

local currency. Three fourths go to countries that already have a surplus of dollars.

The subcommittee report, "Foreign Research Dollar Drain," concludes that dollar grants to foreign scientists for nonurgent research is inappropriate at a time when the nation is trying to eliminate an international payments deficit. The subcommittee particularly accused government agencies of imposing lax criteria and criticized the Budget Bureau, the administration's financial watchdog, for merely asking agencies to adopt tighter controls rather than requiring them.

The criticism is directed at the Departments of Defense and Health, Education and Welfare, the Atomic Energy Commission, the National Science Foundation and the National Aeronautics and Space Administration. The report recommends two immediate actions. First, new foreign research financing should be limited to just those projects urgently needed by the US that can not be carried out here and that a foreign government will not finance itself. Second, all current, uncompleted projects should be reviewed and a report submitted within three months to the subcommittee on whether such projects would meet the new-project limitation.

At the end of July John S. Foster Jr, director of defense research and engineering at the Department of Defense, announced new review and evaluation procedures for research proposals, a fine screening of all proposals, closing of two of three European science offices and limitation of support to urgent projects only. DoD foreign research is the subcommittee's biggest target because it represents about 40% of the total. The department spent \$8 120 000 on research outside the US in 1967 and put more than 70% of that into developed countries.

AAS Plans Quarterly Journal, Increased Subscription Rates

A new publication and increases in subscription rates and page charges for existing journals have been announced by the American Astronomical Society.

Lodewyk Woltjer, coeditor with Norman H. Baker of the *Astronomical Journal*, said the new *Bulletin of the American Astronomical Society* will

publish all unrefereed material that now appears in the *Journal*. This material includes observatory reports and abstracts of papers presented at society meetings. The *Journal* expanded its scope this year to include papers on astrophysical as well as astronomical subjects. The new quarterly will be patterned after the *Bulletin of the American Physical Society*.

The first issue of the new publication will appear in January. Members will pay \$2 a year, nonmembers \$5. Woltjer said he expected that members' dues, now \$14 a year, would be adjusted to include the *Bulletin*.

Next year the society will drop its requirement that members subscribe to either the *Astronomical Journal* or

the *Astrophysical Journal*. At that time, member rates of the *Astronomical Journal* will rise from \$9 to \$12, while *Astrophysical Journal* member rates will rise from \$18 to \$25. Non-member rates will go to \$20 and \$50, respectively. Members who subscribe to both journals and the *Bulletin* will receive the *Astronomical Journal* for \$8 rather than \$12, however.

Page rates for the *Astronomical Journal* will go up with the August issue from \$25 to \$45 for papers and observatory reports and to \$30 for abstracts. *Astrophysical Journal* page rates will rise with the 1 Nov. issue from \$20 to \$36 in the *Journal* itself and from \$30 to \$40 in the separate letters section.

Election Will Not Change Federal Research Support

Whoever occupies 1600 Pennsylvania Avenue after the November elections, Richard Nixon or Hubert Humphrey, the course of government support for basic research will not be drastically altered. PHYSICS TODAY asked both camps about the candidates' positions concerning science and the role the government should play in supporting it. The conclusion: The golden years for growth in research money are over, but both Republicans and Democrats support a strong research program as essential to the general health of the country. Here are statements by both sides.

"The Republican administration under Richard Nixon will remain committed to the cause of science, a commitment dating from the administration of Dwight Eisenhower. Mr. Nixon is especially concerned about the apparent disorganization, duplication of efforts and unnecessary expense, which now characterize the nation's science effort. He plans a thor-

ough study of the problems and a streamlining to coordinate the present disparate policies and programs and is sympathetic to the idea of establishing one agency as the top science agency."

"Hubert Humphrey is never more enthusiastic than when he is discussing the potential benefits of science and technology. He was one of the strongest advocates in the Senate of basic or 'pure' research. He is chairman of the national councils on space and oceanography. Leadership of these two cabinet-level councils gives the Vice-President the chief responsibility for advising the President and keeping him informed of developments in the fields of space, aeronautics and marine sciences. He was one of the first members of the Senate to push for federal scholarship loans to science students, later included in the National Defense Education Act. Hearings under his chairmanship of a Senate government operations subcommittee paved the way for the Of-



fice of Science and Technology and the National Clearinghouse on Scientific and Technical Information."

