

Supporting innovation in America key to prosperity

By **Robert C. Dynes,**
Irwin Jacobs
and **Julie Meier Wright**

Seventy years ago, as America struggled with an economic decline, a young University of California physicist named Ernest Lawrence built a new device for producing high energy elementary particles. His invention, the cyclotron, led to quantum advances in science and medicine. His protégés at the Berkeley Laboratory pushed the United States ahead of Germany in the global race for technological primacy.

Upon accepting the 1939 Nobel Prize for Physics, Lawrence paid special tribute to his financial benefactors for "the encouragement of fundamental scientific research," adding, "The day when the scientist, no matter how devoted, may make significant progress alone and without material help is past."

Today, as the U.S. economy stutters, Americans are pinning much of their hope for resurgence on technological advances. The scientists who produce such advances are pinning their hopes on public and private funding. Will the stewards of those funds sustain long-term investment in the U.S. innovation portfolio? Or will they redirect that support into short-term ventures and put the nation's technological primacy at risk?

These questions will be on the table today and tomorrow when 150 top U.S. decision-makers — members of Congress and state governors, university and corporate CEOs and labor leaders — gather for the second National Innovation Summit hosted by the Council on Competitiveness at UC San Diego.

The Council's first National Innovation Summit took place in March 1998 at the Massachusetts Institute of Technology. Those of us who attended from California walked tall. The Golden State was leading the national economic boom, and, while California had 12 percent of the U.S. population, we had 20 percent of all U.S. research-and-development funding, and we were the undisputed heavyweight champions in the high-tech arena.

California's continued dominance in scientific innovation is a big reason the council is holding its second summit in San Diego. We are proud to play host, and we are eager to begin work on a national agenda that will return us to an era of prosperity.

Dynes is chancellor of the University of California San Diego. **Jacobs** is chairman and chief executive officer of Qualcomm, Inc. **Wright** is director of the Economic Development Corp.

But our 1998 ebullience has given way to a sense of unease about America's fiscal and policy priorities. Evidence suggests that, at the very moment that science and innovation are offering opportunities for long-term advancement, America is less prepared than ever to seize those opportunities.

We offer two illustrative examples:

■ The United States spent less on research and development as a share of total economic output in 1999 than in 1985. The source of this 15-year decline was not industry; it was Washington. According to a report from the Council on Competitiveness, the federal contribution to the nation's R&D enterprise fell from 46 percent in 1985 to 27 percent in 1999. And federal funding for laboratory construction and renovation dropped from \$610 million in 1990 to \$390 million in 1997. This public disinvestment is especially alarming in light of the fact that more than 70 percent of patents registered by U.S. industry cite publicly funded science as the basis for their inventions.

■ Data from around the country reveal an increasing shortage of skilled American talent in science and technology. A study commissioned by the California Council on Science and Technology has revealed that, just as high-tech job opportunities are expanding, the number of baccalaureate degrees awarded in high-tech fields is not keeping pace.

