Dr. Alberts Comes to Washington

Beneath his laid-back appearance lies a hard-driving biochemist with a strong sense of what he wants to do as president of the National Academy of Sciences. Meet Bruce Alberts

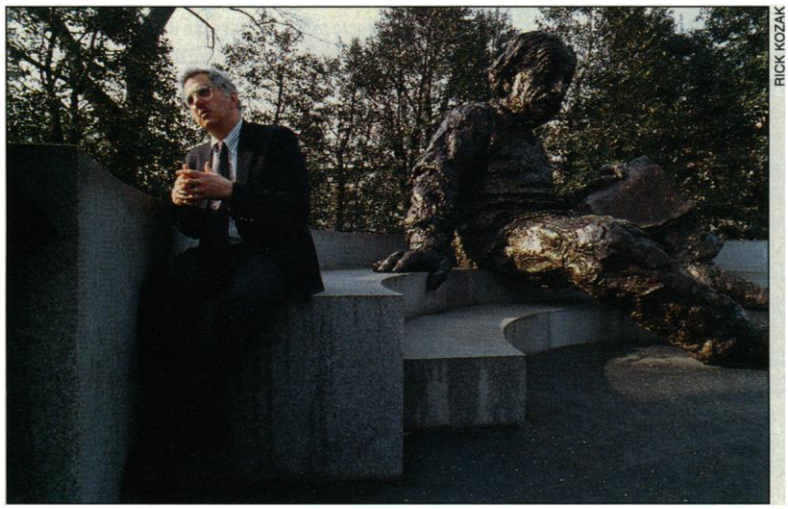
This weekend the National Academy of Sciences (NAS) will convene its 131st annual meeting inside the imposing marble headquarters that look out on the Vietnam and Lincoln memorials. It's a chance for the 1670 members—an illustrious, self-selected body whose demographics have been criticized by one government official as "too male, too pale, and too stale"—to renew acquaintances, listen to speeches, and welcome the next class of 60 scientific worthies. Bruce Alberts, a professor of biochemistry at the University of California, San Francisco, was among the inductees in 1981 at the tender age of 43. Last July, he became the Academy's 20th president.

But don't expect Alberts to be preoccupied with pomp and ceremony during the annual meeting—or his 6-year term. After all, the unpretentious 56-year-old biochemist and science educator came to town during one of Washington's typically steamy summers toting one—wool—suit, and he drives his own Ford Taurus around town rather than using the chauffeured limousine of his statesman-like predecessor, geophysicist Frank Press.

It's not just style that sets Alberts apart from former Academy presidents. When his nomination was announced in September 1992, even some of his close friends wondered why he would want the job. Unlike Press, who was science adviser to President Jimmy Carter before he moved to the Academy post in 1981, Alberts had virtually no experience in Washington politics. Indeed, Alberts says that in 1987 he was picked to lead an Academy panel examining the proposed human genome project precisely because "I had never thought about the issue."

After 9 months on the job, however, Alberts is beginning to put his stamp on the Academy, shuffling its bureaucracy and emphasizing its role in societal issues such as science education. Old Academy hands are realizing he is a force to be reckoned with. "I want to use the Academy to bring people together," he says. "And I want scientists to play a larger role in society than they have traditionally."

But in talking to Alberts, it's easy to be misled into thinking he's a negligible player in this town full of self-promoters. After all, he's no master of the media. NAS officials have already sent him to two consultants to work on his tendency to mumble and rush his words when giving speeches and to read key points rather than maintain eye contact with the audience. One media coach, Lou Hampton, says Alberts' style is common among scientists, who are more comfortable discussing technical issues. But Alberts says he doesn't plan to spend any more time refining his delivery and that listeners will just have to accept him for what he is.



RICK KOZAK

Thinking big. Einstein listens in on Alberts' plans for the Academy.

"I don't want to focus on giving congressional testimony, going to social affairs, and being a figurehead," Alberts says with typical bluntness. (By way of comparison, Press testified some 35 times in 12 years; in 10 months, Alberts has appeared once.) "I don't think I can do that any better than anybody else. Probably worse. In fact, Paul Newman would draw bigger crowds and be a much more polished speaker.... I want to focus on areas where I can make a unique contribution, on things that wouldn't happen if I hadn't come here."

