Senator GRAMM to recommit the conference report on the Agricultural Research bill. I strongly oppose Senator GRAMM'S motion.

The 1996 welfare law allows refugees to receive federal benefits, including SSI, Medicaid and food stamps, for their first five years in the United States. It made this exception because refugees and asylum-seekers generally come to the United States with little more than the shirts on their backs after escaping persecution abroad. They have no sponsors. The may have disabilities which make it difficult to work. They need time to get on their feet, and begin to recover from the persecution they fled in their former country.

After five years in the United States, refugees can apply for citizenship. Unfortunately, there are serious backlogs of naturalization applications at INS. In many parts of the country, it takes two years to complete the naturalization process and obtain citizenship—and these backlogs are not expected to go down in the near future. Often, the earliest a refugee will gain citizenship is after seven years in the United States.

As we did last year with SSI and Medicaid, the Agricultural Research bill extends the time that a refugee can receive food stamps from five to seven years. Senator GRAMM wants to deny this extension to refugees who entered the United States after the welfare law was enacted.

If we do not extend this time limit from five to seven years, thousands of refugees who have applied for citizenship could lose food stamps as they wait in the naturalization backlog for their applications to be processed.

This group includes refugees like Dien Nwin, who fled Vietnam in 1992 with his wife and children. Dien fought on the side of the United States during the Vietnam War and was imprisoned in a Communist re-education camp for 9 and-a-half years. He was worked hard and supported his family for over five years. He applied for citizenship, but he's stuck in the backlog.

Now, Dien and his family have fallen on hard times. In the past two years, Dien has developed nasal cancer and lung cancer. He has been unable to work since then, and his family has had to use food stamps to survive. Dien is lucky. He entered the United States before the passage of the welfare bill. Under Senator GRAMM's motion to recommit, Dien would be cut off from receiving food stamps after his initial five years in the United States.

Last year, over 25,000 refugees came to the United States fleeing religious persecution in the Former Soviet Union. These refugees included Jews, Evangelical Christians, Mormons and other religious minorities fleeing the restriction of their religious liberties. Under Senator GRAMM's amendment, these refugees will only be eligible for food stamps for their first five years in the United States. Since refugees cannot apply for naturalization until they have lived in the United States for five years, there will be a gap in their food stamp eligibility, depending on how long the naturalization backlog is at the time they apply.

The naturalization backlog is expected to increase without an increase in INS funding. Record numbers of legal immigrants are applying for citzenship—more than a million per year. This number is not expected to decrease.

Few actions are a more important part of our time-honored commitment to freedom around the world than opening America's doors to those who are denied freedom and face persecution in their own lands.

Whether it is Vietnamese fleeing communism, Bosnians exiled by ethnic cleansing, Jews from the former Soviet Union fleeing anti-semitism, Burmese seeking safe haven from oppression, or Africans escaping political retribution and genocide, our refugee program stands ready to aid, protect, and resettle those who need our help. Part of such help is ensuring that these refugees' needs are met in their new home in this country. Those needs will not be met if their eligibility for food stamps is not extended to seven years.

I urge my colleagues to oppose Senator GRAMM's motion.

Mr. LUGAR addressed the Chair.

The PRESIDING OFFICER. The Senator from Indiana.

Mr. LUGAR. Mr. President, I want to summarize our debate—which has been a good one this morning—by saying that it is very important that we act today to pass the conference report. As the distinguished Senator from Mississippi stated eloquently and correctly, failure to do that will throw into chaos farmers who are now planting and who count upon crop insurance, reformed albeit as we have reformed it, as an underlying safety net in the year of El Nino, remarkable weather circumstances, it is unthinkable simply to kick away that safety net through our indifference.

Secondly, Mr. President, the agriculture research, which has been characterized as an entitlement, along with crop insurance and other provisions, of course, is a 5-year program, as is our farm bill program.

We have payments to farmers and Conservation Reserve Program payments for the environment. We have designated $120 million for vital research which we believe is necessary simply to fight back the pest diseases that are now jeopardizing our growth.

Mr. President, the yield of wheat in our country has been flat in yield per acre over the last 15 years of time. The breakers are not occurring, and we must triple and not have a zero gain.

