Argonne's ZGS complex includes neutrino beam line and 12-foot bubble chamber at lower right. Two halls for polarized-proton-beam experiments are at upper left.

- three months for "conventional" research efforts (unpolarized beams),
- five months for the improved study of neutrino interactions in the 12-foot bubble chamber and
- twenty months for the polarized-beam program, available only at the Argonne facility. (Saturne at Saclay could conceivably be adapted to accelerate polarized protons, but at 3 GeV and with low polarization compared to the ZGS's 60% beam polarization at 12 GeV.)

Such a schedule would require nine months of total operating time for the ZGS both in FY 1977 and FY 1978. The panel points out that present funding for the Argonne synchrotron permits only six to seven months of use per year; an additional $1 million per year would be needed, according to Argonne, for the 20 months of operation outlined above, and the panel recommends that the extra money be provided.

Argonne seeks extension. Argonne has proposed to ERDA that the ZGS become a dedicated polarized-proton facility for three years *after* the 1978 shutdown date, according to Thomas H. Fields, Argonne associate director for high-energy physics. Fields told us operation of the ZGS six months per year during that period would be cost-effective and would permit the completion of much polarized-beam research not included in the Walker panel's plan. But the panel does not back the Argonne alternative. "It is clear," the panel says, "that a large program of polarized-beam experiments which could easily occupy the ZGS for the proposed three-year extension can already be foreseen. However, the panel is not now prepared to endorse this commitment of rather large operating expenditures to this specialized (though unique) program for such a long period of time[5½ years]." The Argonne proposal sets post-1978 operation at $5.5 million annually, compared with the present budget of $10.5 million per year. Even the $5.5 million figure would mean elimination of support for the 12-foot bubble chamber and for Booster II, a 500-MeV synchrotron expected to begin operation in Spring 1977.

Fields told us a shutdown of the ZGS could mean that some of the facilities associated with the synchrotron would be employed in other projects. If and when the Intense Pulsed Neutron Source is built at Argonne, he said, it would very likely use ZGS buildings and personnel. Also, the 12-foot bubble chamber might be transferred to another accelerator.

—FCB

White House science office organizes

The flesh and sinew of the new Federal science-advice organism continues to grow on the bare bones of the 1976 science-policy act (Public Law 94-282). President Gerald Ford has recently named Simon Ramo, a founder and top executive of TRW Inc, to head the President's Committee on Science and Technology created by the act, and nine other persons have been appointed to committee membership. Meanwhile, physicist William A. Nierenberg and biologist Donald Kennedy have joined the White House Office of Science and Technology Policy as half-time senior consultants.

The new PCST appointees are William O. Baker, president of Bell Labs (designated as vice-chairman of the committee); Otis R. Bowen, Governor of Indiana; W. Glenn Campbell, director of the Hoover Institution on War, Revolution and Peace, Stanford University; Edward E. David Jr, executive vice-president of Gould Inc, Chicago (formerly White House science adviser to President Richard M. Nixon); Elizabeth H. Leduc, dean of the division of biology and medicine, Brown University; Fritz J. Russ, president of Systems Research Laboratories Inc; Charles P. Slichter, Center for Advanced Study, University of Illinois; Charles H. Townes, University of California, Berkeley, and W. Bradford Wiley, chairman and chief executive of John Wiley and Sons Inc.

Ramo, who headed the now-disbanded Advisory Group on Contributions of Technology to Economic Strength, will be responsible, as chairman of the PCST, for a two-year survey of the entire Federal effort in science, technology and engineering. He and the other committee members will analyze the overall context of the Government's participation in scientific programs—including mission, goals, facilities and other factors. The science-policy act specifically mandates their examination of the need for organizational reform and for a broader base of support for basic research. The committee's preliminary report must be presented to the Congress within one year after the survey commences.

Ramo's group (together with the Advisory Group on Anticipated Advances in Science and Technology, headed by Baker and also terminated this fall) prepared a list of policy questions in eight areas—food, nutrition, government regulation of R&D, energy, the oceans, industrial productivity, basic research and the opera-

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Washington Bulletins

★ **In the Congressional elections,** former astronaut Harrison Schmitt (R–N.M.) won a seat in the Senate. Schmitt was among seven scientist-candidates who sought membership in Congress this year (see PHYSICS TODAY, October, page 63). Mike McCormack (D–4th CD–Wash.), George E. Brown Jr (D–36th CD–Cal.) and David F. Emery (R–1st CD–Me.) were re-elected to the House, and Newton I. Steers Jr (R–8th CD–Md.) won his first House seat. Defeated in the House race were incumbent James G. Martin (R–9th CD–N.C.) and John R. Burcham (R–5th CD–Md.).

★ **The required labeling of fluorocarbon-propelled aerosol sprays,** recently proposed by the Food and Drug Administration, appears to make imminent the Federal regulation of such products. The FDA has proclaimed its intention of phasing out the use of fluorocarbons as spray propellants.

White House

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tion and organization of the OSTP—to aid White House science adviser H. Guyford Stever. Stever has charged Nierenberg with reviewing energy issues and ocean-related matters, while Kennedy is expected to look into basic research in agriculture, DNA-research guidelines and the report of the President's Biomedical Research Panel.

