Mr. HORNE. Mr. Speaker, one of America’s great treasures is the National Academy of Sciences. Its distinguished members have rendered service to our government and the American people since the early years of the Civil War. President Lincoln saw the need for the availability of talented scientists to help their nation whether they are recommending various policies and to provide specific advice on complex scientific and technological problems both military and civilian.

At its 135th Annual Meeting earlier this week, Dr. Bruce Alberts, the President of the Academy reported on its work. I believe my colleagues and citizens generally will be interested in the work of the Academy to encourage a better scientific base by students throughout our land. Half of Dr. Alberts’ report expresses a major concern as to whether our country will be able to educate the two million new teachers which we will need in the next decade. Those new teachers must have a solid base in mathematics and science if the United States is to remain the leader in science and technology throughout the 21st Century.

The Academy has consistently built working relationships with other scientists and their academies throughout the world. That type of collaboration is essential if the countries—both large and small—are to meet the needs of their people and to provide the opportunities for a better life than is now possible in too many places.

The report of Dr. Alberts should be reassuring. His remarks entitled “Moving from Analysis to Action” show that our brightest minds agree that there is so much that needs to be done. Clearly, we can and must do better if we are to get this analysis right.

Welcome to this 135th annual meeting of the Academy. We had a very exciting year in Washington in 1997. When I spoke last April, our role as an independent adviser to the nation was threatened by a legal ruling that applied the Federal Advisory Committee Act to the operations of the Academy. Because of a great deal of very hard work by many people, the threats that started in January 1997 ended in November, when Congress passed a bill that ensures our committees are kept free from government control. The tremendous support we received from the federal administration and from so many members of Congress is deeply appreciated, and I think it’s time to recognize the value they place on the objective advice that we provide to the nation.

As is appropriate, much of the advice we provide focuses on the policies needed to support our vigorous scientific research enterprise. Especially influential are the reports of our Committee on Science, Engineering, and Public Policy, known as COSEPUP, under the leadership of Academy member Phil Griffiths. Their analysis of President Clinton’s 1998 budget last week is a prime example of this. This report focuses on the federal science and technology component of that budget, an important concept that was developed in the 1995 report of an Academy committee chaired by Frank Press. COSEPUP will provide this analysis every year, making sure that this crucial part of the federal investment in science is focused.

COSEPUP also is deeply engaged in a very important study dealing with the implications that the Government Performance and Results Act has for basic research. This new law, known as GRAPE, requires all agencies to set goals and to use performance measures for management and budgeting. It is intended to encourage greater efficiency and accountability in Federal programs. But if not implemented wisely, it could have a negative effect on the research enterprise—an effect that we are working hard to avoid.

For the remainder of this talk, I want to focus on just two issues: education, and science in its international context. I want to begin with the education imperative.

At this session last year, I discussed the eighth-grade results in the Third International Mathematics and Science Study (TIMSS), where U.S. students ranked about average in both science and math among 41 countries. This spring, the test results for our fourth high school seniors showed that they had done even worse in this international comparison. Many Americans didn’t believe it. Column after column ran on the opinion pages of the nation’s major newspapers, challenging the results. The world’s undisputed leader in science and technology produce a population of young people with such poor science and mathematics skills? Recall that this was a test in which students at the end of secondary school from 21 countries participated, and U.S. students out-performed only two countries. Could these poor results reflect either a flaw in the exam, or an unusual bimodal distribution in the U.S. performance— with the top 10 percent of our students scoring very high and the bottom 10 percent of our students scoring very low? Unfortunately, the answer is no. TIMSS also included a comparison across countries of the very best students in both advanced mathematics and physics. The results are on the next slide. Here, there was not a single nation that we outperformed.

If we examine U.S. scores on our own national examinations, we find that the performance of our students has been improving at a gradual pace since 1970. What the TIMSS results mean in fact is that, while we have been improving our science and mathematics education slowly, many other nations of the world have been doing so at a faster rate.

Clearly, we can and must do better if we are to remain a productive nation throughout the next century. This Academy has been trying to play a major role in science and math education for many years. I would like to briefly describe some of the constructive ways in which we can be even more effective, given the crises that started in January 1997 and the result of this fall’s midterm election.

I submit these wise remarks for the RECORD.
minutes, I will explain what the Academy hopes to be able to do in specific areas.