Service to society

What does Alberts think are the areas where he can make a unique contribution? Heading the list are elementary science education and the role of scientists in society (see box, p. 497). In his mind, these issues are intertwined. If scientists can improve performance in the classroom, that will not only help the nation, he argues, but also demonstrate that scientists can make an important difference on a major societal problem. Over time, he reasons, the accretion of contributions in education and other fields will create a record of service that should make it easier to garner public and political support of all types of science.

Although Alberts says the payoff to research from this kind of effort should be obvious, the message hasn't reached most academics, who continue to think that the highest calling for their students is to follow in their footsteps. "I'd like to make it clear that scientific training is valuable for lots of professions, and to make it more acceptable for people to go into all kinds of work after being trained as a scientist," Alberts says. "Even those scientists who will be least successful at the kinds of things I do in my lab are tremendously talented for other functions," he says, pausing before adding, "like getting them to be a science teacher."

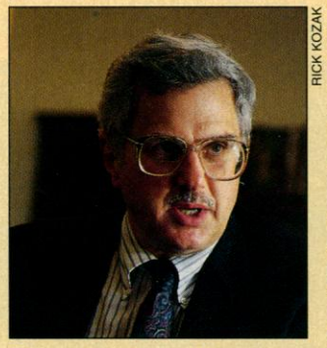
Alberts hopes to get his message across by uniting Academy efforts on science education, working with scientific societies, and raising the topic at every opportunity. Indeed, in his only appearance so far before Congress, he managed temporarily to shift the discussion from reauthorization of the White House's science policy apparatus to the need for scientists to become more involved in the world beyond academia.

This is the same dogged approach that helped him become a successful investigator into the mechanisms of DNA replication, a major coauthor of the best-selling undergraduate textbook, *The Molecular Biology of the Cell* (just out in a third edition), and the force behind an innovative program that brings San Francisco–area scientists into the elementary schools to help teachers offer their students hands-on science experiences. He has also brought his renowned energy, enthusiasm, and capacity for hard work to the job, only to find that those traits also can get him into trouble.

Making Public Schools the Place to Be

As an undergraduate biochemistry major at the University of California, Berkeley, in the mid-1980s, Beth Alberts had no desire to follow her classmates into graduate or medical school. Instead, she wanted to become a high-school science teacher. Her choice was not popular with Berkeley faculty—"my professors were amazed, they didn't know what to do with me," she recalls—but her father, University of California, San Francisco biochemist Bruce Alberts, stood behind her decision. Now Alberts is president of the National Academy of Sciences (NAS), from which he is leading a campaign to get scientists more involved in the public schools. And he repeatedly cites his daughter's experience in discussing what needs to be changed.

"All the students I've known would be tremendous resources in science education because they're energetic and dynamic, they understand and are excited about science," he says. "But they don't have a chance to think about that career because we tell them that's leaving science." Alberts says scientists "have to widen the definition" of the scientific community to include people like his daughter—now on extended maternity leave from Oxnard High School, west of Los Angeles—who are making a contribution to science outside the laboratory.



RICK KOZAK

Elementary logic. Alberts wants scientists to help improve public schools.

Alberts is not just putting pressure on his colleagues to change their attitudes. He is also refocusing the Academy's efforts on behalf of science education. Within the next few weeks, the National Science Foundation (NSF) expects to make a 3-year, $12.6 million award to the National Research Council (NRC), the Academy's main operating arm, that will unite several activities now funded by separate grants. The award is intended to fill what one NSF official called "redundancies, gaps, and other inconsistencies" in the Academy's current efforts, and will be in the form of a cooperative agreement, rather than a grant, to make it easier for each side to add or subtract elements over its 3-year lifetime.

But Alberts did not get everything he wanted. His original proposal, for $19 million, would have added a hands-on component to the Academy's traditional efforts, which consist of issuing reports, holding workshops, and meeting with other organizations active in the field. In particular, it would have helped Alberts launch a project involving researchers and science teachers in three urban areas, called Regional Initiatives in Science Education (RISE). RISE is modeled after an NSF-funded project that he has carried out for several years in the San Francisco public schools that places scientists as volunteers in the city's 72 elementary schools. In addition, the San Francisco project tries to give teachers a greater voice in the operation of their school system.

NSF also rejected plans by the Academy's Mathematics Science Education Board (MSEB) to expand statewide math coalitions to implement national standards for mathematics that it helped to promulgate in 1989. As a result of the smaller NSF award, the board may be forced to shrink its 20-person staff by half a dozen or more; its chairman, mathematician Hyman Bass of Columbia University, says that at one point last fall he feared the board itself might disappear.

