

Mexican quake made small sea ripples

On land, the effects of the double earthquake that jolted Mexico last September were devastating (SN: 9/28/85, p. 196). But at sea, the earthquake's effects were relatively mild. According to a report in the December TSUNAMI NEWSLETTER by George Pararas-Carayannis, director of the International Tsunami Information Center in Honolulu, the tsunamis that rolled across the Pacific after the quake were small. For example, Ecuador reported some of the tallest waves, which were only 60 centimeters high. Along the Mexican coast, from Manzanillo to Acapulco, scientists estimate that the tsunami ranged from 1 to 3 meters tall.

The September earthquake occurred because the Cocos plate is subducting, or plunging, beneath the North American plate. Pararas-Carayannis attributes the relatively small size of the tsunamis to the shallow angle of this subduction and the small vertical motion of the crust during the earthquake.

Burst your bubble?

Bubbles, created when ocean waves break, can burst at the sea surface in two ways. The internal cavity of the bubble can collapse, creating "jet drops" of up to 100 microns in size that are ejected straight up in a line. Or a spray of much smaller droplets can form when the outer film of the bubble ruptures. Scientists, interested in learning about the liquid aerosols added to the air by ocean bubble-bursting, have focused their studies on jet drops, which, because of their size, small number and large ejection heights, are considerably easier to photograph in the laboratory than are "film drops."

Now, in the Jan. 15 JOURNAL OF GEOPHYSICAL RESEARCH, F.J. Resch at Toulon University in La Garde, France, and colleagues describe a method using holography to examine the behavior and creation of film drops when the film cap of a bubble fragments. "Although optical holography is already a well-established technique for determining the size and spatial location of very small particles . . . , it appears that this is the first time that the method has been applied to the study of a bubble breaking at liquid surface," the researchers write.

NOAA news notes

- Scientists at the National Oceanic and Atmospheric Administration (NOAA) say they solved the largest set of mathematical equations ever attempted when they recently finished a 12-year project to recompute the national geodetic network, which consists of 250,000 precisely measured points on the earth's surface. This network has been gradually compiled since 1807; the last time the network data were readjusted was in 1927.

- NOAA reports that one of the strongest geomagnetic storms since 1976 disrupted communications across the northern United States during the first weeks of February. The magnetic storm, which is caused by a surge of charged particles from the sun, has been linked to a series of solar flares.

- Radiosondes — shoebox-sized instrument packages that are carried by helium balloons to altitudes of 20 miles — are launched twice daily from 100 sites to measure the temperature, pressure, humidity and winds in the atmosphere — data essential for monitoring and forecasting the weather. Radiosondes are designed to parachute back to earth when their balloons burst; the hope is that people who find them will return them to the National Weather Service, so that they can be rebuilt and used again. Normally, about 18,000 are returned per year. But in recent years, reports NOAA, for some unknown reason the number of returns has dropped by several thousand each year. So NOAA, with a little help from the Sierra Club, the Boy Scouts of America and other groups, is putting out the word for people to be on the lookout for the radiosondes.

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The importance of being inventive

Browsing at the Patent and Trademark Office's National Inventors Expo, held last week in Arlington, Va., was like sampling a mail-order catalog from Alice's Wonderland. At one booth, an earnest inventor extolled the virtues of a system for scavenging anesthetic gas during surgical operations, while nearby another demonstrated a portable cello that folds up into a package just a little larger than a toolbox. There were more than 50 inventors at the show, all holding recent patents and hoping to attract the world's attention.

Many of the displayed inventions are rooted in the simple frustrations of everyday life. Is the stereo too loud when you answer the telephone? William P. Hammond of Kirkwood, Mo., has an electronic device that automatically turns down the sound when the telephone rings or when you dial out.

Do your cats protest and scratch when you try to powder or spray them? Rod O'Connor, a chemistry professor and founder of Texas Romec, Inc., in College Station, Texas, has come up with "d'flea," a liquid-dispensing comb. While the animal is soothingly groomed, a flea-killing liquid oozes from the comb's porous nylon teeth.

Having trouble splitting wood for your cozy fireplace? Harry A. Thor's "Easy Motion" wood splitter, sold from his home in Vestal, N.Y., may be the answer. Just raise a sliding 5-pound weight to the top of a steel guide tube; then let it fall. The plummeting "hammer" drives a steel wedge fastened to the tube's lower end into the wood. A spring in the wedge assembly reduces the impact shock.

Other inventions are just plain fun. The "Gravikord" looks like a steel and wire model of a suspension bridge, but in reality it's a new musical instrument. Invented by Robert Grawi of White Bear Enterprises in New York City, the instrument is the electronic descendant of the African *kora* or double harp. This vertically held, lap-supported instrument has small handlebars that free a musician's thumbs for strumming its 25 strings to generate ripples of metallic sound.

And some inventions are hard to categorize. Roy L. Lundgren of Ft. Lauderdale, Fla., wants to tap the energy in pedestrian traffic. His "pedestrian energy transfer system" consists of thin pads that contain several rocker arms mounted on shafts. When people walk over the device, which can be hidden under a carpet, the rocker arms are pushed down and drive the shaft. At the expo, a rapidly hopping child generated enough power to set two electric fans spinning.

James O. Coon Jr. of Alachua, Fla., has come up with a low-cost, low-volume machine for placing inserts into newspapers or similar publications. Unlike the complex insert machines now available, says Coon, his invention is simple and cheap.

In conjunction with the expo, five inventors were inducted into the National Inventors Hall of Fame, bringing the number of inductees to 64. The inventors honored this year are Harold E. Edgerton for the invention of the stroboscope, Wilson Greatbatch for his cardiac pacemaker, Luther Burbank for his Elberta peach plant patent, and Ernest H. Volwiler and Donalee L. Tabern for the development of the anesthetic Pentothal.

Laser patent dispute

In 1959, inventor Gordon Gould applied for a patent that covered gas-discharge lasers. The Patent and Trademark Office denied Gould the patent. Late last year, Judge Thomas A. Flannery of the U.S. Court of Appeals decided the agency had made errors in its examination and that Gould deserves a patent. If Gould gets and enforces his patent, he will be able to collect royalties on all helium-neon and carbon dioxide lasers now manufactured, a market worth hundreds of millions of dollars. Gould, who lives in Kinsale, Va., has been involved in several other laser patent disputes (SN: 3/20/82, p. 199).

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