Patenting Is a Growing Idea at Cornell

Cornell Chronicle
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For decades "patent" has been a dirty word among many university faculty in American higher education.

Things are beginning to change, however, at a number of the nation's leading research institutions.

Among the leaders of this relatively unnoticed revolution is Cornell, along with Stanford University, Massachusetts Institute of Technology, and the Universities of Wisconsin and Illinois.

Stanford, for example, announced last year that since 1970 its Office of Technology Licensing had distributed more than $750,000 to faculty inventors, their academic departments and the University general fund.

Cornell's own Department of Patents and Licensing has compiled figures going back nine years (when interest in patents picked up here) showing that the Cornell Research Foundation has received a total of $1 million from licensees of Cornell inventions. Most of the funds, $768,000, were paid to the inventors and to their departments for further research. The remainder was used for operating expenses of the University's expanding patent program.

Currently, CRF, a wholly owned subsidiary of the University, holds 92 U.S. patents and has applications pending in the United States on 24 others.

A question that arises is what is behind this gradual abandonment of the time-honored idea that the fruits of university research are part of the public domain?

An obvious answer, of course, is that given the financial plight facing higher education this kind of idealism goes out the window under the pressure of necessity.

The answer is not that simple, however, according to Theodore Wood, manager of the University's Department of Patents and Licensing, established in 1976. Before that time all University patent applications were turned over to Research Corporation in New York City, which performs this service for more than 300 institutions in the country. Establishment of the University's current program was based in part upon the recommendation of a study by the Cornell Class of 1922.

Speaking in his small office complex in 124 Day Hall, Wood said that in the 1960s certain departments in the federal government began to encourage universities to seek patents based on their research findings. While there never has been an official administration policy on encouraging use of the patent system, more and more federal departments are pursuing such a policy, Wood said.

Surprisingly, the greatest impetus has come from the Department of Health Education and Welfare. Norman J. Latker, patent counsel for HEW, has been a leading proponent of the patent system and the need for universities in particular to use it.

But why?

Latker and others, including Betsy Ancker-Johnson, former assistant secretary for science and technology, U.S. Department of Commerce, have argued publicly since the late 1960s that American business has fallen behind many European countries, not because it doesn't have new ideas for products but because too many of them never get developed and placed on the market. In their words American business is the victim of a growing "technology transfer gap" with most of the world's industrial nations.

They argue that by allowing new discoveries to enter the public domain immediately, private incentive to turn the ideas into marketable commodities is killed. It should be pointed out that a patented idea lasts 17 years in the U.S., then automatically enters the public domain.

As Wood says, "History shows that businessmen will seldom invest in an invention that is available to everyone."

Some argue that the "public domain idea" among faculty is a vestige of the pre-World War II university when the research effort on American campuses was relatively modest compared to today's standards. They also say it is related to "publish or perish" pressure. The patenting process can be drawn out and during that time the inventor feels constrained about publishing his or her research.

With the influx of billions of federal dollars in the past three decades, American research universities have become a major source of ideas and information needed for the future growth of American industry. University contributions have been crucial in the success of the space program and America's world leadership in electronics and computers.

Shifts in government research support, the increased emphasis on patents and licensing and the inevitable growth in inter-relations with industry mark what appears to be a new era in the evolution of university research.

The question of whether patent and licensing will ever become a substantial source of revenue for universities is still open. The figures now don't indicate it will be, according to Wood.

There are other realities, however, according to Thomas W. Mailey, who works with Wood as manager of industrial liaison in what is called Cornell's Technology Transfer Program.

"We must be constantly aware," says Mailey, "that we exist to help inventors and move new ideas and concepts from research to industry. This does not mean that our total effort is towards making money—it means our orientation should be towards maximum exposure of good new technology resulting from research at Cornell."

Both Wood and Mailey feel their work is a new variation on the public service commitment of the university as the state's Land Grant institution.

Wood, who retired in 1970 after 17 years as a patent executive with International Business Machines, Inc. says his patent work at Cornell is the most challenging of his career, which began as an examiner in 1946 with the U.S. Patent Office.

The overall technology transfer program is under the direction of W. Donald Cooke, vice president for research, with the assistance of Thomas R. Rogers, director of the Office of Sponsored Programs.

But if you have any patentable ideas, Wood is the man to see.

Martin B. Stiles

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THE NEW YORK TIMES, SUNDAY, JULY 25, 1971

Patents Adding To Earnings

By STACY V. JONES

WASHINGTON — American corporations, which own more than half a million "live" United States patents and an uncounted number issued by foreign governments, often find it profitable to license others to use at least part of their patented technology.

This technology, which may include machinery, integrated circuits and production techniques, may bring substantial earnings. The General Electric Company's report for 1970 lists earnings from royalties and technical agreements as $24.4-million. This includes a substantial amount gained from know-how — unpatented technical knowledge—and foreign patents.

A Patent Office study, published in 1957 by the Senate subcommittee on patents, showed General Electric to be the leading American patent owner at the end of 1955. No exact count has been made since, but the company is probably still in the lead.

Since G.E. was incorporated in 1892, it has received about 42,000 American patents, of which 14,466 were still in force last Jan. 1. At present, the company is receiving about 1,000 new domestic patents a year.

G.E. is seeking to license inventions that it has decided not to use; sharing the results of its research with small businesses in return for royalties that include a percentage of sales. A technology marketing operation, which has its headquarters at G.E.'s research and development center in Schenectady, N. Y., chooses about 100 patents a year that it thinks have good potential and publicizes them through a periodical, Business Opportunities. Subscribers can use it to advertise their own surplus inventions.

Other companies are also trying to increase their royalty income. The Westinghouse Electric Corporation says it believes in "maximizing" its patent licensing. The National Cash Register Company is realizing gains on "spin-offs" from basic research, such as business forms that do not need carbon paper. The Esso Research and Engineering Company, which holds most of the patents of the Standard Oil Company (New Jersey), is actively offering licenses on a variety of processes, including hydrorefining, fluid coking and plastic production methods.

In their published licensing policies, many large companies offer to grant nonexclusive rights on almost any invention, regardless of the competitive situation, in return for reasonable royalties. But some retain exclusive rights during the first two or three years after the patent is issued.

A company's licensing office must keep in mind the relationship of the patent's limited monopoly to the larger antitrust question. The freedom to license will be taken into account by the Senate Judiciary subcommittee on patents later this session, when it begins work on a pending bill for revision of the patent laws.

The International Business Machines Corporation, which holds about 6,250 live United States patents, receives about 550 new patents a year. For protection on its discoveries, I.B.M. relies partly on disclosure, which prevents others from patenting a published invention. The company files patent applications only on important inventions and puts the others into the public domain through the I.B.M. Technical Disclosure Bulletin. In 1970, about 2,200 inventions were published in this manner by I.B.M. If it changes its mind, I.B.M. can apply for a patent within a year after publication.

Other holders of a large number of patents, with the number of unexpired American patents held on a recent date and the approximate annual total of new patents being received include:

¶The General Motors Corporation: about 11,000 currently; 390 in 1970.

¶The Bell System: 9,690 on March 31; about 800 a year.

¶E. I. du Pont le Nemours & Co.: 8,854 on Jan. 1; about 600 a year.

¶The Phillips Petroleum Company: 6,056 on Jan. 1; 404 in 1970.

¶The RCA Corporation: 5,695 currently; about 300 a year.

¶The Standard Oil Company (New Jersey): 5,192 currently; 267 in 1970.

In all, there are now about 900,000 unexpired American patents. Domestic corporations own about 60 per cent and foreign corporations 10 per cent.

The proportion of American patents received by corporations has been gradually increasing over the years. This is the age of the payroll inventor whose contract provides that he assign to his employer the inventions he makes during working hours. About three out of four patents now go to corporations. Of the remaining one-fourth, most are owned by individuals, with a small proportion held by the Government, which employs its own inventors.

Few American companies assign balance-sheet values to their patents or report earnings specifically from them. A brokerage house has estimated the patent royalties of Phillips Petroleum at $12-million a year. In 1970 the company received 351 patents from 34 foreign countries.

Many American companies receive foreign patents on the same inventions they patent here, often in as many as 15 or 20 countries. The estimated number of foreign filings is 150,000 a year. Among the corporations owning substantial numbers of unexpired foreign patents are Westinghouse, with 13,045, and RCA, with 8,505.

The Soviet Union is in the spotlight just now on the foreign licensing stage. The International Intertrade Index of Newark is putting together a group of 10 American executives who will spend 10 days in Moscow studying Soviet inventions with a view toward manufacturing them under license in this country. Roger Tuthill, chief engineer of Airco Welding Products, Inc., Union, N.J., and several pharmaceutical specialists have signed up for the trip.

A Soviet delegation visited the Patent Office and American companies last spring to study the protection and licensing of inventions. Last month, William E. Schuyler Jr., Commissioner of Patents, and four members of the Licensing Executives Society, Inc., went to Moscow to explore opportunities in the Soviet Union for the licensing of American technology and American-owned Soviet patents.

The number of live American patents owned by domestic corporations has grown from 317,726 in 1955 to an estimated 540,000 today. There are signs that patent holdings abroad have increased at an even higher rate and that foreign licensing will take on added importance.

STRENGTHENING THE NATION'S RESEARCH AND DEVELOPMENT EFFORT[1]

The need for a more strategic approach.—It is clear that Federal investments in research and development have a far-reaching impact on economic and social progress. The implications go well beyond the contribution of research and development to specific programs such as defense, space, energy, health, environment, and transportation.

The scope and significance of research and development tends to be overlooked in the Federal budgetary process since it is scattered throughout the budget and since science and technology are often viewed as optional long-run approaches to the solution of specific problems which demand immediate attention. This view of research and development hinders the development of an overall—more strategic—approach to the resource allocation process.

A discussion about R. & D. must be a discussion about the future. Many of our goals can be attained by improved day-to-day management of existing programs or by more investment in using what we already know how to do. But nothing forces a government or a business to look to the future more than does the question: What should we do in R. & D.?

A major objective of this Administration has been and will continue to be, a more strategic approach to our total national research and development investment. To further this strategic approach, we must spend more of our talent and resources in more clearly understanding the research and development process, particularly in how it works in the context of a representative form of government and a free market economy. This budget proposes just that. In addition, the 1973 budget will move us ahead in several critical areas where our knowledge is sufficient to make wise investments in R. & D.

This budget accelerates our efforts to turn science and technology to the service of man through emphasis on solving important civilian problems, increases significantly our efforts in defense R. & D. to protect our national security, and strengthens the support of basic research to increase our stock of knowledge to draw on for the future.

Beyond these overall R. & D. thrusts in the budget, provision is made for a beginning in several important areas. This budget:

—initiates a series of experiments to find better ways to encourage private investment in research and development and to improve

[1] The term "research and development" covers the discovery and application of new scientific knowledge—including the design, testing, and evaluation of new materials, processes, products and systems. It includes, for example, basic research into the origin of the universe or on the workings of the human body as well as the design and development of a new military aircraft or the New York-to-Washington Metroliner demonstration project. It would not include, for example, the purchase of military aircraft for operational use, payments to Amtrak for operating or capital costs, or funds directly for the schooling of new scientists and engineers.

the application of R. & D. results. These experiments will be undertaken through joint university-industry cooperative efforts and through industrial and research associations—with special attention to small technological firms.

—draws more directly on the capabilities of those agencies that harnessed the atom and conquered space, AEC and NASA.

—strengthens the partnership between government and industry in R. & D. to create innovative technologies and new markets, thus providing new job opportunities, increasing the Nation's productivity and strengthening the U.S. position in international trade. For example, the Edison Electric Institute is developing a program of contributions for R. & D. from its member electric utilities. The Federal Government will encourage such activities through coordinated planning and cooperative R. & D. efforts with such groups. A similar arrangement is underway with the American Gas Association on coal gasification projects.

—provides an improved national capability to assess the importance of research and development to economic growth.

Through these and other efforts the Administration continues to improve the management of the Government to insure that our overall R. & D. effort is adequate, that our R. & D. programs are focused on top priority needs, that our considerable R. & D. capabilities are effectively utilized, and that the American people get a proper return on the dollars they invest in Federal research and development.

Fiscal year 1973 funding for Federal R. & D.—The Federal effort for the conduct of R. & D. will reach $17.8 billion in the 1973 budget, an increase of $1.4 billion, or more than 8%, over 1972.

Included within this total are significant increases in research and development to strengthen our national defense; to increase the emphasis of the space program on useful applications; to accelerate research and development to deal with key problems in health, transportation, energy, environment, and natural disasters; and to strengthen basic science.

The expansion of ongoing programs, together with new efforts that move us to a longer range R. & D. strategy, results in a total increase of more than $700 million for the civilian research and development effort—exclusive of defense and space—in 1973 or 15% over 1972. This makes for a 65% growth in civilian R. & D. since 1969, from $3.3 billion to $5.4 billion.

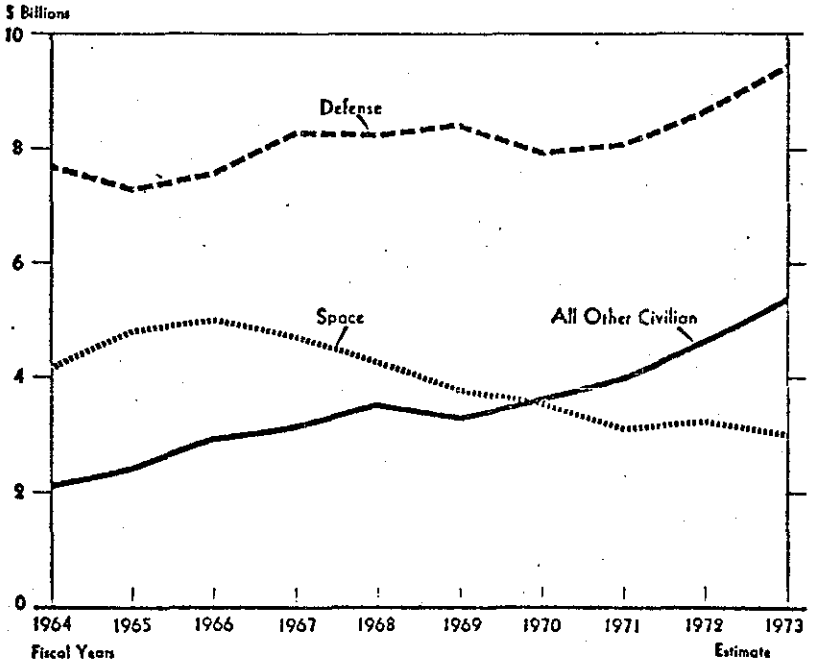
THE OVERALL FEDERAL R. & D. OUTLOOK

[Obligations for conduct of R. & D. in billions of dollars]

	1969	1972	1973
Defense, including AEC military-related programs	8.4	8.6	9.4
Space	3.8	3.1	3.0
Civilian programs	3.3	4.7	5.4
Total	15.5	16.4	17.8

Trends in Federal R. & D. are also depicted in the following chart.

Conduct of Research and Development — Obligations



Special efforts to strengthen civilian R. & D.—This budget includes special efforts to strengthen civilian R. & D. as illustrated in the following table:

RESEARCH AND DEVELOPMENT

[Obligations in millions]

Program objective	1972	1973	Percent increase
Abundant electrical power without pollution	$392	$480	22%
Fast, safe, pollution-free transportation	456	666	46
Reduction in the loss of human life and property from natural disasters	93	136	46
Effective methods of curbing drug trafficking and of rehabilitating drug users	50	60	20
Local demonstrations of effective emergency health care systems	8	15	88
Experimental incentives program	0	40	-------
Total of these categories	999	1,397	
Total 1973 increase	-------	398	40

This increase of about $400 million is the first stage in $2 billion of R. & D. over the next 5 years in these areas alone. These increases illustrate the efforts of the Administration to focus R. & D. on both short-run and longer range goals in areas of national concern.

Abundant electrical power without pollution.—A sufficient supply of clean electrical power is essential to economic growth and the quality of national life. A broad research and development program is crucial to the attainment of these goals—both in the short- and long-run—and particularly to balance environmental and energy needs.

In the 1973 budget, further effort will be devoted to the development of pollution control technologies in order to provide additional options for meeting air quality standards at lower costs. In 1973 there will also be further expansion of research and development programs identified in the Energy Message of June 1971. These programs include the fast breeder reactor for nuclear power, coal gasification, magneto-hydrodynamics, controlled thermonuclear fusion power, solar energy and mapping and basic assessment of the resources of the Outer Continental Shelf.

To reach further ahead in time—to provide more options for the future and to begin to draw more on the capabilities of the high technology agencies—the 1973 budget provides for research on advanced dry cooling towers and large scale energy storage batteries in the AEC, cryogenic power generation and transmission in the AEC and National Bureau of Standards, greater use of laser technology in fusion power research under AEC, and research by the Department of the Interior on the uses of low-B.t.u. gas produced—with less pollution—from coal.

Fast, safe, pollution-free transportation.—New and expanded research and development programs are needed to provide fast, safe,

pollution-free transportation. Technically advanced systems must be explored which are not only safer and more efficient but which reduce adverse environmental impacts.

Under the 1973 budget nearer term R. & D. programs will be initiated or expanded to attack the problem of truck and aircraft noise, develop more attractive and economical mass transit vehicles, and provide for safer automobiles.

In order to maintain our options for new transportation systems further in the future, work will be accelerated on personal rapid transit, which provides individualized, nonstop service for commuters; and new work undertaken on dual-mode systems for metropolitan areas which might combine the convenience of the automobile with the efficiency of a rapid transit system and on new tunneling technologies to reduce the cost of underground excavation for mass transit. Work on advanced air traffic control concepts, a short takeoff and landing (STOL) aircraft, and quiet aircraft engines will continue at higher levels to provide more efficient, safer air transportation with reduced environmental impact. In these more advanced fields of both ground and air transportation, the capabilities of NASA will assist in meeting R. & D. program objectives. Similarly the technical talent of AEC will be utilized in advanced work on tunneling.

Reduction in the loss of human lives and property from natural disasters.—Natural disasters take an unwarranted toll on human life and property. In 1969, 12,000 people died from fires and $2.4 billion of property was destroyed. While increased warning time has significantly reduced deaths from hurricanes, property damage has increased dramatically, to some $2.4 billion during 1965 through 1969.

The 1973 budget proposes acceleration of research efforts to diminish losses of lives and property from these and other hazards and natural disasters. Particular attention will be focused on research in hurricane modification to reduce damage from surface winds; on earthquake prediction—and ultimately control—and on engineering to design safer structures; and on fire research—including forest fires.

Effective methods of curbing drug trafficking and of rehabilitating drug users.—The June 1971 message to the Congress on Drug Abuse Prevention and Control recognized the need for a major effort to curb a problem that is assuming the dimensions of a national emergency. This message called for the creation of a Special Action Office for drug abuse prevention.

In keeping with this Administration action, research and development on new ways to curb drug trafficking and to rehabilitate drug users has been stepped up in both 1972 and 1973. For the coming fiscal year, the budget provides for an overall fourfold increase in research budgets of a number of agencies over the 2-year period since

1971. This includes funds for the Departments of Justice; Health, Education, and Welfare; Defense; Agriculture; and the Office of Economic Opportunity—for a multipronged attack on all phases of the drug problem.

Local demonstrations of emergency health care systems.—Vast sums of money are spent in this country on research in many aspects of health. One need that has yet to be properly addressed is the provision of adequate emergency medical service. Technologies are available. The problem is to pull together these technologies into a system which effectively links communication, transportation of victims, ambulance equipment and services, trained manpower, and emergency room hospital service.

