Kistiakowsky deplored the effects of section 203 and suggested that "a close coupling of mission-oriented agencies and extramural programs of basic scientific research is highly desirable and should not be damaged by narrow definition and interpretation of the relevancy of basic research."

Wiesner noted the longer-range economic and other damage of research cuts.

Hornig expects that "in a decade we will pay dearly" for economizing on research now. —JBP

## NSF Assistant Directors Nominated by President

President Nixon has nominated four assistant directors of the National Science Foundation. Although the four posts were established by Congress in 1968, they have remained open until now.

Physicist Edward C. Creutz, Gulf General Atomic vice-president for research and development, will become NSF Assistant Director for Research, responsible for roughly half the NSF budget.

Lloyd E. Humphreys, psychology professor at the University of Illinois, will be Assistant Director for Education.

Louis Levin, a biochemist, who is already at NSF as Executive Associate Director, will be the new Assistant Director for Institutional Programs.

Rear Admiral Thomas B. Owen, a physical chemist who is presently Chief of Naval Research, will be Assistant Director for National and International Programs.

The position of NSF deputy director still remains open.

Also recently nominated by the President are nine members for the National Science Board, NSF's policy-making body. Among the nominees: Robert A. Charpie, president of the Cabot Corporation of Boston, and a theoretical physicist; Robert H. Dicke, chairman of the physics department at Princeton; and Frank Press, chairman of the geology and geophysics department at MIT.

## National Science Board Prescribes For Health of US Science

*The Physical Sciences,* prepared by the National Science Board, the 25-member policymaking body of NSF, went to Congress in February. In its preamble the report lists what the NSB considers basic tenets of US science policy: the nation will strive to stay near the forefront in major science areas; every young person's opportunity for advanced education should be limited only by his ability and motivation, and the government is responsible for ensuring the quick and effective use of scientific knowledge in support of national goals.

The report summarizes the present state of astronomy, chemistry and physics. It reviews recent discoveries in the macrouniverse, for example in quasars, relativity, pulsars, and space experiments, as well as new insights into the microuniverse of elementary particles, and atomic and molecular physics and chemistry. The NSB also examines the nature of the physical-science enterprise, noting science-technology interactions, the importance of new ideas, the communication system of science, and the setting of priorities.

The NSB discusses the health of the US effort in the physical sciences, outlining the roles of universities, government and industry in different types of training and research. Among numerous NSB recommendations: greater input by scientists to the process of establishing scientific priorities within the political sectors; government sensitivity to the vital needs of the physical sciences; special attention by all agencies to research programs involving individual investigators and small groups; the establishment of large federally funded research facilities *only* as national or regional resources.

Sixteen specific recommendations are presented for consideration by the Legislative and Executive branches of government. Among these: To help avoid the mediocrity currently threatening the US scientific effort, physical science support levels "should be made comparable to those recommended in the studies of the Committee on Science and Public Policy of the National Academy of Sciences in the fields of astronomy, chemistry and physics." NSF should be able to have more money and more opportunity for initiative in developing physical-science research programs. All agencies should continue to give special attention to small groups of researchers, "many of which are now underfunded to the point approaching stultification." Older or less productive large installations should be selectively phased out to allow construction and operation of new installations "which are closer to the forefront of developments in scientific techniques and capability." The US should work for international participation in planning and utilizing large research facilities. The mission-oriented government agencies "should continue to support basic research in all areas of the physical sciences which show reasonable promise of having a bearing on their missions." The currently declining funding for the scientific aspects of the space program should be reversed. Industry, government and universities should cooperate more effectively "in translating basic science into social utility and in opening up for basic research the new areas which are often suggested by technological problems."

## Remote Probes to Study Weather and Atmosphere

*Atmospheric Exploration by Remote Probes,* a special panel report from the National Research Council, recommends new types of measuring devices for increasing understanding of atmospheric processes and weather predictability. Instruments that can probe the atmosphere at varying distances promise "a major leap in advancing our observational capability." The report notes that theoretical and technological advances now permit the use of radars, radio propagation facilities, and infrared and microwave radiometers to measure conditions of atmospheric structure, wind turbulence, temperature and moisture. The NRC panel, headed by David Atlas (University of Chicago), recommends developing an "atmospheric test range" at NASA's Wallops Island facility, and the use by atmospheric scientists of MIT's Haystack radar facility.

## To Understand Earth in Space Make Observations from Ground

Ground-based techniques must be fully exploited for a complete understanding of the earth's space environment, according to a report from the National Research Council's Geophysics Research Board. *Physics of the Earth in Space: The Role of Ground-Based Research,* notes that, while the past decade has greatly advanced understanding of the sun–earth system, many scientific questions require a coordinated program of ground- and space-based techniques. The result of a 1969 summer study by the Committee on Solar-Terrestial Research (supported by NSF, ESSA, the Air Force and NASA), the report discusses the