UNIVERSITY PATENTS ISSUED IN 1987

Prepared by Claire Z. Stokes, Science & Engineering Library, for
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Numbers in parenthesis are total patents from 1986.

1.	Massachusetts Institute of Technology	66	(42)
2.	California, University of	65	(54)
3.	Stanford University	42	(33)
4.	Cornell Research Foundation	29	(15)
5.	Minnesota, University of	28	(15)
6.	California Institute of Technology	27	(25)
7.	Johns Hopkins University	18	(19)
	Research Foundation of New York, State University of	18	(11)
9.	Iowa State University	15	(9)
10.	Florida, University of	13	(10)
	Pittsburgh, University of	10	(8)
	Yale University	13	(3)
13.	Miami, University of	12	(3)
	Utah, University of	12	(8)
15.	Northwestern University	11	(8)
	Wisconsin Alumni Research Foundation	11	(17)
17.	Rockefeller University	10	(4)
	University of Texas System	10	(24)
19.	Boston University	9	(4)

7 patents each:
Columbia University in the City of New York
Cincinnati, University of
Missouri, University of
New York Institute of Technology
Texas A&M University System
Toronto Innovations Foundation, University of

6 patents each:
Georgia Tech. Research Corporation
Medicine & Dentistry of New Jersey, University of
North Carolina State University
Ohio State University
Rochester, University of
Washington University
Wayne State University

5 patents each:
Baylor College of Medicine
Dayton, University of
Harvard College
Iowa Research Foundation, University of

5 patents each (continued):
Georgia Research Foundation Inc., University of
Mayo Medical Ventures
Michigan State University
New York University
Tennessee Research Corporation, University of

4 patents each:
Colorado State University Research Foundation
Duke University
Georgetown University
Illinois, University of
Kansas State University Research Foundation
Queens University at Kingston
Southern California, University of
Vanderbilt University
Yeshiva University

3 patents each:
Alabama, University of
Case Western Reserve University
Clemson University
Delaware, University of

3 patents each (continued):
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Hebrew University
Indiana University Foundation
Kentucky Research Foundation, University of
Medical College of Ohio
Wayne State University
Wright State University

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Brigham Young University
Delaware, University of
Florida State University
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Virginia Alumni Patents Foundation, University of
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Arkansas, University of
Birmingham, University of
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Chicago, University of
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Emory University
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Griffith University
Health Sciences/Chicago Medical School, University of
Illinois Institute of Technology
Institute Republic of China
Kansas Center for Research
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Kentucky, University of
Louisiana State University A & M
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Michigan Technological University
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Missouri, University of
Mount Sinai School of Medicine of the City University of New York
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New Mexico State University Foundation
New Mexico, University of
North Carolina State University
Notre Dame University
Ohio State University
Ohio University
Pennsylvania, University of
Roanoke College
Rochester Institute of Technology
South Florida, University of
Southern Methodist University
Southern Mississippi, University of
St. Louis University
Temple University
Tennessee Research Corporation, University of
Texas Tech. University Health Sciences Ctr.
Thomas Jefferson University
Tufts College
Utah State University Foundation
Vermont & State Agricultural College, University of
Wake Forest University
Washington State University Research Foundation
Washington, University of
Waterloo, University of
Wyoming, University of

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Louisiana State University
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Miami University
Monash University
Northeastern University
North Carolina, University of
Ohio State University Research Foundation
Oklahoma, University of
Princeton University
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Rutgers The State University of New Jersey
Southern Mississippi, University of
Syracuse University
Temple University
Virginia Alumni Patents Foundation, University of
West Virginia University

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American College
Arkansas, University of
Birmingham, University of
Bowling Green State University
Brandeis University
Brown University Research Foundation
California Institute of Technology
Carnegie-Mellon University
Chicago, University of
Colorado Foundation, University of

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Emory University
Georgia Tech. Research Institute
Griffith University
Health Sciences/Chicago Medical School, University of
Illinois Institute of Technology
Institute Republic of China
Kansas Center for Research
Kent State University
Kentucky, University of
Louisiana State University A & M
Massachusetts, University of
Michigan Technological University
Michigan, University of
Missouri, University of
Mount Sinai School of Medicine of the City University of New York
Nebraska, University of
New Mexico State University Foundation
New Mexico, University of
North Carolina State University
Notre Dame University
Ohio State University
Ohio University
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South Florida, University of
Southern Methodist University
Southern Mississippi, University of
St. Louis University
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Tennessee Research Corporation, University of
Texas Tech. University Health Sciences Ctr.
Thomas Jefferson University
Tufts College
Utah State University Foundation
Vermont & State Agricultural College, University of
Wake Forest University
Washington State University Research Foundation
Washington, University of
Waterloo, University of
Wyoming, University of

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SCIENCE & GOVERNMENT REPORT

18th Year of Publication

The Independent Bulletin of Science Policy

Volume XVIII, Number 12 | P.O. Box 6226A, Washington, D.C. 20015 | July 15, 1988

Q&A With Grant Swinger: Gold in the Greenhouse Effect

The following continues SGR's occasional series of science-policy conversations with Dr. Grant Swinger, Director of the Center for the Absorption of Federal Funds.

