

“Southern 500”, it has also earned the ominous and accurate nickname as the track “too tough to tame”.

For five decades, people from around the world have traveled to this otherwise quiet city in order to be spectators in this contest of driving and mechanical skill. The atmosphere is festive, with the infield and stands packed to capacity with racing enthusiasts who are willing to brave the cruel heat, stifling humidity, and unforgiving sun in order to see which driver is able to prove that his mettle is equal to the asphalt and curves that make-up this 1.36 mile track. In 1950, the year of the first race, 25,000 people turned out as spectators, this year, there will be more than 100,000 race fans at Darlington, and millions more around the globe will follow the action on radio or television. That is a testament to both the popularity of NASCAR and the respect that the Darlington Raceway has among drivers and race fans.

To those who have never made it to Darlington, it might be hard to understand the attraction of this sport, but for those of us who have witnessed this race up close, there is no question why people love to go to this track. There is something truly awe inspiring about standing close to one of the turns at Darlington and watching stock cars engineered and built to the ultimate standards roll past as they race to be the first to finish the 500 grueling miles that must be completed in order to win the “Southern 500”. These cars rumble past at well over 100 miles-per-hour with only inches between bumpers, and as they go through one of the four turns of the track, the earth literally shakes under one’s feet and the air is thick with the deafening roar of engines and the fumes of high performance fuel. It takes individuals of tremendous mechanical skill to put one of these vehicles on the track, and other men of incredible determination, skill, and grit to compete in these races. One cannot help but come away amazed at the abilities of these drivers and crews, or at the challenge the Darlington Raceway presents to these individuals.

In 1950, I was serving in my final year as Governor of the State of South Carolina, and on September 1st of that year, I had the distinct honor and privilege of cutting the ribbon that opened the Darlington Motor Speedway. Nothing would give me greater pleasure than to be able to celebrate the golden anniversary of the opening of the Speedway in person, but regrettably my schedule does not permit me to be in Darlington early next month. Instead, I have chosen to take to the Senate Floor to salute the vision of Harold Brasington, the man who built the Darlington Speedway. I also want to salute Jim Hunter, President of Darlington Raceway; Bill France, Jr., the President and CEO of International Speedway Corporation, as well as the President of NASCAR; and most importantly, to express my greetings and

well wishes to all the drivers, crews, and fans who will descend there on September 5, 1999 to see who will tame this track.

THE FEDERAL RESEARCH INVESTMENT ACT

Mr. KENNEDY. Mr. President, I welcome this opportunity to express my strong support for S. 296, the Federal Research Investment Act, which was introduced earlier this year by Senator FRIST and Senator ROCKEFELLER, and was reported favorably by the Commerce Committee earlier this month. This legislation is important for the future of the nation’s economy and our competitive position in the global market-place.

A key ingredient in the continued success and growth of our economy is federal investment in research and development. Much of America’s technological leadership today and in the past has been stimulated by federal R&D expenditures, and we need to continue to strengthen these investments as a top national priority.

The results of this public-private partnership are all around us. They include the biotechnology industry, commercial satellite communications, integrated circuitry, the Internet, satellite-based global navigation and communications, and supercomputers.

The Act calls for doubling the federal non-defense science budgets over the next eleven years. As a share of GDP, federal investment in R&D now stands at about half what it was 30 years ago. This share is projected to continue to fall under the current budget caps. Clearly, a strong commitment is needed for investment in R&D funding for basic sciences. Without a strong commitment, the worsening imbalance in R&D funding will have a negative impact on the economy and the nation’s competitive position.

I strongly support the effort to double the federal R&D budget. It is one of the most effective ways to ensure the continued prosperity of our nation. It is imperative that we continue making these investments which have made Massachusetts and many other states renowned for their innovative leadership. We must continue and enhance, not cut back, on these needed investments.

I commend Senator ROCKEFELLER and Senator FRIST for their leadership and vision on this critical piece of legislation, and I urge my colleagues to join in supporting this important Act.

Mr. ROCKEFELLER. Mr. President, I would like to join Senators FRIST and LIEBERMAN and other distinguished colleagues to commend the Senate for passing the Federal Research Investment Act. This legislation will set a long-term vision for federal funding of research and development programs so that the United States can continue to be the world leader in the research and innovation upon which our high-tech industry is based.

