Mt. Tabor's Crater

City Acquired Mountain Park Site Back in 1909

Journal Staff Writer

Mount Tabor had its brief "gold rush" early in the 20th century and only recently an equally-absurd "uranium "rush."

The gold rush was a bit of foolishness that came indirectly from the unemployment problem of the time.

In 1909 the city acquired 200 acres on the mountain for a park site. It was decided to put idle labor to work developing the park and the city council appropriated $10,000 for the project.

The unemployed idle continued their idling habits even after going to work and only part of the project was finished before funds were overdrawn.

However, workers did succeed in clearing 8000 feet of driveway 32 feet wide from the summit to the SE Salmon street entrance. Grading was finished on part of this.

In 1913 the grading work uncovered evidence of a crater and for the first time Portland knew it had an extinct volcano.

Somehow word got around that these volcanic deposits contained gold. The gold rush was on. More that 1000 persons carried away quantities of the stuff before the myth died.

The crater was drilled 100 feet down for study and in 1952 it was marked by a plaque proclaming that Portland is the only major U. S. city with a volcano in its limits.

Mount Tabor had no gold, but it had other advantages worth more to a burgeoning metropolis. Natural slopes proved a desirable site for reservoirs serving the city's East side.

From time to time some ambitious ideas were cooked up to "enhance" the mountain's scenic attraction. In 1933 there was a proposal to build a 300-foot observation tower at the summit. Estimated cost: $500,000.

To be constructed of concrete, stone, marble and tile, the tower would provide a viewpoint 1200 feet above sea level. Restaurants and shops would be housed at various levels.

Another plan was to dig a tunnel into the center of the crater as a tourist attraction. Finally, there was a plan to link tunnel and tower with an elevator carrying visitors from deep within the earth to a point high above it.

These plans actually got to the city council level with serious consideration of asking government funds for construction.

Ultimately, Mount Tabor was left largely in its naturally beautiful state with no steel-girded elevators or monstrous cement towers. The volcanic cone was excavated enough to show the strata and open-air amphitheatre constructed.

Acquisition of the park area by the city resulted in the removal of one of the fine old landmarks atop the mountain. It was the John Smith mansion, built in the last 19th century by a railroad contractor who was wiped out in the financial panic of the early 1890's.

Noted for its numerous fireplaces and ornate woodwork, both inside and out, the house was considered by the city as a permanent park building at one time. Later the plan was abandoned and the house torn down.

Because of the reservoirs, the park had to be closed for some months in early World War II. Sabotage was feared but never developed. Guards were posted for a time and there were wire barriers around the tanks.

Business development of this community has been governed to some extent by the terrain. A few businesses have clustered on the saddle between the two summits for many years.

The western slope, with its more gradual incline, had proved the logical business site. A few shops and stores adjoin Portland Sanitarium hospital on SE 60th avenue and Belmont street.

About 2½ years ago 22 businessmen on SE Hawthorne between 47th and 60th announced they were banded together in a Mount Tabor Merchants association, Since then, they have made overtures to extend their jurdisdiction to 39th.

The development of splitlevel houses has made sloping Mount Tabor newly desirable as a residential area. The west slope has a generally modern residential face and many new homes have crowded right up to the edge of the park preserve.

A very recent development has bloomed in a narrow canyon at the head of SE Morrison street. For years the conyon was desolate, with only an old deserted mansion near its mouth.

This colorful old place, with iron dogs at the front door, winding staircases and a multitude of halls and rooms, was a fovorite "spook party" tour for teen-agers.

Now the street has been improved to the conyon headwall and a group of ultra-modern houses has gone up, affording tenants a degree of privacy seldom found in the city limits.

A revered Mount Tabor personality for many years was the late Chaplain John W. Beard, pastor of Mount Tabor Presbyterian church from 1923 to 1948.

After distinguished World War I combat record, the chaplain remained active in the military, Pacifists in the '30s reviled him for his outspoken insistence that a strong military is the best guardian of peace.

He returned to service with the national guard in World War II, retiring as a lieutenant colonel.

His hobby was retracing historic pioneer routes, usually on horseback or by canoe. Most notable adventure was a four-month, 2500-mile horseback trip at the age of 65. In 1848, with his wife, he rode the old Oregon trail to its beginning at Independence, Mo.

Portland, like much of the West, went crazy over uranium in the mid-50's. Everybody, it seemed, was buying Geiger counters and one chap claimed to have discovered uranium in downtown Portland.

Mount Tabor's volcanic ash drew these prospectors, as it had drawn the gold hunters 40 years before. But again the search bore no results.

Today Mount Tabor is one of Portland's oldest communities, yet one of its youngest. New homes continue to spring up and only a few spots show signs of serious blight. It is Portland at its typical best.

PORTLAND'S EXTINCT VOLCANO

As far as is known the City of Portland is the only city in the United States that has within its boundaries an extinct volcano. This interesting geological formation is located in the very center of the City in one of its largest public parks.

Mt. Tabor is a notable landmark of Portland, both geographically and historically. It was named after the Mt. Tabor of Palestine by Plympton Kelly, a pioneer settler whose father lived on its south slope. In interludes between fighting Indians and carving an existence out of the wilderness, young Kelly found time to become a student of history. He had once read "Napoleon and His Marshals" by Jool T. Headley, and was so impressed by the account of the battle between the French and Moslems near the base of Mt. Tabor that he decided to give the butte in the vicinity of his father's home the same name. The high hill on which he lived became known as Kelly's Butte.