Despite those cuts, Bass says the math education community is pleased that Alberts is leading the Academy's efforts in education. "It's been exhilarating," says mathematician Lynn Steen, the board's executive director, who is on leave from St. Olaf College in Minnesota. "Since Bruce arrived, it's suddenly clear to everybody at the NRC that education is important. He has an idea a day, and he's a hands-on presence at every level."

Alberts will soon be stretching those hands out to potential donors in a campaign to raise $10 million for RISE. Part-time coordinators are already on site in Minneapolis, Orange County, California, and Washington, D.C., each working with local agencies, private organizations, and businesses with an interest in improving science education.

Alberts announced his plans for RISE prematurely last November at a press briefing called to reassure the community that another project, to set national standards for grades K through 12 science education, was on track despite some changes at the top: Its chairman, James Ebert, had stepped down suddenly, and the Academy's chief educational officer, Kenneth Hoffman, had been reassigned. With NIH biologist Richard Klausner now at the helm, a draft document is expected to go out for comments in May, with final standards to follow by the end of the year.

One by one, these activities contribute to Alberts' goal of having the Academy bring order to what he now calls "a mumbo-jumbo confusion of programs, all of which need to be coordinated at the local level." With luck, such a system might even exist by the time his 13-month-old grandson is ready to learn about the wonders of science.

–J.M.

"I didn't want to take too long to catch on, because I might lose the opportunity to move ahead," he says about his first few months in office, during which he admits "I was just working too hard." One result, he recalls, was "I found myself going from meeting to meeting, not really understanding what was going on." On top of everything else, he still returns to San Francisco every third weekend to spend 3 days with his students. "One of Bruce's problems is that he's a very obliging person," says his close friend and former university colleague, National Institutes of Health (NIH) director Harold Varmus. "He'll help anybody out, but that takes up a lot of his time."

Alberts meets the bureaucracy

In this whirl of activity, Alberts has spent the biggest chunk of time familiarizing himself with the National Research Council (NRC)—the chief operating arm of the $200-million academy complex. The NRC, whose staff includes 170 doctoral-level scientists with expertise in fields ranging from astrophysics to urban violence, churns out nearly 200 reports a year under the auspices of a kaleidoscopic mix of 650 commissions, committees, boards, panels, and task forces. The reports, which typically are requested and funded by the government and take 18 months to write, represent the best efforts of some 7000 volunteer scientists, most of whom are not NAS members.

One of Alberts' first steps at the NRC was to take the reins of the Coordinating Council on Education, created in 1991 to unite the Academy's expanding educational activities. The NRC's current showpiece activity is an ambitious project to create voluntary national standards for science education in grades K through 12. A draft of the standards is due out next month, and the process has been peppered with debate about the proper balance among the ingredients of a good education, including curriculum, teaching skills, training, and testing.

Yet there is consensus that, during this process, Alberts has been a stabilizing influ-

ence. "The Coordinating Council has two priorities—getting the standards right, and setting an agenda for the future," says Cornell biologist and NAS member Thomas Pollard. "The key is to stay focused, and that's where Bruce excels. There's nothing more important to him."

However, spending more time on education means giving up something else. That's one reason Alberts took three NRC units that interact with Congress and the federal agencies, each of which had reported to Press, and merged them into a single entity under the control of veteran staffer Larry McCray. But there was an administrative reason, too: Alberts felt that federal relations would be strengthened if the Academy spoke with one voice. Alberts has also sounded out Congress on the idea of having the NRC make scientific and technical experts available for consultation on short notice, even in areas that haven't been addressed in a recent NRC report or policy statement.

RICHARD OLIVIER

Abbey Road lives. The authors of *The Molecular Biology of the Cell* couldn't resist this takeoff on the 1969 Beatles album cover. From left: James Watson, Keith Roberts, Martin Raff, Julian Lewis, Dennis Bray, and Bruce Alberts.

Alberts hasn't had the luxury of spending all his time learning the ropes. Right in the middle of that process, he had to confront a major fiscal problem—an unexpected downturn in the federal revenues that pay for the bulk of the NRC's work. After almost a decade of double-digit growth, annual program revenues dropped by 7% last year and are expected to be flat, at best, in the year ending on 30 June. His response was decisive. He recently ordered a 10% cut in the operating budgets of every unit for 1994–95, on top of a 4% cut in the current fiscal year. Although there are no plans for layoffs, senior staff say that additional belt-tightening—a 15% cut was contemplated earlier this spring—could limit the scope of the NRC's major commissions and boards and put some activities on hold.

