Eastern Europe Awakens to New Worldwide Scientific Opportunities

It was Sandra Burns' seventh day in Czechoslovakia, so she knew what to expect when she entered the city of Brno's State Technical Library last May and asked for the latest issue of *Science*. The librarian obligingly checked the catalogue: The newest copy was dated 1963.

For Burns, acting assistant director for AAAS International Programs, the incident was just one more example of the challenges faced by Eastern European researchers as they struggle to overcome more than 40 years of faltering economies, forced isolation, and stifling state-controlled science practices.

In an 11-day fact-finding trip through Czechoslovakia last spring, Burns saw new independent science groups emerging alongside established academies, many of whose members are wary of the changes facing the nation and its scientific community.

Monitoring it all is the American Association for the Advancement of Science (AAAS), whose docket of international programs for 1991 is expected to include more initiatives focusing on post-communist Europe.

Burns considered Czechoslovakia fertile ground for an exploration into the state of science in Central and Eastern Europe because of that nation's "strong scientific traditions and industrial base.

"Given the changes, it seemed an opportune time to see if there were any emerging non-governmental groups of scientists and what role they are playing in the reforms being undertaken to restructure the country," she says.

Burns met with scientists to talk about the future. All of them seemed to be wrestling with structure, she reports. The same organizational questions recurred in almost every meeting: How do you conduct peer review, especially in a community so small that nearly everyone knows each other personally? Where does funding come from if not the state? What is a grant proposal? How do you decide which projects get funded and which don't? How do you run an independent science organization?

"Under the old system, everything was rigidly designed to meet the state's perceived need for increased productivity," explains Burns. "The number of people on your staff, the number and kinds of experiments you'd do, the number of trips to scientific meetings allowed per institute—everything was set up on a 5-year plan."

One of the most basic structural barriers to progress in Eastern European science, Burns says, is the separation of the research community from the university teaching community.

Typically, she says, industrial, defense and basic science researchers are based at different institutions with little opportunity for contact; few researchers are based at universities, allowing minimal communication that might benefit students of science.

Although small groups of scientists would meet furtively to share their progress, officially, "science wasn't pursued with that wonder of discovery" that tends to drive science in the West, says Burns.

Today, "vertical communication within individual disciplines is pretty good," she says. "But scientists are eager to expand those contacts to include colleagues overseas or experts in related fields."

So cut off from the world at large were Czechoslovak scientists that many of the current needs they articulated for Burns were at the most basic level.

"We need journals. And books," physician and political activist Pavol Demeš told Burns. Demeš directs international relations for the Slovak Ministry of Education, Youth and Sports in Bratislava.

In many cases, scientists don't even know what types of information exist, said Demeš, let alone where it's located and how they can get it.

Burns agrees. She brought with her 20 copies of the directory of the AAAS Consortium of Affiliates for International Programs. The book, which includes contact information, phone numbers, and telefax numbers for nearly 100 U.S. scientific societies and about 50 such societies in other countries, turned out to be "a really hot item," she says.

"The fact that here in the United States we have directories of directories intrigues Czech and Slovak scientists. Even general telephone directories are hard to get."

Demeš and other scientists were clear with Burns about the kind of information resources they need:

- Copies of current journals, directories, and textbooks;
- International panels of experts who could advise on setting up a national funding system for science and technology and act as reviewers under an eventual grant system;
- Internships or exchanges with major scientific institutions that would focus on how to administer and organize research programs;
- Temporary waivers on fees to international conferences, which currently block many Central and Eastern European scientists from attending due to the lack of hard currency.

Concerted nationwide efforts to reach these goals must take into account the strong nationalism of the country's two republics, Czechland and Slovakia, says Burns. Poor communication and duplicate efforts are already apparent as a result of the republics' nationalistic fervor, she says.

"It's too early to tell" which scientific groups would be best for AAAS to hook up with, she adds. Except for the Czechoslovak Academy of Sciences, which will probably continue in some form, "it's not clear which ones will be viable over time. At this point we're not shutting anyone out." ◆

At the State Technical Library in Brno, the latest issue of* Science *was dated 1963.

