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Comet West, with 50-million-mile tail.

sota in the north to the European Southern Observatory in the south and from the Uttar Pradesh State Observatory in India in the east to the University of Iowa in the west. They find carbon in two- and three-atom combinations, cyanogen (CN), CH radicals, sodium and positively ionized water molecules (H_2O^+).

The latest reports in hand at the time of writing give a visual magnitude of 3.1 on March 18. They also predict that the three subsidiary nuclei will continue to separate from nucleus A. By April 22, nucleus B is expected to be half a minute of arc from A, nucleus C nearly a whole minute away and nucleus D 13 seconds away. □

Solar neutrinos: Still negative

The mystery of the missing solar neutrinos remains a mystery in spite of rumors to the contrary. That is the latest word from Raymond Davis Jr. of Brookhaven National Laboratory, leader of the experimental group that has been searching for the theoretically predicted flux of neutrinos from the sun for the last 15 years. The scientists have not seen anything they could call a solar neutrino flux.

What started talk to the contrary was a progress report by Davis that referred to some recent runs of the experiment that yielded high data readings. The experiment consists of a tank of cleaning fluid (perchloroethylene) located in a mine near Lead, S.D. Burial shields the tank from nearly all particles but neutrinos. Incoming neutrinos should react with chlorine nuclei in the fluid to produce a radioactive form of argon. The argon production is monitored to determine the neutrino flux.

For years the experiment recorded only data that were consistently well below what the usual theory of nuclear processes in the sun would expect. Lately, four data runs that fall within the range expected by theory have turned up. These

include numbers 27, 36, 37 and 38.

Because the last three runs have been high, some people seem to have concluded that something was wrong with the experiment in the past and has now come right so that solar neutrinos in the expected amount are finally being recorded. Davis says nothing has changed. Whatever is right with the experiment has always been right with it. Other people seem to have concluded that the appearance of three high runs in a row is evidence that the sun's neutrino producing mechanism was turned off and has now turned on. There are theories that provide such off-and-on behavior, one of them (due to Fred Hoyle) giving an 11-year cycle, but Davis thinks them a bit far-fetched. In his opinion, Davis told SCIENCE NEWS, the high runs so far can be considered to be only part of the expected statistical fluctuation in an experiment of this kind, and a negative conclusion on solar neutrino flux is the only one yet warranted. □

Mauna Loa: Major eruption predicted

U.S. Geological Survey volcanologists predict that the Mauna Loa volcano on the island of Hawaii will undergo a major eruption sometime before July 1978. They warn that a sustained eruption could, if a sufficiently high quantity of lava is produced, endanger the coastal city of Hilo, the island's economic and transportation center.

The prediction is based on a review of the past eruptive history of Mauna Loa, one of earth's largest and most active volcanoes. The volcano ended its longest period of dormancy ever—25 years—July 5 and 6, 1975. That eruption was small by Mauna Loa standards—less than 30 million cubic meters of lava were erupted.

But scientists at the USGS Hawaiian Volcano Observatory believe the July 1975 eruption was the first phase in a three-phase eruption cycle along Mauna Loa's northeast rift zone. According to this pattern, last year's summit eruption will be followed by another small and brief summit eruption and then immediately by an eruption along the volcano's northeast flank. This fissure is expected to form a "curtain of fire" one to two miles long, with lava erupting at high rates, and lava flowing as far as 10 miles downslope in the first 48 hours. The lava could eventually reach Hilo "if a sufficiently high rate of lava eruptions continue for a sufficient period of time."

Hawaiian authorities have been alerted. Countermeasures are under study. They include diversion of the lava flow by explosives, by construction of earthen barriers and by application of large volumes of water to the leading edges of lava flows in hopes of cooling them enough to form barriers of solid rock. □

Emotions and sudden death

The belief that emotions can trigger sudden death goes back centuries. Only recently, however, has medical science been able to confirm it and to explore how it happens. Animal studies, for example, have revealed that the nervous system is a culprit in heart attacks; that ventricular fibrillation—abnormally fast contractions of the ventricle of the heart—is the critical mechanism responsible for instant cardiac death, and that emotions can trigger this fibrillation and death. Thanks to the advent of human heart-monitoring and cardiac-resuscitation techniques, doctors have determined that emotions can send the hearts of heart disease patients into ventricular fibrillation.

Now a case history further confirms the role of emotions as a cause of fibrillation and subsequent cardiac death. It is reported in the March 18 NEW ENGLAND JOURNAL OF MEDICINE by Bernard Lown and his cardiovascular team at Harvard School of Public Health. The most intriguing aspect of this history is that emotions appeared capable of setting off fibrillation and heart arrest in the absence of heart disease.

The case concerned a 39-year-old Boston educator who enjoyed excellent health. Then one afternoon while roughhousing with his two teenage daughters, he experienced heart arrest. His wife, a nurse, gave him cardiopulmonary resuscitation. By the time he reached the hospital, his heart was beating again, but it was in fibrillation. The doctors examined him but could find no sign of heart disease. So they looked for a psychological cause for his fibrillation and arrest. Sure enough, psychiatric interviews revealed that the patient had been experiencing some turbulent, repressed emotions. Several months earlier, he had experienced his first career setback. It upset him greatly, since he was aggressive and competitive. Because his wife's father had recently died, she was not giving him the psychological support he desperately needed at this time. Then, while roughhousing with his daughters, he experienced aggressive, erotic impulses that ran counter to his deeply religious, sexually repressed nature. Either these emotions alone, or these emotions coupled with others he had been holding in recently, apparently set his heart into fibrillation and arrest. What's more, his fibrillation intensified while he underwent psychiatric interviews and while he was in the REM (dream) stage of sleep. These two factors further suggested that his fibrillation and cardiac arrest had an emotional origin.

So "psychologic and neurophysiologic factors may predispose to life-threatening cardiac arrhythmia in the absence of organic heart disease," Lown and his colleagues conclude. □