

They look at balance in the earth

By The Associated Press

Scientists using a super-high-pressure device have simulated a squeezing effect deep within the earth that they say causes dense iron to sink to the core and lighter elements to rise.

Peter M. Bell of the Carnegie Institution of Washington, D.C. said Thursday that great pressures hundreds of miles below the earth's surface force the molecules of common elements into new kinds of crystalline structures.

As pressures and temperatures increase with depth, he said, some compounds become more iron-rich and descend toward the center of the earth.

Bell said this process — along with gravity, planetary spin and other forces — caused the earth to develop its dense, iron-rich, liquid and solid core.

"This process I describe probably controls the entire chemical balance of the earth," Bell said.

Bell and Dr. Ho-Kwang Mao use a device called a diamond anvil cell to recreate conditions inside the earth.

The machine uses both hydraulic and mechanical crank power to push together two diamonds that have a facing surface about one-25th of an inch in diameter. By applying a large force to a small surface area, they produce great pressures.

The researchers have attained pressures 1.7 million times greater than at sea level and, with the aid of laser beams, temperatures of 5,400 degrees Fahrenheit. This is equivalent to the pressure and temperature 1,800 miles below the surface, at the outer edge of the core itself.

The Carnegie researchers' experimental work also may explain a finding that has puzzled scientists.

Between 400 miles and 500 miles down, they find an area of seismic discontinuity which indicates a major change in the composition of material probably occurs.

Unable to take samples this deep, scientists have had to guess about the nature of the material until now, Bell said.

Man has not even penetrated the outer crust of the planet, which is only 22 miles thick, let alone the mantle layer, which goes down 1,800 miles to the outer regions of the core.

Using their special pressure device, the Carnegie researchers discovered that at pressures and temperatures equivalent to those 400 miles down, oxides of magnesium, iron and silicon undergo major physical and chemical changes.

These important minerals take on a new, compact crystal structure called perovskite. These perovskites are intermixed with another material, containing magnesium and iron, called magnesiowustite.

The researchers found that these mixtures remain stable to about 1,000 miles down. There, the magnesiowustite gradually depletes the perovskites of iron and the denser material sinks to the core.

As the iron goes to the core, the lighter elements rise and remix with the perovskites above, they say. This cycle repeats itself and it is this process that gave the earth the core-mantle composition it has now, they add.

May 10 - 1980

Expert gives molton rock 'even' chance

VANCOUVER, Wash. (AP) — Several scientists say Mount St. Helens is showing signs that an eruption of molten rock may be impending as the volcano continues to shake and bulge.

"There is at least an even chance for having an eruption that would involve magma," said Steve Malone, a seismologist at the University of Washington in Seattle.

His opinion was seconded by Leonard Palmer, a Portland State University geologist who lowered himself into the crater last weekend to gather samples. Palmer said the eruption was in its second stage, ejecting rock from the volcano's last active period 123 years ago, and soon could enter the third stage, in which new material is ejected.

Palmer is the geologist who predicted an eruption one day before ash and gas began spewing from the 9,677-foot peak on March 27.

Clouds hid the summit for most of Friday, but scientists said gas and ash eruptions continued for a third day following two weeks of relative quiet.

Several strong quakes shook the mountain Friday.

Volcano bulging slows; scientists try to guess next move

5/12

VANCOUVER, Wash. (AP) — The bulging on the north flank of Mount St. Helens has slowed some but not enough to cause wary scientists to relax their technical vigil of the 9,677-foot volcano.

A one-mile-by-one-half-mile area on the slope had expanded at a regular rate of five feet to six feet a day for several days, but the bulging slowed over the weekend to about three feet a day.

Clear skies Sunday allowed the peak to show off with intermittent belches of steam and ash, while scientists were busy trying to guess its next move.

One geologist has gone so far as to predict that the changing gravitational pull of the sun and the moon could trigger a lava eruption on May 21.

Eruption of Mount St. Helens creates 'extreme pilot hazard'

5/13

Al Eggers of the University of Puget Sound at Tacoma said the pushing magma and resisting rock within the volcano are delicately balanced. Strong gravitational pull could break that balance.

Scientists for the U.S Geological Survey placed no significance on the slowdown of the bulge — that it continued to move concerns them enough. However, if the bulging were to increase it could precede a major slide or eruption, scientists have said.

Geologists don't know the strength of the material on the bulging flank and they are not sure of the consistency of the magma below. Both frustrate efforts to guess a breaking point.

Eggers said gravitational pull, the force that

causes ocean tides and also affects earth, could act as the proverbial straw on the straining mountainside.

Earth tides will be at their minimum May 21 and "there frequently have been lava eruptions during such periods on other volcanos," he said last week.

Eggers and his students have monitored the mountain since earthquakes began a week before the March 27 eruption. Steam and ash have been blown into the air around the mountain in southwestern Washington, but no lava has been seen.

Don Mullineaux, a survey geologist and volcano-hazards expert, said Sunday the earth-tide theory has applied to some other volcanos.

"But on Mount St. Helens nobody has come up with any results we could go with," he said.

"Scientists in Portland, Ore., and at the University of Washington (in Seattle) daily monitor the mountain and earth tide data," Mullineaux said. "We aren't going to discount the theory — but I'm not interested in placing bets as to when it's going to erupt."

Earthquakes also continued at a fairly regular rate, UW seismologists reported. On Saturday, there were 24 quakes measuring 3.0 or greater on the Richter scale and 10 of those measured 4.0 or greater, Mullineaux said. The largest quake for the day was at 9 p.m. and measured 4.6.

Sunday morning the largest was 4.5.

VANCOUVER, Wash. (AP) — Mount St. Helens erupted a mammoth cloud of volcanic ash today, prompting federal authorities to issue a pilots' warning of "extreme hazard" in a 30-mile-wide area.

The plume from the eruption spread 20 nautical miles north-northeast of the peak and was 30 nautical miles wide, said Ken Shake, a spokesman for the Federal Aviation Administration in Seattle.

The ash cloud extended up to 18,000 feet above sea level, Shake said. Earlier eruptions from the volcano have reached that height.

The FAA's Seattle Air Route Traffic Control Center issued a notice to pilots advising that the entire grid was "an area of extreme hazard to aircraft" and should be avoided, he said.

One theory some geologists use to explain the eruption of Mount St. Helens is the idea that continents rest on huge plates of rock which spread from ocean floors.

The theory has been used to explain the "Ring of Fire" of volcanoes around the Pacific ocean and that the continents apparently have "drifted" apart after millions of years.

About 250 miles west of the Washington coast is an undersea mountain range, the Juan de Fuca Ridge. It is part of the East Pacific Ridge which runs from north to south Pacific.

The ridge is formed by molten material pushing up from the earth's interior. As the material hardens, it pushes the older portion of the ocean floor under the coast.

The lighter rock of the continent rides up over the thrusting ocean bottom, scientists say. This process is known as subduction.

As the former ocean floor is thrust beneath the continent, it heats up from the pressure. After pushing 40 to 60 miles beneath the earth's surface, the material becomes molten.

(Earlier story, page 15)

Scientists move away from volcano-

- but Harry stays put

TUESDAY, MAY 13, 1980

VANCOUVER, Wash. (AP) — Scientists are moving to safer ground farther from Mount St. Helens, but Harry Truman has vowed once again to remain at his resort, six miles from the newly active volcano.

The feisty 83-year-old had a cool reception for a Skamania County sheriff's deputy and a helicopter from a Portland, Ore., television station after a strong earthquake Monday caused a two-mile ice avalanche on the unstable north flank of the southwest Washington peak.