I start with state and national examinations. As indicated by the next slide, at present, test results are treated as authoritative in deciding who gets into what schools, and the textbooks and the “scoring machines” don’t look for brilliant science students, the scoring machines at the Educational Testing Service will think you did. Their tests, the scoring machines at the Educational Testing Service, will think you did. Their tests, the latest study guide called “Cracking the SAT II: Biology Subject Test”: “We’ll show you that you don’t really have to understand anything. You just have to make a couple of simple associations, like these. Aerobic respiration with: presence of oxygen more ATP produced. Anaerobic respiration: without oxygen less ATP produced. When we get through, you may not really understand much about the difference between aerobic and anaerobic respiration. But you can do the major test.”

Whether or not you understand your answer, the scoring machines at the Educational Testing Service will think you did. Their scoring machines look for blank answers and test the students and they don’t look for understanding. Stick with us, and you’ll make the scoring machines think you did.

The textbooks that teach to such tests, as well as the tests themselves, stand in powerful contrast to our view of education as a valuable experience. Is it any wonder that an extensive analysis of the attitudes toward schooling of 20,000 middle-class American adolescents shows that 40 percent of them are completely disengaged from what is going on in the classroom? These young Americans place no value on what is being taught, and they correspondingly pay no attention to it. The result is that this generation has been placed on a decline of parental and community values. But when one looks at the science curriculum and the science tests that these students face, one cannot help but wonder whether a great deal of the blame does not instead belong to the excruciatingly boring material that they are expected to learn.

The Academy has been working to improve the science achievement tests used for college admissions for more than six years. We began by encouraging both the College Board and the Educational Testing Service in discussions about their science exams. More recently, we have been working with the American Institute of Physics and the Association of American Universities to encourage them to develop more rigorous tests that are aligned with the standards we are seeing some progress in all of these endeavors.

Let’s turn now to the districts that govern our schools. What can be done about the fact that so many of our school systems are dysfunctional organizations that not only fail to support teachers with the incentives, resources, and training that they need, but place burdens upon teachers that make it almost impossible for them to do their job well?

We will never have quality education for most of our children unless school systems can transform themselves into effective organizations that spread good instruction throughout all of their schools. Our Center on Science, Mathematics, and Engineering Education provides professional development programs that focuses on school-district improvement. A small group — led by Ray Cortines, previously San Francisco’s school superintendent, and Richard Ravitch, New York City schools, and Robert Waterman, an expert in corporate management who co-authored “In Search of Excellence” — is attempting to learn from studies of the 20 or so effective school districts in the United States and Canada that might serve as organizational models. My personal belief is that we need to make major progress in U.S. education until we can successfully attack this issue head-on.

I want to end this part of my discussion by focusing on the education and recruitment of teachers. We know that far too few of them have the understanding of science or math that they need to be able to teach these subjects effectively in schools today. We also know that the preparation for teaching provided to the majority of these teachers is inadequate. Teachers are generally taught pedagogy, divorced from any subject matter, whereas to be a good math teacher, one needs to be able to explain how to teach math. And to be a good science teacher, one needs focused preparation on how to teach science. Moreover, we seem to be losing teachers at a rate that one cannot learn everything that he or she needs to know during their college years, but in reality, a teacher should be provided with an experienced, expert mentor, along with continuous professional development. Doctors don’t graduate from medical school and practice medicine for 30 years with only their initial training. Similarly, when science evolves at an ever-increasing rate, the professional development of science teachers must become a non-ending process that is deeply embedded in each school district.

An enormous turnover of teachers will occur during the next 10 years, when it is estimated that some 2 million new teachers will be needed. What might the Academy do to address the urgent national need for talented teachers in education, I believe that the world wide Web offers a potentially powerful potential for creating dynamic change. This summer, the Center on Science, Mathematics, and Engineering Education is planning a project in which we bring together the nation’s best teacher educators in middle school mathematics. We propose to have these individuals attend a revolving “summer camp” where they demonstrate how they do what they do in teacher development — using their very best video recordings of student exercises. The aim is to pool the best of these materials to create high-quality “shareware” for teacher preparation that can be made freely accessible on the Web. We have not yet been able to reform teacher education through policy studies and books aimed at university faculty and deans. But perhaps we can reform from below by using such Web sites to make all students aware of the preparation they should expect from their colleges and universities, if they are to become effective teachers.

If the Academy is going to have a profound impact on the quality of science education, we need to encourage all senior scientists and mathematicians to stress the importance of teaching as a career. Simultaneously, we need to lower the bar to entry for motivated and talented young scientists from even considering teaching as a career. Here I cite as a model the Teach for America Program, which recruits talented undergraduates to spend two years teaching in some of our nation’s most desperate schools. Remarkably, studies show that these teachers perform better despite an initial handicap stemming from their having received only six weeks of summer “boot camp” training in how to teach. About the third year, as they ged their two-year commitment, and many become leaders in their schools and school districts.

