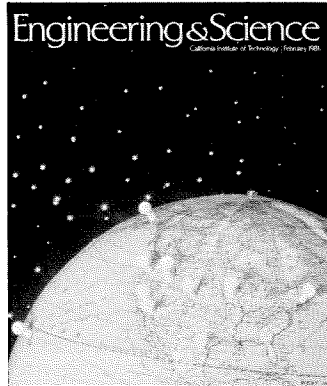


# In This Issue



## Global Outlook

On the cover — a glimpse of a projected network of ten radio telescopes, which together could synthesize a telescope aperture thousands of kilometers in diameter. With such a network, astronomers would be able to peer at galaxies and quasars up to 10 billion light years away with a resolution fine enough to see such relatively small details as features only a few light years in size! This achievement is made possible by a technique called very long baseline interferometry (VLBI). Although developed only in the past few years, VLBI has already revealed astonishing features of some distant objects that have a minimum mass of 100 million suns.

Caltech has been a leader in the development of this field, and this first attracted Anthony Readhead here in 1974. Originally from South Africa, Readhead received his BSc in theoretical physics from the University of the Witwatersrand in 1968. For his PhD he studied in Cambridge, England, under Sir Martin Ryle and Antony Hewish and then received a five-year fellowship from the Royal Society of London. It was during this period that he made an extended visit to Caltech, and he returned to the Institute as a senior research fellow in radio astronomy in

Anthony Readhead



1976. He is now research associate and acknowledged to be a leading authority on VLBI.

In addition to interpreting scientific results, Readhead has made important contributions to the technique of VLBI, that is, how it is actually done. His article, "VLBI — A New Frontier in Astronomy" on page 6, gives some examples of both.

Shirley Hufstедler



## Educational Experience

The annual dinner of The Associates of the California Institute of Technology is always a festive affair, and never more so than when the speaker of the evening is an old friend of Caltech. Shirley Hufstедler, the first Secretary of Education, served on Caltech's board of trustees from September 1975 until her resignation in order to take up new duties in Washington in January 1980.

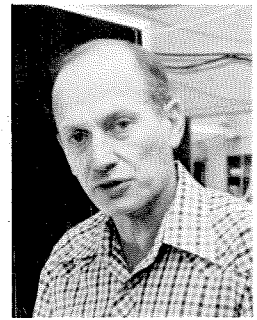
Secretary Hufstедler received her BBA from the University of New Mexico in 1945 and her LLB from Stanford University in 1949. After private practice in law in Los Angeles, she spent 18 years on the bench; first as a Superior Court judge; then as an Associate Justice of the California Court of Appeals; and then as the highest ranking woman jurist in the country when she became judge of the U.S. 9th Circuit Court of Appeals.

"A Report Card for American Education" on page 12 is adapted from her speech to The Associates.

## Guiding Light

The story of learning to manipulate light to carry signals through tiny glass fibers over long distances is only a little over ten years old, but it now seems to have a happy ending. In "Integrated Optoelectronics" on page 17, Amnon Yariv traces the development of this field from the invention of the semiconductor laser to the achievement at Caltech of an integrated optoelectronic circuit on a single layered crystal. American industry, as well as Japanese and European, skeptical about

Amnon Yariv



the feasibility of integrated optoelectronics for most of this period, is now picking up the Caltech development — thus signaling the beginning of a new technology.

Yariv was born in Israel but received all his degrees from UC Berkeley — BS '54, MS '56, and PhD '58. After five years at Bell Laboratories, where his interest in guiding light on semiconductor crystals was awakened, he came to Caltech in 1964 and continued this work. He is professor of applied physics, and in 1979 he was named Thomas G. Myers Professor of Electrical Engineering.

Harold McGee



## Fruitful Idea

Harold McGee (BS '73) went to Yale from Caltech, earned a PhD, and taught for two years. While he was in New Haven, another Caltech alumnus, Sharon Long (also BS '73 and now Mrs. Harold McGee), gave a popular lecture-demonstration on crystal chemistry and fudge-making. It was out of this that Hal got the idea for the book he has been writing.

*The Nature of Food and Cooking*, which will be published late this year by Scribner's, explores the biology and chemistry of everyday food materials and culinary techniques, together with some cultural history — for example, the great impact of the 19th-century German chemist Liebig on the way we cook meat. "Ripeness Is All" on page 26 is one chapter in that book and originally appeared in *Horticulture*, which was published by the Massachusetts Horticulture Society in August 1980.