

SENATE QUIZ SHOW: BROMLEY PASSES BUT HE FACES TOUGHER TESTS AHEAD

D. Allan Bromley was officially confirmed as director of the White House Office of Science and Technology Policy just before midnight on 3 August, with only a few members on the Senate floor to register the *pro forma* vote. The next day the Yale nuclear physicist was sworn in by bureaucrats from the White House personnel office—an inauspicious beginning for someone the Bush Administration and the scientific community are both counting on to provide sagacity, leadership and visibility in the job.

Bromley had been kept waiting for confirmation by the Senate since President Bush sent the nomination forward on 20 April. The Senate Commerce, Science and Technology Committee seemed in no particular hurry to act and finally got around to a hearing on 21 July. In the lengthy interim, Bromley boned up on government science and technology strategy and policy in a spacious corner office on the third floor of the Old Executive Office Building, from which he could overlook the White House. While waiting for the Senate, he ate breakfasts with President Bush and met with agency heads to privately discuss R&D policies and politics—subjects Bromley mastered adroitly during his years on the White House Science Council in the Reagan era, his presidency of the International Union of Pure and Applied Physics and his activities in Washington's science policy circles (PHYSICS TODAY, June, page 39).

Bromley's confirmation hearing before the Science, Space and Technology Subcommittee was a 3-hour 45-minute marathon from which he emerged unruffled and unscathed. Subcommittee Chairman Albert Gore Jr., a Tennessee Democrat, had set the tone in lengthy opening remarks about the nomination being warmly received because of Bromley's unique credentials. Since there was no opposition to Bromley from members of Congress or the science community, the senators, said Gore, could concen-

trate on his positions and priorities. In the end, though, the hearing revealed a lot about what the senators think about the nation's R&D programs and their management.

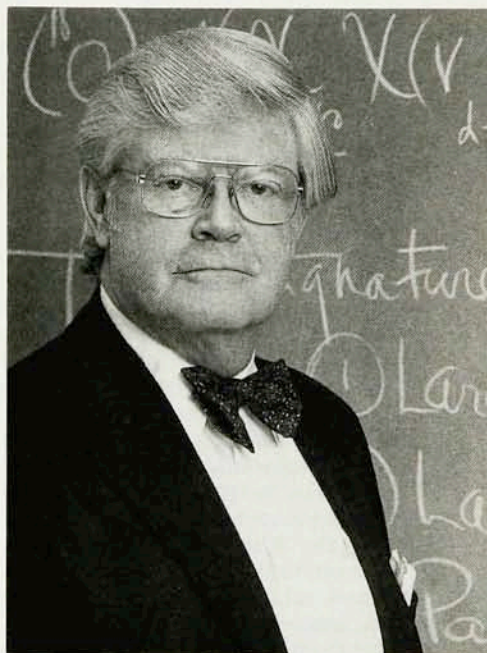
Gore touched on just about all of the Bush Administration's spectacular science projects that await Bromley's purview—notably, construction of the space station, expected to cost \$28 billion; the Superconducting Super Collider, which is estimated at \$6 billion; the proposed Mission to Planet Earth, an international operation that might cost the US at least \$20 billion to examine the entire globe from space; the newly proposed expeditions to the Moon and Mars, for possibly \$400 billion over the next 30 years, and the more immediate problems of environmental pollution and global warming, which defy any cost analysis. Other topics covered in the Bromley quiz included AIDS research, human genome sequencing, precollege and graduate education and the balance between "big science" and "small science."

What makes Bromley's job so challenging, Gore explained somewhat prolixly, is that the government must deal with the formidable range of science and technology matters within the tight constraints brought about by the nation's intractable budget deficit. "We can't do it all," Gore asserted, "at least not right away."

Creating a formidable PCAST

Gore also used the occasion to heap scorn on the Reagan Administration's apparent disregard for the judgment of America's most savvy scientists and engineers in deciding on such projects as the Strategic Defense Initiative and the National Aerospace Plane. Warming to his topic, Gore claimed that Reagan "all but ignored" OSTP during his presidency and reduced its budget and staff by more than 50%. Gore seemed elated that Bush "has indicated that he intends to take science seriously."

