edited by KAREN HOPKIN

Developing National Standards for Science Education

While school kids across the nation were enjoying their summer vacations, educators and members of the nation's leading science organizations were working to develop a national standard for science curriculum, teaching, and assessment for grades K through 12. This represents the first attempt to provide national curriculum standards for science.

Why has it taken so long to address something so fundamental? "Science is not a core subject in school," says John Rigden, director of development for the National Committee on Science Standards. "Everyone knows that kids have to be taught reading, writing, and arithmetic. Nothing analogous exists for science. We need to create in the minds of teachers and school administrators a shared sense of what students should know about science, and what they should be able to do."

The National Committee on Science Standards aims to have a preliminary draft of a document prepared by the end of October, for presentation at the eighth annual AAAS Forum for School Science.

Participants in this meeting, sponsored by AAAS and the Coordinating Council for Education of the National Research Council (NRC), will include representatives from the National Science Teachers Association (NSTA), AAAS Project 2061, and state and local education officials.

Project 2061 has been formulating recommendations for defining and enhancing scientific literacy in the natural and social sciences, mathematics, and technology since 1985.

The national standards committee has been influenced by the mathematics standards prepared by the National Council of Teachers of Mathematics, and by *Science For All Americans* (1989), Project 2061's description of 12th grade learning goals. Associate project director Andrew Ahlgren also provided the curriculum committee with a draft of Project 2061's "benchmarks"—an elaboration of what students should know about science, math, and technology by the end of grades 2, 5, 8, and 12.

"We have an obligation to make clear just what we expect our schools to accomplish."
–F. James Rutherford
Director of Project 2061

Ahlgren has discussed the curriculum standards and their formulation with the national committee, and says he is "optimistic that the resulting national standards will be consistent with those proposed by Project 2061."

Rigden notes that the standards will provide focus and direction, but will not be a laundry list of information to be memorized. "Out of the vast domain of scientific knowledge, and the range of skills and processes, [we must] extract those things that are really important," he says. The standards will provide a flexible program that will allow individual teachers, school districts, or states the freedom to create a variety of curricula that will fulfill the intent of the standards.

Ahlgren agrees with these goals, but cautions against the federal government dictating a strict agenda. "The power is really in the hands of the state and local school boards," Ahlgren says. Any standards should be open to interpretation, he says, but "should provide a level of detail useful for helping educators to design curricula."

The national standards will also address the contribution of teaching and provide assessment guidelines. These recommendations will not only describe the means for assessing the development of individual students, but will encourage evaluation of the overall program, allowing teachers to make appropriate modifications.

The annual AAAS Forum for School Science has been addressing problems in scientific literacy and assessment of science teaching and curricula since 1985. Project leader Betty Calinger describes the forum as "a good opportunity for bringing together different groups that don't normally get together" to address specific issues in science education.

On 30 and 31 October, the meeting will provide an opportunity for science educators and members of the science community to discuss and propose modifications for the science curriculum standards. From there, the document will go on the road.

"Starting later this fall, the standards will be revised by the community at large," says Rigden. "At that stage, we'll put the document in the hands of all constituents interested in K through 12 science education."

Then begins the iterative process of incorporating community recommendations into a final draft of the national curriculum standards. Rigden anticipates that the document will be completed in the fall of 1994, when it will be distributed to teachers and school districts. "A lot of states are waiting for it right now," he says.

F. James Rutherford, director of Project 2061, applauds the effort, saying, "We have an obligation to make clear just what we expect our schools to accomplish."

On the long road to education reform, there may be strength in numbers. "For a long time, we were the only ones on the road," Ahlgren says. "But pretty soon people were coming in from the side streets and catching up from behind. Now it's pretty crowded on the highway." Perhaps this traffic will encourage real progress toward enhancing science literacy.

To register for the AAAS Forum for School Science contact Betty Callinger at 202-326-6629.

Wanted: TV Critics

AAAS needs scientists to help screen the broadcast entries for the AAAS–Westinghouse Science Journalism Awards. The videos cover topics from heart transplants to virtual reality, with everything including killer bees, taxol, and the Big Bang in between.

If you will be in the Washington, D.C., area in mid- to late September, why not score these segments for scientific accuracy, and enjoy some quality reporting and programming to boot?

For further information, or to volunteer, please contact senior communications officer Nan Broadbent at 202-326-6431.

A New Breed of Science Reporter

Look, up in the press box—is it a scientist? Is it a journalist? No, it's a AAAS Mass Media Fellow.

Thanks to the fellowship program, this summer 14 talented medical and science graduate students earned their keep as *bona fide* science reporters.

Already in its 18th year, the program has placed nearly 300 fellows at newspapers, magazines, and television and radio stations across the country.

The program doesn't aim to seduce incipient scientists into careers in journalism, yet many of the fellows have gone on to positions at National Public Radio, *The New York Times*, and ABC's Good Morning America. Others return to the lab with improved skills in communicating complex technical information in a concise, accurate, and entertaining manner.

