



BETHE



NADER

clear power sources and the gravity of the fuel crisis." Further, "all energy release involves risks and nuclear power is no exception." However, "civilian nuclear power has been under public surveillance that is without parallel in the history of technology . . . We have confidence that technical ingenuity and care in operation can continue to im-

prove the safety of all phases of the nuclear-power program . . ."

Letter to the President. The Nader letter was organized by the Union of Concerned Scientists but signed by the eight scientists and Nader speaking as individuals. They say that the nuclear-power issue "involves not only technological, but also institutional problems. For example, even if safe nuclear power-plant designs were available, the actual safety of the power plants could be compromised by improper construction, maintenance or operation. The utilities who own nuclear power plants say they will be careful, but there is no guarantee of this . . . Already during the brief experience with commercial nuclear power in the United States more effort seems to have been devoted to building the nuclear-power plants quickly than to building them safely." The group also notes that "it has become clear that the early nuclear-power proponents failed to appreciate the practical problems that could prevent the safe implementation of their ideas."

—RAS

Letter signers

The scientists who signed the Bethe letter are Luis Alvarez (Lawrence Radiation Laboratory), Peter Auer (Cornell), Robert Bacher (Caltech), William Baker (Bell Laboratories), John Bardeen (U. of Illinois), Hans Bethe (Cornell), F. Bloch (Stanford), Norris Bradbury (former Los Alamos Scientific Laboratory director), Harold Brown (Caltech), Richard Chamberlain (U. of Pennsylvania), Cyril Comar (Cornell), Arthur Kantrowitz (AVCO-Everett Research Laboratory), Ralph Lapp (energy consultant), Joshua Lederberg (Stanford), Willard Libby (UCLA), Franklin Long (Cornell), Edwin McMillan (Lawrence Radiation Laboratory), Kenneth Pitzer (UC Berkeley), Edward Purcell (Harvard), I. I. Rabi (Columbia), Norman Rasmussen (MIT), Roger Revelle (Harvard), Glenn Seaborg (U. of California), Frederick Seitz (Rockefeller University), Edward Teller (Lawrence Radiation Laboratory), James Van Allen (U. of Iowa), Warren Weaver (mathematician, New Milford, Conn.), Alvin Weinberg (former director of Oak Ridge National Laboratory), Edward Wenk Jr (U. of Washington), Eugene Wigner (Princeton) and Richard Wilson (Harvard).

Signers of the Nader letter are Hannes Alfvén (UC San Diego and Royal Institute of Technology, Stockholm), Barry Commoner (Washington University), John Edsall (Harvard), Henry Kendall (MIT), Ralph Nader, Linus Pauling (Caltech and Stanford), Harold Urey (UC San Diego), George Wald (Harvard) and James Watson (Harvard).

Large Space Telescope leads priority list

In sifting through many possible space-research programs, the National Research Council's Space Science Board has chosen to recommend the Large Space Telescope as the only new NASA project (in the Office of Space Science) for FY 1976. The board also recommends that several programs start in FY 1977, including the Lunar Polar Orbiter, the Electrodynamic Satellites, the Gamma-ray Explorer and the Solar Maximum Mission. These assessments are included in an NAS publication *Opportunities and Choices in Space Science, 1974*. In addition to the recommendations for new programs, SSB reaffirms its strong support for the ex-

isting High-Energy Astronomy Observatories and Pioneer Venus and Mariner Jupiter Saturn missions. These were all started in response to this report's predecessor, the 1971 NAS publication *Priorities for Space Research 1971-1980* (PHYSICS TODAY, August 1971, page 19). *Opportunities and Choices* was considered a necessary update, says the board, and was prepared by disciplinary committees in mail consultation with active researchers. The board feels that annual revisions of the report will be of value.

Space physics. The fundamental questions that remain, according to the board, include determining how the solar-wind flows into the Earth's magnetosphere, the coupling mechanisms between the ionosphere and magnetosphere and the mechanisms for generating nonthermal radiation from the magnetosphere. The board recommends missions to measure parameters such as magnetic fields and particle fluxes, simultaneously in the ionosphere and the magnetosphere at points chosen to identify or isolate particular physical phenomena. Continuity and economy in this research effort can be achieved by alternate launching of Electrodynamic Satellites and Atmospheric Explorers at three-year intervals.

Space astronomy. The goal here is to operate permanent observatories in space in conjunction with the space shuttle. The first of these observatories is the Large Space Telescope, probably with a two-meter telescope with diffraction-limited resolution of 0.10 sec of arc. Originally a three-meter telescope was planned, but cost considerations now make this size doubtful. Another high-priority observatory would include a 1.2-meter imaging x-ray telescope; eventually others would operate in space at gamma-ray, infrared and radio wavelengths.

Planetary and lunar exploration. "The ultimate objective of planetary investigation," the board says, "should be to return samples for detailed study in terrestrial laboratories. In the near term, the board advocates the Viking Extension in addition to the Lunar Polar Orbiter. The Viking Extension provides for a longer data-collection period for the Viking Mars mission, which at present has only 90 days for postlanding experimentation. If the FY 1976 and 1977 budgets are the size anticipated, the board "reluctantly" recommends elimination of the Jupiter-Uranus program and delay of the Pioneer Jupiter Orbiter to allow other near-term projects (the Large Space Telescope, Solar Maximum Mission, Lunar Polar Orbiter and the Electrodynamic Satellites) to proceed without delay. For the outer solar system, the board recommends a NASA examination of strategies for exploration during the next decade.