One only needs to look as far as the front page of the newspaper to see the effect of high-technology on our country. New drugs are becoming available for fighting cancer; new communication hardware is allowing more people to connect to the Internet; and advances in fuel-cell technology are leading to low-emission, high-efficiency alternative fuel vehicles. According to a 1998 National Science Foundation study, over seventy percent of all patent applications in America cite non-profit or federally funded research as a core component to the innovation being patented. Even at IBM, an industry leader in R&D, only 21 percent of its patent applications were based on company research. People are living longer, with a higher quality of life, in a better economy due to processes, procedures, and equipment which are based on federally funded research.

New technologies and products do not appear out of thin air. They are the result of a basis of knowledge which has been built up by researchers supported by federal funding. American companies draw from this knowledge base in developing the high-tech products which you and I read about in the paper and see on our store shelves everyday.

I view this knowledge base as an investment. The US government puts in modest amounts of funding in the form of support for scientific research. The dividends come from the economic growth which is produced as this knowledge is turned into actual products by American companies.

A large part of the current rosy economic situation is due to these high-tech industries. High-tech companies are responsible for one-third of our economic output and half of our economic growth. Alan Greenspan has said that new technologies are primarily responsible for the nation’s phenomenal economic performance, low unemployment, low inflation, high corporate profits and soaring stock prices. If we want continued economic growth, we therefore need to support the fundamental, pre-competitive research critical to these industries, at the necessary levels, and in a stable manner from year to year—and we need to do so now.

Just three years ago, federal science funding was in a serious decline and fewer than half a dozen members of Congress gave it any attention. Now the connection between a healthy research enterprise and our nation’s strong economic growth is widely understood. In the last two years the science budget has increased above inflation. In particular, for Fiscal Year 1999, an unprecedented 10 percent increase in civilian R&D funding was appropriated. Yet, somehow we appear to be once again in a situation where the future outlook for R&D funding is either declining, stagnating, or barely keeping pace with inflation. We must not only pass the Federal Research Investment Act, but we must continue

our fight to actually implement the R&D budgetary guidelines set forth in this bill.

Finally, let me just say that one of the original reasons that I became involved in technology issues, such as the EPSCoR and EPSCoT programs, was because I believe that technology should be shared by everyone, not just those in Silicon Valley or the Route 128 corridor in Massachusetts. Therefore, this bill should be seen as a means of allowing for diversity in our national innovation infrastructure—research must be allowed to flower in Montana, Alaska, West Virginia as well as the traditional centers of science.

In conclusion, we have put together a long-term vision for federal R&D funding which we hope will lead to real increases in federal funding for research and development. Federally funded research has been, and will continue to be, a driving power behind our economic success. If we are to maintain and enhance our current economic prosperity we must make sure that research programs are funded at adequate levels in a consistent long-term manner.

I thank my colleagues for their support of this bill and ask unanimous consent that both my comments and the news article from the Wheeling News-Register, "Congress Must Act to Ensure That Vital Research Doesn't Lapse in U.S.," be printed in the RECORD.

There being no objection, the material was ordered to be printed in the RECORD, as follows:

[From the Wheeling News-Register, Tuesday, May 11, 1999]

CONGRESS MUST ACT TO ENSURE THAT VITAL RESEARCH DOESN'T LAPSE IN U.S.

(By Erich Bloch and Charles M. Vest)

Our nation is currently enjoying the longest period of sustained economic growth since World War II. Much of this growth is driven by competition and commercial reward for innovative companies that use new technologies to develop new products and services. These new technologies are possible only because of the nation's investment in research. Basic scientific and engineering research funded by the federal government and conducted at America's public and private universities is of particular importance. University research led to the laser, fiber optics and the Internet, which make the modern computing and telecommunications industries possible. It also discovered recombinant DNA techniques that have fueled the biotechnology industry, and made most of the advances of modern medicine.

The private sector also funds and conducts important research. Indeed, in many instances it took both government and industry funding to achieve the decisive result. The private sector's primary function is to advance technology and translate basic sci-

entific knowledge into commercially useful devices and systems. But here too, the federal government has a critical role: it must provide a policy and regulatory framework that encourages and rewards private investment in research.

