

**Science and technology U.S.A. / produced by the British Embassy Science and Technology Section.**

**Contributors**

Great Britain. Embassy (U.S.)

**Publication/Creation**

Washington DC : The Embassy, 1995.

**Persistent URL**

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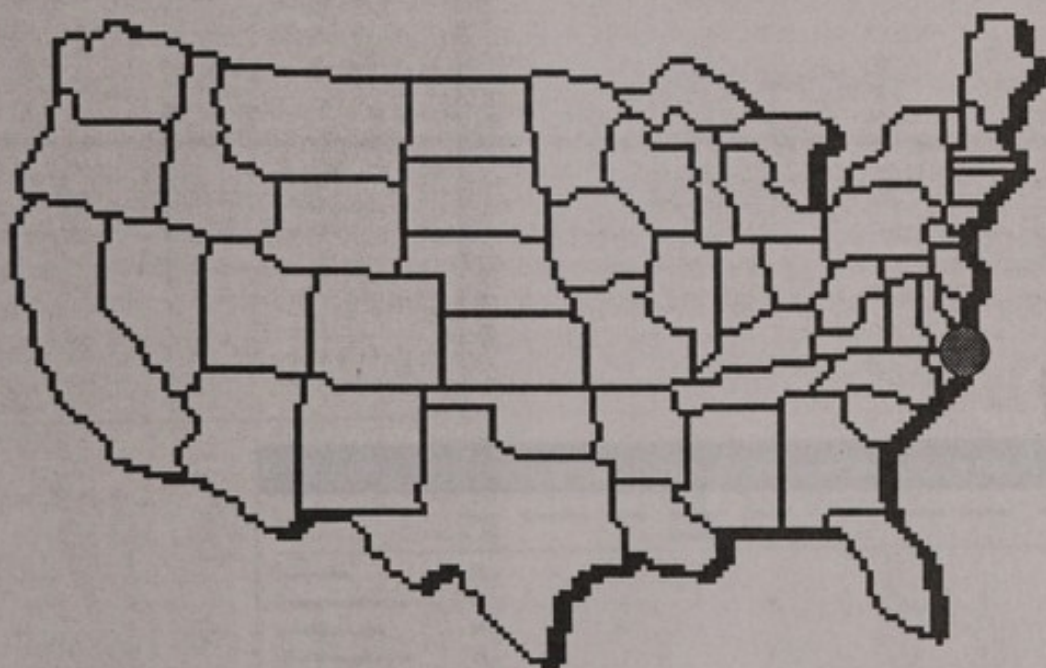
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# SCIENCE AND TECHNOLOGY

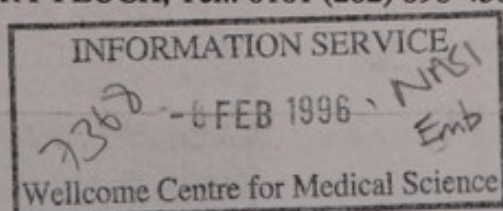
## U.S.A.



28 November 1995

PRODUCED BY: THE BRITISH EMBASSY SCIENCE & TECHNOLOGY SECTION, WASHINGTON D.C.

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## 1. REPORT SHOWS R &amp; D HAS BECOME GLOBAL

A report released last week by the US Department of Commerce provided startling figures relating to foreign Research and Development investment in the U.S. The report entitled "Globalizing Industrial Research and Development" states that since the late eighties, R & D investment in the U.S. has risen by 57% from \$ 6.5 billion in 1987 to \$ 14.6 billion in 1994, with the United Kingdom (\$2.3b) being the third largest investor.

The main areas of R & D involvement by foreign companies are: pharmaceuticals, biotechnology, chemicals and rubber, automotive, computing and semiconductors. The following charts provide details of foreign company R & D facilities in the U.S.

