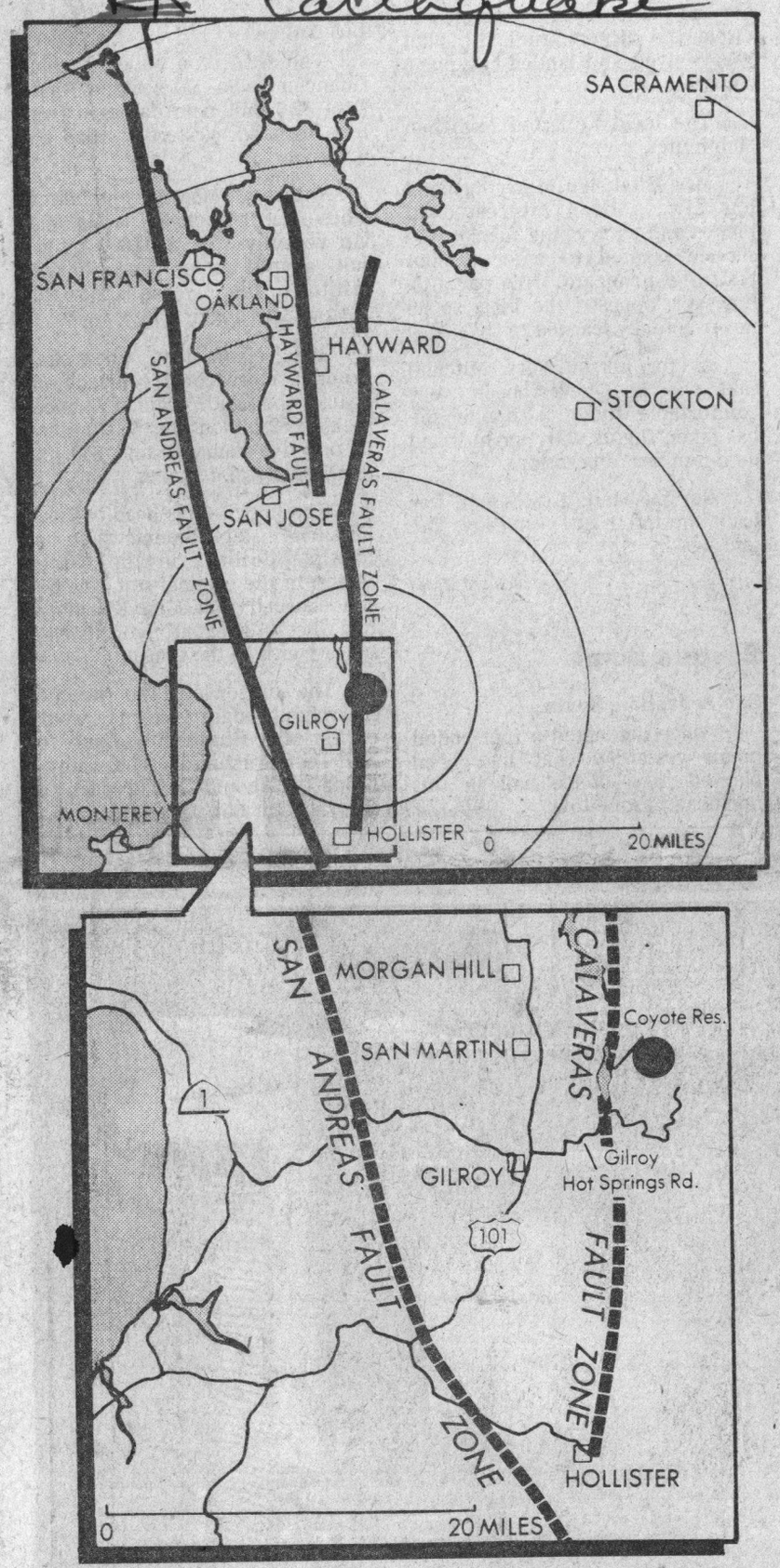
PR Earthquake

8/1/79

Biggest Quake Here in 68 Years



Fault zones and the radius through which yesterday's quake was felt (top), and the Gilroy area that was the epicenter

A Huge Area Hit By 2 Jolts

By David Perlman
Science Editor

A frightening earthquake struck near Gilroy yesterday morning with two distinct shocks that set highrise buildings swaying in downtown San Francisco but caused no major damage or critical injuries.

