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he also served as chairman of the nuclear engineering department from 1964-69. He has been a consulting professor of engineering at Stanford University since 1973.

From 1969-77, Mark was director of the NASA-Ames Research Center in Moffett Field, California, which provided NASA with supporting research in fundamental aerodynamics, life sciences, airborne science and applications and other fields. He was a member of the President's Advisory Group on Science and Technology in 1975-76, and served as Undersecretary of the US Air Force from 1977 until 1979, when President Carter named him Secretary of the Air Force. In 1981, President Reagan appointed him as Deputy Administrator of NASA, from which post he has now resigned to assume his new duties at the University of Texas.

Mark succeeds E. Don Walker, who had headed the UT system since 1978; Walker resigned the post to accept a position as the executive director of the Hermann Hospital Estate in Houston.

Gravity Research Foundation announces winning essayists

The Gravity Research Foundation has announced the winners of its 1984 awards for essays on gravitation. Lawrence M. Krauss of Harvard University was awarded \$1500 for his paper *Dark Matter and Inflation*, in which he demonstrates that dark matter consisting of stable weakly interacting particles is incompatible with the minimal predictions of inflation, based on present observation of galaxy clustering and assuming galaxies are good tracers of mass in the universe. The second award, \$500, went to Leonard Parker and David J. Toms, both of the University of Wisconsin-Milwaukee, for their joint paper "Gravity and grand unified theories." Clifford M. Will of Washington University, St. Louis, was awarded \$200 for "A new class of ideal clocks." John F. Donoghue, Barry R. Holstein and R. W. Robinett, all of the University of Massachusetts, received \$150 for "The principle of equivalence at finite temperature." And T. Padmanabhan received \$100 for "Planck length is the lower bound to all physical length scales."

Gregory Aminoff Medal to David Harker

The Swedish Royal Academy of Sciences has awarded the Gregory Aminoff Medal in Gold to David Harker in recognition of his fundamental contributions to the development of methods

in x-ray crystallography for determining molecular structures of biologically important substances.

In the early 1930s, as a student of Nobel laureate Linus Pauling at the California Institute of Technology, Harker first developed the method of locating heavy atoms in crystals using the features now known as Harker lines and Harker sections. During World War II, at the Research Laboratory of the General Electric Company, he determined the structure of the first of the boron hydrides, then being developed as potential rocket fuels. After the war, he organized one of the first protein structure laboratories in the world, at Brooklyn Polytechnic Institute, and later brought his team to Roswell Park Memorial Institute, where in 1967 they succeeded in deter-

mining the crystal structure of ribonuclease, an enzyme that hydrolyzes RNA.

A fellow of AAAS, Harker is professor emeritus in the molecular biophysics department of the Medical Foundation of Buffalo where he is now studying the nature of colored space groups, a generalization of symmetry applied to crystals.

in brief

The eighteenth Karl G. Jansky Lecturer at the National Radio Astronomy Observatory was **Arno Penzias** of Bell Labs. The lectureship honors contributions to radio astronomy.

obituaries

Peter Kapitza

Pyotr Leonidovich Kapitza, one of the most revered scientists in the Soviet Union and one of the best known Russian physicists in the world, died on 8 April 1984.

Born on 9 July 1894 in Kronstadt, the naval base near Leningrad (then called St. Petersburg), he was the son of a general in the Corps of Engineers. Kapitza received training as an electrical engineer at the Polytechnic Institute of St. Petersburg, and, after graduating in 1918, stayed on as a lecturer. But even before that he commenced research work under A. F. Joffe; he published his first papers in 1916, one of which foreshadowed the Stern-Gerlach experiment.

In 1921 Kapitza came to Cambridge in England for a short visit, which, as it turned out, lasted 13 years; later (in 1966) he described this period of work as his happiest years. Ernest Rutherford, at that time Cavendish Professor, took a great liking to Kapitza, sensing in him a kindred spirit, and offered him a Clerk Maxwell studentship. His first project was a study of α -particle tracks in a strong magnetic field for which he developed a new technique of pulsed magnetic fields; he achieved 32 T in pulses lasting 10 ms.

This experiment was Kapitza's only incursion into nuclear physics. Having built the magnet, he used it as a tool in the area of his major interest, the study of physical properties of matter in strong magnetic fields. Topics of papers published between 1924 and 1932 include electrical conductivity, magnetostriiction and the Zeeman effect in such fields. These studies led him on to



KAPITZA

low-temperature physics, which became his second major area of interest. Again, he entered the new subject by designing the tools for it, in this case a new technique of liquefaction of helium by an adiabatic method. His helium liquefier was for many years the mainstay of cryogenic laboratories.

The research accomplishments of that period gained Kapitza wide recognition. He was elected a Fellow of the Royal Society in 1929 and appointed Research Professor. He also became the Director of the Mond Laboratory in Cambridge—designated for research in magnetic and low-temperature physics. However, he was not to reap the fruits of the plans carefully laid by him for that laboratory.

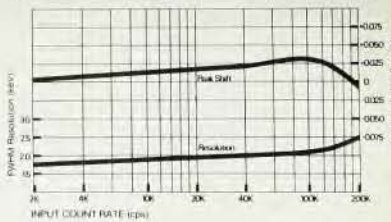
In 1934, while on his annual trip to Russia to visit his mother, his passport was withdrawn and he was not allowed to return to England. This had a very

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