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Note on the Occurrence of Dribblet Spires in the Snake River Plain, Idaho

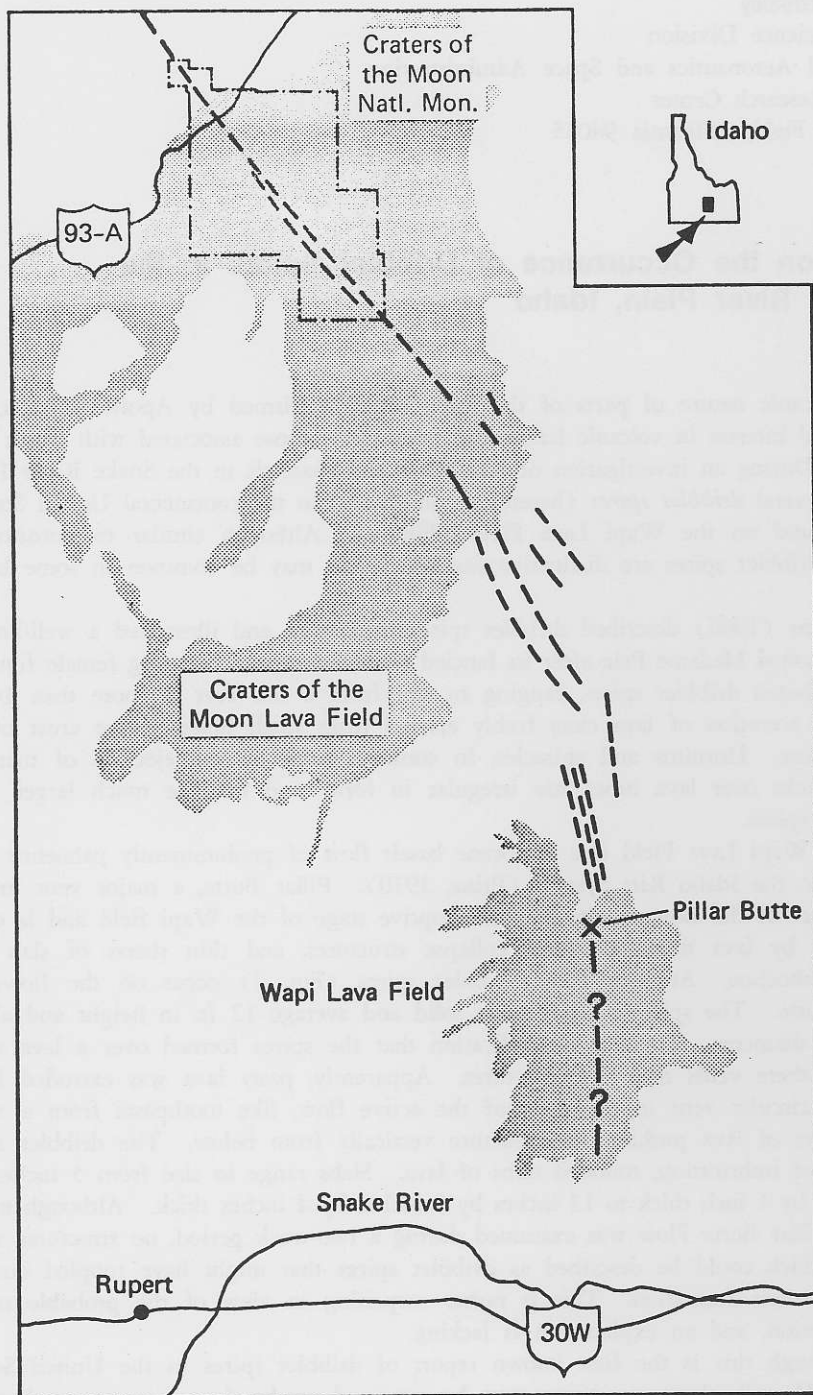
The volcanic nature of parts of the lunar mare, confirmed by Apollo samples, has prompted interest in volcanic landforms, particularly those associated with basalt lava flows. During an investigation of lava tubes and channels in the Snake River Plain, Idaho, several *dribblet spires* (heretofore unreported in the continental United States) were found on the Wapi Lava Field (Fig. 1). Although similar to hornitos in origin, dribblet spires are distinctive features which may be common in some basalt flows.

Stearns (1966) described dribblet spires in Hawaii and illustrated a well-known spire (named Madame Pele after its fancied resemblance to a standing female figure). He attributed dribblet spires, ranging in size from a few feet to more than 16 ft. high, to accretion of lava clots feebly ejected from small holes in the crust of an active flow. Hornitos and spiracles, in contrast, form by the ejection of material from cracks over lava tubes, are irregular in form, and may be much larger than dribblet spires.

The Wapi Lava Field is a Holocene basalt flow of predominantly pahoehoe lava related to the Idaho Rift System (Prinz, 1970). Pillar Butte, a major vent in the north part of the flow, marks the last eruptive stage of the Wapi field and is characterized by lava tubes, channels, collapse structures, and thin sheets of slab and shelly pahoehoe. At least three dribblet spires (Fig. 2) occur on the flows of Pillar Butte. The spires appear to be solid and average 12 ft. in height and about 5 ft. in diameter. There is no indication that the spires formed over a lava tube, nor are there vents near the structures. Apparently, pasty lava was extruded from a small circular vent in the crust of the active flow, like toothpaste from a tube, with clots of lava pushing the structure vertically from below. The dribblet spire consists of imbricating, rounded slabs of lava. Slabs range in size from 5 inches by 5 inches by 1 inch thick to 12 inches by 9 inches by 4 inches thick. Although much of the Pillar Butte Flow was examined during a two-week period, no structures were found which could be described as dribblet spires that might have toppled during, or after, their formation. This is rather surprising in view of the probable mode of formation, and an explanation is lacking.

Although this is the first known report of dribblet spires in the United States outside Hawaii, these structures may be expected to be found in young basaltic pahoehoe flows.

Resolution of most lunar photographs at present does not permit discrimination of features on the moon the size of dribblet spires. It is probable that most lunar



Modified from Prinz, 1970

Figure 1. Location of Wapi Lava Field and Pillar Butte eruptive vent in the Snake River Plain, Idaho. Dashed line shows the approximate position of the Idaho Rift System. Map modified from Prinz (1970).



Figure 2. Dribblet spire on Pillar Butte Flow, showing typical imbricating slabs of pahoehoe lava. Half-gallon canteen at base indicates scale.

dribblet spires would have been eroded, possibly beyond recognition, in consideration of the great age of lunar mare surfaces (3.3 billion years, compared to less than 1 million years for the Wapi Lava Field). Lunar areas such as the Marius Hills

(Karlstrom *et al.*, 1968), however, and parts of the crater Copernicus, which are suspected as being relatively young and basaltic, may have remnants of dribble spires on their surfaces.

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