

Stony Brook. . . **Paul D. Minton**, chairman, statistics department, Southern Methodist University, to dean, School of Arts and Sciences, Virginia Commonwealth University. . . **Allen G. Debus**, professor of history, biological sciences division, University of Chicago, to first director, Morris Fishbein Center for the Study of the History of Science and Medicine at the university. . . **Neil G. McCluskey**, dean-director, Institute for Studies in Education, University of Notre Dame, to dean of education, Herbert H. Lehman College, City University of New York. . . **Wesley J. Matson**, assistant dean, School of Education, University of Wisconsin, Milwaukee, to dean of education, Winona State College. . . **Thomas R. Tephly**, associate professor of pharmacology, College of Medicine, University of Michigan, Ann Arbor, to director, Center for Toxicology and Biochemical Pharmacology, University of Iowa. . . **Roland H. Good, Jr.**, professor of physics, Iowa State University, to head, physics department, Pennsylvania State University. . . **Robert L. Williams**, chairman, psychiatry department, University of Florida College of Medicine, Gainesville, to chairman, psychiatry department, Baylor College of Medicine. . . **Harry J. Lowe**, acting chairman, anesthesiology department, biological sciences division, University of Chicago, elevated to chairman of the department.

## RECENT DEATHS

**John D. Akerman**, 74; professor emeritus of aeronautics, University of Minnesota; 8 January.

**Paul M. Althouse**, 55; provost, Pennsylvania State University; 4 February.

**George M. Bateman**, 74; professor emeritus of chemistry, Arizona State University; 28 January.

**Allan A. Blatherwick**, 57; professor of aerospace engineering and mechanics, University of Minnesota; 31 December.

**Walter H. Boone**, 66; chairman, chemistry department, Potomac State College; 15 January.

**Ng. Ph. Buu-Hoi**, 56; director of research, Centre National de la Recherche Scientifique, Paris, and former director-general, Office of Atomic Energy of Vietnam; 28 January.

**Carlton M. Carson**, 73; retired micropaleontologist, Tidewater Oil Company, California; 7 January.

**Antonio Ciocco**, 63; professor of biostatistics, University of Pittsburgh; 5 January.

**Andre G. Clavier**, 77; electrical engineer and technical consultant, International Telephone and Telegraph Corporation; 9 January.

**Richard Courant**, 84; founder and former director, New York University

Institute for Mathematics and Mechanics; 27 January.

**Albert E. Dimond**, 57; chief, plant pathology and botany department, Connecticut Agricultural Experiment Station; 4 February.

**Franklin G. Ebaugh**, 76; professor emeritus of psychiatry, University of Colorado; 4 January.

**Earle J. Fennell**, 66; retired associate chief topographic engineer, U.S. Geological Survey; 22 January.

**Raymond L. Garner**, 66; first chairman, biochemistry department, New Jersey College of Medicine and Dentistry; 13 November.

**Chester S. Keefer**, 74; professor emeritus of medicine, Boston University School of Medicine; 3 February.

**Edgar B. Keemer**, 93; former professor of pharmacy, chemistry and bacteriology, Howard University; 15 January.

**Jacob Priman**, 79; professor emeritus of anatomy, University of Pittsburgh; 23 November.

**Richard B. Turner**, 55; professor of chemistry, Rice University; 22 December.

**Richard A. Waterman**, 57; professor of anthropology, University of South Florida; 7 November.

**Orland E. White**, 85; director emeritus, Blandy Experiment Farm, University of Virginia; 10 January.

**George C. Williams**, 97; former president, Ithaca College; 28 December.

## RESEARCH NEWS

# Bioengineering: "Drop Foot" Corrected by Electrical Stimulation

More than 400 stroke victims in Yugoslavia and the United States have used an electrical device that eliminates "drop foot" and enables them to walk almost normally. Not all can use the new procedure, called functional neuromuscular stimulation, to overcome the spasticity of the calf muscles that normally accompanies a stroke, nor do all patients who try muscle control by electrical stimulation continue to use it. However, some patients have used the device for more than 3 years, still like it, and report no unpleasant side effects. One type of device for electrical stimulation is being evaluated at clinical rehabilitation centers

in the United States by investigators who hope to see it widely distributed. Preliminary estimates indicate that, if the devices are manufactured in large numbers, they may be as cheap as some leg braces.

The leg stimulator is just one example of the marriage of artificial devices with natural limbs and organs. Doctors and engineers working together have perfected many substitutes for parts of the human body, ranging from artificial blood vessels to pacemakers. For example, a very large effort is being undertaken by many federal agencies (with 99 research contracts outstanding) to produce an effective artificial heart.

Electrical stimulation of groups of muscles is an extremely attractive potential method for rehabilitating hemiplegics and paraplegics because usually the neuromuscular systems in the extremities of these patients are intact. Optimistic researchers even talk about the ambitious goal of programming a paraplegic to walk under the control of a set of carefully orchestrated electrical stimuli.

For the past 6 years the leading figures in research on functional stimulation of muscles have been investigators at the University of Ljubljana (Yugoslavia). The Ljubljana rehabilitation center has a strong program in