Full-scale demonstration of such integrated emergency treatment systems—as planned in the 1973 budget—can be undertaken with relatively small amounts of added Federal funds to act as a catalyst.

Incentives to encourage economic growth through R. & D.—As part of the $400 million increase in special efforts to strengthen civilian R. & D., $40 million is provided for two new experimental programs to encourage economic growth through R. & D. The objective of these programs will be to broaden the application of research and development results, to improve productivity, and to stimulate private sector R. & D. efforts.

Over $14 million is included in the budget for the National Bureau of Standards for this purpose and $26 million for the National Science Foundation. The funds for the NSF will also provide for a national research and development assessment capability to improve understanding of the process of innovation and research application in American society.

Both agencies will experiment with a variety of approaches including joint research in university, industry and Government laboratories, shared cost research through industrial and research associations, demonstration of new technology applications in various sectors of the economy, and encouragement of small, innovative firms.

The division of responsibility between the National Bureau of Standards and the National Science Foundation will in part be determined by the different foci of current activities in the two agencies. The Foundation can be expected to emphasize university-industry relationships, research associations, special incentives—and longer range exploratory research. The National Bureau of Standards may emphasize shorter range research objectives—technological development and demonstrations with relatively immediate industrial application and efforts to broaden the application of useful technological advances. The Bureau will also emphasize its contacts with individual industrial firms and associations.

(XCC Latner Smith (MIT)
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MAY 15 1978

Gene-splicing research and the protest that fizzled out

By Susan Cohen
Staff Writer

THE headlines once pictured the possibility of worldwide epidemics, unleashed from the laboratories where recombinant DNA researchers were playing cut and paste with the basic units of heredity.

But even many of those who have cautioned against the proliferation of such research now disown those fantasies.

The fact is that the debate over the safety of the gene-splicing technique called recombinant DNA has gone as quiet as the laboratories where the work proceeds with little protest and, apparently, without incident.

In early March, the National Institutes of Health (NIH) granted Stanford University permission to issue licenses to private companies seeking to develop the technique for commercial use.

Congress has apparently abandoned attempts to set up a regulatory commission to oversee recombinant DNA research.

And the NIH, which writes and enforces the strict safety standards for gene-splicing done in federally funded projects, is now revising those guidelines.

"The momentum is now going towards taking away more and more of the restrictions on the research," says Nancy Pfund, a Stanford graduate student, who has represented the Sierra Club and other environmental groups worried about the use of recombinant DNA.

"The debate is still alive but it's shifting focus. Commercialization and the role of the public in scientific policy don't garner the sorts of headlines that 'Andromeda strains' do."

The scientists who originally warned of the potential hazards of their own research — then lobbied Congress to prevent legislation which might further tie their hands — say the debate has shifted because new evidence has laid the safety questions to rest.

Their critics claim Congress was wowed by the scientific muscle of those who lobbied against increased regulation.

But now that the work is proceeding, its commercial potential is raising another set of issues, among them one of the most difficult questions of all to answer: Just how should the public or can the public be involved in directing the often-awesome path of scientific progress.

Gene-swapping, gene-splicing, or more a scientifically, recombinant DNA, is an ability researchers acquired only recently. It allows scientists to take part of the DNA or dexoyribonucleic acid which makes up the genetic blueprint for one organism and insert it into the genetic machinery of another.

Some of the potential stemming from such a technique was demonstrated just a few months ago when UC-San Francisco and City of Hope researchers inserted an artificial gene into a bacterium and directed it to make a hormone found in the human brain. The experiment was hailed as proof that recombinant DNA may be used to turn bacteria into factories, churning out useful medical substances, such as insulin, at man's command.

The possibilities of gene-splicing also extend to agriculture where years of breeding might be short-cut with a method to issue genetic commands.

"We share the firm conviction that this will be a billion dollar revolution and what we'll see 25 years from now will be astounding," predicts Dr. Ronald Cate, president of CETUS, a Berkeley firm already working at putting recombinant DNA to commercial use.

But soon after the technique was developed, the researchers themselves began to recognize its potential hazards. They invoked a voluntary moratorium on the work to discuss the issues and set up some safety procedures.

Among the worst scenarios they imagined was that a tumor-producing virus might be introduced to a common bacteria which might escape from the laboratory and infect nearby populations.

It is just such scenarios which have faded.

The NIH guidelines have banned the most risky of the experiments and set up stringent safety containment procedures for others.

New types of "disarmed" bacteria are being used in the experiments, cells which are unlikely to survive outside the laboratory.

And some experiments indicate that gene-swapping is not novel to nature, that organisms swap genes frequently without creating hazards.

"The recombination of DNAs is a very natural process," says Stanford associate professor of biochemistry Ronald Davis, one of about 15 researchers at Stanford now doing recombinant DNA experiments.

"If it's happening at a fairly high frequency in nature and we're not picking them up as dangerous, it indicates to me that they're not hazards," Davis says.

It was such evidence that Senator Edward Kennedy, D-Mass., cited last year when he dropped his sponsorship of a bill which would have set up something akin to the Nuclear Regulatory Commission to deal with recombinant DNA. It is also leading the NIH to revise the guidelines under which federally funded gene-splicing projects have been operating for

the last year and a half — probably to ease regulation of those types of recombinantion known to occur in nature.

When Congress started to consider the issue this year, the debate had been pared down to a bill which would extend the NIH guidelines to cover industry, at least for two years.

Setting up the same standards for industrial laboratories that university laboratories operate under makes sense to both recombinant DNA researchers and their critics.

The most controversial part of the House bill, which would also set up a study commission to examine the long-term uses of the new technology, is the clause which would reserve the right to regulate the field to the federal government.

The prestigious universities where the research is under way support the clause. The critics, who may have hopes for more restrictive legislation at the state or local level, have spoken out against it.

The critics also point to what they charge is a conflict of interest. Stanford University, which is seeking a patent on the recombinant DNA process developed by Dr. Stanley Cohen of Stanford and Dr. Herbert Boyer of UC-San Francisco, stands to make substantial royalties should commercial uses be developed during the life of the patent.

Although Cohen has waived his rights to the a percentage of the royalties, Boyer has set up his own company called Genotech to pursue commercial application of recombinant DNA.

Stanford has not issued any licenses to private firms so far and has made no decision on how it will go about doing so, according to vice president for public affairs Robert Rosenzweig. He lists possibilities that range from allowing anyone who applies to use the process without collecting royalties to granting an exclusive license to one firm.

"Down the road there are going to be lots of applications that will raise questions," Rosenzweig says, but he goes on, "in the short run the problems are going to be quite manageable."

Rosenzweig points out that NIH will require any firm receiving a license to comply with the federal guidelines, something private firms are not now required to do.

And, he goes on, it is only with the protection of a license that industry is willing to invest in developing a useable product from the results of publically funded basic research.

"Some people appear to think that's either novel or evil. I don't think it's either. That's the way things get done in this country," Rosenzweig argues.

But among those who disagree is Jonathan King, a biology professor at MIT who has been a leader of those criticial of the recombinant DNA researchers.

King is willing to concede now that "it's an important technology. It's a revolutionary technology. It can be done safely."

But he sees problems of both safety and ethics as the technique gets translated into commercial use.

"It's really a rip-off of the public interest. This was developed entirely out of public funds . . . the money should go back to the public trough," King charges.

"Every bit of recombinant DNA research was paid for by the sweat of the public brow. I don't think the trustees of Stanford should benefit from that."

King also fears that as industry, using recombinant DNA techniques, develops products and methods worth guarding as trade secrets, the research will become increasingly difficult to regulate.

"There's a direct conflict between public safety and private profit," he says. "It's impossible to have the stuff done safely in secret."

Adds Halsted Holman, a Stanford professor of immunology who has been critical of his Stanford colleagues on the recombinant DNA issue, "How much do we know about the health problems associated with recombinant research in industrial applications?"

So far, Holman says, "The evidence favors the experiments" which are being done in carefully monitored laboratories. "But as we get into more and more complicated recombinations that might change," Holman says.

The critics' main contention is that the technology is just too new to be sure about and too revolutionary to abandon caution.

Even beyond the immediate questions of safety, University of California at Santa Cruz Chancellor and former genetic researcher Robert L. Sinsheimer has suggested the work be restricted to a few facilities because of its long-range potential for tampering with heredity.

"With recombinant DNA our practice now far outpaces our theories and may carry us swiftly and unwittingly into new domains," Sinsheimer said in a speech last November.

"We may now have come to a time when we need to consider whether we ought to forego certain technologies, however alluring, as unsuited to the nature of mankind."

But recombinant DNA researchers dismiss the idea that their technique presents any special problems as it goes commercial or that restricting their research is the way to protect society from broad fears of genetic engineering.

"It's my belief at the present time and the belief of the other signers (of the moratorium) that the concerns that have been developed have been greatly overblown," says recombinant DNA pioneer Stanley Cohen.

"The experience and the reason for the shifting of the debate away from the safety question is that it's become clear that this

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research has no more danger than any other research," he says.

Cohen believes safety procedures should be followed, as they are in other types of biological research, but he has argued heartily in Congress against any enactment of specific regulations into law.

"We don't have a salmonella research act of 1978 or a rabies research act of 1978, yet work in those areas is known to be hazardous," he points out.

Cohen, who has been criticized for using unpubished data as a weapon in the legislative arena, is just as eager to take a swipe at those who speak for more public participation in setting scientific policy.

"The public as I see it are public representatives and not self-proclaimed spokesmen for the public," he says. "When one says the public should be involved I would argue the public has been involved."

While government, through its funding processes, sets the basic directions of research, Cohen states, "The question is whether basic research itself should be directed in a day to day way by the public."

"It's very difficult for anyone, even for scientists, to know what direction the search for truth will take," he says. "Knowledge cannot be bad.Knowledge can only be good."

It is up to the public, Cohen acknowledges, to see that the knowledge resulting from basic research is put to good use. But he sees existing mechanisms to do this.

He tells the story of a critic who charged genetic engineering might someday be used to genetically alter an aggressive male by directing his cells to produce less of a particular male hormone. Cohen's reply was that a method already exists to accomplish the same end — castration — "but castration is not publically accepted."

But those who have fought against him on the recombinant DNA issue contend there must be better ways to allow the public to control its scientific future.

"I think the public interest is there but it hasn't found a way to express itself," says Nancy Pfund. "We're asking for the same rule of participation in basic science as in other sectors of our economy and society.

"That's the issue that's going to keep burning once this particular issue dies out," she says.

To which one recombinant DNA researcher replies: "They've overdramatized and scared the public and by scaring them you get them involved. Maybe the public doesn't want to get involved."

Vote postponed on faculty files

DALY CALIFORNIA 3/31/78

By TOM PECORARO
Staff Writer

SACRAMENTO — A last-minute lobbying effort against a bill guaranteeing UC faculty members access to confidential personnel papers forced postponement of hearings on the bill here yesterday.

Hearings have been postponed until the bill's backers can muster enough votes for passage.

UC administrators who oppose the bill earlier this week convinced Assemblymember Art Torres (D-Los Angeles) to withdraw his support for it.

And UC Regent Stanley Sheinbaum yesterday morning phoned from New Mexico during an Assembly Judiciary Committee hearing on the bill, urging committee member Maxine Waters (D-Los Angeles) to oppose it.

The bill, SB 251, sponsored by state Senator David Roberti (D-Los Angeles), would give faculty candidates for promotion and tenure access to confidential information about them — letters of recommendation and reports of faculty review committees. Only the names of reviewers would be deleted from the released information.

The bill also grants all UC employees access to non-confidential records, including teaching evaluations and pre-employment letters of reference.

UC administrators and faculty senates at several UC campuses have united in opposition to the legislation, arguing that it will undermine the confidential promotion and tenure review process they equate with UC's excellence in research.

The bill's opponents also say it is unnecessary. They point out that a bill granting all state employees access to personnel and confidential information kept about them was signed into law last year.

The bill, SB 170, allowed the university to provide either full texts of this confidential material with the names edited out or summaries of its substance. The university's new policy, enacted last September, allows only for summaries.

"It seems premature for the legislature to step in at this point. We don't know how well these procedures are working or how well they will work," said Harold Horowitz, UCLA vice-chancellor for faculty relations and chair of the committee that wrote the university's current personnel procedures.

Assemblymember Torres, lobbied by Horowitz earlier this week, emphasized this same point.

"If the university is, as he (Horowitz) assured me, making good faith effort to implement SB 170, it is not appropriate to introduce new legislation at this time," Torres said.

But supporters of Roberti's new bill contend that the university is violating the intent, if not the letter, of last year's law.

David Brody, statewide chair of the UC American Federation of Teachers, one of the principal groups backing SB 251, argued in testimony before the judiciary committee yesterday that by providing summaries only at the end of the tenure review process the university makes it impossible for candidates unfairly denied tenure to determine where they were wronged.

"The crucial thing is that people have the information they need to appeal their decision and be guaranteed due process," Brody said. "These aggregated summaries are virtually useless to a person who believes himself to be treated unfairly. Aggregated summaries make a mockery of due process."

The bill's supporters only have one more chance to present it in committee. Under California law, any bill that fails to win passage after being postponed three times is considered dead, and SB 251 has already been delayed twice.

"We're going to make every effort to find out what the legislators' concerns are and address them," Lori Snell, a legislative assistant to Senator Roberti said. "If it takes two or three weeks to set the date of the next hearing, fine. It's our last time around."

Science Report/White House views intense technology hunt as useful exercise, though few projects emerge

by Claude E. Barfield

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On Jan. 27, within a week after President Nixon delivered his State of the Union message and his fiscal 1973 budget to Congress, about two dozen White House staff members gathered at Washington's Hay-Adams Hotel to celebrate the end of a unique crash effort to plan new subsidies for high-technology development.

The party's guest of honor was William M. Magruder, who had led the drive to create what came to be known as the New Technological Opportunities Program.

The men and women who had worked for Magruder on a backbreaking schedule since early fall had prepared a gift for their boss. It was a toy airplane, in red plastic, piloted by the Red Baron, of Peanuts comic strip fame.

The baron was outfitted with schizophrenic headgear.

One-half of his helmet was painted black, with the letters SST outlined in white—symbolizing Magruder's unsuccessful campaign in 1970 to save the ill-fated program to develop a commercial supersonic transport aircraft.

The other half was white, and it was adorned with the acronym TOP, for Technological Opportunities Program.

Also painted onto the baron's helmet was a series of numbers ranging from 350 to 779—symbolizing the millions of dollars that had been contemplated at one time or another for the technology program next year.

It was a small plane, as befitted the program the Administration had approved. For after months of effort, after intensive review of dozens of imaginative and expensive proposals for new federal research and development subsidies, after hours and hours of consideration by the principal advisers to President Nixon, the Administration had decided, as Commerce Secretary Peter G. Peterson put it, that "we have to learn to crawl in this area before we can walk."



William M. Magruder and the symbolic toy airplane from his staff

That admission had formally been made a day before Magruder's party, at a Cabinet Room briefing led by John D. Ehrlichman, the President's top domestic affairs adviser. Ehrlichman notified the gathering that no big new programs would emerge in the coming fiscal year.

Yet Ehrlichman argued that even though the Administration had not approved expensive projects to develop new technology, Magruder's work had laid the base for a more rational approach to federal science policy.

Clearly, the new technological opportunities (NTO) exercise has increased the government's understanding of problems endemic to subsidizing research and development in domestic fields where private industry traditionally has held sway. It also has led to a new federal resolve to undertake experiments in R and D partnership between the government and the private sector.

In the long run, the Presidential "message to Congress on science and technology" that emerged from the Magruder effort may be viewed as an important first step in a government attempt to better apply the technological resources of the nation.

Program development: The drive to find new technological opportunities was launched last September, shortly after the Administration had instituted its wage-price freeze. Its goal was to identify ways in which the government could help stimulate technological innovations to solve critical domestic problems, thus improving the competitive position of the United States in world trade and utilizing the skills of unemployed scientists and engineers.

The program then seemed to hold out the promise to the scientific and technological community and to large U.S. industries of an important new partnership with the federal government and significant short-term payoffs in cash. It had high political overtones. The program "could become a key component in President Nixon's economic policies and in his bid for reelection," wrote John N. Wilford in *The New York Times*.

"In a real sense, science and technology are being enlisted as important components of the new economic policies," said Peterson at the time.

And in an October interview, David said he believed the program "will result in some of the most important opportunities for the scientific and technological community in years."

Magruder was appointed on Sept. 13 to coordinate the program, and a few days later he expressed caution about "overselling the program" but said that "I wouldn't have taken the job unless I had convinced myself that we could come up with something significant."

Working against a tight deadline—the technology package was supposed to be ready for announcement in the State of the Union message—Magruder in November abandoned his resolve not to build a sizable personal

R and D Coverage

This is the first of a two-part series on the evolution of the Nixon Administration's policies for science and technology. This report analyzes the Administration's drive last fall to produce a group of major new technological initiatives; the second report will describe the Administration's future plans in the area. *(For two earlier reports on the Administration's plans to stimulate research and development in the United States, see Vo. 3, No. 43, p. 2115, and No. 44, p. 2156.)*

staff and recruited nine program managers from the National Aeronautics and Space Administration to pull the package together.

The program managers inherited an ambitious wish list of proposals made to Magruder by federal agencies—a list that would have cost $1.5 billion in fiscal 1973 and $11 billion through fiscal 1977. Large new initiatives put forward to the White House included development of new nuclear power systems for commercial ships, development of offshore ports for deep-draft tankers, mapping and exploitation of the resources of the continental shelf, a speed-up in the AEC's program to use nuclear detonations to free natural gas from tight rock formations, a plan to fully develop high-speed rail transportation in the Northeast Corridor, an item-by-item analysis of the nutritional content of the nation's food supply, and a campaign against kidney diseases.

White House team: Four of President Nixon's top advisers made the final decisions on the NTO program: Ehrlichman, executive director of the Domestic Council staff; George P. Shultz, director of OMB; Peterson, then director of the Council on International Economic Policy; and Peter M. Flanigan, special assistant to the President.

The group wrestled with the proposals presented to them all during the month of December and spent several hundred man-hours trying to put together a package.

By Christmas, it was evident that they had failed. In the end, none of the large-scale projects was accepted, and the Administration also decided not to go for across-the-board R and D tax incentives for industry.

A much smaller, backup list was assembled by the OMB and word went out from the White House that no more could be expected in 1972.

President's message: On March 16, the President sent his long-awaited message on science and technology to Congress, a message originally supposed to cap the NTO campaign by announcing broad new policies and programs. With the failure of that campaign to produce sizable new initiatives, the document was anticlimactic.

Disappointment—Though billed as the "first Presidential message on science and technology in the nation's history," it failed to attract much notice, and indeed most press comments showed keen disappointment in its contents.

Thus, the headline in *Science*, the magazine of the American Association for the Advancement of Science, read: "White House Presents Vapid Technology Plan." And the magazine characterized the message as "little more than reshufflings of existing rhetoric and known policies" in "sad contrast to the optimistic hints that emanated from the Administration last summer and fall."

Daniel S. Greenberg, a keen if acerbic observer of federal science policy making, wrote in his *Science and Government Report:* "In form, content, and vision . . . it is a fairly pedestrian melange. . . ."

Speaking to the business community, *Business Week* similarly stated that the "Administration is admitting that it doesn't know how to formulate new technological programs or institute immediate incentives for strengthening industrial innovation."

Positive reaction—There are those who strongly disagree with the criticism leveled at the message on science and technology. "Much of the negative reaction is based on the very high expectations that were generated out of the Magruder operation," said William D. Carey of Arthur D. Little Inc. "They made a tactical error in trumpeting that drive and it leaves the message looking pretty weak."