Foreign R&amp;D Facilities in the United States, 1994

Country	Companies	Facilities
All countries	306	645
Japan	107	225
United Kingdom	61	109
Germany	32	95
France	22	52
Switzerland	16	47
Netherlands	11	26
Korea	10	27
Sweden	14	22
Canada	5	8
Italy	6	8
Finland	5	5
Denmark	3	4
Belgium	1	2
Norway	2	2
Australia	2	2
Israel	2	2
Taiwan	2	2
Austria	1	1
Ireland	1	1
Spain	1	1
Hong Kong	1	1
Singapore	1	1
Venezuela	1	1
Netherlands Antilles	1	1

U.S. R&amp;D Facilities of Foreign Companies, 1994

Industry	Japan	Germany	Korea	Netherlands	United Kingdom	Switzerland	Sweden	France	Others
Computers	22	4	7	3					3
Computer software	27	4	1	1	6			3	1
Semiconductors	19	3	10	2					
Telecommunications	15	4	1		2	1	2	2	3
Optoelectronics	11	3			2		1		3
High definition TV, other electronics	33	9	4	4	10	5		4	3
Drugs, bio-technology	25	18	1	5	23	17	6	11	9
Chemicals, rubber, materials	24	28		4	19	10		17	8
Metals	5	1			3	1	1	4	2
Automotive	34	11	3		1		2	2	
Machinery	7	2			4		6	3	5
Instrumentation, controls	1	3		3	23	6	1	6	
Food, consumer goods, misc	7	6		7	19	6	1	2	7

During the same time span U.S. companies have doubled their R & D abroad from \$5.2 billion to \$9.8 billion. Most of this research is concentrated in the UK, Germany, Canada, France and Japan. The reports suggests that the U.S. can benefit from both trends.

REPORT ON THE U.S. INVESTMENT IN FOREIGN COUNTRIES

The U.S. investment in foreign countries has increased steadily since 1950. The total U.S. investment in foreign countries was \$100 billion in 1950, and it had risen to \$150 billion by 1955. The U.S. investment in foreign countries was \$100 billion in 1950, and it had risen to \$150 billion by 1955. The U.S. investment in foreign countries was \$100 billion in 1950, and it had risen to \$150 billion by 1955.

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Country	1950	1955
United Kingdom	10	15
France	8	12
Germany	7	11
Italy	6	10
Japan	5	9
Canada	4	8
Australia	3	7
India	2	6
China	1	5
U.S.S.R.	1	4
Other countries	1	3
Total	100	150

Country	1950	1955
United Kingdom	10	15
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Total	100	150

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2. CLINTON THANKS DEMOCRATIC SENATORS FOR THEIR SUPPORT ON HIS  
STAND ON THE R & D BUDGET

In a 21 November letter to key democratic "science and technology Senators, Clinton explains he cannot allow congressional proposals to cut long-term Federal spending on non-defence research and development. It is estimated that by the end of the Republican 7 year budget deficit plan non-defence R & D will be cut by a third.

3. DEPARTMENT OF COMMERCE SHOULD SURVIVE FOR NOW

There has been insufficient support in the Senate for the elimination of the Department of Commerce. However in light of the unending demands by Republican freshman to get rid of the Department, Senator Dole will probably resurrect the issue next year

4. SUPER CONDUCTING DEVICE CAN PROTECT POWER TRANSMISSION  
EQUIPMENT FROM LIGHTING AND DOWNED LINES.

A Department of Energy-industry team have built and tested a high temperature superconducting device that protects power transmission equipment from energy surges caused by lightning strikes, downed lines and other system faults. This programme is one of four industry led collaborations under DoE's Superconductivity Partnerships Initiative.

5. STATE - FEDERAL TECHNOLOGY PARTNERSHIP TASK FORCE.

The 20 member State - Federal Technology partnership Task Force co-chaired by former Governors Richard Celeste and Dick Thornburgh presented White House Science adviser Jack Gibbons with their first report. It includes specific recommendations for strengthening U.S. Science and Technology through better co-operation between the States and Federal Government. Under Secretary for Commerce Mary Good, will head up another Task Force to generate specific comments and outline the type of organisation that would have to be created to engage with State representatives to address partnership issues. Are there some pointers here for Europe ?

6. MILITARY CLOSE TO GETTING A JOINT DUAL-USE PROGRAMME OFFICE

The U.S. Army, Navy and Air Force are close to signing a memorandum of understanding with the Advanced Research Projects Agency (ARPA) to establish a joint-use programme office.

7. BATTERY THINNER THAN PLASTIC WRAP

A new thin-film lithium battery has been developed by the Oak Ridge National Laboratory and licensed to Teldyne Electronic Technologies. This technology may be useful for electro cardiographs and other medical diagnostic tools. The battery can be charged and discharged many times, and contains fewer toxic materials than other batteries. Other applications could include portable communications devices, where the battery could be built in as an integral part of the circuit and as power sources for personal hazardous gas sensor cards, and micromachines.