•

SGR. *You were high on competitiveness as a growth factor for research when we last talked (SGR April 15, 1987). If I may recall your words about competitiveness: "It's the new mover. Bigger than anything we've had before." You predicted a lot of grants and contract action.*

Swinger. Turned out I was wrong. It's come and gone like the others—ecology, energy, oceanography, education, space science, poverty, third-world development. A list of disasters. In fact, you're the first one to mention competitiveness in a long time.

SGR. *It sounded like a good one. What happened?*

Swinger. We should have foreseen it. The competitiveness hustle started with the usual nicely bound, end-of-the-world reports from the think tanks and lobbies. You know, plastic spiral binding and shiny covers, and titles like "Crossroads for Crisis," "Choices for America," "Rejuvenation or Ruin?" and "Competitiveness: Everyone's Responsibility."

SGR. *I remember them. Lots of excitement.*

Swinger. No one reads beyond the one-page summary, but that's understood. Then came the seminars and conferences. We were run to a frazzle. Meetings everyplace. Our Center's Pan American Chair was in full use—I mean the one on the airline. Frequent Flyer points went off the charts. We ran some of the meetings on contract to the federal agencies, and I can assure you that they were interdisciplinary to the hilt. We had engineers, venture-capital people, a retired grandmother who had never ever worked.

Science on Hold in Washington—P. 3
France Boosts R&D Priority—P. 4

SGR. *Why was she there?*

Swinger. That's what interdisciplinarity is all about. New perspectives. Like the report says, competitiveness is everyone's responsibility. We even had a dog trainer.

SGR. *Who else?*

Swinger. Professors of every kind. We had religious leaders, a juvenile criminal, a US Senator, but he had to leave early. And we had federal research administrators, musicians, experts on Japan—lots of them running around loose. Meanwhile, Congress started beating the drums, and the research crowd moved in fast. They dusted off all the war cries: Urgent needs of the country, mobilization of science, the usual stuff. Like after Sputnik or the start of the war on poverty. Then everyone lost interest.

SGR. *Why?*

Swinger. That's the way the system works.

SGR. *Does something new always comes along?*

Swinger. Never fails. For a while, we had high hopes for superconductivity. You know, like in the early days of nuclear power, we could talk about electricity that

(Continued on page 2)

In Brief

Inquiries into allegations of a coverup of error in a paper co-authored by Nobel laureate David Baltimore (SGR April 15) are proceeding on two fronts. NIH, urged to quick action by Director James Wyngaarden, has convened an outside panel of three reviewers to study the paper. The NIH office for investigating misconduct says a final report may be delivered to Wyngaarden by August 15—superspeed in such matters.

Meanwhile, Rep. John Dingell's Subcommittee on Oversight and Investigations has subpoenaed research notes for the questioned paper from Thereza Imanishi-Kari, formerly of MIT, now at Tufts, who was principal investigator on the project. Baltimore, denying any coverup or toleration of known error, says the lingering charges and Congressional intrusions are undermining scientific trust and independence. The assessment from a senior medical statesman in Washington is that he may be right, but "Baltimore has handled the public relations part of it terribly."

In the works in Soviet-American scholarly relations—establishment of a joint "Panel on Economic Growth in Modern Industrial Societies: The US and the Soviet Union." Sponsorship is by the National Academy of Sciences (NAS) and the Soviet Academy of Sciences. Tentative plans call for the US side to be chaired by Marina v.N. Whitman, a Vice President of General Motors; the Soviet by Konstantin Frolov, a Vice President of the Academy, and Leonid Abalkin, Director of the Institute of Economics.

The NAS is also seeking ways to assist Mexico's economically hardhit research enterprise. Discussions were held earlier this month with the Mexican Academies of Science and Engineering, and private funding is being sought for joint research activities.

. . . Racing on Capitol Hill for Title of "Mr. Greenhouse"

(Continued from page 1)

would be too cheap to meter, levitating trains, non-polluting electric cars, super-super computers. The race with Japan. Frankly, I was optimistic, especially after the President put on that superconductivity conference last summer in Washington and wouldn't let any foreigners in. That took some great nerve, since it was just about that same time he was asking foreigners to chip in for the American space station and the Super Collider accelerator. Anything that dumb suggested that superconductivity must have a lot of political brute force behind it. So, we whipped up a batch of grant applications.