JOE HUBBARD

1992 Mass Media Fellows (left to right): Lauren Roth, Elizabeth Ralston, Carla Schnurr, Michael Campbell, Jehan Velji, Joy Barnes, Greg Butera, Matthew Crenson, Ann Celi, Ron Lalonde, Gwendolyn Kelly, Chris Jandacek, and Vernita Ediger. Missing from the photo is Wendy

During their 10-week journalism stint, the fellows turned in stories on topics ranging from spider silk and motion sickness to UFOs and autism. They addressed issues relating to public health, science education, and the environment. According to AAAS Executive Officer Richard S. Nicholson, "The host sites are impressed with the people they get." He says the fellows are "lively, outgoing, and interested in life beyond the lab."

According to project coordinator Amie Hubbard, the fellowship program is designed to enhance the public understanding of science by encouraging accurate and frequent coverage of science topics by the media. Working together, she says, scientists and journalists in the program strive to make science reporting more understandable and less intimidating.

Calling the fellowship "one of the most important things we do at AAAS," Nicholson notes that "it's an investment in people, and if you believe that people can make a difference, then programs like this fellowship will improve the public's understanding of science over time."

For more information about the Mass Media Fellowship Program, contact Amie Hubbard at 202-326-6760.

Scientists Combat Human Rights Violations

Despite the recent improvements in human rights practices in many regions, violations still occur all over the world. Students, scientists, health professionals, and others are imprisoned, tortured, or killed as punishment for the peaceful expression of opinions or for exercising their basic human rights.

What can scientists and health care providers do to help? Two new publications from the Science and Human Rights Program at AAAS provide information on persecuted scientists, engineers, and health professionals, and explain how to apply scientific methods to the documentation and resolution of human rights problems.

The Directory of Persecuted Scientists, Engineers, and Health Professionals chronicles individual cases of human rights violations in 27 countries and recommends appropriate action to the reader. The cases were compiled by the Science and Human Rights Program from information supplied by nongovernmental human rights organizations like Amnesty International and Human Rights Watch, newspaper reports, and the U.S. State Department.

Taking Up the Challenge: The Promotion of Human Rights is a resource booklet compiled by Kari Hannibal, senior program associate for the Science and Human Rights Program. Hannibal describes the guide's function as twofold. "It will inform scientists and spur them to become active in human rights issues, and demonstrate the degree of past cooperation between scientists and human rights groups," she says.

In addition to deprivations of civil and political rights, the manual draws attention to violations of social, economic, and cultural rights. It discusses the contributions that specific fields, including the forensic sciences, medicine, genetics, statistics, and education, can make toward recognizing and eradicating these violations.

Hannibal says the publications should enable scientists to employ their skills to promote human rights worldwide. To obtain a copy of either publication, contact Kari Hannibal at 202-326-6790.

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Conference Explores Problem of Weapons Proliferation

Recent conflicts between the United Nations and Iraq have raised anxieties regarding the proliferation of advanced weaponry to developing nations. No longer limited to fearsome nuclear arsenals, these systems include chemical and biological weaponry as well as advanced delivery systems, such as high performance aircraft.

Given this climate, the AAAS Program on Science and International Security will sponsor a 1-day conference on 30 October 1992 to discuss the Proliferation of Advanced Weaponry: Technical and Political Challenges for U.S. and Regional Security. "Proliferation is one of the most pressing issues on the international security agenda," says program director Thomas Wander.

Participants will explore:

- the impact of the spread of advanced weaponry to developing regions in the Middle East, in Northeast and South Asia, and in other regions of political conflict
- how to effectively control the flow of technology that can be applied to military and commercial uses
- whether nations can impose weapons restrictions that are both equitable and effective
- and how U.S. intelligence, both human and technical, can respond to proliferation.

Wander would like to "separate the sense from the nonsense and see this timely topic seriously addressed in a balanced way." To achieve this, the AAAS Program on Science and Security has invited several analysts from regions whose security interests are directly impacted by these measures. Wander says that speakers from Egypt, Israel, and India will provide viewpoints that U.S. security analysts do not always hear.

Because the meeting will address the interplay between technology and security, Wander expects to attract students interested in science and international security

as well as educators, diplomats, journalists, and policy-makers.

To obtain a program or register, contact Ray Orkwis at 202-326-6494.

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Ion Channels and Heart Disease

Researchers and clinicians from the United States, Canada, Germany, Sweden, France, Japan, Italy, and the Netherlands will converge in Chantilly, Virginia, this September to discuss the role of ion channels in cardiac function.

The meeting, co-sponsored by AAAS and the National Institutes of Health, will bring together basic scientists studying the structure and function of cardiovascular channels, clinicians concerned with disease processes resulting from channel dysfunction, and pharmaceutical scientists interested in designing drugs to treat these diseases, including arrhythmias and sudden cardiac death.