The historic Mt. Tabor in Palestine is a commanding view point some six miles from Nazareth to the south of the Sea of Galilee. Thus it is not strange that one of the best viewpoints in the environs of the City of Roses should have been named after "an high hill" in Palestine by this fervent Methodist who probably never suspected that, as a volcano, long extinct, his Mt. Tabor had breathed fire and brimstone long before Mt. Hood was piled up.

This interesting feature became known in 1912, after Mt. Tabor had become a public park. During development work volcanic cinders were uncovered on its northwest face.

During the next two decades, excavations were carried on by the Bureau of Parks which intersected the cinder cone and the spoil was turned to good advantage in surfacing paths and drives, and in the construction of various landscape rockeries throughout the park system. This excavation was continued until the core and throat, and the flow of cinders from the blowout were fully exposed. So it remains today, a point of interest and education for those who frequent the park; a close-up of a once violent volcanic action.

In addition to its scenic and geological features, Mt. Tabor is largely covered with native Oregon forest trees and shrubbery. Its area is 200 acres, and it is an attractive feature park for every-day leisure and recreation, offering a commanding view in every direction.

Pages 24, 25, "City Review", Portland, Oregon, 1937

PORTLAND'S EXTINCT VOLCANO

Mt. Tabor, now a park in Portland Oregon, is a notable land mark, both geographically and historically. It was named after the Mt. Tabor of Palestine by Plympton Kelly, a pioneer settler, whose father lived on the south slope, and besides carving a farm out of the wilderness, was a Methodist exhorter and a student of history. He also engaged in Indian fighting. Somehow he found time to read "Napoleon and his Marshals" by Joel T. Headley, and was impressed by the account of the battle between the French and Moslems not far from the base of Mt. Tabor, and decided to name the butte back of his father's home, Mt. Tabor. His own high hill became known as Kelly's Butte.

Mt. Tabor, as all good Christians should know, is a commanding view point some six miles from Nazareth, the childhood home of Christ, to the south of the Sea of Galilee. It is not strange that one of the best view points in the environs of the City of Roses should have been named after "an high hill" in Palestine by a fervent Methodist, although probably never suspecting that as a volcano long extinct, it had breathed fire and brimstone; and that long before Mt. Hood was piled up. That interesting feature did not become known until in 1912 after it had become a public park, volcanic cinders were uncovered on its northwest face, in the development of a system of drives.

When the discovery was made an old Cripple Creek miner was present and created a lot of color by announcing that an assay of the cinders showed gold. Of course the gold strike was merely a hoax, but it led to further exploration and studies by geologists, notably the late Ira A. Williams who had reported the surrounding terrain rather extensively.

During the next two decades, excavations were carried on by the Bureau of Parks intersecting the cinder cone and turning the spoil to good advantage in surfacing paths and drives and construction of various landscape rockeries all over the park system, until the core and throat, and the flow of cinders from the blowout were clearly shown. And so it will remain for the interest and benefit of frequenters of the park, a close-up of volcanic action.

Further explorations are still to be made. It was the tentative theory of Williams that the cinder cone was a small blowout, perhaps a last gasp, of a major volcano the crater of which forms the base of the main butte. The top of Mt. Tabor is 100 feet higher than the cinder cone and is composed of a remnant of Satsop formation, or what is locally known as Troutdale. Satsop is a more recent blanket of spewed conglomerate composed of smooth boulders and water worn gravel in a clay mix. The quartzite it bears is characteristic indicating that its source is the Rocky Mountain region.

Evidence would seem to indicate that the cinder cone has never been covered by the Satsop deposit, locally known as Troutdale formation. Possibly it was spared from obliteration from Satsop flow by cleaver effect of the basaltic body of the mountain; or it might have been a vent of a more recent geological era. It is buried in fine earth such as sand dune deposition, as if in the lee of the mountain.

Maybe the old volcano got sore from being kicked around after it had been ignominiously buried and spoke up with a last spitting of fire.

Williams recommended piercing the main butte east and west with a tunnel below the Satsop, and sinking a shaft from the summit, from which he expected to trace the breadth and depth of the main crater. According to his preliminary guess, Mt. Tabor belonged to an earlier age than Mt. Hood, and had probably subsided enough to be covered by the Satsop, followed by a rise to present elevation.

Mt. Tabor Park is the principal site of the City's water supply storage, having four major reservoirs and one high service. The excavations for these reservoirs have given valuable evidences of the geologic processes. Reservoir No. 1 and also the high service reservoir on the north slope, did not penetrate through the Satsop in 40 feet of depth. No. 2 is quite below the Satsop and the excavation was largely in hard igneous rock and volcanic scoria. Reservoir No. 5 on the west face of the butte was excavated mainly in heavy stiff blue clay with water bearing seams. No. 6, immediately below No. 5, was in what is known as common earth excavation, no boulders or gravel occurring.

In the early days of Portland there was a log school house on the [illegible] of the butte.

Besides its scenic, and geological features, Mt. Tabor is largely covered with the native Oregon forest trees. Its extent is 200 acres, and it is a valuable feature park for every day leisure time recreation.

—C. P. Keyser,
Superintendent of Parks

No 2 on the flat at the base of the butte southeast, is clear out of the Satsop. The excavation for it below the top three or four feet of dirt ran into huge random fragments of lava rock loosely bedded, in the west half and into hard compact sand in the east half.