As this belt tightening continues, Alberts is also putting his own management team into place. Last week Philip Smith, who arrived at the Academy with Press, announced he would be stepping down as the NRC's executive officer at the end of June. The 62-year-old Smith says he wants to "get off a 23-year treadmill of 15-hour work days" that began during stints at the White House budget and science policy offices and continued at the Academy. (At press time, there was no word on a successor.) In the last several months, many of Smith's administrative duties had been shifted to Suzanne Woolsey, who last spring was appointed by Press as chief operating officer. Woolsey had previously been executive director of the Commission on Behavioral and Social Sciences and Education, one of the NRC's five major scientific units.

Another major change was the resignation on 28 February of MIT mathematics professor Kenneth Hoffman, former associate executive officer for education. Last month Alberts elevated Donna Gerardi, an NRC staffer who has been working on education issues since 1987, to the position of special assistant to the president for education to help him keep tabs on the Academy's burgeoning efforts. Woolsey, in turn, has done some reshuffling of her own. She has hired a new director of computer operations, Leonard Kim, and put the brakes on an upgrade to the NRC's computer systems. Woolsey felt these efforts, championed by Smith and Walter (Duffy) Mazan, who left in January to form his own company, were too costly and not well-suited to the Academy's needs. David Williams, the Academy's chief financial officer, will soon be taking over the Academy's investment portfolio, and Woolsey is expected to oversee his successor, who will handle day-to-day financial affairs.

Down home at the NRC

Academy staffers say Alberts has already brought the NRC's operating style closer to his own, which Pollard characterizes as "down-home, direct, and friendly." Alberts is proud of having kept his promise to visit and chat with each of the NRC's 1157 employees, a step widely seen by staff as a demonstration that the boss appreciates their contributions. He reinforced that theme last month at a first-ever NRC "town meeting," in which he exhorted staff to give generously of their time when colleagues ask for help, to respect the work of others, and to admit publicly when they don't know something.

He's installed an electronic suggestion box to solicit ways to save time and money after hearing that employees would routinely write memos about pressing problems, then put them into desk drawers because nobody was interested. And he's borrowed a page from academic life by holding several poster sessions about the work of various NRC units and instituting weekly noon seminars, open to all via a newly purchased closed-circuit television system, for staff to share their experiences with recent studies. These innovations are all part of an attempt to build a sense of teamwork at an institution with a reputation for independence.

Alberts has also created a liaison system for NAS's 25 discipline-based sections as a way to strengthen ties between NAS members and the NRC. The hand-picked liaisons met in Washington for the first time in February, where they were briefed on the council's activities, and the exercise will be repeated at this weekend's annual meeting. The idea is to make the membership a more valuable resource by increasing their knowledge of the NRC, as well as to respond to complaints by MIT meteorologist Richard Lindzen and others that NRC panels contain too few NAS members and that, as a result, the academy is lending its name to reports written by others (*Science*, 7 January, p. 23).

The NRC is also the Academy's public face. And Alberts wants it to become much more recognizable. "I'd like every scientist to be as familiar with the NRC as they are with NIH and the NSF [National Science Foundation]. I don't want the NRC to be known as a place that primarily does long reports. I think we have a much more central function—to connect everyone in society working on science-based issues to the people in Washington who make decisions."

Although he admits his goals may take a decade or more to achieve, Alberts plans to limit himself to a single 6-year term. (NAS bylaws allow for a maximum of 12 years as president.) He says he's immunized against Potomac fever, which afflicts many who have tasted power in this city, because of the heat and humidity of Washington summers, the hazards of its icy winters, and because San Francisco, his home since 1976, "is a very hard place to leave."

Those who know him well bet Alberts will have left his mark on Washington by the time he returns to the West Coast. John Burris, director of the Marine Biological Laboratory at Woods Hole, Massachusetts, and the past executive director of the Commission on Life Sciences when Alberts was chair, offers this prognosis: "Don't ever underestimate him," he says. "He is not the absent-minded professor that some people imagine him to be. My guess is that both sides will make some adjustments: Bruce will tuck in his shirt, and Washington will recognize that he is a dynamic leader."

–Jeffrey Mervis