SGR. *Any luck?*

Swinger. The problem was that the money they were putting into superconductivity came out of other programs, so it came out about even, maybe worse. I warned from the start that if you stake your future on superconductivity, you'll go broke. But some people didn't listen. Like in the old days when NASA snookered a lot of the university crowd into setting up space science centers. And then, when the tenured payrolls were in place, NASA said, sorry, and pulled the plug. That's when the PhD's took to driving taxis and delivering pizza.

A Premium on Gloom

SGR. *Where does that leave you now that superconductivity and competitiveness have fizzled?*

Swinger. No problem. You can always be sure that something will come along. Right now, it's the greenhouse effect. It's an old one, coming around for the fifth or sixth time. But there's nothing like a hot summer, a drought, and catchy labels—greenhouse effect, ozone hole—to perk up political attention. In Congress, they've been racing with each other to hold hearings. The gloomier you are, the more they want to hear you. Something like, "Mr. Chairman, the fate of civilization is at stake." Makes the evening TV news programs. Guaranteed.

SGR. *Will Congress stay with this?*

SGR. Depends on only one thing—the weather. If it stays hot, we're home free for at least a year. You see, right now there's a competition on Capitol Hill to see who's going to be Mr. Greenhouse Effect. Senator Nunn is Mr. Defense. Congressman Pepper is Mr. Senior Citizen. Kennedy is Mr. Liberal. Helms is Mr. Conservative. Greenhouse is still up for grabs. But if it suddenly turns cool and wet, they'll hurry around to something like Soviet-American cooperation, the population crisis, a new supersonic transport, the coming shortage of scientists. There are plenty of topics.

SGR. *But for the time being, greenhouse could be a good one?*

Swinger. Right now it looks good. We're going all out. We're preparing a big report for raising public consciousness, "CO2 and You." The theme is that CO2 is everyone's responsibility. We're also doing a video on it.

SGR. *In view of the short lifespan of these programs, what's your backup if greenhouse crashes after a short run?*

Idiotic Notions Deserve Hearing, Too

Swinger. We have a solid base of ongoing activities at the Center. "Overhead and Underhand: The Grant Swinger Guide to Academic Finance," is now in its third edition. We also prepare material on various issues: For and against the Super Collider, on the justice and the injustice of the peer-review system—take your choice. We've got papers saying the big universities are shortchanged on federal research money, and we've got papers saying they get too much. We research everything thoroughly and make a sound case. On scientific fraud, we've got papers that argue that the problem happens one in a million, though, of course, we have no idea how often it happens. Our position is that even idiotic notions merit a respectful hearing, a conference, and a report.

SGR. *Then the future is assured for the Center for the Absorption of Federal Funds.*

Swinger. We've learned that something always comes along.

•

Previous items in the Grant Swinger series, comprising interviews with and articles by Dr. Swinger, have been collected in The Grant Swinger Papers *(32 pp., $4.95 each, three copies for $12; add $2 for overseas airmail). Order from: SGR, PO Box 6226, Washington, DC 20015. Please include payment with order.*

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In Pre-Election Washington, Science Policy Draws Yawns

With time running out on the wearied Reagan Administration, and Presidential campaign fever rapidly spreading, science policy will be mainly frozen and ignored until after the November election—and possibly for some time beyond that.

There are a few exceptions: Congress, pushed on by the health lobbies, seems set on establishing a separate institute for hearing disorders at the National Institutes of Health—over the customary protests of the NIH management. Federal agencies normally welcome administrative expansion as a route to bigger budgets; but NIH has the budget problem licked because of Congressional enthusiasm for health research. What's difficult for NIH is the intrusion of narrowly focused lobbies into its administrative affairs—and the intrusions are all the easier when there's a labeled institute on the Bethesda campus.

Meanwhile, the White House Office of Science and Technology Policy, unswervingly faithful to Cold War values of 20 years ago, has been fighting a rear-guard action against closer research ties with the USSR. While the Soviets' top general is warmly greeted at a B-1 base and aboard a US aircraft carrier, OSTP Director William R. Graham remains on full battle alert to prevent American science from contributing to the Communist menace.

Graham is villified throughout the federal science bureaucracy as an anachronism who has surrounded himself with the weakest staff in the history of White House science advice. But the Washington terrain was long ago deliberately contoured for the advantage of those who would delay changes. And that circumstance, along with spreading catalepsy in the White House staff system, provides ideal conditions for sabotaging the complex arrangements necessary for initiating an expansion of scientific exchanges and collaborative efforts with the Soviets.