MT. TABOR PARK

Geological and historical as well as architectural and horticultural distinctions may be found in Portland's parks. In Mt. Tabor park on the west flank of the 643 foot butte in the center of the city's east side residential district are remnants of what once was an active volcano.

The park's outdoor volcano theater reveals the story of the one-time crater. In the cross-cut of the west wall of the bowl may be seen beds of material that fell out of the crater sloping to the north and south away from the center. Beds of material that fell inside the crater slope westward toward its center. Near the top is a lens of yellowish brown, the burnt gravels that were thrown up by some extra violent explosions but which fell back within the crater. The easterly wall of the cut shows cinder beds sloping to the north, the east and the south away from the crater.

Geologists estimate that the geological stage for the building of Mt. Tabor was set 35,000,000 years ago when the Columbia river basalts began flowing over the vast area of what is now Oregon, Washington and Idaho.

Excavations carried on during development work in the park in 1912 exposed the cinder and rock of the old crater. Cinders were being used in surfacing paths and drives in the park, the interesting lava rock for construction of rockeries and other landscape details when geologists discovered the historical significance of the cut which exposed core and throat of the cinder cone.

It was their theory that this cinder cone is evidence of a one-time fiery blow-out and that the Mt. Tabor volcano breathed its hot gases and spewed its pyrotechnical displays even before Mt. Hood's impressive peak took its place on the horizon.

Mt. Tabor park was named after Mt. Tabor in Palestine by the pioneer settler Plympton Kelly, a student of history, whose family home was on the south slope of nearby Kelly's Butte. Acquisitions of properties for the park began in 1909 and prior to that the city had bought as long ago as 1893 sites for two water reservoirs. In the next 20 years other properties were annexed to accommodate two more major reservoirs. These basins are graceful features of the park's landscaping, and the white plumes of water founting for aeration in the summer months on the high elevation may be seen from many sections of the city.

From the winding drive through the park may be obtained fine panoramic view of the city and surrounding countryside. Native trees and shrubs are emphasized in plantings in the park and handsome groves of trees are attractions to picnickers for whom tables, benches and outdoor fireplaces are furnished by the Park Bureau. The playground area at the top of the hill includes apparatus, wading pool, sandboxes, a handball court and five tennis courts. Programs of varied nature are held in Volcano amphitheater near the S.E. 69th and Belmont Street entrance. Another entrance is at S.E. 60th and Salmon. The Mt. Tabor bus services the park.

#3003

Portland Oregon, August 31, 1961

Mrs. Emily Moltzner
Oregon Geological Society

Dear Emily:

On your request for an account of how and when the cinder cone in MtTabor Park was discovered, or perhaps I should say uncovered, I will endeavor to give you the story as I recall the incidents, together with two papers that I have dug out of the files in the office of the Superintendent of Parks that I will append. I expect sporadic newspaper reports pertaining can be traced: here I will cite particularly, Oregonian 10/1&3/13; 8/19&25/29; 2/18/34, an obit on Ira Williams.

The following Statement is by Charles Paul Keyser, Member American Society of Civil Engineers, sometime Superintendent of Parks and Public Recreation in Portland Oregon. First I will sketch a thumbnail history pertinent to my position.

I entered the service of the Municipal Board of Park Commissioners on March 17 1909, was appointed to the position of Executive Head of the Bureau in August 1917, and continued in that capacity until retirement on December 31, 1949. My initial appointment was classified as Civil Engineer in the Department of Parks. When in 1913 a sweeping City Charter revision abolished the Park Commission and set up the Commission form of government organized in five administrative Departments, our unit, still self contained, was allocated to the Department of Public Affairs, and officially ever since has been designated the Bureau. In either case the Superintendent was the administrative head, conforming to policy set by the tax levying City Council in the annual budgets, in the main.

My position when I entered the service in 1909 had been newly created. Theretofore E. T. Mische, who had been appointed Superintendant a year previously, had been getting along without a much needed principal assistant, and I was expected to be the right kind of help in working out his expansion and development schemes. Besides ordering engineering and architectural works and their operation in the park system, pretty much delegated to the Engineer, while the Superintendent managed and supervised the various phases of planting including gardening and propagation, we prosecuted an extensive schedule of land acquisition. Our main source of appropation was a one million dollar bond issue that Mische had to start with in 1908. We did right well for five years, and then went back to the people for more money and did not get it. In the Spring of 1913, in the same election in which the Park Commission was abolished, Mische's two million dollar bond measure failed to pass, which for him was a handwriting on the wall . He failed to click with the new regime, struggled along bravely for a couple of years longer, and in 1915 stepped down and was succeeded by J. O. Convill who had been appointed by Commissioner Brewster as Assistant Superintendent in charge of maintenance and operation. Convill could also double in brass. He had been a notable college athlete. His extensive background in sports and savvy of publicity made him especially useful to Brewster who was rather inclined to promoting recreational activities with such appropriations as he could wangle, until the time would be right to plug for more bond or other capital expenditure. The Engineer continued on as a second fiddle to the Superintendent until World War I broke. Convill enlisted. I volunteered, was rejected and did my bit to keep the home fires burning for the duration. Mische had already decamped, and was doing cantonment work for the Navy. When Convill was mustered out he elected to engage in other pursuits and Keyser was in the saddle permanently. And so it would appear that he should be blamed principally for what has taken place in Mt. Tabor Park since the City came into possession, with due credit to Mische for design of development.

