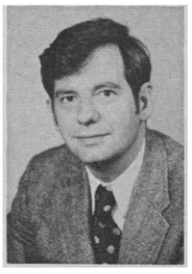
oped over the next decade. The director of the DBS should have responsibility for organizing the research program as well as the regulatory activities of the division.

In addition, federal responsibility for vaccine development should be clarified, in a way that ensures the DBS does not develop vaccines in-house. There should be some court of appeal against the director's decisions. Since the DBS acts, in effect, for the academic community on behalf of the public, there should be a stronger connection with the academic world than occasional ad hoc conferences and a rubber-stamp board of scientific counselors. Standing committees of scientists might be established—one to oversee research and another for regulations—so as to buttress the director's posture toward manufacturers. Problems with vaccines should be more openly discussed, and herd immunity should be sought by means other than treating the public as one. Most importantly, the boat in which the DBS director sits should be strong and flexible enough to withstand the occasional rocking.—NICHOLAS WADE

APPOINTMENTS



W. G. Bowen

M. H. Bernstein

William G. Bowen, provost, Princeton University, to president of the university. . . . **Marver H. Bernstein**, professor of politics and public affairs, Princeton University, to president, Brandeis University. . . . **David R. Derge**, dean for administration, Indiana University, to president, Southern Illinois University, Carbondale. . . . **Timothy W. Costello**, professor of psychology and management, New York University, to president, Adelphi University. . . . **N. Ferbee Taylor**, vice president for administration, University of North Carolina system, to chancellor, University of North Carolina, Chapel Hill. . . . **Ivan L. Frick**, president, Finlay College, to president, Elmhurst College. . . . **Harold P. Hanson**, dean, Graduate School, University of Florida, to vice president for academic affairs at the university. . . . **Archie R. Dykes**, chancellor, University of Tennessee, Martin, to chancellor, University of Tennessee, Knoxville. . . . **Victor Jones**, professor of engineering and applied physics, Harvard University, to dean, Graduate School at the university. . . . **Thomas G. Cook**, assistant professor of education, University of Wisconsin, to dean, School of Education, Ferris State College. . . . **William Happ**, operations research analyst, U.S. Army Corps of Engineers, to dean, School of Engineering, Sacramento State College. . . . **Leonard E. Goodall**, vice chancellor, University of Illinois, Chicago Circle, to chancellor, University of Michigan, Dearborn. . . . **Conrad T. Burriss**, professor of chemical engineering, Manhattan College, to dean, School of Enginering at the college.

RESEARCH NEWS

Cancer Radiation Therapy: Potential for High Energy Particles

Although the causes of cancer are still unknown, treatment with radiation therapy alone or in combination with chemotherapy and surgery helps to save hundreds of thousands of lives a year. Large doses of radiation, however, damage healthy tissues in addition to destroying tumors and thus may cause severe side effects. The use of high energy particles instead of the conventional x-rays or gamma rays may make possible significant improvements in radiation therapy, according to a growing number of physicists and radiotherapists, and the preliminary results of several laboratory and clinical trials seem to support this belief.

Both the physical and radiobiological properties of energetic particles indicate that they may be able to alleviate some of the problems of conventional radiotherapy, although clinical trials are needed to ascertain that new and untoward effects do not occur. The potential uses of particle radiation may be restricted to localized cancers—a category of diseases that does not include some of the most common, such as lung and breast cancer. Nonetheless, the use of particle radiation, if its potential advantages turn out to be clinically significant, may be able to help the large number of patients who now die from localized cancers despite treatment with conventional radiotherapy.

Practical applications of particle radiation in cancer therapy may be slow in coming. Except on a small scale, the necessary clinical trials are not now being conducted in this country, and there appears to be little likelihood of systematic trials with many types of particles in the near future. Despite the large increases in funding for cancer research, relatively little support is available for radiotherapy research, including particle radiation. National Cancer Institute support for investigations of particle radiation totaled less than $1 million in fiscal year 1971, a figure that NCI officials estimate may rise to $2.5 million by fiscal 1973. One reason, according to NCI, for the relatively low level of funding is a shortage of qualified radiotherapists who are interested in particle radiation. Research proposals have been rejected by the peer review system for lack of scientific merit—a consequence, according to one NCI official, of the naiveté in radiobiological matters on the part of the physicists who proposed them.

Whatever the reason, several physics laboratories that have an interest in using their particle accelerators for cancer research may find it impossible to do so, and in one case the lack of other sources of funding may result in the closing of the laboratory.

The current interest in medical uses for particle radiation contrasts strongly with the attitudes that have prevailed