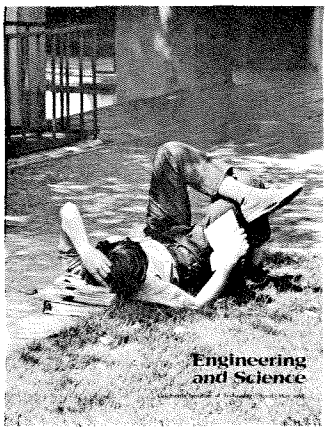
In This Issue



Family Planning

On the cover—a representative member of the Caltech family and the main subject and chief concern of Institute Psychologist Nancy Beakel in "What Makes Caltech Tick?" (page 17), which is adapted from her Watson Lecture on March 3.

After graduating from the University of Texas with a BFA in drama, Nancy started her professional life as an actress, and the seven years she spent on the stage gave her a special opportunity to study human behavior. It probably sharpened her perception of the importance of clear communication as well. Her dissertation for her PhD in psychology at UCLA was on the subject of nonverbal communication in families. After five years at Caltech, counseling 15 to 30 troubled students every week, she's spotted plenty of nonverbal communication in the Caltech family too.

Nancy Beakel does a lot for Caltech in addition to counseling. She is currently vice chairman of the Caltech Y, an instructor in the Division of Humanities and Social Sciences, faculty sponsor for the Caltech Women's Coalition, and a board member of the Child Development Center, which is a school for children of Caltech families.

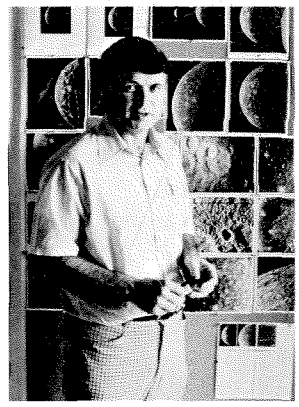
Energy Conservation

In view of the seriousness of the near-term energy problem, it seems somewhere between simply over-optimistic and downright foolhardy to say that there is a way out. But one man who is willing to point out one reasonable way through the turmoil is Caltech's Lester Lees, professor of environmental engineering and aeronautics.

Lees came to Caltech in 1953 and spent his first several years here in research and teaching in the field of aeronautics. However, he became more and more interested in the development of an interdisciplinary program to attack problems of environmental pollution. When the Environmental Quality Laboratory (EQL) was formed in 1970, Lees became its first director, resigning only recently to become senior staff member.

He is an authority on air pollution control and on the problems of reconciling energy supply and demand. "Energy Conservation: Will It Work?" (page 3) is adapted from a recent talk he gave on that subject.

The views expressed are the author's own, and are not meant to represent the position of either EQL or Caltech.



Scientific Boundaries

Bruce Murray graduated from high school in Santa Monica and then went east—to MIT—for his college education, receiving his PhD in 1955. He spent three years working in the petroleum industry on the Gulf Coast and then two years in an Air Force research unit. In 1960 he came to Caltech as a research fellow and has since become professor of planetary science. He has been active in the Mariner spacecraft program, most recently in the successful Mariner 10 mission to Venus and Mercury. He has just received a Guggenheim fellowship in recognition of his research in comparative planetology of the Earth-like planets—Earth, Mars, Moon, Venus, and Mercury.

Murray is highly articulate on scientific subjects and thoughtful about their implications, and he recently combined those talents in a lecture at Beckman Auditorium. "The Limits of Science" on page 9 is an informal adaptation of that talk.

continued on inside back cover

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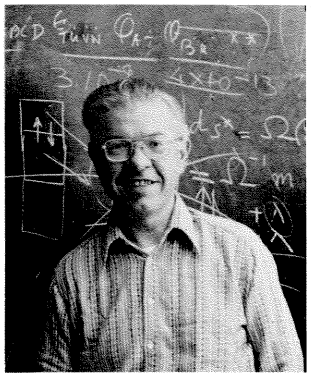

Renaissance Man

When Sir Fred Hoyle gave a Watson Lecture at Beckman Auditorium on February 17, his long-time friend and colleague William A. Fowler, Institute Professor of Physics, introduced him as "a Renaissance man." Fowler backed up this appellation with an impressive—and wry—list of Hoyle's accomplishments, from which we culled the following:

"Hoyle is one of the originators of the steady state cosmology, and he's made many original contributions to the concept of nuclear synthesis in stars and supernovae. He's now constructing a new cosmology that explains everything from the lack of solar neutrinos to the variation in the climate of the earth. Of course, it also explains the red shift, the blackbody background radiation, and how to put out fires.

"Sir Fred has had a long association with the California Institute and the Hale Observatories. It all began in 1952 when he walked into the Kellogg Radiation Lab and announced that his calculations on the structure of red giant stars convinced him that there was an excited state in the carbon^{12} nucleus near the threshhold for formation from 3-helium nuclei. We threatened to throw him out on his ear. But experiments in the lab quickly proved him right, and he's been a visiting member of the faculty ever since. Currently he's a Sherman Fairchild Distinguished Scholar.

"Hoyle's books range from politics and sociology to science fiction. He has written a Christmas pantomime for children and a space serial for television, and he's the author of an opera libretto."

He is also author of *Astronomy and Cosmology* and of *Highlights in Astronomy*, which are just now being published by W. H. Freeman and Company. Hoyle's Beckman talk and his *E&S* article, "The Emergence of Intelligence in the Universe" (page 23), are both adapted from material that appears in those two books.