Getzinger: New International Head

When Dick Getzinger ran for a spot on the Los Alamos, N.M., county council, he was a desk-bound nuclear energy researcher with a vague yearning to extend his horizons beyond the laboratory walls.

Today, more than 15 years later, Getzinger's horizons encompass the world as he takes on the job of heading the AAAS International Directorate beginning November 5.

Getzinger brings to the Association a wealth of global experience as a federal science and technology officer, including a 10-year stint in the Foreign Service—most recently at the U.S. embassy in Tokyo as counselor for scientific and technological affairs. In addition, he has held similar posts in Ottawa, Canada, and Vienna, Austria.

"It was—and still is—hard to give up the lab," says Getzinger, who has worked extensively on arms control issues since gaining his Ph.D. in chemical engineering from the University of California at Berkeley.

"To see good data and a simple theory that explains them still gives me a tug," he adds.

But as Los Alamos County Council chair and later as a member of New Mexico Senator Pete Domenici's staff in Washington, the "attraction of dealing with people" as well as science was strong enough to propel him toward a career in public service. "It's important to translate what's going on in the lab" so that policymakers can make good decisions, he says.

Although Getzinger says he does not come to the International Directorate with an agenda, he eagerly anticipates progress in such areas as assistance to developing countries, the Soviet Union and Eastern Europe [see story, p. 1155], post–Cold War arms control strategies, and the race to understand global climate change.

"These are exciting times," says Getzinger. "We have to be willing to keep pace with the changes." ❖

Abelson Prize Honors First Elected Official

Thomas Moss was a 1974 AAAS Congressional Fellow the day he walked into U.S. Representative George Brown, Jr.'s Capitol Hill office for an interview. The California congressman invited Moss to sit down and then did something the scientist has always remembered.

"He told me about some of the things he'd been reading lately, including a piece by [German philosopher] Hannah Arendt," recalls Moss, who today is dean of graduate studies and research at Case Western Reserve University in Cleveland, Ohio.

But what really struck Moss as refreshing was that Brown "then asked me what I thought of her."

Sixteen years later, Brown still seeks and advances the views of scientists in the interest of sound public policy. In recognition of his efforts on behalf of science and technology, AAAS has named Brown the 1990 winner of the Philip Hauge Abelson Prize, which comes with a $2500 award.

U.S. Representative George Brown, Jr. (CA), winner of the 1990 AAAS Abelson Prize, is being cited for his efforts to advance science and technology policy over a 26-year career in Congress.

Brown is the first elected official to be honored with the prize, which salutes "sustained exceptional contributions to advancing science" by a public servant or a scientist.

"George Brown has bridged the communication gap between the scientific and political communities" for most of his 26 years in Congress, says Moss, who was one of three scientists to nominate Brown for the award. "And he has supported scientists in a manner that brings to them the realities of the political arena."

Brown's empathy for science comes from his own background in physics. "So many people in Congress tend to think solely in terms of economic benefit when it comes to basic science," says Brown. "They don't understand that you've got to keep the structure healthy."

In an effort to build a sound structure for basic science within government, Brown was an early architect of the Office of Technology Assessment, which was established in 1972, and worked to reestablish the Office of Science and Technology Policy in 1976.

More recently, he has championed efforts to attract more women and minorities into science careers and to improve the nation's scientific literacy. He is also a staunch supporter of alternative energy research.

"Every piece of legislation is in some sense an experiment," says Brown. As in science, he feels policymaking is a matter of "objectively evaluating the results of what we are doing." ❖

"Great Wall" Article Wins *Science* Prize

Many have indulged in the ancient, idle pursuit of lying back and counting the stars that flicker across the night sky. But when Margaret Geller and John Huchra count whole galaxies, the results throw into question the very origins of the universe—and raise scores of new questions for cosmology to pursue.

Geller and Huchra are researchers at the Harvard-Smithsonian Center for Astrophysics in Cambridge, Massachusetts, and coauthors of "Mapping the Universe," a landmark article that recently earned them the 1990 AAAS Newcomb Cleveland Prize, the annual recognition of an outstanding paper published in *Science*. The honor comes with a $5000 award.

