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we hear that

Promoted to professor at Emory University is **Allen K. Garrison**.

Arnold R. Fritsch has been named president of Gulf United Nuclear Fuels Corp.

Yoichiro Nambu and **Valentine L. Telegdi** have been named Distinguished Service Professor at the University of

Chicago. This honor, the highest bestowed by the university, signifies outstanding achievement both to the University and to the academic world as a whole.

North Texas State University has appointed **Rogers W. Redding** and **Bernard McIntyre** as assistant professors. **M. E. Anderson**, professor of physics, is now also associate vice-president for academic affairs.

obituaries

Arthur G. Rouse

Arthur G. Rouse, professor at St. Paul University, died on 4 April at the age of 60.

Rouse, who had been with the university since 1937, conducted summer institutes there for high-school physics teachers funded by the National Science Foundation. In 1967 and 1968, Rouse took leaves from the university to serve as a consultant for the National Science Foundation to universities in India. He conducted institutes for high-school physics teachers there, instructing them in new teaching materials and techniques and in several complex areas of physics.

Niels E. Edlefsen

Niels E. Edlefsen, applied physicist and retired engineering executive, died on 21 March at the age of 78.

While working on his PhD at the University of California at Berkeley in 1930, Edlefsen applied some of E. O. Lawrence's ideas on periodic acceleration of protons to build several six-inch models of what later became known as the cyclotron. After receiving his degree, Edlefsen taught at the Agricultural Experiment Station and studied the physics and chemistry of soils. During World War II, he was appointed project engineer for a new surface-search radar for PT boats. After the war Edlefsen spent a year as director of research for Raytheon Company before joining North American Aviation to develop inertial navigation devices. Under his direction, his guidance section of North American grew into the electro-mechanical division with several hundred engineers and other hundreds of supporting personnel. In 1955 Edlefsen became vice-president of Vickers Corp, a division of Sperry Rand, where he was responsible for reorganizing and revitalizing Vickers' research and engineering. After retirement, he spent two years in

Indonesia as professor of physics at Gadjah Mada University. When he returned home, he was one of 20 engineers comprising the Engineering Advisory Council reporting to the president of the University of California on the engineering colleges of the seven University of California campuses.

Leonard I. Schiff

In the midst of a full life Leonard I. Schiff, professor of physics at Stanford University, suffered a fatal heart attack on January 19 at the age of 55. Deeply grieved, his colleagues suddenly lost a devoted friend whose qualities are evident in the perfect union of his achievements as scientist, teacher and statesman.

The scientific work of Schiff presents an impressive view of his universality. In this age of extreme specialization he belonged to the very few theorists whose contributions cover almost the entire range of physical phenomena. While some of them only attracted his temporary attention, there are several topics in which he was permanently interested so that he returned to them at various stages of his development.

Starting with his thesis under Philip Morse, which he completed when he was 22 years old, the scattering of particles in collisions is a recurrent "Leitmotif" of his later work. With characteristic foresight and interest in the work of his colleagues he emphasized, in a technical report written in 1949, the information to be gained from the elastic scattering of high-energy electrons. The present linear accelerator at Stanford's High Energy Laboratory was at that time still in the early stages of construction but his considerations provided much of the stimulus to Robert Hofstadter and his collaborators in their important work that later revealed the distribution of charge and current in nuclei. The first major publication of their data was directly followed by a paper of Schiff's

in which he presented a careful theoretical analysis, including the effects of a rounding-off at the edge of the nucleus. Published shortly afterwards, his analysis of inelastic electron scattering as well as his later work on the electromagnetic form factors of three-nucleon systems are separate contributions of major significance.

General relativity is another area in which Schiff remained interested since the early years of his research. While he appreciated the depth and beauty of Einstein's theory he felt that it was supported by a rather slender body of empirical evidence and that other severe tests of its consequences would be desirable. In particular, he showed in 1960 that the gravitation and rotation of the earth causes a minute but definite change in the direction of the axis of a gyroscope relative to the fixed stars if the theory is correct. An experimental realization of this test has been proposed by William Fairbank and is now actively pursued by him and his collaborators. The experiment has received a great deal of attention; it requires immense skill, and several more years have to pass before it can be launched on a satellite. Once obtained, the result will come too late for him to see but it will furnish another instance where Schiff's influence shall be felt long after his death.

Space does not permit us to do justice to the many other topics that he has treated with superb clarity and thoroughness, but these qualities of his research reappeared undiminished in his teaching. Whoever once heard a lecture by Schiff will remember how clear and well organized it was and will realize that much careful thought had gone into its preparation. Far from considering elementary teaching to be of minor concern, he realized the importance of providing a solid foundation in the introductory courses. He therefore insisted that they should be taught by the most experienced senior professors and gave a masterful example through his own participation.

His beneficial influence upon the quality of education, thus achieved, has found its well-deserved recognition. In 1966 he received the Oersted Medal of the American Association of Physics Teachers for his "notable contribution to the teaching of physics" and the Dinkelspiel Award, Stanford's highest faculty honor, for his contribution to undergraduate education.

Schiff's widest influence as a teacher and scholar, however, has been achieved through his book *Quantum Mechanics*, which today is found on the shelf of almost every physicist all over the world. The first edition of the book appeared in 1949. Although it deals with the very basis of modern physics there existed no comparable introductory text before and none for many years to come. It has

been instrumental in bringing up a whole generation of scientists. The second edition appeared in 1955 and the third in 1968, each enriched and modified to keep in step with recent developments.

Beyond his prolific activities in research and teaching, Schiff showed great concern through his engagement in numerous other problems confronting science and the university. Arguing that many important papers in mathematical physics did not fall into the categories covered by existing journals he provided the original stimulus for the creation of the *Journal of Mathematical Physics*. A member of many learned societies, he served as fellow or officer in several, including the American Physical Society, the American Academy of



SCHIFF

Arts and Sciences and the National Academy of Sciences in which he was chairman of the physics section at the time of his death.

From a faculty position at the University of Pennsylvania he came to Stanford in 1947 and served as executive head of the physics department from 1948 to 1966. In strict adherence to the principles of democracy, he earned the deep respect and gratitude of all members of the department during this decisive period of its existence. In the university's turbulent year 1968-69 he served concurrently as chairman of the advisory board and as the first chairman of the academic senate with the same wisdom and respect for individuals that he exhibited in departmental affairs.

There was much that Leonard Schiff still had to give and wanted to give when his life came to a sudden end. The warmth and gentleness of his presence is bitterly missed but he has left the lasting imprint of his personality on Stanford as well as on the whole world of physics.

F. Bloch,

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