HISTORICAL BACKGROUND AND FACT SHEET OF THE WATCHMAN - prepared by L. Smith

The Watchman, elevation 8025, is one of the highest points on the west rim of Crater Lake. It was named because a party of topographic engineers was placed on its summit in 1886 to take observations while the lake was being sounded by the Cleetwood party.

It had previously been christened Bentley Peak by Captian O.C. Applegate of Ft. Klamath, in honor of A. Bently of Toledo, Ohio, who visited Crater Lake in 1871 with Sir (then Mr.) William F. Maxwell, of Edinburgh, Scotland, and Dr. Munson of Klamath Agency. Munson died of over-exertion and Maxwell faithfully watched his body all night while Bently went for assistance.

Hillman Peak, is the highest point on the rim above the lake, with an elevation of 8156 feet. It was at one time known as Maxwell Peak, for Sir William F. Maxwell, of Scotland, who explored the Crater Lake region in 1871. It was later called Glacier Peak because on its slopes were found the first evidences of glacial scratchings, indication the occurence of glacial scratchings, indicating the occurence of glacial action on Mt. Mazama. Finally the USBGN adopted the name Hillman Peak, probably at the insistance of Will Steel, in honor of John W. Hillman, who was one of the party that discovered Crater Lake on June 12, 1853.

1917 - Watchman trail built.
1924 - Mt. Scott Lookout constructed by the Forest Service.
1931 - Watchman fire look-out construction begun.
1932 - Water line completed to Watchman from Lightning Springs. Probably the only fire tower in N.W. with flush toilets. (two of them)
1943 - Because of the lack of men available during W.W.II, the first woman look-out was hired.
1952 - Completion of new Mt. Scott fire look-out, at a cost of $12,683.
1962 - Rock wall stabellzed with additional mortar work. Exhibits were finally installed in exhibit room, after being stored for 25 years. For several years it was by-far the best museum in park.
Mid 60's - The beautiful wooden cat walk was sawed off with chain saws. It was replaced with an ugly angle iron walk way that was crushed by snow the following winter.
1973 - Last season for full time couple living on the Watchman, it is presently manned only during high fire danger or following a lightning storm.
1975 - Most exhibts were removed from the Exhibit room because they were "too old".

Suggested activities at the top of the Watchman.

Know the major mountain peaks of the area.

You will probably want to complete the major part of the geological story of Crater Lake at top, because this is the only major view point of the lake on the access trail.

The old road that you see during the first part of the trail was used from 1913 until about 1933, when the present road was built.

Obtain key to look-out and tour interior. Demonstrate the fire-finder and methods of locating and plotting forest fires.

What would it be like living on top of a mountain for a summer? Would you like to have to carry everything that you need up this mountain? How would your life style have to change?

The park's radio transmitter is located at the Watchman. Power comes from Solar cells.

Demonstrate the radio system by calling HQ and asking for Fire weather data and a weather report.

Show the inside of Exhibit room and the few remaining exhibits.

The tower was closed, like many others around the park, when the government began depending on airplane fly-overs, twice daily. Is this system as good as on-site observation? Which method is cheaper?

You could talk about the changing role of fire in the National Parks, and how it is now becoming a friend, rather than just a foe to the forests.

Examine the art work of the stone work. These men that built these buildings were real artisans. What special skills were needed to do such work? What special problems would they face trying to build such a building so far from the road? Could such a building be duplicated today? Has this type of stone cutting been lost? Does their pride show in their work?

The Watchman trail is .8 mile long, with a climb of about 600 - 700 ft.

## The Watchman Dike and Flow

Next to the Devil's Backbone, the most conspicuous dike on the cliffs of Crater Lake is the one immediately beneath the Watchman. It stands vertically, forming a high wall cutting athwart the bedded lavas and ashes. Where it disappears beneath the talus, more than two-thirds of the way down the cliffs, its thickness is only about 6 feet, but upward it widens steadily to more than 50 feet and merges into the Watchman flow. There is no difference between the material of the dike and that of the surface lava, both consisting of massive, pale-gray porphyritic andesite. Within the dike, flow banding is obscure, but horizontal and vertical joints are well developed. This is one of the few dikes on the walls of the caldera which do not have black, glassy selvages, the margins being of the same pale-gray color as the interior and no less crystalline. At first sight, the dike seems to represent the actual feeder of the Watchman flow, and it has generally been so interpreted, but a study of the banding in the flow, though not entirely disproving this idea, casts considerable doubt on it. With better reason, the



continued on next page---

Hillman-continued from last page....

---

larger bodies of massive, unbedded breccia, likewise affected by solfataric action. Close to the exposed top of the conduit, near the western edge, the unbedded breccias pass upward gradually into well stratified ejecta that were probably laid down at the surface.

