

all want to fund it, so there will be some evidence in the budgets that the president feels this is important.

PT *How do you convey the importance of funding science to policymakers in the administration and on Capitol Hill who are not scientists?*

MARBURGER I invite them to lunch and talk to them. I invite them to briefings. I go to their meetings, and I go to meetings with the budget folks. I give them my views and they give me theirs. I know that one of the functions of the science adviser, high up in an administration, is to increase the level of understanding of how science works. I carry that out by talking to everybody I can.

PT *Past science advisers say that access to the president is important if you are to be effective. You have said that when you met with President Bush to discuss this job, you didn't "insist on being able to pick up the telephone at any time and talk with him." What is your relationship with the White House?*

MARBURGER Each administration has a different flavor, a different set of characters, personalities that you have to deal with. And the tactics of the job are going to differ dramatically from one administration to another. This happens to be a very businesslike administration and I like that because it means that you can talk about being effective, and you can argue on the basis of cause and effect, or what the consequences are.

PT *Many scientists were concerned in the first few months after the election about President Bush's apparent lack of regard for science. Did you share that concern prior to your selection?*

MARBURGER I didn't have a concern, but I also didn't have any feeling for how the administration felt about science. There were very few statements [on science policy] and it was really hard to tell. Very quickly I learned that this administration, starting with the president, has a lot of respect for science. I've found no trace of antagonism or lack of respect for science.

PT *Several former science advisers said the lateness of your appointment could put you at a disadvantage in establishing yourself in the administration. How has the president's staff received you?*

MARBURGER That's worked out. It could have been a concern, but the events of 9-11 made that issue go away because it was clear that the war against terrorism, and homeland security, were going to be highly technically oriented. So, in a way, I think that the events of 9-11 have helped to

reestablish this office as being important in the policy process.

PT *Yet you don't have the title of "assistant to the president" as your predecessor did. What does the loss of that title mean?*

MARBURGER The only thing that's changed, as far as I can tell, is the title, the detailed title. Starting with the first Bush administration, the science adviser acquired the title of "assistant to the president" in addition to "director of OSTP." In the administration since then, that practice was followed. In this Bush administration, they decided that there has been a title inflation, that there were just too many people with that title [assistant to the president], so they wiped out a whole bunch of them, including this one. And, frankly, I haven't seen that it has made a bit of difference. It hasn't been a problem. My access [to the White House] is as much as I ever would have hoped for.

PT *On several critical scientific issues, such as global warming and stem cell research, the political concerns don't necessarily mesh with the science. Are you comfortable being in the middle of that?*

MARBURGER You have to be. First of all, it really is my responsibility, and the president expects me to do this, to tell him honestly what the science says about these issues. He relies on me and my office to give the best possible science advice. The integrity of my office depends on being very clear about what is science and what is not. As long as policymakers know what the consequences are, so that they can make their decisions with their eyes open, my job has been done.

PT *Beyond that, do you see yourself as a coordinator between agencies and outside groups, as the one who makes sure that everyone is talking with regard to science?*

MARBURGER That's right. We have frequent meetings with different representatives from different agencies in a fairly well-defined context, and we try to understand what the issues are and what the capabilities are and what everybody is doing so that we can help them. A lot of people looking at this process of how the government does its work . . . are put off by the complexity of it. But complexity is not surprising for a nation the size of, and with the diversity of, the US. Secondly, complexity doesn't mean chaos. The government is a machine, and this machine has components that are designed to help make it work, and OSTP is one of the devices by which this complexity gets mastered in the policy-making process.

JIM DAWSON

UK Joins ESO

After dragging its feet for years, the UK is joining the European Southern Observatory in July. The move will give the country's astronomers access to the Very Large Telescope (VLT) and ESO's other facilities in Chile (see PHYSICS TODAY, September 2000, page 55). The UK will be ESO's 10th member state.

Joining ESO also assures UK astronomers a role in planning the 100-meter Overwhelmingly Large Telescope and other future projects that are too costly for the country to afford alone.

"This is fantastic news for Britain. It's like Christmas," says Richard Ellis, a former director of the University of Cambridge's Institute of Astronomy who is now at Caltech. British astronomy had slipped since its peak in the 1970s and 1980s, when it commanded about 15% of the world's 4-meter telescopes. The UK currently has the equivalent of half an 8-meter telescope—one-quarter shares in each of the Gemini twins—or about 3% of existing and planned 8-meter telescopes, says UK Astronomer Royal Martin Rees of the University of Cambridge. Joining ESO, he adds, "restores the UK's full competitiveness with the countries of mainland Europe. Moreover, ESO, with UK participation, can quite reasonably aspire to forge ahead of the US in ground-based astronomy. So this development is not only good for the UK, but good for European science as well."

But it won't be pain free: Cuts of some £5 million (\$7.2 million) a year in existing programs are the government's condition for paying £10 million toward the £12 million annual ESO dues. So the Particle Physics and Astronomy Research Council (PPARC), the UK funding agency responsible for astronomy, is chopping the country's share in, and the total running budget of, the Anglo-Australian Observatory in New South Wales—the facility it chose over ESO for Southern Hemisphere stargazing 40 years ago. The UK will also with-



THE VERY LARGE TELESCOPE.

draw from several telescopes on the Spanish island of La Palma and in Hawaii, or, as with the 4.2-meter William Herschel Telescope, reduce the number of instruments. The University of Manchester's MERLIN, a radio array centered on Jodrell Bank, was spared, and in fact will be upgraded. PPARC head Ian Halliday says that the UK's membership in Gemini is not threatened, though "it's clear that downstream our astronomers will be asking to fund instruments on both Gemini and the VLT, so there will be a competitive element. That's life."

