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Ambrym Volcano, Vanuatu (16.25°S, 168.25°E). All times are local (= GMT + 11 hours).

On 31 April at 0730, the meteorological service in Wellington, New Zealand detected volcanic ash clouds near 16.1°S, 168.1°E on satellite images. The main cloud had an estimated diameter of 15-30 km, with streamers to 115 km NNE, and moved at a speed of about 30 km/hour. The plume height was estimated at about 6 km from an aircraft at 0350. The meteorological service in Darwin, Australia also located a steam/ash cloud on visible satellite images at 1030. NOAA infrared and visible images showed only a small cloud on 31 April at 1344 during clear weather. The following is a report from J.P. Eissen, M. Lardy, M. Monzier, L. Mollard, and D. Charley of ORSTOM (Nouméa and Port Vila).

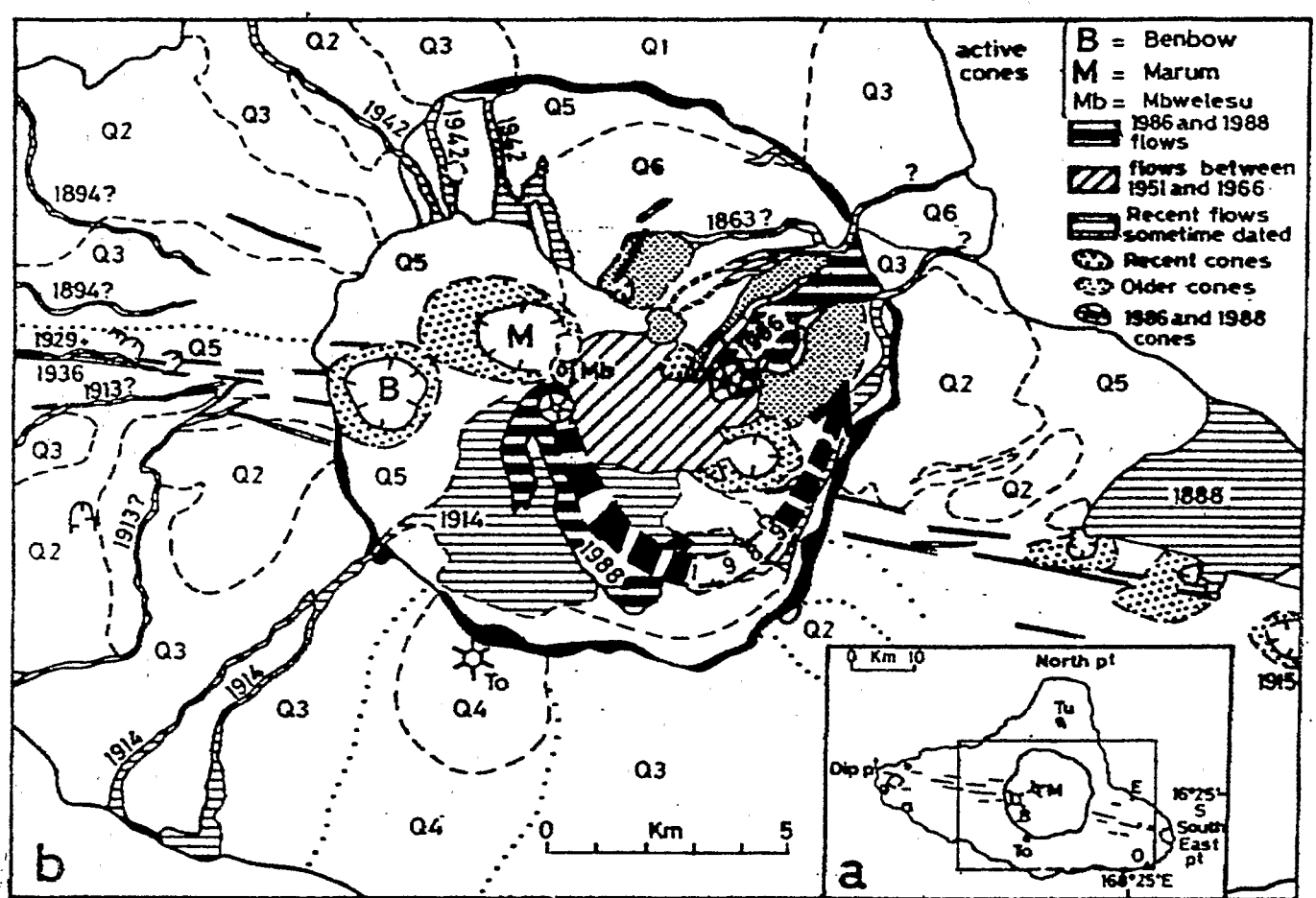
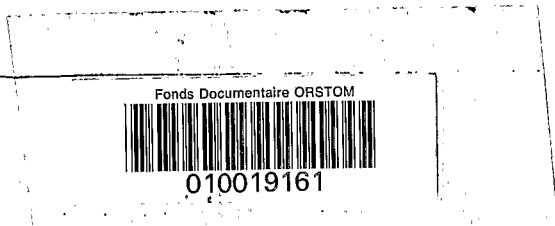


