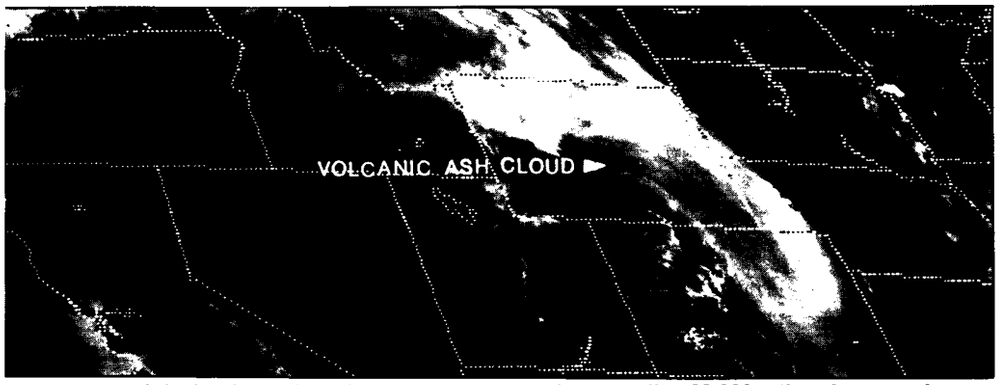

NOAA NESS

Ash cloud one day after eruption as seen from satellite 22,000 miles above earth.

the west. As a result, the stratospheric ash traveled east to Colorado, made a U-turn and returned over Washington by May 27.

On the ground, researchers are also taking stock of Mt. St. Helens's aftermath. The Forest Service estimates that one billion board feet of timber was leveled by the eruption, although a spokesman said much could be salvaged. One report estimated that 5,250 elk, 6,000 deer, 200 bear, 100 mountain goats, 15 cougars and thousands of small animals were lost; crop damage in Washington state is estimated at more than $100 million. □

Rocks and shocks in the Sierras

Campers and hikers in the region certainly thought differently, but the recent batch of earthquakes in the Mammoth Lakes, Calif., area of the Sierra Nevada range came as no surprise to researchers at the University of Nevada in Reno. Alan Ryall and co-workers had just expanded their network of instruments in the area; Ryall had presented a paper in April describing the area as ripe for a large quake. But the series of tremors — which began on May 25 with two Richter magnitude 6.0 quakes, followed by a third magnitude 6.0 on May 27 and more than 100 quakes measuring 4 or larger — is definitely not typical of California-style shakers.

The rash of temblors is typical of that region, however, explained Ryall. Similar sequences occurred in 1941 and 1927 and, of late, he said in an interview, the region had shown signs of building toward something as big as a magnitude 6.0 — which is considered capable of severe damage. Beginning in 1978, the Nevada researchers noted a growing number of moderate quakes (magnitudes 4 to 5.5) along a 200-mile stretch of the eastern edge of the Sierras, from Reno south to Bishop, Calif. (Mammoth Lakes lies about 40 miles north of Bishop and about 200 miles east of San Francisco; the recent activity is tentatively fixed about 7 to 8 miles east and south of the town.) Ryall and co-workers, as well as seismologists from other institutions, also noted "swarms" — or clusters of small quakes — in the area since last September.

Such activity — scattered moderate quakes and swarms, all in a reasonably confined area — is custom-made grist for the earthquake prediction mill. Accordingly, early this year Ryall and co-workers expanded their network of seismographs with funding from the U.S. Geological Survey's earthquake prediction program. In April, Ryall told a seismology meeting that the recent activity added up to a good possibility of a large quake — maximum magnitude 7.5 — somewhere between Mammoth Lakes and Bridgeport, 50 miles to the north. "I didn't make a prediction," Ryall stresses. "It's just that there was such a similarity between the pattern here and other areas [such as before] the 1971 San Fernando earthquake.... It was really obvious based on a lot of experience and a good overview of the earthquakes in that area." As for the possibility of another, larger quake in the area: "I wouldn't be surprised if it did and I wouldn't be surprised if it didn't."

The recent events also serve to show seismologists another of the many personalities of temblors. According to Cal Tech's Clarence Allen, the Mammoth Lakes quakes are a different breed from other California earthquakes. The August 1979 and January 1980 quakes in the San Francisco area, for example, consisted of an abrupt major shock and a series of aftershocks that declined in intensity, he said. In southern California, as in the October 1979 Imperial valley quake, swarm activity builds gradually to a peak — the main shock — and tails off. "This [the Mammoth Lakes series] is in between," says Allen. "It's like the back end of a swarm. It started abruptly — started high and stayed high. It's like a truncated swarm."

Despite their personality clashes, these various seismic events are beginning to be viewed by some seismologists as part of a large-scale phenomenon. "There is an increase in the earthquake rate in California." says Cal Tech's Kate Hutton. "It's possible it could be due to tectonic changes at depth — to large-scale changes in the stress field. But we have no mechanism; it's speculative right now." □

Love Canal: Where does DOD fit in?

The New York State Assembly may have thrown a monkey wrench into Justice Department suits (SN: 1/5/80, p. 6) charging Hooker Chemical Co. and related parties with contaminating four Niagara Falls sites, including the one known as Love Canal. Preliminary findings of an inquiry the assembly commissioned June 1, 1979 last week reported finding evidence that the federal government might also be implicated in the contamination of parts of Niagara County, N.Y., including a region of Love Canal.

What the State Assembly report claims to have found is evidence: that the federal government engaged in extensive wartime and post-war manufacturing of munitions, nuclear materials and items of chemical warfare in the Love Canal region; that hazardous and toxic chemicals were disposed of improperly and without regard to the potential dangers they might present to the health and safety of persons who then and might later live in the area; and that the government transferred parcels of dangerously contaminated property to private companies.

On May 30, one day after the State Assembly report was issued in Albany, the Department of Defense issued its own statement categorically denying the charges: "The Department of Defense takes exception to the New York State Assembly task force report as we find no evidence to suggest that previous, comprehensive army and interagency task-force reports — which found no Defense Department dumping program existed in the Love Canal area — were deficient." In fact, the report "presents a very weak case of federal culpability," DOD said.

Whether or not one would term it weak, the State Assembly report does indeed make a case for DOD involvement at Love Canal beyond what had been admitted previously. For example, the "comprehensive army report" mentioned in the DOD statement was published in August 1978. According to the report, the army did not produce phosgene — a chemical warfare agent — at Niagara Falls either during or after World War II, nor did it ship chemical warfare materials in military vehicles. Yet the State Assembly report turned up formerly classified military documents showing wartime production of phosgene at two Niagara Falls sites together with requests for the army to ship the chemical in its own vehicles.

Among the phosgene manufacturing plants was a Hooker Electrochemical Co. site. Documents studied by Arthur James Woolston-Smith, a State Assembly investigator, explained that Metals Reserve Co., a subsidiary of the federally owned Reconstruction Finance Corp., had constructed facilities on a Hooker Elec-