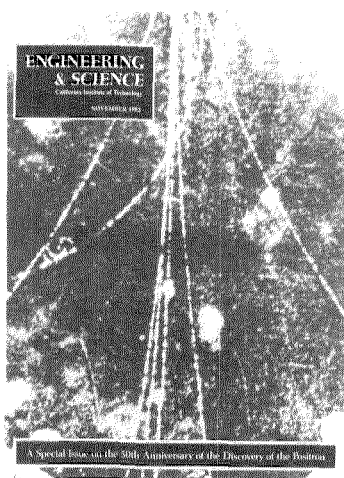


In This Issue

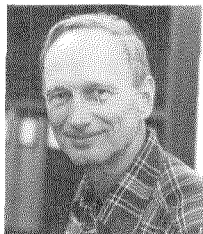


Happy Anniversary

On the cover — a 50-year-old photograph that unexpectedly showed not only the tracks of electrons but also of positrons. Both appeared in the cloud chamber being observed by a young Caltech research fellow in physics, Carl Anderson. The 1932 discovery of the positron earned the Nobel Prize for Anderson, who is now Board of Trustees Professor of Physics Emeritus at the Institute. It also opened up a new era of particle physics, which is discussed in this special anniversary issue of *E&S*.

Contributors

The author of "The Picture That Was Not Reversed," which begins



on page 6, is Eugene Cowan, who came to Caltech in 1945 as a graduate student. He received his PhD in

1948, having done his work under Carl Anderson. For the next several years he made investigations of high-energy interactions in cosmic rays, proceeding, meanwhile, up the academic ladder from research fellow to full professor of physics in 1961. He is currently occupied with geophysical research into the dynamics of the mechanism that generates the earth's magnetic field.

Before Robert Bacher retired in 1976, he had spent 27 years at Caltech in such positions as professor of physics, vice president, provost, and chairman of the Division of Physics,



Mathematics and Astronomy. A distinguished scientist, he is the author of the introduction to this anniversary issue of *E&S* that appears on page 4.

John Schwarz, who writes about "Fifty Years of Antimatter" on



page 24, has been at Caltech for ten years, first as a research associate in theoretical high-energy physics, and as senior research associate since 1981. His current work is in the area of supersymmetry and supergravity, which may lead to a unified description of interactions among elementary particles. Schwarz holds an AB from Harvard (1962) and a PhD from UC Berkeley (1966). He taught at Princeton before coming to Caltech.

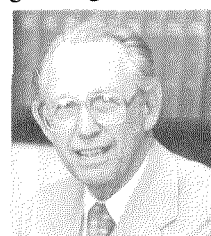
Robert Leighton, a Caltech alumnus (BS '41, MS '44, PhD '47),



became a research fellow in 1947. He worked with Carl Anderson on cosmic ray studies until 1960, by which time he was a full professor. Since then he has done research in both solar and planetary physics,

and he served for five years as chairman of the Division of Physics, Mathematics and Astronomy. Leighton has designed and built many of the instruments used in his research, most recently several millimeter-wave radio telescopes that have extremely high surface accuracy. In this issue he returns to the world of cosmic rays with "Cosmic Rays — A Scientific Cornucopia," which begins on page 19.

Milton Plesset, professor of engineering science emeritus, was a



National Research Fellow at Caltech in 1932-33, and he returned to the Institute as an associate

professor of applied mechanics in 1948. He is considered an authority on the problems and progress of nuclear power. "Recollections of 1932-33" on page 15 is an excerpt of an interview with him about that year.

Among the younger generation of Caltech particle physicists is Robert



McKeown, who came here from Argonne National Laboratory as assistant professor in 1980. He received his BS from the State University of New York — Stony Brook in 1974 and his PhD from Princeton in 1979. In addition to his experimental work on quarks, which he writes about in "The Search for Fractional Charges" beginning on page 26, McKeown's research also includes experiments on neutrino oscillations and pion interactions with nuclei.

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