"I've made up my mind now more than ever not to leave," said Truman, drink in hand.

Deputy Ed Helland said Truman, believed to be the last resident remaining in the Spirit Lake area, would not be forced to leave.

Truman had told Skamania County Sheriff Bill Clausner he would leave if an emergency situation

arose. Clausner and Cowlitz County Sheriff Les Nelson reportedly met with Truman Friday.

"If he wants to go along the mountain, he can go ahead," Helland said.

Meanwhile, U.S. Forest Service crews plowed snow from logging roads to an unnamed ridge where scientists from the U.S. Geological Survey plan to establish a safer area for observation of the 9,677-foot peak.

Donal R. Mullineaux, a USGS volcano-hazards specialist, said scientists wanted to avoid further visits to Timberline, a turnaround at the end of state Highway 504 and the highest road on the volcano at about 4,400 feet.

Mullineaux said USGS personnel at Timberline felt the Monday quake, estimated at 5.0 on the open-ended Richter scale of ground movement, although clouds hid

the resulting avalanche from view.

The avalanche caused by the quake was large enough to be spotted by a passing plane and reported to the Federal Aviation Administration in Seattle.

However, it was picayune compared with the catastrophic landslides which scientists fear could come from a mile-by-half-mile area on the mountain's north face that has been bulging at a rate of about five feet a day.

The worst possible scenario has been presented by the USGS as a devastating fall of rock that could wipe out everything in a six-mile path to Spirit Lake.

Mullineaux said Monday's avalanche came from "a fairly thin ice field . . . about 100 feet (thick)" near the 7,600-foot level between Forsyth and Leschi glaciers — the lower part of the bulge — and rumbled about two

miles down the north flank of the peak.

Left behind was an ice wall "that is in a precarious position," he said. "This makes the Timberline area more precarious."

Scientists plan to leave instruments used to measure tilt at Timberline, while using the alternate observation area to check for levels of sulfur dioxide, he said. Scientists say lava eruptions often are preceded by a sudden rise in releases of the foul-smelling gas.

Mullineaux said the new observation area, which scientists had hoped to open last weekend, was at about the same elevation as Timberline and about a mile to the northeast. The ridge is separated from the mountain by a valley 2,000 to 2,500 feet deep, he added.

Volcano scientist notes quakes

-gravitation correlation

VANCOUVER, Wash. (AP) — A U.S. Geological Survey scientist contends there is a correlation between earthquakes on Mount St. Helens and the gravitational pull of the sun and moon.

But Dave Johnston of Menlo Park, Calif., says there is no positive correlation between eruptions of steam and ash and tidal action, which is caused by gravitational pull of celestial bodies.

Johnston, who is assigned to the volcano-watch program in Vancouver, made no predictions.

Al Eggers, a geologist at the University of Puget Sound in Tacoma, earlier had said a lava eruption could occur May 21 when the gravitational pull of the sun and moon could upset the

area more than 35 miles wide.

Intermittent eruptions of steam and ash from the summit of the 9,677-foot mountain were reported through the day.

Drifting ash from the mountain spread over an area 23 miles north-northeast of the peak and across an area 35 miles wide, said Ken Shake, a spokesman for the Federal Aviation Administration in Seattle.

The ash cloud extended up to 18,000 feet above sea level, Shake said.

The FAA's Seattle Air Route Traffic Control Center issued a notice to airmen advising that the entire grid was "an area of extreme hazard to aircraft" and should be avoided, he said.

The traffic-control center, which is in charge of temporary airspace restrictions around the

peak, issues ash warnings periodically, Shake said.

The eruptions observed Tuesday by a Forest Service plane followed the pattern of the last few days and resembled eruptions monitored in early and mid-April, said Donal Mullineaux, a U.S. Geological Survey volcano-hazards specialist.

Mullineaux said the extent of the ash drift was not surprising.

"The ash could drift as far as Montana," he said.

Forty earthquakes greater than magnitude 3.0 on the Richter scale, including one at 4.9, shook the volcano in the 24 hours ending at midnight Monday.

delicate balance between pushing magma within the mountain and resisting rock.

Arnold Okamura, a geologist for the U.S. Geological Survey, said Tuesday night "it's fairly quiet."

A USGS observer flew over the mountain for 4½ hours Tuesday afternoon and didn't see any steam and ash eruption activity, Okamura said.

A U.S. Forest Service spotter plane also reported nothing.

"They saw no changes on the mountain at all," said Forest Service spokesman Jim Unterwegner.

But planes were warned to avoid the airspace around Mount St. Helens on Tuesday as ash drifting from the active volcano spread over an



AP Laserphoto

Souvenir stands have become familiar sight around volcano.

5/14/80

Entrepreneurs spew souvenirs for the hordes

SILVER LAKE, Wash. (AP) — "Git yer Mount St. Helens hot dogs, boat tours, photographs, volcano seeds, volcanic ash, ashtrays, T-shirts, key chains, post cards, hats, buttons, frisbees, planters. . ."

Whatever comes out the summit crater of the newly active volcano may be small-time stuff compared with the outpouring of trinkets, curios and souvenirs being sold by entrepreneurs hopping to capitalize on the hordes of tourists they anticipate.

For example, Joel Andrews, an Auburn resident who operates concession stands at state fairs, has set up shop at Chet's Place, a fishing resort on a four-mile-long lake near this Cowlitz County hamlet.

"There's no place this side of the roadblocks where you can get a better view of the mountain on a clear day," Andrews says. "The mountain is only 20 miles away as the crow flies, and it stands out stark and clear above the lake."

He is only one of the businessmen to descend on the southwest Washington area since Mount St. Helens came out of a 123-year stupor and began belching gas and ash March 27.

Others have located in or around virtually every wide spot in the roads leading to the 9,677-foot peak.

Andrews began his operation after obtaining permission from Chet Huls, who developed the resort. Andrews moved in a tent for souvenir sales, a trailer to provide food service and a tour boat. He is arranging airplane flights from an airport in nearby Toledo, setting up another tent for an eating area and planning summer barbecues.

Already Andrews is selling items ranging from hot dogs to plastic packets of volcanic ash "right off the mountain."

He says he plans to make a key chain with a small glass container of volcanic ash.

Andrews says only a handful of the one million tourists he expects have materialized so far, but he's not discouraged.

"Immediately after the mountain erupted, we had huge crowds here," he said. "Then the crowds tapered off."

"But business is increasing, and we hope June, July and August will bring in the horde of tourists."

Eruptions slow some

VANCOUVER, Wash. (AP) — Clouds have frustrated attempts to measure the expanding lump on Mount St. Helen's flank, but geologists say activity above and beneath the volcano is continuing at a steady pace.

Instruments that measure the bulge on the north slope, which has been expanding between three and six feet a day, remained out of reach to airborne scientists who could not land Wednesday.

From the air, however, U.S. Geological Survey scientists reported steam and ash eruptions continued throughout the day, though they slowed somewhat in the afternoon.

Scientists said a recently discovered steam vent in the ice at the head of Shoestring Glacier has enlarged "somewhat" and visible steam emissions from the pit have increased. Shoestring Glacier is located on the east-southeast side of the 9,677-foot peak.

May's

1980

He'd run from lava, children told

BROOKS (AP) — Harry Truman, the mountain man of Mount St. Helens, dropped in by helicopter Wednesday to visit elementary students at Clear Lake School.

"Do you know when the lava will come?" asked one of the 110 pupils at the elementary school in the community some five miles north of Salem.

"I wish I did, because I would run," said the feisty Truman, who admits to being older than 80.

"I'm going to tear down the hill as fast as I can."

Truman visited the school to thank students for the letters they sent him after he became a media star when the volcano came to life.