Daniel E. Koshland, Jr., editor of *Science* and chair of the selection committee, says the paper is "fascinating to theorists and an experimental tour de force," noting that "one reviewer called it one of the most important papers in cosmology in the last 5 years."

The prize, which ranks as the

Senior Scientists Less Than Retiring

The young girl clutches the dice in one hand and breathes on them before throwing them across the table. From the front of the classroom, Arthur Brown looks on approvingly.

"A lot of kids today are going to shoot craps sometime in their lives, and they might as well learn how little chance they have of winning anything," says Brown, a retired mathematician with a background in operations research who is teaching this class of eleven year olds about statistics and probability. "Besides, you've got to get and keep their attention."

Craps may not be the most likely focus of a science class, but then Brown is an unlikely school teacher. He is one of hundreds of men and women over the age of 55 who are willing to volunteer their time and expertise to non-profit causes through the AAAS Senior Scientists and Engineers program (SSE).

Currently Brown and six other senior scientists and engineers are taking part in a pilot SSE program called Project Applied. They're dropping in on five Washington, D.C., elementary and middle schools this fall to demonstrate in a fun, hands-on way a few basic scientific concepts.

Paul Torda, a professor of mechanical and aeronautical engineering, puts his classes to work playing with paper airplanes in order to understand the science of flight. Cell biologist Gertrude Kasbekar concocts batches of cells on slides to show her students.

Other demonstrations involve learning how engines work and figuring out how to muffle the wall-thumping sound of a boom box.

Sometimes lessons take an unexpected twist due to the scientists' own experiences. When physicist Morris Macovsky mentioned during his talk on resonances and vortices that he'd once done research in a submarine, the drowsy class

Association's oldest honor, was established in 1923 with funds donated by New York philanthropist Newcomb Cleveland.

Encompassing 5 years of painstaking data gathering, the paper is the second report on a massive survey of galaxies the authors have undertaken.

Early on they discovered that their map depicted large structures which were much more sharp-edged and bunchy than the uniform distribution of expanding matter scientists had long expected to find.

Over time, however, the data revealed an even more startling find: thousands of galaxies arranged in a "Great Wall" at least 500 million light-years across—easily the largest structure ever seen in the universe, and one whose limits seem to extend far beyond the bounds of even this most ambitious survey.

"There is not a model based on laboratory physics that adequately explains [the Great Wall]," says Geller. "The microwave data from the Big Bang had suggested that matter is smoothly distributed this far out, but it's not."

Now widely cited in the literature, Geller and Huchra's article has inspired a new generation of projects aimed at resolving the contradictions to cosmological theory that their survey presents.

"This field, once data-impoverished, is now data-rich," says Geller. "We are in the age where we can really begin to answer the question: What does the universe look like and how did it evolve?" ❖

Animal Research Advocate Cited

His office has been trashed and valuable files stolen. His wife and children are harassed. His name tops the list of those people whom some animal rights activists would like to see silenced, even physically harmed.

But still Adrian Morrison speaks out. And last month, Morrison, the University of Pennsylvania anatomy professor whose outspoken defense of the responsible use of animals in research has made him the target of vandalism as well as praise, was named the 1991 recipient of the AAAS Scientific Freedom and Responsibility Award.

The tribute, which comes with a $2500 award, cites Morrison for "his dedicated promotion of the responsible use of animals in research and his courageous stand in the face of great personal risk against attempts to curtail animal research essential to public health."

"Despite the pressure he's been under, Dr. Morrison has consistently defended scientists who use animals for important research," says Mark Frankel, AAAS staff officer for the award.

"At the same time, he has been an advocate and a teacher with regard to the responsible treatment of those animals. His behavior reflects a concern for scientific freedom as well as responsibility."

Morrison is a veterinarian and scientist known for his work on brain activity during sleep. His research with cats led to the recognition and treatment of a clinical disorder among humans, in which people flail about, sometimes dangerously, during the dreamy, rapid-eye-movement (REM) phase of sleep. He also heads the Society for Neuroscience's committee on animals in research, from which post he has helped develop guidelines regarding the use of anesthetics, the avoidance of pain, and the maintenance of decent living conditions.

