

In This Issue



Night Flight

On the cover—one of the world's most unusual birds sits for his portrait. The oilbird has a highly developed visual system even though it is reared in total darkness. This anomaly prompted John Pettigrew, associate professor of biology, to spend several weeks in Colombia, South America, studying the bird at close hand. What he found proved so provocative that he extended his studies to another oddity in the avian class—a night-flying seagull of the Galapagos Islands.

Pettigrew's research has been largely on the role of early vision in the development of the brain. He is an MD from Australia by way of a three-year postdoctoral stint at UC Berkeley where he shared in the discovery of a special class of "binocular" nerve cells in the cat. More recently, he has worked with ethologist Mark Konishi, Caltech professor of biology, on the visual cortex of birds.

No one is more delighted than Pettigrew with the opportunities for travel offered by these new subjects. He closed a recent Watson Lecture about them with a half-promise that his next trip would be to investigate a nocturnal parrot in New Zealand. "Vision and Birds of the Night" on page 8 is adapted from that talk.



John Pettigrew and guides in Colombia.

Nuclear Energy

Alvin M. Weinberg is currently director of the Institute for Energy Analysis at Oak Ridge Associated Universities in Tennessee, a position he took in 1965 after 20 years as director of the Oak Ridge National Laboratory. Weinberg actually began his career as a mathematical biophysicist at the University of Chicago, but World War II cut that effort short, and in 1942 he began work in nuclear energy. He's been at it ever since.

In 1960 Weinberg received both the Atoms for Peace Award and the U.S. Atomic Energy Commission's E. O. Lawrence Memorial Award for his contributions to the theory and development of fission reactors. More recently he received the New York Academy of Sciences Award and the first Heinrich Hertz Prize of the University of Karlsruhe.

Weinberg has written extensively on some of the difficult problems of public policy posed by the growth of modern science, and in 1967 he published *Reflections on Big Science*, a book that discusses the new kind of large-scale scientific enterprise, of which Oak Ridge National Laboratory is an example.

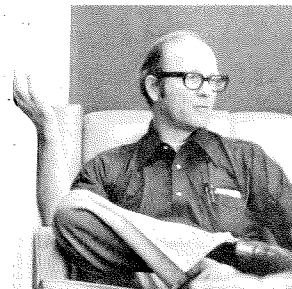
"Outline for an Acceptable Nuclear Future" on page 4 is adapted from a talk Weinberg gave at an energy policy seminar held on campus last May.



Fair and Colder?

Nobody can do anything about the weather—much less the climate—but Stephen Schneider is one man who is trying to understand what's happening to the world because of climatic factors. He is currently deputy head of the Climate Project at the National Center for Atmospheric Research in Boulder, Colorado, and is widely called upon as an expert on topics such as water supply and climate, climatic effects of nuclear and alternative energy systems, climate dynamics, and climatic variations.

Schneider is editor of *Climatic Change*, a journal devoted to the description, causes, and implications of climatic change, and he is the author of the recently published book *The Genesis Strategy: Climate and Global Survival*. With all those—and more—credentials, he was a natural to speak at The Next Eighty Years conference held at Caltech last spring. "The Possibility and Consequences of Climatic Change" on page 15 is adapted from that talk.



Local Boy

John Andelin was right at home talking to members of the Caltech community last October as a guest of the Caltech Y. He's talked to them before, particularly to students. In the first place, he was a student here himself (BS '55, PhD '67). During his graduate school days he was also an RA for a couple of years for the off-campus student group, Throop Club. He was then the Ricketts House RA for four years. He was so good at it that in 1962-63 when Robert Huttenback, at that time Master of Student Houses, took a year's leave of absence, Andelin took over as Acting Master. After that, he says, he gave up the RA business to get down to the business of finishing up his graduate work.

Doctorate in hand, in 1967 he went to work for his thesis adviser, James Mercereau, doing low-temperature physics at Ford Scientific Laboratory in Newport Beach. In 1969 he changed jobs and focus by going to Harvard to work in solar physics.

Andelin started a stint in government service at Oak Ridge National Laboratory in the spring of 1971, leaving there in the fall to go to work with Mike McCormack, Democratic Congressman from the state of Washington. He has been in Washington, D.C., ever since, and he talked about his experiences there at Caltech last October. "My Life As A Hired Gun" on page 21 is an informal account of a Techer's life in politics.