Mt.Tabor is a natural for a public park. It is said to have been named by Clinton Kelly, a notable pioneer preacher, after the Mt.Tabor in Palestine. The historic mountain near the Sea of Galilee , twelve hundred feet higher in altitude is more of a mountain, but Kelly's Mt.Tabor standing at altitude 643, commanded a view of waters and woods and lofty mountains not to be despised, and contained a volcano that Kelly wot not of in his lifetime. In 1909 most of the high ground was still in more or less neglected ownerships following a real estate bust of the nineties. Money would buy them at moderate prices. Fifteen years earlier the Bull Run water supply had been brought to Reservoir No 1 which is niched into the south face of the mountain with an overflow level of 412. Now the Board of Water Commissioners was getting ready to construct two additional main reservoirs, and between Waterworks and Park acquisitions the city engaged on on a program to round out 200 acres all told. Mische wrought well to corral the 200 acres for park purposes at the opportune moment, and although it took a major fraction of his first million no one will question that it was money very well spent. In my estimation making Mt Tabor a most outstanding feature of our park system was his greatest single achievement, even if he was disappointed in failing to acquire the property fronting on S.E. 60th Avenue between Reservoirs #6 and #2, and a more ample margin on the eastern slope.

On the west slope are a pair of mounds standing like shoulders with a breastbone ridge between. They are about equal in altitude , standing a hundred feet or so lower than the crest of the mountain. Reservoir No 5 was nestled into the hollow between the south mound and the ridge. Between the north mound and the ridge is a deeper hollow or little valley running down to S.E.Salmon Street. For convenience in our discussion we might designate the left shoulder Mound Satsop, and the right shoulder Mound Cinderella, noting that they differ radically in composition. We are here concerned mainly with Mound Cinderella which is our extinct volcano in question. Reservoir No. 5 has the same overflow level as has No. 1.

It was not known that the City had bought up an extinct volcano. The first sign of volcanic eruption that came to light in the confines of the newly acquired public property was when a streak of volcanic cinders in situ was exposed in grading a sidehill cut in Mische's Interlink Drive. This discovery, on or about September 10, 1913, was at a point directly across the little valley from Mound Cinderella, in the north slope of the ridge. Perhaps this is as good a place as any to mention a a hoax that was perpetrated in connection with the find. A Park employe salted a sample of the cinders with some rich ore from Teluride, Colorado which he beat up and had assayed. When the assay showed nearly $1100 to the ton it caused considerable excitement — almost a gold rush . Further digging exposed cinders and scoria in the toe of the slope of the east base of Mound Cinderella. This led to prospecting the whole mound, revealing that the extraordinary formation was completely concealed under a blanket of fine grained soil in places not more than three feet in thickness. We continued our excavations over the following several years until we had truncated the east half of the cinder cone leaving it standing with a vertical resection cut through the heart of the vent, and in the space from which the cinders and clinkers had been borrowed for use in constructing footpaths and rock walls in the various parks, an openair theatre with a subjoined picnic space was worked in. Before we stopped the mining operation Ira Williams was called in to to give a geologist's report and recommendation. Our excavations and test borings had disclosed Cinderella's secrets, except we had not probed deeply enough to tell exactly her connection with a parent volcano that Williams believed had been overlaid by the mass of Satsop that forms the main mass of the upper hundred feet or more of the mountain. It is conceivable that means might have been found to verify his theoretical conclusion by probing with shaft and tunnels that he had in mind, if his career had not come to an untimely end. I should have been a hound like Sutro who persisted and prevailed in his famous tunnel project to tap the Comstock. Hope still flickers that some scientific and/or civic Influence will get this done.

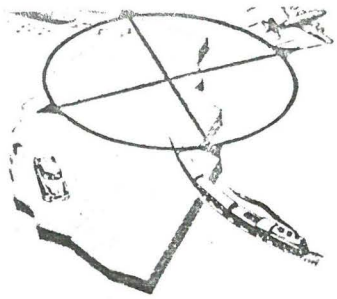
All the way the unkind Supt.of Parks was dogged and harried by landscape gardeners and homemakers and others who coveted the treasures of Cinderella. When in the time of World War I Portland became a great ship building city, it was proposed to utilize the cinders as a light-weight aggregate for concrete hulls. And then there were those who muttered,not understanding how the taxpayers could be denied while minions of government were using the precious material prodigally in fixing up the Public's parks. There were conscientious objectors who deplored the desecration along with the scientific minded who feared we were going too far with our excavations. In the end this Horatio managed to escape with his hide and reputation for resistance. However it must be allowed that the Geological Society of the Oregon Country came forward ~~xxxxxxxxxxxxxxxx~~ when the time was right to protest consistently against any further removal, giving the support that was required to preserve our Cinderella as a unique feature of the Park system of the City of Roses. It matters not at all who happened to be present at the accidental discovery of the "gold mine". Whosoever will unveil the inner secrets of Mt.Tabor's volcanic origin should be entitled to an accolade.

