

David Schwartz, kneeling, and Tom Fumal inspect the fissure in front of Freda and John Tranbarger's home on Summit Road.

Cap Carpenter  
— Mercury News



# Growing fissures lacing mountains; cracks' origins mystify geologists

By Glenda Chui  
Mercury News Science Writer

As if in a horror movie, giant cracks are shifting and spreading in the Santa Cruz Mountains.

They are creeping across yards next to houses, worrying residents already rattled by Tuesday's big earthquake.

Scientists are perplexed by their origin — and disagree about their significance.

"The definitive thing is, we don't know what the hell is going on here,"

said Malcolm Clark, a geologist with the U.S. Geological Survey, which sent three teams to study the cracks Friday. "This is just a mess up here, primarily."

But one thing seems increasingly clear, scientists said: The cracks are not the yawning maws of the San Andreas Fault.

Most major quakes occur deep in the earth, but they rupture the ground all the way to the surface. Along these breaks the sides of the fault slip past each other by several

feet. Their movements can be clearly seen in the displacements of fences and curbs. This movement helps scientists confirm which fault the quake is on and how much that fault moved.

But, contrary to some reports, scientists have not found any of these telltale signs in the mountains, where the San Andreas erupted in Tuesday's magnitude 6.9 earthquake.

Instead, they found a confounding  
*See FAULT, Page 23A*



## The Quake of '89

### New relief fund

United Way of Santa Clara County on Friday established an earthquake relief fund for agencies involved in disaster relief.

Novell Inc. of San Jose made the first contribution, \$50,000. Contributions may be sent to United Way, P.O. Box 2, 2323 Homestead Road, Santa Clara 95052-0002, with a notation that they are for the earthquake fund. For more information, call (408) 247-1200.

Since Tuesday, help has poured into Santa Clara and Santa Cruz counties. Circus Circus casino of Las Vegas sent \$250,000 to the American Red Cross of Santa Clara County. Businesses and foundations such as Hitachi, Hewlett-Packard, IBM and the Knight Foundation donated \$100,000 each to help victims.

Here are other donations, listed by the charity that received them.

✓ St. Vincent De Paul Society, (408) 993-9900

Kraft Foods: 40-foot truckload of food.

Monarch Trucking Co., San Jose: trucking services.

Golden Grain, San Leandro: truckload of pasta and spaghetti sauce.

Hewlett-Packard: truckload of food.

A&W Beverages Inc.: truckload of soda.

Gagliardi Brothers: warehouse space in Gilroy for distribution.

✓ United Way of Santa Cruz, (408) 688-2082

Santa Cruz Operations: \$10,000.

System Studies: \$1,000.

✓ Salvation Army of Santa Cruz, (408) 426-8365

Clorox: charcoal and cleaning supplies.

Kraft: luncheon meats and condiments.

Safeway and Sunny Delite: fruit drink.

U-Haul: containers for storage.

Procter and Gamble: Pampers.

Allied Sisco Food Distributors: plastic tableware and coffee.

Trans-Western Polymers: plastic bags.

Apple Computer Inc.: 100 tents and tarps.

Beech-nut: 12 truckloads of baby food.

Berkeley Farms: cases of milk.

Crystal Geyser: mineral water.

Macy's: 45-foot trailer of tents, blankets, food.

Anonymous: 22-foot truckload of charcoal briquettes.

✓ American Red Cross of Santa Clara Valley, (408) 292-6242

Zitel Corp.: \$10,000.

Home Savings of America: \$10,000.

Notify us about donations by calling or writing Action Line, San Jose Mercury News, 750 Ridder Park Drive, San Jose 95190, (408) 287-1222; or by fax, (408) 288-8060.

# Cracks spreading in mountains

## Geologists confounded

FAULT, from Page 1A  
mess of cracks.

"To have this degree of cracking without lateral movement — it's just not what we expected," said David Schwartz of the U.S. Geological Survey. The cracks, he added, make the job of understanding the quake "like a thousand-piece jigsaw puzzle rather than a 10-piece jigsaw puzzle."

The most well-known crack ripped through the yard of Freda and John Tranbarger's house on Summit Road, about five miles from the epicenter. Three feet wide and seven feet deep at its most impressive, it sweeps in a pronounced arc for about 1,000 feet before sliding down a gully and running up the other side of the hill.

On Thursday, Gary Griggs, a geologist at the University of California, Santa Cruz, discovered a second giant crack on a ridge above Turnpike Road, north of the Soquel-San Jose Road.

And people said many of the smaller, less dramatic cracks that lace the mountains appeared to be spreading.

"Yesterday, that was a crack. Today, I can put my hand in it," Estelle Fein said late Thursday, pointing to a fissure that runs the length of her neighbor's yard on King's Creek Road in Boulder Creek.