The quake was felt as far north as Santa Rosa, as far south as Monterey and Carmel, and eastward past Sacramento to the Sierra Nevada and Reno.

It was believed to be the strongest quake to hit northern California since 1911, although experts disagreed on the intensity.

Seismologists at the University of California in Berkeley measured its magnitude at 5.9 on the Richter scale, while their colleagues at the U.S. Geological Survey's Office of Earthquake Studies in Menlo Park scored it at 5.7 on the same scale.

The discrepancy was not significant — it was due to differences in instrumentation, in distance, and in measuring techniques, and will be refined by more detailed readings of seismographic data later.

The quake was followed by a swarm of more than 1000 "aftershocks" as opposing blocks of the earth's crust along the Calaveras fault — just east of the more notorious San Andreas fault — continued to grind against each other.

Among the injuries first reported were an engineer knocked

UPI Telephoto

Ron Sullivan stood in his Hollister real estate office after ceiling collapsed during quake

9 Miles From Epicenter

Gilroy Area Hit Hard

By Rick Carroll

Charles Haines, a town merchant, had just ordered coffee at Augie's Cafe in downtown Gilroy yesterday, when the strongest earthquake in nearly a century hit "like an accordion."

when big rocks caved in on him while he was working in a trench for the U.S. Bureau of Reclamation. He was treated in Hollister for bruises, cuts and shock.

At least five buildings received "more than

Jolts, Then Shakes — Just One Earthquake

By Charles Petit

Just One Earthquake

By Charles Petit
Science Correspondent

Many Bay Area residents got the distinct — and incorrect — impression yesterday that two earthquakes rapidly followed one another as the Calaveras fault near Gilroy slipped along perhaps 12 miles of its length, six miles beneath the surface.

First were a few fast, hard jolts, then a pause of a few seconds, followed by a very different slow, rolling motion.

It was all the same earthquake.

"Those were the P-waves first, with the S-waves a little later," said Robert Uhrhammer, a research seismologist at the University of California Seismographic Station in Berkeley, where alarm bells went off the moment the first waves reached Berkeley.

Uhrhammer, whose staff distilled data from 18 seismographic stations scattered across northern and central California to calculate the quake's magnitude at 5.9, described how an earthquake generates two main kinds of waves, which travel at different speeds through the earth's crust.

P-waves, or compression waves, travel fastest, up to five miles per second, and create a sharp up-and-down motion.

S-waves, or shear waves, go only about three miles per second, and cause horizontal back and forth motions — the sort that set buildings swaying side to side.

It is this difference in velocity that seismologists use to estimate the distance to an earthquake.

"As a rule of thumb," Uhrham-

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notorious San Andreas fault — continued to grind against each other.

Among the injuries first reported were an engineer knocked down by falling rocks east of Gilroy, four persons in Gilroy treated for shock, bruises and a broken arm, three persons cut by shattering glass in Hollister, and a series of heart attacks reported by ambulance drivers in the San Jose area.

Damage was relatively minor throughout the affected region, although five buildings sustained "significant" structural damage in Gilroy, where city officials said losses might exceed $100,000.

UC instruments timed the arrival of the first earthquake waves at 23 seconds past 10:05 a.m., and

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By Rick Carroll

Charles Haines, a town merchant, had just ordered coffee at Augie's Cafe in downtown Gilroy yesterday, when the strongest earthquake in nearly a century hit "like an accordion."

"The walls came in and out," he said, "and the roof was like a wave," Haines said.

Gilroy, population 40,000, calls itself the Garlic Capital of the World, and is the nearest town to the earthquake's epicenter — nine miles east, near Coyote Reservoir.

Four people were treated at Gilroy's Wheeler Hospital for quake-related injuries. Ernesto Valle, 27, fell off a boiler in a food packing plant and broke his arm. Three other people got bumps and bruises bad enough to check into the emergency room.

Six miles east of town, government engineer John Trojanowski, 33, was almost buried alive when big rocks caved in on him while he was working in a trench for the U.S. Bureau of Reclamation. He was treated in Hollister for bruises, cuts and shock.