Although nearly all analysts agree that our strong economy is driven by research, we are not promoting and investing in new research at an acceptable level, in either the public or the private sector. This puts our future economy at substantial risk. Despite Washington's proclivity for slowing the growth of basic research funding, even in this time of record economic growth and increased tax revenues, this risk is being noted. Last year, for instance, both the House and Senate took major steps towards addressing their obligation in this regard.

The House of Representatives, taking its lead from Rep. Vernon Ehlers, a physicist and vice chairman of the Science Committee, unanimously approved key principles for federal involvement in science research. The Senate unanimously passed a bill promoting federal investment in research and development. These two congressional actions, together with a host of independent reports on investment in research, established a momentum that must be embraced and accelerated by the new Congress.

But Washington memories are short. Many a good idea has gotten buried between the end of one Congress and the start of a new one. Let's make sure this is not happening in this case. Despite the pressure that balancing the budget puts on Congress, we need to stay on the course that has proven to be so effective.

There is plenty of disagreement about the details of how U.S. science and technology policy should move forward. However, we wish to point to four recommendations of the House Science Committee's report that are especially worthy of strong bipartisan support in the 106th Congress.

First, Congress should give high priority to stable and substantial federal funding for fundamental scientific research. Federal support of fundamental research has declined as a percentage of gross domestic product during this decade. It is both ironic and frustrating that our research base has not benefited from the very economic expansion it helped to create.

Second, the federal government should invest in fundamental research across a wide spectrum of disciplines in science, mathematics, and engineering. The seamlessness of science and technology and the interrelation of their many fields are demonstrated every day. For example, magnetic resonance imaging devices (MRIs), which have become life-saving diagnostic tools in the medical professions, have their roots in physics, chemistry, mathematics, and electrical engineering.

Third, an increased focus on partnerships is needed. University-industry partnerships, government-industry partnerships, and three-way efforts are required today because of the complicated relationship between research and the needs and constraints of each sector.

Finally, the policy environment for research must be improved. The Research and Experimentation Tax Credit must be

strengthened and made permanent. This credit has been on again, off again during the past 15 years, despite its effectiveness in stimulating private industry to invest in R&D.

At this point in the federal budget process, there is real danger that an expanded federal commitment to scientific research—a goal unanimously supported by Congress last year—may fall victim to larger political battles. Congress should ensure that R&D, especially fundamental research, receives the priority it deserves and that partnerships between government, academia, and the private sector are given a chance to succeed.

Mr. LIEBERMAN. Mr. President, I rise to praise S. 296, the Federal Research Investment Act of 1999, legislation designed to reverse a downward trend in the Federal Government's allocation to science and engineering research and development (R&D). S. 296 authorizes a 5.5% increase in funding per year for federally funded civilian R&D programs, through 2010. While the future of individual agencies, such as the National Institutes of Health or the National Science Foundation, remains with the authorizing committees, the bill establishes a long term commitment to sustaining the aggregate research and development portfolio during the annual budget cycle. The bill also puts in place a number of review and accountability measures to assure the public and Congress that, each year, the R&D funds are well spent. I am pleased to report that S. 296 passed the Senate last week, on July 28, 1999, by unanimous consent. It had 41 cosponsors, about equally divided between the two parties, including the Majority and Minority leaders. The magnitude of support for this bill reflects the growing realization that technological progress is the single largest factor, bar none, in sustaining economic growth.

Today we find ourselves in a "New Economy." Everything about it defies conventional wisdom. Our unemployment rate is extremely low, but at the same time, our interest rates are low. The boom itself keeps going, defying expectations. In fact, the current economic boom is soon to be the longest one in our nation's history. Even our national debt has fallen far faster than economists had ever predicted it could. In retrospect, these happy miscalculations reflect a flaw in economic growth theory. Conventional economic wisdom at first underestimated the strength and depth of our New Economy because it ignored the substantial productivity gains generated by advances in technology, in this particular case, information technology. However, had we paid attention to history, we would have known better.