Figure 11: a) Index map with topographic features of Ambrym Island. B=Benbow, M=Marum (active cones), To=Tower Peak, Tu=Tuvio Mont (old volcanic centers), E=Endou village, O=Otas village. b) Detail of the area within the rectangle (in a) showing geologic features of Ambrym Caldera modified by Melchior (1988) and Charley (1988) from geological (Stephenson et al., 1968; Mallick and Greenbaum, 1973-74) and pedological (Quantin, 1978) maps of Ambrym. Q<sub>1</sub>=Tuvio volcanics (old northern Ambrym volcano), Q<sub>2</sub>=older flank volcanics, Q<sub>3</sub>=younger flank volcanics, Q<sub>4</sub>=Tower Peak volcanics, Q<sub>5</sub>=undifferentiated recent caldera and flank volcanics, Q<sub>6</sub>=NE and E Marum basaltic flows and and old related cones. The 1989 flow is shown by the dashed arrow.



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Ambrym Volcano (continued)

"Ambrym, a large stratovolcano with a 15-km-wide caldera (figure 11a), is one of the most active volcanoes of the New Hebrides arc, which includes Yasur (Tanna Island), Lopevi (Lopevi Island), and the shallow submarine volcano Karua (between Epi and Tongoa Islands). Ambrym has been active almost every year since its discovery by Cook in 1774. In the historical period, at least 5 types of activity can be distinguished. From the most to least frequent, these are: 1) intra-caldera, intermittent, Strombolian-type activity with mild extra-caldera ashfalls, but without lava flows (occurs almost every year); 2) intracaldera eruption frequently preceded by lava lake formation in the crater -- generally starts with emission of a Plinian column that produces extra-caldera ashfalls, followed by intra-caldera lava flows; 3) activity similar to (2) followed by lava overflowing from the caldera (1863 (?), 1913-14, 1942 eruptions); 4) extra-caldera lava emission from fissures (1894, 1913, 1929, 1936 eruptions) -- sometimes evolves toward 5) formation of pyroclastic cones, sometimes accompanied by lava flows (1888, 1915, 1929 eruptions). Several of these types of activity have occurred consecutively in the different phases of a single eruption (as in 1913-14 and 1929, the 2 major Ambrym eruptions).

"On 13 November 1986, an aircraft pilot reported an increase in activity at the volcano. Ash emission became significant 17 November, but activity decreased 19-20 November. A new cone formed (Cheney, 1986) 3 km E of the active Marum cone (figure 11b) and produced an intra-caldera lava flow about 4 km long (Melchior, 1988).

"On 27 May 1988, a lava lake about 50 m in diameter was observed in Mbwelesu's crater. Benbow was emitting white clouds whereas Marum and Mbwelesu were emitting dark grey clouds (Melchior, 1988). On 10 August, intracaldera lava flowed S more than 1.5 km from what appeared to be a new cone, but was possibly an extension of Mbwelesu (Cheney, 1988). The flow (still warm) extended about 5 km S (Charley, 1988). This eruption had ended by 23 August.

"At 1000 on 24 April 1989, a pilot observed a large plume rising about 3500 m above the volcano. A lava flow from the the 1988 cone was following the same path as the 1988 flow but was a few km longer. It followed the creek near Endou village (figure 11a) and may or may not have extended outside the caldera. About 1 km<sup>2</sup> of Otas village was reported to be burned. On the night of 29 April, large areas of red glow were seen from boats cruising in the area, and winds carried ash NW. Young vegetation on the S flank was burned (possibly by acid rain), and rain water had a strong taste. Local inhabitants said that the eruption was normal for the volcano even though there were more loud roaring noises and small earthquakes than in 1986 or 1988. A local pilots' strike prevented further observation of the eruption, but on 10 May the volcano was still active." The eruption apparently stopped sometime before 14 May.

