

Appendix: A Brief Account of the 1971 Eruption of Mount Etna

G. P. L. Walker

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APPENDIX

A brief account of the 1971 eruption of Mount Etna

COMPILED BY G. P. L. WALKER

Imperial College, London SW7 2BP

The eruption of April–June 1971 was the biggest event on Etna since the early 1950s, an event fresh in the memory of the speakers at the Symposium. The following brief summary of the eruption was compiled from the observations of a number of workers (from the Institut International de Recherches Volcanologiques, Catania, the University of Catania, the French team lead by H. Tazieff and a number of British workers), as listed in the bibliography. Two distinct phases in the eruption can be distinguished, each lasting about one month. In the first the activity was localized from fissures high on the mountain at the foot of the summit cone. In the second the lava issued from fissure vents situated up to 5 km from the summit which opened progressively lower down on the eastern and northeastern slopes of the mountain.

The distribution of lava has been shown by Romano & Sturiale (this volume) and included here in a map by F. Le Guern showing the principal vents and lavas near the summit.

The first phase

The eruption began on 5 April 1971 when vents opened on two short parallel north–northwest trending lengths of fissure at 3000 m on the southern foot of the summit cone, one (the Vulcarolo vent of Rittmann, Romano & Sturiale 1971) 700 to 800 m north, and the other (the Observatory vent) just northwest, of the Observatory (craters I and II, figure 1). Gases escaped vigorously and cones of spatter and scoria were built on both fissures, but the activity was predominantly effusive and an extensive lava field was formed.

Effusion from the Vulcarolo vent lasted 11 days. Much of the lava from it flowed into the Valle del Bove and the flow front descended to 1900 m and reached Monte Centenari on the floor of the Valle on 9 April. Activity on the other fissure lasted 32 days, with a fall off in vigour around the middle of April but an increase again on 22 April when vents (the western vents) opened 60 m higher than the Observatory vents (crater III, figure 1).

Lava which flowed southwards surrounded the Observatory on 12 April and completely overwhelmed the building soon afterwards, and it destroyed the upper station and several pylons of the cablecar (the Funivia). The lava front passed close by the Piccolo Rifugio and the middle station of the Funivia, at 2500 m, on 29 April and reached its lowest point, 2150 m, on 1 May having covered 80 % of the distance from the vent to the Rifugio Sapienza and the lower station on the Funivia.

Lava from these two fissures covered about 3 km², made up of a great number of flow units: more than five separate lava tongues could commonly be seen flowing at any one time. Small phreatic explosions were sometimes observed when lava flowed over snow, and mudflows also developed downslope of the advancing lava.

The second phase was preceded on 4 May by the opening of a short east–west fissure (the eastern vent; crater IV, figure 1) at the eastern foot of the summit cone. Lava poured out for three days into the Valle del Bove, and strombolian activity built a small ring of spatter and

scoria while upslope a fumarole was discharging high temperature gases. The Observatory and western vents ceased to erupt on 6 May. The new cone was then still growing but by the evening of that day activity waned and by midnight had ceased.

The second phase

Late on 7 May vents (hornitos I, II and III, figure 1) opened on fissures trending east-northeast across the upper part of the steep western slope of the Valle del Bove, in line with the fissure of 1928. Lava erupted from points successively at 2680, 2580, 2540 and 2300 m altitude. Activity was almost entirely effusive and short lava streams flowed towards the Valle del Bove, but only a relatively small amount of lava was erupted, the lava streams failed to reach the floor of the Valle, and activity ceased on 17 May.

During the night of 11/12 May lava began to flow vigorously from points at 1840 and 1800 m (the Contrada Serracozzo vents or Citelli vents) on a fissure near the Rifugio Citelli as the main part of the second phase. Activity was exclusively effusive. Lava flowed eastwards and soon cut the road from Fornazzo to Rifugio Citelli in several places, and entered cultivated land. The advancing flow front reached the village of Fornazzo on 21 May, destroyed one road bridge and partly destroyed another before coming to rest. The main threat to Fornazzo developed later. On 24 May two new lava tongues, each 10 m high and 30 m wide, originating from lateral breakouts upslope, descended along the south of the first flow, destroyed several farms and on 26 May bypassed the village and the following day plunged into the dry gorge of Cava Grande. The final threat to Fornazzo came on 29 May when another lava tongue missed the end house of the village by 3 m and entered Cava Grande. A number of buildings near the village were however destroyed and much farmland was buried.