At least five buildings received "more than minor" structural damage, including the local J.C. Penney store and Ford's Department Store. City administrator Fred Wood estimated losses at more than $100,000. But Wood said most of the damage was minor.

Streetlights swayed, power poles whipped about and the south face of the clock on the old City Hall slipped to a ledge on the clock tower.

A new crack split the City Hall building and revived talk that the structure, built in 1905 and badly shaken in the 1906 quake, might be doomed.

Dogs and cats started yowling at the Gilroy veterinarian hospital where Dr. Bill Throgmorton, his scalpel poised, was forced to interrupt ear

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Report Clearing Oil Industry Used Firms' Data

By Patrick Tyler
and Jonathan Neuman
Washington Post

Washington

A report released by the White House yesterday clearing the oil industry of hoarding gasoline during the recent fuel shortage relied entirely on data supplied by the industry and included no independent audits, according to federal energy officials.

The report was presented as a summary of the findings of "the investigation of the activities of oil companies, as requested by the president." It was not, however, prepared by the Department of Energy's investigating arm, which had been assigned to conduct audits of gasoline pricing and allocations during this year's shortage, officials acknowledged.

DOE general counsel Lynn Coleman said that DOE officials preparing the report on what they repeatedly refer to as "the investigation" never actually left the Energy Department and relied on information supplied by the American Petroleum Institute and other industry sources.

At the same time, in an inter-

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TWO SCARY SHAKES—BUT JUST ONE TEMBLOR

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mer said, "we figure that every second in difference in arrival time means five miles in distance to the earthquake. Here at Berkeley the P-waves and S-waves were 13 seconds apart. That comes out to 65 miles."

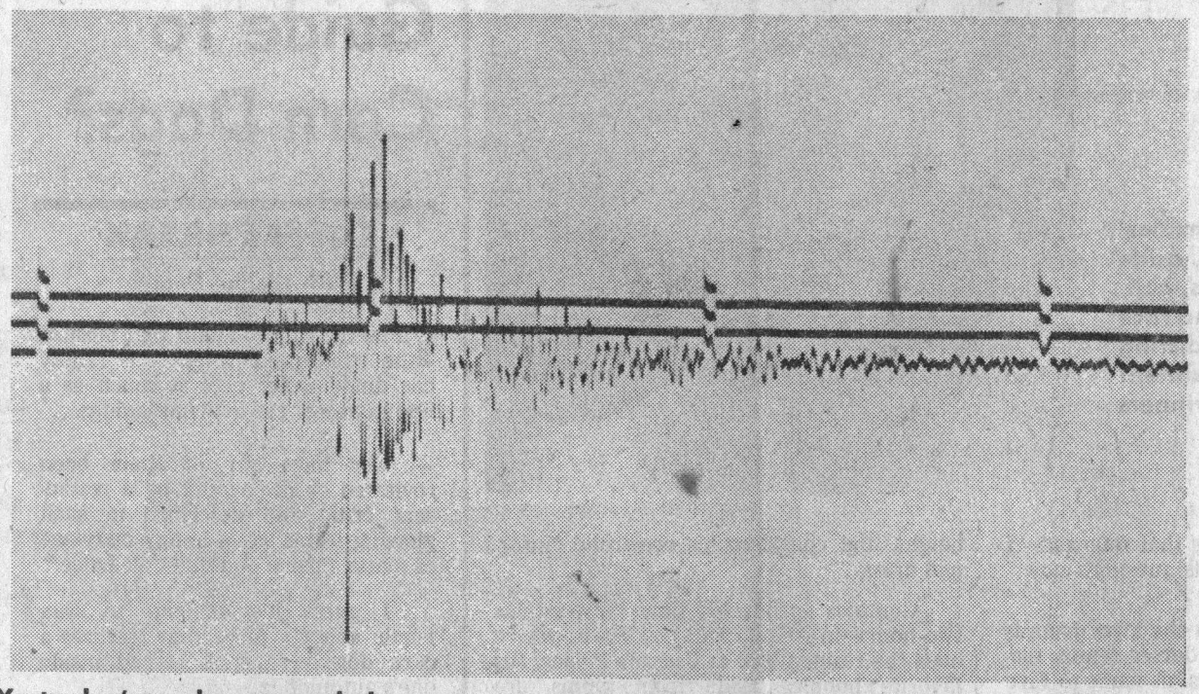
Such waves, racing through the earth's crust, sometimes reflecting off deep layers of high-density rock, may feel somewhat different to persons relatively near to each other but standing on different types of soil or rock.

