WHIPPLE

scientist at the Smithsonian.

John M. Hill (University of Arizona) received the 1986 Trumpler Award for his PhD thesis "Multiple-object spectroscopy: The MX spectrometer design," which he completed at Arizona in 1984. Hill developed an optical instrument, nicknamed Medusa, that uses optical fibers to produce simultaneously spectra of as many as 32 objects in a field of the sky up to a half a degree across. In addition he has contributed much to the development of spin-casting methods for making large glass telescope mirrors.

H. Melvin Dyck (University of Wyoming) and Benjamin M. Zuckerman (UCLA) received the 1986 Muhlmann Prize for studies they conducted at the Mauna Kea Observatories in Hawaii. Using speckle interferometry they determined that very young stars are very often surrounded by large disks of material, which they conjecture may be protoplanetary systems. In addition, they identified a previously unknown companion star to the young variable T Tauri.

obituaries

Jerrold Reinach Zacharias

Jerrold Reinach Zacharias, Institute Professor Emeritus at the Massachusetts Institute of Technology, died on 16 July 1986 at the age of 81. Born in Jacksonville, Florida, he studied at Columbia University and obtained his PhD with Shirley L. Quimby. From 1931 to 1940 he taught at Hunter College while embarking on research in molecular beams with I. I. Rabi at Columbia. The work of that group on

ZACHARIAS

hyperfine structure, leading (among other things) to precision measurements of the magnetic moments of the proton and the deuteron, was a classic of atomic physics research in which Zacharias played an important part.

In 1940 Zacharias joined the newly established radiation laboratory at MIT, working on airborne radar. It was here that the first 10-cm radar system was developed. Paralleling British practice, young physicists were given leading roles; they proved themselves very valuable in the field of invention, but did not have the kind of background necessary to design devices that could be mass-produced and used in the field. In 1941 the leaders of the laboratory, in particular Lee DuBridge and Rabi, recognized this need and found in Zacharias the person to deal with it. He had a unique blend of talents as both scientist and technologist—Jerome B. Wiesner has called him the first systems engineer. After spending six months with technical personnel at Bell Laboratories (New York City), Zacharias returned to MIT with the onerous task of convincing his colleagues that engineering design and production was a crucially important part of the job. It became evident at this point that Zacharias was a born leader. He knew how to provide encouragement and get others mobilized, but he was also a perfectionist who could be very demanding. He had the great gift of being able to think a project through from A to Z, and yet change course *en route* if need be. The result was that, by 1943, airborne microwave radar was a reality.

In 1945 Zacharias went to Los Alamos to direct the engineering division of the Manhattan Project; his role was much the same as it had been at the radiation laboratory. His direct involvement there was brief, but its consequences were of profound importance to MIT, for in 1946 he returned to MIT, and brought with him half a dozen outstanding physicists from Los Alamos—chief among them Bruno Rossi and Victor Weisskopf. The result was a transformation of the department in both quality and scope. In addition, resuming his prewar interests, Zacharias established his own molecular beam laboratory. Besides yielding much data of nuclear and atomic interest and providing training in the Zacharias style for a new generation of physicists, the research in this laboratory laid the groundwork for the cesium beam atomic clock—perhaps even more remarkable than radar for its translation of fundamental physics into technological reality.

The postwar years saw Zacharias rise to prominence on the national scene, initially in defense policy. Particularly notable was his leadership in 1950 (together with the late Admiral Forrest Sherman) of Project Hartwell, a study of the protection of surface vessels in the face of modern submarines and nuclear weapons. Also of great significance was his leadership of a summer study in 1952 during which the Distant Early Warning Line was conceived. Then, from 1952 to 1964, during the Eisenhower and Kennedy administrations, he served as a member of the President's Science Advisory Committee.

During the mid 1950s, Zacharias turned his abundant energies and organizing abilities toward problems of national education in science. In 1956 he created the Physical Science Study Committee; its chief product, the PSSC high-school physics course, set a new standard for teaching at this level (see the detailed account in PHYSICS TODAY, September 1986, page 30). From there his interests broadened to education at all levels and in many different fields; indeed, he believed deeply and passionately that education was the key to all the social and political problems that beset a democracy.

During the last two decades of his life, Zacharias became more and more concerned with the potential, for good or for disaster, of nuclear energy, but again he felt that proper education of the public was vital; opinion not rooted in hard facts was worthless. Everyone who worked with him became familiar with his catechism: "What, Why, How, Who, For whom, When, Where, How much . . .?" And through it all, as Philip Morrison has said, he was a spokesman for values and standards. He was, in the words of another of his associates, "a force of nature"—a very long-range force, one might add. His many honors included the President's Certificate of Merit (1948), the Oersted Medal of the American Association of Physics Teachers (1961), the National Science Teachers Association Citation for distinguished services to science teaching (1969), the Medal of the International Commission on Physics Education (1984), and the I. I. Rabi Award of the Annual Frequency Control Symposium (US Army and IEEE, 1986).

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Kark Heinz Beckurts

Karl Heinz Beckurts was killed, along with his driver, in a terrorist bomb attack on the morning of 9 July 1986 as he was being driven from his home near Munich to his office at the Siemens AG. A terrorist group known as the Red Army has claimed responsibility for this murder.

Beckurts was born in Reith, Germany, on 16 May 1930. He started a career in physics, graduated from the University of Göttingen in 1953 and received his PhD in 1956. This was the period after World War II in which Germany had regained its sovereignty and was able to begin rebuilding its science and technology with the help of talented young scientists.

In 1956 Beckurts joined the newly founded Nuclear Research Establishment at Karlsruhe where he soon started a group working in experimental neutron physics. I joined his group in 1960 and had the privilege to work with him for about 10 years. Besides his enthusiasm and his inexhaustible reserve of ideas we always admired his intellectual and human qualities. His scientific interests ranged from nuclear physics and cross sections for nuclear reactor needs to applications of neutrons in condensed-matter research. Because he understood the close connection between research and teaching he was active as a teacher, lecturing at the University of Karlsruhe.

During his time at Karlsruhe he wrote numerous scientific papers and a well-recognized book on neutron physics with K. Wirtz. He also contributed in several ways to the realization of the French–German High Flux Reactor at Grenoble, France, now known as the Institut Max von Laue–Paul Langevin and operated by France, Germany and the United Kingdom.

In 1970 Beckurts was appointed chairman of the board of directors of the Jülich Nuclear Research Center. His broader scientific interests and his