Finally, let me simply say that there will not be people lined up all over the world trying to get into America to ruin our welfare reform. As a matter of fact, welfare reform has brought about a better America. This bill will help preserve that in a humane way. Provisions that were made under SSI for income for the very persons who are being talked about today—the elderly, the children, the disabled, and those who have come with a well found sense of persecution to escape torture—will, in fact, be aided in a humane way that I believe all Senators would want to support.

I thank the Chair.

NATIONAL SCIENCE FOUNDATION AUTHORIZATION ACT OF 1997

The PRESIDING OFFICER. Under the previous order, there will now be 10 minutes of debate equally divided on S. 1046, which the clerk will report.

The assistant legislative clerk read as follows:

A bill (S. 1046) to authorize appropriations for fiscal years 1998 and 1999 for the National Science Foundation, and for other purposes.

The Senate proceeded to consider the bill.

Mr. JEFFORDS addressed the Chair.

The PRESIDING OFFICER. The Senator from Vermont.

AMENDMENT NO. 2386

(Purpose: To authorize appropriations for fiscal years 1998, 1999, and 2000 for the National Science Foundation, and for other purposes)

Mr. JEFFORDS. I understand there is a substitute amendment at the desk. I ask for its immediate consideration.

The PRESIDING OFFICER. The clerk will report.

The assistant legislative clerk read as follows:

The Senator from Vermont (Mr. JEFFORDS), for Mr. MCCAIN, Mr. HOLLINGS, Mr. JEFFORDS, Mr. KENNEDY, Mr. FRIST, Mr. ROCKEFELLER, and Ms. COLLINS, proposes an amendment numbered 2386.

Mr. JEFFORDS. Mr. President, I ask unanimous consent that reading of the amendment be dispensed with.

The PRESIDING OFFICER. Without objection, it is so ordered.

(The text of the amendment is printed in today's RECORD under ''Amendments Submitted.'')

Mr. MCCAIN. Mr. President, I rise to offer an amendment to the S.1046, the National Science Foundation Authorization Act of 1998. This amendment authorizes the National Science Foundation for a period of three fiscal years, 1998, 1999 and 2000.

I am very pleased to see that this amendment represents a bi-partisan effort by both the Commerce and the Labor Committees. These two Committees share jurisdiction of the National Science Foundation. I would also like to thank the co-sponsors of this amendment, Senators JEFFORDS, HOLLINGS, KENNEDY, FRIST and ROCKEFELLER, for their support of this amendment.

The National Science Foundation (NSF) plays a critical role in the development of much of this country's science and technology infrastructure. Its efforts cover a variety of issues

such as education—from the kindergarten to the post-doctorate levels—research and development, and Internet development.

Given that half of the new economic growth in the economy is due to technological advancements, the role of the National Science Foundation in basic research is an important one. Many companies in the private sector have indicated that they cannot afford to conduct the long term basic research required for many of these technological advances. They have come to rely upon the basic research of the National Science Foundation and other government agencies as the basis for many of their commercial products. For it is through the commercialization process of these research results that the government and the American public benefits. From this process, new industries are started, jobs are created, and many new products are generated to improve our quality of life of all people.

Because of the research at the National Science Foundation, we have the Internet today. The growth of the Internet and the role it is playing in electronic commerce today is far beyond anyone's expectations when the project was started. We look forward to the National Science Foundation's involvement in the Next Generation Internet project.

In a time when we are hearing of the terrible performance of America's students in math and science education, it is important that we do our jobs as members of the Senate and authorize agencies' such as the National Science Foundation to ensure that the federal government is doing its share to improve upon the lives of all Americans through education and other related research activities.

I urge the other members of the Senate to support this amendment and the final passage of the bill. Again, I would like to thank the co-sponsors of this amendment for their support and hard work.

Mr. JEFFORDS. Mr. President, I know of no objection to the amendment. I urge its adoption.

The PRESIDING OFFICER. Without objection, the amendment is agreed to.

The amendment (No. 2386) was agreed to.

