

the extreme case of feeding directly on cacodylic acid, 50 percent of animals are lethally affected by 1 to 2 grams per kilogram of body weight. (c) Not a herbicide at all is the familiar *insecticide* DDT (flies, mosquitoes) whose many year life, accumulation in earthworms, and transfer to birds have stirred concern. (d) A rabbit remains healthy eating all day, every-day vegetation freshly sprayed with 2,4-D. (e) This herbicide in surface water is degraded to 1 percent of its original strength in 30 days. Leakage of herbicide from spray planes taking off produces less effect on trees near the Tan Son Nhut Airbase than Saigon smog. (g) Some of the spray from a plane one too-windy day was carried almost 15 miles down wind and killed some rubber trees (damage payments \$87 each). (h) The most extreme situation anyone has envisaged in Vietnam is "creation of 800,000 additional refugees" and "wild rats infected with the plague . . . displacing the less dangerous city rodents." Anyone can make his own estimate of upper limit to "herbicide refugees" by looking at the figures for the amount of cropland sprayed and recalling that the population of South Vietnam, city and country together, is 16.5 million.

Fourth, if information now on hand serves as guide to action for the next 20 months, it looks like 20 years to understand in detail the effect of land clearing, whether by old-fashioned brute force or the modern herbicides, on the balance of plant and animal life. For this reason one ecologist rates the operation in Vietnam as "a gigantic and valuable experiment of global proportions." And in the United States on 12 July 1968 President Johnson signed a bill authorizing \$10.5 millions more for a study dating from 1958 on the effect of chemicals upon fish and wildlife.

As for action: (1) Dissemination of the information now on hand is the single most important step that can be taken to show anew what the Founding Fathers called "a decent respect for the opinion of mankind." (2) An appropriate United Nations committee can recommend limits on arsenicals and report facts, as another such committee did on radiation dosage and effects of nuclear weapons. However, as in that case, so in this—no such committee can be expected to make field measurements or agree on major policy recommendations. (3) United States-supported research and field tests, the bulk of it in

the United States itself, will be the major source of new knowledge. (4) On what goes on in Vietnam, as for peace-keeping operations, so for herbicides, the responsibility lies in the first instance with the local people: (a) The South Vietnam Air Force initiated the use of herbicides. (b) The South Vietnam representatives sit in on the planning and have veto power over every airborne herbicide operation. (c) The herbicide program receives attention in the local press in both South and North Vietnam. (d) There is a group of able French-trained Vietnamese biologists in the Saigon area who are interested in herbicides and are capable of contributing valuable field studies if supplied with a jeep. Many have associations with the National Committee for Nature Preservation in South Vietnam. (e) In the bright economic future recently envisaged for Vietnam by David Lilienthal herbicides will be a decisive factor in augmenting the already great output of food and fiber.—JOHN A. WHEELER

## APPOINTMENTS



R. L. Sproull



M. M. Nance

**Robert L. Sproull**, academic vice president of Cornell University, to provost and vice president of the University of Rochester . . . **M. Macco Nance**, acting president of South Carolina State College, to president of the college . . . **Richard L. Masland**, director of the National Institute of Neurological Diseases and Blindness, to professor and chairman of the department of neurology, College of Physicians and Surgeons, Columbia University . . . **Robert J. Glaser**, vice president for medical affairs and dean of the Stanford University School of Medicine, to acting president of the university . . . **Ned D. Bayley**, deputy director of science and education in the office of the secretary of the Department of Agri-

culture, to director of science and education for the department . . . **Herman B. James**, dean of the school of agriculture and life sciences, North Carolina State University, to assistant administrator for the War on Hunger under the Agency for International Development . . . **Joseph M. Goldsen**, former head of the social science department, RAND Corporation, to executive director of the Concilium on International Studies and assistant to the provost at Yale University . . . **John Legaris**, first vice president of the National Air Pollution Control Association, to president of the association . . . **Mark Ferber**, University of California representative in Washington, D.C., to special assistant to Vice President Charles Hitch as coordinator of the university's new program on urban problems . . . **Fred S. Honkala**, dean of the University of Montana Graduate School and director of research for the University of Montana Foundation, to a 1-year leave of absence as director of the Advanced Science Education Program for the National Science Foundation . . . **Lawrence M. Kushner**, acting chief of the Institute for Applied Technology of the National Bureau of Standards, to director of the institute . . . **Donald R. Chadwick**, director of the National Center for Chronic Disease Control of HEW, to deputy director of the division of Regional Medical Programs . . . **Pierre R. Demarque**, professor of astronomy at the University of Chicago, to professor of astrophysics and chairman of the department of astronomy, Yale University. . . . **Theodore Cooper**, associate director of the National Heart Institute and chief of its Artificial Heart-Myocardial Infarction Program, to director of the institute. . . . **Ward J. Haas**, director of the Space Sciences Research Center at the University of Missouri, to vice president of Warner-Lambert Pharmaceutical Co. and director of the Warner-Lambert Research Institute. . . . **Martin Cherkasky**, director of Montefiore Hospital and Medical Center, to chairman of the department of community health of the Albert Einstein College of Medicine. . . . **Daniel Banes**, head, division of pharmaceutical sciences in FDA's Bureau of Science, to acting associate commissioner for science.

*Erratum.* The price of volume 1 of *Venomous Animals and Their Venoms*, reviewed 31 May, Page 984, was given incorrectly. The price of the volume is \$34 singly and \$28.50 by subscription to the three-volume work.