Bromley, for his part, virtually



Bromley: Unruffled and unscathed

discarded his carefully worded 13-page testimony and responded to the senators with clarity and confidence. On a few questions he said he needed more information—one instance of uncertainty being the "greenhouse effect." Throughout the hearing, Bromley revealed his political sensitivity and rhetorical smoothness. He planned to devote a large portion of OSTP's time and talent to developing long-range R&D strategies and to weighing their implications as well as to emphasizing technology much more than his predecessors had done. He spoke of a "national agenda" for science and technology that includes such issues as environment and ecology, public health, economic competitiveness, education and training, national defense, space exploration, energy supply and use, and the nation's science and technology base. He said he had convinced Bush to appoint a President's Council of Advisers on Science and Technology, which would

bear the acronym PCAST—a reminder to some of PSAC, the highly regarded group of science mandarins that served in the Eisenhower, Kennedy and Johnson years. Bromley said Bush has promised to attend PCAST meetings with some regularity.

The President also assured him, said Bromley, that OSTP would be strengthened and that he would have direct access to the Oval Office "when it is required." Bromley has already spent what he termed "a substantial amount of time" talking with Richard Darman, director of the Office of Management and Budget, and with Robert Grady, OMB's top science official, to improve the bonds between that powerful agency and OSTP at various stages in the budget process. Even so, Bromley is familiar enough with the capital scene to know that R&D funding decisions are made in the end by Congress.

In keeping with Bush's commitment to revitalize OSTP, made in a campaign speech last October and in his budget speech in February, Bromley told the subcommittee the agency would get an additional \$1 million to boost its budget to nearly \$3 million in fiscal 1990, which starts on 1 October. That is considerably less than OSTP's \$4.8 million budget in 1978—a sum that would be at least 20% larger if inflation could be counted. Moreover, while the White House science office had a staff of 55 in the Kennedy years, Reagan whittled it to 15 and, even then, some were simply on temporary duty from other agencies. OMB has promised to increase the number of staff positions to 33 next year and to 45 the following year.

Bromley intends to select four associate directors to handle the areas of physical sciences and engineering, life sciences, policy and international affairs, and industrial technology. Though Bromley has made up his mind about filling these position, the nominations will come from the President of course. All four positions require Senate confirmation, in keeping with the National Science and Technology Policy, Organization and Priorities Act of 1976 (P. L. 94-282). Bromley did not need Senate approval for his White House post as assistant to the President for science and technology, but the OSTP job is called for by the 1976 law and demands a floor vote. It turns out, though, that Bromley preferred to be sworn in for both jobs at the same time—that is, only after he was acceptable to the Senate.

Speaking from a 'bully pulpit'

At various time in the hearing, John C. Danforth of Missouri, the senior

Republican on the committee, along with Larry Pressler, a South Dakota Republican, and John F. Kerry, a Massachusetts Democrat, urged Bromley to take a forceful role in setting science policy. They each suggested that he should emulate the outspoken advocacy of the outgoing surgeon general, C. Everett Koop. In answer to a question by Danforth, Bromley said it would be a mistake to view him as a special pleader or lobbyist for the science and technology communities. Those who know Bromley are certain, however, that he will use his office as a "bully pulpit" to speak his mind on R&D issues. He told Kerry he expects his OSTP to contribute to Bush Administration science and technology policies and to provide better coordination among government agencies, national laboratories, industrial firms and educational bodies.

Gore repeatedly pressed Bromley to identify his priorities if push comes to shove for the many "megaprojects" that the Reagan and Bush Administrations expected Congress to fund, despite the tight budgets required by the Gramm-Rudman-Hollings deficit reduction law. Bromley said he advocates going ahead with the SSC, the space station, the multiagency Mission to Planet Earth and the President's commitment, revealed the previous day, on the 20th anniversary of the first lunar landing, to colonize the Moon and to explore Mars.