Mr. JEFFORDS. Mr. President, it is a great pleasure to come before you today to seek Senate approval of S. 1046, the National Science Foundation Authorization Act of 1998. I introduced this legislation, along with my colleagues Senators KENNEDY, FRIST, and COLLINS, on July 22, 1997. The bill was reported unanimously by the Senate Committee on Labor and Human Resources on October 15, 1997. This bipartisan proposal will be further enhanced by the manager's package I am bringing to the floor on behalf of my colleagues Senators MCCAIN, HOLLINGS, KENNEDY, FRIST, ROCKEFELLER, and COLLINS. This package reflects similar bipartisan cooperation, builds upon the foundation contained within S. 1046 and contains improvements proposed by both Committees. This legislation will make an important investment in our nation's scientific and technological future.

S. 1046, as amended, will authorize more than $9 billion for research and development activities, and $2 billion for math and science education activities over the next 3 years. The bill will support more than 19,000 projects at 2,000 colleges, universities, primary, elementary, and secondary schools across the Nation.

This authorization bill also recognizes that the future of science in this country will be determined by our basic educational policy. Two billion dollars is authorized over the next 3 years for K through 12 math and science systematic reform, undergraduate science education activities, graduate education, and efforts to advance the public understanding of science. These efforts will continue to contribute to improvements in the education we offer to our children and maintain a strong cadre of scientific leaders needed to remain competitive well into the next century.

S. 1046 provides a strong bipartisan response to the research and science education challenges facing the Nation.

The strong bipartisan support which NSF enjoys is a reflection of its historic contribution to both our national security and our economic competitiveness. The prominent role of science in the American war effort during World War II left us with a new appreciation of the importance of research in establishing and preserving economic and military security. Federally funded research led to the development of radar, sonar, blood plasma, sulfanilamide, penicillin and the atomic bomb. In 1944, President Roosevelt charged Vannevar Bush, his chief science adviser, with evaluating the most effective way to harness this technological infrastructure in peacetime. The Bush report—Science—The Endless Frontier—established a strategy and rationale for Federal support of basic research. The report argued, and argued correctly, that ''a nation which depends upon others for its new basic scientific knowledge will be slow in its industrial progress and weak in its competitive position in world trade regardless of its mechanical skill.'' This report provided the blueprint for creation of the National Science Foundation.

NSF was established in 1950 to ''develop and encourage the pursuit of a national policy for the promotion of basic research and education in the sciences.'' Following the 1957 Soviet launch of the Sputnik satellite, this mission was expanded to provide greater support for science education and literacy. Over the next three decades, NSF became the primary Federal sponsor of basic research in mathematics, physical sciences, computer science, engineering and environmental science at colleges and universities. Equally important to the future of our Nation, NSF became a catalyst for the reform of math and science education.

The manager's amendment which we are bringing to the floor authorizes more than $11 billion for research and development activities at NSF over the next three years—$3.5 billion in fiscal year 1998, $3.7 billion in fiscal year 1999, and nearly $3.9 billion in fiscal year 2000. This Federal funding will be very well invested. Although the National Science Foundation's budget accounts for only 4 percent of Federal research and development funding, NSF provides 25 percent of Federal support to academic institutions for research. NSF grants support more than 19,000 research and education projects at 2,000 colleges, universities, primary, elementary, and secondary schools, businesses, and other research institutions. Competition for these grants is fierce. NSF funds only about one-third of the 30,000 proposals it reviews annually and the grants that survive this review process represent the finest proposals that the research community can put forward.

The importance of this investment in basic research cannot be exaggerated. Over the past decade, private sector investment in research and development has eclipsed Federal investment in public science. However, the Federal investment in basic science is a major contributor to industrial innovation in the United States. A recent review of American industrial patent applications revealed that the Government or nonprofit foundations supported 75 percent of the main papers cited as the foundation for new industrial innovation.

A few of NSF's contributions illustrate the importance of our investment in basic research and development:

The Internet—Over the past decade, NSF has transformed the Internet from a tool used by a handful of researchers at the Department of Defense to the backbone of this Nation's university research infrastructure. Today the Internet is on the verge of becoming the Nation's commercial marketplace.

Nanotechnology and ''Thin Film''—50 years ago scientists developed the transistor and ushered in the information revolution. Today 3 million transistors can fit on a chip no larger than the first fingernail-sized individual transistor. NSF's investments in nanotechnology and ''thin films'' are expected to generate a further 1,000-fold reduction in size for semiconductor devices with eventual cost-savings of a similar magnitude.

