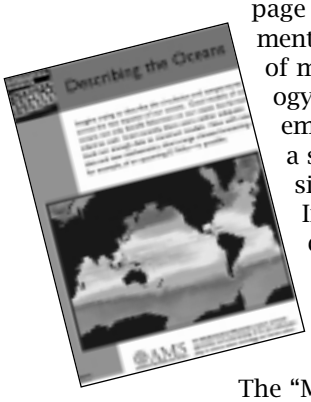
Inside the AMS

"Mathematical Moments" Program Launched

The AMS Public Awareness Office has created a series of one-page flyers called "Mathematical Moments" which describe important uses of mathematics in science, technology, and human culture. Each "Mathematical Moments" flyer focuses on a single topic, such as aircraft design, fractals, heart modeling, the Internet, music, or weather prediction. The flyers are illustrated with colorful graphics and supply references for more in-depth treatment of the topics described.



The "Mathematical Moments" provide a handy, eye-catching, and concise way to reach such audiences as elected officials, precollege students, and school teachers and administrators. Paper copies of "Mathematical Moments" have been distributed to the approximately 500 chairs of mathematics departments that are institutional members of the Society. The flyers may also be downloaded from the Web site `http://www.ams.org/ams/mathmoments.html`. Feedback about the flyers is welcome and may be directed to the AMS Public Awareness Officers, Mike Breen and Annette Emerson (e-mail: `pa-office@ams.org`).

—Allyn Jackson

AMS Receives Grant for Students to Attend "Math in Moscow"

The AMS has received a grant from the National Science Foundation that will support the participation of ten U.S. undergraduate students per year in the "Math in Moscow" program. Held at the Independent University of Moscow, the semester-long program draws on the Russian tradition of teaching mathematics, emphasizing a creative approach and in-depth understanding. The teachers in the program have significant connections with contemporary research topics, and most are internationally recognized mathematicians.

The fellowships supported by the grant offer a standard award to be applied toward tuition, travel, and living expenses. The AMS has assembled a committee to screen applicants for the fellowships. For further information, including instructions on applying, visit the Web site `http://www.ams.org/careers-edu/mimoscow.html`, or write to: Professional Services Department, AMS, 201 Charles Street, Providence, RI 02904.

Further information about "Math in Moscow" is available on the Web at `http://www.mccme.ru/mathinmoscow/`, or by writing to: Math in Moscow, P.O. Box 524, Wynnewood, PA 19096.

—Allyn Jackson

Joint Testimony by Society Presidents

On March 21, 2001, AMS president Hyman Bass, together with three other scientific organization officials, gave testimony before the House Subcommittee on Veterans Affairs, Housing and Urban Development, and Independent Agencies. This subcommittee is responsible for appropriations for the National Science Foundation (NSF).

Joining Bass in the presentation were George Trilling, president of the American Physical Society; Mary J. C. Hendrix, president of the Federation of American Societies for Experimental Biology; and Eli M. Pearce, president-elect of the American Chemical Society. This testimony was presented at a crucial time, when the scientific community had learned that the Bush administration planned to request only a 1.3 percent increase for the NSF for fiscal year 2002. In Congress there is widespread support for the NSF, so this increase may be enlarged as

the budget moves through Congress. The testimony by the four presidents called on the subcommittee to provide the NSF with a 15 percent increase in fiscal 2002.

Bass's portion of the testimony was as follows.

"Mr. Chairman, Mr. Mollohan, and members of the Subcommittee, research supported by the National Science Foundation has had a monumental impact. The NSF investment has enabled the U.S. to build a scientific infrastructure second to none, facilitated revolutionary research that pushes the frontiers of knowledge, and laid the groundwork for innovation that has resulted in a vibrant economy and a superior quality of life. Many new products, procedures, and methods have accrued from the NSF investment in basic research—research performed over many years and not always predetermined toward a specific application. Society, unaware for the most part how basic research impacts daily life, enjoys many benefits from NSF investments. I would like to highlight a few examples.

"Mary Hendrix just presented four brief case stories about NSF-supported research in medicine and disease. Let me add one more that illustrates the role of mathematics in this arena. Every year tens of thousands of people in the U.S. receive artificial heart valve implants. NSF currently supports a group of mathematicians studying unsteady fluid flows driven by dynamic boundaries. The heart valve is an excellent example of such a boundary. The results of this kind of mathematics research have had a dramatic impact on heart valve design and functionality.

"Lighter replacements for structural steel, such as strong and resilient plastics, are also the result of research supported by NSF, in this case in the area of chemical engineering. In less than a minute, two or more reactive chemicals can now be mixed, molded, and cured. The result is molded plastic that reduces automobile repair and insurance costs and reduces fuel consumption. Public benefits accrue from reduced air pollution as well.

"Let me turn to Web searching and surfing, which have become as commonplace as driving a car. Today's Web browsers and search engines grew out of NSF-supported research. Mosaic, software developed by a University of Illinois student, is the basis for Internet Explorer and Netscape. The search engines Excite and Infoseek owe their origins to the NSF, as does Thomas, the search engine used by the Library of Congress.

"Bar codes—those ubiquitous symbols stamped on everything from packages and magazines to store tags and grocery items—provide another example of benefits from NSF-supported research. In the 1970s NSF helped fund research to improve the accuracy of bar code scanners. Later in the 1990s NSF supported efforts that eventually led to a new type of bar code reader that can operate under adverse and messy conditions. Continuing research is focused on developing two-dimensional bar codes that will allow more information to be represented in a very compact form. I think it safe to say that almost every citizen in the U.S., perhaps even the world, has been affected by this research.

"I would be remiss if I didn't mention the contribution that NSF makes to science and mathematics education, an area that is critical to our nation's future. Trained as a mathematician who has spent the bulk of his career in mathematical research, I personally have pursued research in the teaching and learning of mathematics for the past decade.

"We must improve student learning in mathematics and science if our population is to participate fully in our country's technological growth and development. The NSF funds centers for learning and teaching that provide a mix of research, teacher education, and leadership development. These centers promote innovative professional development opportunities for in-service and pre-service teachers. Along with the Department of Education, the NSF also supports research in learning processes in mathematics, science and reading, an effort to identify ways of improving student learning. Finally, NSF supports educationally innovative projects in undergraduate education and is the lead federal agency supporting graduate research assistants in the physical sciences and mathematics.

"The work of NSF plays a critical role in the vitality of our country, in research and education. A future that will provide the opportunities and discoveries that will measure up to the successes of the last fifty years will require a continuing chain of discoveries in mathematics and science and a population better educated in mathematics and science. The health of the National Science Foundation is central to that success."

The complete testimony of all four participants is available on the Web at `http://www.ams.org/government/statehb301.html`.

—Allyn Jackson