Having said this, Bromley admitted that the nation could not afford to pursue all the megaprojects simultaneously. He suggested it may be prudent to "back off a little" on mapping the human genome while more sophisticated instruments are being developed, and he noted that the Defense Department and the President's National Space Council have both agreed to delay developing the Mach 25 aerospace plane, which Reagan once dubbed the Orient Express.

Bromley insisted he champions small science. It merits special protection against budget pressures that frequently arise from mammoth projects. He is committed, he said, "to maintaining a healthy balance between small science activities that are the backbone of our science research base and major science initiatives." When Gore asked him to make some specific choices among programs, perhaps cutting basic research at the National Science Foundation, Bromley seemed irritated. He snapped his response: "I can say quite categorically that if I have anything to do about it, it will not be small science because that would be suicidal."

Asked by Gore for his evaluation of the global warming problem and whether he agreed that the US should curtail its use of fossil fuels, Bromley said action must be taken now to preserve the world's tropical rain forests, to step up reforestation and to use energy more efficiently. But he is not yet convinced that research findings accumulated so far indicate that actions are required to reduce carbon emissions drastically. Bromley's reply angered Gore, who said Bromley was wrong and needed to review some facts he may have missed. US reluctance to act, Gore warned, would make it harder to convince the Third World to preserve its forests.

Danforth questioned Bromley on the earmarking of science funds for universities and the tradeoffs of merit review versus wider geographical distribution based on "pork barrel" funding by Congress. Bromley said the nation's policy must be to support the best possible research. Even so, he said, the country needs high quality education, widely distributed, since 75% of American college students attend schools within 50 miles of their homes. He repeatedly linked education with research.

In response to Kerry's question on current shortages of academic research facilities, Bromley said the needs exceeded the annual budgets for science and technology. He estimated the need at about \$10 billion. The problem with research facilities and equipment at America's colleges and universities will not correct itself, said Bromley. He proposed that Washington ought to contribute up to 50% of the costs in matching grants to universities and states—a plan put forward in the 1986 report by the White House Science Council, written by Bromley and David Packard, chairman of Hewlett-Packard.

As a longtime academic, Bromley is accustomed to quizzes. But in this situation, members of the Senate Committee on Commerce, Science and Technology sent what seemed to be an endless questionnaire. Before he appeared at the hearing, Bromley answered 47 written questions, some simply anticipating what individual senators asked in person. After the hearing, Bromley was inundated with another 32 questions, which he answered before the confirmation vote.

In the weeks ahead, Bromley will need to wend his way through the minefields that have been put in place by allies and combatants in the executive turf wars that are under way in such fields as semiconductors, superconductivity, high-definition television and export control by the Com-

merce, Defense and Energy departments. Sources in Washington's science policy circles say that Bromley's position may already be weakened by his late arrival within the Administration's power structure.

He will be expected to cross another minefield in September. Gore ex-

tracted a promise from Bromley to make another appearance at the confirmation hearing for the associate directors of OSTP. That hearing, Gore asserted, will begin a series of public sessions on science and technology issues.

—IRWIN GOODWIN

REMOVING CONTROLS ON PCs REVIVES WORRIES ON EXPORTS

In relaxing the government's export controls on personal and laptop computers to Soviet bloc countries, the Commerce Department acknowledged that the technology is now both technically unexceptional and widely available. The Defense Department's publicized pique with the decision came as no surprise. Only last March, DOD and the State Department agreed to share authority with Commerce in approving technology transfers to US allies and adversaries, but the Pentagon is adamant about holding onto technologies with even a modicum of military usefulness lest it fall into the hands of Soviet armed forces. The decision on computers, which went into effect on 15 August, highlights the turf wars between the departments over technologies with dual commercial and military uses. It has led to the publication of various lists of militarily critical technologies and to embargoes of products to the Soviet bloc.