1. LITHIUM THIN-FILM BATTERY DEVELOPMENT FOR THE FUTURE  
STAFF OF THE U.S. SENATE

A 12 November letter to the Department of Energy and Technology  
from the Office of Technology Assessment explains the importance of  
the long-term research and development program in the area of  
lithium thin-film batteries. It is estimated that by the end of the 1980s, the  
battery will be one of the most important energy sources.

## 2. DEPARTMENT OF COMMERCE SHOULD SURVIVE FOR NOW

There has been considerable support in the Senate for the elimination  
of the Department of Commerce. However, in light of the current  
economic situation, it is recommended that the Department be  
reauthorized for the next year.

## 3. SUPER CONDUCTING DEVICE CAN PROTECT POWER TRANSMISSION EQUIPMENT FROM LIGHTNING AND DOWNED LINES

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## 4. STATE - FEDERAL TECHNOLOGY PARTNERSHIP TASK FORCE

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partners here for Europe?

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Other applications would include portable communication devices,  
where the battery could be built in as an integral part of the  
circuit and as power sources for portable instruments and sensors, and  
spacecraft.



## 8. CLINTON SIGNS BIOTECH PATENTS BILL INTO LAW

This month President Clinton signed into law S 111, the Biotechnology Process Patents Bill. The Bill expands the scope of patentable Biotechnology processes and materials by loosening the "non obvious or novel requirements". Supporters claim that the biotech industry will benefit through increased innovation, investments and protection from foreign competitors. Under the new law U.S. companies can restrict the import of products made abroad that use processes or starting materials that are protected by U.S. patents.

## 9. NASA AWARDS LIFE & BIOMEDICAL SCIENCE RESEARCH GRANTS

NASA has selected 46 proposals to receive two and three year grants for conducting ground-based or space-borne life sciences research totalling approximately \$15 million. NASA hope the research will advance fundamental knowledge of the way in which weightlessness, radiation and other aspects of the space flight environment interact with biological processes.

## 10. U.S. - CANADIAN COMPUTER PROGRAMME TO BE USED TO DESIGN BUILDINGS FOR GOOD INDOOR AIR QUALITY.

U.S. and Canadian researchers have joined together to develop a computer programme that will be used to design buildings for good indoor air quality. The three year project will create a Microsoft windows based computer programme to predict indoor contaminate levels before a building is constructed and occupied. It can also be used for existing buildings.

## 11. GARBAGE EXCHANGE ON THE INTERNET.

The National Institute for Standards and Technology (NIST) are sponsoring a trade recycables exchange , a centralized electronic marketplace for buying and selling recycable materials. NIST believe the exchange will help create a more stable marketplace for these materials, provide more timely and accurate price information and give buyers a better assurance of quality. Initial materials to be traded on the exchange include various grades of recovered glass, plastic and paper.

## 12. FUSION FUNDING

Funding for fusion research in the U.S. is under further pressure. After a reduction from 1995's budget of \$372 million to \$244 million for 1996, the Department of Energy has bid for only \$200 million in 1997. This might be increased when the bids are examined by the White House, but Congress has already hinted that additional funds are unlikely to be made available.

## 13. ELECTRIC CARS

California is backing off its previous commitment to require at least 2% of new cars sold in the State in 1998 to be zero emissions vehicles. The Chairman of the Air resources Board has asked staff to propose an alternative market-based plan to replace the earlier requirement, while maintaining the emissions reductions which would



This month President Clinton signed into law the Technology Transfer Act. The bill expands the scope of patentable technology, processes and materials by loosening the "new use" or "new application" requirements. Supporters claim that the law will stimulate research and development, investment and innovation in the private sector. Under the new law U.S. companies can transfer the rights to products and services that are produced by U.S. patents.

# NASA AWARDS LIFE A HIGH SCHOOL SCIENCE RESEARCH GRANT

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# FUSION FUNDING

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# ELECTRIC CARS

California is backing off its previous commitment to require at least 3% of new cars sold in the state in 1998 to be zero emissions vehicles. The Chairman of the Air Resources Board has asked that the program be alternative market-based plan to replace the earlier requirement, while maintaining the emissions reductions which would

have been achieved. The decisions follows the conclusions of an experts panel that battery technologies are not sufficiently advanced to meet the mandate.