Budgetary ups and downs in R&D, a standard focus of concern in the capital's science-policy community, are of less interest this year, simply because the next President will almost surely review and revise the spending plans he inherits from the Reagan Administration. The budget now passing through Congress is for the fiscal year that begins next October 1. That allows research administrators nearly four months to dish out the money *á la* Reagan's design.

But abruptly ordered White House or Congressional cutbacks in spending plans have proved so disruptive and embarrassing for good relations between the research agencies and their clients, that prudence calls for caution in spending until the newly inaugurated Administration announces its budget intentions. The National Science Foundation reaped virulent abuse from its friends in academe when it found that unexpected Congressional reductions in its budget for this year necessitated reductions in promised funds. The NSF bureaucracy, which properly considers itself a sensitive and sympathetic supporter of academic science, came out of the experience quite stunned.

While science's money problems are eternal, it's now widely agreed that an even bigger problem is the placement of scientific activities in the federal budget system. Congress no longer needs persuading about the importance of research, if only because constituents throughout the country are convinced that scientific activities help attract good jobs.

Support for more scientific spending is thus abundant on Capitol Hill, but it loses force within the intricate system of appropriations subcommittees with fixed overall budgets and strange mixtures of agencies to fund. Thus, NSF is a favorite in Congress, but its plans for moving toward a doubled budget by 1992 have twice been frustrated. The reason is that in the appropriations process, NSF must share a fixed sum with NASA, housing for the poor, veterans medical care, and several other non-science activities.

It's now clear that in the Gramm-Rudman era, big budget growth for science is almost surely destined to be thwarted unless R&D can be extracted from this peculiar system of tradeoffs. An inconspicuous but important step toward devising another way was initiated recently when the Senate Budget Committee, later joined by its House counterpart, requested the advice of the National Academy of Sciences, the National Academy of Engineering, and the Institute of Medicine.

In their conference report, the two Committees defined the assignment as providing "advice on developing an appropriate institutional framework and information base for conducting cross-program development and review of the Nation's research and development programs. This should be structured in such a way that it can be used by both the Executive Branch and Congress as a method for reviewing program contents and strategies and in determining funding and organizational priorities for science and technology."

The Academies and the Institute have accepted the assignment with enthusiasm, as evidenced by the employment of their own money to conduct the study, a rarity in doing work for federal agencies or the Congress. A committee consisting of senior members has been established, with NAS President Frank Press as Chairman, and a working staff group has been meeting with Congressional and Executive Branch officials over the past several weeks. Serving as head of the staff is Don I. Phillips, Executive Director of the Government-University-Industry Research Roundtable, the Academies' standing forum for research-policy issues. The response to the Budget Committees' request is due in November—DSG

France: New Government Gives High Priority to Research

Paris. Research in France experienced budget cuts and program deferrals under the two-year reign of Conservative Prime Minister Jacques Chirac. But now with the Socialists back in power, research and technology have regained a high priority.

The new Prime Minister, Michel Rocard, speaks eloquently of the importance of research and has spelled out plans for rapid increases in spending. Rocard, a career politician, had no record as an advocate of research. But it is widely noted here that he is the son of one of the grand old men of French science, Yves Rocard, a pioneering researcher in electronics who played a major role in rebuilding French science after World War II. The father, still active at age 80, has in a long career directed major laboratories and served as science adviser to the Navy.

Michel Rocard came to power in May with the election of Francois Mitterrand to a second term as President. The new Prime Minister—a moderate Socialist in the Mitterrand style—used his first address to the Chamber of Deputies to speak in behalf of turning around the government's policies on research. In doing so, he clearly echoed themes sounded by Mitterrand during the election campaign.

Rocard declared that "research is an investment priority for our country" and said that national strength depends on cooperation among researchers in universities, industry, and government.

That's standard rhetoric in all industrialized nations today, and it has been sounded here before, too. But, in reality, little has been accomplished in bringing the three sectors together in France. However, it's generally agreed that the economic and political climate is now especially favorable for pursuing the goal. The Rocard Administration appears to be strongly committed to ending the austerity that has encumbered researchers for many years. Elsewhere, scientists may be inclined to reach out for new alliances in difficult financial times, but here they tend to dig in and protect what they have.

According to the scorekeepers of the 24-nation Organization for Economic Cooperation and Development, French research spending was the laggard of the big industrial powers, standing at 2.26 percent of gross national product in 1986. At the top was Japan, 2.81 percent; next was the US, 2.77 percent, and then West Germany, 2.67 percent.