The margins of the conduit seem to have offered ready passage for gases and solutions rising from the chamber below. Not only are the rocks of the conduit itself largely altered, but the enclosing lavas are tinted in shades of orange, red, pink, brown, purple, and green by the development of chlorite, hematite, and limonite, or are bleached to whitish, crumbly masses of kaolin and opal.

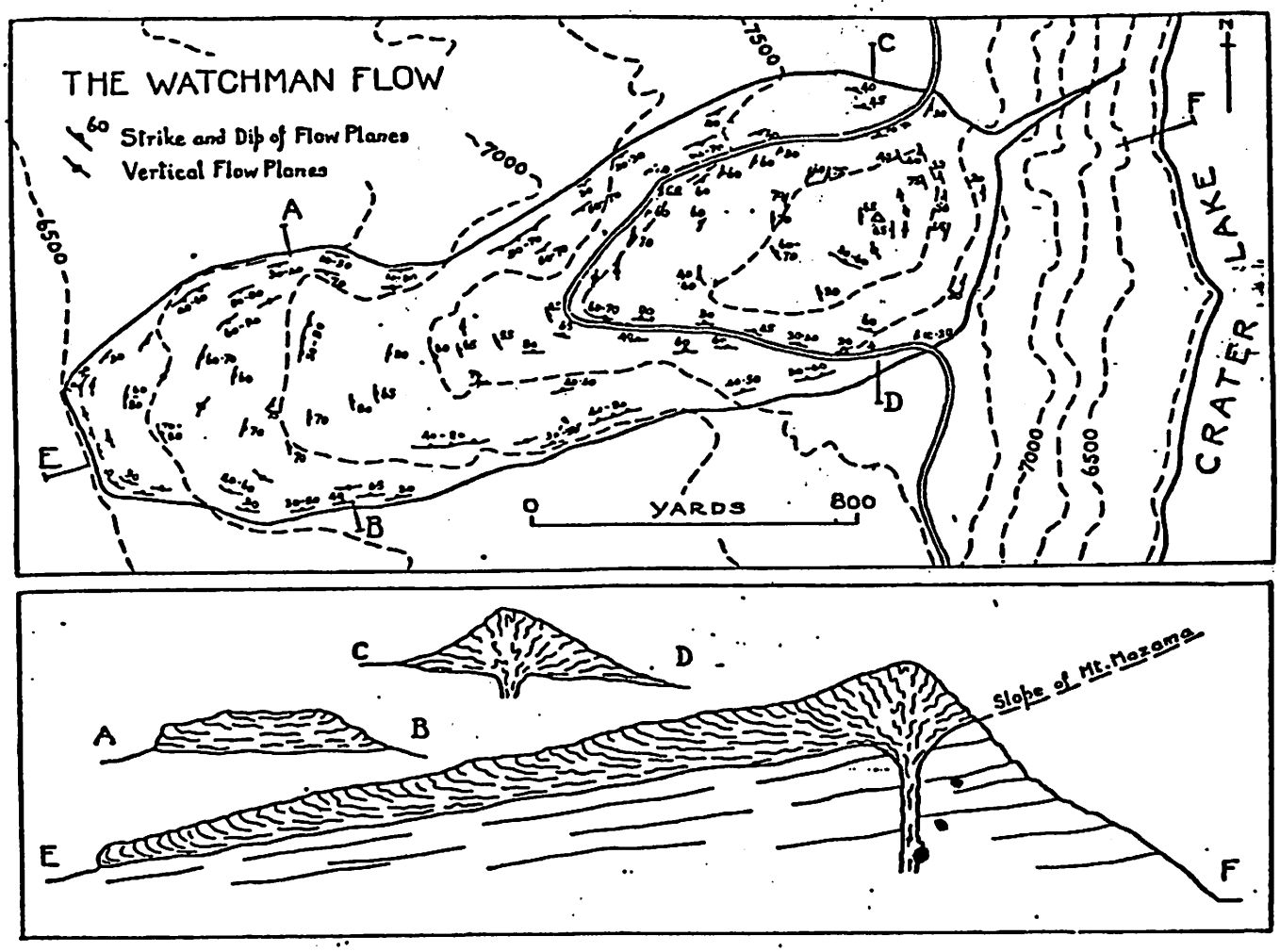


FIG. 9. Map and section of the Watchman flow

dike may be considered as an offshoot from the feeder common to both.

The Watchman flow has a distinct topographic expression, as may be seen in figure 9. Its length is almost 1¼ miles and its average width 2000 feet. The average thickness is between 400 and 500 feet. The flow must have been unusually viscous, for the snout and sides are extremely steep.