Although with the opening of the Contrada Serracozzo vents the point of emission of lava had now migrated 5 km and was 1100 m lower on the mountain than at the start of the eruption, the escape of gases from the summit region continued when, on 17 May, a new explosion crater (crater V, figure 1) 200 m in diameter formed a short distance upslope from the eastern vent along the line of the same fissure. Ash was erupted almost continuously until 27 May, after which activity was sporadic and came to an end on 9 June. It is supposed that the lava rose to near the surface and degassed through this crater before flowing laterally through a subsurface conduit to Contrada Serracozzo.

Effusion of lava from the lower vent of Contrada Serracozzo continued until 12 June, when the eruption terminated. The eruption had lasted a total of 69 days, during which time lava fields covering 7.5 km² were formed. The total volume of lava is estimated at 75×10^6 m³, and of pyroclastics a further 3×10^6 m³.

Subsequent activity

Apart from weakly explosive activity in the first half of April, the central crater of Etna was inactive during the course of the April–June 1971 eruption, and the northeast crater, the scene of persistent activity over several decades before 1971, was completely inactive throughout. Activity in the central crater was resumed again on 23 September after 100 days of complete quiescence, when the crater was partially infilled with lava, and sporadic explosions have been taking place since then.

ETNA Eruption 1971: carte des fissures, emplacement des événements et contour approximatif des coulées

échelle 1/10000 0 100 500 1000 1500 mètres

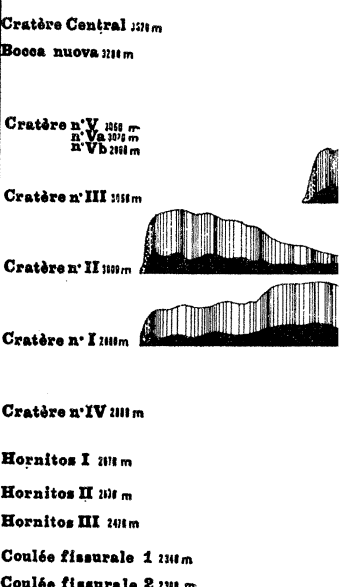
l'emplacement des événements a été relevé au théodolite
le contour des coulées dans la Valle del Leone a été tracé après
carte de R. Romano et C. Sturube (Accad. Gioenia Catania)
1/4: équipe Taziell'Avrili Mai Juin Août 1971

