expected to embrace budget levels set by the House interior committee on 1 May. The committee's actions, aides say, track Asselstine's objections to the NRC budget.

The interior committee has recommended funding reactor regulation programs at $96.7 million, compared to the $88.9 advocated by NRC. The House committee also wants inspection and enforcement efforts funded at $95.5 million, almost $3 million more than called for by NRC. The nuclear materials safety and safeguards budget would be boosted to $42.5 million, almost $2 million more than NRC sought.

The Senate environment committee's action parallels the House interior committee with two exceptions. It authorizes increasing reactor regulation funds to $91 million—slightly less than the current budget. And, it calls for funding regulatory research programs at $136.6 million—$600,000 more than the NRC requested but less than this year's $150-million budget.

The environment committee recommended a total of $437 million for NRC in 1986—$8 million more than requested by the agency. The House and Senate appropriation committees are expected to rely heavily on the authorizing committees' recommendations, staffers say. They are not expected to take up the NRC budget until later this month or early June.

—**Mark Crawford**

## Ohio State, Arizona to Build Giant Telescope

Ohio State University and the University of Arizona have announced that they will jointly build an 8-meter infrared telescope atop Arizona's Mount Graham, some 100 kilometers northeast of Tucson.

When completed in the early 1990's, the Mount Graham instrument will be second in size only to the recently announced W. M. Keck telescope, a 10-meter instrument that will be built on the summit of Hawaii's Mauna Kea by the University of California and the California Institute of Technology (*Science*, 18 January, p. 275).

As in the California project, the Arizona/Ohio State group will use so-called "new technology" to transcend the size limits on conventional mirrors, represented by the 5-meter Hale telescope on Palomar Mountain and the 6-meter Soviet telescope at Zelenchukskaya in the Caucasus. However, the approaches are very different. The California mirror will be a mosaic of 36 hexagonal segments kept in a constant adjustment by computer, whereas the Arizona/Ohio State mirror will be cast as a single monolith.

The technique was developed by Arizona's Roger Angel, with major concerns being simplicity and cost-effectiveness. First, chunks of Pyrex glass are melted in a mold; then, as the glass cools, the mold is spun so that centrifugal force creates just the right parabolic surface on the finished mirror blank. This means that very little glass has to be removed during the final polishing. Angel and his colleagues have successfully demonstrated this technique on a 1.8-meter mirror, and are now building a facility for 8-meter mirrors under the university football stadium, Manhattan Project style.

In addition, the mirror for the new telescope will be given a relatively large curvature and a correspondingly short focal length, which means that the telescope structure and its protective dome can be that much smaller and cheaper. The upshot is that the estimated cost of the 8-meter instrument is only $25 million, far less than the $85 million being budgeted by the Californians. (Also under consideration is a plan to include a second, identical telescope, which would raise the cost to some $50 million.)

The money is not yet in hand, but the partners do have reason to be optimistic. Ohio State is in the midst of a $250-million fund-raising drive, and Arizona, which is currently celebrating its centennial, is raising $100 million. Eugene R. Capriotti, for one, believes that the astronomers can make a case for a small fraction of that money.

As chairman of Ohio State's astronomy department, he is the first to admit that "Arizona is the dog and we're the tail at this time. But the whole idea is to develop a program here of the first magnitude." Indeed, the observatory will have a remote control and viewing site on the Ohio State campus in Columbus. "We hope to sit here in Ohio and operate the telescope out in Arizona," he says. "We don't have to sit back any longer and let places like Texas and California dominate astronomy because of location."—**M. Mitchell Waldrop**

## Senators Criticize Lopsided Chemical Weapons Panel

Last October, the House and Senate Armed Services committees asked the White House to establish a "bipartisan" commission on binary chemical weapons. The group's assignment was to assess the usefulness of existing chemical weapons, the adequacy of proposed defensive measures, and the implications of binary production for arms control. Supporters of the program hoped that the commission would generate a favorable consensus similar to that created by the Scowcroft panel on the MX missile.

In response, the White House appointed at least six people to the eight-member panel who had previously supported the production of binaries. Thomas Welch, a deputy assistant secretary of defense for chemical matters, was appointed as its executive secretary, and staff work was performed by members of the Army's chemical corps. In a report on 1 May that surprised no one, the panel concluded that binary weapons should indeed be produced.

At a hearing of the Senate Armed Services Committee, panel chairman Walter J. Stoessel, Jr., a former U.S. ambassador to Germany, Poland, and the Soviet Union, stressed that the members had all "come to this with an open mind." But he acknowledged under questioning from several senators that none of the members had previously opposed binary production.

The panel, which included several retired Army officers, as well as former national security adviser Zbigniew Brzezinski and former secretary of state Alexander Haig, concluded that only 25 percent of the existing chemical stockpile is "serviceable," and only a fraction of that is "militarily effective." All of these weapons "should be destroyed at an accelerated rate," Stoessel said, provided that binary weapons are created to take their place.