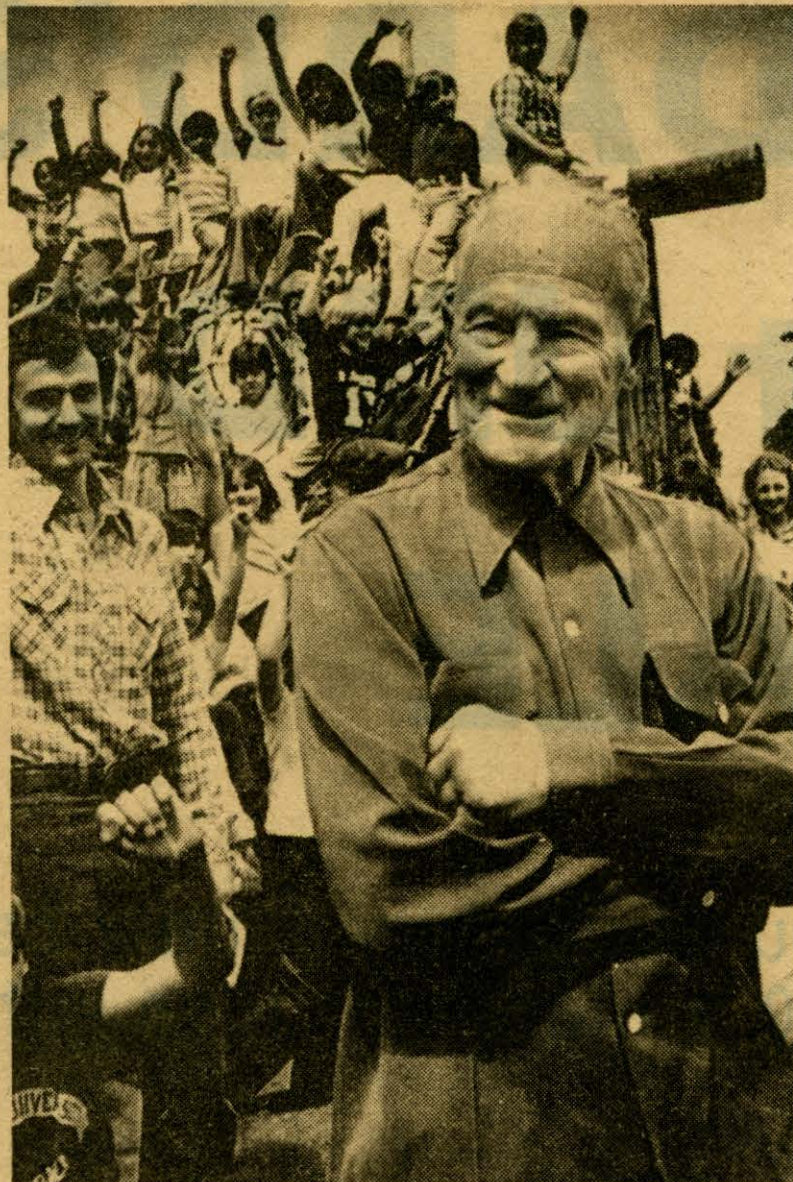
He has operated a resort at Spirit Lake at the northern base of Mount St. Helens for 50 years and has refused to leave his home despite daily rumblings and occasional eruptions from the volcano.

"There are dozens of quakes every damn minute. There is never a dull moment," he told the students.

"About the time things settle down, here comes one of those babies," he said.

Truman made the trip in a helicopter provided by National Geographic magazine, which has been photographing the mountain.

Truman said he would have visited sooner but that



AP Laserphoto

Schoolchildren give Truman a cheer.

he doesn't like to drive through Portland.

Dwight Reber of Aurora, pilot for the trip, said Truman arrived with only 10 minutes' notice to the school so the visit wouldn't attract an army of reporters and photographers.

School Principal Kate Mathews said she saw excerpts from some of the let-

ters in a story by The Associated Press in a Salem newspaper.

"That's when we knew you wanted to come and visit," she said.

"You'd be surprised what a hit those letters made in my kitchen," Truman told the children.

"Every mother and father cried."

5/16/80

SATURDAY, MAY 17, 1980

Volcano viewers expect clear sky but no real show

VANCOUVER, Wash. (AP) — The National Weather Service predicted good volcano-viewing weather over the weekend, but scientists who watch Mount St. Helens for a living weren't promising much of a show.

The volcano has slipped into a routine pattern of quiet — if a volcano shaken by 40 earthquakes and bulging at the rate of five feet a day can be described as quiet.

There were no eruptions of steam and ash Thursday or Friday — at least none that observers could see through breaks in the clouds, the U.S. Geological Survey reported.

Observers who circled the mountain for more than an hour in a U.S. Forest Service plane said they saw no new eruptions of ash from the gaping crater atop the 9,677-foot mountain.

During one break in the clouds, scientists saw that one steam vent spotted outside the summit crater earlier had been filled in by falling ice, a USGS spokeswoman said.

Dozens of daily earthquakes have been reported since the peak began erupting steam and ash on March 27.

Friday morning, there were three quakes on the mountain, with the largest estimated at 4.5 on the open-ended Richter scale of ground movement, the University of Washington geophysics department reported in Seattle.

While such a quake could cause moderate damage in a populated area, it is hardly felt in the lightly populated area around the southwest Washington volcano.

Measurements showed the north flank of the volcano continues to expand northward at a rate of five feet a day, the spokeswoman said. The bulging has been monitored for more than three weeks, causing worry the area may break loose in a massive avalanche.

Boy Scouts decide volcano can't be trusted, get gear

VANCOUVER, Wash. (AP) — The Boy Scouts who usually hold summer camp on Spirit Lake in the ever-growing shadow of Mount St. Helens have decided not to trust their equipment to the whims of the bulging, venting volcano.

A three-man team was airlifted into two youth camps late Thursday afternoon to reclaim 18,000 pounds of camp equipment, including a 28-foot boat, said officials of the Boy Scouts of America Columbia Pacific Council and the YMCA.

Meanwhile, a new small crater with a steam vent on the north rim of the old crater was spotted by scientists flying over the volcano in the afternoon.

The mountain went about its business of shaking — earthquakes ticked off at a regular pace — and venting tons of sulfur dioxide, an acidic gas that indicates the presence of molten rock within the 9,677-foot peak.

But Don Mullineaux, the volcano hazards expert for the U.S. Geological Survey, said the gas emissions appear to be no greater than in April and March and cannot be interpreted to predict whether the magma, or molten material, is building toward an eruption.

The sulfur measurements are important because any increase could indicate an upcoming eruption of lava, magma once it is extruded. No lava has been pushed from the peak in southwestern Washington since it started erupting ash and steam March 27.

The volcano took part of the day off as ash

and steam eruptions, which had been filling the surrounding sky with regularity, dropped off to a minimum.

The mountain was obscured by clouds again Thursday morning but played peekaboo with airborne scientists during the afternoon, giving away a few good looks of its ash covered apex.

David Johnston, a survey geologist, said the mountain was so quiet during his hour long flight that he "practically fell asleep in the helicopter."

As it has for the past three weeks, the north flank of the mountain continued to bulge Wednesday at a rate of about five feet a day, he said. A new steam vent was reported just north of the crater rim.

Earthquakes also continued at the volcano.

Of the assault on the summer camps, Randalyn Clark, YMCA spokeswoman, said the organizations wanted to rescue some of the more expensive equipment that would probably not be covered by insurance should the camp be destroyed by avalanches.