Carey, a recognized authority on science policy who served as assistant director (human resources) of the Budget Bureau during the Johnson Administration, continued:

"That's too bad, because I think it's a very good message and an extremely significant document in the history of federal science policy making.

"In the first place, it begins to look at science and technology not merely from the cost side of government policy—but as a necessary and vital investment, a blue-chip investment. That represents a whole turnaround, and in that sense it could become as important a landmark as the 1946 Full Employment Act was for labor.

"Secondly, it seems to recognize the real problems of innovation and the barriers to the utilization of technology by society. . . .What it says finally is, 'OK, we can't solve the big problems at the moment, but let's try out a number of things.'"

Carey's opinion received strong support from John W. Davis, D-Ga., chairman of the House Science and Astronautics Subcommittee on Science, Research and Development. At hearings in April devoted to science, technology and the economy, Davis expressed the "deepest regret" that the message had not received more attention in the press and in Congress. "It is a very important document," he said, "and fully commanded the attention of the subcommittee and myself."

And Greenberg, while critical of the message, wrote on Feb. 15: "It is inviting to scoff at the mouse that has emerged from the mountain of task force papers, but it should not be doubted that some profound reorientation of the national R and D enterprise is now under way."

New programs: Though the Administration has lowered its sights in the federal R and D area, small but potentially important initiatives have been launched for the coming fiscal year.

The chief residue of the Magruder drive is the $37.5-million Experimental Incentives program announced in the President's fiscal 1973 budget. The program will be jointly administered by the National Science Foundation and the National Bureau of Standards. During the coming year, each agency will commission a number of small-scale pilot projects to experiment with a variety of partnership arrangements between the federal government on the one hand and private firms, universities, nonprofit research organizations and state and local governments on the other.

In addition, the NSF has been given $2.5 million to study the barriers to technological innovation in the United States.

The Administration has also proposed legislation to encourage the growth of small firms specializing in development of high-technology products. The legislation would liberalize government-loan programs for such companies and grant them favorable tax treatment and relaxed securities regulation. Further, the Administration is exploring other measures to aid commercial development of high technology—chiefly revisions in patent and antitrust policies.

The Administration as well has pinpointed five areas where it feels it can push ahead with a number of programs: energy, transportation, drug control and rehabilitation, and natural disaster control. The five general fields received most of the $700-million increase the Administration claims it

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has made in civilian R and D for fiscal 1973. These are areas in which R and D already is in a relatively advanced state, and they would have been slated for sizable increases regardless of Magruder's efforts. In addition, the increases will not finance any large-scale demonstration projects of the kind Magruder was studying.

Search for a strategy

The search for a new research and development program divides roughly into two periods of time: the five months from July to December when David's Office of Science and Technology and then Magruder and other officials performed the detail work of reviewing proposals from government agencies, and the time thereafter when top Presidential advisers became intimately involved in the decisions leading to policies outlined in Presidential messages in January, February and March.

Beginnings: The Administration's effort began on July 1, 1971, when Ehrlichman sent letters to 15 government agencies asking for technology proposals. Responses were forwarded to the OST, where David's staff began analyzing them immediately to assess their technological merit and to evaluate how they might contribute to the larger goals: solution of pressing domestic problems, favorable impact on the balance of trade and on employment of scientists and engineers.

It was not until after the appointment of Magruder as a special consultant to the President on loan to the Domestic Council that the NTO program moved into high gear.

At about the same time—in September—two interagency task forces were appointed to study elements of the NTO program, and they, like the OST, reported to Magruder, who had been assigned to coordinate the effort.



William D. Carey

One task force, headed by Ezra Solomon, a member of the Council of Economic Advisers, was instructed to explore ways of financing the initiatives as well as more general means of stimulating industrial R and D. The group had a December deadline.

The other task force, headed by the Treasury Department, was to report after six months to a year on the problems associated with transfer of technology among nations. It has just completed its study and will present its recommendations soon to the Federal Council for Science and Technology.

One additional step taken by Magruder after he assumed command was to elicit proposals for new technologies from private industry. Several hundred letters went out over his name to numerous trade associations and individual companies. This produced more than 1,000 ideas, but very few received thorough study.

Initiatives search: David chose Lawrence A. Goldmuntz, executive director of the interagency Federal Council for Science and Technology, to direct day-to-day operations in the OST's review of agency suggestions, and Goldmuntz, in turn, recruited two deputies from the Commerce Department: John B. Connolly and Harold Glaser.

Goldmuntz divided the OST staff into nine working groups, each with an assigned subject area. The area titles were flexible and changed several times during the operation, but generally they included transportation, communications for social needs, natural resources, urban-suburban development, health care, pollution, natural disasters, law enforcement and productivity.

In addition to its own in-house evaluation of agency proposals, the OST sought outside advice from blue-ribbon panels of scientists, economists and industrialists in each topic area. Magruder estimates that about 125 outside consultants came to the White House during October and November.

OST evaluation—It was in wrestling with the second set of questions about the technology proposals—their impact on domestic problems, international trade and employment of scientists—that the first major problems and delays occurred. "The schedule kept slipping," said Connolly, "and the reasons it did related directly to the difficulties of tying particular programs to our specified national goals. We found a great deal of disagreement in the government agencies and among the outside experts about how an R and D effort fitted into overall priorities."

Goldmuntz pointed out that in some areas disagreements started back in the blue-ribbon panels themselves. Transportation was a case in point. "Some railroad leaders on that panel," he said, "saw no reason for the federal government to get into the act with a subsidized R and D program. Their attitude was, 'I'm making money, and I'm doing fine without your help, thank you.' "

Problems with agencies—The OST team found, in addition, that the federal agencies that were supposed to contribute ideas exhibited a widely varying degree of interest in the project.

Some were highly enthusiastic and worked hard developing their proposals—the Transportation Department, for example. Other agencies submitted many ideas that either were insufficiently supported by data or which had already been rejected earlier by top policy officials; there were, for example, a whole series of proposals first made during the Johnson Administration for exploiting ocean resources, and a large number of suggestions for special-purpose airplanes. And some agencies, like the HEW Department, tried to be cooperative but never became very enthusiastic about the new technology program.

In the case of HEW, the initial suggestions for health and medicine initiatives had to be scrapped entirely and a new package was constructed between Dec. 1 and Dec. 15.



Peter G. Peterson

"It wasn't that they didn't want to cooperate," says Douglas R. Lord, who put together the final HEW set of proposals for Magruder, "but they did react against anything they thought smacked of 'technology for technology's sake.' "

Dr. Ian A. Mitchell, special assistant to the HEW assistant secretary for health and scientific affairs, said: "We were very interested and did back the proposals in the nutrition and food-safety areas—and some medical initiatives such as attack on kidney diseases and diabetes. But we felt there was a certain naivete in the NTO program about the application of technology to medicine. You have to prepare yourself with a lot of homework in each field before you can really know how to apply technology—in new devices or processes, for instance."

Budget cycle: Meanwhile, an intractable problem came more and more to the fore during October and November: coordination of the initiatives program with the inexorable deadlines of the fiscal 1973 budget cycle.

Department budget estimates are normally submitted to the OMB by Sept. 30—just when the Magruder operation was moving into high gear.

But government agencies were allowed the choice of submitting their technology proposals as part of their original baseline budgets or as separate packages outside those baselines. Most chose the latter route, and this added greatly to the burden of the OMB examiners.

Magruder would have preferred that the entire exercise be placed outside the cycle and on an independent time frame. However, he says, "It's difficult to get most government bureaucrats to conceive of an effort outside the budget-cycle framework; so we lost on that question."

Connolly said: "Bill fought hard against the decision to tie everything to the December end point. Because what it meant was that we were continually in a crisis situation regarding deadlines.

"Toward the end, we were killing those guys in the OMB, hitting them with more and more proposals every day. Poor Hugh Loweth was working practically a 24-hour day."

(Hugh F. Loweth, a staff member in the economics, science and technology division of the OMB, had been assigned to work full time with the Magruder operation.)

Program managers: In order to keep the program on schedule, Magruder had to begin to make his own presentations during the first week of December to the quartet of White House officials—Ehrlichman, Shultz, Peterson and Flanigan.

By the end of November, the situation within the NTO initiatives search was "chaotic," Goldmuntz said, and at this point Magruder reversed a decision he had made at the time of his appointment: he went out to recruit a staff of his own to assist him in the final weeks. "We were suddenly under the gun on the deadlines," Magruder said, "and things weren't moving fast enough. There were too many meetings and too much paper shuffling. I decided that I had to have a group of hardheaded systems-management specialists to get the program areas into shape for presentation to the top men in the White House."

"I needed a lot more help when we went forward in answering a series of tough questions the White House was bound to raise: why not have the private sector do this project, for instance; or what is the cost/benefit ratio on this; or if the government is going to get into this, how can we get the government out later?"

On Dec. 1, at Magruder's request, NASA assigned nine program managers to the NTO effort, and the National Science Foundation supplied an economist, Leonard L. Lederman, whose field of research centered in R and D, productivity and economic growth.

Promptly dubbed the "Little Magruders" by the other government officials with whom they worked, the group moved into 10 offices in the New Executive Office Building.

Each program manager was assigned to one or more of the loose subject areas already established by the OST staff, and each set out to apply the program-management techniques developed by the space and defense agencies to the inchoate group of proposals before them.

What the NASA team inherited was a list of proposals that was defensible from a technical standpoint but which lacked detailed analysis in two other important respects:

- program management analysis—how, by whom, on what timetable and with what resources would a program be developed;
- priorities—the relative priority of the various NTO proposals in relation to over-all national policies and to other R and D efforts.

The first task was the most important for the NASA team. Priority-setting—though attempted in a preliminary way by the team—ultimately had to be left to the quartet of White House officials.

***Function*—In** explaining how the NASA team was used, Connolly said:

Space Shuttle: The Biggest NTO?

Last fall, Administration officials were making much of their plans to direct federal research and development dollars away from space and defense, where they traditionally have been concentrated, and into efforts that could help solve domestic problems in areas such as health care and transportation.

But, ironically, with the failure of the White House efforts to develop a large package of civilian technology proposals, the biggest R and D item now planned by the Administration is the controversial space shuttle—a NASA project slated to cost $5.5 billion and to generate some 50,000 jobs in the aerospace industry in the next six or seven years. *(For background on the shuttle, see Vol. 4, No. 11, p. 539, and No. 17, p. 706.)*

President Nixon announced that the space shuttle had been given a full go-ahead on Jan. 5, just after the Administration had admitted that it was retreating from the ambitious goals it had set earlier in the NTO (new technological opportunities) program.

The space-shuttle program will have two effects that had been expected to come from the NTO program: it will funnel sizable amounts of federal money into high-technology industries and it will help reduce unemployment among scientists and engineers.

Inevitably suspicions of a trade-off arose. But the Administration flatly denies that the events are linked. Said Edwin L. Harper, assistant director of the Domestic Council staff: "I was at all the relevant meetings and the two programs were never discussed in terms of a trade-off. The timing of the space-shuttle decision had an independent history."

"Their function was not to help us force OMB and the top White House officials to say, 'Yes, we'll buy this or that program.' Rather, we wanted them to tell us what resources, money and manpower it would take if the Administration decided to go with a program; to answer questions about how you got from A to B to C."

Douglas Lord, who handled the health and nutrition proposals, corroborated. "Basically, what I tried to do," he said, "was to lay out the objectives of a particular technology and then put together a resource and management plan and a schedule for its development, as well as some kind of method of program evaluation as it went along."

Tension—Although the experience of the program managers varied in working with staff of the OST and the OMB, several said they felt that—for different reasons—they did not always have wholehearted support from either quarter.

Of the OST's cooperation, one said: "It's true that some of them resented us and thought we were trying to make a kingdom for Magruder." But, he added, "it didn't affect the effort we were both engaged in."

Of the OMB, Lord said that they "were busy and harried as hell. The work they did for us was top-notch. But I did have the feeling that they had been told that this operation had a lower priority than the regular budget negotiations."

Blue Book: The first-cut screening by Magruder, the OST staff and the outside consultants had produced a "wish list," as Magruder calls it, of all the new technological opportunities that could reasonably be candidates for the fiscal 1973 R and D budget. Magruder had collected them all together in a compendious volume called the Blue Book.

The projects listed at the highest point were valued at $1.49 billion in fiscal 1973, including about $810 million from federal general revenues and $680 million from a variety of sources: from federal trust funds—primarily the Highway Trust Fund—and from state and local governments and private industry under proposals for cost-sharing programs. The total runout costs of the list through fiscal 1977 including federal and other money amounted to about $11 billion.

A and B lists—Soon after the NASA group arrived, it was decided to divide the proposals in the Blue Book into two categories—a higher-priority set of proposals that seemed to have the best chance of survival, and lower-priority programs that would go on the back burner.

The program manager for the natural resources area, Robert N. Lindley, explained: "When I got a fix on my block of proposals I found that some just weren't well thought out, or the ideas hadn't yet matured, or a technology didn't seem to fit into any comprehensive resource management plan. So I tried to reconstruct a package that Bill could defend as a whole."

The natural-resources area was so complex and contained so many potential programs that Lindley recruited additional assistants from the Atomic Energy Commission, NASA, and the Commerce and Interior Departments. Also, he added a subpackage of energy proposals.

Changing numbers—During December, as Magruder, the OST and the NASA team worked over the programs, the dollar figures shifted constantly.

According to Magruder, the total funds for new obligational authority in fiscal 1973 dropped to about $656 million early in December, then rose to $779 million by the middle of the month and finally settled at $699 million. In addition to its final request of $699 million in new obligational authority, the NTO team also put in for about $300 million to be financed from trust funds and cost sharing.

The total runout costs of the final requests through fiscal 1977 came to $5.9 billion in new obligational authority and $8.6 billion with trust funds and cost-sharing programs added in.

Magruder cautions that "these numbers were never fixed for very long" and a "great deal of significance shouldn't be attached to the interim totals because we were constantly playing with new ideas and discarding ideas that at first had seemed attractive."

Another government official who worked on the program says flatly: "You ought to treat any figures you get from the NTO team with a great deal of skepticism. Particularly toward the end they were living in a dream world and basically playing out a charade. From the middle of December on, the handwriting was on the wall—there wasn't going to be any large-scale, highly visible program that would come out of this exercise."

White House negotiations

Ehrlichman, Shultz, Peterson and Flanigan formed the final screening committee for the entire NTO program and they in turn made the ultimate recommendations to the President, who seems—whatever his disappointment—to have accepted them entirely.

Two-track system: The first three weeks in December were hectic for all concerned with the initiatives program, and Magruder became the focal point of a two-track system. Even as the NASA team began their desperate effort to whip the initiative areas into shape, Magruder had to commence his own presentation to the four White House officials. He met some 15 times with the White House aides, the meetings often lasting three or four hours.

As the White House group wrestled with the pros and cons of the proposals before them, it became clear that the problems that had plagued the OST staff and the outside panelists carried through right to the top.

"It seemed to me," said one staff aide who attended the first of the White House briefings, "that they were staggered and overwhelmed with the amount of information and the complex public-policy implications of the programs before them."

"They couldn't give Bill much guidance throughout the meetings," said another staff aide, "because they were at sea themselves. So they kept peppering him with questions to go back and work out about this or that proposal."

There were frustrations for the program managers also. "The dual-track process," says Lindley, "did have an inhibiting impact. We'd get one program ready; Bill would go up with it and come back with a series of questions, which hit us as we were in the midst of preparing another proposal."

"A major difficulty for us," said Douglas Lord, "was that for obvious reasons we were not privy to the broad picture, the total budgetary strategy—in which areas, for instance, R and D funding had already been strengthened or conversely where it needed beefing up."

Magruder—In retrospect, Magruder defends the searching, skeptical questioning the proposals received. He says: "I emerged from the experience with real admiration for the checks and balances built into the decision-making process; the kinds of new pro-

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The Wish List: Big Ideas for New Technologies

At its high point in December, the White House list of possible new technological opportunities (NTOs) that the federal government could subsidize included programs valued at $1.49 billion in fiscal 1973, with runout costs of about $11 billion through fiscal 1977. Not all of the ideas on the list were presented by William M. Magruder, who managed the search for new technology initiatives, to higher officials in the White House. But the list below includes some of the large-scale initiatives that were considered seriously during December. None survived in the form or size in which it was presented, though some appear in the fiscal 1973 budget as drastically scaled-down pilot or experimental programs.

Nuclear ship: The proposal called for development of a nuclear-propulsion system of 120,000 horsepower for a large merchant ship or tanker. Development costs were $77 million.

Deep-water ports: Plans were put forward for the design of offshore terminals for deep-draft tankers. The cost of the offshore facility design would have amounted to $18 million through fiscal 1977.

Plowshare: The NTO leaders suggested that the AEC's Plowshare program for the peaceful uses of atomic energy be accelerated with stepped-up spending. Specifically, they wanted a multiple-detonation demonstration project to prove the commercial feasibility of freeing natural gas from tight rock formations within the next five years. The costs to the federal government through fiscal 1977 would have run to about $60 million.

Nutrition: The Agriculture Department proposed—and Magruder pushed hard for—an item-by-item analysis of the nutritional content of the nation's food supply. Agriculture officials argued that with the rapidly changing nature of the food supply—more and more processed foods, new fortification agents, frozen foods, and so forth—it has become almost impossible to establish guidelines for a proper diet.

Food safety: A complementary program, suggested by the HEW Department's Food and Drug Administration, would have identified and analyzed the effects of naturally occurring toxins in the food supply. It would have labeled hazardous substances, including cancer-producing components and those causing genetic defects. The two programs together would have cost $135 million through fiscal 1977.

Northeast Corridor: Full-scale development of high-speed rail transportation in the Northeast Corridor received high-priority consideration. It would have laid out a multi-million-dollar attack on a major transportation problem by straightening and modernizing railtracks in the East, refurbishing train stations along the routes and building parking facilities—all in an attempt to increase the use of rail transportation.

(Another transportation proposal that got serious consideration was computerization of freight-car handling.)

Continental shelf: Another idea was to map out and produce geophysical, geological and resource surveys of the continental shelf along the northeast coast and the Gulf of Alaska. These surveys and maps would have provided the basis for step two of the program: the beginnings of limited development of the mineral resources in these offshore areas.

Integrated modular utilities: One proposal was to assemble and demonstrate a technology that would have integrated sewage disposal, solid-waste disposal, power, heat and light into a single system. The integrated-utility system would have achieved major fuel-cost economies in cluster developments such as apartment buildings, garden apartments and office buildings. NTO leaders argued that by 1986, with a 25-per cent market penetration, this system could save $1 billion annually from lower fuel consumption.

Solid-waste disposal: A demonstration project for the recycling of solid wastes in a city of at least 500,000 was among the proposals. Chicago was actively discussed as a site.

Aviation: There were numerous proposals for development of specialized aircraft, particularly to deal with natural disasters and weather modification. Two aircraft were especially pushed: a helicopter for use against forest fires and an airplane specially outfitted for weather modification.

In addition, there were several suggestions for government leadership in developing planes for short- and medium-haul intercity flights.

Some of these proposals survived in the Defense Department budget; Defense was given extra money for programs that would convert readily to the NTO-suggested civilian needs.

Communications for social needs: Proposals to use electronics for social purposes cut across many program areas and included, in Magruder's words, "some of our most far-out and imaginative ideas."

The concept of a "wired city" was at the farthest reaches of the program. Under this system, individual citizens, through devices in their television sets, would be able to communicate directly with almost all urban social service agencies—including health, welfare and police-protection programs.