Genetics—A great deal of attention is paid to the effort conducted by the NIH to map the Human Genome. What is often overlooked; however, is the critical role played by NSF in supporting the basic research that leads to the breakthroughs for which NIH justly receives so much credit. Research supported by NSF was key to the development of the polymerase chain reaction

and a great deal of the technology used for sequencing.

Magnetic Resonance Imaging—MRI technology is widely utilized to diagnose a wide array of illnesses. The development of this technology was made possible by combining information gained through the study of the spin characteristics of basic matter, research in mathematics, and high flux magnets. The Next Generation Nuclear Magnetic Resonance Imager, currently under construction, will allow for the identification of the 3-dimensional structures of the 100,000 proteins whose genes are being sequenced by the HGP.

Buckeyballs—One of the most exciting recent discoveries in the world of material science was the discovery of carbon-60. Although this occurs in nature, its discovery (which won the researchers a Nobel prize) was the product of work by astronomers. This in turn led to the discovery of the nanotube which has been found to be 100 times stronger than steel and a fraction of the weight. Nanotubes may produce cars that weigh no more than 100 pounds.

CD Players—CD players rely on data compression algorithms that were developed using an NSF grant. These algorithms were first used in the transmission of satellite data and now provide the foundation for new developments in data storage.

Jet Printers—The mathematical equations that describe the behavior of fluid under pressure provided the foundation for developing the ink jet printer.

Plant Genome—Research into the genome of a flower plant with no previous commercial value, led to the discovery of ways to increase crop yields, the production of plants with seeds having lower polyunsaturated fats and to the development of crops that produce a biodegradable plastic.

Artificial Retina—Researchers at North Carolina State University have designed a computer chip that may pave the way for creation of an artificial retina. Problems with bio-compatibility have been solved by researchers at Stanford who developed a synthetic cell membrane that adheres to both living cells and silicon chips.

Cam Corders—Virtually all camcorders and electronic devices using electronic imaging sensors are based on charge-coupled devices. These devices, sensitive to a single photon of light, were developed and transformed by astronomers interested in maximizing their capacity for light gathering.

I could go on at length about the many technological advances that we enjoy today that are attributable to basic research supported by NSF. These advances would not be possible, however, if we as a nation did not continue to train and support a cadre of the world's most talented researchers. S. 1046 recognizes the importance of maintaining an investment in human resources and authorizes more than $2 billion for the education and human resources directorate over the next three years. This directorate has primary responsibility for NSF's education and training activities. In contrast with the programs of the Department of Education, NSF science and math education programs are experiments which link learning and discovery. Proposals are selected by outside peer review panels on the basis of their potential to provide long-lasting and broad impact. NSF has made notable contributions in the areas of curriculum and instructional material development, professional development, and improved the participation in science research and science education of women, minorities, and individuals with disabilities. The legislation before you strengthens and enhances these efforts.

The Education and Human Resources Directorate also provides funding for the Experimental Program to Stimulate Competitive Research. As noted in the Committee report, this program plays an important role in ensuring that small states, like Vermont, build the capacity to more fully participate in NSF's research programs. The program has been particularly successful in developing infrastructure in those states where a limited research base has made the attraction and retention of young faculty, equipment purchases, network connections, human resource development, research project development, and technology transfer difficult. Such infrastructure building remains a crucial part of guaranteeing that the participating states are competitive and must be continued.

The Foundation has initiated a new co-funding effort which is designed to integrate the research community in the EPSCoR states more completely into the larger research community. As research funding for NSF increases in general, I expect that the matching requirements for cofunding will not result in the displacement of non-EPSCoR NSF funding which institutions would otherwise receive. I look forward to working closely with the Foundation to ensure continued growth in the co-funding initiative without reducing the amount available for standard grants.

And finally, I want to proudly note the partnership that has been forged between the National Science Foundation and the State of Vermont. NSF currently supports over 74 projects in the Green Mountain State. Grants have been provided to the Barre Town Elementary School, Middlebury College, Mountshire Museum of Science, Woodbury College, Cabot School, Charlestown Elementary School, St. Michael's College, JOHNSON State College, Trinity College, and the University of Vermont. In 1992, the Vermont Institute for Science, Math and Technology received a five-year award of $7.9 million to establish a collaborative statewide education reform effort linking business, higher education, government, and community sectors. This year, as a result of the success of this collaboration, NSF has elected to extend the award for an additional five years. In addition, Trinity College was this year awarded $1.2 million to improve the instruction of math and science in our primary, secondary, and elementary schools.