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Quantin, P., 1978, Archipel des Nouvelles-Hébrides: Atlas des Sols et de quelques Données du Milieu; Cartes Pédologiques, des Formes du Relief, Géologiques et de la Végétation; ORSTOM (18 sheets).

Stephenson, P.J., McCall, G.J.H., Le Maitre, R.W., and Robinson, G.P., 1968, The Ambrym Island Research Project; in Warden, A.J., ed., New Hebrides Geological Survey Annual Report 1966, Port Vila, p. 9-15.

Ambrym Volcano (continued)

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Soputan Volcano, N Sulawesi, Indonesia (1.11°N, 124.72°E). All times are local (= GMT + 8 hours).

On 22 April, Soputan erupted for the first time since May 1985 (see SEAN Bulletin v. 10, no. 5), sending ash and lapilli to 1000-1500 m above the summit. Newspapers, quoting Volcanological Survey of Indonesia (VSI) director Subroto Modjo, reported that the eruption consisted of 3 explosions (at 1027, 1535, and 1752), the second of which ejected most of the tephra. Earthquakes were recorded by a nearby seismograph and were felt 25 km away. As much as 15-20 cm of ash (carried E by the wind) fell nearby in parts of Tumaratas (11 km NE of Soputan) and Taraitak, and in Ampreng, Raringis, and Noongan. At least 500 houses were damaged and 3 classrooms collapsed in Noongan, a gathering hall collapsed in Paslaten Langowan (13 km ENE of the volcano), and many trees, especially in the Gunung Potong forest area (7 km E of Soputan) were knocked down. No ashfall was reported in Manado, 45 km NNE of Soputan. Damage to buildings and crops was estimated at about \$114,000. As a precaution, hazard warning maps were given to residents. VSI geologists were monitoring the activity. No casualties or additional explosions had been reported as of 26 April.

Soputan (1661 m above sea level) has erupted at least 26 times since the 1700s, generally with moderately explosive ash emission and earthquakes.

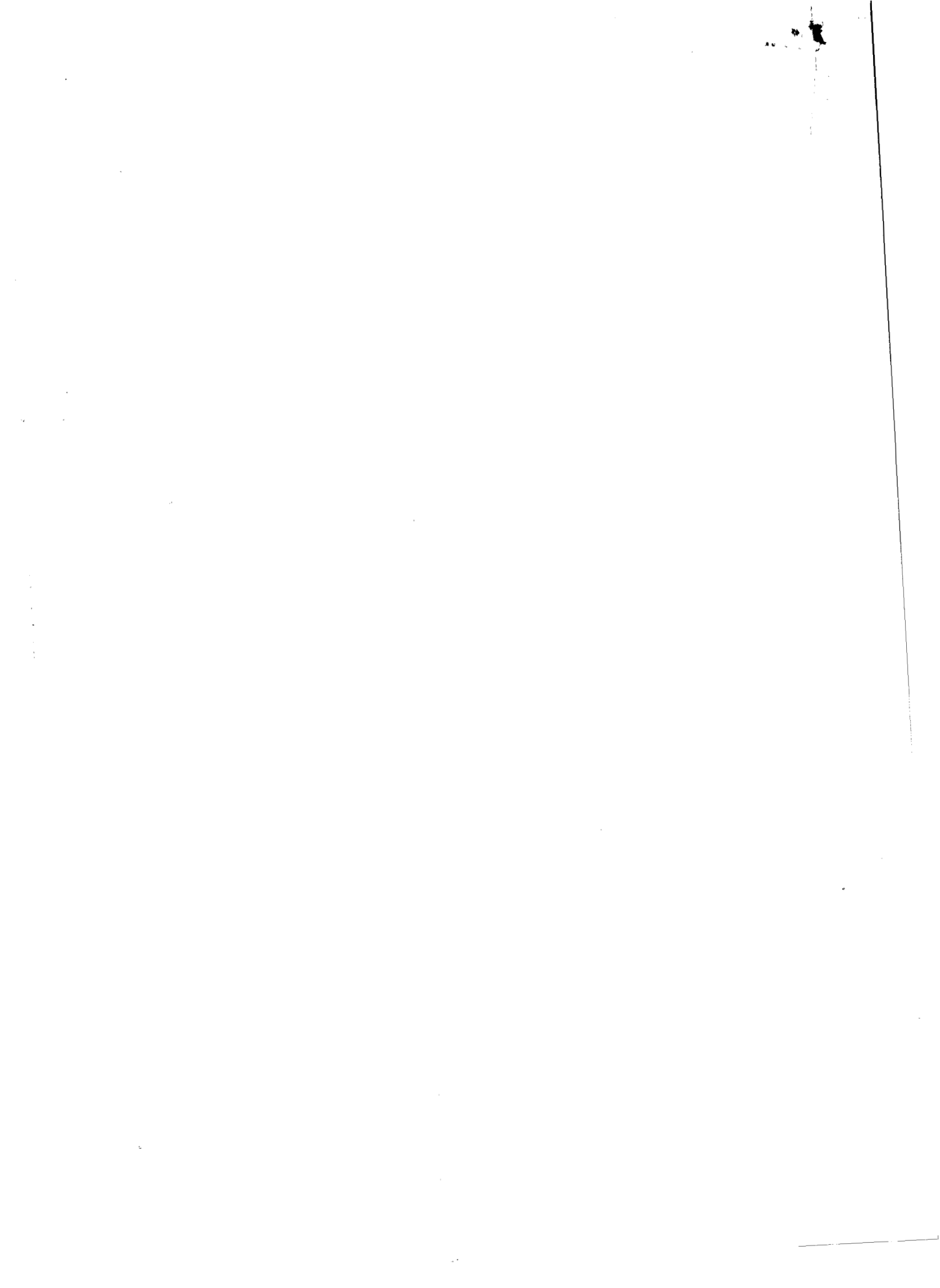
Information Contacts: Office of Foreign Disaster Assistance, AID, U.S. Dept. of State, Washington, DC 20523 USA; R. Austin, Englehard Engineering, Hwy. 18 Spur, P.O. Box 37, Gordon, GA 31031 USA.