dessin: J. F. Forner, F. Le Guern

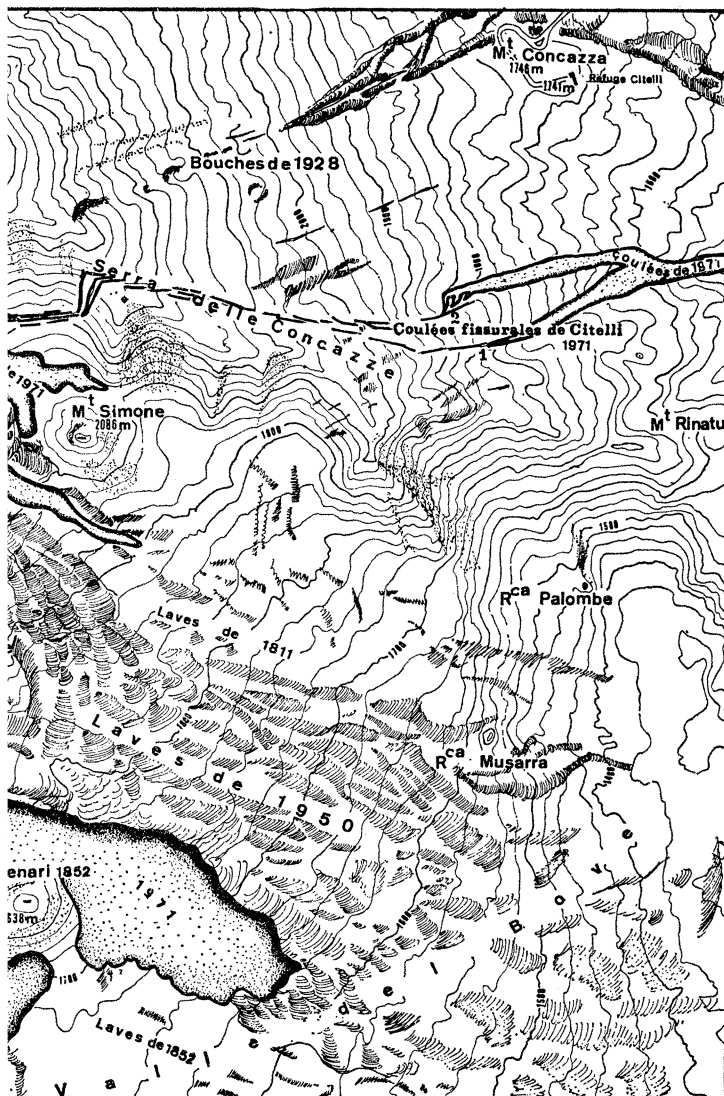


ETNA : diagramme de l'éruption 1971

Avril
4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20

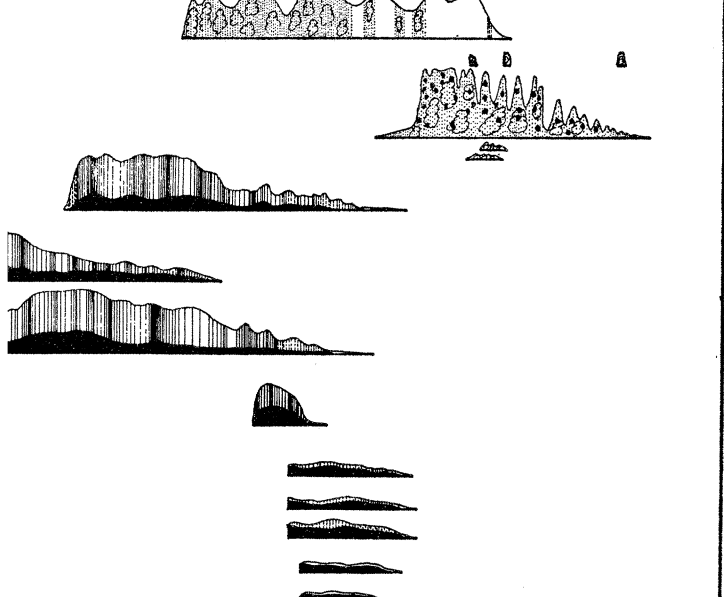


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amme	coulées de lave	éjections de lambeaux de lave, fontaines
on 1971	éjections de brèches	émission de vapeur d'eau
	éjections de scories	émission de gaz sans vapeur d'eau
	éjections de cendres	tremblements de terre

Avril 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 1 2 3 4 5 6 7 8 9
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 Juin



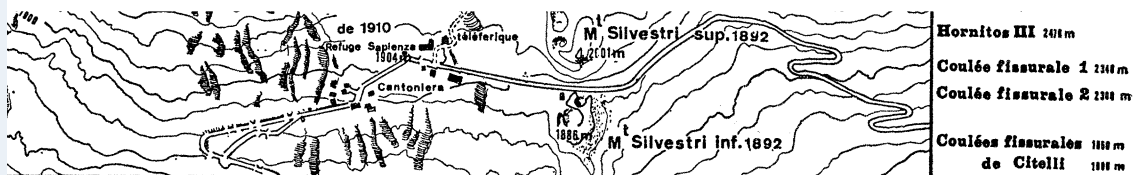
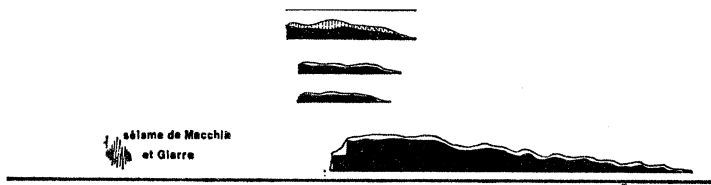


FIGURE 1. Map of the summit of Mount Etna showing the principal features of the 1971 eru



1971 eruption (by F. Le Guern).