In the early 1990s, the Carnegie Commission on Science, Technology, and Government published a series of reports emphasizing the need for a greatly increased role for science and scientists in international affairs. Several of the members of the Academy were leaders in that effort. As the Commission pointed out, there are tremendous unexploited opportunities for the scientific community in the international arena. In a world full of conflicting cultural values and competing needs, nowhere share a powerful common culture that respects honesty, generosity, and ideas independently of their source or rewarding merit. A major aim of this Academy is to strengthen the ties between scientists and their institutions around the world. Our goal is to initiate a scientific network that becomes a central element in the interactions between nations — increasing the level of rationality in international discourse, while enhancing the influence of all countries everywhere in the decision-making processes of their own governments.

I am pleased to announce that we recently received a letter from the Department of State in which Secretary Madeleine Albright requests that we help the State Department determine “the contributions that science, technology, and health can make to foreign policy, and how the Department might better carry out its responsibilities to that end.” This request was encouraged by our Public Welfare Medalist, William Golden, whose advice and help on this matter has been crucial.

What are the main principles that should underlie our response to the State Department? I would like to suggest consideration of the four ideas shown on the next slide, which I will briefly discuss:

Science Can Be A Powerful Force for Promoting Democracy. The vitality of a nation’s science and technology enterprise is increasing becoming the main driver of economic advancement around the world. Success requires a free exchange of ideas, as well as universal access to the world’s great store of knowledge. Historically, the growth of science has helped to spread democracy, and this is even more true today.

Many governments around the world exert power over their citizens through the control of information. But restricting access to knowledge has proven to be self-destructive in the long run. The advanced economies of the modern world. The reason is a simple one: The world is too complex for a few leaders to make wise decisions about all aspects of public policy. Thus, in a recent article in the Washington Post titled, “Beijing Spring: Talk of Reform,” I was pleased to read that the Chinese were bringing information they had been published in an official Chinese weekly: “Only in a democratic environment can people dare to voice new opinions and can their wisdom be fully brought into play. If we don’t encourage people to think freely and voice new opinions,
The communications revolution also is driving a great transformation in education. Already, the Web is being used as a direct teaching tool, providing virtual classrooms and laboratories into which one can log on. As a result, a course taught at one site to be taken by students anywhere in the world. Such technologies present an enormous opportunity to use scientific and technical knowledge everywhere—an ability that will be absolutely essential if we are to resolve more rational uses of available world in the 21st century.

Science Academies Can Be A Strong Force For Wide Policy-making. In preparing for the future, we need to scenario planning, and therefore work with a tiny part of the world's people. In the 1960s, seven out of every eight children born will be developing in a growing in up a developing nation. As the world turns we need to adopt the more effective mechanisms for providing scientific advice internationally—particularly in view of the overwhelming needs of this huge population.

In 1993, the scientific academies of the world met for the first time in New Delhi in order to address world population issues. The report observed that the global food supply cannot increase. At the same time, the African food supply? At present, I see large numbers of talented, idealistic young people in our universities who would welcome the challenge of working on such urgent scientific problems. But the many opportunities to use modern science in behalf of the developing world remain invisible to most scientists, especially in the less developed world. As you know, we are trying to make this invisible knowledge usable.

Electronic Communication Networks Make Possible A New Kind of World Science. In looking to the future, it is important to recognize that we are only at the very beginning of the communications revolution. For example, by the year 2002, we are promised by the year 2002, we are promised by 2002, we are promised by the year 2002, we are promised by the Carnegie Commission, which led to the massacres in Rwanda were in large part triggered by conflicts over limited food resources. We must expect more such conflicts in the future, unless something dramatic is done now. How might the tremendous scientific resources of the developed world be directed toward the problem of increasing the African food supply? At present, I see large numbers of talented, idealistic young people in our universities who would welcome the challenge of working on such urgent scientific problems. But the many opportunities to use modern science in behalf of the developing world remain invisible to most scientists, especially in the less developed world. As you know, we are trying to make this invisible knowledge usable.