There were a number of proposals for development of computer software for domestic needs and programs.

High-priority consideration was given to developing computer software in education and health care, particularly in hospital administration.

Resource survey: In the natural resources area, a multi-million-dollar survey of the nation's mineral and industrial raw materials was proposed. NTO leaders pointed out that the nation will use as much raw material in the period 1976-2000 as it did in the entire 200 years previously.

They argued that an inventory was badly needed as a basis for policymaking.

Kidney disease: Late in the screening process, HEW presented a proposal for a major campaign against kidney diseases, comparable to the efforts the Administration has begun in the heart and cancer areas.

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Edward E. David

posals we were presenting had to be forced to give solid, in-depth justifications; and we received a fair hearing."

Government officials who worked with him during December, however, say that the sequence of events was a frustrating experience for Magruder. Says one career official, "Bill did think that on some programs the top guys were being unnecessarily cautious, and he kept chafing at their seeming inability to make up their minds."

"As a group," says Connolly, the NTO staff "may have been relatively naive; perhaps we had our own blinders on. Some of the projects seemed so obviously right for the country to do, we probably underestimated the barriers also associated with them."

Final list: Time ran out at Christmas. After almost a month of going around and around on the wide-ranging set of new technology programs and opportunities, the White House team gave up, lowered its sights and pulled back from all major new projects.

The OMB had begun, during December, to work on a more modest backup list that would, in the words of one government official, "illustrate with certain pilot programs the direction the government was moving to deal with a set of problems." The list contained no expensive, showcase new technology initiatives.

Soon after Christmas, a memo embodying these OMB recommendations went from Ehrlichman's office to the principals involved in the NTO program, saying in effect, "Here's the list. Bulletproof it." "Bulletproof," in the parlance of the White House staff, means analysis of a proposal or program for all possible problems and complications for the President.

Reaction—There was "a certain amount of dismay" among the NTO staff members when the final list was revealed, says Lindley.

"It did seem arbitrary and not to follow our recommendations," says another initiatives program manager. "Some proposals not high on our priority list survived, and some that we pushed hardest disappeared."

Residue—The Administration says that the fiscal 1973 budget contains a $737-million increase in civilian research and development funds.

There is some disagreement, however, even among Administration officials, about how much of this money is directly attributable to the NTO program.

One career bureaucrat who worked on the program said: "If you could really take a scalpel and pare down to the bone on the R and D increase, you'd find no more than about $125 million that came from Magruder's proposals."

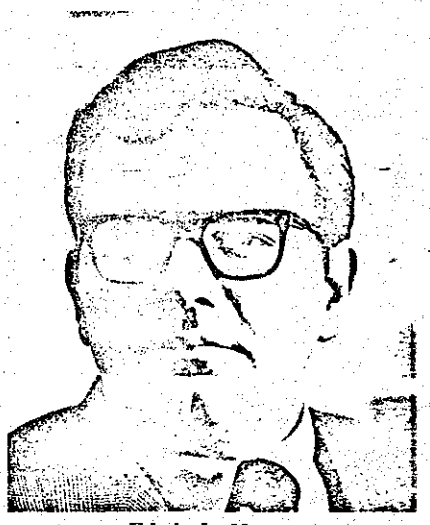
Magruder maintains, and his claim is supported by the OMB, that about $400 million of the $737 million represents additional funds from the NTO recommendations.

Among others, he cites increases in the following areas as resulting from the NTO analysis: emergency health care, development of high-speed delivery electronic mail; coal gasification; models for regional air pollution surveillance; advanced personal rapid transit systems; earthquake prediction; fire research and an integrated modular utility system for cities.

In addition, he says that about $150 million was added to the Defense Department budget for aviation projects that hold promise for civilian use, including a short-take-off-and-landing prototype aircraft; a new turbofan jet engine with a 20,000-pound thrust for commercial short-haul planes; a prototype heavy-lift helicopter; a vertical-take-off-and-landing prototype aircraft; and a microwave guidance system for aircraft landing in all weather conditions.

The total money issue is complicated because much of the NTO-related increase went to programs already planned or being funded by the government, and it is difficult to separate out that portion of the increase which resulted from the normal budget negotiations and that portion that emerged from the Magruder operation.

What seems to be the case, though, is that at the end of the budgetary



Edwin L. Harper

process, the Administration had two sets of figures: those associated with an increase of about $300 million from the regular negotiations and about $400 million from the NTO effort. The two columns were "collapsed together," in the phrase of one OMB official, and thus the NTO programs and regular increases completely lost their separate identities.

Economic incentives: The Administration's decision to draw back and launch no spectacular technological demonstration projects was paralleled by a determination not to propose any of the wide variety of options available for stimulating industrial R and D.

On Aug. 15, when he announced the wage-price freeze, President Nixon had specifically directed the Secretary of the Treasury "to recommend to the Congress in January new tax proposals for stimulating research and development of new industries . . . ."

Tax incentives were explored in depth as a means to stimulate industrial R and D by the NTO task force led by Solomon of the CEA, which included representatives from the OMB and from the Commerce, Justice and Treasury Departments. Despite the President's August mandate, the group recommended against tax reforms.

Although officials who worked on tax-reform proposals will not talk about the ideas they considered, Magruder said the economic-incentives proposal most seriously discussed was a 7-per cent tax write-off for R and D expenditures.

"The tax write-off would have cost the government several billion dollars in revenue," Magruder said, "and the problem we faced was that there are no methods of quantifying accurately the

social and economic benefits to be obtained from this loss. Treasury put the onus of responsibility on us to make that case, and we found that there weren't tools available to prove it."

David corroborated Magruder's explanation in testimony before the House Subcommittee on Science, Research and Development on April 12. The reason that proponents of tax incentives lost, he said, was that they "were unable to carry the burden of proving that their proposals would, in fact, accomplish the desired end and that the net effect after restructuring the laws . . . would be a positive benefit. Their proposals were made without adequate evidence of cost-effectiveness, economic tradeoffs and the reallocation of private and public resources."

(Neither Solomon nor Alan K. McAdams, who performed much of the CEA staff work on the tax proposals, would respond to questions about the NTO group's reasoning. "I'm tired of having the press quote members of this Administration as being at odds with each other," Solomon said. "You can just say that the forces and arguments against tax incentives won out over the forces and arguments for them.")

Harper: When the retrenchment occurred all along the line, Ehrlichman quietly asked his assistant, Edwin L. Harper, to pick up the pieces—to work out with the OMB a means of folding the surviving NTO programs into the 1973 budget and to devise explanations of the NTO program's results.

Harper is assistant director of the Domestic Council. His behind-the-scenes takeover of the NTO program fulfilled the prediction of one former Domestic Council staff member, William E. Kriegsman, now at Arthur D. Little Inc. Kriegsman, who had major responsibility for science policy before he left the council last June, said in October that "Magruder's conspicuous position constitutes an anomaly in the way the council usually works" and that "sooner or later, a relatively anonymous staff aide will reappear to handle the political decisions."

Harper maintains that there is today no single Domestic Council staff member who performs Kriegsman's duties. Harper says, however, that he keeps Ehrlichman informed on matters of importance in the field of science and technology.

David: With the shutdown of Magruder's operation, the President's science adviser moved back to center stage as the chief Administration spokesman on science policy—and on the NTO program.

Beginning with the Jan. 22 budget briefing, David has fielded all questions concerning the NTO program and presented the Administration's official position regarding the aim and results of the Magruder operation.

The official line, as presented by David at the Jan. 22 briefing was that "the NTO program was but one of a number of inputs to the budget" and it "would be difficult if not impossible to separate out its contribution from that of other inputs."

Significantly, the science adviser was already speaking of the NTO effort in the past tense, and he would comment no further on the program. Also significant was Magruder's conspicuous absence from the budget briefing, as well as his absence six weeks later from the press briefing before the President's special message on science and technology went up to Congress.

In a recent interview, David referred to the NTO experiment as a "fruitful and necessary exploratory effort." Similarly, Harper told *National Journal* that the NTO program had been aimed only to "stir things up, to generate some new ideas, to get things moving."

Like David, Harper is reluctant to admit that at one time the Administration hoped to come up with a package of large-scale new technology programs that the government might fund entirely or stimulate through tax incentives, loans or cost-sharing arrangements.

Reasons for retreat

In interviews with participants in the NTO program and with knowledgeable outside observers who followed it closely, four factors were most often cited as central to the failure of the Administration effort to produce a profound and immediate turnaround in the nation's R and D policies:

- the choice of Magruder to lead the drive;
- the timetable and organizational framework for the NTO program;
- the severe shortage of money for any new federal projects in fiscal 1973;
- and most important, the complexity of the problems associated with mounting a host of major new technological initiatives.

Magruder: Magruder's appointment produced mixed feelings from the beginning, and today estimates of his assets and liabilities vary greatly.

The NASA program managers who helped him have high praise for his talent and drive. For example, George W. Cherry, who worked on the transportation package, said: "He probably had an impossible task, but I think he came as close as anyone could to pulling it off."

Some government administrators of science and technology programs also found much that was positive in his leadership. Said one career official who worked closely with Magruder on the program: "The image of Magruder as a mindless SST and aerospace advocate is unfair and inaccurate. I was amazed at how much information he assimilated after he took over the program, and with his good sense in evaluating programs."

And Lewis M. Branscomb, who until May 6 was director of the National Bureau of Standards, stated: "It seems to me that Magruder did as competent a job as possible in translating the defense and space mode of operations to domestic R and D problems . . . . I suspect that the deficiencies stem from this defense/space approach rather than from Magruder's own leadership capabilities."

There are others, however, who trace many problems associated with the NTO program to Magruder, and to the difficulty he had in getting along with career bureaucrats.

Said one official who worked with him: "He's an able and dedicated guy, but he managed to irritate a helluva lot of people while he was here . . . . He's so goddamned aggressive. We kept telling him to hide his aggressiveness, and for a time he did. But he doesn't suffer fools gladly; and when the pressure was on, he just couldn't keep himself from going for guys' throats."

A second member of the NTO operation said: "Bill can be pretty blunt, and undoubtedly some people didn't like the way he operated. He got to be seen as a threat to a lot of people. He kept pushing into everyone's program area, and that can be deadly. My own guess is that as time went on he rubbed even Domestic Council guys like Harper and (John C.) Whitaker the wrong way."

The official added: "Not all of the animosity and foot-dragging was his fault by any means. This was a crash program, and there just weren't enough hours of the day to soothe everybody's feelings . . . . He walked into a system

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that had been functioning certain ways for years; and at almost every step he was bound to trample on long-established relations between government agencies."

"It would have taken the finesse of a Vatican diplomat to have kept everyone happy with the conditions we worked under," said Goldmuntz.

Magruder's visibility—Magruder's visibility and his public statements about the scope of the NTO program are also a source of contradictory debate.

From September on, reporters around Washington complained about his inaccessibility. Magruder says that he remained to the end reluctant to grant interviews, and did so only after the White House asked him to correct misinformation that was coming from unsupported rumors.

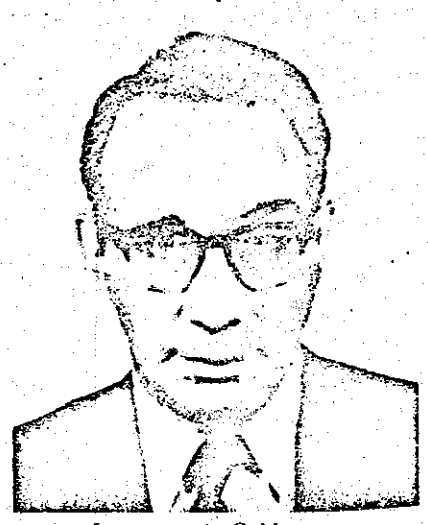
Yet, according to several officials who had access to the principals involved, Magruder's statements and speeches—few though they were—became a great source of worry to the White House, particularly as it became evident that no major initiatives were going to result.

Says one official: "Jesus Christ, there was Magruder in December still talking about the hundreds of government bureaucrats working on the proposals and the thousands of industry suggestions that were pouring in and holding out the promise of a huge government contribution. At the same time they were getting nowhere in the White House meetings.

"Peter Flanigan went up the wall when his contacts in the business community told him that hopes from that sector were rising astronomically. He knew they were bound to be dashed, and that the whole program might explode in the Administration's face and become a big political liability."

Deadlines, organization: The severe time constraints Magruder faced were a factor in the difficulty he had in pulling a technology package together, and they also contributed to the bureaucratic strains already present.

It was because time was running short that Magruder recruited his staff of program managers, and at the time Magruder emphasized that they were "brought in strictly on a temporary, six-week basis." Nonetheless, there were persistent rumors around the Executive Office Building and in the government agencies that this group would form the nucleus of a permanent NTO staff.



Lawrence A. Goldmuntz

Despite Magruder's denials, these suspicions caused problems for the NTO operation. Said John Connolly: "We got great cooperation from them, but it is true that agency bureaucrats are much more institutionally than program-oriented. One of the first questions we always got—either directly or implicitly—was: 'How does this fit in with our own programs and who's going to be in charge?' "

Goldmuntz also said he thought that talk of institutional change at the White House level to guide the technological initiatives was a disturbing factor.

Budget: In October, just as the NTO drive was gathering momentum, OMB officials already were predicting that it would be very difficult to break out money for new programs in fiscal 1973 because the President's new economic policies would contribute to big budget deficits.

Indeed, projections for the fiscal 1972 budget deficit—now estimated at nearly $39 billion—weighed heavily on the NTO program.

The budget considerations gave particular force to a traditional OMB policy question that came up again and again in the December screening sessions: if this program is really economically sound, why not let the private sector carry the ball?

"They hit us frequently with concern about overtaking the private sector," says Goldmuntz. "On some programs I think we had good answers to that question, but often we didn't have time to develop them in depth."

Flanigan—Peter Flanigan likewise said it was not money but policy determinations that controlled most of the cuts. He told *National Journal:* "What happened was that from a very long list of possible new technology initiatives, a certain group was chosen. If anybody thought that all of the possible initiatives should have been chosen, then of course the list is shorter than it would have been. But initiatives weren't cut for budgetary reasons, but rather on the basis of what was an appropriate activity for the federal government."

Changed climate—Peterson acknowledged, in addition, that a general change between September and December in the trend of economic thinking within the Administration affected year-end decisions on the amounts of money that should be committed to the program.

The NTO effort was launched in the midst of a flurry of bold policy decisions by President Nixon aimed at dampening inflation, redressing the adverse balance of trade and settling the unstable international monetary situation.

In September, there were high hopes of a quick turnaround on a number of economic problems. By December, when the final decisions on the NTO proposals were made, the climate had changed substantially.

The Administration found that many of the problems it had attacked—currency, inflation, balance of trade—did not admit to short-term solutions. "This knowledge did affect us," said Peterson. "We did think in the summer that we could do more and do it quickly. By December, we were determined to go slow and keep our feet on the ground."

Complexity, lack of knowledge: More important than any other factor in causing the Administration to back away finally from major new technological initiatives and costly incentive policies was the growing realization by key figures that they really knew very little about the nature of the technological-innovation process.

Looking back on the NTO operation, Secretary Peterson says: "What became clear was that we needed to know a lot more about the management of the R and D sector; and that until we gained this knowledge, we'd better be very cautious." "I know that some of the people who worked on the NTO program were disappointed, and thought we could have moved ahead faster," Peterson added. "But I didn't think we should jump into anything before we knew where we were going."

Science adviser David echoed Peter-

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son's judgment: "One thing we learned was that you don't start at the top and work down—you start at the bottom and work up." And Raymond L. Bisplinghoff, deputy director of the NSF said simply: "That exercise verified that we do not know how to make major interventions by the federal government in the R and D sector."

Goldmuntz, David—Goldmuntz, who was at the fulcrum of the initiatives screening process, pointed out that those programs which survived were those "most isolatable from any complicating social, economic, or political factors."

"Almost all of the big programs, that went up to the White House were freighted with social or institutional or political or structural complications," he said. "As the developers of the programs, we probably underestimated them, but the White House team had to factor them in carefully."

David made much the same point when he noted that "one of the things many of us had driven home more clearly than before was that R and D is not the whole story—you've got to take into account customs, mores, politics, existing structures and a whole host of other things when you attack a technological issue."

Examples—Goldmuntz gave several specific examples of what he meant. "Take the development of high-speed rail transportation in the Northeast Corridor, for instance. We pushed that pretty hard, and who can argue that it shouldn't be a high-priority item? But in analyzing that proposal the White House also had to take into account the fact that there are several thousand government jurisdictions involved, that the Penn Central is not the most popular railroad in the country today, that it might get athwart union work rules—and well, a number of complicated issues like this came up."

"Much the same kind of thing occurred with our ideas in the communications for social needs area," he said. "We put forward a number of communications proposals in the welfare and health areas. But we quickly got caught in a crossfire between the Corporation for Public Broadcasting, the Office of Telecommunications Policy and the cable TV interests. The policy questions were just too complex."

And so it went with other programs. The AEC's Plowshare program to free natural gas from rock formations with nuclear detonations rated high, but environmental animosity meant that the Administration couldn't touch it in an election year. The offshore port for deep-draft tankers, similarly, would have faced substantial opposition from the Governors of the Middle Atlantic and Northeastern coastal states, off whose shorelines the facility probably would be built. And a large program for an integrated urban utilities system would have raised opposition from unionized municipal workers.

Presidential options—The White House also came to realize that some of the technology proposals would have pushed the Administration further along than it wanted to go in certain policy areas at the moment.

"The name of the game around here is to keep the President's options open," says an OMB staff member. He cited the offshore port project as one in which "the technological commitment would have had substantial implications for oil policy, national security and the entire natural resources policy." *(For a report on the policy implications of offshore oil terminals, see Vol. 3, No. 49, p. 2389.)*

"You just can't expect any Administration to box itself in with a whole group of these long-term policy commitments," he said.

Overview

Whatever their reaction to the concrete results that emerged from the NTO operation, most government officials who worked with the program say that it was an important exercise because it sensitized agency personnel and top political officers in the White House to the opportunities and the problems involved in government policy toward R and D.

Argued Goldmuntz: "There were some disappointments for those of us who worked on the program, but we did show that there are real opportunities for R and D investment. And it's not pork barrel—these are proposals that will call for substantial commitment of resources but which can make real improvements in the quality of life in American society."

And a career OMB official who has major responsibilities for science funding said: "The political officers in the OMB began for the first time to understand the complexity of the R and D process—its complicated relationship to such things as balance of trade, productivity and jobs. It was really exciting to see those guys learn what they learned and come to the conclusions that they did, when the outcome was so uncertain."

Departments: Bureaucrats in charge of R and D planning for the civilian departments likewise considered the exercise worthwhile.

Harold B. Finger, assistant secretary for research and technology at the HUD Department told *National Journal:* "The educational process was important for those at the top who have to set priorities and timetables. Here at HUD we wrestle with the outer parameters of R and D problems all the time—with the conflicting social, institutional and political questions that form barriers to technological innovation.

"But I think elsewhere there has been an attitude of impatience, a desire for dramatic, clear and immediate results. A lot of people now know there's no reason to expect this—that trying to get short-term fixes will only complicate the solution to long-term problems."

Alfonso B. Linhares, a technology specialist at the Transportation Department, said that Secretary John A. Volpe and Robert H. Cannon Jr., the assistant secretary for systems development, "are very anxious to continue the intense review process we went through on the NTO proposals as a part of our regular program analysis. . . . We also learned a helluva lot more about how the OST, OMB and White House types think—what criteria they seem to consider important on R and D projects."

