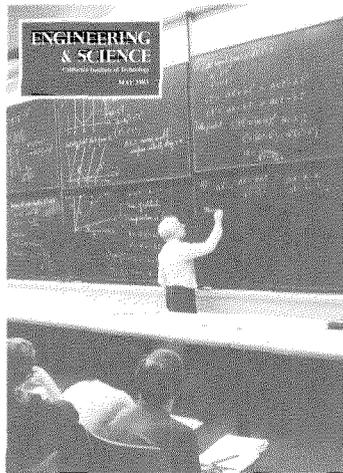


In This Issue



Pedagogical President

On the cover — a sight familiar to every past or present Caltech freshman: the front of the big physics lecture hall in East Bridge Lab. The unusual aspect of the picture is that the professor covering the blackboards with the mathematical evolution of Einstein's special theory of relativity from the Lorentz transformations is Caltech President Marvin Goldberger. "A Duty to Profess" beginning on page 10 tells something of how and why he got into Physics 1.

Getting Together

Like marriage, collaborative research programs between universities and industry involve varying degrees of emotional attachment, mutual convenience, direct and indirect benefits, risk-taking, adjustments to new ideas and ways of doing things, and a host of other factors that accompany the establishment of relationships between sets of dissimilar colleagues.

Recently the number of these associations has been increasing, and there are good reasons on both

sides for wanting them to work out. The university needs industrial funding and an outlet for key research. Industry needs to keep in touch with advances in science in order to profit from emerging ideas, techniques, and technologies. With these factors in mind, *E&S* presents in this issue five short articles on this subject — two by people in the academic community, three by men from industry.

The introductory article is by Donald R. Fowler, general counsel for Caltech.

Fowler recently made a two-phase study of the widely reported need for enhanced university-industry research relationships: a historical review and an empirical survey of 158 research managers from both industry and academia. "Impediments to Successful University-Industry Research Relationships," which begins on page 12, discusses some of the results of the survey.

Last November the Research Directors Conference, sponsored by Caltech's Industrial Associates, looked at the same subject from a different standpoint. A panel discussion featured three speakers from industry with hands-on experience of university-industry research relationships — Martin Cooper, vice president and director of research for Motorola, Inc.; Louis Fernandez, vice chairman of the board of Monsanto Company; and John Tormey, director of corporate technical policy (since retired) for Rockwell International Corporation. And John Roberts, Institute Professor of Chemistry (and at that time,



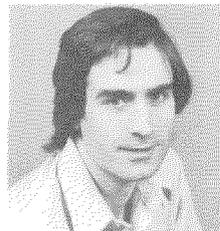
provost and vice president and dean of the faculty), gave a brief statement on the situation from the academic point of view. Excerpts from these four talks begin on page 15 in "Universities and Industry in Collaboration."

Charm and Beauty

When Hamlet pointed out nearly 400 years ago that "there are more things in heaven and earth" than his friend Horatio dreamed of, he could have been speaking for physicists today as they try to describe the particles and forces that seem to make up the universe. A few of the mysteries are, however, being slowly unraveled with the aid of some exotic but creative instruments and experiments, plus scientific logic. In "A Crystal Ball Looks at Charm and Beauty," beginning on page 4, Frank Porter and Charles Peck explain a bit about each of these factors.

Frank Porter got his BS at Caltech in 1972, went off to UC Berkeley for his PhD,

and returned to the Institute in 1977. He became a senior research fellow in physics in 1980. His co-author, Charles Peck, is also a Caltech alumnus (PhD '64), who stayed on at the Institute, becoming a full professor of physics in 1977. Both are active in high energy physics research.



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