In addition, many buildings are designed to absorb the shock of an earthquake by swaying, which may magnify the effect to persons in them. A person standing on a sidewalk may not notice an earthquake that has sent worried workers scrambling under their desks in a nearby highrise.

Following the P and S waves, areas relatively near an earthquake may feel even slower-moving surface waves that can produce additional motions for a minute or more after the main shock has passed.

In general, most of the energy of an earthquake is released from the side-to-side motion of the S-waves.

In yesterday's earthquake, the Berkeley seismograph plot clearly showed a sharp increase in ground shaking 13 seconds after the first jiggles were felt. The jump in intensity marked the arrival of S-waves.



Yesterday's quake as recorded on a seismograph. The breaks in the solid horizontal lines indicate intervals of one minute. The sudden increase in vertical lines were caused by arrival of P-waves, followed 13 seconds later by much greater vertical movement as the S-waves arrived.

Although larger than most, yesterday's quake on the Calaveras was "completely typical of California earthquakes," Uhrhammer said.

Like all major faults that scar California's coastal regions, the Calaveras is a type geologists call a "right lateral strike slip fault."

Strike slip faults mark the boundaries where the dozen or so plates into which the earth's 50-mile-thick crust is divided grind sideways past one another. The motion is often a series of lurches — with each lurch an earthquake.

The Calaveras is a "right lateral" fault, because if a person stands facing the fault the other side moves to the right. In the case of the Calaveras, San Andreas, Hayward and other big California faults, they reveal where the Pacific plate is grinding ponderously north relative to the North American plate, driven by powerful convective forces deep in the earth's interior.

Networks of instruments maintained by UC Berkeley and the U.S. Geological Survey indicated that yesterday's quake was about six miles under the earth's surface.

While the exact length of the section of fault that failed cannot be known for certain in the absence of any surface rupture, the force of the earthquake indicates that about 12 miles of fault probably shifted.

When a fault breaks, it does not go all at once. According to current geological theory, the slippage starts at one spot, with a "zone" of slippage racing along the fault until it dies out — for reasons that depend on the type of rock involved and whether the break enters a portion of fault where stress is less.

The rupture point may move along a fault at up to 7200 miles per hour. In just five seconds, ten miles of fault may begin to slip. Once the slip starts, each point along the section of fault may continue slipping for several seconds more.

THE BIG EARTHQUAKE

From Page 1

the quake's epicenter was pinpointed as nine miles east of Morgan Hill and 18 miles north of Hollister, near Coyote reservoir and the remote, virtually uninhabited community of Gilroy Hot Springs.

The last earthquake to rattle San Franciscans to a serious degree was the jolt on March 22, 1957, which measured 5.3 on the Richter scale, but was centered in Daly City and caused heavy damage in the Bay Area and hospitalized more than 30 persons.

Bay Area residents felt yesterday's initial shock waves as a series of strong up-and-down vibrations, and some San Jose residents reported they heard sharp noises like explosions or thunderclaps.

After a pause of about five seconds, a second set of shock waves struck from side to side, sickeningly like the rocking of a

stopped for five full minutes and then the system was placed in a "manual mode," with humans rather than computers taking over.

Train speeds were cut to 25 miles an hour; train operators visually scanned the tracks and roadbeds, and after 40 minutes all tunnels, tracks and the transbay tube were found to be undamaged. Service then returned to normal.

According to Frederick Lester, a Geological Survey seismologist at Menlo Park, the region around the earthquake epicenter — particularly the area of the San Andreas fault — has been heavily instrumented with devices to record minor quakes, to measure the tilting of the earth and to detect even tiny slow crustal movements known as "fault creep."

None of the instruments, how-

Photos by Mike Maloney

Terrell L. Thomas replaced records at KFAT that had fallen during the earthquake

REPORT

From Page 1

view, Coleman defended the report as an "intensive effort to analyze and display facts that ordinarily show up as numbers on a computer printout."