White Island Volcano, Bay of Plenty, New Zealand (37.52°S, 177.18°E). All times are local (= GMT + 13 hours through 18 March; GMT + 12 hours thereafter).

Donald Duck vent has intermittently ejected tephra since its formation in late January (see SEAN Bulletin v. 14, no. 2) in a zone of strong fumarolic activity about 100 m NE of eruptive vents in 1978 crater (figure 12). Photographs by Geoff Green of a 4 March eruption (at about 1500-1530) show a 500-m, vigorously convoluting, ash column with an incandescent base. The eruption continued for at least 3/4 hour, and ash emission also began from RF Crater. A larger eruption between 16 and 20 March, apparently not witnessed, presumably generated a larger column. During April, Donald Duck continued to eject ash and threw lithic blocks to as much as 200 m S. Intermittent ash, block, and bomb ejections also continued from RF Crater during the month. Two bomb-ejecting eruptions from RF Crater since 20 March were followed by widespread ash deposition.

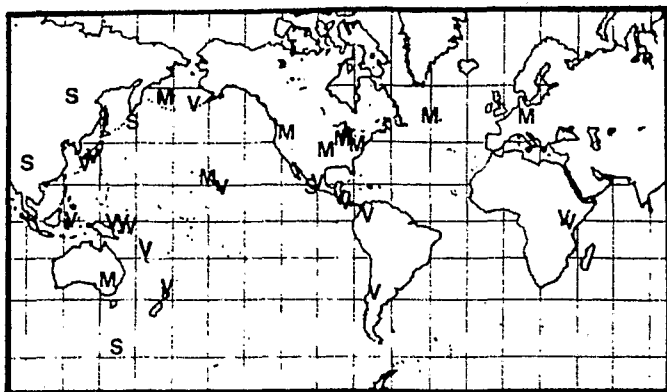
During 26 April fieldwork, Donald Duck vent emitted voluminous clouds of light-grey gas from a vent at the base of its N wall. New ash-covered scoria bombs (first noted in early April) were present S of Donald Mound, reaching more than 1 m in diameter near the 1978 Crater rim. RF Crater (appearing deep with vertical walls) discharged a dilute cloud of gas and fine pink ash. Ash covered much of the main crater floor and walls. Impact craters and lithic blocks a few days old were abundant around Donald Mound and Donald Duck vent. Congress Crater was quiet.







# Smithsonian Institution



M-Meteoritic S-Seismic V-Volcanic

## SEAN Scientific Event Alert Network BULLETIN

VOLUME 14, NO. 4, APRIL 30, 1989

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### FIREBALLS

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