

earth sciences

The bottom drops out in Alabama

With a roar, a crashing of trees and a shaking of houses, a huge patch of ground collapsed in central Alabama recently, producing what is apparently the largest sinkhole to form in the United States in recent years.

The resulting pit is some 425 feet long, 350 feet wide and 150 feet deep, and is located in the woods of Shelby County near Montevallo, Ala. The collapse apparently occurred on Dec. 2, but was not discovered until hunters found it by accident two days later.

The U.S. Geological Survey estimates that at least 1,000 other sinkholes and similar collapses have formed in the last 15 years over a 10-square-mile area of the county. Such features usually occur in areas where the surface is underlain by cave-ridden pockets of limestone, which the USGS believes may include as much as 15 percent of the conterminous 48 states.

Collapses can be triggered by changes in precipitation, water table level, runoff or erosion, or by man-produced effects such as vibration and overloading of the surface of the land.

Unexplained craters pock the ocean floor

A number of unexplained craters, three to five feet in diameter and one to two feet deep, have been found in the steep underwater slopes of Point Mugu Submarine Canyon off the southern California coast.

Although the U.S. Navy uses the area for target practice, diver-oceanographers for the Dames and Moore consulting firm in Los Angeles believe that there is no connection. "If they were caused by missiles or bombs, we would have found fragments," says marine geologist Jerry C. Wilson, who also rules out energy surges from waves. "An energy surge would cause soil around the hole to spread out," Wilson says, "and we didn't observe that."

A possible cause is an earthquake that shook much of Ventura and Los Angeles Counties on Feb. 21, which might have shaken some loose, unconsolidated material into collapsing from beneath. Another possibility, Wilson suggests, is that natural gas bubbles trapped by the fine-grained soil shook loose, compacting perhaps as part of the long-term geologic process of forming rocks. A third quake-related mechanism might have been that the sand, behaving like a liquid, welled up into something like a small volcano, but Wilson rules that out, again because they "looked like they were formed because their bottoms dropped."

The craters were found every 10 or 15 feet, spread over an observed area about the size of a football field.

Hourly monitoring of tides

Along most of the coastline of the United States, the tides rise and fall at a regular, stately pace. In some areas, however, bottlenecks and steep bottom slopes produce such rapid changes in water depth that less than an hour's time can make a substantial difference to commercial shipping.

One such area is Cook Inlet, feeding the port at Anchorage, Alaska. The fact that Anchorage is now considered to be open to shipping year-round has prompted the National Oceanic and Atmospheric Administration to undertake a pilot program providing hour-by-hour predictions of tidal heights, including times and heights of high and low tide.

The data are published in book form, so far through the end of 1973. If it proves to be useful enough, the service may be continued annually and possibly extended to other shipping areas.

behavioral sciences

Hypnosis and the wart

In 1927 it was suggested that hypnosis could be used to remove warts. Supporting evidence, however, has been less than overwhelming. Now, researchers at Massachusetts General Hospital in Boston have conducted a controlled experiment and conclude that "warts do tend to respond to hypnosis."

Owen S. Surman, Sheldon K. Gottlieb, Thomas P. Hackett and Elizabeth L. Silverberg report their findings in the March ARCHIVES OF GENERAL PSYCHIATRY. Seventeen patients, with an average of 30 warts, were treated hypnotically once a week for five weeks. Hypnosis was induced by an eye fixation technique followed by hand levitation. Patients were told under hypnosis that warts on one side of the body (chosen by the patient) would soon disappear. Seven control patients received no hypnosis. Both groups abstained from all other forms of treatment. Three months later both groups were examined. Of those hypnotized, 9 (53 percent) showed significant improvement. A sudden loss of all warts occurred in four patients. Four reported gradual fading, and one experienced successive sudden loss of individual warts. None of the seven control patients showed improvement. Of these, four subsequently received hypnotherapy and three showed significant improvement.

Stimulants, students and growth

An estimated one percent of all children in elementary schools are prescribed stimulants as a form of therapy for hyperactivity. Researchers at the Baltimore County Department of Health warn that long-term use of certain stimulant drugs can lead to "a highly significant suppression of growth in weight and height." Daniel J. Safer and Richard P. Allen report in the April PEDIATRICS on studies of 63 hyperactive children. Of these children, 29 were using dextro-amphetamine sulfate, 20 were on methylphenidate and 14 received no medication. After three years, the children on higher doses of methylphenidate (more than 20 mg daily) had achieved only 83 percent of their expected gains in weight and height. Those on dextroamphetamine achieved only 62 percent of expected weight gain and 75 percent of expected height gain. For this drug the significant factor was not dosage but duration and frequency of treatment. The researchers warn that stimulants should be used only when necessary to benefit the hyperactive child during the school year. There is evidence, they say, that children rebound in weight and height when off the drugs during the summer. This rebound, however, does not entirely compensate for the growth lost during the academic year.

In addition to hindering growth, these drugs also appear to cause learning problems. Working with stimulants and tranquilizers at Georgetown University Medical Center, Donald M. Thompson has shown that both types of drugs impair the learning process of pigeons.

From addiction to alcoholism

Some addicts, when they give up heroin in exchange for methadone, become alcoholics. Doctors at the Baltimore City Hospital used the reinforcing properties of methadone to get alcoholic patients to take disulfiram (Antabuse), an alcohol antagonist. The patients were given methadone only if they took disulfiram. As expected, alcoholism was controlled. But the researchers admit in the April AMERICAN JOURNAL OF PSYCHIATRY that "disulfiram will not affect the causes of these patients' drinking any more than methadone treatment gets at the roots of heroin addiction."