

## Extraterrestrial amino acids

Last December's report by a group from the National Aeronautics and Space Administration's Ames Research Center of finding indigenous amino acids in the Murchison meteorite (SN: 12/5/70, p. 429) has sparked intense scientific interest. The finding was subsequently confirmed by groups from the University of Houston (SN: 3/20/71, p. 195) and Arizona State University (SN: 3/27/71, p. 210).

The Arizona State scientists, Drs. John R. Cronin and Carleton B. Moore, also reported detecting the same amino acids in an intact piece of a similar meteorite that fell near Murray, Ky., in 1950. Now the leader of the NASA group, Dr. Cyril Ponnampereuma, confirms an abundance of amino acids in the Murray meteorite. Dr. Ponnampereuma told a meeting of the New York Academy of Sciences last week that the group's use of gas chromatography combined with mass spectrometry detected all 18 of the amino acids in Murray that they earlier found in Murchison. They also found the same two pyrimidines—4-hydroxypyrimidine and 4-hydroxymethylpyrimidine—in each meteorite. The

pyrimidines differ slightly from those found in nucleic acids in living cells.

The coincidence to the finds is further strong evidence that the amino acids and pyrimidines were created chemically in space. Although he can only speculate, Dr. Ponnampereuma suggests that the existence of identical complex patterns of amino acids and pyrimidines in two meteorites could mean that this is a basic phase in the chemical process leading to life. The findings increase the likelihood of life elsewhere in the universe.

In both meteorites, six of the amino acids are among those that are commonly linked together to form proteins in living cells; the other 12 are amino acids only occasionally found. They are thus not likely to result from terrestrial contamination. The amino acids are of an almost equal mixture of right- and left-handed molecular structures. Earth organisms produce only left-handed amino acids. The mixture of both types thus appears to rule-out biological origin and is strong evidence for extraterrestrial chemical origin.

Members of the Ames team also included Drs. James Lawless, Keith Kvenvolden, Clair Folsome and Miss Etta Peterson. ASU's Dr. Moore also took part. □

## Cyclops: Eye on the universe

For a total of 150 hours from May through July of 1960 the 85-foot antenna at the National Radio Astronomy Observatory in Green Bank, W.Va., monitored radio emissions from the nearby stars Tau Ceti and Epsilon Eridani for any evidence of signals from intelligent extraterrestrial civilizations. The search, Project Ozma, turned up nothing unusual. But it was the first time man had tried to detect signals from any unknown counterparts on other planetary systems.

Last week engineers and scientists gathered at the National Aeronautics and Space Administration's Ames Research Center in Mountain View, Calif., to explore the technological possibilities of a project that would be orders of magnitude more sophisticated than Ozma. The 11-week study, sponsored jointly by Ames and Stanford University, is called Project Cyclops. Its aim is to examine feasibilities and to educate, not to recommend policy. There is no intention of inaugurating such a project at this time. Decades might pass before it is possible. But the study co-directors, Dr. Bernard M. Oliver, vice president for research of the Hewlett-Packard Co. and a

visiting professor at Stanford, and Dr. John Billingham, chief of the biotechnology division at Ames, believe it is not too early for a fuller study of the technology necessary to detect artifact signals.

Basically, Cyclops envisions an interconnected array of 1,000 to 10,000 radio telescope dishes spread over an area perhaps 10 miles across. Such an array should, according to one estimate, be able to detect beamed signals from any civilization within 1,000 light-years. Normal radio "leakage" from the regular transmissions of advanced technological civilizations might be detectable from perhaps 100 light-years. The costs of such an array would have to be justified by the signal search itself, but the array would also be an excellent tool for radio astronomy. One goal of the study is to explore ways in which the dishes could be produced cheaply enough to make the idea feasible. "We would like to nail down the cost of doing this," says Dr. Oliver.

As for the Cyclops array itself, "its mission would be to add a new dimension to cosmology," Dr. Oliver says. "It might establish the science of biological cosmology."

## Whatever happened to UFO's?

On May 31 two New Hampshire farmers looked across a field and saw a spherical, flat-bottomed object hovering above the ground. As they watched, the object rose vertically, arced and headed into the wind on a horizontal path.

This is one of several incoming reports of unidentified flying objects received recently by the National Investigations Committee on Aerial Phenomena (NICAP) in Washington. NICAP secretary-treasurer Stuart Nixon says he believes the reports may be the start of a recurrence of saucer sightings or at least the reporting of saucer sightings. NICAP has been a long time waiting. Since 1968 the number of UFO sightings has dropped off, along with public interest in them. Last week a Wall Street Journal article reported that a probable reason for the decline is the negative social climate produced by publication in 1968 of the Condon report, the 810-page scientific study of UFO sightings commissioned by the U.S. Air Force and directed by Dr. Edward U. Condon of the University of Colorado. It concluded that "nothing has come from the study of UFO's in the last 21 years that has added to scientific knowledge." And "that further extensive study of UFO's probably cannot be justified in the expectation that science will be advanced thereby."

**This scientific debunking** of the UFO phenomena and the subsequent, though not necessarily connected, decline in sightings presents an interesting behavioral pattern. Dr. Ernest R. Hilgard, a Stanford University psychologist who served on the National Academy of Sciences panel that reviewed the Condon report, believes the report itself is not wholly responsible for the falling off of flying saucer interest. "I would like to feel that the report quieted the saucer interest," he says, "but I do not think so." People probably just lost interest, he suggests. "These fads go in cycles," he explains, and many persons who would have been interested in extraterrestrial phenomena have turned to other things: drugs, astrology, Oriental religions and various subjective and philosophic fields. As society becomes more affluent man has time to reflect on his position in the universe. As he does so he attempts to integrate himself into and make himself a more important part of that universe. Belief in other worldly things is one method of doing so, points out Dr. Hilgard. But national and international events of the past few years have tended to make people look inside rather than outside themselves for answers to universal questions. This fad too will pass, says Dr. Hilgard, who predicts