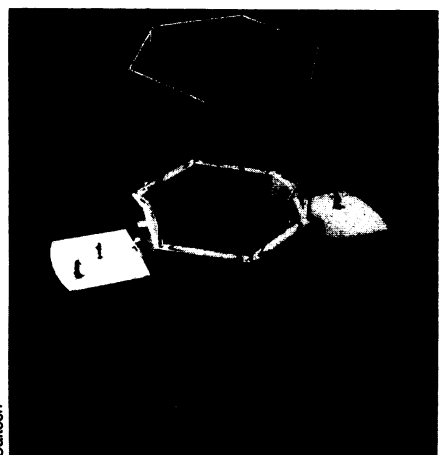


\$70 million pledge for 10-m telescope

In what appears to be the largest private gift ever made for scientific research, the W. M. Keck Foundation of Los Angeles will give \$70 million to California Institute of Technology for the construction of an observatory featuring a 10-meter diameter telescope. Caltech and the University of California will jointly build and operate the telescope. The site will be Mauna Kea on the island of Hawaii.

The \$70 million will very nearly cover the total cost of construction of the Keck Telescope, as the new instrument will be called. Construction is expected to begin in 1986. The beginning of scientific observations is anticipated in 1992. The gift, announced jointly last week by all three institutions, is conditional on the Keck Foundation's making a suitable contract with Caltech, and Caltech's making a suitable one with UC, but these are legal niceties over which representatives of the three organizations say they do not expect any difficulties. The Keck Foundation administers the legacy of William Myron Keck, founder of the Superior Oil Company (which merged with Mobil in 1984). The Foundation's total assets exceed \$500 million.



Model of the proposed 10-meter telescope shows the primary mirror built of hexagonal pieces and a secondary mirror hung at the top of the space frame, which will reflect rays back through a hole in the main mirror to a focus behind it.

The design of the telescope and the development of some of its unique features are already well advanced. The idea for a 10-meter telescope began among astronomers of UC, and a committee representing all of that institution's campuses that have astronomy departments was set up to plan it. Design and experiment with sample components have been going forward under the direction of Jerry Nelson of the Berkeley campus (SN: 7/28/79, p. 76).

Most experts in the field consider a 10-

meter monolithic mirror too big to be practical, so the design builds up the mirror out of hexagonal segments that are independently supported and moved. A prototype segment and its support and moving mechanisms are now under test at the Lawrence Berkeley Laboratory.

Early last year UC announced a pledge of \$35 million offered under the will of Marion O. Hoffman of Los Angeles (SN: 5/5/84, p. 277). As more money was needed, UC then went looking for other donors and other institutions to aid in the project. Association with Caltech is credited with bringing about the Keck Foundation offer; representatives of UC credit the efforts of Marvin L. Goldberger, president of Caltech, as instrumental in obtaining it. How much the Hoffman Foundation will now give remains to be determined. — *D. E. Thomsen*

Frog talk: Chirp, chuckle and thump

Like an Indian tracker who listens through the ground for distant hoofbeats, some Puerto Rican frogs receive information via seismic signals. But unlike the tracker, the frogs appear also to send signals through the ground to other frogs. This behavior, described in the Jan. 11 *SCIENCE*, "provides the first strong implication of the use of substrate-borne seismic signals in intraspecific communication in vertebrates," say Edwin R. Lewis of the University of California at Berkeley and Peter M. Narins of the Department of Biology at UC Los Angeles.

Out of view of others of his species, a male white-lipped frog typically emits a rapid train of chirps, which signal his location. When the frog is on mud, the start of each chirp is accompanied by a thump, which Lewis and Narins suggest is caused by the motion of the frog's throat pouch pressed against the ground. They have demonstrated that a frog's ear can respond to the body vibrations that the thump's seismic signal produces. In fact, the male white-lipped frogs exhibit the most acute sensitivity to seismic stimuli observed in any animal, Lewis and Narins report.

The thumps accompanying a frog's chirps may provide information important to interactions between males. When the scientists mimic the thumps by lightly tapping their fingers on the ground a meter or two away from a calling frog, it typically responds with pauses and extended vocalizations called chuckles, the same response it makes to the sound of chirps. Lewis and Narins argue that the difference in speed between the airborne chirp and the ground-borne thump may indicate the distance between frogs, and thus help male frogs establish and maintain their closely spaced territories. — *J.A. Miller*

Protean ways of Epstein-Barr virus

Epstein-Barr virus causes mononucleosis and is strongly linked to Burkitt's lymphoma and nasopharyngeal carcinoma; and now this member of the herpesvirus family is being blamed for a chronic flulike condition.

Two reports in the January *ANNALS OF INTERNAL MEDICINE* describe "chronic active Epstein-Barr virus infection" as the persistence for more than a year of high levels of antibody to the virus accompanied by a constellation of low-grade symptoms, among them fatigue, headache, depression, sore throat, fever, aches and pains.

The condition was found in 39 of 44 patients with recurrent illness of no known cause who had been referred to the University of Arizona Hospital in Tucson, and in 23 of 31 such patients seen at the National Institutes of Health (NIH) in Bethesda, Md., and elsewhere. The prevalence of the chronic infection is not known. "My guess," says James F. Jones, who headed the Arizona study and is now at the National Jewish Hospital in Denver, "is that this is probably not a terribly uncommon problem. But it's hard to guess." Jones knows of about 500 cases. The authors of the second study term the condition "not rare."

During mononucleosis and in milder, sometimes symptomless Epstein-Barr infections, the virus takes up residence in certain white blood cells and immortalizes them. So once a person is infected—as 90 percent of people over 30 in the United States have been—the virus is always present. Why a small percentage of people chronically suffer from it is a mystery.

Nor is a cure available. If Epstein-Barr virus is firmly pinpointed as the cause and not an effect of the chronic condition, acyclovir, an antiviral drug with some success against herpesviruses, may prove useful, one of the reports notes. Meanwhile, the researchers expect that being able to diagnose a specific medical condition should be of some comfort to its victims, most of whom have been labeled as malingerers or as suffering from psychiatric problems. "The primary benefit of all this for these individuals is knowing they do have something and they're not rejects from society," says Jones.

Although a Brooklyn physician in 1948 reported finding chronic symptoms following mononucleosis, and there have been a handful of reports since then, the virus has been widely believed to sleep quietly once it had established itself in the white cells. But all other members of the herpesvirus family are known to hide out in the body and periodically cause trouble, notes Jones. "So it's not unusual to think Epstein-Barr virus can do this," he says.

— *J. Silberman*