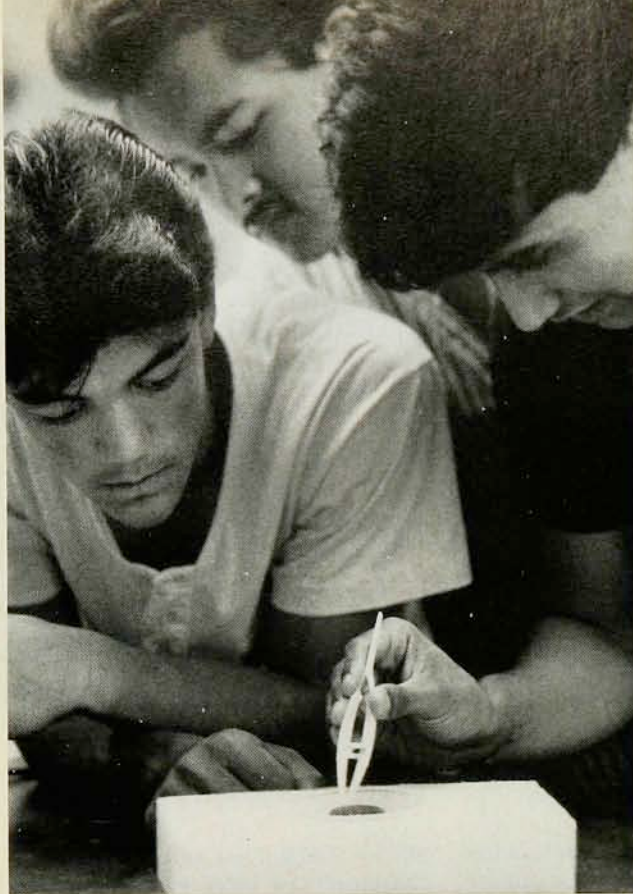




Gilroy students attempt a demonstration in which a homemade pellet of yttrium barium copper oxide levitates above a magnet.

onstrate superconducting magnetic levitation in class. They did all the work to produce the pellets themselves, using materials and tools borrowed, begged or bought locally, with technical advice from Paul M. Grant, a research scientist at the nearby IBM Almaden Research Center. As Grant has noted in an article on the demonstration, photographs of such levitation experiments have been published widely in popular magazines in the United States. Indeed, a version of the experiment recently turned up in the nationally syndicated comic strip "Bloom County," wherein a proud father is bragging about his genius son's breakthrough in "super duct-work activity" ("it's all the rage with the brainy types"). The son, holding a superconducting pellet, is shown suspended above the floor, upside-down.

Grant points out that the ingredients for yttrium barium copper oxide, Y_2O_3 , $BaCO_3$ and CuO , are fairly readily available and do not need to be extremely pure, though transition metal impurities should be avoided. Many or most high-school art departments have kilns capable of baking the materials at 900–950 °C, and machine shops usually are equipped with hydraulic presses capable of exerting pressures of 15 000–18 000 pounds per square inch. Grant says that the trickiest part of the production process, after the materials have been baked in air, reground and

baked again in flowing oxygen, is cooling them very slowly, especially in the crucial range from 700 °C to 400 °C, so that the x in $YBa_2Cu_3O_{7-x}$ is kept as close to zero as possible.

As Grant sees it, the first important application of the new higher-temperature superconductors already has been made—namely in education—and perhaps the first person to make the application was Grant's daughter Heidi, who performed a levitation experiment in her eighth-grade class last April. Details about her "shake and bake" method of producing $YBa_2Cu_3O_{7-x}$ can be obtained by writing to her in care of her father at IBM Almaden.

—WILLIAM SWEET.

Goldberger is new director of Institute for Advanced Study

Marvin L. Goldberger, former president of Caltech, took over as director of the Institute for Advanced Study in Princeton, New Jersey, in September. Goldberger succeeds Harry Woolf, a science historian, who will join the institute as a member of the permanent faculty following a year of study at Churchill College of Cambridge University. The institute currently has 22 professors and about 160 visiting fellows.

Goldberger, a particle theorist, re-

ceived his BS from the Carnegie Institute of Technology in 1943 and his PhD from the University of Chicago in 1948. After a year as a research physicist at the University of California's Radiation Laboratory in 1948–49 and a year at MIT in 1949–50, Goldberger joined the physics faculty at Chicago, where he became a professor in 1955. From 1957 to 1977 he was Higgins Professor of Mathematical Physics at Princeton University, serving as chairman of the physics department from 1970 to 1976. He was named Joseph Henry Professor of Physics at Princeton in 1977 and became president of Caltech in 1978.

Goldberger served as a member of the President's Science Advisory Committee from 1965 to 1969 and as chairman of the National Academy of Sciences committee on international security and arms control from 1980 to 1986. Goldberger is succeeded at Caltech by Thomas E. Everhart (see next story).

Everhart is Caltech president, succeeding Goldberger

Thomas E. Everhart took office on 1 September as the new president of Caltech, succeeding Marvin L. Goldberger.

Everhart, an electrical engineer, received a BA from Harvard University in 1953, an MSc from the University of California, Los Angeles, in 1955 and a PhD from Cambridge University in 1958. He was a member of the technical staff at Hughes Research Laboratories from 1953 to 1955. He joined the faculty of the University of California, Berkeley, in 1958 and became a professor of electrical engineering there in 1967. From 1972 to 1977 he was chairman of Berkeley's department of electrical engineering and computer science.

Everhart served as dean of the college of engineering at Cornell University from 1979 to 1984, when he became chancellor of the University of Illinois at Urbana-Champaign. He is the fifth chief executive officer of Caltech.

in brief

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