sufficient to keep them running at about the same level of operation.

The increase of $4.3 million or 18.3% for materials-research laboratories will allow NSF to open one or two new labs while providing funds to strengthen instrumentation at existing facilities.

The $0.45 million increase for the Francis Bitter National Magnet Laboratory, up 9.7% from FY 1983, will support a constant level of operation as well as R&D for magnet development and research related to high magnetic fields.

The two NSF-supported synchrotron-radiation facilities, at the University of Wisconsin and at Cornell University, are slated for an increase of 15.6% over FY 1983 in the FY 1984 request. This funding level will permit improvements to instrumentation and fuller exploitation of the facilities.

Astronomy. The FY 1984 request for the astronomical and atmospheric sciences directorate seeks an increase of $58.8 million or 21.3% over FY 1983 levels; this includes $79.3 million for astronomical sciences, up $16.3 million or 25.9% over FY 1983. The major priorities in astronomy reflect the recommendations of the National Academy of Sciences astronomy survey committee headed by George Field (Harvard). The second highest priority for major new construction of the Field committee was a Very Long Baseline Array. The budget calls for $2.5 million to begin design studies for the array at the National Radio Astronomy Observatory.

Of the $2.2 million provided for research in solar-system astronomy in the FY 1984 request, up to $0.5 million will support ground-based studies of Halley's Comet. Other research priorities include addressing a critical need for detectors of all types (especially infrared array detectors and charge-coupled-device detectors) and increasing computational capability using modern mini-computer systems.

Another project recommended by the Field committee is the construction of the New Technology Telescope (PHYSICS TODAY, November, page 44), a 15-meter optical telescope three times larger than the Hale Telescope at Mount Palomar. Late in FY 1983 NSF will decide which design concept to pursue, and FY 1984 funds will be used to work out the design details. Another of the top priorities for ground-based astronomy is the installation of a 10-meter radio antenna (whose site has not yet been selected), suitable for submillimeter astronomy. In general, emphasis is given to increasing the technical support at ground-based observatories, both to correct a shortage of personnel that has developed over a number of years and to develop new instrumentation and improve the maintenance of the present equipment.

The increase in funding for the atmospheric sciences will allow further improvements to the computing facility at the National Center for Atmospheric Research, including acquisition of a new mass-storage system and increases in project support for all subfields, particularly for studies of the chemistry of the atmosphere.

Education. The funding for education increases by $9 million over FY 1983 appropriations to $39 million in the FY 1984 request. In FY 1983 the $30 million appropriated is slated to be split evenly between support for graduate students and support for programs to improve precollege teaching of mathematics and science.

Of the $9.0 million increase in FY 1984, $4.0 million will be used to raise the stipend for graduate fellowships from $6900 to $8100 and to raise the cost-of-education allowance by $900. The remaining $5.0 million will be used for new programs that seek to improve pre-college teaching both by giving Presidential awards to outstanding teachers and by providing funds for longer-term training for math and science teachers.

A new NSF program would give an additional $6.0 million to support 200 outstanding young faculty within seven years of receiving their last degree. The award is intended to allow them to create a research environment at the university. Matching funds are being sought from industry for these awards, and, depending on the amounts received, 200 additional awards will be granted each year up to a maximum total of 1000. The intention is to provide individual awards of up to $100 000 with a combination of Federal and private funds. Keyworth said NSF plans to establish a selection mechanism outside of the Federal grant system; recipients will be chosen on the basis of excellence, with some preference given to critical needs in engineering. Keyworth said this new program is intended to keep excellent teachers and scientists at universities. —JC

APS council adopts nuclear-war resolution

The Council of the American Physical Society adopted a resolution concerning nuclear war at its meeting in January. Announcing the resolution APS president Robert Marshak said, "While the final decision about nuclear arms rests with the citizens of the world, by trying to select aspects of the nuclear arms race that we as physicists can identify as crucial, we can lend further weight to their concerns." Marshak added that the timing of the release of the document would permit it "to add to the ongoing dialog about the deployment of missiles and the reduction of nuclear arms stockpiles."

In addition to passage of this resolution, APS has endorsed the statement on nuclear war made by the National Academy of Sciences (PHYSICS TODAY, September 1982, page 97) and plans to continue to organize public educational activities such as symposia, technical studies, and workshops.

The initial draft of this resolution was prepared by a panel of experts in nuclear arms control consisting of Hans Bethe, Sidney Drell, Marvin Goldberger, Wolfgang Panofsky and Herbert York. The resolution was then presented to the APS Council. The text adopted by the council follows.

Whereas nuclear war is an unprecedented threat to humanity;

Whereas the stockpile of nuclear

APS president Robert Marshak (Virginia Polytech), shown at right, and Neal F. Lane (Rice University), chairman of the APS Panel of Public Affairs, present the resolution on nuclear-arm limitation passed by the Council to the press and public at the APS January meeting.