The men were airlifted to a resort on the lake's south side where they took a boat across to the camps where there was no suitable landing area. They then loaded the equipment aboard the boat and into a garbage dumpster and were airlifted out of the area by helicopters.

Columbia Helicopters of Aurora, Ore., donated the craft and pilots for the airlift.

Scientists say ash a threat to wheat

SPOKANE, Wash. (AP) — The massive outpouring of ash from Mount St. Helens which drifted hundreds of miles over eastern Washington and northern Idaho could threaten Washington's wheat crop, scientists said Sunday.

Preliminary tests showed the ash was moderately acidic, a soil scientist at Washington State University said.

"The pH (acidity measurement) of the ash is 4.7," said Al Halverson, who spent Sunday collecting samples and running preliminary tests.

"Seven is neutral," he explained. "A lot of Washington state soil has a pH of 6. Plants show stress from acidity when it is as low as 4.7."

"Even more damaging could be the soluble material in the ash," he said. Halverson said he would continue tests Monday to determine what the ash is composed of, saying it contains sulfur and possibly some hydrochloric acid.

"Some components are similar to alkali soil. If you have several inches of ash and it rains or you irrigate, it will go into the soil and cause problems," he said.

But damage would depend on the buildup of ash and the amount of water put on the soil. A heavy rain would dilute the solubles and reduce damage.

"I don't think we'll have a major problem with an inch or less," he said, but four inches, which have been reported in Yakima County, could pose serious threats to agriculture.

Halverson said his samples, taken in Pullman, could differ greatly from those taken closer to or further from the volcano.

"You will get different compositions depending on how far you are from the site, he said. "Coarser stuff falls off first. We are getting a finer material and in Montana, it will be finer still."

Monday's tests will determine what soluble materials are contained in the ash and in what quantities, he said.

The state's wheat crop could become a victim of the ash in areas of high density buildup, said WSU scientist Ray Gilkeson.

"In the past, all our experience has been with ash over 100 years old and the sulfur has long been out of it," he said. "This is a brand new ballgame."

With the buildup already reported in some areas, he said, "If they have had that much and it has sulfur in it at all, it will kill the wheat crop for this year."

Based on tree studies, scientists know ash falls have slowed tree growth in forests, Gilkeson said.

'What we saw, we probably never will see again,' ash-covered camper says

MONDAY, MAY 19, 1980

CASTLE ROCK, Wash. (AP) — "I could not believe the mud slides . . . hot, steaming mud carrying trees, logging equipment and parts of houses," said Pam Siddens, a camper who was whisked to safety by helicopter after Mount St. Helens erupted with a blast felt 200 miles away.

Logger Joe Sullivan said the mountain "just moved sideways and the whole thing went up," when it erupted Sunday at 8:39 a.m. PDT. "It scared the hell out of me."

Many people, campers and the curious, had narrow, harrowing escapes down the mountainside. And thousands of others, near the volcano and miles away, suddenly were shrouded in eerie darkness and thick

ash.

"I was knocked out of bed by the explosion. It's just boiling — going way up in the air," said Ann Katzer, owner of a general store in Toutle, about 35 miles northwest of Mount St. Helens. Toutle's residents were evacuated.

The eruption sent hot gas and black ash towering nine miles above the volcano, blotting out the sun for more than 100 miles. At least five persons were killed, 21 were missing and Spirit Lake at the base of the mountain disappeared under rock and mud flows.

Bolts of lightning sparked forest fires over thousand of acres. Mud flows and

floods poured down the mountain, destroying bridges and forcing the evacuation of some 2,000 people.

"The devastation on the mountainside is incredible," said Air Force Lt. D.E. Schroeder. "Trees are knocked down, animals are standing around in shock, covered with ash."

Twenty miles northeast of the mountain in Randle, ham-radio operator James Lanterman said, "The air is so full of smoke and pumice stone that a person would not live outside. I was thinking of evacuating but I didn't think I could make it, so I'm staying inside."

"What we saw, we probably will never

see again," said Ms. Siddens, 29, her black hair flecked with gray ash after she reached Castle Rock, 35 miles west of Mount St. Helens.

She and Terry Clayton, 41, both of Seattle, had camped Saturday on the shore of Riff Lake, 20 miles north of the volcano. They were awakened Sunday by lightning striking the ground and a towering column of black smoke and ash.

They began trying to drive back to the main highway, crossing several bridges covered by water and flowing mud, but abandoned their car when they spotted a Coast Guard helicopter.

The aerial view was astounding, they

said.

"I used to fish the north fork (of the Toutle River) and I could not believe the mud slides," Ms. Siddens said. The river was full of "hot, steaming mud carrying trees, logging equipment and parts of houses," she added.

The pair guided the helicopter back to the mountain to warn others, finally convincing hold-out residents to jump in the helicopter.

Logger Sullivan, his wife, brother-in-law and fellow logger Mark Dahl, had driven up back roads to about three miles west of the peak Sunday to get a look at the mountain. As they took pictures of the already

steaming volcano, they saw a cloud of pitch-black ash and smoke.

They jumped into their pickup and raced down the mountain.

"There was this massive black cloud. We were lucky to get out alive," said Dahl.

Another couple, Tony Caprara, 29, and Mary Lambert, 25, both of Tacoma, missed the roadblocks that ringed the mountain and drove up a logging road Sunday after hearing of the eruption.

Three miles from the volcano, their car, affected by volcanic ash, died. But luckily, a helicopter spotted and rescued them.

"I just thank God we got out," Caprara said.

Clouds shock jetliner pilot

SAN FRANCISCO (AP) — United Airlines pilot Capt. Joe Mathes said he was at 25,000 feet and nearly over Mount St. Helens Sunday when the volcano erupted with a shattering blast that blackened the sky.

"It was a huge, grayish-black mushroom cloud," said Mathes, who was flying a Boeing 727 on Los Angeles-Seattle flight 274 a few miles west of the mountain when it let go at 8:32 a.m. PDT.