The meeting will take place at the Westfields International Conference Center near Dulles International Airport from 12 to 15 September 1992. To obtain a program agenda or to register, contact the Meetings Office at 202-326-6450.

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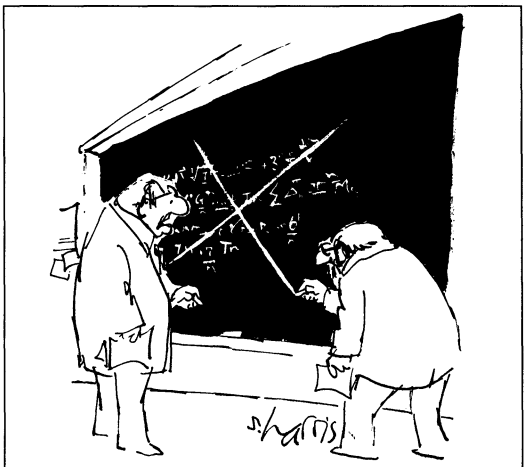
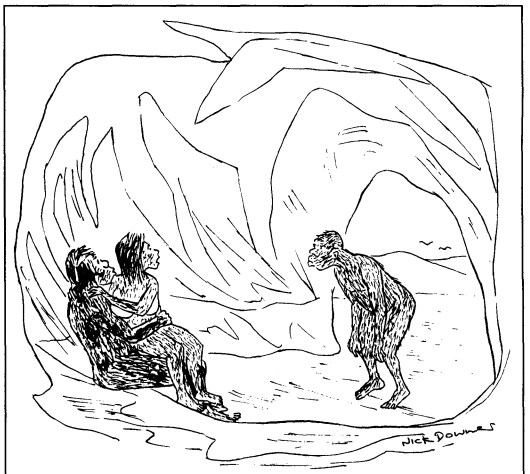
Science Laughs



"That's it? That's peer review?"



"Eddie! I thought you were extinct!"

Since Archimedes first reacted to the discovery of mass displacement by running naked through the streets of ancient Greece, the public has realized that scientists can be a funny lot. Few people can poke fun at the foibles of science life more proficiently than a pair of prolific cartoonists—beloved veteran Sidney Harris and relative newcomer Nick Downes.

This month AAAS will publish two cartoon collections. *Chalk Up Another One* is a new collection of more than 135 of Harris's best cartoons, harvested from works that span his 25-year career. This volume pays special attention to Harris's many trips to the blackboard, where mathematicians unwind with simple addition and calculus is used to determine why the chicken crossed the road.

Big Science is the first collection of Nick Downes's irreverent views of life in the laboratory, where dedicated scientists imitate DNA molecules or attempt to find the cure for what makes people do science for a living.

Although publishing cartoon anthologies is a AAAS first, Harris and Downes are not strangers to the Association. Both have appeared frequently in the pages of *Science* during the past 6 years. What tempted AAAS to turn to science 'toons? Director of Publications Pat Morgan says, "Linus Pauling wrote an introduction for one of Harris's books. If it's good enough for Linus Pauling, it's good enough for me."

The books, at $10.95 each ($8.75 for AAAS members), will be available in late September. To order a copy, call Celia McEnaney at 202-326-6736.

With a Little Help from Our Ph.D.'s

Why would any scientist in his or her right mind willingly go back to school? To help improve the quality of science education, of course. Over the past 3 years, the Bell Atlantic–AAAS Institute for Science and Technology Education has paired about 100 middle school teachers with scientist or engineer partners. These teams work together to offer children valuable science experiences.

The program is now seeking 30 scientists from Maryland, Virginia, Washington, D.C., West Virginia, Pennsylvania, New Jersey, or Delaware to assist the 1992–1993 participants. The scientist can lend a hand by assisting with student projects, reviewing science or technology curricula, participating in career days, arranging field trips, or offering in-class instruction. To obtain more information or to volunteer, please call Mary Beth Lennon, Program Assistant, Bell Atlantic–AAAS Institute, at 202-326-6644.

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How Can I Contact the American Society for Brewing Chemists?

You've just read a report about genetically engineered yeast and you'd like to know if it is the same strain used by commercial breweries. Where can you find this information?

Your troubles are over—the ultimate sourcebook is now available. *Science Sources 1992* provides reporters, or the incurably curious, an extensive list of colleges and universities, museums, federal agencies, industrial and nonprofit research institutions, and scientific associations across the country.

This reference, which offers contact numbers and the names of more than 1500 public information officers and specialist sources, is available in paperback ($9.60 for AAAS members) and on diskette ($12 for book and disk). To order your copy, call AAAS Books at 301-645-5643 and ask for AAAS.

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AAAS Annual Report Available

Single copies of the 1991 Annual Report are now available free for AAAS members. The report contains information about Association activities, publications, and awards, as well as a complete financial statement for the year. Also included are lists of AAAS fellows and affiliates. To obtain a copy of the Annual Report, contact the Office of Communications at 202-326-6440.