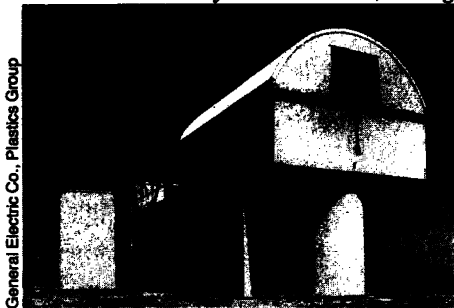


Do-it-yourself observatory: MIRA

One of the greatest difficulties facing any astronomer is getting time on a telescope. If the astronomer is young and wants to do research that requires a long sequence of observations, the problems are multiplied. Young astronomers have the further difficulty of finding a job. Industry offers very few places; even fairly large colleges often cannot afford to hire a full time astronomy instructor. Staff positions at large observatories are far fewer than those who would like to have them.

More than a decade ago a group of young astronomers from Case-Western Reserve University in Cleveland, facing



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MIRA observatory on Chew's Ridge.

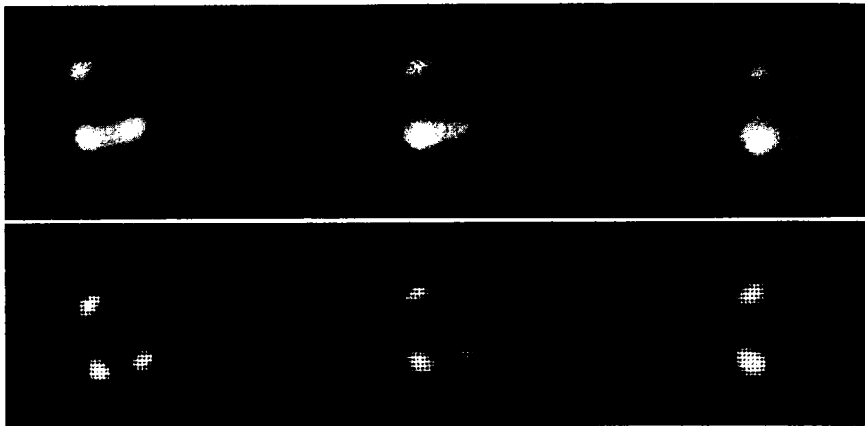
these problems, decided to found their own small observatory. Ohio is not the optimum location for astronomical seeing, so they went to California and founded the Monterey Institute for Research in Astronomy (MIRA). Now, at long last, they have their observatory, and with its 36-inch telescope it qualifies, in the words of MIRA's president, Cynthia Irvine, as a major observatory. Recently they completed the installation of the telescope in its permanent home, and for the occasion of last week's meeting in Santa Cruz, Calif., of the Astronomical Society of the Pacific, they hosted an open house for colleagues.

MIRA stands at the end of a long, winding and difficult road in both the literal and figurative senses of the word. The observatory is on the crest of Chew's Ridge at about 5,000 feet elevation, in sight of the Pacific Ocean and the Salinas Valley. The compact building houses the telescope, auxiliary equipment and eating and sleeping space for working astronomers. For a part of California that is a noted tourist attraction, the isolation is surprising. Even telephone installation is impossible.

Now that they have a working observatory, which took much longer than they expected to build, they hope to get on with the research they have largely postponed. They are trying to build up a fund to support the observatory's operations, and they also hope to attract a few visiting astronomers. There is a possibility of an affiliation with an academic institution, but negotiations are delicate, and Irvine would not reveal any details. —D.E. Thomsen

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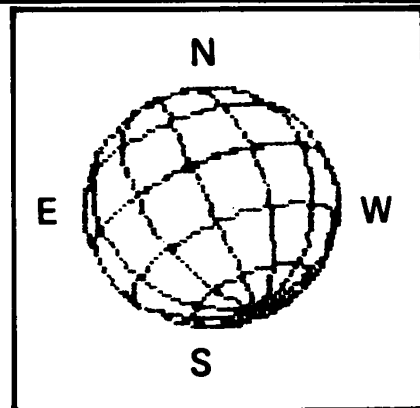
Neptune: The message of the day



Illustrations: JPL

Huge, bright, cloudlike features moving around the planet Neptune in these two three-image sequences have given astronomers what Bradford A. Smith of the University of Arizona calls the first opportunity to measure the length of a Neptunian day by direct observation. The apparent answer, according to Smith and Richard J. Terrile of Jet Propulsion Laboratory (JPL) in Pasadena, Calif.: about 17 hours and 50 minutes.

The images shown, described by JPL as "the best yet taken of the planet," were made using the "instrument definition model" of the charge-coupled device (CCD) camera developed for the Space Telescope, mounted to the 2.5-meter du Pont telescope at Las Campanas Observatory in Chile. They were made at the 8900-angstrom wavelength at which the methane in Neptune's atmosphere absorbs sunlight, making the planet look dark in contrast to the light reflected from the high clouds that may be either methane ice crystals or photochemically produced solid particles. The lower sequence shown is the computer-processed version of the sequence above, made sharp enough to reveal that the lower right bright spot appears to shrink as the pictures progress from left to right,



though it is actually moving around the planet's darkened limb, or edge. Tracking the speed of the moving spot indicates the speed of the atmosphere's rotation, at least at the spot's approximately 40° latitude. (On Jupiter and Saturn, Smith notes, the more conspicuously visible spots at that latitude tend to move at approximately the same rate as those planets' true, "internal" rotation periods.)

One implication of a 17^h50^m day, however, could be that Neptune's interior structure is different from those of the other giant planets. If it is similar except for scale, some researchers suggest, the day ought to be shorter, about 14^h.

Cocaine smoking may cause lung damage

Cocaine smoking, known as "freebasing," can cause a significant reduction of gas exchange in the lungs, even if the practice occurs over a period of only a few months, according to a report released in Washington, D.C., last week.

Freebase cocaine use is on the rise and "has become a serious health hazard in this country," says Sidney Schnoll, chief of the chemical dependence program at Northwestern Memorial Hospital in Chicago. "It is now apparent that [cocaine smoking] can cause adverse pulmonary effects," he told a press seminar convened by the Alcohol, Drug Abuse and Mental Health Administration.

When smoked after being converted into a purified "freebase" form, cocaine reaches maximum blood levels in two to five minutes. The "snorting" of cocaine crystals into the nostrils results in a peak blood level 20 minutes to one hour later.

Schnoll and two colleagues evaluated 19 persons who had been smoking cocaine for an average of 2 years, with a range of from 3 months to 5 years. The average age of the 13 men and 6 women was just under 30 years.

The subjects sought treatment, says Schnoll, because of job and family problems and financial difficulties stemming from cocaine habits that can cost up to

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