(Facing p. 178)

APPENDIX

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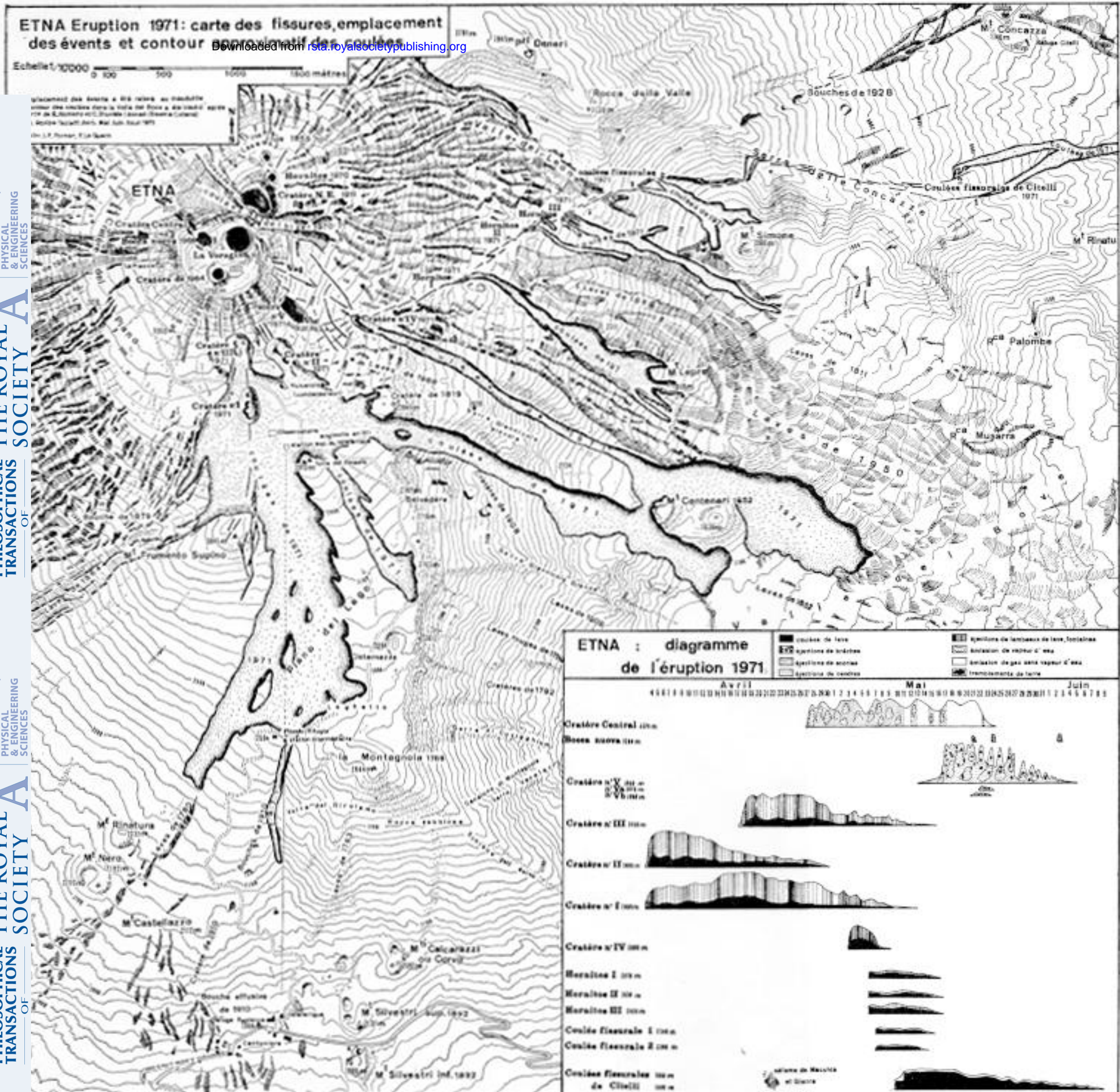


FIGURE 1. Map of the summit of Mount Etna showing the principal features of the 1971 eruption (by F. Le Guern).

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