Almost a dozen major economic studies, including those of Nobel Prize laureate Robert Solow, have tracked economic growth over prior decades. These studies found that in every time period studied, approximately half of all economic growth was due to technological progress. The preponderance of the evidence provided by these economic studies has led Alan Greenspan to note in many of his recent speeches that in addition to the traditional forces of labor and capital, a very substantial portion of economic growth is now recognized to be due to technological innovation and the productivity increases it brings to the workplace. That technological innovation is what is sustaining our boom today. Beyond the effects of interest rates and fiscal policy, there are the dot.com's and the gazelle stocks, pushing our nation's technological wunderkind into untold riches, and pulling the rest of the nation along with them.

In an industrialized nation, the technological innovation so necessary for robust economic growth is generated by research and development (R&D). R&D is directly responsible for creation of the new products and processes which account for half or more of the growth in output per person, thereby fueling our economy. The private sector recognizes these connections—earlier this summer, *Business Week* devoted a entire issue, over a hundred pages, to highlighting the greatest scientific and technological innovations of the past 100 years. As the noted economist Lester Thurow puts it, “The payoff from social investment in basic research is as clear as anything is ever going to be in economics.” To drive home the economic impact of scientific R&D, I would like to bring up the specific example of biomedical research, which at least one analysis finds has a rate of return that is greater than \$13 for every dollar invested.

This correlation between technology and economic growth is especially compelling today, and not just for the biomedical arena. On a local scale, scores of governors are striving to bring high tech corridors into their states. They know, intuitively, that future economic growth for their states depends on high tech. America's research-intensive industries have been growing at about twice the rate of the average economy over the past two decades. Job opportunities in information technology flood the newspaper want ads, an illustration of the Internet sector's 1.2 million new jobs in 1998. Moreover, high tech wages are 77% greater than the private sector average.

However, we have reached a crossroads in this era of technological growth. We must remember that the ultimate origins of today's high-tech companies, and hence the dramatic economic gains we now see, were a few seminal discoveries made in the mid-1960's. It was at that time that we, as a country, were seriously investing in

research and development. Because of the 20-30 year time lag between basic scientific discovery and market product, that substantial federal investment is now bearing fruit in the form of our exceptionally robust economy in the 1990's.

Unfortunately, since the mid-1960's we have not maintained our investment in R&D. As a fraction of the federal budget, the federal government's support of R&D has dropped by $\frac{1}{3}$ over the past 34 years. When expressed as a fraction of GDP, federal funding of R&D has declined to half its mid-1960's value. For certain individual disciplines, the future is bleak. A recent report from the National Academy shows that in the years between 1993 and 1997, federal funding for research in mechanical engineering declined 50.4%, that for electrical engineering declined 35.7%, that for physics declined 28.7%, and that for chemical engineering declined 12.9%. These decreases are not just abstract reductions in facilities and personnel at research labs, and students and professors in universities. They represent the very seed corn of our economic prosperity. We no longer have as robust a pool of ideas to germinate into fundamentally new industries; we no longer have the technically trained populace capable of fully cultivating and implementing those ideas. Meanwhile, other countries are stepping in to fill the gap. Thirteen countries now have greater funding for basic research as a fraction of GNP than we do. For non-defense research, Japan spends more than the US, even in absolute dollars.

The problem of declining US R&D funding is especially acute, and demands action now, because of the dynamics of the global economy. In order to compete in the global economy, industry R&D funding has become overwhelmingly (84%) and increasingly concentrated on product development/refinement, i.e., the last stage of R&D. Thus, for new product concepts, industry is correspondingly more dependent on the basic and applied research sponsored by the government. The connection is a direct one. Currently, 73% of all papers cited in industrial patents are the product of government and non-profit funded research. With our declining investment in government-funded R&D, coupled with the increased appetite of industry for new market products and technologically literate workers, the government is stripping US industry of the knowledge base required to derive new products and compete in new industries.

We must also understand that this falloff in R&D will have serious economic repercussions into the future. Our investments in science and technology have an impact which stretches out over a twenty to thirty year horizon. Recognition of this fact is particularly crucial because of the projected dramatic rises in entitlement spending when the baby boom generation retires. To pay for Social Security, for

Medicare, for all the hopes and dreams of our country, we will need a healthy economic harvest in years to come. Increasing our commitment to R&D today is the surest way to provide for the robust economy that is essential to our future social commitments. As Judy Carter, President and CEO of Softworks, points out, “Without a growing economy, Americans' standard of living, and our ability to support the needs of our aging population will be in jeopardy. Faced with a static or decreasing workforce as U.S. demographics shift, U.S. lawmakers must focus on encouraging technology development to increase productivity, enabling a smaller workforce to support a growing population of retirees.”