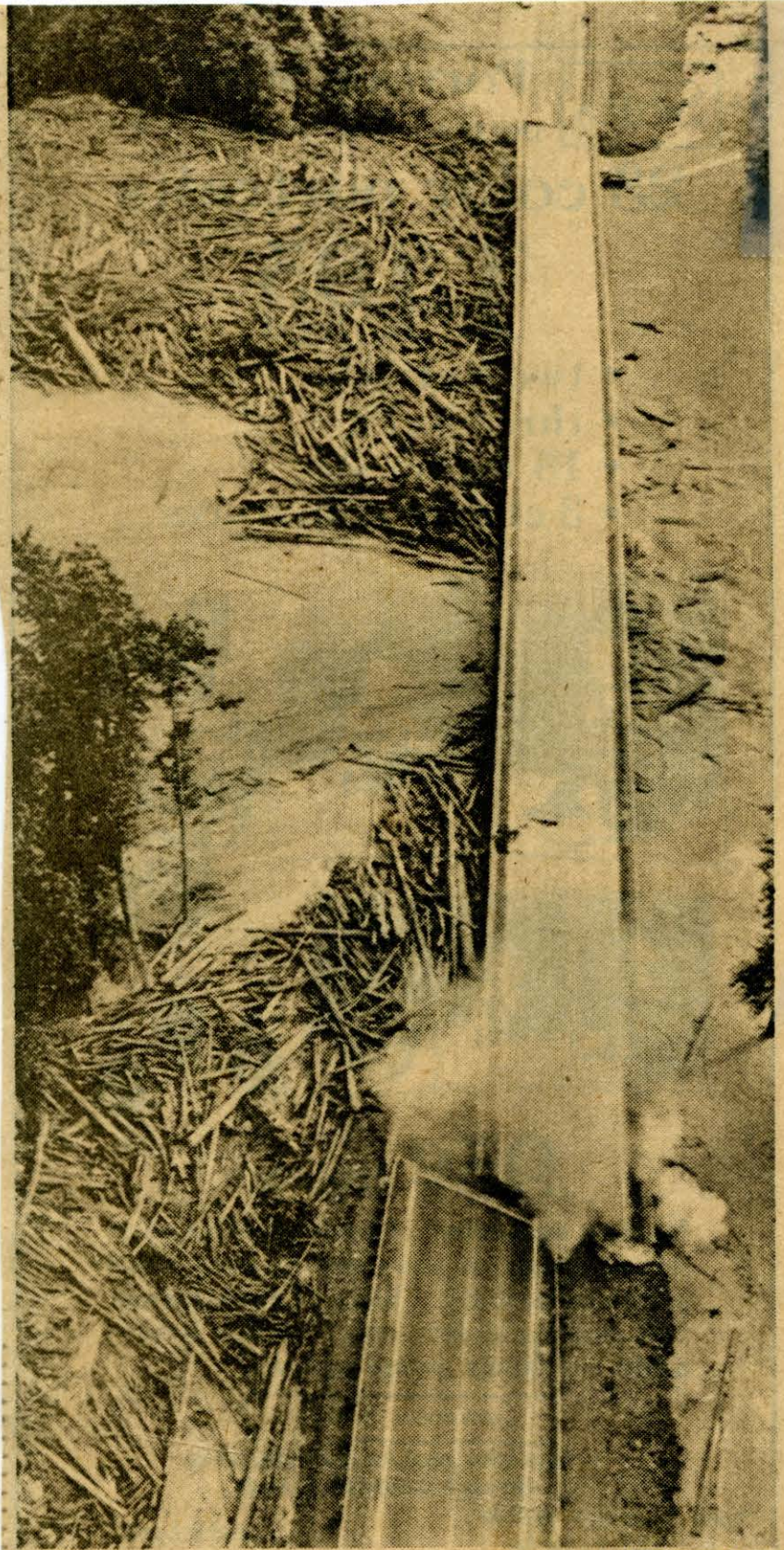
He described the clouds belching out of the volcano as "the biggest I've ever seen." He said a single cloud measured at least 35 miles in diameter.

Mathes, who telephoned the San Francisco Chronicle from his home, said he saw "a lighting flash in there," an occurrence also reported by observers on the ground who said the eruption created its own weather.

Mathes said the cloud he saw "cast a shadow easily 60 miles to the northwest. . . the first cloud had disappeared when here came another one. We saw it boiling up at about 45,000 feet, so we gave it a wide berth."

Toutle Bridge across Interstate 5

can be heard long before it can be seen



AP Laserphoto

Bridge goes out

A wall of logs, mud and water from Mount St. Helens takes out a concrete bridge on the Spirit Lake Highway a mile east of the Toutle Lake School Sunday. The bridge then turned sideways and rushed down the river at speeds up to 50 miles per hour before breaking into pieces.

MONDAY, MAY 19, 1980

ON THE TOUTLE BRIDGE ON INTERSTATE FIVE (AP) — You could hear the Toutle Bridge long before you could see it as the river of the same name raged beneath early today.

The roar of the water was punctuated by hollow booms, like distant cannon fire reverberating in the moist night air, as high logs battered the bridge supports.

A cloud of steam and mist rose 40 feet into the air, enshrouding the skeletal

superstructure of the bridge.

Interstate 5, the main north-south link between Seattle and Portland, was closed Sunday for fear the bridge would be washed away by the Toutle River, swollen by mud slides from erupting Mount St. Helens.

Emil Huber, assistant superintendent for maintenance and construction for the Washington Department of Transportation, arrived for his hourly check of the

battered bridge.

Parking his car 25 feet back, Huber approached the bridge gingerly, the beam from his flashlight swallowed up in the swirling steam.

A lone fir tree jammed under an adjacent railroad bridge bobbed wildly as it was buffeted by successive waves of debris. On the upstream side of the bridge, the top of a tree lay on the roadbed, snapped off when the trunk was rapped against the

side railing.

The pavement in the middle still was wet where water has surged over the edge of the bridge.

"I've been with the state 23 years and I've never, ever, seen anything like it," said Huber, trying vainly to peer beneath the bridge.

He decided it was too dangerous even to walk on until daylight.

Trees snapped and shattered as they

wedged against bridge supports and pounded by other trees.

Occasionally there was the sound of metal on concrete. Earlier in the day, a state trooper reported a house floating down the river. He said the impact against the bridge ripped the roof from the building and the remnants continued downstream.

Dave Sabin, bridge technician, said this is one of only two state bridges still stan-

ding on a 24-mile stretch of the river.

Usually this time of year, there is 15 feet of clearance between the bottom of the bridge and the water. Now logs scraped the bottom as they dived beneath it.

A tubular railing along the side of the bridge literally hummed with vibrations.

The roadbed and bridge shuttered as another chunk of debris smacked against the concrete and steel structure, cutting short a lecture on bridge design.

Boaters create their own logjam

KELSO, Wash. (AP) — The warnings to avoid rivers swollen with debris from the erupting Mount St. Helens fell to deaf ears in Kelso as dozens of boaters created their own logjam when they tried to retrieve valuable lumber being swept to sea.

The two-mile-long logjam was washed from the banks of the Toutle River by a 12-foot wall of water that later swept into the Cowlitz River. The swift-moving wall of water reached Kelso, 30 miles west of erupting Mount St. Helens, only hours after the Sunday morning eruption.

Many of the logs were worth up to \$300 and it

was finders keepers.

Boats rammed through the massive jam, securing ropes around the best logs and pulling them ashore. One business used cranes to pick choice logs from the jam and piled them on three barges.

A tug ramming up the river rescued Don Hughes from his precarious perch atop a log. Hughes said he was swimming in the river when the rapidly moving logjam swept down the river.

Three youths were rescued by the police when they climbed on a log near the shore and it was swept to the middle of the river.

Crop-dusting plane pilot dies; ash may have obscured vision

ELLENSBURG, Wash. (AP) — Volcanic ash from Mount St. Helens may have obscured the vision of a pilot who was killed when his crop-dusting plane crashed into a high-voltage power line, officials say.

The area of the Sunday crash, three miles east of Teanaway, Wash., was growing dark "like an eclipse" when the accident occurred at about 9:22 a.m., said Kittitas County Sheriff Bob Barret. Teanaway is 17 miles northeast of Ellensburg.

Mount St. Helens, 100 miles southwest of Teanaway, had started erupting about an hour earlier.

The large cloud of volcanic ash quickly dispersed east and northeast to the Ellensburg area.

Barret identified the dead pilot as Vernon Mitchell of Ellensburg.

The 287,000 kilovolt line was carrying 230,000 kilovolts when it was crashed into, said Gene Tollefson, a spokesman for the Bonneville Power Administration in Portland. The line carries power from Grand Coulee Dam in northeast Washington to the state's coast, he said. The BPA's largest power lines are 500,000 kilovolts.

The line was knocked to the ground and power disrupted.

From high in balloon reporter views eruption

Monday, May 19, 1980

It was like watching a violent movie with the sound turned off.

When Mount St. Helens erupted Sunday morning, I was 30 miles away in a hot-air balloon piloted by Ron Purdum of Albany. We were above LaCenter, Wash., a small town southwest of the mountain.

That was the right side to be on Sunday.

We had lifted off in Purdum's "Chinook" shortly after 8 a.m. A second balloon was in the air, and three others still were being inflated.

