the University of Michigan, trained in biology but with an omnivorous mind. Among other interests which he had or later cultivated were history, literature, farming, languages, jurisprudence, business, bibliography, theology and medicine, in each of which diverse fields he was to become uncommonly well-informed. Nor did he regard these accomplishments lightly. Learning, to him, was not merely a pastime, still less a soporific. It was a live, keen-edged tool made for use. Thus it became his conscious habit to bring to bear on each daily problem different facets of his mind. It might be a proposed law governing the importation of seeds, ergo he considered it with a wide knowledge of its political, economic, legal, historical and biological implications. Even if the problem were of a kind not usually associated with broad culture, as for example —experimental technique, he could see it often from points of view not available to others. Naturally, he had his deficiencies and these he ruefully acknowledged, often lamenting his lack of interest in mathematics, sports, the fine arts and night clubs. Yet certainly he came close to being an intellectual giant simply from the profundity of his general knowledge.

Knowledge alone would not, however, suffice to make him a counselor of high worth. Perhaps from his Dutch ancestry, perhaps because it was an innate personal trait, he possessed a judicial attitude of truly extraordinary quality. He would have been an incomparable jurist. Few men could see more objectively. Fewer still could exercise the faculty with such complete indifference to the consequences to themselves. No single instance comes to mind when he compromised a solution because of its effect upon his personal welfare. If his decision affected others adversely, he made numberless concessions, but never to himself. Mental integrity, as personal integrity, was to him the cornerstone of character, and his scorn of devious thinking, as of devious intent, was quiet but complete.

Thus there was brought to agronomy at a time when it needed dignity, poise and learning a man who personified those attributes. He helped to give the neophyte science distinction, and lived, fortunately, far into its consummation.

Dr. Pieters' cultural contribution to agronomy was incidental, and probably unconscious. His real contribution was to the economic betterment of American farmers. Following a successful organization of what later became the Department and Congressional seed and plant distribution services, he resigned, in 1906, to organize a seed-producing business in California. Four years later he sold the business at a profit and, after a year at Heidelberg, returned to the University of Michigan for his doctorate. At the request of the late C. V. Piper he reentered the Department in 1915 to study the causes of wide-spread failure of the clover crop. Within a few years he had determined that the chief cause of failure was unadapted seed, and he was instrumental in causing restrictions to be placed on the importation of unsuitable kinds. Later he turned his attention to the problem of finding legumes suited to growing on the impoverished acid soils of the South. This led to one of the dramatic finds for which the Bureau of Plant Industry is known. In a small packet of seed laid aside some time before, he found a new kind of Lespedeza from Korea which, when planted at Arlington Farm, developed such superior qualities that it became, in seventeen years, the basis of a Lespedeza industry rivaling that of clover and alfalfa combined.

He retired, at the compulsory age limit, in 1936, but was accorded the unusual distinction of two presidential extensions of appointment in order that the Bureau of Plant Industry and the Soil Conservation Service might utilize his knowledge.

Dr. Pieters was a fluent but precise writer, and his publications, which number more than eighty titles, are a true cross-section of forage crops, green manuring, and seed production. His unpublished counsels, his delightful wit, his unfailing tolerance, his devotion to truth, his unflagging energy, and his fine, inborn courtesy are in the Department's archive of memories.

L. W. KEPHART
U. S. DEPARTMENT OF AGRICULTURE

DR. ERKKI MIKKOLA

ON February 13, 1940, Dr. Erkki Mikael Mikkola, geologist of the Geological Survey of Finland, was killed at Taipale in the defense of his country against invasion. Although only 36 years of age, he had become a leader in the study of Pre-Cambrian problems. His published contributions to the understanding of the complex crystalline rocks of Finland are of fundamental value.

Erkki Mikkola's death is a genuine loss to science. His death is also a human example, for it came on the battlefield in a heroic attempt to protect his people from the invader. Finally, his death is a national symbol, for it represents the bravery and courage of a people who love their independence and their free institutions so much that they willingly give their lives for them.