#### 14. INDUSTRIAL R & D SPENDING UP

Figures release by the Industrial Research Institute indicate that U.S. companies are spending more on R & D. The number of respondents to the IRI survey who are planning increases, is the highest since 1990. The proposed increase in R & D budgets based on replies from 150 IRI member companies is 6%.

#### 15. COALITION PLANS TO BUILD HDTV STATION.

A coalition of television broadcasters and electronic manufacturers plan to build a high-definition tv station sometime next year to test and define the new technology. After years of testing and development HDTV technology is finally moving closer to deployment. An advisory group of manufacturers and broadcasters completed laboratory tests last month of an HDTV transmission standard and will make recommendations to the Federal Communications Commission, who will vote early next year whether or not to adopt the transmission standards for general use.

#### 16. POPULARITY OF INTERNET GROWS.

A major survey on "the use of the internet" has just been released by commercenet a group of businesses interested in promoting electronic commerce. The poll conducted by Nielson Media Research reveals that about 37 million people in the U.S. and Canada have access to the internet representing about 17% of the population over the age of 16. The access would be either through work, home, via friends or via a commercial online services. Of that number 24 million adults had signed onto internet in the last 90 days. More than half of the internet users are between the age of 16-34. More results of the survey can be obtained from Nielson Media Research at (<http://www.nielsenmedia.com>).

#### 17. SCIENCE & TECHNOLOGY SECTION RECEIVES IT'S FIRST CUSTOMER

Only days after the Science and Technology Section established a home page on the World Wide Web (<http://Britain.nyc.ny.us>), we received our first request for information on British Achievements in Science and Technology from a 12th grade (18 year old) high school student in Augusta, Georgia.

have been reviewed. The decision allows the continuation of an  
export panel that battery technologies are not sufficiently advanced  
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internet representing about 17% of the population over the age of 18.  
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Technology from a 15th grade 15 year old high school student in  
Augusta, Georgia.



NEW S & T REPORTS AND PUBLICATIONS FROM THE U.S.A.

An assessment of the National Institute of Standards and Technology Programmes, FY 95 (NRC)

Career trends in S & T: An international perspective. (NRC)

Engineering with ecological constraints. (NRC)

Evaluating the science, engineering and health basis of the DoE's environmental management programme. (NRC)

Failing to achieve the Ph.D.: Issues in measuring graduate attrition. (NRC)

Meeting the nation's needs for biomedical and biobehavioral scientist: Reports of the panel on estimation procedures. (NRC)

Plasma processing and processing science (NRC)

Radiation in medicine: A need for regulatory reform. (Institute of Medicine)

Risk & Innovation: The role & importance of small, high-tech companies in the U.S. economy (NAE)

Superfund: Operations & maintenance activities will require billions of dollars. (GAO)

FDA import automation: Serious management & systems development persist. (GAO)

Export finance: Comparative analysis of U.S. and European Union export credit agencies. (GAO)

Federally funded R & D centres: Use of contact fee by the aerospace corporation (GAO)

Motor vehicle safety in the national highway system designation act of 1995. (CRS)

Prudent practices for safety in laboratories (NAS)

An assessment of the National Institute of Standards and Technology  
Programme, FY 1997

Future trends in 2 & 3: An international perspective. (NIST)

Engineering with ecological constraints. (NIST)

Evaluating the science, engineering and health basis of the DOE's  
environmental management programme. (NIST)

Failing to achieve the R&D: Issues in assessing graduate  
education. (NIST)

Meeting the nation's needs for biomedical and technological  
science: Reports of the panel on education procedures.  
(NIST)

Finance processing and processing science. (NIST)

Medicine in medicine: A need for regulatory reform. (NIST)

Risk & innovation: The role & importance of small  
high-tech companies in the U.S. economy. (NIST)

Superfund: Operations & maintenance activities will require  
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USA import automation: Serious management & systems development  
needed. (GAO)

Export finance: Comparative analysis of U.S. and European Union  
export credit agencies. (GAO)

Extraterrestrial funded R & D: Central use of contract for life  
science corporation. (GAO)

Future vehicle safety in the national highway system development and  
of 1995. (CRS)

Expenditure practices for safety in laboratories. (NIST)