Nierenberg, with a PhD from Columbia University, served as a professor of physics at the University of California, Berkeley, until in 1965 he became director of the university's Scripps Institution of Oceanography in San Diego; he is a member of the National Science Board. Kennedy received his PhD from Harvard, was on the zoology faculty at Syracuse University from 1956 to 1960, and now heads Stanford University's Program in Human Biology. —FCB

Hinners

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1976, page 69). We asked Hinners if these are in fact the chief concerns within the space-science operation. He told us that priorities have not been set among astronomy, astrophysics, solar–terrestrial research and so on; instead, he favors the continuation of a broad effort that investigates each of those areas as much as the program's resources allow. Even if a budget cut forced the setting of more definitive priorities, Hinners said, "You wouldn't, I think, see the disappearance of a particular component of the research program . . . ," but rather a general winding down, with some individual flight missions cancelled. He predicted that if this occurred, within five to ten years the lack of new data to work with would result in people's wandering off to other fields and the dying out of the space-science effort. He agrees with the "Outlook's" call for space-science funding at a level of $500–600 million per year, up from the current $400-million base.

The only "new start" in the Physics and Astronomy Program's FY 1977 budget was the Solar Maximum Mission, Hinners told us, and the Pioneer-Venus mission was the last new start funded in planetary exploration. The Large Space Telescope, a 2.4-meter optical telescope intended to be placed in orbit by the Space Shuttle, was originally expected to be another FY 1977 new start, but it failed to win any funding this year. "To do some of the thing's we're thinking about—such as the LST and further outer-planets missions—requires a space-science budget well above the present level," said Hinners. The space telescope and a Jupiter-Orbiter mission, he said, are potential new starts in FY 1978.

Space Shuttle's promise. Hinners expects the space-science program to be a prime user of the Shuttle in the 1980's. Indeed, without the guaranteed easy access to Earth's near-space environment offered by the Space Shuttle, he said, contemplated projects like the LST would make little sense: "We want to avoid having to design everything with the idea it'll work for ten years without fail; we're counting on being able to bring experiments back for maintenance and refurbishing and to change them when we want to look at different phenomena." The space telescope, for example, would lose much of its value, he told us, if it were launched into orbit by a one-shot Titan rocket; the opportunity to repair and readjust the observatory at intervals, made possible by the Shuttle, is vital.

Life-sciences research and the Atmospheres, Magnetospheres and Plasmas-in-Space payload are identified by Hinners as the most important space-science investigations for the near term to be carried out in the Spacelab, an orbital laboratory carried in the bay of the Shuttle. In the Spacelab's free-fall environment, long-term effects in humans, animals and bacterial cultures will be studied, while the AMPS payload is expected to make possible the first "active" experiments in Earth's near-space zone. Electron accelerators and high-power transmitters will constitute part of the apparatus hoisted aloft. "We're also looking," Hinners told us, "at a number of astrophysics, stellar-astronomy and solar-physics payloads" for the Spacelab, employing active sounding techniques in atmospheric physics and laser-lidar ("light detection and ranging") systems in measuring trace constituents.

New approaches. The new breed of space-science projects to be made available by the Space Shuttle's use has led to the consideration of new ways of soliciting experiments and sharing responsibility with the scientists collaborating with NASA. In the near future, according to Hinners, NASA will begin calling for ideas and proposals without reference to particular flight missions. "We'd fund the experimenter and his research now," Hinners said, "and then a few years downstream, say six months or so before he's ready to fly, he'd notify us and we'd schedule his experiment on a regular shuttle flight." Such an approach, he said, would result in less launchdate-inspired panic, reduced costs and possibly better-thought-out research.

Experimental apparatus on the Spacelab is to be mounted on removable structures called pallets, which slip into the bay of the Space Shuttle. Hinners told us "dedicated pallets" are under consideration. "It's conceivable," he said, "that these could be farmed out to university groups, consortia, or whatever, so they could put together their own pallets; this would put the burden of making sure the experiments work on them."

Go-slow on institute. Special institutes for the LST and for x-ray astronomy have very recently been proposed to NASA as a means to bring space scientists in those areas together, originate ideas for research and coordinate experimental programs. Hinners told us an LST institute is under consideration, because the space telescope would be an exceptionally long-term project (10–15 years) for the agency, and the space-science staff recognizes the need for special handling in that case. As for establishing an x-ray-astronomy institute, though, he discounts any current necessity. Not only is there no x-ray satellite now flying (or planned) that would have a lifetime comparable to the space telescope, Hinners told us, but also NASA wishes to move slowly on the institute approach. "Institutes," he said, "tend to proliferate, and once they're set up they tend to be cast in concrete." He added that an LST-like orbiting x-ray observatory is contemplated for the 1980's, and when that time comes an institute might be desirable—now it would be premature. —FCB

New officers elected for National Academy

Emanuel R. Piore, retired vice-president and chief scientist and a current member of the board of IBM Corp, has been re-elected to a third four-year term as treasurer, National Academy of Sciences.

Also elected were four new members of the Council of the NAS—among them is Philip W. Anderson of Bell Laboratories, Murray Hill, N.J., who began his three-year term 1 July.

in brief

The American Association for the Advancement of Science has announced that internships are available for up to 18 advanced natural and social science students, who would serve as reporters, researchers and production assistants in a variety of media areas during the summer of 1977. Applications should be sent by 1 February 1977 to Coordinator, AAAS Mass Media Intern Program, 1776 Massachusetts Avenue NW, Washington, D.C. 20036.

The Third Marconi International Fellowship will be awarded for "creative work in communications and electronics that will benefit mankind." Previous recipients have been James R. Killian Jr (Massachusetts Institute of Technology) and Hiroshi Inose (University of Tokyo). Nominations for this $25 000 Fellowship should be sent to Marconi International Fellowship Council, Aspen Institute for Humanistic Studies, 1919 14th St, No. 811, Boulder, Colo. 80302. □