Rocard's stated goal is a rapid rise to 3 percent, a figure now and then mentioned by the Chirac government, but never seriously pursued. Since Rocard hasn't set a deadline, one might doubt his commitment and his margin of maneuverability vis-a-vis the Ministry of Finance. Like the American Office of Management and Budget, the Ministry takes pride in holding down spending, any spending. But, in fact, Rocard promptly produced an additional $150 million for research for the second half of 1988—a sum equivalent to about 2 percent of the research budget. The money was designated as a catch-up payment to compensate for previous cuts and to provide a first step toward the goal of 3 percent of GNP. According to Rocard, when Chirac left office, the research budget was $850 million short of the stated goal.

Along with the strong pledges and additional money, Rocard has taken the important step of elevating research in the governmental hierarchy. Initially, when the new government was formed, research was tucked inside the Ministry of National Education. The research portfolio was given to a highly respected figure in French science administration, Herbert Curien, who had formerly served as head of the French space agency and the *Centre National de la Recherche Scientifique* (CNRS), a counterpart of the US National Science Foundation. At the end of June, however, Curien emerged from a reshuffling of the Cabinet as head of a new Ministry of Research and Technology.

The change was essential, if any real accomplishments were to be hoped for in Rocard's call for greater collaboration among big sectors of research. In France, university research is managed by professorial cliques that are embedded in the national education system—and looked upon with disdain by the managers of high-tech industry. The professors are unhappy about government money supporting research in industry. They, of course, dress their arguments in terms of scientific productivity and quality, but what it all comes down to is that they want the money for their own programs. Curien's response is that all research allocations will be more closely scrutinized to make certain that the country is getting good value for its spending. In Rocard's words, "Research is not only a matter of funds. It is also a matter of attitude."

Rapidly coming up as a difficult issue is the adaptation of French scientific customs to the Common Market goal of economic unification in 1992. Mobility from one lab to another is out of character for the French, but it is now clear that they will have to overcome their ancient habits if French science is to occupy an important place in the new Europe that's shaping up.

The "Science Program" planned by the European Economic Community (EEC) is designed to promote integration by encouraging cooperation among laboratories of the member nations and exchanges of personnel. Activities are to be financed by a $180 million fund administered by EEC headquarters, in Brussels. The Community also plans other scientific activities in support of the 1992 goal. In June, the Ministers of Research of the 12 member countries met in Luxembourg and agreed to an additional $350 million of activities organized into three programs.

(Continued on page 5)

For NASA's Shuttle-Naming Contest: Ostrich? Turkey?

Continuing with the circus theme that for years has ruinously infested the space program, NASA has established a contest for America's school children to name the shuttle orbiter that's being built to replace the ill-fated *Challenger.*

Suggestions: The *Ostrich*, in honor of the policies that have virtually grounded the space program for over two years. Or, dipping into showbiz language, the *Turkey*, in recognition of the cumbersome design that renders every shuttle flight a gamble with calamity.

Neither entry will make the finals, but that's no reflection on their appropriateness or the distorted public relations values that dominate American space planning. Proceeding from the demeaning notion that celestial entertainment is essential for maintaining public support for the space program, NASA has emphasized people in space and high-tech spectaculars, at vast cost, great human risk, and minimal return.

To revive the drooping attention of the news media—bored with the shuttle after 24 flights—a schoolteacher was conspicuously added to the *Challenger* crew. Meanwhile, NASA was neglecting simple, workhorse launchers and relatively light unmanned payloads that can work effectively in space. And it was initially allotting only crumbs for serious scientific space research, and then dipping into those funds to cover cost overruns on the shuttle.

Following the *Challenger* disaster, national attention was focused on the astronauts who died and on the drama of the Morton Thiokol whistle-blowers who were ignored and then punished for warning against the fatal launch. Little attention was directed at another matter: NASA's repeated misrepresentations and exaggerations of the shuttle's capacity to serve the nation's needs in space.

Eager for a high-wire act to follow the popular and political success of the manned moon-landing program, NASA concocted the shuttle and sold it to Congress and the public as a reliable and economic vehicle for the next chapter in space. Technological fantasy was accompanied by fiscal fantasy, as was shown in a report issued in 1985 by the Congressional Budget Office (CBO), *Pricing Options for the Space Shuttle.*

In 1977, four years before the first shuttle flight, NASA said a price of $38 million per flight "would generate revenues in excess of its costs," according to the CBO report. But the figure was based on wondrously optimistic assumptions about cargo demand and frequency of flights—572 shuttle flights between 1980 and 1991, an average of 52 a year. By 1980, the forecast had dropped to 487. In 1985, NASA reduced the flight forecast to a total of 165 through 1991—an average of nearly 24 per year. At that rate, the cost was calculated at $150 million per flight. But the peak annual flight rate, attained in 1985, was only 9. The final flight of the *Challenger,* in January 1986, was only the 25th in five years of shuttle flights.

