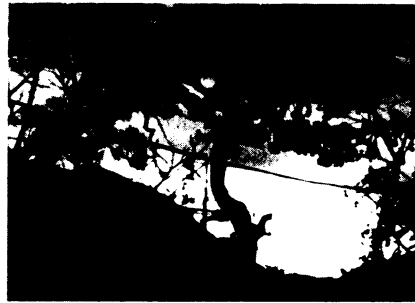
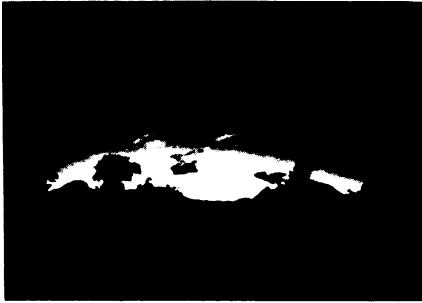


Explanation for 'eerie' earthquake lights



Photos: USGS

The eerie glow that sometimes accompanies a large earthquake is caused by an electric charge produced when rocks moving along the fault zone are heated by friction, according to a report presented last week by U.S. Geological Survey scientists at the American Geophysical Union meeting in Philadelphia.

The researchers, James D. Byerlee, David A. Lockner and Malcolm J. Johnson of USGS, Menlo Park, Calif., reported that earthquake lights occur when friction at the fault line heats up a thin strip of rock that extends to the earth's surface. The heated rocks in turn vaporize water that forms an insulating barrier around the slipped section of the fault. The scientists report the combination of rock shearing and water vaporization generates an electric field responsible for a discharge of electricity seen as earthquake lights.

The earthquake lights in the above photographs were taken during a series of Japanese earthquakes from 1965 to 1967 by T. Kuribayashi. Described as beams and columns of light in the night sky, earthquake lights have been seen as far as 70 miles from the epicenter and are most intense during the middle of an earthquake. USGS scientists said the phenomenon occurs only when friction at the fault zone is large.

Contraceptive versus pregnancy risks

Pregnancy-related deaths have fallen dramatically in recent years while those due to contraception-related complications have risen, to the point where both causes account for a nearly equal number of deaths among women in the United States. So report Peter M. Layde and colleagues at the Centers for Disease Control in Atlanta in the May 28 *JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION*.

The researchers wanted to determine the total reproductive mortality rate among U.S. women from 1955 to 1975; what percentage of this was due to ectopic pregnancies, miscarriages, abortions and related pregnancy complications; and what percentage was due to sterilization complications, infection-related intrauterine device complications or to stroke or heart attack caused by oral contraceptives. To obtain the answers, they studied vital statistics from the National

Center for Health Statistics as well as epidemiological study results published by the CDC and other scientific sources.

The reproductive mortality rate among American women, they found, dropped by 73 percent between 1955 and 1975, from 7.8 per 100,000 women aged 15 to 44 years in 1955 to 2.1 in 1975. However, while 99 percent of reproductive deaths were pregnancy-related and one percent were contraceptive-related in 1955, 53 percent were pregnancy-related and 47 percent were contraceptive-related in 1975. What's more, of this 47 percent, 45 percent was due to oral contraceptive use, and mostly among women aged 35 to 44. So while "our estimates indicate that the risk of reproduction-related mortality has declined sharply since 1955," they conclude, "... the increasing importance of contraceptive-related deaths suggests that further reduction of the reproductive

mortality rate will depend on eliminating deaths due to modern methods of contraception, particularly those associated with OC use in women aged 35 years and older."

Such a reduction, in fact, may already be in the works, they point out. The latest American contraceptive use data stem only from 1975 and several studies have been published since 1975 revealing that oral contraceptive risks are greatest among women older than 35 years, especially among those who smoke cigarettes (SN: 4/9/77, p. 233). —J. A. Treichel

Infant poisoning by benzyl alcohol?

The U.S. Food and Drug Administration is trying to get the word out that benzyl alcohol used as a preservative in certain intravenous solutions may cause a fatal syndrome in premature infants. In 50,000 letters—dated May 28—mailed to doctors and hospital pharmacists and administrators, the agency reports that the long-used preservative has been linked with the deaths of 16 newborns, each weighing less than 5.5 pounds.

The deaths occurred among premature infants undergoing intensive care at two medical centers. Juan J. Gershanik and colleagues of the Southern Baptist Hospital in New Orleans reported six of the cases in January at the Southern Society for Pediatrics Research meeting in the same city. In all cases, death followed a pattern of central nervous system depression, respiratory distress progressing to gasping, renal failure and sometimes seizures. Meanwhile, Neil R.M. Buist and associates noticed the same symptoms preceding the deaths of 10 low-weight premature infants at the Doernbecher Memorial Hospital for Children in Portland, Ore. At both medical centers, no additional cases of the fatal syndrome have been seen since the doctors discontinued using benzyl alcohol among premature infants.

Benzyl alcohol is commonly found in intravenous solutions that are drawn more than once from the same small container. "Most of the things you see hanging over beds are not these small, multi-dose vials," William Grigg of FDA explains. Instead, the benzyl alcohol preservative is found, for example, in saline solution that is used for flushing an intravenous or arterial catheter after blood samples are drawn. (In premature infants, the same catheter is used for administering food and medication and must be flushed after it is used to draw blood for tests.) The chemical also may be added to sterile water, which then can be used as an intravenous vehicle for medications. Such benzyl alcohol-containing solutions have not been reported to cause problems in older infants, in children or in adults, Grigg says.

—L. Garmon