On January 29, during the time of the fierce and unremitting attacks at Taipale, Dr. Mikkola wrote a letter to his wife, in which he spoke of his hopes for their two-year-old only son, Tapani. It expresses so well the desperate desire of the Finnish people for freedom to pursue their cherished culture that I quote from it, through a translation made by Dr. Pentti Eskola, internationally known petrologist and, with the writer, a warm friend and admirer of Mikkola:

I have just been intensely imagining in my mind Tapani's undertakings and progress of speech, about which you wrote me so much, and I have recollected, among other things, how he almost filled a box with heavy

rock specimens and again placed most of them on the floor that time when you were finishing the drawing of the microscopic thin section. And how he pronounced to his father the new words he had learned when we met last time. My last wish is that the young life of my only dear son be protected by all means and that care be taken of his education in the community with western civilization, in freedom of human spirit, in knowledge and appreciation of all our common values and his Finnish descent, and in consciousness of his father's life ideals and aims. Profession and so-called social standing, again are altogether matters of minor importance. I sometimes feel that the fate of our country in the immediate future is at stake to such a degree that our whole nation may have to suffer incomparably graver misfortunes and that great numbers of our most helpless citizens must emigrate to foreign countries, as Finnish children have already been sent over to Sweden. But even in such a case we believe in the final preservation and progress of our country and the victory of the western countries and above all upon the victory of western civilization, which honors the individuality of man and the freedom of action and thought. If God allows, and wonderful opportunities or some quick favorable series of events come to our aid, we may clear with lesser sacrifices, but we should be infinitely thankful to the Highest, if we need not lose many times more than up to present date. The widowed women of our people may in that case only with pride remember their beloved ones who were asked to give their life for this great cause. And if our Tapani some day, as a grown-up man, be asked to do the same, then his father, either living or in the grave, will be glad to make this sacrifice, though now there exists nothing to which he is more ready than to give his own life to protect the little man's life from any imminent danger.

RICHARD FOSTER FLINT

YALE UNIVERSITY

RECENT DEATHS

DR. J. ANDREW DRUSHEL, since 1928 professor of education at New York University, previously for two years associate professor of mathematics, died on June 20. He was sixty-seven years old.

SIR ARTHUR HARDEN, professor of biochemistry, emeritus, at the University of London, died on June 17. He was seventy-five years old.

DR. JOHN GERALD FITZGERALD, professor of hygiene and preventive medicine at the University of Toronto and director of the School of Hygiene and of the Connaught Laboratories, died on June 20 at the age of fifty-seven years.

DR. W. E. HARPER, director of the Dominion Astrophysical Observatory at Victoria, B. C., died on June 4 at the age of sixty-two years. A correspondent writes: "In 1938 Dr. Harper attended the Stockholm meeting of the International Astronomical Union, and while crossing from Denmark to Germany was stricken with pneumonia. After spending six weeks in a hospital at Rostock he was taken to England and subsequently reached Canada in October, 1938. He never completely recovered from this serious illness; heart trouble followed with complications, which resulted in his death last week. Dr. Harper succeeded Dr. J. S. Plaskett in 1935, and during his short five-year directorship the work of the institution was pushed forward with vigor, with an increased staff and some additional equipment. His own contributions in the field of radial velocities, parallaxes and spectrographic binaries will long remain a memorial to his industry as a research worker."

SCIENTIFIC EVENTS

NATIONAL RESEARCH FELLOWSHIPS IN THE NATURAL SCIENCES

THE National Research Fellowship Board in the Natural Sciences, of the National Research Council, has made the following fellowship appointments for the academic year 1940–1941:

John Nathaniel Adkins, Ph.D. in seismology, University of California, 1939. To work at Massachusetts Institute of Technology. Subject: Deformation of the earth under the action of ice loads and tidal forces.

Daniel I. Axelrod, Ph.D. in tertiary paleobotany, University of California, 1938. To work at the United States National Museum, Washington, D. C. Subject: The later Tertiary floras of California (with particular reference to criteria for age determination).

Herbert Irving Bernstein, Ph.D. in chemistry, Pennsylvania State College, 1940. To work at Princeton University. Subject: A stereochemical approach to the problem of molecular rearrangements.

Albert Patrick Blair, Ph.D. in zoology, Indiana University, 1940. To work at Columbia University. Subject: Interrelations of the toads of eastern North America.

Robert Harza Burris, Ph.D. in agricultural bacteriology, University of Wisconsin, 1940. To work at Columbia University. Subject: Biological nitrogen fixation with the aid of isotopic nitrogen.

Robert Avery Chipman, Ph.D. in physics, University of Cambridge, 1939. To work at the Johns Hopkins University. Subject: Methods of electrical measurements and the electrical properties of matter at very high radio frequencies.

Charles Louis Critchfield, Ph.D. in theoretical physics, George Washington University, 1939. To work at Princeton University. Subject: Forces between elementary particles.

Max Demorest, Ph.D. in geology, Princeton University, 1938. To work at Yale University. Subject: The structural petrology of ice.

Richard Wolford Dodson, Ph.D. in chemistry, the Johns