

The Month at Caltech

Grant for Star Study

The Institute has received a \$357,200 grant from the National Science Foundation to support continuing nuclear astrophysics research under the direction of William A. Fowler, Caltech professor of physics. The funds are to finance further studies on the structure and evolution of celestial objects and on the synthesis of the chemical elements in them. These include meteorites, the sun and other stars, the material in space between galaxies, and quasars.

Dr. Fowler, who has been the principal investigator in this research, will work with some 15 other scientists, including Gerald J. Wasserburg, professor of geology and geophysics; John N. Bahcall, assistant professor of theoretical physics; Donald S. Burnett, assistant professor of nuclear geochemistry; and Fred Hoyle, visiting associate in physics.

The work of the Caltech group covers six broad areas:

1. The synthesis of the elements in stars. Dr. Fowler said he now believes that the heavier ele-



William A. Fowler

ments were created in such grand catastrophies as explosions involving stars millions of times more massive than the sun.

2. Properties of super-massive stars as possible models for the mysterious quasars. The nature of these most energetic objects in the universe intrigues astronomers. The quasars may be enormous stars unlike any that have been observed in our galaxy.

3. Use of the bright light from the distant quasars to reveal something about the composition and excitation of the matter in space between them and the earth.

4. Calculations of stellar structure and evolution based on the rates of nuclear reactions that are determined in the laboratory. Many of these rates are obtained with the electrostatic accelerators in Caltech's Kellogg Radiation Laboratory and in its Sloan Laboratory of Mathematics and Physics.

5. Development of methods to test directly by observations the theory that the sun and stars shine because of nuclear processes in their cores. This will be done in a "neutrino observatory" 4,500 feet deep in the Sunshine Mine in Kellogg, Idaho.

6. Contributions of Drs. Wasserburg and Burnett to the understanding of meteorites in studies of the chemical and isotopic composition of different kinds of these visitors from space.

Honors and Awards

Fritz Zwicky, Caltech professor of astrophysics and staff member of the Mt. Wilson and Palomar Observatories, has been elected vice president of the International Academy of Astronautics. The 180-member academy also named Dr. Zwicky finance chairman and a member of two committees — one concerned with an international lunar laboratory and one with space relativity.

Jack E. McKee, Caltech professor of environmental health engineering, has been appointed a member of the Atomic Energy Commission's advisory committee on reactor safeguards. The 15-member

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committee reviews applications for new nuclear power reactors and advises on the safety of the proposed reactors. Dr. McKee, who has been a member of the Caltech faculty since 1949, received his MS and PhD degrees in sanitary engineering from Harvard University.

Eugene M. Shoemaker, Caltech research associate in astrogeology, has received the John Price Wetherill Medal from The Franklin Institute of Philadelphia. Dr. Shoemaker, who is also chief of the astrogeology branch of the United States Geological Survey in Flagstaff, Arizona, and Edward Ching-Te Chao of Arlington, Virginia, both received medals for their discovery of natural coesite in craters in various parts of the world — proof that these craters were made by meteorite impact rather than by volcanic activity.

First AUFS Visit

The first of the representatives of the American Universities Field Staff will arrive on campus January 4 for 10 days of lectures and informal talks with Caltech students and faculty. Richard W. Patch, specialist in Latin American affairs, will report on Boliva and Peru in a series of discussion and luncheon groups, classes, and seminars until January 13. Lawrence Olson will be at Caltech from January 18 to 27 to discuss conditions in Japan.



An unscheduled exhibit tops them all on Caltech's Students' Day, as the old Throop Hall clock becomes an oversized Mickey Mouse watch. The contrivance was a contribution of a group of student steeplejacks called the Fleming House Mickey Mouse Club.

Students' Day

A record number of students (1020) from a record number of southern California high schools (211) visited the Caltech campus for the 16th annual Students' Day on December 4. Caltech student guides toured the guests through more than 50 research exhibits, including a model of the Mariner IV spacecraft in front of Throop Hall (left), and a demonstration of free surface flow phenomena (below) in the Keck Engineering Laboratories. Afternoon lectures in Beckman Auditorium were given by Arnold O. Beckman, chairman of Caltech's board of trustees, and three members of the Caltech faculty.