We floated lazily along in the wicker gondola, looking down on greening fields, newly planted gardens and back-yard junkyards. And we looked over at the then-quiet mountain.

The mountain had been a focal point of the trip from the beginning. After ballooning Saturday

morning, Purdum and his sons, Rod and Russ, and I had driven up the Lewis River Valley to the roadblock and then followed a logging road up for a good view of the volcano. The mountain's flanks were dirty from recent explosions of ash.

We watched for a couple hours and talked about the "big one" scientists were saying was due any day. The only activity was among the

clouds scudding across the peak.

The mountain was just as calm Sunday morning when we took our first looks at the slightly hazy horizon. I made an offhand comment along the lines of "Well, mountain, here we are: Do it." Purdum chuckled. We went back to studying the countryside below us.

A few minutes later, we both looked up at the mountain again — and said, in unison, "Look! It's erupting!"

The first small puff of grayish-white steam and ash grew rapidly. Purdum let loose an appropriate whoop; I knelt to steady my zoom lens on the padded edge of the gondola. Neither of us felt we were in any danger because of our distance from the mountain.

"This has to be the biggest one yet," Purdum

said. "I wish Rod and Russ were up here, too," I said. (The balloon holds a maximum of three people. Rod and Russ were driving the "chase" car and we planned to exchange passengers later.)

We expected to hear an explosion and perhaps feel a shock wave through the air, but we neither heard nor felt anything.

The mushrooming cloud rapidly obscured the peak in a gray cloak. But long after the peak was hidden, we could see boiling clouds rolling slowly down the northwest flank. Purdum guessed there were new vents opening up, and according to at least one news report, he was right.

We realized that such a violent explosion must be devastating the northern side of the mountain, but we could see nothing of that. We voiced hopes

that everyone was out of the way and continued marveling at the force we were witnessing.

Rod and I traded places a little later so he could have a flying lesson. I drove the car and managed to lose the balloon completely as it landed among trees.

When we rejoined the other jubilant balloonists at rally headquarters, we compared notes. As we drove toward Portland in the early afternoon, we could see the pillar of cloud behind us as the eruption continued in a sky darkened with ash.

Amid congratulating ourselves on how lucky we'd been, I thought how different our luck might have been on the other side of the mountain. I'm glad we saw the movie without the sound effects.

Rescuers find 9 alive

near volcano

VANCOUVER, Wash. (AP) — Nine persons, apparent survivors of Mount St. Helens' thunderous eruption, were spotted by rescue helicopters today near the mountain.

Five of the persons were found about eight miles from the volcano, which continues to spew huge amounts of ash and steam.

Four others were found four to five miles from the mountain, near Fawn Lake. They were described as two adults, a child and an infant.

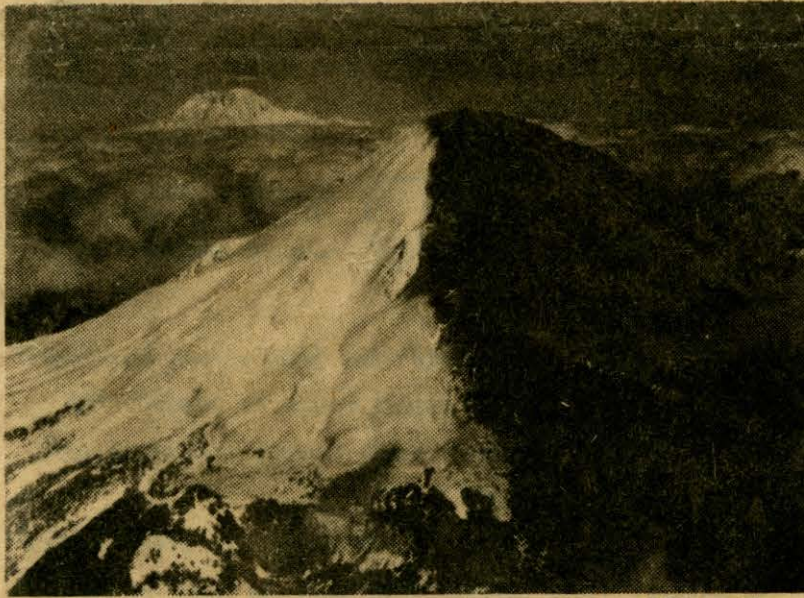
Helicopters could not land to pick up the nine because of poor visibility caused by volcanic ash. A C-130 plane was circling the area.

Other survivors were seen 20 miles from the volcano, searchers reported, and helicopters were sent to them.

"It's really hard to say what they've undergone," said FAA spokesman Marv Norman in Olympia, Wash. "It's hard to say what heat they endured."

In the Toutle River 45 miles below the mountain, hot mud and rock and ash reportedly heated the waters to 100 degrees, killing all fish.

Red-hot sulfur gas, rocks and mud raced down the mountainside in Sun-



AP Laserphoto

Photo shows mountain before eruption.

day's eruption, incinerating everything in the way.

At least five persons were killed, caught in the gases and mudslides or by flooding that followed. There was an unconfirmed report that two other persons were killed by trees blown down by the hot blast.

About 1,200 feet was ripped off the top of the mountain by the pulverizing eruption. A volcanic crater at the summit was a mile and a half wide.

Twenty-one persons have been listed as missing. Thousands were forced to flee from a mile-wide wall of steaming mud.

Among those missing were Harry Truman, 84-year-old patriarch of the mountain, a U.S. Geological Survey geologist and Reid Blackburn, a newspaper photographer for The Columbian in Vancouver.

Truman's home at Spirit Lake Lodge was obliterated. The lake, a popular recreation area at the base of the volcano's north side, was turned into a bubbling mud cauldron.

Day was turned into night in many areas Sunday when sky-borne volcanic ash blotted out the sun and created an eerie "midnight at noon."

Many communities across eastern Washington and western Montana were virtually at a standstill, buried in ash up to 7 inches deep following Sunday's convulsion.

A meteorologist for the National Weather Service in Boise, Idaho, said the fallout could reach as far as New England in two or three days.

A plume of steam and ash was still billowing 14,000 feet high from a crater a half-mile wide today, but there were no sightings of the rivers of mud, rock and gas which roared down the flanks of the peak earlier. There were no sightings of lava flows during the eruption.

"It's still perking, but it is not as violent," said Sam Frear, a spokesman for the Forest Service said. "We hope we've seen the worst."

Ash concerns top legislator from Oregon

PORTLAND (AP) — Oregon Senate President Jason Boe has written Gov. Victor Atiyeh that members of the Legislative Emergency Board and the Senate are standing by in case the eruption of Mount St. Helens causes damage that might require legislative action.

Boe said he particularly was concerned about possible harmful effects of drifting volcanic ash in the eastern part of the state.