The briefing: One of those who attended Ehrlichman's Jan. 26 briefing described the affair as "an elaborate funeral and burial ceremony."

But others were impressed by favorable reviews the exercise was given by key policy officials present.

Said one: "Ehrlichman pointed out that the Administration had been wrestling with the massive issues associated with R and D for three years; and though it might not seem that we had accomplished much, we had given them more insight into their problems than any other exercise they had tried."

Surveying the results of his efforts Magruder said: "I'm satisfied that we served the top decision makers in at least bringing the conflicts and hard questions out into the open. . . . Beyond that, as John Ehrlichman told us at the farewell briefing, the operation gave the Administration a whole credenza of projects whose time will come sooner or later."

COMPARATIVE STATISTICS FOR FISCAL YEAR 1971 FOR THE MAJOR R & D AGENCIES OF THE EXECUTIVE BRA

	DHEW	AEC	ARMY	NAVY	NASA	AIR FORCE	INTERIOR	USDA
AGENCY R & D BUDGET IN MILLIONS	1,443	1,319	1,801	2,244	3,272	3,070	245	294
1. NUMBER OF AGENCY PATENT ATTORNEYS (INCLUDING AGENTS)	3	47	79	96	33	37	8	7
2. TOTAL NUMBER OF INVENTION DISCLOSURES RECEIVED	279	1,502	1,675	1,954	2,475	1,475	154	162
3. INVENTION DISCLOSURES REQUIRING A DETERMINATION OF GOVERNMENT INTEREST AND/OR PATENTING.[b] EMPLOYEE	60	19	843	960	159	204	76	152
CONTRACTOR	166	1,448	526[c]	760[c]	2,130	881[c]	78	10
TOTAL	226	1,467	1,369	1,720	2,289	1,085	154	162
4. NUMBER OF INVENTION REPORTS PROCESSED PER ATTORNEY (3 ÷ 1)	75	31	17	18	69	29	18	23
5. TOTAL PATENT APPLICATIONS FILED.	38	245	428	747	274	203	73	150
6. NUMBER OF PATENT APPLICATIONS FILED PER PATENT ATTORNEY (5 ÷ 1)	13	5.2	5.4	7.8	8.3	5.5	9.1	21
7. PERCENTAGE OF ITEM 3 ABOVE ON WHICH PATENT APPLICATIONS WERE FILED. (5 ÷ 3)	17%	17%	31%	44%	12%	19%	48%	92%
8. NUMBER OF DETERMINATIONS GIVING GREATER RIGHTS IN IDENTIFIED INVENTIONS.	28	6	6	7	75[d]	0	1	0
9. NUMBER OF R & D CONTRACTS WITH PATENT CLAUSES	1,964	220	1,425	2,223	1,291	3,591	258	151
10. NUMBER OF R & D GRANTS WITH PATENT CLAUSES	10,231	0	212	3	336	378	241	0

a. The DHEW Patent staff is currently handling all of the VA's and AID's patent problems in cases related to the Department s ho
b. Disclosures in which the contractor has exercised its first option to retain title based on a contract clause providing this item which explains the difference in totals between items 2 and 3.
c. Substantially all of these disclosures represent inventions in which the contractor had a first option to retain title, but e that these inventions had no substantial commercial potential.
d. These determinations were handled by the NASA "Inventions and Contributions Board", not by the NASA patent staff.

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March 9, 1978 263-2831

Dr. Frank Press, Director
Office of Science & Technology
Policy
The White House
Washington, D. C. 20500

PATENT BRANCH, OGC
DHEW

MAR 16 1978

Dear Dr. Press:

This letter is sent to you on behalf of the Society of University Patent Administrators to voice the collective and individual concern which members of our Society have regarding a fundamental consideration in the approach to a uniform government patent policy.

Advocates of the title-in-the-government approach to such policy in their sweeping recommendation have drawn no distinction between basic, applied and developmental research. In so doing they have not and apparently are unwilling to take into account the different risk factors involved in and appropriate to these various kinds of research effort.

A member of our Society, Mr. Willard Fornell of the University of Minnesota, has prepared a short paper which addresses that issue with some particularity. Since that issue has not to our knowledge been addressed in any detail in previous discussion with, or in written material submitted to, your office with regard to your consideration of an Administration position on government patent policy your careful review of the attached copy of Mr. Fornell's paper is respectfully urged and solicited.

Please note that the paper "Analytical Basis for The University Position on H. R. 8596" sent to you with our letter of March 1, 1978 is referenced by Mr. Fornell.

Very truly yours,

Howard W. Bremer
President, Society of University
Patent Administrators

HWB:rw
Enc.
bc--Mr. Willard Fornell
SUPA Officers & Trustees

Politics & Economics:

Do They Prevent the Meaningful Use of Aerospace Technology?

see page 62

Highlights:

1—Politics and economics prevent almost absolutely the meaningful application of aerospace technology to non-Defense, NASA and AEC programs.

2—The present lack of carefully defined commitment is what begins to produce an indecisive drift in the use of technology. This country runs on the advocacy process.

3—U.S. industry can no longer afford the high cost of R&D to meet national needs. Other countries subsidize.

PUBLIC CRITICISM in recent years of waste and inefficiency have combined with almost static Federal funding appropriations to hamper the meaningful push for technological growth in military, space research and even nuclear power programs. In several significant cases lately – military aircraft developments, earth mapping satellites, manned orbiting laboratories, command/control systems – potential long-term technological advance has been sacrificed to short-term demand from higher Federal authority that year-to-year expenditures be held down.

But, though these political and economic pressures make progress more difficult for research and development in the Defense Department, National Aeronautics & Space Administration (NASA) and the Atomic Energy Commission (AEC), politics and economics prevent almost absolutely the meaningful application of aerospace technology to non-Defense, NASA and AEC programs.

Potentially, the aerospace industry's opportunities to spin-off its military and space research and development (R&D) expertise into other Government programs are almost limitless. "Laboratory-sized demonstrations" have proved this well enough to the unbiased observer. In fact, though the industry R&D and systems management experts have been working on the challenge – in some cases for more than a decade – they have run into a large, complex and frustratingly obstinate array of Government roadblocks. Not the least of these is a general Government lack of understanding about and appreciation for just what kinds of incentives will trigger industry into significant action.

In the vernacular of industry, applying technology to the significant solution of civil government problems, e.g. pollution control, improved health care and education, law enforcement, urban renewal, transportation modernization, preservation of natural resources, even modernization of Government business practices, themselves, is not so much an R&D problem as it is a marketing problem. The root causes of the problem lie in the imperceptive, often antiquated, political and economic practices of the Government, itself.

Since World War II, the United States has spent some $200 billion on research and development, about 80 percent of it efforts. For most of that period to date, the general public and their mirror image, the Congress, approved those expenditures almost without question, except here and there on an individual project that ran into development difficulty. Even then, implied in the criticism was a feeling of public urgency that the program must succeed.

In the last half-dozen years, faced with burgeoning domestic crises and frustrated over the trends of the war in Southeast Asia, that endorsement has turned to criticism and condemnation. Moreover, political opportunists (some of them in very high places in Government) were quick to seize on this change of attitude and exploit it to their own parochial ends.

Among the once-unimaginable indictments leveled at aerospace technology: it was a major reason for pollution; its high cost was being paid for with national neglect of the needs of people; while people starved, technology returned nothing on the investment in it, except some inspiring television entertainment during an *Apollo* trip to the moon. College professors, many of whom should have known better, used self-imposed cancellation of Federal R&D grants as a political weapon to protest Administration policies and practices in Southeast Asia. The numbers of young people seeking a college engineering degree dropped.

The Nation's Foundation

Through this emotion-charged atmosphere ran one simple charge which had some substance to it. The charge: if the U.S. can put a man on the moon, why can't it manage to improve vastly the decaying environment and quality of life of its own citizens? Implied in that tion that the Nation could. More importantly, the challenging question became a kind of focal point which attracted the attention of the practitioners and managers of aerospace technology.

In simpler terms, while headline hunters were garnering attention by criticizing, more thoughtful statesmen were taking a careful look at the substance of the debate. Their conclusion, or possibly more appropriately a long-understood conclusion they just took more trouble to explain to people today, is that technological advance is an essential element in getting control of most of the domestic ailments noted earlier.

Indeed, if melded into an appropriate, perceptive, imaginative politico-economic management system, technology in heavily applied doses is probably the only way out of most of these environmental enigmas. Proof enough is around to support that truism.

For one thing, technological advance is the foundation on which this Nation's economic growth and national security rests. And without the latter, a nation has neither the taxable industrial base to pay for social welfare grants nor conceivably even a nation to have social problems in. For another thing, the press documents daily, in effect, that a growing population with increasing personal ambitions wants more and more Government service while showing increasingly a reluctance to pay any more for it.

One escape valve, possibly the most important one other than determination, is through technology. Already, aerospace-developed technology has proven, in a time of generally rising prices, that it can reduce the cost of communication. It and the systems

are demonstrating they can cut the cost of operating a government's bureaucracy by 10 percent a year or more while providing more immediate, more personalized attention to the public. Similarly, application of military systems to law enforcement and health care are proving they can provide more and better performance in those functions with, if not a reduced cost, at least no cost increase. The list documenting such potential is almost endless.

Finally, short of a drastic reduction in the Nation's standard of living, the country really seems to have little choice but to make meaningful use of its aerospace technology. Population growth alone demands it. With roughly six percent of the world's population, the U.S. uses approximately 40 percent of the world's irreplaceable resources. The Nation must import 27 or the 36 basic substances considered necessary for a modern industry.

In effect, American industry, let alone American security, rests in part on a fragile set of agreements with other nations and in part on a favorable balance of world trade. Technology can ease the vital importance of importing essential resources by finding alternatives (in energy sources, for instance) to current U.S. heavy dependence on others for these necessary materials. And high technology, mostly aerospace, or aerospace-derived, products are the Nation's primary competitive exports – though lately, through Government ineptness, even that is now in serious jeopardy.

Interrelated Answers

With all that going for it, why then isn't aerospace technology being applied to domestic ills, civil government problems, economic and export expansion, and general improvement in the quality of U.S. life with the same zeal, determination and commitment with which it was poured into aircraft developments, into the missile race, the space race?

There is no simple answer to that. If there were one, at least one as simple as the anti-technologists like to suggest there is, it probably never would have become even a legitimate question. But there is a collection of interrelated answers, and most of the basic ones center around governmental politics and economics. They are probably best explained by contrasting what *is* in Defense and NASA with what *is not* in the rest of Government.

Much has been proclaimed in recent years about a "reordering of priorities" away from investments predominantly in military programs and toward expenditures on the Nation's so-called "human resources." So far, that has meant primarily just that the Defense tage of the Federal budget and grants have increased – primarily under old and already proven ineffective programs – to the civil section.

If domestic problems centered around only a lack of funds, why do public complaints about education, health care, transportation, urban decay and crime continue to increase now that the funding has increased? Federal, state and local spending has increased by more than 150 percent in these areas on an annual average compared to 1964. Schools get more money and teachers go on strike. Medicare is set up and retired people stage marches on Washington, D.C. Law enforcement budgets go up and citizens go buy their own guns. And all the while, people complain about constantly increasing taxes.

Can We Afford It

Applied aerospace technology is not the whole answer; but to the extent that it can provide part of the answer, it must have some direction. Nothing like the total national commitment to the space race or the missile race exists in the civil sector.

Against the background of obviously limited resources, is pollution control more important or less important than modernized transportation? And if more important, which part is, air or water, industrial or community, automobile or garbage disposal? Does improved health care rate more attention than urban decay or is education more important than either of them? And where does law enforcement fit on the list? How much will it cost to get a handle on 80 percent of the problem and can we afford it? Can we afford it for all of them or only half of them, and, if the latter, which ones need attention first?

Battelle predicts a $30.1 billion expenditure for R&D in 1972, an eight percent increase over the estimated $27.8 billion spent in 1971 and the largest percentage increase since the mid-1960s. Almost $16 billion of that will be spent by the Federal Government; $12.7 billion by industry; the remainder by colleges, universities and (so-called) not-for-profit institutions. The Federal Government as it always has, will tend to use its $16 billion on forward-looking, high-risk projects; industry on nearer-term development of marketable products.

Though a lack of priorities is not the whole cause, the present lack of carefully defined commitment is what begins to produce an indecisive drift in the use of technology. This country runs on the advocacy process. And, lacking a clear delineation of who stands where in the hierarchy, projects and programs contest eagerly and energetically on Capitol Hill for funding – and end up, other. Probably the best example of that is whatever happened to the promise a few years ago that the National Oceanographic and Atmospheric Agency (NOAA) would, in its way, do even more for the Nation technologically and economically than NASA has already done? The potential is still there but the national priority clearly isn't.

An Ominous Development

The meaningful use of aerospace technology suffers, too, from the fact that it has established no national policy regarding the importance of technological advance. Such a policy is implied in NASA's charter and in that of the National Science Foundation (NSF). But evidence is hard to find that such a policy is understood and accepted in the votes of Congress and the comments of Press and Public.

The high value of technology is understood in Europe, in Japan and even in many underdeveloped parts of the southern hemisphere as well as in Russia and China. Largely following a U.S. pattern of a generation ago, those nations pour a steady and ever-increasing percentage of their national resources and government budgets into underwriting industrial high-technology programs.

Such a policy in the U.S. would aid significantly in eliminating the short-term, up-and-down kind of funding this Nation has been experiencing over the past 20 years. Moreover, specific programs and projects fitted into such a policy would run far less risk of being wiped out just as they were scheduled to begin returning significantly on the investment.

Do other Governments have more perception than the U.S. Government? Foreign governments, for instance, are underwriting – at a cost of some $4 billion – their industries' development of a whole fleet of commercial aircraft, from supersonic transports to air buses. That's two-thirds to 100 percent, depending on the aircraft model, of the total R&D cost. Are they spending scarce monies just to achieve the status symbol of technological prowess? No. They're going after a conservatively estimated $30 billion in aircraft sales.

Where U.S. industry once could afford, by itself, to compete against the combination of foreign government and foreign industry, it can afford the risk no longer. It is an ominous development not just for U.S. aerospace leadership but for the welfare of the whole country. Yet, as witness the cancellation of the U.S. supersonic transport development, Government politicians are project-oriented, not policy oriented.

With all due respect to the Federal Procurement Regulations, a third obstacle to applying aerospace technology

contest with a mixed bag of rules, ordnances and laws. They exist and conflict at all Federal, state and local levels. They are in a constant state of evolution; or, lorded over with politics locally, they resist change as the Rock of Gibraltar resists erosion.

Defense/NASA/AEC have evolved a sophisticated – some say too sophisticated – collection of procurement regulations and "laws" called directives through which, among other things, they set up viable relationships with the industrial creators of aerospace technology. The rules take into account the long lead times, incremental financing

space technology marketeers, to a splintered fragmented market.

Each of these feudal empires has a vote on any aerospace-type system it might be one of the benefactors of. And much like a veto in the United Nations, a "no" vote by any one of the informal and unorganized "committee" amounts to suspension of the project. To aerospace industrialists used to dealing with what they thought were the procurement complexities of Defense, NASA and AEC, this civil government bureaucratic snarl often looks truly horrendous. And is.

In the U.S. today, there are some

racy. Another effective marketing tool has been to get a system sold in one local government area, demonstrate and prove its value and then publicize its merit elsewhere on the competitive pride basis of "You could have this, too, if you only would. . ."

Related to the above and, for that matter, to the negative portrait anti-technologists have drawn around aerospace technology, is another obstacle. Civil government, especially at the State and local levels, suffers from a lack of trained, experienced personnel accustomed to utilizing technology and dealing with the industry that can deliver it.

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The Marketing Logjam

Though Defense and NASA funding has been curtailed, it's still in the megabuck range. In the reordering of priorities, nothing like the R&D funding cut out of those budgets was transplanted as R&D to the other agencies. And local governments can't begin to replace the attractive size to industry of the Federal R&D carrot. Current result of this, most often coupled with the above outlined "human nature" of local governments, is that high-powered aerospace technology firms are often successful in a local community where their own plants are located, and largely unsuccessful selling the same proven system anywhere else.

The biggest frustration here is that what works in a hospital in Oakland will work just as effectively in Bridgeport, Conn.; the police command/control system that is excellent in Illinois ought to be almost as good, anyway, in Alabama; the education system that solves a retarded-children problem in New Orleans will handle just as efficiently the same chore in Seattle. Geography, obviously, is not a restrictive factor.

But industry, by itself, just can't break that marketing logjam without the investment of considerable amounts of risk capital it doesn't have and the utilization of considerable amounts of commercial-type marketing expertise which it doesn't have, either. The answer, almost obviously, is for the Federal Government to aggragate the market.

FAA's Effective System

It has begun to take some steps in this direction, particularly in the Department of Transportation and the Law Enforcement Assistance Agency. The technique amounts to a form of revenue sharing. In simplest terms, at the Federal level, all or most of the R&D costs on a particular system are paid for; the system is developed; implanted in a local community, and other governments from across the land are invited to come take a look.

The local government officials are under no pressure to buy the system, too; but frequently the Federal sponsoring agency will offer a powerful incentive: they will offer to pay upwards of two thirds the cost of the local government will put up the other one third.

Another way to aggregate the market, is employed by the Federal Aviation Administration. It not only buys, manages and sees to the installation of systems to handle the national air traffic control problem; it also sets the standards by which all local airports must operate. Result: industry knows at the start of development that a system built for Dallas-Ft. Worth purchase, it if meets the Federal standards, is just as saleable in Phoenix, Los Angeles, or Cleveland.

Still, to a large extent, the meaningful utilization of aerospace technology to cope with local civil problems is, even under these circumstances, mostly a one-at-a-time, piecemeal evolution of locally tailor-made (and therefor very expensive) products. There is at least one way to speed up the evolution: centralize and aggregate the market even more than it already is now. And that is possible.

Incentive to Industry

Specifically, with all the technological and systems management expertise the Federal Government can reach easier than local governments can touch, Washington should be able, for instance, to announce a major national health care improvement program; hire a contractor, as part of that, to develop a complete "turnkey" diagnostic system; estimate how many hospitals and clinics will buy this "optimum" system; contract for that many; develop and produce them — and then accept the responsibility for selling them to the local government customers.

Same could be done, at least for the study and prototype models, on a series of "optimum" transportation systems for, say, four or five different sizes of cities; and for education systems; or law enforcement systems; or, in all these programs, for key component elements. The incentive to industry, obviously, is that the dollars involved, not only for R&D but the production potential, would put any one of these projects on a scale with Defense/NASA expenditures. The advantage to local government is that what they give up in a precisely tailor-made system they get back in the economies of mass production. And, in the long run, the same economies should accrue indirectly to the Federal Government — on top of which, in this way they would be making a kind of revolving fund investment rather than an outright expenditure grant.

Underscoring all the above is another attitudinal, nee political, problem. Defense and NASA have a different operating heritage than civil government in their relationship to industry. The military and space programs have bought and pushed technology for their own use (except in the case of management systems to streamline their internal operations). Rather, they are buyers for a third party user — local government and the general population.

For all the reasons noted earlier, that complicates the decision-making problem enormously. It means persuasion and not instruction, selling and not ordering. It also means, theoretically, developing a partnership with industry; creating, basically, a kind of civil-industrial complex. That has to be difficult for agencies with a heritage of having regulated industry rather than working with it, particularly in light of what the "military-industry complex" syndrome has done to the image of Defense and even NASA and AEC.