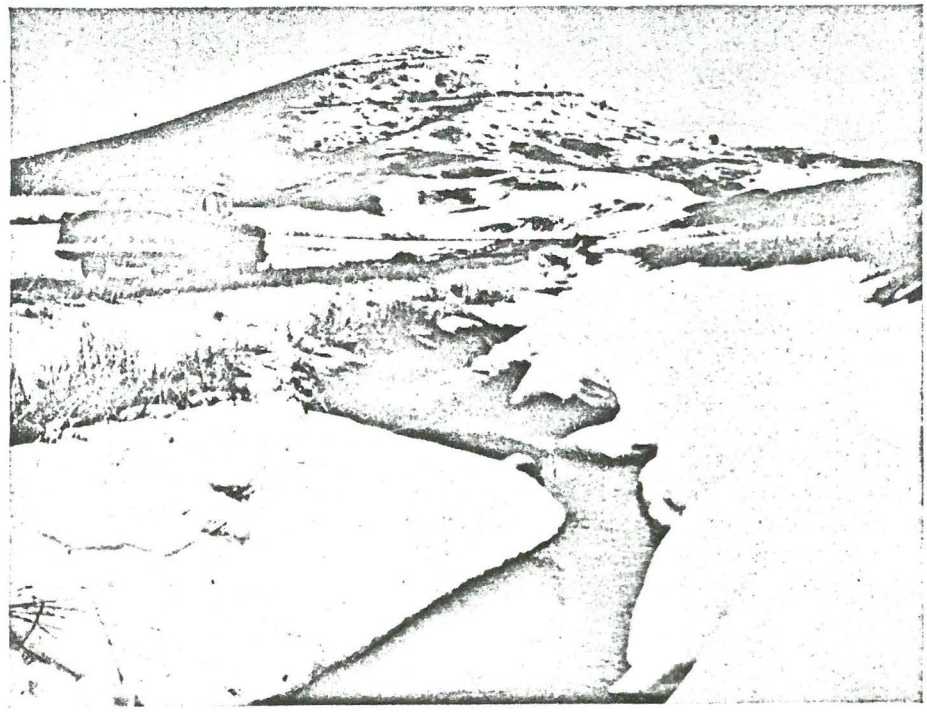
Very truly yours

Charles Paul Keyser

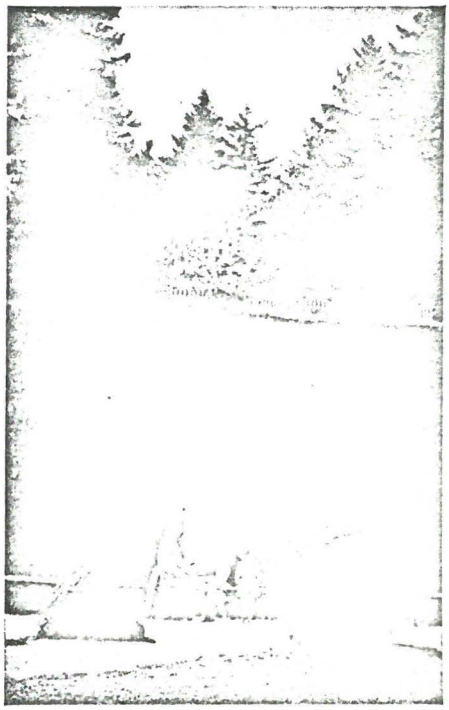
Charles Paul Keyser

March travel . . . in and beyond the Pacific Northwest





Spiral road *winding up slopes of historic Steptoe Butte is plainly visible as you approach. Road is black-topped, of two-car width. From the summit you will look down on Washington's Palouse country, a wheat growing center of the West*



From nearby *parking lot you can see layers of gravel, cinders, lava rock that Portland's Mount Tabor volcano spewed forth*

South of Spokane . . . a three-mile drive to a hilltop park

In March, winter and spring seem to meet head-on at Steptoe Butte, 36 miles south of Spokane. On its shadowed north side, snow banks may line the icy road that spirals three miles to its top, but on the south side you'll feel the balmy promise of spring and look down on a country already faintly tinged with green.

The massive, pyramid-shaped bulk that is Steptoe Butte rears 3,613 feet above the fertile plateau of the Palouse Country, a vantage point worth driving a few extra miles to ascend if you're traveling U. S. Highway 195 between Spokane and Colfax. From 10 miles in any direction, you'll see it dominating the landscape.

A state park of 136 acres surrounds Steptoe Butte. Signs indicate turnoffs to it from U. S. 195, two miles south of Steptoe, and at Cashup. A third highway marker directs you west from State Highway 3. The park entrance is not more than six miles from any of these three points.

To drive to the summit in March, it would be wise to carry chains, for the road may well be slippery for the last mile or two. Or you can park your car and walk, if you're dressed warmly enough to withstand the wind that knifes from the north. There is respite as the road traverses the south slopes, which should be sunny and quiet during March.

Steptoe Butte affords no crevices where trees can grow, except for the straggle of wild cherry and service berry on the shaded side. From the summit you can look north to the Selkirks, of which this butte is an eroded remnant, across snow ridged fields with farm buildings huddled in the lee of sheltering trees. To the west a dark line of willow brush marks the canyon of the Palouse River, with the Cascades dwarfed in the distance. Close at hand to the east are the Moscow Mountains, preview of the Bitterroots, which ascend in turn to the Rockies. At your feet as you look south spreads the mosaic of rich brown earth and fields of yellow stubble of the Palouse, with the Blue Mountains for a backdrop. You may be lucky enough to see a golden eagle or two wheeling in the sky overhead.

Steptoe Butte bears the name of a pre-Civil War Indian fighter and army officer, Lieutenant Colonel Edward J. Steptoe, who in 1858 fought a skirmish nearby that touched off three years of hostility and reprisal.

Inside Portland . . . an ancient volcano

Whether you're a visitor or a native, a crisp, clear day in March is just the time to explore Mount Tabor, an extinct volcano within the city limits of Portland. It lies in the northwest corner of Mount Tabor Park, 200 acres of natural woodland situated in the southeast quadrant of the city.