Although much of the information routinely released by DOE about the oil companies comes directly from those companies, President Carter, when he first requested the report in May, called for a thorough investigation.

Even though he made such a request, the president released the DOE report yesterday despite these factors:

- The entire DOE report is based on data compiled from February to May of this year, and does not include what Energy Department officials described as the key shortage months of June and July. "May is the last month for which data is available," the report said.
- The most crucial audits of oil companies by the DOE, those of gasoline pricing and allocations, have not yet been completed and are not expected to be ready for at least two weeks.
- A report by an outside accounting firm that has been asked by DOE to try to determine the accuracy of the oil industry data also is not expected to be completed until the middle of the month.
- The Department of Justice, which was ordered by Carter to join the DOE in the investigation, had no role in writing the DOE report, a Justice Department official said yesterday.
- Donald Kaplan, chief of the energy section of the Justice Department's antitrust division, said that his department declined to use its subpoena power in preparing its own interim report for the president. He said the department instead relied on information from the DOE and on "voluntary cooperation" from oil companies.

Carter's press secretary Jody Powell officially released the DOE report yesterday afternoon, but had no comment ot its contents. He deferred all questions to the Energy and Justice departments.

DOE officials who prepared the report said in interviews that their findings were incomplete and would be constantly updated as new information came in. They said they decided to release the report at this early date — without statistics from June and July — because of the president's urgent request for the report.

DOE general counsel Coleman

These two sets of earthquake waves were vibrations largely bouncing off deep rock layers at

More about the quake beginning on Page 4

the base of the earth's crust, where the hot, viscous material known as the mantle lies.

They were followed by slower waves traveling along the surface of the earth, and they also caused the swaying and undulating that rocked tall buildings, toppled groceries from shelves, shattered windows and tumbled boulders from hillsides.

Seismograph tracings of the quake indicated that the entire event — from the very first faint evidence of shock waves to the dying of a final tremor — lasted about 1000 seconds, or nearly 17 minutes. Only the strongest ground motions, each lasting a few seconds, could be felt by humans.

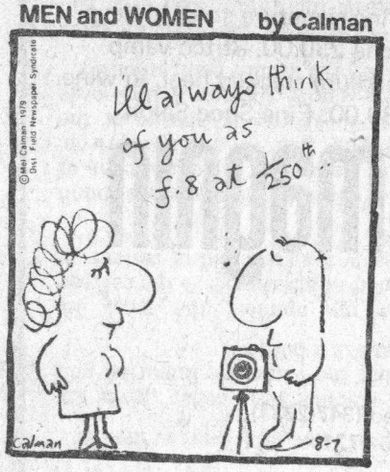
Telephone service was interrupted briefly in many Bay Area cities, but this was caused by the abrupt overloading of circuits as millions rushed to their phones to seek information about the quake or to ask the inevitable "Hey, did you feel THAT one?"

More serious was the disruption of electrical service in Hollister, Gilroy and Fremont when power cables carrying 12,000-volt and 4000-volt lines touched each other and created a high-voltage electric arc that destroyed connecting circuits.

More than 2250 customers were without electricity — most until noon but some until early evening, according to Pacific Gas and Electric Co. officials.

As soon as the quake struck, BART officials ordered all the system's trains halted. They were

MEN and WOMEN by Calman



yesterday's quake — although their readings will now be studied even more carefully to look for hints of events that might have foretold the big event.

Four new temporary seismographic stations were installed near the quake epicenter last night, and in the coming days a total of more than 300 remote instruments along Northern California faults will be relaying their data to the Geological Survey's computers.

Among yesterday's aftershocks, Lester said, at least one registered at 3 on the Richter scale.

The Calaveras fault, one of the state's most significant earthquake zones, branches off from the long San Andreas fault a few miles south of Hollister, wends its way north through that city, and extends up into northern Contra Costa County.

In the past 50 years or so, the Calaveras has been noted for slowly deforming Hollister's streets, sidewalks, stone walls and buildings through "fault creep." Fences have been warped by as much as a foot, curbstones have cracked, and concrete slabs have moved sideways by six inches or more where the fault runs directly under them.