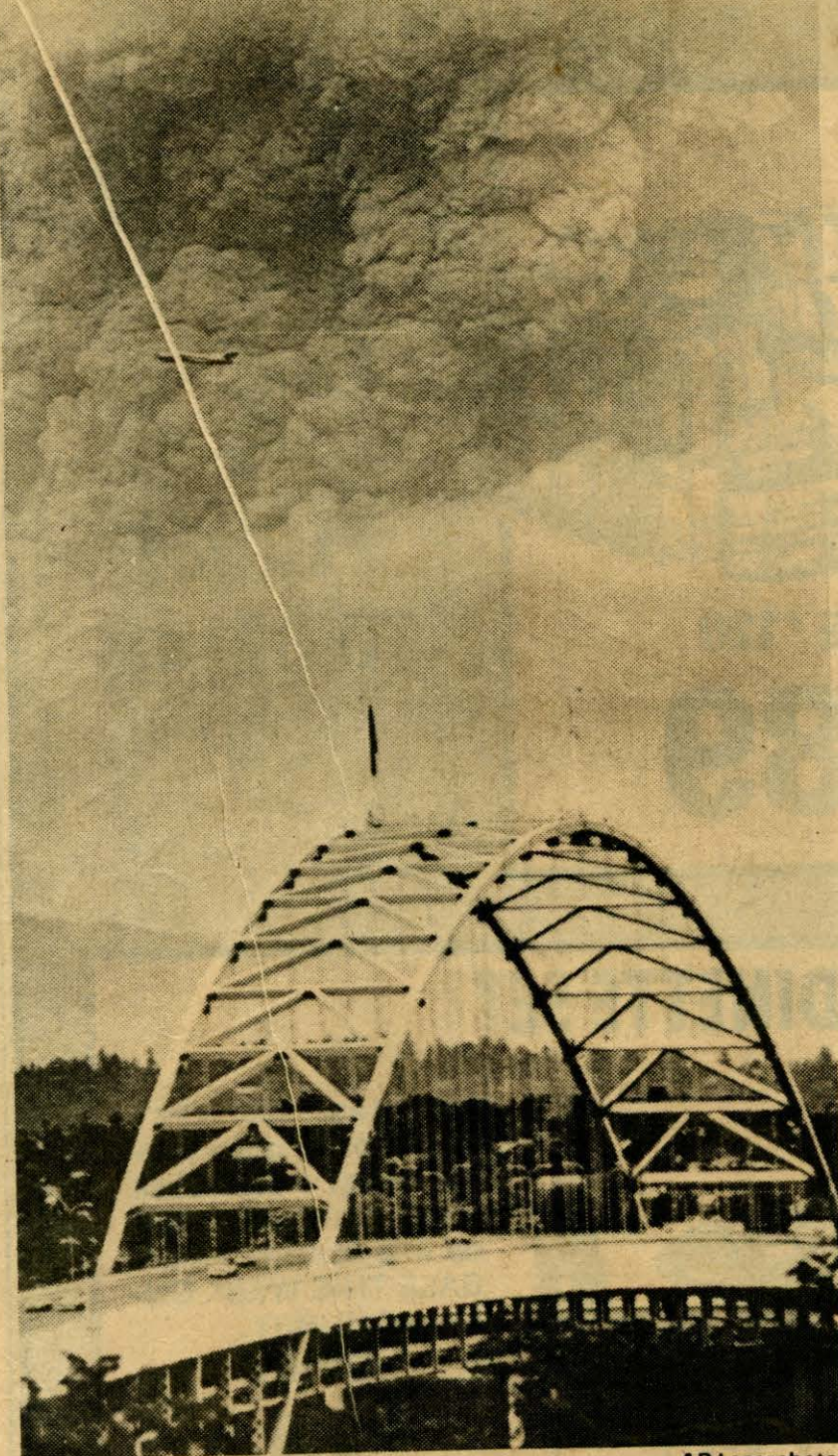
Boe said: "I want you to know that the Senate of Oregon stands prepared to offer any assistance you consider necessary. If sudden unbudgeted appropriations become necessary, I will immediately convene a special meeting of the emergency board. I am contacting all state senators to be prepared in the event the situation becomes so serious that full legislative action is required."

Boe said he sent the letter after talking by phone with Sen. Mike Thorne at his ranch near Pendleton. He said Thorne was concerned about the effect on livestock and crops.

Thorne told The Associated Press his ranch is on the edge of a cloud of ash drifting near the Oregon-Washington border.

"It's clearly a matter of what the wind does here in Pendleton," he said. "Right now it's blowing the ash to the north but the tip of Oregon, near Wallowa, may be a problem."

By this morning, there were no reports of major ash deposits drifting into Oregon.



AP Laserphoto

Portlanders see it

An erupting Mount St. Helens looms over the Fremont Bridge in Portland Sunday. A jetliner taking off from Portland International Airport can be seen in the sky.

Portland hospital treats the burns of 3 loggers

PORTLAND (AP) — Two loggers from Oregon and one from California were burned badly by hot gases, cinders and ash on Mount St. Helens, officials of the Emanuel Hospital Burn Center in Portland said Sunday night.

All were in serious condition after being brought from

hospitals in Longview and Vancouver, Wash., Emanuel officials said.

Leonte Skorhodoff, 30, of Mount Angel and Jim Scymantky, 36, of Woodburn had burns over half their bodies.

The men reportedly walked eight miles before finding help Sunday morning after Mount

St. Helens erupted, a hospital spokesman said.

Raymond Casillias, 33, of Stockton, Calif., had less serious burns, nurses said. A helicopter picked up Casillias while he was sitting on a log surrounded by a mud flow from a volcano.

Is patriarch of mountain still alive?

VANCOUVER, Wash. (AP) — Harry Truman, the 84-year-old patriarch of Mount St. Helens, may have refused to leave his Spirit Lake lodge once too often.

While it may be premature to write Truman's obituary, officials sadly admit the chances of his surviving the volcano's mammoth eruption and thundering mud slides are slim.

"We can only fear the worst," said Jim Hall with the state Department of Emergency Services.

More than 30 feet of mud and debris were believed to have covered the area where Truman operated a 40-acre resort. And the once-serene Spirit Lake was a "boiling mass emitting gas," the pilot of a U.S. Forest Service spotter plane told the Washington Department of Emergency Services.

Truman, who lived in the lodge with his 16 cats, steadfastly had refused to leave saying if worst came to worst he would hole up in a secret mine shaft with two kegs of whisky.

"This is home to Truman and I'm gonna stay here 'til hell



HARRY TRUMAN

"I'm going with it," he said

freezes over," Truman repeatedly told officials who came to check on him — and the reporters who slipped past or flew over roadblocks several miles down the road.

He was believed to be the only permanent resident living near the mountain. His lodge was about seven miles from the summit.

Skamania County Sheriff Bill Closner said early Sunday he had talked to Truman the previous day.

"He's elected to stay there and we've honored that wish — he has not changed his mind," Closner said.

Cabin owners who had fought to enter the area restricted to gather their belongings were allowed in Saturday by Skamania County officials. "Truman is breaking the law by staying up there," Closner told them.

But the law never bothered Harry.

"If the mountain goes, I'm going with it," Truman said. "I'm gonna stay right here and say 'You old bastard, I stuck it out 54 years and I can stick it out another 54 years.'"

Harry did confide he had found an old mine shaft years ago deep in the hills and had dug it into a cave. If the mountain were to blow, he planned to go there with "some food and two kegs of whisky."

"You'd have to be a real good friend to get in that cave with old Truman," he said.

Prof notes ash, mud could spill for 15 to 20 years

SEATTLE (AP) — University of Puget Sound geography Professor Al Eggers, who came within three days of pinpointing the major eruption of Mount St. Helens, predicts two or three more days of the same from the volcano.

Minus ash and plus lava, he says.

Lava and speeding mud flows could continue to spill from the mountain for 15 or 20 years, according to Eggers. The last eruption of the volcano lasted that long.

"I'd say the kind of eruption we had Sunday will continue for two or three days, maybe a little longer, but not much," said Eggers.

Volcanoes usually spend themselves in violent eruptions, he added, and lose gas, literally.

Eggers cited Krakatoa, one of history's fiercest volcanoes, as an example of how long Mount St. Helens will continue to produce ash in quantities to darken cities hundreds of miles away.

The city of Jakarta in Indonesia, roughly the same distance from Krakatoa as Yakima, Wash., was dark for about 24 hours after Krakatoa's violent eruption in 1883.