Presidential Science Adviser George Keyworth will comment on the APS nuclear-war resolution in the Guest Comment section of our April issue.

weapons distributed around the globe contains the explosive power of more than one million Hiroshima bombs;
Whereas a general nuclear war would kill hundreds of millions of people;
Whereas the aftereffects of general nuclear war are certain to be catastrophic for the survivors and could destroy civilization;
Whereas any use of nuclear weapons, including use in so-called "limited wars," would bring with it substantial risk of escalation to general nuclear war;
Whereas thirty years of vigorous research and development have produced no serious prospect of effective defense against nuclear attack;
Whereas nuclear arsenals of the United States and the Soviet Union are more than adequate for deterrence;
Whereas the continuation of the nuclear arms race will not increase the security of either superpower;
Whereas the proliferation of nuclear weapons to additional countries, especially in areas of high tension, would substantially increase the risk of nuclear war;
Whereas there has been no progress for several years now toward achieving limitations and reductions in strategic arms, either through ratification of SALT II or the negotiation of a replacement for it;
Whereas negotiations intended to achieve a comprehensive nuclear test ban have been indefinitely adjourned; and
Whereas negotiations intended to prevent or inhibit the spread of nuclear warfare to outer space have been suspended;
Be it therefore resolved that The American Physical Society, through its elected Council, calls on the President and the Congress of the United States, and their counterparts in the Soviet Union and other countries:
to intensify substantially, without preconditions and with a sense of urgency, efforts to achieve an equitable and verifiable agreement between the United States and the Soviet Union to limit Strategic Nuclear Arms and to reduce significantly the number of such weapons and delivery systems;
to conduct, in a similar spirit, negotiations to restrict the use and limit the deployment of battlefield and intermediate-range nuclear weapons;
to resume negotiations to prevent the spread of warfare into outer space;
to take all practical measures to inhibit the further proliferation of nuclear weapons to additional countries;
to take all practical actions that would reduce the risk of nuclear war by accident or miscalculation;
to continue to observe all existing arms-control agreements, as well as SALT II;
to avoid military doctrines and deployments that treat nuclear explosives as ordinary weapons of war; and
to initiate serious negotiations to ban the testing of nuclear weapons in all environments for all time as called for in the Non-proliferation Treaty.

The 30 elected members of the council approved the resolution almost unanimously.

Academy physics survey gathers steam

A comprehensive survey of physics, designed along the lines of the study completed in 1972 under the direction of Allan Bromley (Yale) is getting under way. William Brinkman (Bell Labs), who heads the survey for the National Academy of Sciences, told us that he has selected six members of a steering committee that eventually will have about 17 members. Thus far, those who have agreed to serve are William Fowler (Caltech), who will act as a liaison for the Academy Commission on Physical Sciences, Mathematics and Resources, as well as the steering committee, Theodor W. Hänsch (Stanford), Val Fitch (Princeton University), Ronald C. Davidson (MIT), Peter D. M. Parker (Yale) and Vincent Jaccarino (University of California, Santa Barbara).

Commenting on the need for the survey, Brinkman said, "The physics climate has gone through enormous changes in the past ten years. The Bromley report was written when relevance was the biggest issue; this is no longer true." Brinkman said that while the survey will emphasize the question of where physics as a science is going, it will also consider such issues as the role of big science in national

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facilities, increasing competition with the European and Japanese scientific communities, changes in the subfields of physics and how future opportunities within them will be influenced by both funding and research trends.

Brinkman estimates the total cost of this survey at $700 000; of this amount, $200 000 has already been requested from the Department of Energy. The Academy anticipates a similar level of support from NSF and the Department of Defense, and about half as much from NASA. The Academy is also seeking private funding to broaden the survey.

Current plans call for a report to be ready by February 1984; this will take about half the time the Bromley survey required, reflecting a reduction in scope. The steering committee, which met for the first time in February, is beginning by defining objectives for the study and setting up subpanels to meet these objectives. In addition to examining each of the subfields of physics, they will establish subpanels in physics applications, the unifying aspects of physics, the diversity of physics, and manpower and funding as they influence and are influenced by directions in physics research.

Brinkman, a solid-state theorist, now director of the Physical Research Lab at Bell Laboratories, received his PhD from the University of Missouri in 1965. Since 1966 he has been at Bell Labs, beginning as a member of the technical staff in the theoretical physics department, then serving as head of the infrared physics and electronics research department, from 1972 to 1974, and as director of the chemical physics research lab from 1974 until he assumed his present position in 1981. —JC

in brief

The American Vacuum Society will award scholarships for the 1983–84 academic year in vacuum science and