Mount Tabor makes a good spur-of-the-moment destination because of its proximity—no more than half an hour's drive

for Portlanders, and less than four miles from downtown.

Roads wind through the park on an easy grade to the parking lot overlooking the once fiery throat of the volcano, now used in summer as an outdoor theater. Geologists say the Mount Tabor cinder cone is a product of volcanic activity that occurred roughly 10,000,000 years ago. Park drives and paths are surfaced with cinders from the old crater.

Before you leave the park, look for the fine example of sculptor Gutzon Borglum's work—a statue of Harvey W. Scott which occupies a crest at the opposite end of the park from the volcano. Scott was the pioneer editor of the *Oregonian* whose first news writing task as a young man of 27 was to pen the editorial announcing the assassination of Abraham Lincoln.

The road that circles Mount Tabor Park affords some unusual views of Portland. Looking toward the Columbia, Willamette, and the distant downtown skyline, you get a very clear idea of the shape of the Willamette Valley, with Mount Hood and Mount Jefferson looming to the east.

Scanning the skies . . . real and simulated

The layman has more reasons than ever for wanting to understand what goes on in outer space. A first step in cosmic comprehension might be one of these two: a visit to a planetarium or an evening of studying the heavens through a powerful glass at an observatory.

Four Northwest planetariums and observatories are open to the public at certain times. Since three are connected with universities and accessible only during the academic year, we want to mention them before the school term is over. From a weather standpoint, March is not an ideal time for sky observations, but several constellations are relatively near the earth at this season and shine most brightly in the dark spring sky.

You'll need to wait for a clear, starry night for best results at an observatory, but weather is no problem at a planetarium, which demonstrates the features of the heavens by use of a projector installed in a room with a circular dome. As you look up into a simulated deep blue sky, you see the stars swing through their seasons, becoming dim or brighter according to their distance from the earth.

Planetariums

The planetarium that occupies the center of the Northwest Room in Portland's handsome Museum of Science and Industry is the newest in the West. It seats 80 to 90 persons for its half-hour shows (which are accompanied by explanatory comments); these are presented daily at 2:30 P.M., and at 2, 3, and 4 P.M. on Saturday and Sunday. Admission charge is 40 cents for adults, 20 cents for children.

At Pullman, in Room 121 of the Institute

For travel planners, a March check list

Up the coast to Alaska. The first of five package tours from West Coast cities to southeastern Alaska departs Los Angeles May 19. You travel by train to Seattle, then enjoy a 9-day cruise to Skagway aboard the *S. S. Prince George*. Highlights include sightseeing in Ketchikan, Prince Rupert, Juneau (Mendenhall Glacier), and Wrangell, and a side trip on the narrow-gage railroad to Carcross. Minimum all-inclusive prices start at $649 from Los Angeles (19 days), $599 from San Francisco (17 days), and $499 from Seattle (15 days). For information and reservations, see your travel agent, or write Random Travel Inc., in all three cities.

European car rental/purchase. If you're interested in renting or buying a car in Europe, you can get the details on leading European makes from the free 1960 catalog of: Auto-Europe, Inc., 268 South Beverly Drive, Beverly Hills, California, or 1911 Fifth Avenue, Seattle.

New jet service. United Air Lines' DC-8 jet transport service will be expanded in March, connecting California with the Pacific Northwest and Hawaii. On March 1, jets will begin twice daily flights from San Francisco to Seattle-Tacoma, with return flights continuing to Los Angeles. Beginning March 14 jet service will be expanded to include Hawaii with six flights a week from Los Angeles and from San Francisco to Honolulu. The Honolulu jet flight will cost the same as conventional prop flights, with no additional charge for jet service.

For foreign travel. Air France has prepared a pocket-size, 24-page currency converter giving U. S. dollar equivalents of 63 foreign currencies. The free booklet can be obtained from Mlle. Colette d'Orsay, Air France, 683 Fifth Avenue, New York 22, or from local Air France offices.

Western vacation service. For anyone planning a ranch vacation, the Guest Ranch Reservation Center has listings of more than 250 summer, winter, and year-round guest ranches throughout the West, and offers free information and reservation service. Write Guest Ranch Reservation Center, 6115 Selma, Hollywood 28.

Motoring through Britain. If Britain is on your European motor tour itinerary this summer, you'll be interested in the new brochure "Dine and Drive Thro' Britain." The gourmet guide for motorists lists names, locations, and telephone numbers of 400 hotels, inns, and restaurants throughout Britain. The booklet is free; write: The Victor Britain Rent-A-Car System, 12a Berkeley Street, London, W. I.

What a travel agent can do for you:

Provide information on tours; reserve space on air, rail, bus, and steamship lines; make hotel, ranch, and resort reservations; take care of trip planning, including side trips and special events. Most agencies do not charge for arranging transportation, "package" tours, or accommodations, but some may charge for "custom" tour services.

MOUNT TABOR

Mt. Tabor is one of three prominent isolated buttes rising in East Portland in the angle betseen the Columbia River and the Willamette River. Two of these buttes, Rocky Butte and Kelly Butte, are obviously volcanic piles of lava, the former preserving even a bit of its former crater.

The origin of Mt. Tabor, however, is not so obvious. Unlike the other two it is heavily timbered, is surmounted by a flat surface and has gentle slopes so that it has always been a favorite visiting and picknicking place for the people of Portland. These characteristic features are also somewhat suggestive of its origin.