The shuttle's delicate technology was a constraining factor in meeting the flight schedule, but another factor was also at work. NASA, as part of its Congressional sales pitch, had wildly overstated the volume of cargo that would be waiting for shuttle transportation. The CBO report states, "The most conservative projections of 1980s demand, made in the 1970s, consistently proved to be double the demand that materialized."

Nevertheless, NASA apparently believed its own hokum about shuttle reliability and demand for cargo space. As the costs of building and operating the shuttle fleet inevitably exceeded NASA's sugar-coated projections, the gap was filled with money that had originally been earmarked for unmanned scientific projects and the low-priced rockets that carry them aloft. When the shuttle fleet was grounded, NASA had run out of expendable launch vehicles and had none on order. Western Europe and the Soviets have maintained their production of expendable launchers and have been beckoning for American space business.

Committed to man in space, though man is a fragile nuisance outside the earth's atmosphere, NASA plods on with restoring the shuttle to service. It insists that there are no robots that can match man's performance in space. But that's because robots, being unglamorous, have been neglected by NASA planners, in the same fashion that the Air Force and the Navy have dawdled in developing unmanned reconnaissance aircraft. Clearly they work, as the Israeli Air Force has demonstrated, but their glory potential is minimal.

(Continued on page 6)

France *(Continued from page 4)*

The "Drive Program," budgeted for $60 million, is aimed at reducing auto accidents through computerized traffic-management. Research in chemical analysis, for environmental protection and other purposes, will also get $60 million. And the "Delta Program" will work on advanced educational techniques.

The EEC's Brussels bureaucracy was once widely regarded as a toothless nuisance notable for long delays and few real accomplishments. But it now boasts efficiency and financial resources that are envied by officials of the EEC member nations. Europe's lobbyists for R&D now flock to Brussels to pursue their goals.

For the creaky French science establishment, these are challenging times. The financial signs are favorable, and opportunities for European-wide pooling of resources have never been better. All the excuses will soon be removed. That can be a very trying circumstance.—FS

In Print: New Publications Covering Many R&D Subjects

The following publications are obtainable as indicated—not from SGR.

Beyond the Rhetoric: Evaluating University-Industry Cooperation in Research and Technology Exchange (two volumes, total 128 pp., $20 for both), reports by the Business-Higher Education Forum, suggest that academic-industry research ties be more rigorously scrutinized for effectiveness and compatibility with the partners' basic interests. Despite the pompous title, the publications are valuable for their examples of pitfalls and advantages, along with advice on how to tango.

Business-Higher Education Forum, One DuPont Circle, Suite 800, Washington, DC 20036; tel. 202/939-9345.

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National Institutes of Health Annual Report of International Activities: Fiscal 1987 (189 pp., a limited number of copies available; no charge), summarizes NIH relations, large and small, with researchers in and visiting from over 140 countries, plus summaries of research and fellowship programs, and some comparative international data on disease incidence. Japan was tops in the number of researchers attached to the Bethesda-based NIH Visiting Program, with 362, plus another 75 as Guest Researchers. Second—which will come as a surprise to many—was Italy, with 135 visiting and 72 guest researchers.

NIH Fogarty International Center, Public Affairs, Building 16, Bethesda, Md. 20892; tel. 301/496-2075.

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STI Review (173 pp., twice yearly; $16 per copy, $30 per year), third issue of journal published by the Directorate for Science, Technology and Industry of the Organization for Economic Cooperation and Development (OECD), Paris-based consortium of 24 major industrial nations. Articles in this issue are titled "Structural Adjustment in the Automobile Industry," "New Materials in the Transport Sector," "The Technological and Economic Impacts of the New Superconductors," and "The Role of Information and Telecommunication Technologies in Regional Development."

OECD publications are available at general bookshops and OECD offices in many major cities throughout the world. In the US: OECD Publications and Information Center, Suite 700, 2000 L St. NW, Washington, DC 20036-4095; tel. 202/785-6323.

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Five reports from the General Accounting Office, prepared at the request of the Senate Subcommittee on Science, Technology, and Space, chronicle the costly collapse of NASA's space sciences program.

All bearing the main title ***Space Exploration***, they are subtitled:

NASA's Deep Space Missions Are Experiencing Long Delays (GAO/NSIAD-88-128BR, 26 pp.)

Cost, Schedule, and Performance of NASA's Ulysses Mission to the Sun (GAO/NSIAD-88-129FS, 25 pp.)