The AAAS award "is important from a personal point of view, of course, but even more with regard to biomedical research and the public health," says Morrison.

"We don't know when the breakthroughs will come. It's vital that research following the federal guidelines for the responsible use of animals be performed."

In February 1990, the AAAS adopted a resolution supporting the use of properly cared-for research animals in the pursuit of "the cure for prevention of disease."

Such support is appreciated by Morrison, who for more than a decade has been a high-profile focus of animal rightists' anger.

"I expect increased harassment" in the wake of the AAAS award, says Morrison, "but I expected harassment before. And maybe [the award] will give my comments added weight." ❖

snapped to attention.

"Weren't you scared?" they asked. "How does a submarine work?"

As guinea pigs in this pilot SSE program, several of the Project Applied volunteers weren't sure at first how they would like teaching children. That certainly was the case with Brown.

"I'm usually terrified of talking to eleven-year-olds," says the accomplished researcher. "But the experience is both frightening and thrilling."

The 300,000 scientists and engineers "who are now retired are by no means over the hill," says Laura Mann, a program assistant in the AAAS executive office who administers the program. "Their professional contributions are urgently needed in the public interest."

The key to the success of SSE is that it's "market-pulled rather than volunteer-pushed," says Mann. AAAS solicits requests from non-profit groups for scientific or technological help, then puts senior professionals to work—quick response, quick reward.

So far Mann has placed more than 170 names of senior scientists and engineers in her SSE talent bank, and hundreds more have expressed interest.

Besides Project Applied, she is working to establish task forces that could provide valuable advice on scientific or technological public policy issues facing government agencies and other groups.

Already, an SSE task force is helping a Northern Virginia group with the science portion of a new children's museum called Discoveryville.

Scientists on the Discoveryville task force come from a variety of disciplines. They are applying their collective wisdom to everything from what kinds of exhibits and demonstrations should appear in the new museum to how the facility can best promote itself.

"Senior scientists and engineers are a great national resource," says Mann. "It doesn't make sense to ignore them."

Association members interested in volunteering for an SSE program can find out more by contacting Mann at AAAS, 1333 H Street, NW, Washington, DC 20005, or by calling her at (202) 326-6664. ❖

AAAS Election Results to Appear 7 December

The envelope, please!

All votes are in for the new slate of AAAS general and section officers. Results of the 1990 annual elections will be reported in the 7 December issue of "Inside AAAS."

Successful candidates will be listed for the Association's President-elect, board of directors, and nominations committee.

Also announced will be the chair-elect, member-at-large, and nominating committees for each of the Association's 25 membership sections.

The new officers' terms will begin on 20 February 1991.

SWARM Solicits Papers for Meeting

The AAAS Southwestern and Rocky Mountain Division (SWARM) invites scientists and graduate students to contribute papers for presentation at its 67th annual meeting on 15-18 May 1991 in Lubbock, Texas.

Texas Tech University will host the meeting, whose theme is "Making Sense Out of Science: Communication in Science and Technology."

So far, symposia are scheduled relating to:

- Playas: Community Analysis and Landscape Patterns.
- Molecular Responses to Stress.
- Technology and Philosophy.
- Stress: Advances and Reconceptualizations.
- Cultural Dynamics of the Southern Plains.
- Cognition: Advances, Concerns, and Research.
- Attribution: Motivational and Cognitive Perspectives.

The deadline for papers is 10 December 1990. Send titles and abstracts to Dr. M. Michelle Balcomb, Executive Director, SWARM Division, AAAS, Colorado Mountain College, 215 Ninth Street, Glenwood Springs, CO 81601. ❖

University of Chicago

Leon Lederman, AAAS President-elect and a 1988 Nobel Prize winner in physics, talks about quarks and the Big Bang in the November 28 premier of a new annual television program on science called The Christmas Lecture Series. *The show will air several times through January on The Learning Channel. Modeled on a 125-year-old tradition in England, the series is geared toward young people and aims to raise their scientific literacy.*