers of Etna.

In reality this attempt will remain only a parenthesis because they are not recorded major changes in the lava flow, since the flow of the eruption decreases naturally. Even downstream, the lava that succeeds in entering the walls, in reality does not advance very much and on May 8<sup>th</sup> it stops managing to destroy just 300 homes, some church and some palaces; but nevertheless the eruption of 1669 is still remembered today as the one that destroyed Catania.

At the same time the lava attacks the walls of the Ursino Castle; it begins to ascend until it overflows inside the moat ...

It's not something that happens quickly, you have to imagine this advancing lava in streams, then it cools and a new stream arrives. The first one arrives on April 24<sup>th</sup> but to climb the wall in all its height it takes almost a month. On May 16<sup>th</sup> the lava overflows into the moat near the Bastione di San Giorgio, it remains active for a couple of days and then turns itself off; on June 7<sup>th</sup> a second stream arrives and fills the moat, and in two days it covers the sides of the castle up to the height of the first floor. And during all this time the Spanish garrison is still there, at the defense posts, and waits until the last moment before getting away.

On June 26<sup>th</sup> comes a last wave of lava. It pours straight into the sea and its glow is so immense that from far away the whole city of Catania seems to burn. It comes out of an opening in the crater surface in the countryside area where today Cibali resides, which from the outside seemed solidified but which contained the tunnels that carried lava from the base of the Monti Rossi directly into the sea. An impressive length!

Next, the eruption energy becomes very small and no building is threatened anymore. Much of the lava that had to come out, has already done it in a huge amount. This is also demonstrated by the fact that the Central Crater suffers a new sinking, probably due to the so sudden emptying of the volcanic

chamber, a phenomenon that has been seen happening in many other volcanoes.

On July 11<sup>th</sup> the flow that had been pouring into the sea for three months terminates, and on July 15<sup>th</sup> the whole eruption ends.

With the end of the eruption also ends this first part of the documentary dedicated to 1669, but in the next one I will tell you everything that happened after: people's reactions, the testimonies, and finally the places, which still remain as a demonstration of an eruption that turned upside-down the course of history.