Cost, Schedule, and Performance of NASA's Magellan Mission to Venus (GAO/NSIAD-88-130FS, 20 pp.)

Cost, Schedule, and Performance of NASA's Mars Observer Mission (GAO/NSIAD-88-137FS, 20 pp.)

Cost, Schedule, and Performance of NASA's Galileo Mission to Jupiter (GAO/NSIAD-88-138FS, 32pp.)

No charge. US General Accounting Office, Post Office Box 6015, Gaithersburg, Md. 20877; tel. 202/275-6241.

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Are We Cleaning Up? 10 Superfund Case Studies (GPO Stock No. 052-003-01122-1, 77 pp. $3.50), report by the Congressional Office of Technology Assessment, concludes that after eight years and $5 billion, Superfund has produced generally poor results. The case studies are a dispiriting saga of "how a site moves through the Superfund system"—very slowly and with little or no progress toward the goal of cleanup, says OTA.

Superintendent of Documents, USGPO, Washington, DC 20402; tel. 202/783-3238.

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Pacific Research Centers (Second Edition, 517 pp., $300), lists some 3500 research centers in Japan, PRC, Korea, Australia, Taiwan, and other nations, with title, address, phone number, and key staff members of each institution, plus data on research interests, publications, etc.

Gale Research Co., Book Tower, Detroit, Michigan 48226; tel. 313/961-2242.

Space *(Continued from page 5)*

The latest argument for the shuttle is that it is needed to carry materials aloft for constructing and supplying NASA's next adventure in monumentalism, the manned space station. In the grand tradition of malleable aerospace bookkeeping, the costs of this undertaking are variously estimated at from $14 billion to $34 billion. Still lacking, however, is a clear statement of what's to be done aboard the space station and why it can't be by other means.

When name-picking time comes for the space station, there should be no need for a contest. The runaway winner in this contest is clear: just call it the *Albatross*.—DSG

SGR Summer Schedule

The next issue of *Science & Government Report* will be published August 15, 1988.

Three Gloomy Reports on US Industrial Prospects Issued by OTA

In the Washington report-writing industry, it's a boom season for dour productions on the ineptitude of American industry. Checking in with the following new trio in this genre is the Congressional Office of Technology Assessment (OTA), whose topics of study directly reflect Capitol Hill's concerns:

Advanced Materials by Design (GPO Stock No. 052-003-01095-0, 353 pp., $14), reports that US industry is mainly sitting on the sidelines, waiting to see whether research on exotic materials can be used in saleable products, while Japanese manufacturers are closely involved with early efforts at commercializing the next generation of composites and ceramics. OTA notes that a large part of the US effort is financed by and focused on the needs of the Pentagon, and that "By a margin of 2 to 1, the US ceramics companies interviewed by OTA felt that Japan is the world leader in advanced ceramics R&D."

Commercializing High-Temperature Superconductivity (GPO Stock No. 052-003-01112-3, 106 pp., $8), reports that "American companies may already have begun to fall behind." OTA adds that "Japanese firms have been much more aggressive in studying possible applications of HTS (high-temperature superconductivity), and have more people at work, many of them applications-oriented engineers and business planners charged with thinking about how to get HTS into the marketplace."

Paying the Bill: Manufacturing and America's Trade Deficit (GPO Stock No.052-003-01124-7, 88 pp., $4), notes that "US pre-eminence in many manufacturing fields has evaporated," and one big reason is that "American manufacturers have fallen behind in the practical application of technology."

OTA doesn't prescribe for its Congressional clients. But the options offered in the three reports include closer collaboration of the federal, academic, and industrial sectors, expanded efforts to extract industrial value from military R&D, and increased federal financing of research in industry.

Superintendent of Documents, USGPO, Washington, DC 20402; tel. 202/783-3238.

Job Changes & Appointments

Anne G. Keatley, Executive Director for Government and Public Affairs, National Academy of Sciences, has been appointed Director of Institutional and External Affairs at the Carnegie Institution of Washington, effective August 1.

Eric Fischer, formerly with the Senate Budget Committee as a Congressional Fellow of the American Association for the Advancement of Science, has been appointed Deputy Director of the Smithsonian Tropical Research Institute. Fischer was formerly on the faculty of the University of Washington (Seattle). He succeeds ***James R. Karr,*** who has been appointed Professor of Biology at Virginia Polytechnic Institute and State University, Blacksburg, Va.

Thomas L. Poulos, Professor of Biochemistry, University of Maryland, has been appointed Director of the Center for Advanced Research in Biotechnology (CARB), jointly sponsored by the University, the National Bureau of Standards (NBS), and Montgomery County, which borders on Washington, DC. ***Walter J. Stevens,*** a computational physicist at NBS, has been appointed Deputy Director of CARB, one of four research centers in the Maryland Biotechnology Institute, which aims to nurture high-tech industrial development.