Seismologists believe that this creeping movement tends to release earthquake energy slowly and thus minimize the likelihood of the more disastrous quakes that hit where the opposing crustal blocks on either side of a fault trace are locked tightly.

The great San Francisco quake of 1906, for example, struck on a locked segment of the San Andreas fault, and although there were no truly accurate recording instruments at the time — nor any Richter magnitude scale — it is generally considered to have had a Richter magnitude of 8.3.

Yesterday's temblor is believed to have been the largest to hit Northern California since one that struck in the same region on July 1, 1911.

That quake is generally thought to have had a magnitude of 6.6, and may also have had its epicenter on the Calaveras Fault. But the area was virtually unpopulated in those days, and while that quake was also felt as far away as Reno, it did no damage at all except to shake loose some plaster on the Stanford University campus.

GILROY

From Page 1

surgery on an anesthetized Doberman named Mac. The dog slept through the whole thing.

Ralph Blackburn got smacked on the head by a box of knife blades, one of the thousands of items in stock that fell to the floor and filled the aisles of his Gilroy hardware store.

His wife, June, lost one-third of her prized collection of ceramic mice.

"Visualize a rough ocean and you are in a ship. That's what it was like," said Blackburn, who like many businessmen closed his shop for the rest of the day to put everything in order again.

Nearby, at Hacienda Liquors, owner John C. Alvarez struggled vainly to save the Chivas Regal bottles that fell and shattered before he gave thought to his own safety.

"It was hopeless," said Alvarez, 53, who estimated his loss at $4000.

Streetlights swayed, power poles whipped about and the south face of the clock on the old City Hall slipped to a ledge on the clock tower.

A new crack split the City Hall building and revived talk that the structure, built in 1905 and badly shaken in the 1906 quake, might be doomed.

Terrell Lynn Thomas, the morning disc jockey at KFAT, country and western radio station, had just cued up "The Galvanized Washing Tub," by Little Jimmy Dickens when the walls began to heave, splintering a crack in the two-story brick building.

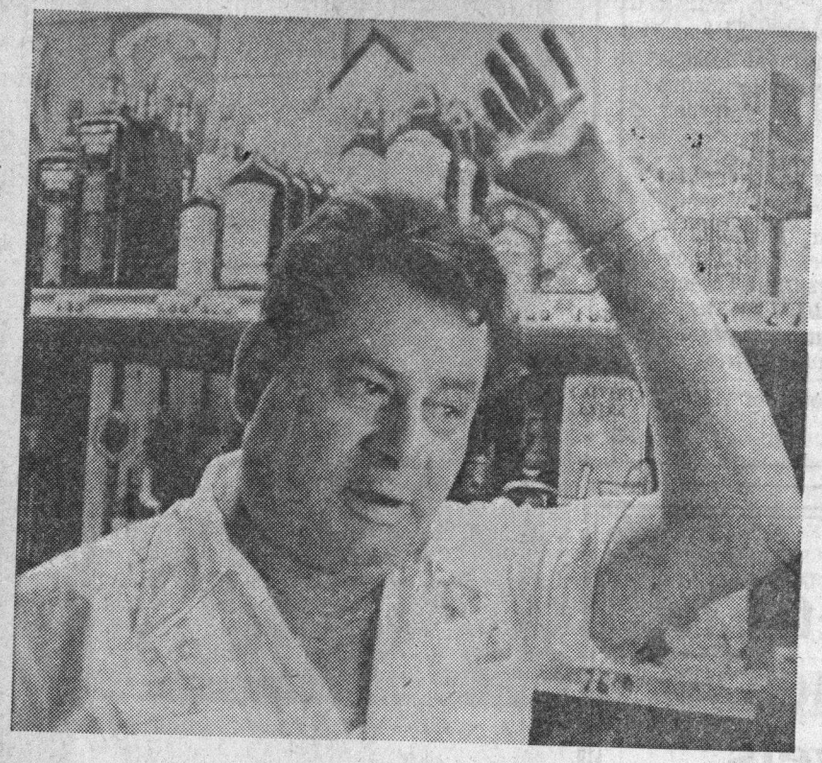
Thomas was nearly buried by hundreds of country and western albums.