To the students of the geology of Portland it is a well-known fact that a formation (Troutdale) of poorly consolidated water worn gravel, volcanic sand, silts once buried this region to a depth of at least feet. This formation has since been largely stripped away except for remnants that cling in the form of benches on the side of some hills, that occur as scattered gravels on the above three hills and included as part of the material ejected by and still inclosed in the cinders and slopes of the volcanoes.

The Columbia, Willamette and Clackamas Rivers were responsible for cutting away most of the Troutdale formation. The Willamette was always deflected away to the west by the great rocky masses of Mt. Scott and contiguous hills. The Clackamas once had a course eastward of Mt. Scott and associated hills and to the north; thus the Clackamas and the Columbia shifted back and forth in various channels as they cut down to their present level and must have

swept past the sides of these three buttes.

It is apparent that the rocky masses of Rocky and Kelly buttes stood as resistant masses to the erosion of these streams, though on both are scars showing that their sides were deeply cut into. We might reason by analogy that Tabor Butte was preserved for the same reason; however, proof of resistant rock in its walls is lacking.

Mt. Tabor is inclosed at the bottom by contour 300' (above sea level) and is surmounted by three peaks, the elevations of which are: at the N 450, at the W 529.1, at the S 642. Between the north peak and the two southern ones two canyons whose heads nearly meet sharply separate into two parts, a northern and a southern hill. The eastern slope is steep, the western gentle and crenulated by draws. Either streams flowing down the slopes of Mt. Tabor have found the contact between the northern and southern hills so weak that they have cut deeper and larger ravines here than at any other part of the mountain, or else one hill was built against the others at a later time and the contact was not perfect.

The northern hill is so flat surfaced that it is occupied by streets and buildings. At many places there is proof that it is composed of lava (andesite) in the main, though on its slopes are gravels and sands. Also at the southwest end of Mt. Tabor lavas were found when excavating for the reservoir and the rock was used to wall the reservoir itself and to build the wall of the surrounding park. At no other place on the mountain is there any exposure of lava rock. The road cuts on the east side show water-worn gravel, poorly bedded and not bedded at all. This material looks as though

it has slumped down the hill somewhat. The cut north of Reservoir No. 1 shows bedded sands and gravel. The reservoir on the southwest side and up on the hill is founded on "clay". Excavations for the water tower, at an elevation of 590 found gravel to a depth of 40 feet or down to 550' in elevations. Over the slope of the mountain and at various places on top water-worn gravel was found. Drill holes near the "volcano" found sand and gravel down to a depth of 310' in elevation.

Thus, except at two places, there is no evidence of hard lava rock. If the mountain is composed everywhere, except those two places, of sand and gravel, it is hard to understand how it could have stood when all the rest of the region round about has been eroded away. It appears most reasonable to suppose that at places hard lava rock does exist, which served to armor the mountain against the powerful cutting of the Columbia and Clackamas Rivers. It seems probable that the steep eastern slope is walled with lava, now covered by sand and gravel that has slumped over it. If so, then the north hill, the lava at the reservoir and the east slope would have served to deflect streams flowing from the south and east to the west and north. The explanation appears reasonable for streams working from elevations 400 down to 300. What protected the upper part when the stream was cutting at the higher levels?

The answer is not available but we may speculate somewhat. Suppose the north hill is an old volcano from which a lava flow flowed southward. Suppose the original volcano was 500 feet high then the lava at the south end of Mt. Tabor could reasonably be expected to have stood 375 feet high. This hill was buried, along with

the whole region, with Troutdale formation. Then the streams started to cut down. The Willamette was always deflected away from Mt. Tabor by Mt. Scott. The Clackamas was deflected clear of the south end of Mt. Tabor by Kelly Butte. The Columbia in most every possible course would Mt. Tabor.

If the above theory is true then the main body of Mt. Tabor is not a volcano and it owes its existence to the vagaries of erosion. If it was so situated that it was surrounded by protections on every side until the streams had cut to a low level, then Mt. Tabor was able to protect itself.

The above problem settled as well as possible, let us turn to a feature which makes Mt. Tabor unique. It bears on its slopes a cinder cone of a volcano and is therefore the only cinder cone within the city limits of any city in the United States except in Bend, Oregon.

The cinder cone stands on the northwest corner of the south hill of Mt. Tabor. In Fig. 4 the old volcanic pile and its lava flow is shown as grey. The white is the hill of Troutdale sediment left and the dotted area is the volcano.

Where the volcano now stands there was a depression between the north and south hill as proven by the cinders occupying a lower level in this section than to the south. The growth of the volcano did not fully fill the depression and two draws exist on the north and south side of the volcano which have since been enlarged by erosion. Also the cinders, as shown by borings, are deeper on the north than on the south side.

When the volcano first erupted some lava flowed out, and then upon this lava fell about 10 feet of cinders. The cinders had time

to weather to red clay before the next eruption occurred. The second and last eruption built Mt. Tabor's volcano to its finished height. This was somewhat higher than the present mound, probably by about 25 feet.

Some of the material blown out of the volcano fell some distance away. For instance, on the top of the south hill are many pieces of scoria, only slightly weathered, that lie on the surface mixed with the water-worn boulders of that surface.