Howard J. Silver has been appointed Executive Director of the Consortium of Social Science Associations, a Washington-based lobby that represents social and behavioral sciences scholarly and professional organizations.

Silver has held the post on an acting basis since the resignation last January of ***David Jenness.***

Medical Award Honors NCI Head for Developing Hodgkins Therapy

Vincent T. DeVita Jr., Director of the National Cancer Institute, has been named the first recipient of a $150,000 prize established by the Pezcoller Foundation of Trento, Italy, to honor outstanding medical researchers. DeVita was cited for the development of treatments for Hodgkins Disease and diffuse large-cell lymphomas. The award, to be given every three years, is financed by Alessio Pezcoller, now age 90, for many years a cancer surgeon in Trento, and a major bank in that city. The award selection was made by an international committee of medical reseachers.

SGR Wins Investigative Prize

Science & Government Report has been named the first recipient of a new prize for "exclusive or investigative reporting" by newsletters.

The award was for SGR's coverage of fraud charges against Stephen E. Breuning, a research psychologist accused of fabricating data on tranquillizer dosage for retarded children (SGR March 15, April 1, 1987). Breuning's research was branded fraudulent by the National Institute of Mental Health and he was subsequently indicted on federal criminal charges. He has denied any wrongdoing.

The newsletter prize, $1000, is sponsored by the National Press Foundation, an independent, non-profit organization that annually awards prizes in various categories of journalism.

Political Heat Rising on Sharing of Federal R&D Funds?

From Equity, Excellence, and the Distribution of Federal Research and Development Funds *(88 pp.), an analysis prepared for Congress by William C. Boesman and Christine Matthews Rose, staff members of the Science Policy Research Division, Congressional Research Service, Library of Congress.**

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In addition to the comprehensive universities, there are approximately 182 research institutions falling outside the "top" 100 universities [in receipt of federal R&D funds], that are qualified to conduct cutting-edge research. Major discoveries made in the field of high-temperature superconductors . . . occurred at the University of Houston and the University of Alabama, Huntsville. The University of Alabama received $3.2 million in Federal support for science and engineering while the University of Houston received $7.9 million for R&D in fiscal year 1985. In comparison, Johns Hopkins University and the Massachusetts Institute of Technology, both "top-100" institutions, received $429.2 million and $187.7 million, respectively.

Proponents arguing for "geographical equity" in dispersion of Federal science funds contend that policies and programs should be established to strengthen and maintain strong science programs at these 182 research institutions. These "non-elite universities," or "second- and third-tier universities" as described by David Eli Drew, Claremont Graduate School, ["Finest Science Not Always Found in the Fanciest American Universities," *Los Angeles Times,* October 18, 1987], are receiving a small fraction of Federal R&D funding while productively engaged in basic research. These institutions, along with the comprehensive institutions, are employing many doctoral science faculty members from the top 100 institutions from which they graduated . . . . Proponents maintain that the present institutional concentration of Federal science funds has failed to respond to shifts in the distribution of scientific talent. The best researchers and the best ideas are not necessarily limited to the leading institutions.

[Whatever] the merits of the peer/merit review system, and there are many, that system is intended to select the best proposals for scientific research from among those available mainly on the basis of present scientific merit regardless of extraneous factors, including geographical considerations. Thus, the peer/merit review system is likely to reinforce the existing geographical distribution of R&D funding to scientific institutions as long as it correlates with the distribution of research excellence.

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[Various data suggest] that a relationship exists (whether causal or derivative is unknown) between Federal R&D funds expended in a State and the economic level of the State as measured in terms of per capita personal income . . . . [Of] the 17 States having per capita personal income at or above the US average in 1985, 10 also received Federal R&D funds above the US average per capita level. Perhaps even more significantly, of the 34 States having per capita income below the US average, 31 also received Federal R&D funds below the US average per capita level.

While much more than Federal R&D funds expended in a State determine its relative economic development, patterns [of distribution of Federal R&D funds] suggest that the concerns of State and regional policymakers about the importance of R&D to their State may not be misplaced. Such patterns also suggest that the unequal distribution of R&D funds may become more of a political and economic issue in the future than it has been over the last couple of decades.

**Reports produced by the Congressional Research Service are directly available only to members of Congress. But the legislators and their staffs routinely fulfill outside requests for copies. To get this one, specify that it's a report from the Congressional Research Service, give the full title and the identifying document code: 88-422 SPR. The main Capitol switchboard number is 202/224-3121.*

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