We are doing well now economically because of our past R&D investments, but the declining R&D accounts bode poorly for our future. The Council on Competitiveness put it succinctly when it concluded, “the United States may be living off historical assets that are not being renewed.” It is time now to renew those investments. With its small but steady increases in the nation's R&D accounts and its commitment to thoughtful planning and review of our R&D portfolio, The Federal Research Investment Act, S. 296, begins the replenishment of our consummate national treasure—our knowledge base.

Mr. FRIST. Mr. President, I would like to take a few minutes to talk about an important, yet often ignored aspect of the federal budget—our investment in research and development (R&D). While I strongly believe that Congress must strive to stay within the budget caps, I also firmly believe that funding for R&D should be allowed to grow in fiscal year 2000 and beyond. Many economists argue that such an investment, through its impact on economic growth, will not drain our resources, but will actually improve our country's fiscal standing.

The Federal Research Investment Act, which I authored with Senators ROCKEFELLER, DOMENICI, and LIEBERMAN, passed the Senate last Monday for the second year in a row. the bill would double the amount of federally-funded civilian research and development (R&D) over eleven year period. This critical federal investment, performed throughout our national laboratories, universities, and private industry, is currently fueling 50% of our national economy through improvements in capital and labor productivity.

Throughout my career in the Senate, I have spent a considerable amount of time advocating for greater funding levels for civilian R&D. Together with many of my colleagues from both sides of the aisle, I have been trying to educate others on the value of the federal government's role in funding merit-based and peer-reviewed programs. One only has to look at the Internet, the foundation of the new digital economy, to find an example of prudent federal investment in R&D.

Current economic expansion and growth, however, cannot be maintained if we do not provide the necessary funds and incentives to perform critical R&D throughout the scientific disciplines. Federal expenditures of both civilian and defense R&D as a percentage of GDP have dropped from 2.2 percent in 1965 to only 0.8 percent in 1999—nearly one third of its value.

We have both a long-term problem: addressing the ever-increasing level of mandatory spending; and a near-term challenge: apportioning the ever-dwindling amount of discretionary funding. The confluence of increased dependency on technology and decreased fiscal flexibility has created a problem too obvious to ignore: not all deserving programs can be funded; not all authorized programs can be fully implemented. We must set priorities.

The Federal Research Investment Act applies a set of guiding principles, established by the Senate Science and Technology Caucus, to consistently ask the appropriate questions about each competing technology program; to focus on that programs' effectiveness and appropriateness for federal funding; and to help us make the hard choices about which programs deserve to be funded and which do not.

The Government plays a critical role in driving the innovation process in the United States. The majority of the federal government's basic R&D is directed toward critical missions to serve the public interest in areas including health, environmental pollution control, space exploration, and national defense. Federal funds support nearly 60 percent of the Nation's basic research, with a similar share performed in colleges and universities.

The Senate passage of the Federal Research Investment Act reflects a consensus that although basic research is the foundation for many innovations, the rate of return to society generated by investments in R&D is significantly larger than the benefits that can be captured by the performing institution.

This legislation sends a strong message to the academic and scientific community—Congress understands the value of pre-competitive, basic research and its impact on the national economy and the standard of living.

I hope that the House will be as courageous as the Senate and embrace this long-term funding strategy.

HUMANITARIAN ASSISTANCE IN KOSOVO

Mr. HATCH. Mr. President, I note today that the international community had a successful first conference on reconstructing Kosovo and southeastern Europe. Nearly 40 leaders met in Sarajevo last weekend. The presence of most of these heads of state, including President Clinton's commendable appearance, demonstrates that the international community will not shirk from the responsibility of re-

building Kosovo from the inhumane devastation visited upon it by the ultranationalist brutes still in power in Belgrade.