Electronic Communication Networks Make Possible A New Kind of World Science. In looking to the future, it is important to recognize that we are only at the very beginning of the communications revolution. For example, by the year 2002, we are promised by several commercial partnerships that good connectivity to the World Wide Web will be available in the year 2002, we are promised by several commercial partnerships that good connectivity to the World Wide Web will be available in the year 2002, we are promised by several commercial partnerships that good connectivity to the World Wide Web will be available in the year 2002, we are promised by several commercial partnerships that good connectivity to the World Wide Web will be available in the year 2002, we are promised by several commercial partnerships that good connectivity to the World Wide Web will be available in the year 2002, we are promised by several commercial partnerships that good connectivity to the World Wide Web will be available in the year 2002, we are promised by several commercial partnerships that good connectivity to the World Wide Web will be available in the year 2002, we are promised by several commercial partnerships that good connectivity to the Web for developing nations. We also are hoping to spread this practice widely by promoting the development of electronic journals, since there is almost no cost involved in providing such free electronic access.

The next problem that scientists in developing countries will face is that of finding the information they need in the mass of published literature. In 1997, the U.S. government set an important precedent. We announced that the National Library of Medicine's indexing of the complete biomedical literature would be made electronically available for free on the Web around the world, at their freely available Web site, “PubMed.” A similar ability to search the complete agricultural and environmental literature should follow. In my view, the Public Library of Science, founded by David Lipman, is presently investigating what can be done to produce such a site.

The Importance of a Clear Vision. For both education and international science, we need a strong consensus for where we are heading and how we want to get there. I would argue that these are the challenges we face in reaching out boldly in the two main areas I have emphasized—education and international science.

I would like to end my talk by briefly describing three common challenges that we face in reaching out boldly in the two main areas I have emphasized—education and international science.

1. The Need to Rethink How We Measure Progress. As I speak, the U.S. economy is booming. But as I look around our push shopping malls, observing the rush of our citizens to consume more and more, I wonder whether this is really progress. In thinking about how our nation can prove itself as the world leader it purports to be, we might do well to consider the words of Franklin Roosevelt that are engraved on his new memorial, a short distance from this Academy: "Nothing in this world can add more to the abundance of those who have much; it is whether we provide enough for those who have little." Whatever other points we might have pointed out, every year the inequities of wealth are becoming greater, both within our nation and around the world. At the national level, improving education for all Americans is the best way to reduce such inequities. Likewise, the spread of scientific and technological information throughout the world, involving a generous sharing of knowledge resources by our nation's scientists and engineers, can improve the lives of those who are most in need worldwide.

2. The Need to Learn From Action-Oriented Research and Experience. In his work for the Carnegie Commission, Jimmy Carter made one of the most important contributions to the world toward more rational approaches to development: "Hundreds of well-intentioned international aid agencies, with their own priorities and idiosyncrasies, seldom cooperate with one another. Instead, they compete for publicity, funding, and access to potential recipients. Overburdened leaders in developing countries, whose options are often reorganized, confront a cacophony of offers and demands from donors." Replace a few words, and exactly the same could be said of our priorities for our nation's past attempts at education reform.

3. The Need to Expand Our Roles as Advisers in Both Government and Industry. My contacts with education projects in the United States and with development projects in agriculture have made me aware of a common failing in these important human endeavors. Many experiments are carried out to try to improve these systems. A few are very successful, but many turn out to be failures. The natural inclination is to hide all of the failures. But as every experimental scientist knows, progress is made from learning from what did not work, and then improving the process by incorporating this knowledge into a new and better design. As I look around the world, I would hope that we could lead the world toward more rational approaches to improving both education and international science.
Mr. BONIOR. Mr. Speaker, I am honored to have the opportunity to recognize the 30th anniversary of the Port Huron Museum of Arts and History. In 1968, the Port Huron community organized a volunteer effort to open the doors of the Port Huron Museum of Arts and History. In the beginning, the Museum relied solely on volunteers to operate the institution. Even though the Museum now employs a small staff of full-time, part-time, and seasonal help; more than 24,000 volunteer hours were contributed in 1997. Throughout the past 30 years, many people have worked together to ensure that the Museum continues to grow and mature. They have dedicated their talents to create a lasting cultural and educational resource for the Port Huron area.

Located inside the 1904 Carnegie Library, the Port Huron Museum of Arts and History is the home of many exhibits dedicated to local history, natural history, and art. The Museum is committed to bringing a variety of events to the public such as the Festival of International Cultures and the Blue Water Native American Pow Wow. In 1990, the Museum was proud to dedicate the Huron Lightship, a National Landmark, as its first offshore facility. Not only is Port Huron Museum a valuable resource to the community, it is also recognized throughout the State of Michigan and the nation as center for research in folk arts, archaeology, and Great Lakes marine lore.

