

utilization as collectors of solar energy.

Outside of the university he has been active in environmental problems in southern New Jersey and the preservation of the wet lands. He was a technical advisor to the Isaac Walton League and Alternate Energy Advocates Inc. Fuschillo will be long remembered by his friends, colleagues and students for his professional dedication, humanistic attitude and wide-ranging scope of interest.

BOGOLJUB LALEVIC
Rutgers University
New Brunswick, N.J.

Michael W. Swagel

Michael W. Swagel, neurophysiologist in the department of psychobiology, University of California, Irvine, died on 22 September at age 35. Swagel received his PhD in physics from Columbia University in 1967 and carried out research in atomic spectroscopy and laser physics at the Columbia chemistry department. During the past several years his interests shifted to biophysics. He joined the division of neurosciences, City of Hope National Medical Center, in the fall of 1970. In a short six months he was able to conduct experiments that required intracellular recording of electrical activity in a single cell, and in the next few years he made a unique contribution to the physiology of synaptic transmission. At Irvine Swagel was active in both teaching and research. Here he conducted a series of detailed and sophisticated neurophysiological experiments, giving valuable insight into the phenomena underlying the recovery of function after brain damage.

Swagel loved a challenge. His professional life reflects the breadth of his intellectual horizons and hints at the depth of his love for people that all who knew him will remember.

ALLEN LURIO
IBM Thomas J. Watson Research Center
Yorktown Heights, N.Y.

RICHARD N. ZARE
Columbia University
New York, N.Y.

Marshall Ney States

Marshall Ney States died on 15 August at age 81. A native of Punxsutawney, Pa., he received his undergraduate education at the University of Pittsburgh, followed by graduate work under Robert A. Millikan at the University of Chicago, where he received his PhD in 1922. From that year until 1931 he was associate professor and professor of physics at the University of Kentucky.

He was then appointed director of research and development at Central Scientific Company in Chicago, becoming vice president in 1944. During 1951-1957 he was chief scientist of the Chicago branch of the Office of Naval Research.

His friends knew him as a man of integrity, excellent judgment and willingness to lend a hand as needed. He and the late W. S. Webb were most helpful in efforts that resulted in the establishment of the American Association of Physics Teachers in 1930.

States' contributions grew largely out of his interests in teaching and research and his knowledge, derived from first-hand experience in university work, of the needs for instruments and apparatus in these fields.

PAUL E. KLOPSTEG
Glenview, Ill.

Gilbert E. Cooper, Jr

Gilbert E. Cooper, a senior scientist at Science Applications, Inc, died on 9 October at the age of 31.

Cooper received his doctorate in theoretical physics from the Massachusetts Institute of Technology in 1968 and became a staff member at the University

of California, Lawrence Livermore Laboratory, remaining there until earlier this year when he joined Science Applications, Inc. During his tenure at the Livermore Laboratory he served as a group leader in explosion phenomena and in theoretical plasma physics. At Science Applications, Inc he continued his interests in explosion phenomena and was pursuing problems in controlled thermonuclear fusion.

His work was characterized by an extraordinary degree of versatility and the ability to use basic theoretical concepts for the solution of applied physics problems. After his thesis on a unified theory of nuclear rotations, he turned to plasma physics and made important contributions to the areas of charged particle transport and radiation-matter interactions in nonequilibrium plasmas. He achieved great competence as a computational physicist and made significant improvements in many of the computer codes used in the programs of the Livermore Laboratory. At the time of his death he was involved in the application of one of those codes to two-dimensional magnetohydrodynamic problems arising in controlled thermonuclear fusion.

Cooper was an excellent theoretician with a keen perception of practical problems, and his talent for scientific

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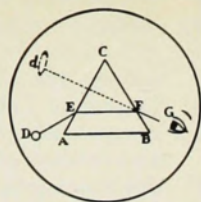
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obituaries

leadership added an extra dimension to his work. Personally, his loss will be deeply felt by his former colleagues at Livermore and his new associates at Science Applications, Inc.

Hillel Spitz

Hillel Spitz, a systems analyst and operations research specialist on the staff of the Center for Naval Analyses since 1956, died on 1 August at the age of 51. He had served as CNA representative to the staffs of the Commanders of the Second and Third Fleets and the Operational Test and Evaluation Forces, as well as on the staff of the Commander in Chief of the Atlantic Fleet. He had



SPITZ

also led CNA's tactical analysis group at Fleet Air Wings, Atlantic.

Spitz had just returned from two years in Hawaii as CNA representative on the staff of the Commander of the Third Fleet. Earlier, he was leader of CNA's anti-air warfare team and conducted research into command and control problems in antisubmarine warfare.

Before joining CNA, Spitz had been a physics instructor at the University of New Hampshire, a mathematical physicist at the Naval Research Laboratory, a physicist at the Geophysical Laboratory of the Carnegie Institution of Washington and at the National Bureau of Standards, and a lecturer in mathematics at the University of Maryland.

He received an AB degree in mathematics and physics from George Washington University in 1943, an MS in applied mathematics from Brown University in 1945, and a doctorate in mathematical statistics from George Washington University in 1972. □

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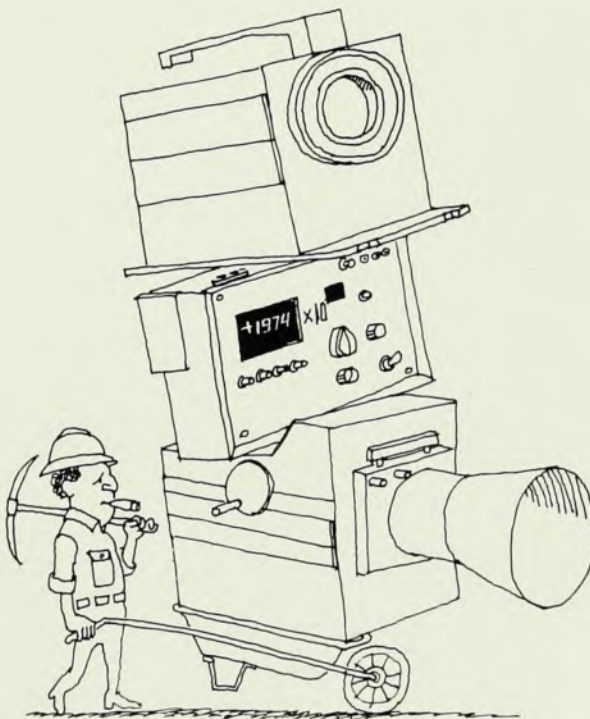
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