The vent through which the gases exploded cut through the Troutdale formation and carried up the water-worn pebbles and some boulders of the formation. These pebbles are commonly burnt and some are split by the great heat. Some of the burnt pebbles fell and were mingled with the cinders. The burnt pebbles first blown out fell on the surface immediately adjacent and were found, by drilling, to lie under the cinders. More of these burnt pebbles are found near the throat of the volcano than further away.

The volcano may be classed as of the explosive type. It probably resulted from the last accumulating gases from the source that furnished the lavas of the north hill. These gases were unable to explode through the old neck of north hill and broke through slightly to one side.

The gases with a temperature of about 1,000° centigrade carried with them some of the residual liquid lava. This was blown into the air as rock mist (ashes), as clumps of liquid rock filled with gas in bubble holes (scoria and cinders or slag) and a few plastic masses of liquid that, spinning in the air, were rounded into bombs. The heaviest pieces fell closest to the throat and the finer farther away. Most, of course, fell close at hand. Hence, a mound or cinder cone

resulted.

First came an explosion which was followed by a rather long period - perhaps a day - of streaming or rushing gases. It was the gases moving out at high velocity during the later period that carried most of the ashes, cinders, bombs and burnt pebbles to the surface. These materials fell as intermittent showers and built up the cone. They fell on slopes determined by the angle of slope on which they could lie and a slope determined by the quantity of material that fell near and at varying distances away.

The streaming gas kept the throat open and as the gases emerged they expanded and swept the material at the orifice away to form a crater. As long as the gases streamed, their pressure kept the walls of the throat from falling in. When, towards the end, the pressure was reduced, the wall collapsed. Some of the collapsed material was cinders and some was the pebbles and boulders of the Troutdale formation. This collapsed material clogged the throat, blocked back the gases until the gases accumulated sufficiently to blow the collapsed material out.

The material blown out by the last gasp fell in the crater. It was not burnt as much as the previous material. It consisted of the water-worn boulders and the ashes made of broken-up cinders and the finer sands and silts of the Troutdale formation.

There has been offered another explanation of the "bedded water-worn pebbles" than that given in the paragraph above. This other theory is that it was washed in. However, the volcano shows too little evidence of erosion for one to accept the theory that the whole was buried by the Troutdale at a later date. For the material

to have been washed from the south hill there must have been a continuous slope from south hill to the volcano. Fig --- suggests that this was a fact.

Up to this time the slope of all the material in the volcano was away from the throat. When the last gasp had ended, the open throat and the crater collapsed and the adjacent material fell into them. This back infall is shown in Fig --- . The slope of these inward dipping beds converging to a point tell us where the throat of the volcano is -- about 25 feet due west of S in Fig .

Since that time erosion has done less to destroy the volcano than man. On the south side erosion has cut the initial draw between the volcano and south hill deeper so that cinders are now found on the south side of the road.

GEOLOGY OF MT. TABOR

The late Ira Williams made a special report on the Geology of Mt. Tabor about ten years ago for the Bureau of Parks. What follows is a brief outline of his opinions. He died shortly after and never followed up his speculations with definite findings based on adequate explorations. Some test holes were later drilled in the cinder cone, which he averred was a blowout, a last dying gasp of an older volcano. To get a better conception of the geology of which Mt. Tabor, (as well as Rocky Butte, Kelly Butte, an other neighboring buttes, which) is one of the landmarks of ancient eruptions, a preliminary reading of Williams' Geology of the Columbia Gorge, which is in the Public Library, is essential.

Williams believed that Mt. Tabor volcano had erupted and subsided ages before Mt. Tabor (the Mt Tabor we know) appeared, and had subsided and then was obliterated with the flow of what is known as Troutdale or Satsop formation of which the top one hundred feet of Mt. Tabor is composed. He expected if a shaft were sunk from the summit with horizontal drifts at various levels, the explorations would discover the main crater of the ancient volcano with the rim roughly at the level of the cinder cone, and that the cinder erupted from a vent in the wall of the crater. He thought that after the spewing of the Troutdale formation over the landscape, there had been erosion of deluge proportions which had left the hard rock buttes standing as we know them.

When the city required the property for park purposes some 35 years ago, no one knew of the presence of cinders until grading operations in construction of a drive exposed them and led to further exploration and finally a resection of the cone down through the cone or vent, and left a sheer wall of clinkers and cinders which clearly shows how the cone built itself.

Some day a shaft will doubtless be sunk from the summit to intersect a horizontal drift under the Troutdale formation to carry out Williams' idea, and possibly it can be used as an object lesson in geology, similiar to popular visiting of caverns.

The Troutdale formation is a dried-up, plum pudding of water worn gravel, in a doughy matrix of clay, Characteristic of it is the occurence of quartzite, a mineral which is foreign to the country structure west of the Cascades. It was a vast plum pudding for it covered not only extensive areas of the lower Columbia and Willamette Valleys but also broad reaches of Western Washington up to Puget Sound. All of the excavations of reservoir No. 1 which is in the ~~west~~ SOUTH slope of Mt. Tabor and forty feet deep was dug in this Troutdale formation. Reservoir No. 2 down on the flat was carved out of hard lava rock in it lower levels.

According to Professor Condon the eminent Oregon geologist, The West Hills and the Coast Range are of the same era as Mt. Tabor. He pretty well supported his dictum in "The Two Islands" that the Willamette Valley was at one time a sound: that the Oregon littoral had risen out of the sea, then sunk then risen again. It is likely that Mt. Tabor has been shuck up and buried quite some, and that before the debs, Hood, St. Helens, Adams, Rainier, and the other youngsters we know, had their coming out party.

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