The people of Kosovo have suffered nearly unspeakable brutality, and it is entirely appropriate that the international community—which invested a great deal in forcing the Serbian military, paramilitary, and other gangsters out of Kosovo—now recognizes that long-term stability will not be created until immediate humanitarian needs, as well as medium-term goals of building a functioning economy, establishing institutions to devise and protect the rule of law, and ejecting the ultranationalists in Belgrade, are met.

It is also appropriate, Mr. President, that the European powers shoulder the majority of this cost, as the U.S. shouldered the majority of Operation Allied Force.

When we look at the humanitarian response to the crisis in Kosovo, we must note with appreciation the participation of nongovernmental organizations around the world who rushed to aid the Kosovar victims.

The American Red Cross, for example, has been involved in the Balkans since 1993—more proof that Milosovic has been wreaking havoc in the region for years.

Doctors Without Borders has been addressing a myriad of public health problems and responding to injuries.

These are just two organizations who have responded to the overwhelming needs of these people.

Prominent among these groups were the aid organizations of most of the world's religions.

Again, to name only a few, Catholic Relief Services just last week shipped more than 1400 metric tons of food. It has contributed other supplies and volunteers as well. The Catholic Relief Services have also taken on the project of rebuilding the schools.

Church World Services, the relief arm of a consortium of protestant denominations, has shipped tents, food, bedding, and other supplies.

The American Jewish Joint Distribution Committee, affiliated with the United Jewish Appeal, in addition to food and shelter supplies, has activated its medical registry of volunteer doctors and nurses to operate clinics in the refugee areas of Albania and Macedonia.

And I would like to highlight the significant efforts by my own church, the Church of Jesus Christ of Latter-day Saints.

In my address to the assembled members of our church last April, President Gordon B. Hinckley said, "At this moment, our hearts reach out to the suffering people of Kosovo." He set in motion our church's efforts to help relieve that suffering.

The Church's initial response to the crisis was timely. On Tuesday, April 6, specific plans were approved to ship family food boxes on a chartered air cargo plane. That night, over 300

Church members in Salt Lake City packed 3,000 boxes with food to feed a family of four for one to two weeks. On Wednesday, the food boxes were loaded on the cargo plane arriving in Macedonia on Friday. Refugee families began receiving the food boxes on Saturday, April 10. A second chartered air cargo plane was sent to Macedonia two weeks later with 26,000 family hygiene kits, 14,000 pounds of soap and 600 additional food boxes.

Other shipments containing blankets, food, and clothing have been distributed to refugees in Macedonia. Also, blankets, food, and clothing have been consigned to the American Red Cross. More hygiene kits have been assembled by Latter-day Saints in Germany, England, California, and Utah for shipment to refugees in June. Student and teacher educational supply kits have been provided to refugee camps in Macedonia. Fresh fruits, vegetables and bread are being purchased locally by the Church in Macedonia and Albania and distributed to refugee camps and host families.

The Church has sent volunteer couples to Macedonia and Albania to coordinate distribution of humanitarian assistance. A third volunteer couple with experience in the helping professions will go to Albania for 3–6 months to assist refugee and host families with social-emotional needs.

To date, the Church of Jesus Christ of Latter-day Saints has provided the following humanitarian aid to Kosovar refugees:

Food—133,000 pounds shipped, plus cash donations of \$400,000 for local purchases;

Clothing and shoes—2 million pounds, soap—166,000 pounds, school kits and educational supplies—4,000 pounds;

Family hygiene kits—52,000, blankets—28,000; and

Cash contributions to the German Red Cross and the Mother Teresa Society—\$110,000

Once all currently planned shipments are completed, the value of assistance rendered by The Church of Jesus Christ of Latter-day Saints will total approximately \$5.2 million. The Church stands ready to evaluate and respond to future needs as circumstances may require and resources allow.

The Mormon Church today has as many adherents overseas as there are in this country. It is a global church. Its presence abroad contributes to an awareness of the need for public health, literacy, and development in other nations. But, more than that, it contributes to a greater understanding among nations and cultures.

The people of my state—not only LDS members—have always demonstrated a willingness to pitch in where there is need. Their contributions are obvious at home. But, we do not mention enough that their charitable spirit extends regularly to less fortunate people around the world.

While Utahans are fiscally conservative people and are not tolerant of the