

said this does not require writing new legislation but just providing "more forceful regulation" of existing rules.

But the President's Commission on Three Mile Island (SN: 5/5/79, p. 292), headed by Dartmouth College President John Kemeny, takes strong exception to that claim in its report, issued this week. Chief among its long list of findings was the claim that "with its present organization, staff and attitudes, the NRC is unable to fulfill its responsibility for providing an acceptable level of safety for nuclear-power plants." Harry McPherson, a lawyer on the Kemeny panel, added at a press conference Tuesday that the Commission had found "serious deficiencies" in NRC's regulations too.

It comes as no surprise, therefore, that the panel headed its list of 44 recommendations to the President and Congress with suggestions that NRC be restructured as a new Cabinet-level agency — something like the Environmental Protection Agency — and that its present five-member commission be abolished. In justifying the recommendation, Kemeny said, "Our finding is that no one is running that agency."

Other recommendations in the 179-page report include:

- making the issuance of new construction and operating licenses for nuclear plants conditional on federal approval of specific local emergency plans, which would include evacuation procedures,
- subjecting each operating licensee to periodic performance reviews,
- drawing up a grading and reporting system to measure overall improvements or declines in reactor safety, and
- establishing an independent oversight committee on nuclear-reactor safety, answerable to the President and Congress, to take over the group decision-making role of the present nuclear-regulatory commission. □

## No more smallpox

Last week, the world was officially declared free of smallpox, a disease that has been with us at least since the time of the Egyptian pharaohs. The announcement came from Halfdan Mahler, director general of the World Health Organization, at a special ceremony in Nairobi, Kenya.

WHO had been close to eradicating smallpox four years ago, but some cases were reported in Bangladesh, India, Ethiopia and Nepal (SN: 8/2/75, p. 73). This time WHO is more secure.

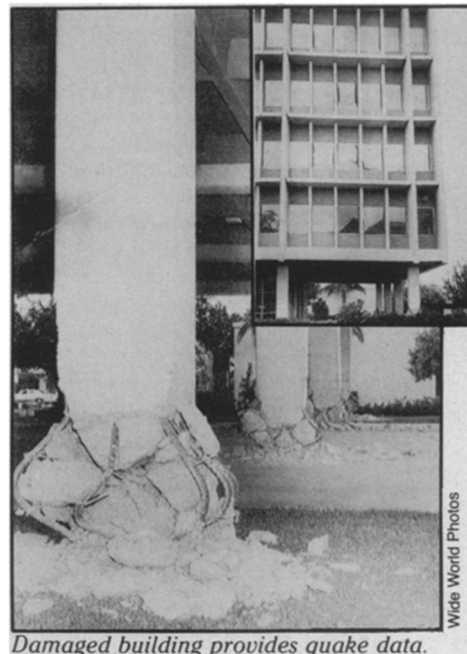
In coming months WHO will recommend that member countries stop all vaccinations against smallpox, and travelers will no longer need smallpox certificates. These steps, Mahler says, will save the world community \$1 billion that can be diverted to solving other health problems. □

## California quake: Another lesson

Every earthquake is a learning experience for geologists; the Oct. 15 Imperial Valley, Calif., quake is no exception.

The 6.4 Richter magnitude quake — the strongest quake to hit the 48 contiguous states since 1971 — had its epicenter 10 miles east of Calexico on the Imperial Valley fault, a major branch of the San Andreas fault system. For researchers such as Carl Johnson of California Institute of Technology, who study the cyclic behavior of a fault — the baseline seismicity, the gradual building of stress, the sudden release and the subsequent shifting — this was a rare opportunity. A 1940 quake broke the same section — though twice as much — of the fault and the two events share many characteristics, Johnson says. When the data gathered during and after the 1940 quake are compared with those of the recent one, he says, scientists may have a complete picture of the seismic cycle of a fault, an aid in prediction.

And for engineers, earthquake-resistant building codes received the ultimate test. The six-story Imperial County Services Building — built by 1967 codes for quake resistance — tilted 3 feet to one side as support pilings gave way. Inside, recording its responses to the quake.



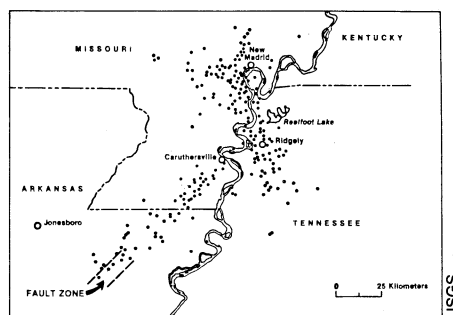
Damaged building provides quake data.

were about 20 instruments that provided "by a significant margin, the best data on building response to an earthquake," according to Cal Tech's Paul Jennings. In spite of the damage, the building did its job, "though we'd like a building to survive without that much damage," he said. The data will be analyzed to determine exactly what gave way and will be used in models to test updated codes. □

## Finding fault in Arkansas

From Dec. 16, 1811, to Feb. 7, 1812, three great earthquakes — believed the most violent series of quakes in U.S. history — shocked the area around New Madrid, Mo. The area near the junction of Missouri, Kentucky, Tennessee and Arkansas continues to be the most seismically active area in the central United States. Yet, though they knew one must be present, seismologists had been unable to link the activity to a specific fault.

Now the culprit has been uncovered. A fault zone that appears to be related to the seismic activity has been found, according to a team of U.S. Geological Survey scientists. Borrowing a technique developed by the oil industry, the researchers obtained east-west and north-south seismic profiles — pictures of the underground rock structure obtained by bouncing sound waves through the ground — of a region in northeastern Arkansas. In both profiles, says Robert M. Hamilton of the USGS in Reston, Va., the researchers found, coincident with the seismic zone, the vertical offsets characteristic of a fault zone. The researchers mapped only a small area of the fault, previously undetected because it lies beneath the soft sediments of the Mississippi River Valley, but they believe it may continue north for about 100 kilometers. "The most important thing is that now



Dots represent quake epicenters; new-found fault indicated at lower left.

we can tie the seismicity to a specific geologic structure," says Hamilton, a member of the team that included Mark D. Zoback of the USGS in Menlo Park, Calif., David P. Russ, Anthony J. Crone and Stanley R. Brockman, all of the USGS in Golden, Colo.

Recent measurements of magnetic and gravitational fields in the region also have found evidence for a very broad rift zone — an area where the plate structure may have been weakened by ancient volcanic activity. The fault zone appears to be related and parallel to the rift zone, Hamilton says, and may prove to be the means by which the weakened rift zone adjusts to stress. □