and some 22 feet of vertical movement along the Hegben fault. The doming of the area continued at least 5 years after the quake.

Evidence indicates that intrusion of magma upward into the crust is the most likely cause of the observed uplift. This suggestion is supported by the proximity of the doming region to the thermally active Yellowstone region.

The weekend goes extraterrestrial

There is preliminary evidence that man's terrestrial activities may be affecting a region of space thousands of miles away. Several independent experiments by Stanford engineers have measured slight changes in the earth's ionosphere and magnetosphere that occur only during weekends. The ionosphere is the electrically charged layer of the upper atmosphere, off which radio signals bounce in long-distance communications and beyond which is the magnetosphere, an extensive region of space that envelopes the earth and contains its magnetic field. Interpreting the results, Chung Gun Park expresses the experimenters' consensus conclusion that "there is no known weekly cycle in nature. It has to be a manmade effect."

Antony C. Fraser-Smith, who conducted the first such Stanford experiment, has detected a slight overall weekend increase of the earth's magnetic field. Some of his data are derived from records that go back over a century, and he finds the effect persisting from the present until about 80 years ago. Although each of the other two experiments has detected disturbances in other aspects of the spatial regions, each of them corroborate the weekend behavior.

The engineers involved suggest that the weekend effect is caused in part by the complex of power lines that crisscross the United States. They base the hypothesis on some theoretical work done 20 years ago by Stanford professor Robert A. Helliwell. According to it, a small amount of radiation that leaks from the earth's surface into space can there provoke a disturbance about one million times greater than itself. This enormous amplification factor makes plausible the idea that man's piddlings on earth could precipitate an effect thousands of miles removed in space. Furthermore, Fraser-Smith speculates, the appearance of the weekend effect seems to roughly coincide with the emergence of power lines in the United States, about 80 years ago.

Sea quartz maps land wind

In an unusual addition to the study of earth's climatic evolution, a researcher is using quartz crystals to probe the winds of the past. The crystals were embedded in a 3-meter core sample of the Atlantic Ocean floor, taken from just north of the Cape Verde Islands about 1,600 kilometers west of Africa. Their presence in varying sizes reflects changes in the winds that carried them there from the land.

"The stronger the wind," says J. Paul Dauphin of the University of Rhode Island, "the larger the grain size which that wind can carry. . . . You can see the grain size vary as you measure down the core length." Pure quartz is particularly useful, he says, since it avoids the difficulties of making the same calculations from "bulk, carbonate-free material," which is likely to include a range of densities.

Dauphin reports that his results also correlate well with oxygen-isotope data from the same sample. As the earth cools, heading for a glacial period, the winds intensify, he says, reducing in strength as the world warms up. The quartz-dust concentrations, reflecting changes in the region's dominant northeast trade winds, match the oxygen-isotope inferences back through at least two glacial cycles.

BIOLOGY

Mosquito love spreads human virus

Viruses take various routes from one disease-causing infection to the next. The La Crosse virus, which causes encephalitis in almost 100 children each year, is transmitted by mosquitoes in the midwestern and eastern United States. The mosquitoes often obtain the virus from infected chipmunks and squirrels. The virus may also pass from female mosquitoes to their eggs and thus to the next mosquito generation. The most recent discovery of Wayne H. Thompson and Barry J. Beaty at the University of Wisconsin is the first case of venereal transmission of a virus by mosquitoes—mating spreads La Crosse virus.

In the laboratory, Thompson and Beaty induced "limited contact" mating of mosquitoes to prevent viral spread by other routes, such as through the saliva. La Crosse virus was detected with a chemical probe, a specially constructed antibody that fluoresces when it binds the virus. The researchers found that sex glands of infected male mosquitoes and the extruded semen both contain large amounts of virus. After mating with an infected male, all previously uninfected females have virus in the lower reproductive tract. In 5 percent, virus spreads to other organs such as nerves, ovaries and salivary glands.

The La Crosse virus has been detected in about a third of the eggs laid by an infected female. Thompson is now collecting mosquito eggs from the field to determine the virus's natural prevalence. Transmission through eggs is the main way the La Crosse virus population survives the winter, Thompson explains. "The infection seems to have no effect on the mosquitoes' ability to survive and mate," he reports.

Peptide found to cool cold rats

Bombesin, a 14-amino-acid peptide chain originally isolated from the skin of frogs, is powerful in a new role. A tiny amount of the peptide, when injected into the brain, lowers the body temperature of rats exposed to cold, Marvin Brown, Jean Rivier and Wylie Vale report in the May 27 SCIENCE. They find, however, that bombesin does not cool animals kept at room temperature. The researchers explain the peptide probably decreases a rat's ability to produce heat or increases its heat loss.

Although bombesin has never been isolated from a mammalian brain, the Salk Institute researchers have indications that the peptide is relevant to normal function. Antibodies made to bind that peptide react in pig and rat brains with a material that either is or resembles bombesin. The investigators are now exploring the interactions of bombesin with hormones known to coordinately control body temperature and determining whether bombesin will prevent fever. They suggest the peptide may be valuable in reducing body temperature for surgery.

Antibiotic action: An outside job?

A spoonful of gelatinous beads may help future medicines go down. Researchers at the University of Illinois report that antibiotics tethered to 0.1 millimeter spheres can still interfere with the growth of certain bacteria. The drugs used, polymixin B and EM 49, are known to inhibit respiration in bacteria. But when the antibiotics are bound to the beads, which are 100 times larger than the bacteria, they are unable to reach the bacterial inner membrane where respiration occurs. David C. LaPorte, Ken S. Rosenthal and Dan R. Storm propose in the April 19 issue of BIOCHEMISTRY that these antibiotics act indirectly by perturbing the structure of the bacteria's outer membranes. Attachment of antibiotics to large polymers, such as these beads, will be a useful tool for studying drug interactions with cell surfaces and may have clinical value for permanently sterilizing cotton bandages or reducing drug side effects.