Nixon, in his campaign speeches, has emphasized the need for the country to keep pace with the Russians in the eyes of the uncommitted nations and has pointed out the scientific expertise of the US as one of the means for insuring national prestige. He has also spoken of the need for the federal government to channel funds to the states and cities to promote research aimed at curing serious national ills, such as crime, social problems, pollution. The Republican emphasis is on practical results and a hardheaded approach to expenditures. However there is no movement directed at taking the government out of the science business or even sharply reducing its role in research. (For statements by leading Republican House science committee members, see *PHYSICS TODAY*, December, page 69.)

Humphrey in his public speeches has often talked of the importance of scientific research to the nation and the people. "Any nation that can mobilize its scientific and managerial resources to put a man on the moon ought to be able to put a man on his feet on this good earth." "Basic research makes the deposits in our bank of knowledge from which applied research may later draw. No deposits, no withdrawals." "There is no reason why we can't prepare ourselves to meet technological changes and tem-

per them to essentially human objectives." An administration headed by Humphrey can be expected to remain heavily involved in science.

AIP Offers New Translation, Takes On AAPT Publication

Two new publishing ventures have been taken on by the American Institute of Physics: a cover-to-cover translation of the *Ukrainian Physics Journal* and publication of *The Physics Teacher*.

The Ukrainian journal offers original papers and brief communications in experimental and theoretical physics, especially in solid state. It also covers nuclear physics, plasmas, lasers and other topics. The first issue is scheduled for mailing in October.

Hugh C. Wolfe, AIP publications director, told *PHYSICS TODAY* that the

Ukrainian journal is so well thought of that all the 1967 issues were translated for the Atomic Energy Commission and the National Science Foundation. Copies are available from the Clearinghouse for Federal Scientific and Technical Information.

AIP publication will begin with volume 13 (1968). In its 12 Russian issues, the volume will contain about 2100 pages. Subscriptions, priced at \$80 domestic and \$84 foreign, are available from AIP.

At the same time, AIP will take over publication of *The Physics Teacher* for the American Association of Physics Teachers. While the association's editorial policies will remain unchanged and Clifford E. Swartz will remain editor and Lester G. Paldy assistant editor, AIP will take on copy editing, production and all arrangements with the printer.

Space Panel Urges Series Of Cheap Planetary Probes

A panel of US scientists has urged that the US send relatively small and inexpensive spacecraft to orbit Venus and Mars each time the planets are favorably placed between now and 1975. The report also recommended an instrument landing on Mars in 1973 and called attention to rare opportunities to send probes to Mercury and the major planets beyond Mars by playing gravitational billiards.

The report, released 15 Aug. by the Space Sciences Board of the National Academy of Sciences and the National Research Council, was prepared under the chairmanship of Gordon J. F. MacDonald as a sequel to a report published in 1965 after a conference at Woods Hole, Mass.

The panel noted that in the current fiscal year, planetary exploration will receive only about 2% of the nation's space budget, an amount the report calls "totally inadequate." At the same time, the total amount of money available for space is declining. The panel outlined the useful work that can be done with small, spinning spacecraft of the Pioneer and IMP classes and urges that they be sent on orbiting missions to Mars and Venus at each opportunity.

Further savings can be made, the panel said, by ending the practice of duplicate missions. Technological advances have made the chances of failure much less and space shots have become so commonplace that national prestige no longer rides on any in-

dividual mission. The panel recommended, however, that the twin Mariner missions to Mars next year go ahead as planned.

More duplication can be eliminated, the report noted, by closer cooperation with the Soviet Union. Joint planning and coordination of scientific flights would not entail the problems of meshing hardware on joint launches or raise possible security problems. The panel suggested that informal contacts between scientists could produce liaison proposals to be presented to the respective governments. Such an arrangement could reduce duplication and reduce the chance of missing a flight opportunity.

Unusual configurations of planets provide opportunities to send spacecraft much further with a booster of given size by using the gravitational force of one planet to accelerate the probe toward the next planet. In 1970, 1973 and 1975, the report noted, it will be possible to use the gravitational field of Venus to assist a spacecraft in a flight to Mercury. The Jet Propulsion Laboratory is already working to seize a once-in-a-century opportunity in 1977-78 to send a probe to Jupiter, Saturn, Uranus and Neptune without using extraordinarily powerful boosters.

The panel also recommended that a \$30-million radar-astronomy observatory be built, that another intermediate-size optical telescope be placed in the southern hemisphere and that a