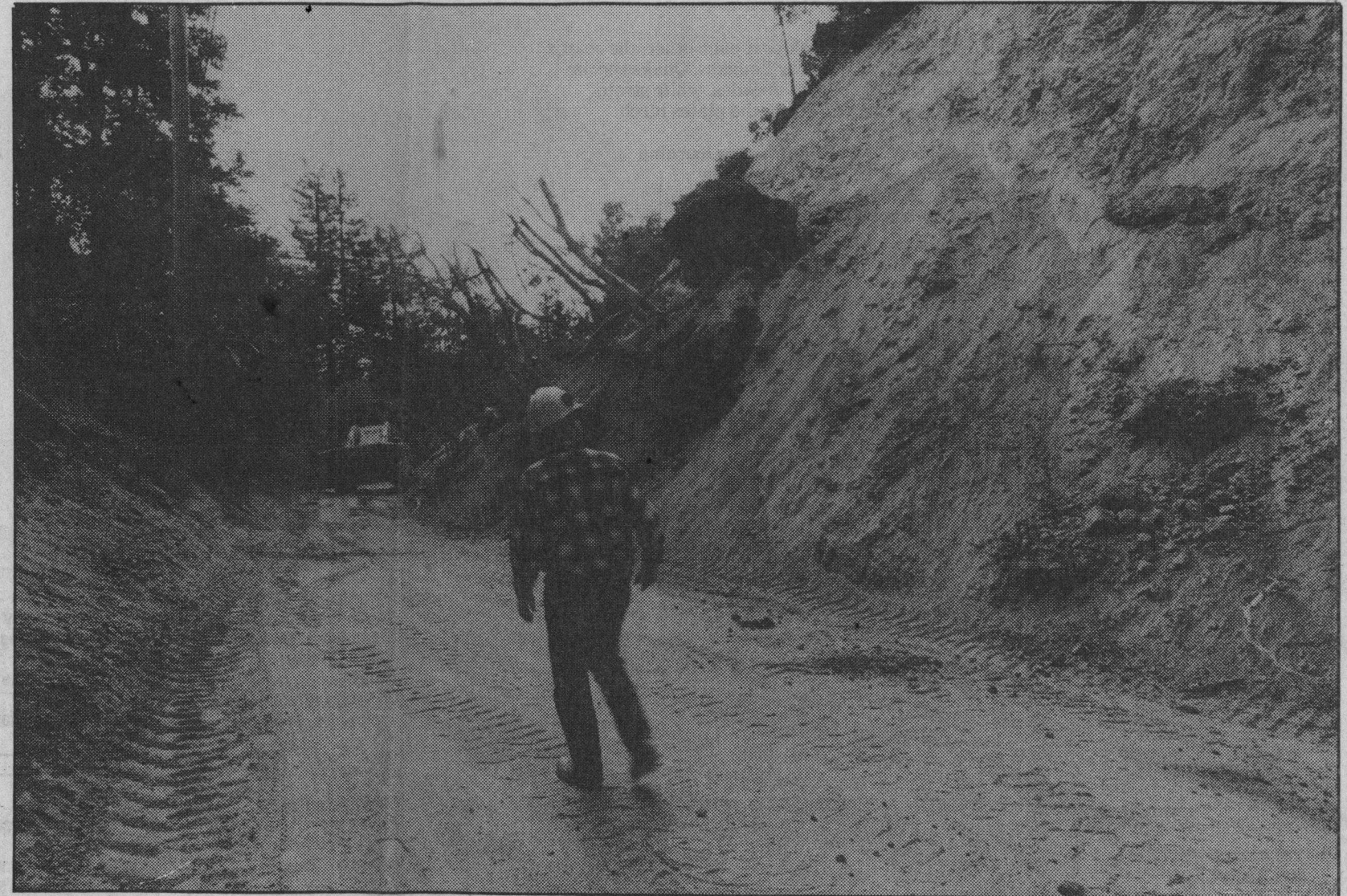
Karen McNally, a professor of geophysics at UC-Santa Cruz, said the cracks are growing because of settling and aftershock activity.

After an earthquake shakes up the ground, she said, "It begins to settle and compact and changes its equilibrium and loosens up again. With rains coming, we're quite worried about more landsliding."

Some of the cracks have already been blamed on small landslides.

But Griggs said the two big crack systems may mark the tops of enormous landslides, so big they weren't recognized immediately.

"It's a whole new phenomenon," he said. "It's going to wreak havoc when it rains. I would expect this winter that there will be a continu-



Cap Carpenter — Mercury News

Santa Cruz County crew clears a slide on the Soquel-San Jose Road near a 1,000-foot-long crack

ation of this sliding and cracking."

However, other geologists were more cautious. They said the mystery of the cracks won't be settled for weeks. First they have to measure a lot of cracks and plot them on a map to see if the pattern gives them definitive clues.

There are a number of possibilities, geologists said. One is that the cracks arose because the energy of the earthquake concentrated on the ridge tops and shattered them.

And while the cracks may not be traces of the San Andreas itself, they may spring from the twisting and warping of large blocks of

**"It's going to wreak havoc when it rains."**

— Gary Griggs,  
UC-Santa Cruz geologist

earth above the earthquake, which started at a point 11 miles deep.

"It's still so early in the process that to grasp any one of those at

this particular point of time, and say this is what's happening, is still premature," Schwartz said.

In their painstaking search for answers, scientists are racing against both nature and the urgent needs of the mountains. Caltrans crews already have paved over many of the cracks that cross the roads. And the rains predicted for this weekend could obscure the rest.

"The real mystery is nobody has found the San Andreas rupture in a real clean way," Griggs said. "How can you create an earthquake that is this large and not rupture the surface?"

## Sympathy pours in after rescue

By Robin Worthington  
and Jeff Gottlieb  
Mercury News Staff Writers

The dramatic rescue of 6-year-old Julio Berumen has triggered hundreds of calls from across the country and donations of toys to Oakland's Children's Hospital, where the boy has improved to stable