It is an attitudinal roadblock more than anything else. The answer to it is, to a large extent, inherent in finding answers to the six obstacles outlined earlier. And that answer is, in turn, a comparatively simple thing to state. Basically, it adds up to saying: "Get involved in your own local government environment." The attitudinal problem can be overcome best and quickest and most effectively when the practitioners of aerospace technology become the active, energetic, provocative promoters of their own present products and future capability. This problem has existed too long and is also soluable.

What to Do

The ways to do that are not all awesomely mysterious, only largely unpracticed by aerospace technologists in the past. There is no single magic technique but, in fact, several methods equally and collectively effective in institutionalizing public discontent about what is and provoking public demand that local governments acquire what aerospace technology can make possible. Join the PTA, run for local political office, attend city council meetings, take the mayor or the editor of the local paper to lunch: in a word, get involved with local government.

The obvious objective: be a marketeer, promoter, communicator, agitator of the technologically possible, and in the process show the potential customer that you are not the overpaid propagator of incomprehensibly sophisticated witchcraft but simply another concerned, taxpaying citizen who happens to have more knowledge than the average hear about how to solve problems.

The days of the mystique of technology are numbered if not, in fact, over. To the pragmatist, they have lasted too long and are indeed over. The human problems of this Nation have already been solved, in many instances, but the job of publicizing those solutions — where they exist — has already begun. Where in the past it was the time of the technician, now it is the time of the taxpayer.



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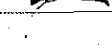


PATENT BRANCH, OGC

JUN 28 1973

Cooperative R & D

Reluctant but Necessary Alliance for Industry and Universities.

STORIES of industrial research centers that use PhDs as clerks and universities that get massive grants to study the sex life of some obscure insect must be filed, along with penny candy and a good nickel cigar, as memories of days not likely to return.

When money was plentiful, a few years back, R&D programs multiplied like rabbits. With the 70s came the cost crunch, foreign competition, and the real bite of inflation. Now industry says: We need new technology but we can't afford to develop our own. Universities say: We have the ability to create new technology, but no one to finance it. And the Government says: We want more practical utilization of the R&D money we spend.

The need to get these parties together, with their matching abilities and needs, seems obvious. Some universities and research centers have had long-standing, mutually profitable relationships with industry. But, in many cases, the business man and the scholar have been aloof and occasionally antagonistic.

"We are like two independent nations that suddenly realize that we need each other to survive," as one sales manager puts it. Such attitudes are, in part, the result of industry and university research programs that flourished with their own independent goals. If a university program came up with something that happened to interest industry, fine. This was an interesting fringe benefit, but certainly not the goal of "pure science." Industry, too, erected its own barriers to cooperation. The axiom was, "It is easier to rediscover it in our own labs than search for it somewhere else." Besides, there is also the NIH factor.

As one professor said, "Industry may be too dumb to know they have an R&D problem—or they're afraid to admit it. I've never had a request from industry stating a specific problem or been asked what the university had to offer."

Similar gripes come from the other side: "Even when we set specific parameters for what we want, university researchers wander all over the place. Our experience is that they can't give us what we ask for."

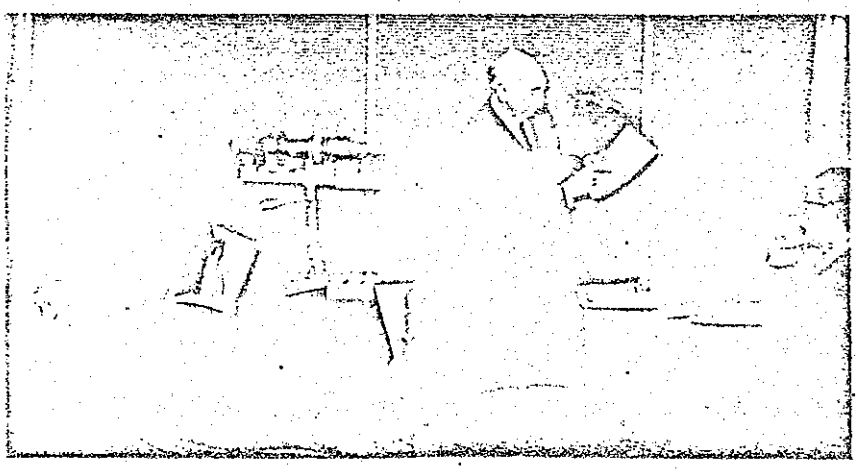
Harsh words and, in some cases, true. But the economic realities of the R&D picture are causing new alliances to form.

In the background is the Government which finances, directly or indirectly, much of the research done in the U. S. It is now Government policy to get more of its R&D back into the economy in the form of useful products. The sometimes-successful Technology Utilization program of NASA is an example.

Although the Government officially backs such a program, many observers feel that any kind of meaningful exchange of technology must occur without Government control. "The Government must act like a government, regardless of its announced policy," says one engineer familiar with the difficulties of dealing with federal programs, "so we can't expect them to guarantee one section of the economy the protection needed to encourage significant investment."

Meeting of Giants

The necessity for resolving specific differences and common problems was clearly pointed



Industry gets a look at what university researchers have to offer in the way of potential new products. This demonstration, by the University of Missouri, was one of many given at a recent forum sponsored by Dr. Dvorkovitz & Associates, of Ormond Beach, Florida.

"Many of the research institutes are qualified to start with ideas and proceed through the development of product prototypes; they seldom get the opportunity, however, to "do the whole job," usually because they can't find an industrial sponsor who will trust them enough to leave them alone . . . and because industrial sponsorship for most new product/process possibilities can almost never be obtained to cover the costs of idea-to-prototype R&D."

Thomas P. Evans
Director of Research
Michigan Technological University

out at a recent event at the Illinois Institute of Technology in Chicago. Dr. Dvorkovitz and Associates, one of the nation's more successful "technology brokers," sponsored a meeting which brought together top men from university research centers and industry. Despite the newness of the idea, and some cautious attitudes, the success of the exchanges is illustrated by a few statistics from the meeting.

Attending were 282 representatives from U. S. and foreign business and governments, mostly decision-making executives. The 225 companies involved represented more than $100 billion in annual sales. On the university side were 93 representatives from 35 institutions.

After introductory speeches, the event became a kind of flea market of technology. Each university or technical institute represented held a brief session in which it presented information on a few of its existing projects. The information was usually salted with just enough data to hook an interested listener: e.g., *"Batter, zinc chlorate, operates at 300 C on pressurized gas. A laboratory version has delivered 1.4 v. The inventor sees the battery as a potential vehicle power source."* A few developments were described in detail, complete with diagrams and slides.

Presentations were followed by a question and answer session about the item and usually included comments on the university's patenting or licensing policy.

Results were mixed:

"That's very interesting, but your man is about 10 years behind the state of the art."

Or, "That's a simple idea that's been around for years," which was met with the cutting rebuttal, "It may be simple, but we hold a patent on it." When an idea hit home, there was a scurry of note taking and card exchanging.

Concurrent with the sessions was a "technology boutique" in which each university had a booth where industry representatives could privately discuss ideas and ask questions. Said one university research head proudly displaying a fist full of cards, "I got more serious contacts in one afternoon than I could in a year of personal visits."

Dr. Dvorkovitz and Associates plans to hold a similar conference next February.

What are the Problems?

A filtering of the comments from the meeting gives a few ideas on the problems of cooperative R&D. The first task is for the "right" people to get together. In large corporations, the person with the power to make the necessary decisions is often hidden in the vast network of executives with confusing titles. On the university side, the opposite is often true. A research center may have a weak or nonexistent personnel structure for fielding and acting on proposals from industry.

Those universities that have begun only recently to seek

"The difficulty of collaboration is compounded when those who now perform essential parts of a function refuse to modify their operations to meet the needs of the whole system. (I am not excluding the Federal Government as one of the principals who must modify its operations.) These vested interests constitute by far the most serious institutional barriers to socially important innovations. Ordinarily, the principals can't be ordered to collaborate. Nor will they do so unless they see something in it for themselves."

Norman J. Latker
Chief of Patent Branch
Department of Health, Education, and Welfare

markets for their technology are faced with a number of new decisions. Said one researcher: "We are only now discovering the entire marketing game. We need patent procedures. We need to establish information protection procedures, and we need to consider liability. Normally we can't find trained people in our own staffs to handle these problems and have to buy outside help."

In such exchanges, industry would naturally like a new product to come as a neatly wrapped package. "We want a low-risk item that can be commercially developed within six months," is the rule-of-thumb one company applies. That doesn't happen too often, but such happy situations can be more frequent if cooperation begins early in an program. Universities must have research programs with goals that are attractive to industry yet satisfy their own scientific standards.

—Robert B. Arons

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THE GREEN SHEET

News About the U.S. Department of Health, Education, and Welfare

Vol. 22 - No. 111 Tuesday, June 8, 1976

GUEST EDITORIAL

Here is another editorial solicited this time by our Denver Regional Office on how editorial writers and other opinion leaders view HEW and its impact, good or bad, on the people served. This one is from the Helena, Denver Independent Record.

By Ken Robertson
Managing Editor

Independent Record

Remember the old party game in which the participants sit in a circle and someone starts it out by whispering a message in the ear of the person next to him?

Nowadays, it's not so popular, but it was the game in which the message was passed around the circle until it finally got back to the originator, who then announced to the group what distortions had crept in during the trip around the circle.

At parties, that game is dead, but it is alive and well, hiding out in federal offices across the nation. Now that's not a claim I make lightly. It's based on six years as a reporter, press aide to a governor and managing editor. The game works rather differently in the federal bureaucracy, because instead of sitting in a circle, the bureaucrats pass around messages by telephone, letter or office communique. But the result is the same, regardless of the agency. All pass along their message from Washington, D.C., to regional offices, to federal offices in each state with built-in miscommunication. And, what is sent back from the hinterlands, to the regional offices, to Washington, fares no better.

Cont. on page 3

N.Y. Times
June 8, 1976, p. 24

UNDERUSE OF DRUGS BY AGED REPORTED

WASHINGTON, June 7 (UPI) —Underuse of drugs may be a greater problem among the elderly than overuse. Government drug abuse officials told a joint session of Senate subcommittees on aging alcoholism and narcotics today.

Some witnesses expressed concern about the overprescribing of tranquilizers, sedatives and hypnotic drugs to create "chemical straitjackets" among nursing home patients.

"However, it should be noted underuse of drugs by the aged may be a greater problem in view of the fact that 95 percent of the elderly population are not institutionalized and are more likely to encounter economic and physical problems in gaining access to medical facilities," said James Isbister, the chief of the Alcohol, Drug Abuse and Mental Health Administration.

Dr. Robert L. Dupont, director of the National Institute on Drug Abuse, said that underuse of drugs could result from aged persons' taking drugs improperly, lacking money for necessary drugs or transportation to health care facilities, and having difficulty in opening containers.

Wash. Star
June 7, 1976, p. A-5

FDA Probe Shift Hit as 'Disgrace'

By Robert Pear
Washington Star Staff Writer

F. David Mathews, secretary of Health, Education and Welfare, was criticized today for his refusal to authorize a further investigation of charges of corruption and personnel abuse in the Food and Drug Administration.

Norman Dorsen, vice chairman of a panel of distinguished scientists and lawyers advising HEW, said it was "a disgrace" that Mathews had not given reasons for his decision.

It was a "triumph of bureaucracy over the people who put their careers on the line" when they made sworn allegations concerning FDA before Senate subcommittees in August 1974, said Dorsen, a law professor at New York University.

"I don't know who was responsible for it," Dorsen said. "I don't know the history of it, but it does not make me any more confident in the government of the United States."

DORSEN MADE his comments today at a meeting of a public advisory comittee known as the HEW Review Panel on New Drug Regulation.

In a report issued two weeks ago, the panel found that FDA commissioner Alexander M. Schmidt's investigation of his own agency had been inadequate and asked Mathews to appoint an independent investigator to look further into charges of corruption, personnel abuse and undue industry influence at FDA.

Mathews, in a letter to the seven-member panel Friday, refused to authorize a new investigation, saying he would refer the matter to the department's general counsel for analysis.

Marsha N. Cohen, another member of the panel, said "we were led to believe that HEW wanted truly independent advice." She said some members would not have accepted appointment to the panel otherwise.

"HEW's apparent retraction of unlimited support after we have rather bitterly criticized a component of that agency leads one to question how independent we were supposed to become," she said.

Cohen, a consumer lawyer from San Francisco, said Mathews' decision represented "forum shopping," the same practice of

Cont. on page 2

Balt. Sun
June 8, 1976, p. C-2

Mandel, Mayor Daley disagree in dispute over Medicaid suits

Washington (AP)—Governor Mandel and Chicago's Mayor Richard Daley squared off in a dispute over federal funds yesterday with Mr. Mandel insisting that the principle of state's rights prevents hospitals from suing states to force reimbursement of Medicaid payments.

Mayor Daley took an opposing view in an appearance before a Senate subcommittee. He supported the right of Illinois hospitals to take the State of Illinois to court in a claim for $80 million in Medicaid payments he said the state has failed to pay the hospitals.

The dispute revolves around a law passed earlier this year designed to force states to allow hospitals to sue them over the amount of Medicaid payments received. The law provides that if a state refuses to waive its right not to be sued then the Department of Health, Education and Welfare can withhold federal medical payments to the state.

Mayor Daley and Mr. Mandel appeared at a hearing on legislation to overturn the new law. Mr. Mandel appeared as a spokesman for the National Governors Conference supporting the repeal that already has been approved by the House.

The specific Illinois case arose after the state earlier this year froze Medicaid payments to Illinois hospitals at April, 1975, levels.

Mayor Daley said that as a result at least three private hospitals in Chicago—Masonic, March and Michael Reese hospitals—have cut back on Medicaid patients. This, he said has forced an increase in Medicaid patients on the city-run Cook County Hospital.

A lawyer for the Illinois Hospital Association, Julian Levi, appeared with Mayor Daley and provided the estimate that the state owes Illinois hospitals $80 million in additional Medicaid payments since the freeze.

Medicaid is a joint state-federal government program under which HEW reimburses most of the costs that states in-

Cont. on page 2

N.Y. Times
June 8, 1976, p. 17

Issue and Debate

Ford Raising Questions On Court's Busing Role

By NANCY HICKS
Special to The New York Times

WASHINGTON, June 7 — President Ford has expressed his determination to try to limit the power of the Federal courts to use busing as a tool to desegregate schools.

Although attorney General Edward H. Levi decided against filing a friend-of-the-court brief in behalf of the Boston Home and School Association, which is asking the Supreme Court to reduce the scope of the busing order of Federal District Judge W. Arthur Garrity Jr., Mr. Ford and Mr. Levi said they were still looking for a case in which to take such a stand.

Mr. Ford is also proposing new legislation that he hopes will limit the ability of the courts to order busing and place a time limit on such court orders.

While Presidential politics are being cited, in part, for Mr. Ford's pushing the issue at this time, the discussion about the issue has again raised debate on the question of whether the Federal courts had overstepped their authority in their busing orders.

The Background

Busing was not an issue when the courts began implementing the 1954 Brown v. Board of Education decision, which held that schools segregated as a result of public policy are inherently unequal.

The pattern of life in the South, which was the target of initial desegregation orders, consisted of blacks and whites living close to one another and this often meant that more busing was used to segregate schools than would be used to desegregate them.

As the issue of school desegregation began moving north in the late 1960's and early 1970's, however, the remedy for segregation proved more difficult. Many attributed segregated schools to the pattern of housing and economics, not to laws such as those that existed in the South.

But the courts found, over and over, that without laws as a driving force, Northern school districts were actively engaged in promoting segregated education in a number of ways: by gerrymandering school districts, by using portable classrooms to relieve school overcrowding instead of reassigning students, by adopting admissions policies that resulted in racially separated schools. In cases where such practices were documented, the courts often ordered busing to reverse them.

These lower court busing orders were upheld in a series of Supreme Court rulings.

In Swann v. Charlotte-Mecklenburg (N.C.) Board of Education, the high court ruled that busing is a valid tool in desegregating schools.

"Bus transportation has long been an integral part of public education system, and it is unlikely that a truly effective remedy could be devised without the continued reliance upon it," the decision said.

In Keyes v. School District No. 1, the 1973 opinion on the Denver school system, the Supreme Court found, in opposition to a Justice Department friend-of-the-court brief, that segregation in a "meaningful portion" of a school system that "creates a resumption" of imposed systemwide segregation that calls for a systemwide solution.

The Opponents

Despite the Keyes decision, President Ford, Attorney General Levi and Solicitor General Robert H. Bork believe that the courts should limit busing orders to individual schools that have been found to be segregated as the result of specific policies by public and school officials.

"I believe that court-ordered busing to achieve racial balance is not the best way necessarily to protect individual rights on one hand, or to achieve quality education on the other," Mr. Ford said in a television interview yesterday.

"In some cases, the court has taken an illegal act of a school board, a relatively small part of a total school system, and taken over the whole school system, and the court, in effect has become the school board. I think that's wrong, and the Attorney General agrees with me, Mr. Ford said.

He is joined in his sentiments by a growing number of Congressmen and from Boston and Louisville who say that the Federal courts are engaging in "social experimentation" with American children by ordering busing extensively.

The Proponents

Those in favor of busing see Mr. Ford's statement as a distortion of the issue. They say that busing was ordered to desegregate, not to integrate —an important distinction— annd that constitutional rights, not quality education are the issues involved.

Civil rights lawyers and groups point to earlier Supreme Court rulings and to the history of cities like Louisville, Charlotte, Denver, Detroit, and Pontiac, Mich., which vehemently opposed busing at first but settled down to live with it. Despite the wordly held public impression, these lawyers point out that relatively few school districts are involved in desegregation actions: about one-sixth of 18,000 districts in the country.

The right lawyers also sa that the expectionly of success is better for a busing plan if lower income groups of either race do not feel that they're being made to shoulder a responsibility not shared by the community.

"One of the things that has made certain plans successful is that they have involved the whole community so that there is no part of the white community excluded," said Willaim L. Taylor of the Center for National Policy Review, a civil rights lawyer.

"One of the problems with Boston is that people feel they are being singled out," he said.

The Outlook

The Attorney General continues to look for a case for the Justice Department to enter, although none is evident at this time. President Ford will soon advance to an increasingly receptive Congress his legislative proposal to limit busing, while proponents of busing will almost certainly challenge the constitutionality of any such law that is passed.

Civil rights groups, on the other hand, are trying to figure out how to carry school desegregation forward. School enrollment figures for 1974 show that more than half the black children in the South were attending schools where the majority of students were white, and fewer than 10 percent were attending all black schools.

In the North, where cities are losing major chunks of their white populations, the record is much more dismal.

The fact that cities themselves are becoming more segregated, often resulting in segregated schools, has led some lawyers to ask if desegregated education is a "right for which there is no remedy."

Judges in Richmond and Detroit sought to remedy this situation by joining urban and suburban school districts and busing across town lines. The Supreme Court, however, opposed that approach and ruled that unless it could be shown that the suburban districts had helped create the problem, they could not be made to participate in its solution.

Last month, however, a three-judge Federal Court in Wilmington, Del., ordered Wilmington's mostly black schools to merge with the mostly white schools in 11 suburban districts. The order is scheduled to go into effect in September 1977.

FDA Probe
Cont. from page 1

which FDA has been accused by some of its critics.

"WE ARE THE blue-ribbon panel to be giving recommendations," Cohen said, "and our recommendations were not liked, so you give them over to someone else. If it weren't so tragic it would be amusing."

Robert W. Hamilton, another panel member, said he resented the secretary's letter, which he read as saying "thank you very much but we didn't like your conclusion." He said Mathews' rejection of "unwelcome advice" is "very analogous to what happened in the FDA."