This legislation builds upon partnerships like that forged with the State of Vermont. It provides a strong bipartisan response to the research and science education challenges facing our Nation. I also want to note that it reflects the hard work of staff for both Committees. I particularly want to express my appreciation for the work of Scott Giles of my staff, Danielle Ripich, Marianna Pierce and Jonathan Halpern of Senator KENNEDY's staff, Floyd DesChamps of Senator MCCAIN's staff and Lila Helms of Senator HOLLINGS' staff and I urge all my colleagues to support this package.

I urge all of my colleagues to support this package.

Mr. KENNEDY addressed the Chair.

The PRESIDING OFFICER. The Senator from Massachusetts.

Mr. KENNEDY. Mr. President, I strongly support passage of the National Science Foundation Authorization Act. It is a privilege to join Senator JEFFORDS, Senator MCCAIN, and Senator HOLLINGS in sponsoring this bipartisan legislation, which looks to the future by strengthening our national commitment to research and development. It also ensures the continued success of the teacher training and professional development programs of the NSF. In addition, it will improve science and math education from kindergarten to graduate school, and help maintain America's competitive edge into the 21st century.

Few federal agencies deliver as much ''bang for the buck'' as the National Science Foundation. It is now funding 20,000 peer-reviewed science and education projects at more than 2,000 colleges, universities, schools, businesses and research facilities in all parts of the United States.

Last year, these projects involved 27,000 senior scientists, 21,000 graduate students, 28,000 undergraduates, 110,000 precollege teachers, and 14,000 students from kindergarten through the twelfth grade. Almost 15 million people are affected by NSF activities through museums, television programs, videos, journals, and outreach activities.

NSF accounts for 4 percent of total federal research and development funding. But it provides 25 percent of basic research support at academic institutions. It provides as much as half of all federal funding for research in fields such as mathematics, computer science, environmental science, and the social sciences.

NSF also plays an important role in training teachers and developing math and science curricula to prepare students for tomorrow's challenges. It promotes innovative education programs in partnerships with colleges, universities, elementary and secondary

schools, science museums, and state and local governments. These programs encourage the discovery of new knowledge and its application to real-world problems.

NSF support for basic research and science education has also had an important role in encouraging economic growth over the last fifty years. According to a recent study, each dollar that the federal government spends on basic research contributes 50 cents or more to the national output each year. In other words, investing in NSF pays for itself in two years. These benefits are spread throughout the economy, enhancing the productivity of the nation's workforce and improving the quality of life for all Americans.

At the Massachusetts Institute of Technology, for example, NSF funds have enabled scientists to explore the commercial applications of their research. Technology developed at MIT had a role in the launching of 13 companies in 1995. They manufacture products ranging from computer chips to communication networks. These enterprises have bolstered the state and local economies, and provided jobs and opportunities for many citizens. In fact, a 1997 report by BankBoston found that research and development at MIT has created 125,000 jobs in Massachusetts.

In our state, NSF is funding a wide range of other projects on the cutting edge of research. NSF grants have been instrumental in building the state's biotechnology industry, mapping the oceans at the Woods Hole Oceanographic Institute, developing new superconductors at the Material Research Science and Education Center at Harvard, and creating cooperative partnerships with schools, parents, businesses, and community organizations to strengthen math and science education.

Nationwide, NSF grants cover a broad range of projects from providing health care to fighting crime to protecting the environment. Specific grants are improving the treatment of arrhythmia, facilitating more accurate identification of crime suspects, developing new biotechnology techniques to cleanup hazardous waste sites, enhancing the speed of semiconductors in processing information, and even analyzing the Antarctic meteorite to determine whether life existed on Mars.

NSF funds benefit the humanities as well. The Next Generation Internet Project will give researchers access to information from the world's libraries and museums at rates that are 100 to 1,000 times faster than today's Internet.