Senator Sam Nunn (D–Ga.) told Stoessel that even though he agreed with these recommendations, the commission's partisan cast would probably limit its influence on Capitol Hill. A decision by the panel to hire a local public relations firm appears to have backfired, with many congressmen expressing anger that such partisan efforts will cost the taxpayers additional thousands of dollars.

A Senate vote on the $174-million production proposal is expected to be close, but opponents in the House of Representatives predict a lopsided decision to kill it for the fourth time. The outcome should be known within a week or so.—**R. Jeffrey Smith**

## EVIST to Be Salvaged, More or Less

The sustained clamor that greeted plans to eliminate the Ethics and Values in Science and Technology Program (EVIST) from the budget of the National Science Foundation (NSF) appears to be getting results.

NSF director Erich Bloch, in an April 30 letter to the EVIST board, stated that about $1 million will be available for distribution among the agency's research directorates.

Congress likes EVIST but is unlikely to change the Administration's budget recommendation. So now the question is, Where will the money come from, and how will the program be administered?

This was addressed at a 3 May meeting of the EVIST board where Richard Green, head of the directorate for Science and Technology in International Affairs, did his best to represent the thoughts of Bloch, who was unable to attend. Green said Bloch thinks the program is valuable, but that it should be integrated into the research directorates rather than continue to stand in "isolation."

Beyond that, nothing is clear. Should each directorate be mandated to spend a portion of its funds on EVIST-type activities, or should they be "taxed" to form an EVIST fund? Who decides what is an EVIST-type activity? Should directorates review proposals or should there be a special panel? Observed a board member: "One doesn't feel this is a well-thought out plan on the part of the director."

Comments at the meeting reflected a general opinion that dissemination of the program around the foundation will not work, because most research divisions have little interest in or capability to assess ethics-related proposals. Members appeared to share the sentiment of board chairman Clifford Grobstein to the effect that "if this ain't broke, why fix it."

—**Constance Holden**

## ERAB Panel Ranks Major Materials Facilities

If Secretary of Energy John Herrington accepts the recommendations of a report that was approved by the Energy Research Advisory Board (ERAB) at its 1–2 May meeting, the Department of Energy (DOE) would upgrade its existing major materials research facilities, principally synchrotron radiation and neutron scattering centers, before embarking on the construction of any new ones.

The study, which was authored by an ad hoc ERAB review committee under the chairmanship of Francis Stehli of the University of Oklahoma, began last October following a July report from the National Research Council (NRC) that assigned scientific priorities to the several new major materials research facilities and upgrades of old ones that were being proposed and were estimated to cost $5 million or more (*Science*, 17 August 1984, p. 704).

ERAB's job was to recommend a DOE response to those priorities in the light of the department's energy and defense missions and budgetary realities. Since DOE already operates through its national laboratories more of these kinds of research facilities than other federal agencies, most observers expected it to pick up the tab on these, as well.

Stehli's review committee turned out to be bullish on this prospect: "We conclude that the Department, in its broad mission to provide the nation's science and technology base, should explicitly take the major responsibility of providing major new facilities and capabilities for this vital area of science."

The committee also recognized that a significant increase in funding would be necessary, not only for actual construction, but for R&D prior to construction and operations afterward. "The Department should urgently and aggressively seek the necessary new funds to fill these new responsibilities in the next decade," it concluded. One scenario for funding that would allow for construction of all the facilities calls for a new chunk of $6 million to be added each year for the next 8 years to DOE's materials research budget.

Preconstruction R&D was seen to be particularly necessary to guarantee against the drawn-out commissioning phases that have plagued the last generation of synchrotron-radiation sources. The committee estimated 3 years of preconstruction R&D for an ultra-bright x-ray synchrotron source and 5 years prior to an advanced reactor for neutrons.

Consistent with its concern that adequate R&D precede a commitment to construction of new facilities and with budgetary realities, the committee placed its first priority on upgrades of existing facilities, all of which it ranked equally, whereas the preceding NRC report had ranked planned facilities in two categories, upgrades and new starts, but had not compared one category with the other.

The NRC report had given its third new starts priority behind the x-ray and neutron facilities to a synchrotron source that specialized in generating ultraviolet radiation. Stehli's committee pointed out, however, that the continuing difficulties encountered with the Aladdin facility at the University of Wisconsin, whose completion is uncertain at the moment, changes the picture. If Aladdin is not finished, the need for an ultraviolet source, such as the Advanced Light Source proposed by the the Lawrence Berkeley Laboratory, would become much more urgent.

Finally, while the committee did not highlight the necessity of allowing for weapons-related research, it consistently noted that DOE's missions include both energy and defense. And, specifically in the area of synchrotron radiation, it called attention to the future needs of the weapons laboratories to carry out both unclassified and classified defense-related research using ultraviolet light.

—**Arthur L. Robinson**