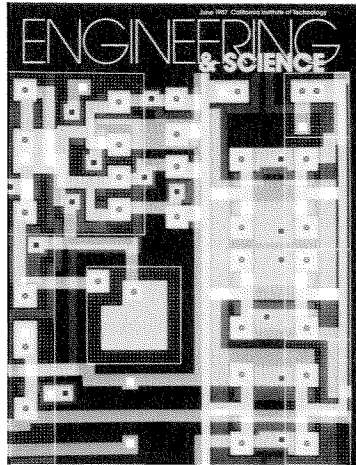


## In This Issue



### Silicon Eye

On the cover — a computer drawing of one pixel from a retina constructed on a tiny silicon wafer that mimics the neural processes in the eye. The pixel is about 100 microns from top to bottom, and the entire chip is composed of about 2,500 such pixels. The colors represent the layers of the semiconductor: red is poly-silicon, green is diffusion, and blue is metal.

The large green square is the photoreceptor. To the right of it are the resistor circuits, to the left the logarithmic feedback elements, and at the top the differentiator — all designed to perform the functions of the biological retina's layers of cells. How this works is explained in "Neural Hardware for Vision," by Carver Mead, beginning on page 2. The article is adapted from his talk to the Research Directors Conference sponsored by the Office for Industrial Associates.

Carver Mead, the Gordon and Betty Moore Professor of Computer Science, is an internationally known innovator in VLSI design. Mead earned all of his degrees at Caltech (BS '56, MS '57, and PhD '60) and



has been on the faculty ever since. His current research interests are focused on computation and neural systems, one elegant example of which is his retina. He's also got an ear in the works. . . .

### Managing Science

When the prestigious Commonwealth Club of California invited Marvin ("Murph") Goldberger to San Francisco to speak on the subject of U.S. science, he was "flattered" to be asked to do so in the "backyard of two of America's centers of excellence in academic science" — UC's Berkeley campus and Stanford.

But Caltech, as he pointed out, "enjoys productive relationships" with both those campuses: The Keck Observatory is a cooperative undertaking with UC, and Caltech's high-energy physicists have long enjoyed the hospitality of the Stanford Linear Accelerator Center. And the three institutions will work together as a team in the national competition to try to bring the Superconducting Supercollider to California. Goldberger's speech in the hospitable northern part of the state, "What's Right, What's Wrong with U. S. Science?" begins on page 8.

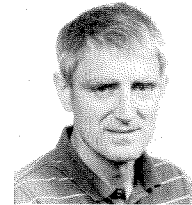
Goldberger, who earned his BS from Carnegie Institute of Technology in 1943 and PhD from the University of Chicago in 1948, has been president of Caltech, as well as professor of theoretical physics, since 1978, when he succeeded Harold Brown. On September 1 he will return to Princeton, where he spent the two decades before coming to Caltech, to become director of the Institute for Advanced Study.

### Uncensored

John Sutherland's Watson Lecture, "Prohibited Words," drew a lot of people to Beckman Auditorium, including some probably expecting something rather more titillating than the usual scientific fare. They may have been disappointed; Sutherland labeled his talk PG13.

His current interest is censorship (his most recent book is *Offensive Literature: Censorship in Britain, 1960-1982*) and on this occasion chose to trace the portrayal of syphilis in art and literature and make some interesting comparisons with the current AIDS epidemic. An article adapted from that talk begins on page 20.

Sutherland came to Caltech as professor of literature in 1984 from previous posts at University College London and the



University of Edinburgh. His PhD is also from Edinburgh (1973) and his BA (1964) and MA (1966) from Leicester

University. He has written several books and edited volumes of Thackeray and Trollope. A longtime, regular reviewer for *The London Review of Books* and *The Times Literary Supplement*, he has also more recently become a regular reviewer for the *Los Angeles Times*.

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