Commerce's decision contradicts the policies of the Reagan years, when the White House and Pentagon were mainly protectionist and xenophobic about major new technologies. Actually, export controls on computers and other high-technology equipment were tightened by the Carter Administration after the Soviet invasion of Afghanistan in 1979, when Congress passed the Export Administration Act. But with the Soviet withdrawal from Afghanistan, the easing of tensions brought about by Mikhail Gorbachev's *glasnost* and *perestroika* policies, the economic reforms sweeping across Eastern Europe and the drive by America's allies to reduce trade barriers, the Bush Administration had second thoughts about technology sales. When Bush visited Poland and Hungary in June, he pledged to open up trade relations in high technology. One week later came Commerce Secretary Robert A. Mosbacher's announcement on personal computers.

The next day Defense Secretary Richard Cheney called in reporters to voice his dismay. The decision, ar-

gued Cheney, is likely to jeopardize national security. The revised policy, warned Cheney, would give the Soviet military "significant capabilities they do not now possess."

To Mosbacher such fears seem groundless, however, because the Soviet bloc has obtained personal computers made in Taiwan, India, Brazil and China, which are not part of the 17-nation group that, since 1949, has been restricting sales of advanced dual-use technologies to Communist countries through the Coordinating Committee on Multilateral Export Controls. cocom has been more or less successful in keeping what Mosbacher calls "middle-level dual-use high-tech" out of Soviet hands, but that hasn't prevented Soviet scientists and engineers from producing high performance computers or kept spies and greedy businessmen from smuggling computers into the USSR.

'Foreign availability finding'

By issuing a "foreign availability finding" in the *Federal Register*, Mosbacher has admitted that embargoed models of Apple Macintosh Plus, for instance, or IBM PS-2 and their clones have been finding their way into Warsaw Pact nations. Mosbacher stated that computers of this type are available in 11 countries and from 70 vendors outside of cocom nations. He lends force to his argument by noting that some desktop computers are already assembled in two Soviet bloc countries—Czechoslovakia and Hungary.

The fuss over personal computers appears to symbolize the Bush era so far: avoid confrontations at home and abroad and emphasize widely popular and practical goals. The new policy on computers satisfies those aims. It allows US microcomputer makers to enter new markets when sales are slowing to older markets; it sends a message to America's allies that the US intends to loosen its trade restrictions; it recognizes that the Soviet bloc is getting dual use technologies despite Washington's embargoes; it sets certain standards for computers

licensed for export and maintains restrictions of computers considered truly strategic.

The new rule seeks to eliminate doubts about computer exports. Last year, for instance, a British engineering firm, Simon-Carves Ltd, signed a \$450 million contract to build a plant to manufacture factory automation machinery in Yerevan, the capital of Soviet Armenia. The plant, scheduled to be completed in 1991, will make industrial microcomputers of a type used to control assembly-line robots. At full capacity, the Yerevan factory may be capable of turning out 25 000 microcomputers each year. When US officials objected to the Simon-Carves deal and suggested the computers might be downgraded in quality, the British rejected the proposal. US negotiators then asked the British to seek permission for the deal from cocom, which would examine the technology for military implications. But the British government refused to do so, insisting that the technology was so innocuous it did not require cocom's purview. Some angry US officials say Prime Minister Margaret Thatcher herself made the decision, rejecting Washington's rigidity and circumventing cocom's review. A British Embassy spokesman in Washington simply said: "You may rest assured that we shall not export to the Soviet Union any equipment that gives rise to security concerns."

Microcomputers have also entered the Soviet Union by back doors. One case occurred in 1986 when a vendor to West Germany's automobile industry shipped 40 computer workstations made by Tektronix Inc of Beaverton, Oregon, complete with disk drives produced by Control Data Corp, to a Belgian distributor who moved the machines to Vienna en route to a Soviet bloc country. Apparently alerted by a tip, US officials broke up the scheme, stranding some equipment in a Vienna warehouse, but not before most of it slipped through. The Pentagon claimed at the time that with the right software, augmented Tektronix 4125s can be used to design nuclear weapons.

National interests served

Mosbacher asserts that the new policy actually serves the national interest in two ways: It encourages exports by one of the country's most competitive industries and, less obviously, it strengthens the export control system by removing restrictions that many scientists and businessmen regard as futile and foolish.

Personal computers have been among the great growth industries of