Throughout the years, the Museum of Arts and History has contributed greatly to the cultural diversity of Port Huron. The staff and volunteers of the Port Huron Museum have worked hard to encourage an appreciation and understanding for art and history in our community. I would like to congratulate all the people who have made the 30th Anniversary of the Port Huron Museum of Arts and Sciences a reality.

THE LOUDEST VOICE

HON. FRANK R. WOLF
OF VIRGINIA
IN THE HOUSE OF REPRESENTATIVES
Monday, May 4, 1998

Mr. WOLF. Mr. Speaker, I want to begin by talking for a moment about two groups that aren’t widely discussed here on the House floor. The first is Mother Jones and the second is USA*Engage. Then I want to focus a little bit on how the history of this town and of St. George’s parishioners on a pilgrimage to Israel and Egypt. The hard work and study of Father C. David Williams have led a group of St. George’s parishioners on a pilgrimage to Israel and Egypt.

Father Williams has received his Doctorate from the Graduate Theological Foundation in Donaldson Indiana under the auspices of the Roman Catholic Archdiocese of Milwaukee, Oxford University in England, and the Diocese of Canterbury, England. Father Williams has just recently finished his studies at Oxford University. In his quest to serve his community, the Father organizes the growing Community Development Corporation out of St. George’s Episcopal Church and has led a group of St. George’s parishioners since September 4, 1984. Previously, Father Williams served as the Senior Chaplain of the House of Detention at Riker’s Island, New York City from 1979 to 1984. During that time, from 1982 to 1984, the Father also served as Convener of the Black Caucus of the Episcopal Diocese of New York. Father Williams is currently the Convener of the Black Caucus of the Diocese of Long Island.

Father Williams has served as Rector of the historic St. George’s Episcopal Church in Bedford-Stuyvesant since September 4, 1984. Previously, Father Williams served as the Senior Chaplain of the House of Detention at Riker’s Island, New York City from 1979 to 1984. During that time, from 1982 to 1984, the Father also served as Convener of the Black Caucus of the Episcopal Diocese of New York. Father Williams is currently the Convener of the Black Caucus of the Diocese of Long Island.

Father Williams has served as Rector of the historic St. George’s Episcopal Church in Bedford-Stuyvesant since September 4, 1984. Previously, Father Williams served as the Senior Chaplain of the House of Detention at Riker’s Island, New York City from 1979 to 1984. During that time, from 1982 to 1984, the Father also served as Convener of the Black Caucus of the Episcopal Diocese of New York. Father Williams is currently the Convener of the Black Caucus of the Diocese of Long Island.

Father Williams has served as Rector of the historic St. George’s Episcopal Church in Bedford-Stuyvesant since September 4, 1984. Previously, Father Williams served as the Senior Chaplain of the House of Detention at Riker’s Island, New York City from 1979 to 1984. During that time, from 1982 to 1984, the Father also served as Convener of the Black Caucus of the Episcopal Diocese of New York. Father Williams is currently the Convener of the Black Caucus of the Diocese of Long Island.

In 1968, the Port Huron community organized a volunteer effort to open the doors of the Port Huron Museum of Arts and History. In 1997, the Port Huron Museum of Arts and History. In the beginning, the Museum relied solely on volunteers to operate the institution. Even though the Museum now employs a small staff of full-time, part-time, and seasonal help; more than 24,000 volunteer hours were contributed in 1997. Throughout the past 30 years, many people have worked together to ensure that the Museum continues to grow and mature. They have dedicated their talents to create a lasting cultural and educational resource for the Port Huron area.

Located inside the 1904 Carnegie Library, the Port Huron Museum of Arts and History is the home of many exhibits dedicated to local history, natural history, and art. The Museum is committed to bringing a variety of events to the public such as the Festival of International Cultures and the Blue Water Native American Pow Wow. In 1990, the Museum was proud to dedicate the Huron Lightship, a National Landmark, as its first offshore facility. Not only is Port Huron Museum a valuable resource to the community, it is also recognized throughout the State of Michigan and the nation as center for research in folk arts, archaeology, and Great Lakes marine lore.

Throughout the years, the Museum of Arts and History has contributed greatly to the cultural diversity of Port Huron. The staff and volunteers of the Port Huron Museum have worked hard to encourage an appreciation and understanding for art and history in our community. I would like to congratulate all the people who have made the 30th Anniversary of the Port Huron Museum of Arts and Sciences a reality.