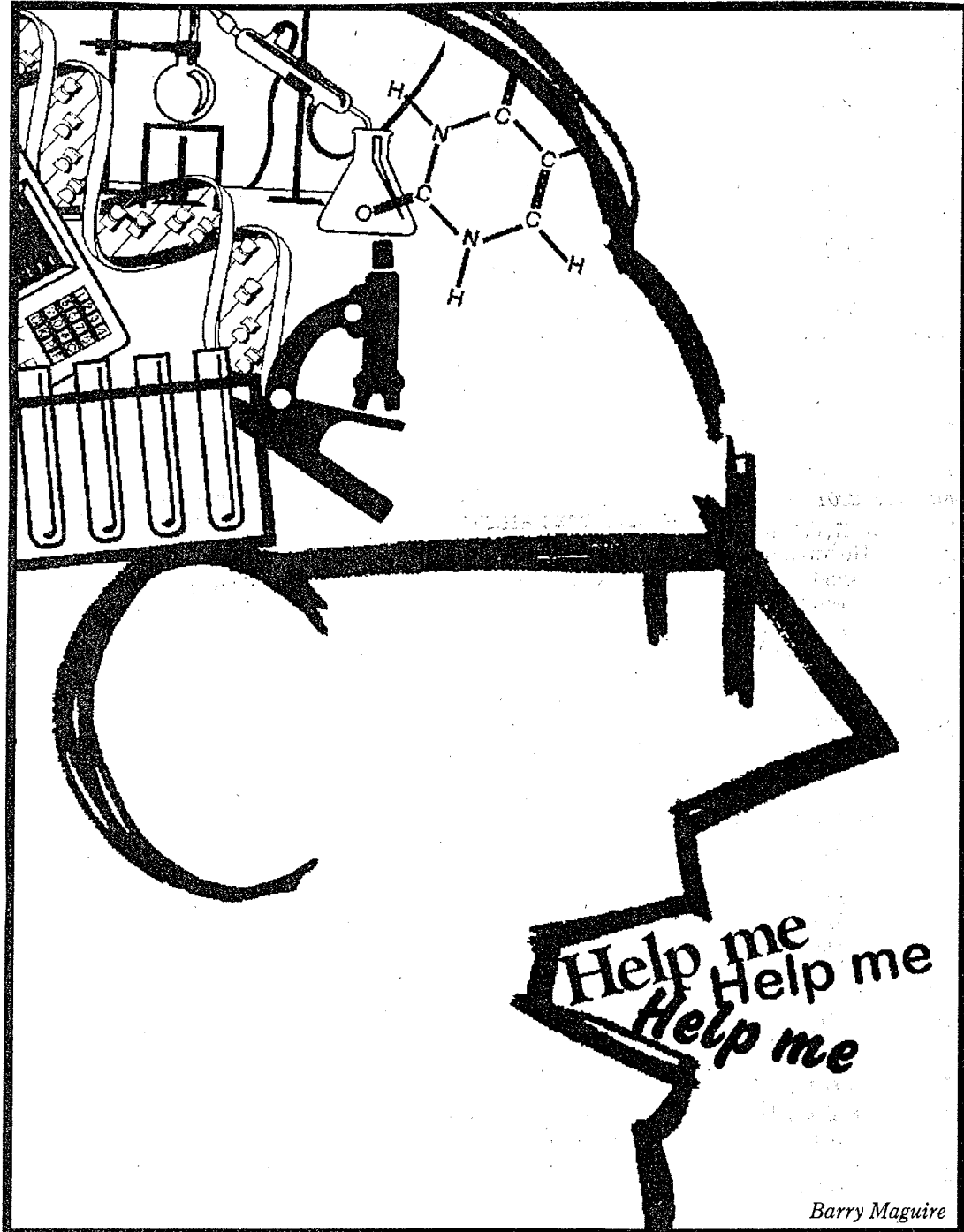
But there is encouraging news on another front. While federal R&D investment is falling off, and fewer college students are pursuing degrees in science and technology, adult learners are acquiring new skills to keep up with technological advancements in the workplace.

Preliminary data from a UC San Diego study commissioned by the California Council on Science and Technology show that, while total undergraduate enrollment at UC campuses now tops 150,000, enrollment in adult education "extension" courses has surpassed 400,000. Even more encouraging, 30 percent of these adult learners are taking science and technology courses, and 50 percent are taking courses in business management and other workplace skills related to science and technology fields.

These citizens have grasped something that federal policy-makers must keep in mind: We cannot afford to drop out of the global innovation race. We must restore America's primacy in science and technology. We must give American workers the skills they need throughout their lives to perform high-knowledge, high-value jobs. We must not sacrifice long-term investments in economic prosperity for short-term political gains.

Near the conclusion of his Nobel acceptance speech, Lawrence warned that the greatest impediment to scientific progress was the threat of financial starvation. "We have every reason to believe that there lies ahead for exploration a territory with treasures transcending anything thus far unearthed," he said, "[but] the difficulties in the way of crossing the next frontier in the atom are no longer in our laboratory."

Right now, young women and men in laboratories here in California and elsewhere are preparing to follow Lawrence's path. If we block that path by refusing to support their work, we stand in the way of our own economic salvation.



Barry Maguire