"All the records and cassettes started falling off the wall, spilling every where," he said.

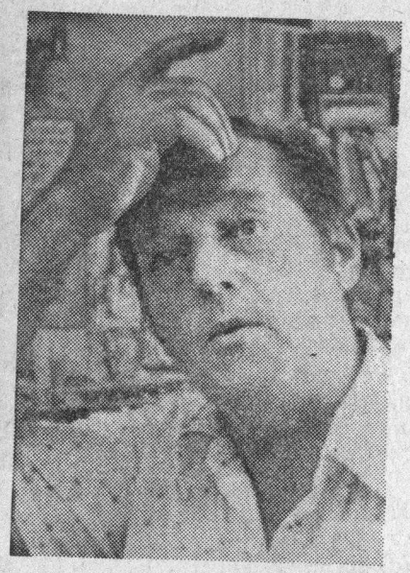
"I tried to hold them back, but it was futile. I got out of there fast," he said.

Five other employees also fled the building, but Thomas said, "we never went off the air. A cassette fell on the needle on the turntable and Little Jimmy Dickens just kept playing."

Motorists on Highway 101 overpasses reported being tossed from lane to lane as the quake swayed



John Alvarez suffered a $4000 loss at his liquor store



RALPH BLACKBURN
'Visualize a rough ocean'

support pillars but otherwise caused no apparent damage.

"This one scared the hell out of me," said Gilroy rural fire chief Frank Borg, who was sipping coffee when the quake struck.

"I ran like hell outside," he said.

Adobe walls cracked at San Martin vineyard's wine tasting room where Barbara Vasquez was just about to escort a family from England on a tour.

"The walls began shaking, whole stacks of wine came tumbling down, and we ran for our lives," she said. "The startled visitors kept asking what this was. It was their first earthquake, and boy, were they scared.

"I've been in four-pointers before, but this was a doozy," she said.

"The only big loss," she said, "was a shattered case of late harvest semillion, which goes for $10 a bottle.

"Thank God, it was only one case," she said.

Supermarket shelves were virtually emptied at the Fairway Market. The top of a brick chimney cracked and nearly topled at The Owl, a drug treatment center in a 75-year-old house one block off Monterey Road, Gilroy's main street.

"It was really scary. Everything creaked and moved," said center director Mike Oshan.

At least three PG&E gas lines snapped in the Gilroy area, sparking grass fires.

At Jack's Used Car Lot, Monterey and Welburn Roads, a hastily chalked sign advertised cars for sale at "earthshaking prices."

By late afternoon most merchants had cleaned up spilled goods, boarded up cracked windows and hauled away the fallen plaster that littered stores and homes across the town.

said that about 12 top energy officials were "fairly critically involved" in the investigation, with many other staff members "working on particulars."

"This had high-level attention in the department," Coleman said.

In describing how the 45-day investigation actually was conducted, he said that DOE officials had "lengthy meetings, discussing the thing orally."

He said that the information gathered for the probe was similar to "the kind the department wrestles with every day of the week."

Coleman said the conclusions of the report were not unexpected by DOE officials. "Certainly we had a general idea of the parameters because we follow this stuff regularly. We weren't surprised by what we found."

The 53-page report basically exonerated the oil industry of charges that it deliberately hoarded gasoline supplies to create a shortage, and thus raise gasoline prices. Instead, the report places considerable blame for the fuel shortages on the Carter administration's allocation program.

The report was compiled and written by Carlyle Hystad of the DOE office of policy and evaluation.

Hystad said in an interview yesterday that the report was based mostly on industry statistics. He said that one DOE investigating arm, the special counsel's office, "did not provide any conclusions regarding specific companies."

The special counsel office is the one that has been assigned the audits of gasoline pricing and allocations. Hystad said these audits were not yet completed, so the findings could not be included in the report to the president.

Prime Minister Takes Office

Rome

Christian Democrat Francesco Cossiga took office today as prime minister of Italy's 38th government since World War II, hoping to bring stability to a nation that has drifted more than six months in a political vacuum.

Sardinian-born Cossiga and his 24-member "government of truce," including nine new faces, took the oath before President Sandro Pertini.

Reuters