Cities in eastern Washington will have heavy ash showers for about the same length of time, Eggers predicted.

When the violent Mount St. Helens eruption subsides, Eggers said, lava likely will emerge, probably in a dome, but possibly in flows.

After earlier eruptions, Goat Rock and Dog's Head, both former lava domes, formed on Mount St. Helens.

Thick, sticky lava piles up over vents to create lava domes. Emerging lava domes usually are accompanied by more dangerous flows of super heated, speeding ash, steam and mud.

Although the lava and speeding mud flows could continue to spill from Mount St. Helens for 15 or 20 years, it also could return to dormancy in a few months or a few weeks, Eggers said.

But, he added, no one really knows.

"Scientists have a hard enough time predicting the weather — and predicting a volcano is much more difficult," said Dave Endicott, spokesman for the University of Washington geophysics department.

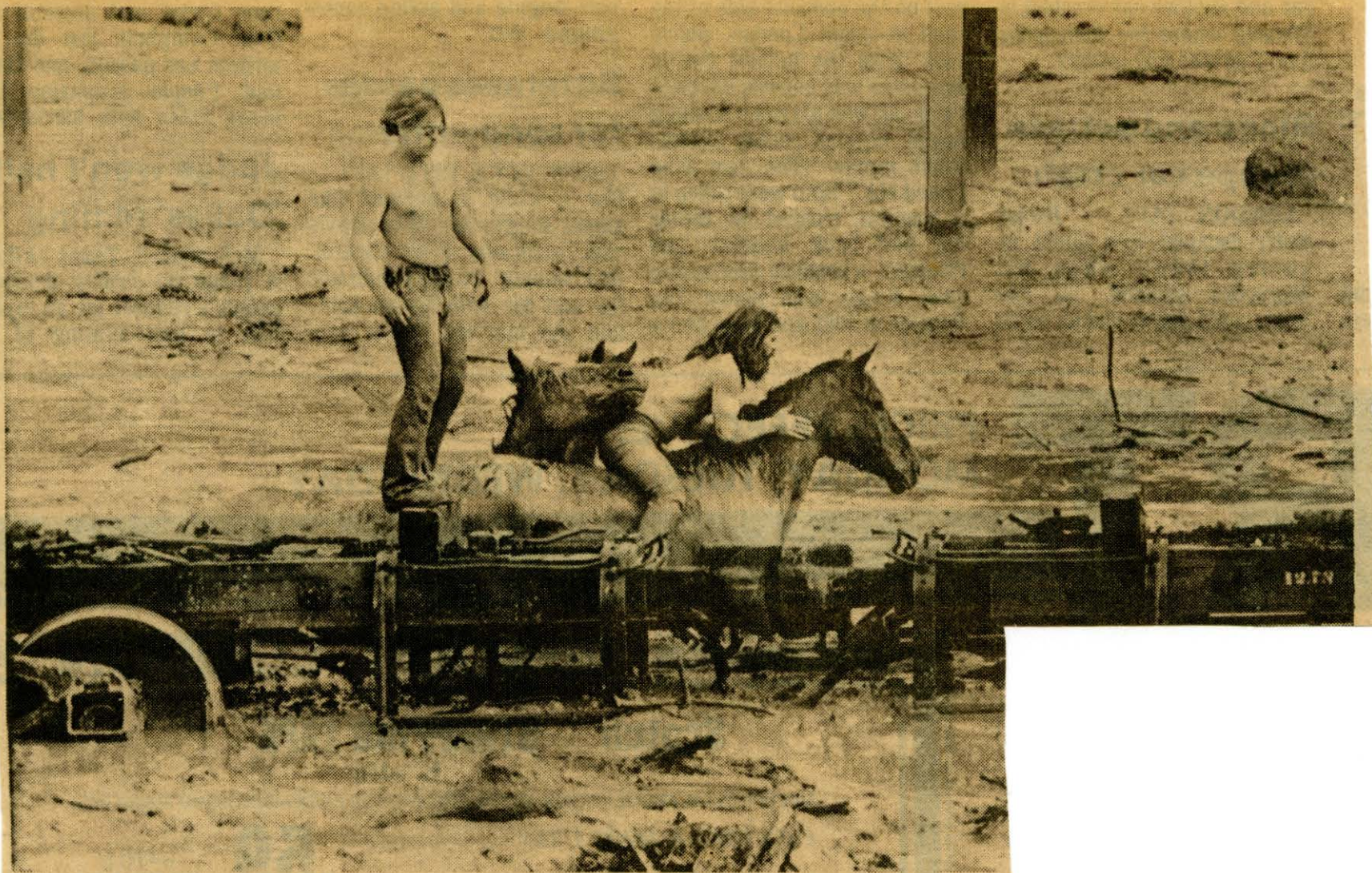
Stewart Smith, department chairman, said anyone who makes predictions about Mount St. Helens was simply guessing and Eggers agreed. But Eggers said his guesses were educated ones.

As long as Mount St. Helens erupts, valleys, river bed and dam areas will continue to be hazardous zones, Eggers said.

Also posing a danger for a while will be water soluble toxic compounds in the volcanic ash, he said. The compounds will dissolve in surface water and any water exposed to large quantities of ash may require de-contamination, he added.

Whether Mount St. Helens erupts for another week or another decade, the state's most populous area, the Seattle area, should be unaffected.

No change in wind direction is expected within the next 24 hours — the period during which ash and gas explosions are likely to be most violent, according to the experts.



Attempt to rescue horses fails

John Brown, on horse, and his brother, Bob, attempt to lead three horses to safety from the Weyerhaeuser log yard in Kid Valley, Wash. The yard was flooded by the

Toutle River following the eruption of Mount St. Helens. At right, John Brown is covered with mud and exhausted after the attempt to rescue the horses failed.

Observers say mountain's flanks resemble moon's desolate wastes

CASTLE ROCK, Wash. (AP) — The once lushly forested flanks of Mount St. Helens resemble the desolate wastes of the moon now that the volcano's violent eruption has altered the landscape, say aerial observers.

"There's one hell of a big hole up there — a big chunk of the mountain is gone," said Tom Robinson, a state Department of Natural Resources manager who flew over the mountain by helicopter Sunday, only hours after it erupted with a bang felt 200 miles away.

"It looked like someone had literally taken a butter knife and sliced off the top of the mountain," he said.

U.S. Geological Survey scientists agreed with Robinson's observations, saying the volcano had dwindled in height from 9,677 feet to 9,100 feet that spewed towering clouds of ash.

Before the eruptions, the mountain with its nearly perfect conical shape and pristine snow covering had been compared to Japan's scenic Mount Fujiyama.

Now, "it kind of looks like the moon — everything is gray," Robinson said.

The mountain began erupting March 27 for the

first time in 123 years.

Sunday morning's eruption appeared to have created a tremendous gale which toppled miles of timber on the northwest flank of the mountain, Robinson said.

"It looks as if someone had detonated a concussion bomb above it," he said. "There are thousands and thousands of acres with nothing standing more than 20 feet high. It's incredible."

Up to 6,000 acres of land were cleared by the blast, said Wimpy Clark, a DNR operations forester also in the helicopter. "It's a hell of a mess. It's just plain damn mind-boggling."

In addition to the forests, the eruption and the cascading mud and debris it produced erased other features.

"Spirit Lake doesn't exist," said Dwight E. Reber, a Columbia Helicopters Inc. pilot from Aurora, Ore., who flew over the popular recreational lake at the foot of St. Helens.

"If it does, it's a lake of lava and mud. Steam and smoke are rising from the edge of the lake," he said. "There are places where the north fork of the Toutle (River) appears to be boiling."