Thomas C. Chalmers, chairman of the panel and president of the Mount Sinai Medical Center in New York, dissented from the request for a further investigation, and said he approved of the secretary's decision.

Medicaid Suits
Cont. from page 1

cur. The states reimburse hospitals for their costs in treating Medicaid patients.

Mr. Mandel supported repeal of the new law, saying that it is federal intervention into the constitutional rights of states to conduct their own business free of federal interference.

"The governors of the 50 states see this controversy not as one pertaining to the administration and reimbursement under the federal Medicaid program but as an intrusion into the inherent constitutional rights of the sovereign states," he said.

"It goes straight to the heart of the relationship between the states and federal government."

Wall Street Jour.
June 8, 1976, p. 42

Survival Technology Sees Limited Approval Of Heart-Attack Device

By a WALL STREET JOURNAL *Staff Reporter*

BETHESDA, Md.—Survival Technology Inc. said the Food and Drug Administration indicated it will give approval for limited use of a new device to aid heart-attack victims.

According to the company, the FDA said it would permit heart-attack victims to use its lidopen auto-injector, a device for administering the drug lidocaine, in cases where the victim "is instructed to self-administer the lidopen auto-injector by qualified medical personnel" after medical personnel evaluate the patient's electrocardiogram.

The company said a heart-attack victim with proper electronic equipment can transmit electrocardiograms to medical centers by telephone.

Survival Technology said it will seek final FDA approval. To do this, it will submit product labeling and will establish a users' registry, the company said.

In February 1975, the company said the FDA approved use of the device by physicians.

The company said it requested a halt in trading of its stock at noon Friday, an hour after learning of the FDA action.

Guest Editorial
Cont. from page 1

I am convinced it is so because I so often have received answers from local bureaucrats that conflict with what the regional office in Denver says, which in turn does not agree with the word from Washington. The confusion could not be more complete if there were a camarilla behind the communications cloud.

The hazy view from Helena indicates there are two reasons for most of the trouble--petifoggery and the vocabulary of the bureaucracy. The former is a fact of human nature with which one cannot grapple; the latter, though, can be wrestled with.

How? Well, one could start with a simple, easily understood rule--total exclusion of the word "viable" from the federal vocabulary, which could chop the length of all federal documents by approximately 25 percent. Issuing new dictionaries to all federal workers might encourage them to learn that there are alternatives. The next step might be to make those books required reading, along with a bit of grammar, so that federal authors could learn what a transitive verb is--one that indicates an action. (A work that may unsettle many an office, but, nonetheless, a necessary work.)

Why do I suggest this is a priority? Well, let's look at some typical "bureaucratese."

"The ... project has the purpose of making the central business district economically viable through the provision of improvements in the area. The improvements are designed to overcome the blight that has caused the area to deteriorate. Generally, these improvements include the construction of new streets, the installation of underground utilities and services, the rehabilitation of buildings that are to remain, and the sale of land for construction of new buildings by private and public developers."

Now, that's taken straight from a document written here in Helena by a city employee whose work had to pass muster in Denver, so it's carefully couched in 75 words of the language of bureaucracy. That means it's fuzzy, indirect thought.

It can be said just as thoroughly and rather more clearly in 44 words of English.

"The project is designed to revive the economy of the decaying central business district. Improvements designed to do this include constructing new streets, installing underground utilities, rehabilitating buildings that are to remain, and selling vacant land to private and public developers for new construction."

Substituting that sort of English for the gobbledygook so loved in federal offices is the best suggestion I can make to benefit the bureaucracy.

EDITOR'S NOTE: Views expressed are those of the writer, and do not necessarily reflect those of the publication for which he works.

Denver Post
May 31, 1976

Child Support Program Created to Aid All of 'Needy'

By PAULA DEGER
Denver Post Staff Writer

The 1.4 million parents who fail to provide child support add $1.4 billion annually to welfare payments, according to figures provided by the U.S. Department of Health, Education and Welfare.

And the federal government's efforts to ease this financial burden led to the Child Support Enforcement program, created to identify and locate absent parents in order to obtain child support from them.

Not only is the service, which became effective Aug. 1, 1975, under Title IV-D of the Social Security Act, available to welfare recipients, but to all families whose children need the financial assistance of an absent parent.

Given the rise in the divorce rate and the increased problem of nonsupport, "today's middle-class mother may be tomorrow's welfare mother," said Louis B. Hays, deputy director of the Office of Child Support Enforcement headquartered in Washington, D.C.

THE PROGRAM SHOULD prevent some mothers from realizing this possibility, he added in a Denver interview.

"Each state is required to establish an agency to administer the program," said Hays, explaining the setup of the program.

These child-support agencies must try to determine the paternity of children born out of wedlock and to obtain child support for applicants.

Each state also must establish a parent-locator service which utilizes state and local information to find a missing parent. If this effort fails, the service has access to the federal parent-locator service.

And each state must cooperate with one another in trying to locate a missing parent.

The use of the federal locator service has caused criticism, said Hays, because of the "Big Brother" image it may create.

"We're not building a big master bank of everyone in the country," said Hays. "That service can be only used to locate an absent parent for child support."

Theoretically, said Hays, the federal parent-locator service has access to files and records of any federal agency in order to find the last known address of the missing parent and the most recent place of employment.

"Right now, we go to the Social Security Administration, the Internal Revenue Service and the Department of Defense to get our address information," he said.

But the national office doesn't keep this information, he asserted. Instead, the information is sent to the state to aid in finding the parent.

"THOSE WHO OBJECT to the federal locator office look at the right of privacy of the parent but not at the rights of children," said Hays.

"If you have to make a choice between the two rights, the choice clearly lies with the right of the children to have their paternity established and to receive financial support."

When a state is unsuccessful in collecting child support from a parent, the state submits an application to the regional office, where it is reviewed and certified.

The IRS then attempts to collect the same way it attempts to collect when dealing with federal income taxes, said Hays.

Although the statute applies to both men and women, 99 per cent of the persons failing in child support are men, Hays stated.

"Normally when the woman deserts her family, she leaves an employed husband. When the father leaves, the wife generally is unemployed or marginally employed."

"But it still is a potential problem," he said, referring to women failing to support. "It's clear that mothers deserting their families are on the increase."

Hays predicts success for the program.

"ON THE WELFARE side, there are 11 million recipients of Aid to Families with Dependent Children and 80 to 90 per cent of the recipients are on the rolls because of an absence of a parent from home," he said.

About 50 per cent of these deserters are able to provide child support.

"When the program is completely implemented, we expect to collect $1 billion of child support each year. This will provide a savings for taxpayers."

During the first nine months of the program, 30 states reported closing 12,000 welfare cases because of obtaining child support.

"And this didn't include some big states like New York and Illinois," he said. "Colorado reported about 1,000 cases closed."

On the nonwelfare side, it is difficult to estimate accurately the implications of the program, he added. But a letter published in a newspaper advice column last year telling women that a new federal law would help women needing financial support for their children, prompted 15,000 letters to the Washington office.

"They were written by women not currently receiving public assistance," said Hays, "but who were unemployed or underemployed."

"The common theme was: 'I don't know how much longer I can hold out without receiving public assistance."

The Tennessean
May 30, 1976

Desegregation Up To People: HEW Director



David Matthews
Conference speaker

Desegregation of schools has been successful in communities where the people are committed to making it work, Secretary of Health, Education and Welfare David Matthews said here yesterday.

The initiative for desegregation comes from the force of law, Matthews said in an interview, but the policy is carried out largely because the community wants it to be.

"SUCCESS SEEMS to rest on a deep commitment that one cannot deny equal education to members in the community," he said.

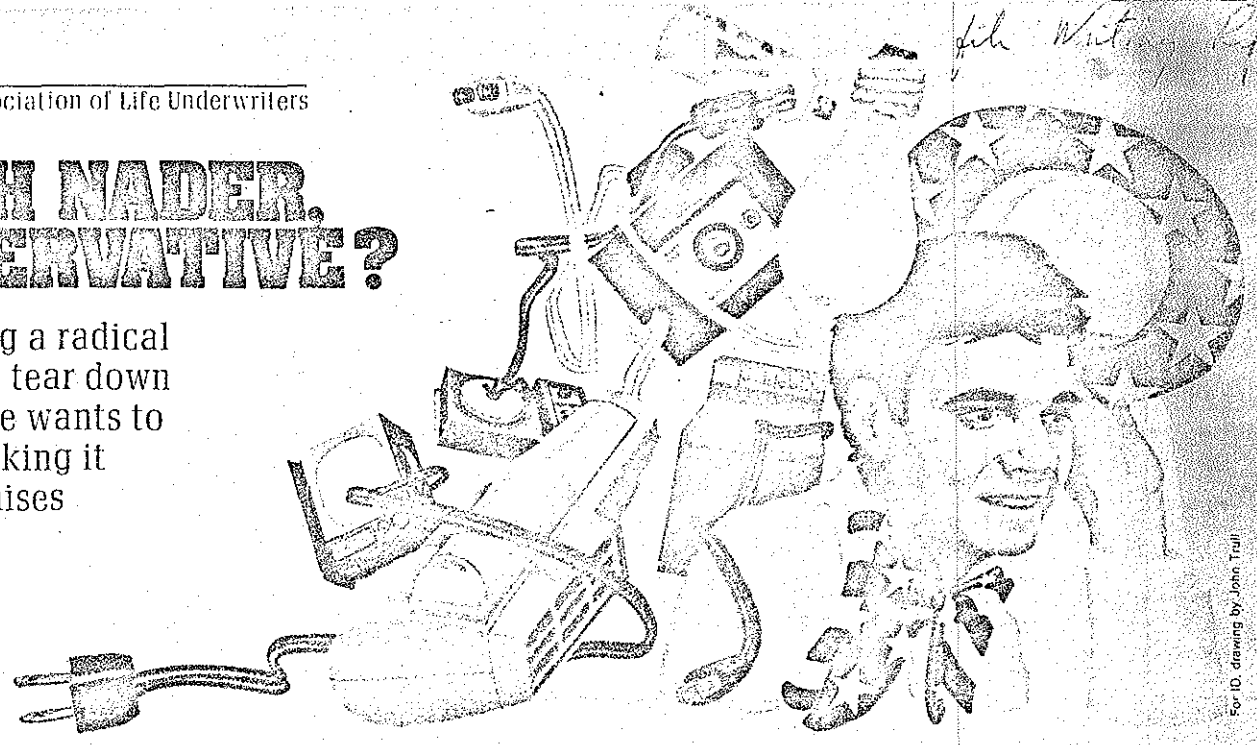
The secretary said his advice to President Ford on the busing question has not dwelt so much on legal recourse as pointing out which communities have desegregated successfully and how they have done so.

Matthews is here to participate in a Regional Conference on the Humanities and Public Policy at the Hyatt Regency.

By Edward B. Rust
From National Association of Life Underwriters

RALPH NADER, CONSERVATIVE?

Far from being a radical who wants to tear down the system, he wants to save it by making it keep its promises



For ID. drawing by John Trull

Edward B. Rust is president of the State Farm Insurance Companies and new president of the U. S. Chamber of Commerce. In this speech to the National Association of Life Underwriters, he encourages business to reexamine its indictment of Ralph Nader and consumerism, suggesting that both sides actually operate from a single motive—making the system work . . .

Democratic society is in a situation in some ways analogous to the insurance business. The society holds together because we make promises to each other, as individuals and as private and public institutions. To the extent that we keep those promises, and to the extent that we have faith in the promises of others, the society functions rather well. When we begin to lose faith in each other and in our institutions, the social fabric begins to unravel.

We are all aware of the many problems that beset us today as a people—the energy crisis, environmental pollution, inflation, foreign trade deficits, and so on. It is not to dismiss these problems lightly that I say they are, to a degree, transient. They will pass in time, and others of equal urgency will arise to take their place. But another problem, in my view, transcends all these others. It is suggested by the phrase "credibility gap," which I suppose is just another way of saying we don't believe each other anymore. We don't believe the businessman, the political candidate, the officeholder, the government agency, the newspaper or the news broadcaster. I don't pretend to have the scientific background that would enable me to analyze the complex factors underlying our declining confidence in the many institutions that together make up our society. I can only offer the personal observations of an American businessman.

I would agree with Alexander Hamilton, who once said, "The vast majority of mankind is entirely biased by motives of self-interest." I don't know if Mr. Hamilton found that distressing. I do not. But the real problem arises in defining where our self-interests truly lie.

The answer to that question frequently depends upon how far into the future we are willing to look. If as businessmen we look only at tomorrow's profits, then self-interest will dictate that we act one way. But if our focus instead is on the long-range survival of the business enterprise, then we will act in quite another way.

Nader wants products to perform as they are supposed to, warranties that protect the buyer as much as the seller, services that genuinely serve

There seems to be some confusion over the role of business. There is much talk these days about the social responsibilities of business and the need for involvement in social programs. And perhaps we should be doing more of this. But the first order of business is the competent management of business, and management's first priority should be the quality of the product or service it provides. This is the first expectation people have of us. It's at this basic level that we must begin to rebuild faith in the institution of business. We need to regenerate a dedication to quality, to value and to service.

This, I believe, is what Ralph Nader and other consumerists are saying, and I find it hard to disagree with them on that point. You will notice that you rarely find consumerists criticizing a business for its failure to involve itself in social programs on the periphery of that business. Mr. Nader's focus is usually on the first order of business—its products and services. His primary insistence is on products that perform as they are supposed to, on warranties that protect the buyer at least as much as the seller, on services that genuinely serve.

I invite American business to look with fresh eyes at Ralph Nader and the kind of consumerism that he represents. He has been described in some quarters as "an enemy of the system," but if we are willing to look objectively at his activities, I think we are forced to the conclusion that his commitment is to making the system work. I believe that it was inevitable that sooner or later someone like Ralph Nader would arise to focus and articulate the dissatisfactions and the frustrations that are widespread among consumers. And so in him we see, not an individual expressing his personal biases, but a man who is singularly sensitive to the mood of the public and who is unusually well equipped to symbolize and express that mood.

I hope you will understand that, as a

From an address by Edward B. Rust to the National Association of Life Underwriters Convention, Chicago, Illinois, September 18, 1973. Excerpted and reprinted with permission.

businessman, I would hardly be siding with Mr. Nader against business. Rather, I simply insist that he is not on "the other side." If we look at the record, I think we will see a clear community of interest that Nader has with American business. Nader's distinction—so obvious that it is often overlooked—is his single-minded dedication to making the free enterprise system work as it's supposed to: making marketplace realities of the very virtues that businessmen ascribe to the system.

His style is not to mount street demonstrations but to insist that products live up to their advertising and to buyers' reasonable expectations of them—and when they don't, to go to the regulatory authorities and say, "Look here. Now regulate." That kind of activity suggests a considerable degree of faith in the system and contrasts sharply with the revolutionary who would tear it down.

But if you would say that he sometimes exaggerates, that he overdramatizes, that he is shrill, then I would have to agree—at the same time pointing out that this is the traditional way to gain attention in the clamorous and free American marketplace, as we who advertise our products and services should be well aware.

We in business sometimes complain that the public—and our young in particular—don't understand or appreciate the free enterprise system. But I must observe that when business sees consumerism and its spokesmen as enemies of that system, then business is demonstrating its own failure to understand the healthy tensions and competing pressures that must always be present in that system, if it is to survive.

The consumerist does not demand perfection of American business. I believe he perceives it as a human institution, susceptible to error. But he understands the difference between honest mistakes and deliberate deception—a distinction Nader is able to make with considerable force.

It's an exercise in corporate egotism to pretend, to assume that mistakes aren't made, and to present to the public an image of godlike perfection, which no one can rightly expect of himself or of the institution he manages. That kind of attitude shows a lack of faith not only in the American people's capacity to understand that mistakes will be made but also in their readiness to forgive those who move promptly to correct them.

I think that these attitudes come about as an indirect result of "giantizing" our institutions. The small businessman cannot isolate himself from his customers, no matter how much he might wish to. But it is possible for the managers of big business to retreat from the abrasions of the marketplace.

The tendency is to encapsulate oneself in corporate limousines and executive suites—an environment that in the long run will distort management's view of reality. But I suggest that it is an inescapable part of the businessman's job to maintain direct personal touch with the realities of the marketplace. Market research is fine and necessary, but those neat charts and graphs can never give you the feel for the product and its user that you get from a direct confrontation with an angry or happy customer.

"If you say that Nader is shrill, then I would have to agree—but this is the traditional way to gain attention in the clamorous American marketplace"

I was in an office conference the other day when a customer of ours in Houston called me on the telephone. He had a problem I was able to help him with. When our telephone conversation concluded, someone commented that an efficiency expert would be appalled that I would interrupt an important meeting to involve myself in the problems of one of our 20 million policyholders. It is an inefficient use of executive time. My response was that the day I refuse calls from customers is the day I should resign, because that is when I will have begun to lose contact with the real world in which we operate.

Share this little fantasy with me . . .

Suppose every American product had a sticker on it that read, "If this thing doesn't work like we said it would, call our company's president," followed by his name and telephone number. It's hard to imagine the impact this would have, but I can tell you a couple of things that would happen. Those computerized consumer complaint statistics would suddenly come very much alive, and in a very short span of time the corporation president would acquire a very sure sense of reality—as well as an unlisted phone number.

But just as business must be willing to calmly assess what consumerism is trying to achieve—must be willing to distinguish between honest criticism and unproductive enmity—so, I believe, it is fair to ask the consumer to look at business realistically. It is no more sensible for the consumer to expect perfection in everything he buys than it is for business to expect consumer acquiescence to all its shortcomings.

I sense a kind of perfectionist mood in some quarters of the society, an irascible intolerance for error of any kind. This is probably a by-product of our technology and our advertising. Too often, advertising leads people to expect what no product or service can possibly deliver. Our technology presents a more subtle problem. We've all heard the nostalgic comment "They sure don't build them like they used to," and in some instances this may be true.

But there's another side of that coin. Not too many years ago, the fairly affluent American home could count no more than a half-dozen electrical appliances. If the average appliance operated six years without needing repair, the customer was going to the serviceman on the average of once a year. But if you have three dozen appliances in your home—and many homes today have at least a dozen more—then you are getting something repaired on the average of once every 60 days. In other words, even if the level of quality is the same, your service problems have increased sixfold, which is a pain in the budget and elsewhere. Inflation, as well, heightens our expectations of products and services; the more you pay for something, the more you demand of it.

I think all of us—businessmen and customers—need to abandon the clichés we too often use in talking and thinking about this thing we call "the system." The businessman sometimes behaves as if he were its sole proprietor, and the customer sometimes expects more of it than it can possibly deliver.

At best, perhaps the system can only be an uneasy partnership, out of which the consumer can expect reasonable satisfaction and out of which the businessman can expect reasonable profits.

Most reasonable people would settle for that. And I believe reasonable people can make it happen just that way. [9]

for short-run advantage will unnerve the collective political conscience. In consequence, everyone will ultimately suffer — especially those who are deserving but who are politically unorganized or inept. In respect to this last point, I think that higher education is making some gains. That we all need to do better — at the state as well as the federal level — is obvious. In the face of powerful, unpredictable, and enigmatic forces in the political economy, political and economic sophistication are the conditions of our survival.

Much can and must be done to overcome and to counteract public disenchantment with higher education when such disenchantment represents an unfair or inaccurate appraisal of reality.

The fourth external force affecting higher education is the most insidious of all. It is the corrosive impact of public disenchantment. Public confidence in colleges and universities and their leadership has dropped a whopping twenty percentage points in six years. It is small comfort to note that public faith in other important institutions in our society has dropped by similar or greater proportions.