This authorization Act will put research and development on a more secure footing over the next two years. It will increase NSF funding by 10 percent in FY1999 and 3 percent in FY2000, which are consistent with the levels recommended in President Clinton's FY1999 budget. The increased funding will provide larger award amounts, so that scientists can undertake longer-range projects.

The legislation also strengthens efforts to improve science, mathematics, engineering, and technology training for teachers and students. In addition, it authorizes the Office of Science and Technology Policy in the White House to prepare a report analyzing indirect costs, which play a vital but little understood role in federal R&D spending.

The National Science Foundation is doing an outstanding job in fulfilling its missions. Passage of this bill will strengthen America's leadership in science and technology, and I urge all of my colleagues to support this important legislation.

I congratulate our chairman for bringing us to this point in the legislative process.

Mr. MCCAIN. Mr. President, I would like to engage Senator LOTT, Senate Majority Leader, and Senator JEFFORDS, Chairman of the Labor and Human Resources Committee, in a colloquy on certain programs within the National Science Foundation.

Mr. LOTT. I would be pleased to join Senator MCCAIN and Senator JEFFORDS in a colloquy on this subject.

Mr. MCCAIN. As Chairman of the Commerce Committee, I have noted with great pleasure the success and impact on the NSF's program to establish outstanding research and education centers at colleges and universities in partnership with industry. These centers are making great contributions to research, science, and technology education, and the economic development and global competitiveness of our nation.

Mr. JEFFORDS. As Chairman of the Labor Committee, I too have been a strong supporter of the NSF's efforts to strengthen research and education efforts at colleges and universities across the nation. NSF provides support to over 2000 colleges and universities and nearly 17,000 researchers nation-wide.

Mr. LOTT. A particular success is the Engineering Research Centers Program which has stimulated focused university-industry partnerships in research and education, and has served as a catalyst for economic development within the United States. Much success can be attributed to the Foundation's leadership in ensuring each center establishes a clear vision and conducts careful strategic planning involving their industry partners. Among the impacts of this program are: Next generation engineering systems developed from new knowledge discoveries and new technological developments; Technology transferred to hundreds of companies and governmental agencies; Technical assistance and training provided for industry and government; Thousands of undergraduate and graduate students involved in the research of the centers and exposed to next generation systems research and development; and Outreach to K–12 and to underrepresented groups.

NSF Science Technology Centers and other NSF university centers have likewise cultivated strong university-industry affiliations with centers focused on specific research areas related to industry needs. For example, the modern Internet browser was developed at the NSF National Center for Supercomputing Applications at the University of Illinois; a turbomachinery computational model developed at the Engineering Research Center for Computational Field Simulation at Mississippi State University is now used by all jet engine manufacturers; the Center for Molecular Biotechnology at the University of Washington is developing tools for industry use to analyze and interpret the information content of biological molecules such as DA and proteins, to analyze and interpret the information content to biological molecules; and the Center for High Pressure Research at the State University of New York at Stony Brook works with several companies to develop new ways that industry can use high-pressure technology to produce exotic materials, such as industrial-grade diamonds. Hundreds of similar contributions can be cited from these and other NSF-funded university centers.

I believe this program should be greatly expanded and that the NSF should become even more active in ensuring the development of long-term vision and strategic planning of each center. Further, NSF should build on successful centers and seek ways to sustain the investment with continual support when appropriate. Areas that show great potential for the future include: computation engineering, biotechnology and bioengineering, manufacturing, and industrial systems, electronics and communications systems, materials processing including polymers and composite materials, manufacturing systems, remote sensing systems and technologies, and optical systems as well as ship building, telecommunications and super-computing supercomputer technology for university research centers.

Mr. MCCAIN. I thank the distinguished Majority Leader and the Labor Committee Chairman, for their insights into these matters and how important research and education is to the overall National economy.

Mr. JEFFORDS. The distinguished Majority Leader should be commended for his strong support for basic scientific and engineering research and I look forward to working with him to strengthen the engineering research centers program.

Mr. LOTT. I also would like to thank Senator MCCAIN and Senator JEFFORDS for their leadership in these areas of science and technology.

SMALL BUSINESS INNOVATION RESEARCH PROGRAM

Mr. ENZI. I would like to raise an issue that has been brought to my attention since the Labor Committee reported this bill in October. It relates to the Small Business Innovative Research (SBIR) program and I want to