Of particular interest is the attitude of the flow planes (figure 9). In general they strike parallel to the margins, and, except in a peripheral belt less than 100 yards wide, they stand either vertically or at steep angles. Even at the snout of the flow the planes still stand steeply and bulge outward in the direction of movement. Along the sides and toward the base, the dip of the planes rapidly diminishes to horizontality. Cross sections therefore show a fan-shaped structure. Under the Watchman itself, the planes are disposed in the form of inverted concentric cones, steeper in the middle and flattening outward. This arrangement suggests an underlying, funnel-shaped feeder. Probably the Watchman, which rises 600 feet above the adjacent rim of the caldera, represents a domical protrusion over the vent.

Although, as we have said, the banding throughout most of the visible part of the flow is vertical and parallel to the margins, it must be assumed that in the lower, unexposed parts it lies at low angles, for otherwise it is impossible to see how the lava could have advanced. Support is lent to this view by study of cross sections of dacite flows on the caldera walls. Apparently the lavas moved somewhat after the manner of glaciers, the upper layers shearing over the lower and turning upward sharply at their distal ends.

Just below and a little to the north of the summit of the Watchman, the lava surfaces are crossed by flutings and scratches which seem at first glance to be of glacial origin. They trend downhill and westward, in the general direction of lava movement. That they are not actually glacial is clear, however, since they may be found in the lee of vertical crags and on the under surface of certain ledges, where ice can have had no erosive power. They must have been caused by frictional drag when the lava had chilled to a solid or semisolid crust.

On many of these fluted faces another curious feature may be observed, namely, streaks of minute hematite crystals. Locally the hematite is concentrated in bands on the crests of the furrows, from which smoke-like trails of hematite dust branch at right angles. Apparently when the separate blocks of lava were pulled apart, fumarole gases made their way along open joints, depositing iron oxide in the initial cavities and then spreading upward as the cracks gaped wider. Elsewhere on the Watchman, hexagonal plates of hematite, up to ¼ inch across, may be found coating joint planes, and much of the brown staining seen on the lavas results from the hydration of this mineral.

The Watchman flow is one of the youngest of the pre-caldera andesites and perhaps coeval with the andesite of Sentinel Rock. Probably it is younger than any of the lavas of the Hillman Peak cone, with the exception of the flow which escaped from Forgotten Crater. It is, however, older than the dacites erupted from the Northern Arc of Vents, for whereas only the lower margins of the dacite flows have been glaciated, all but the highest crags of the Watchman flow have been overridden by ice.

## The Hillman Cone

The highest point on the caldera rim is the summit of Hillman Peak, formerly known as Glacier Peak (see plate 11, figure 2), which rises to an elevation almost 2000 feet above the waters of Crater Lake. Here, as Diller long since pointed out,

> the layers of lava have a decided upward curve when viewed from the lake, and suggest that the volcanic vent from which the lavas of that portion of the rim issued was not central over the lake, but much closer to the western border. This view is fully borne out by the character of the igneous material of Glacier Peak. It is composed in small part of darker slaggy andesites and much red, yellow or whitish fragmental material which is highly colored, as if by the escape of hot volcanic gases near the vent. From the lake these colored patches are brilliant in the morning light.

Clearly, Hillman Peak is the remnant of a parasitic cone on the side of Mount Mazama. When the caldera was formed, the eastern half of the Hillman cone disappeared, revealing a perfect cross section through the central conduit.

In its original state the cone measured approximately ¾ mile across, and it rose to a height of perhaps 1000 feet above the adjacent slopes of Mount Mazama. The lower half of the cone is composed of dark-gray and black "cinders" and scoriaceous tuff breccias (plate 29). The upper part, on the contrary, is made up of dark flows of andesite interbedded with coarse breccias. Much of the lava is kaolinized and propylitized, and some of the fissures are coated with opal and hematite.

In brief, the Hillman cone was built first by explosions of viscous scoria, and later by alternating outflows of lava and more violent, low-temperature eruptions. The flows were confined to the immediate vicinity of the cone, and probably activity came to an end before the Watchman andesite and the neighboring dacites were extruded from the Northern Arc of Vents.

Fortunately, the conduit of the Hillman volcano is perfectly exposed a short distance east-northeast of the summit pinnacle, and is easily accessible. In plan, it is approximately oval, measuring ⅓ by ⅕ mile, and is elongated in a direction more or less radial with respect to the former summit of Mount Mazama (plate 29). Most of the conduit consists of massive andesite devoid of conspicuous banding. Toward the center this andesite is generally of a pale-gray color, is traversed by widely spaced, steeply dipping joints, and is notably vesicular. Intruded into the pale lava is a denser, darker, and less vesicular andesite in which the jointing is more closely spaced. Similar relations have been noted in the conduits of the Union Peak, Mount Thielsen, and Howlock Mountain volcanoes.

Along the margins of the conduit there is commonly a thin skin of coarse breccia, deeply reddened by the action of gases. Within the conduit are muc