In addition to annual dues, the UK has to pay an entry fee of DM 240 million (\$110 million) to join ESO. Half of that will be in the form of VISTA, a new infrared survey telescope. The rest will be paid over the next decade and will be used to cement ESO's membership in the Atacama Large Millimeter Array. And that, says Halliday, made the UK's signing on particularly attractive to ESO. "The timing was crucial."

TONI FEDER

Tarter to Leave Livermore's Top Job

The budget is roughly through Congress. The National Ignition Facility [NIF] is back on track. The lab is in good shape," says C. Bruce Tarter, explaining his decision to step down as director of the Department of Energy's Lawrence Livermore National Laboratory as soon as a successor is found. "I wanted to leave at a time when things are stable."

Things may be stable now, but Tarter's tenure has been turbulent.



TARTER

About two years ago, shortly after then Secretary of Energy Bill Richardson proclaimed that NIF was on time and on budget, the lab let on that, in fact, the project had major cost overruns and technical difficulties. In addition,

Livermore faced discrimination and security concerns in the wake of the Wen Ho Lee espionage accusations at Los Alamos National Laboratory.

At the height of NIF's problems, Tarter did not get a pay raise. Since then, he has overhauled NIF's management team, and NIF got a budget boost of more than 50%, to \$3.4 billion. NIF has also been put on a step-

wise schedule, under which the huge laser, intended to simulate extreme pressures and temperatures in a nuclear weapon, will be built in stages (see PHYSICS TODAY, January 2001, page 21). The most exciting thing about NIF, says Tarter, "is that we expect light will be flowing in the facility within the next calendar year, and we'll start experiments with 8 of 192 beams within the next two years." In its evaluation of Livermore in 2001, DOE for the first time rated the lab outstanding in management, operations, and programs.

"The fact that NIF was able to turn itself around is no small tribute to Bruce," says John McTague, vice president for laboratory management at the University of California, which oversees Livermore for DOE. "He has been an excellent leader during a tumultuous time."

Tarter oversaw the transition at Livermore from nuclear testing during the cold war to the current stockpile stewardship program, in which nuclear weapons are safeguarded and studied but not exploded. As part of stockpile stewardship—of which NIF is the centerpiece—the lab now boasts the world's most powerful supercomputer. Tarter also put some of the lab's discretionary funding into counterterrorism research. That was before such research was popular, says McTague. "It was very far-sighted." Also on Tarter's watch, Livermore helped sequence three human genes.

Financially, the lab is strong: In fiscal year 2002, its budget is set at \$1.5 billion, up more than 10% from FY 2001. Livermore turns 50 on

2 September and is celebrating by hosting lectures and other public activities throughout the year.

Tarter announced his resignation on 7 December, seven years to the day after he assumed the directorship. An astrophysicist and 34-year veteran of Livermore, he is the lab's second-longest serving director. He plans to remain at Livermore.

Tarter says his successor "will have to make sure the national security labs stay connected to science—that's a constant issue. He or she will have to make stewardship continue to work. That will require rethinking the role of nuclear weapons as to how it fits into the national defense posture. Counterterrorism will be a challenge. And NIF will have to be managed successfully to completion."

TONI FEDER

NEWS NOTES

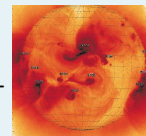
Orbach named to DOE science. Physicist Raymond Orbach, chancellor of the University of California, Riverside (UCR), is President Bush's choice to succeed Millie Dresselhaus as director of the Department of Energy's Office of Science. Orbach, who holds a PhD in physics from UC Berkeley, is expected to assume the post in February, after confirmation by the Senate.

"This is an opportunity to serve our president and country," Orbach said in a message to the faculty and students at UCR. "And it is an invitation that comes but once in a lifetime." In a statement following his nomination, Orbach

Web Watch

<http://www.bbso.njit.edu/arm/latest>

From the Big Bear Solar Observatory in Big Bear Lake, California, comes the **BBSO Active Region Monitor**. The online service provides the most recent images of the Sun taken by a host of terrestrial and orbiting observatories. Images include magnetograms from the Global Oscillation Network Group.



<http://www.comdig.org>

Every week, Pennsylvania State University's Gottfried Mayer compiles the **Complexity Digest**, an online list of journal articles and news stories that concern, or merely touch on, the science of complexity. Linguistics, chaos, and pathology are just a few of the subjects that appear in the digest.

http://www.jal.cc.il.us/~mikolajsawicki/bad_physics.htm

If you spot an example of faulty physics in the popular press, inform Mikolaj "Mik" Sawicki, a physics professor at John A. Logan College in Carterville, Illinois. Sawicki edits **Bad Physics**, a compendium of misunderstood physics found in newspapers, magazines, and literature.

To suggest topics or sites for Web Watch, please e-mail us at ptwww@aip.org.

Compiled by CHARLES DAY