Part of the loss of confidence in higher education is a holdover from the campus unrest of the 1960s — perhaps transmogrified into the litigiousness of the present. Part, undoubtedly, is a function of higher costs to parents and students, especially when matched against increasingly uncertain economic and status benefits to degree holders. Part of the problem may well be a cropping up of an anti-intellectual virus that seems to poison the national psyche every few decades — an eruption of a mindless annoyance among noisy segments of the people who are too diverted to think and too lazy to read.

But it is foolish to ignore the possibility that some of the public is justified in its disenchantment, at least in part. Carolyn Bird's book, *The Case Against College,* is annoying because of its inaccuracies and omissions; but it is also saddening because of its accuracies and inclusions. We *have* lost some of our standards — beyond, I believe, the inevitabilities accompanying mass education. More important, we tend to gyrate aimlessly and dangerously between the Scylla of archaic irrelevancy and the Charybdis of instant vocational curricula by market research.

Much can and must be done to overcome and to counteract public disenchantment with higher education when such disenchantment represents an unfair or inaccurate appraisal of reality. Alumni and governing boards especially must be mobilized for this high political purpose. But some honest introspection on the part of administrators, some recommitment to high purpose and high standards, is an essential aspect of winning back public respect and support, which are the touchstones of financial survival. With them, we are assured of continuing legislative and philanthropic underwriting. Without them, we will surely atrophy and die.

I urge you not to lose heart or commitment. I do not know why you chose your occupation. There are surely ways to earn more money at less psychic cost. But my guess is that most of you were drawn to your jobs because you felt somehow a heightened dignity in addressing managerial and financial skills to an enterprise you believed to be significant. Or it may have been nothing more than your desire to raise young children in a university environment. But is this not another way of saying the same thing? Underlying your choice, and your staying with your jobs, is a value preference for institutions whose business is not to produce a commodity, but to induce personal growth and to search for truth.

That such institutions are marked by imperfections, that faculty and student behavior — like the behavior of all persons — is occasionally atrocious, that departmental and divisional conflicts may make the university America's last stronghold of unbridled competitive enterprise, all of these realities may be enough to make you wonder about the worth of it all.

But I would remind you of Winston Churchill's reply to an old lady who in 1942, in the middle of the Battle of Britain, asked the prime minister why Britain fought. Churchill replied, "You'd find out if we stopped."

What if *we* stopped? What if all of our colleges and universities suddenly disappeared? What if they ceased to function altogether?

Dedication Is Essential

At first, little change might be noted. But ultimately doctors would malpractice from ignorance; bridges designed by untutored engineers would collapse; literature and the performing arts would be held to no standards, and would dissolve into globs of jelly; economics would become a broken record of inutile theories; philosophers would play sloppy word games without rules or rigor; astronomy would collapse into the black holes it has only recently discovered. Above all, society would develop a fatal hardening of the arteries for lack of informed and sensitive social criticism. And there would be no specially protected environment friendly to the restless probings of the human mind. It is not too much to say that our stature as humans would be reduced by cubits, for we would no longer be standing on tiptoe trying to touch the face of some beckoning mystery.

Keeping your institutions going may seem in these days a somewhat sullen trade. But without your dedicated attention to the logistics of education, scholars could not search for new knowledge, students could not stretch their minds and hearts, society could not receive the healing, sometimes painful, balm of self-criticism. Ultimately the world could not muster those energies of mind, aesthetic creativity, and examined moral sentiment that are surely its only long-range promise.

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NACUBO Professional File

External Forces Affecting Higher Education

by Stephen K. Bailey

Out of the myriad external forces that swirl around college campuses, there are four that have had (or are likely to have) a major impact on the fortunes of higher education. The ways in which college and university officials and friends react to these forces can make an enormous difference to the future of higher education.

Conforming to New Social Norms

The first force may be labeled "federal government mandates to conform to new social norms." This refers, of course, to the dozen or so federal laws placed on the books in the last several years that attempt to achieve a variety of social ends only marginally related to the educational objectives of colleges and universities: equal employment opportunity, equal pay, affirmative action, elimination of age discrimination, occupational safety and health, minimum wage and fair labor standards, unemployment insurance, social security, health maintenance organizations, Employment Retirement Income Security Act provisions, wage and salary controls, environmental protection, privacy laws, etc.

Carol Van Alstyne and Sharon Coldren of the American Council on Education have been studying the costs to colleges and universities of implementing or conforming to these federally mandated social programs. With the cooperation of six institutions of higher education of various types — granted the primitive state of the art of ferreting or factoring out such costs — the Council's Policy Analysis Service staff has come up with tentative figures that are sobering indeed. If one can extrapolate from this small sample, most colleges and universities in the nation have been forced to dip into reserves or into other sacred pockets in order to meet the rapidly escalating costs of federally mandated programs. Fellowship funds have been robbed, academic priorities have been skewed, dangerously high tuitions have been increased even further. In one large public institution, the annual cost of implementing federally mandated social programs rose in the period 1965-75 from $438,000 to $1,300,000. In one medium-sized private institution, the costs jumped in that same period from $2,000 to $300,000. In a large private institution, the comparable figures skyrocketed from $110,000 in 1965 to $3,600,000 in 1974-75.

Some of these federally mandated social programs have involved a maddening amount of what the Supreme Court in another context has called "entanglements." Affirmative action comes to mind simply because of the recent crisis over Title IX guidelines and regulations, but many of the federal mandates have been accompanied by sheaves of fine print, bales of report forms, and panoplies of inspectors! Here are external forces with a vengeance. And the costs mandated by these external forces are not easily passed on to the educational consumer — or even to hard-pressed state legislatures.

Higher Education Is Not Exempt

What should be our response to these uncomfortable mandates? We could, I suppose, lobby for their elimination — attempting to roll back the clock to the days of our more relaxed ancestral prerogatives. But in our better moments we know that such talk is silly. Among other things, who are we that we should be exempt from the inevitable pains of implementing evolving norms of human equity and dignity? We are a part of the American community — important and integral. We have been quite as guilty as other segments of society in perpetuating evils of caste and class — especially those based on race, sex, and age. And we have no more right to blow up a human being in an unsafe chemistry laboratory than an industry has that right while making munitions in an unsafe factory.

We have every reason to demand that the government be fair, that it follow due process, that it attempt to keep regulations as simple and as unambiguous as possible, and that it put its own chaotic administrative house in order.

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There may be legitimate ways in which to recapture from the government (as industry does) some of the more onerous costs of compliance.

But we are, I believe, constrained to ask ourselves in all candor whether, without the painful prods and ominous threats of the leviathan state, we would voluntarily press, in our proximate settings, to right the wrongs that our democracy has voted to correct. Unless some of us are inconvenienced, unless some of us are administratively anguished, it is probable that the long-standing evils of artificially imposed inequities and indignities on our campuses will be left undisturbed. It is regrettable that financial administrators must absorb so much of the prickly heat. But I am confident that most of you share with me the sense that we are undergoing historically imperative pains of penance, and that the quicker we internalize — and energize with our own initiatives — the cutting-edge norms of social justice which the government is attempting to enforce, the quicker the external armies of bureaucratic meddlers will disappear. "Self-discipline," John Gardner reminds us, "is the yoke of free men."

At its best and most reasonable, accountability is simply the legitimate requirement on the part of those who supply money that it be spent prudently and effectively.

A second external force affecting higher education bears the name "accountability." Accountability is easily caricatured as the meaningless statistics higher education is forced to accumulate in order to quiet some green-eye-shade types in the state capital. Or to mix some generational acronyms: FTE × MBO ÷ usable square footage = FUBAR.

At its best and most reasonable, accountability is simply the legitimate requirement on the part of those who supply money that it be spent prudently and effectively. The crux of the dilemma, of course, is this: How can legitimate canons of accountability be accommodated without upsetting the priceless fragility of academic self-determination? There are times when accountability types remind some of us of curators of Chinese pottery who decide to test the quality of their eggshell vases with a tack hammer. In some states, accountability tack hammers have been written into law.

While it is important to induce college and university administrators to sharpen pencils in the war against institutional waste and inefficiency, it is equally important to recognize the limits of simplistic quantitative analysis addressed to partly ineffable academic outputs. Jack Getzels at the University of Chicago has come forth with a useful example of the difficulty of factoring cost-benefit ratios in academic communities. He points out that a few years ago, a professor of mathematical physics at the University of Chicago commuted seventy miles twice a week in order to teach a graduate course with only two students in it. The cost-benefit ratio, in a superficial sense, was insane: a high-priced professor commuting 140 miles each week to instruct two students. In retrospect, the only mitigating element was the fact that a few years later both graduate students won the Nobel Prize.

The American Council's able senior economist, Carol Van Alstyne, faced with some accountability dilemmas related to the definition of academic productivity, asks the following: If an engineering graduate in 1920 could build a bridge, but an engineering graduate in 1975 can get a man to the moon, has an increase in educational productivity taken place?

The accountability syndrome will not disappear. State legislatures, federal officials, and responsible philanthropoids will continue to press for program audits as well as fiscal audits of their funds. Somewhere between the preciousness of academic rationalizations of inefficiency on the one hand and the unfeeling and almost anti-intellectual line-iteming of academic budgets by bureaucratic and legislative bookkeepers on the other, there is a realm of legitimate autonomy and reasonable surveillance. One of the high callings of a college or university financial administrator is to define that world so that it is acceptable both to academic colleagues and to the institution's financial patrons. No group of people is better suited to perform this essential role of brokering and buffering than you.

Effects of the Political Economy

A third external force is, of course, the inexorabilities of the political economy. Inflation, unemployment, energy costs, and erratic investment dividends have had radical differential effects on institutions of higher education in recent months and years. Few of the effects have been salutary. Some, such as the impact of the cost of #6 fuel oil on colleges in the northeast, have been horrendous. The conclusion is that there is no substitute for navigational virtuosity when sailing on a sea of troubles. In most institutions of higher education the chief business officer, along with the members of investment committees of governing boards, is a key mariner.

I wish that I could be sanguine about the political economy in the years ahead. My fear is that everyone's search



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NASA technology utilization gets high marks

Senate hearings find that program has resulted in number of successful transfers of technology from agency to industry

A new Senate subcommittee—the Subcommittee on Aerospace Technology & National Needs—has chosen as its first order of business an investigation of the National Aeronautics & Space Administration's technology utilization program. Somewhat surprisingly, the subcommittee in its first series of hearings, held late last month, found that this is one government program that appears to be doing exactly what it was intended to do. The hearings were packed with satisfied users of the NASA program. However, most of the witnesses agreed that some improvements in the program, including its expansion, would not be amiss.

NASA's technology utilization program is aimed at helping state and local governments and industry identify and apply technology developed in the space program to their own particular needs, be it a new fire retardant, a new method of marking thermometers, or a system for detecting bridge failures. The program has been in existence for about 13 years and during that time it has made a number of successful transfers, according to Edward Z. Gray, NASA assistant administrator for industry affairs and technology utilization. These include development of a rechargeable pacemaker, a new type of respirator for firemen, and use of heat pipes to prevent freezing of oil in the Alaska pipeline. And Gray points out that during this period more than 1000 patents developed from NASA-sponsored R&D have been made available to industry.

According to Gray, NASA takes a four-pronged approach to getting technology out of the laboratory and into the market place. First, NASA has a low-cost mail order system to acquaint the 20,000 people on its mailing list with new technology developments. About 500 new technology briefs are issued each year. Each contains a technical description of the innovation, an explanation of the basic concepts involved, and specifies where to go for more detailed information, Second, NASA is willing to sell any one of its more than 16,000 computer programs at a cost of about $500 per program. As the remaining two approaches, NASA has six industrial and seven public sector applications centers at various universities around the country to solve, on a one-to-one basis, specific problems brought to them by any organization.

The centers are staffed by NASA and contractor professional scientists and engineers who, in addition to using the NASA data bank, can call on the consulting services of the university faculties and NASA professionals to help solve a particular problem.

This system does work, according to Richard L. Pessolano, who established a new company based on NASA's heat tube technology. However, he told the subcommittee that changes are needed in the system to make it more responsive to the needs of small businessmen and entrepeneurs. Pessolano recommends that, for a start, NASA develop single source indexes detailing all the work done on a particular technology. He also advocates having the technology utilization program provide some mechanism by which the major research companies that developed the new technologies would provide consulting services for new companies just starting out. And Pessolano would like to see NASA save some of the specialized equipment and instrumentation related to the development of a new technology, which is often dismantled or auctioned off at the end of a project, so that it could be acquired or leased by new companies interested in commercializing the technology.

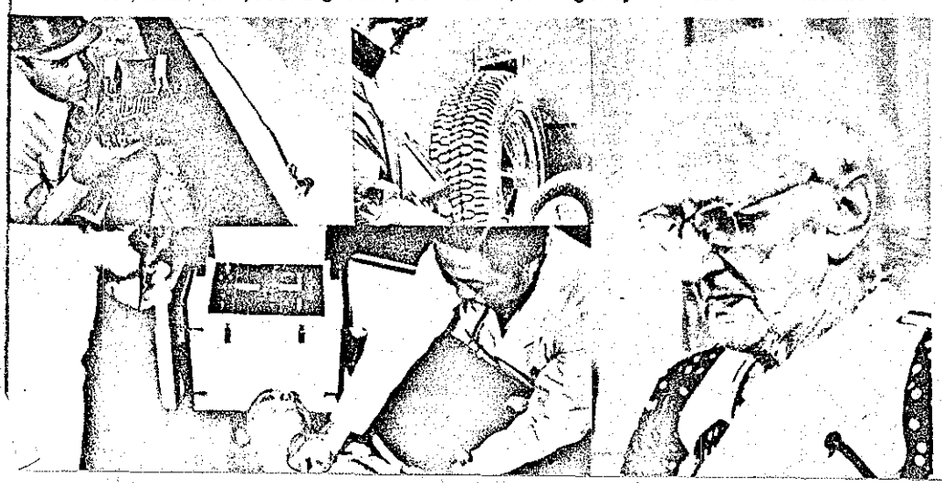
Another successful user of the NASA technology utilization program, Alfred E. Mann, president of Pacesetter Systems, which developed the rechargeable pacemaker, advocates making sweeping changes in the way government laboratories operate to increase the effectiveness of technology transfer. This might be accomplished, he says, by letting government inventors participate in the rewards of successful projects. He advocates using 50% of any royalties derived from a government invention to offset the developing agency's budgeted expenses, with 25% of the proceeds used to fund special projects of the inventor, and the rest of the money actually paid out to the inventor and the laboratory managers.

Although many industries have implemented NASA's technology successfully, state and local governments are running into a number of problems in their efforts to do the same. For example, J. Hugh Nichols, a Maryland state legislator, says that the costs of NASA information services tend to be prohibitive for state and local governments and recommends that some arrangements be made to alleviate this burden. Even NASA's location of its application centers at state universities has had an unintended effect. Nichols points out that the political climate between legislature and university in some states has prohibited establishing effective relationships between NASA and the state governments.

Despite the problems in the local government sector, Senate subcommittee members seemed pleased with the way NASA's technology utilization program is going and are unlikely to recommend any major changes. However, they well may recommend increased funding for it in the future. But it will be at least a year before NASA gets any more money. Its 1976 appropriations bill has just passed Congress and it contains only $1.5 million of a total NASA budget $3.2 billion for the technology utili tion program.

Janice R. Long, C&EN Washi

NASA technology transfers include (clockwise from top left) bridge defect detector, winter tire, rechargeable pacemaker, emergency medical communications



'Privilege' Is Worry For NCI

Oct. 27, 1975

By Robert Pear
Washington Star Staff Writer

The director of the National Cancer Institute says the privileged position of his agency, including special access to the White House, is causing "concern, suspicion and even contempt" among other scientists.

As a result, Dr. Frank J. Rauscher Jr, director of the cancer institute, told a presidential advisory panel yesterday, "people in Congress are beginning to ask about the motives of the entire biomedical community."

And they have a right to ask after hearing scientists bicker, he said.

"ARE WE as physicians and scientists really interested in doing something about a major public health problem, or are we more interested in getting our share of the funds so that we can extend our bibliographies? You hear this more and more," Raucher said. "It does cause me concern."

Rauscher acknowledged that with its "end-run budget authority" and other privileges, the cancer program had won more money, positions and physical space than other units at the National Institutes of Health.

The chain of command is so arranged that "we can get the ears and eyes of the President directly," Rauscher said. He said these special prerogatives were justified because the country has placed high priority on the cancer program.

He appeared at a hearing of the President's Biomedical Research Panel, a seven-member group created last year to conduct a sweeping examination of NIH, looking in particular into problems of management and morale.

THAT PANEL was told yesterday that patient care mandated by Congress might be draining resources and the attention of scientists away from basic research into the causes of cancer.

NIH, under a multitude of external pressures, is pulling "away from reasonably clear, essentially noncontroversial research roles under strong leaders toward both unclear and thoroughly controversial roles in the areas of applied knowledge through demonstrations, control programs and direct service delivery," the panel's staff said in a report.

In an effort to demonstrate the fruits of its research, for example, NIH is providing "seed money" to start up local cancer-control programs, which emphasize early diagnosis, treatment and continuing

"IT'S GOING TO BE traumatic," Rauscher predicted, "if a community five years down the road cannot get enough money to treat its leukemic children as well as they're doing in a demonstration (program). There's going to be all kinds of hell to pay, I'm sure, if we pull out."

But the cancer institute intends to pull out of such programs after their first three to five years.

Several panelists, including Benno C. Schmidt, who also is chairman of the President's Cancer Panel, expressed the belief that the institute should not be in the business of recognizing "comprehensive cancer centers" around the nation, a task it was assigned by Congress.

Rauscher said it was too early to tell whether his agency was "skimming off the cream of the country's biomedical research competence into cancer to the detriment of other social and health problems." But he acknowledged that "certainly the potential is there."

Rauscher said his major concern was that the fight against cancer was "being viewed more and more as successful at the expense of other programs."

THE STAFF of the biomedical research panel made these other points in its report:

- NIH is "in trouble," caught in the middle of deepening ideological, political, budgetary and fiscal controversies."
- Leadership of NIH has been "increasingly politicized."
- NIH is no longer devoted purely to the "quest for new knowledge," but, to the distress of some of its scientists, is pursuing nonresearch aspects of the war on diseases as well.
- "The internal organization and functioning of the NIH lacks coherence."

G. I. Maeroff

N.Y. Times
Dec. 13, 1976, p. 23

Academiicans at Meeting in Capital Voice Resentment Over Federal Regulation of Higher Education

By GENE I. MAEROFF
Special to The New York Times

WASHINGTON, Dec. 12—The simmering resentment in the academic community over the growth of Federal regulation of higher education boiled over at a two-day conference at George Washington University that ended yesterday.

Federal officials were strongly criticized by college professors and administrators for the costs in money, time and effort of having to comply with an expanding list of Government requirements.

There were many suggestions, though there was little documentation, that the growing Federal role represented an infringement of academic freedom.

But the conference also was marked by a vigorous defense of the Federal position by two Government officials who challenged the idea that higher education should be immune from regulations similar to those imposed on business and other institutions.

"What is not correct and what I have heard in the pronouncements of university presidents," said Robert H. Bork, the Solicitor General of the United States, "is the thought that the Federal Government makes a unique kind of error when it undertakes to regulate universities, or that universities are so different and more subtly complex than other institutions that regulation is bound to be uniquely destructive when applied to them.

"None of these things are true," said Mr. Bork, a former law professor at Yale University.

Martin Gerry, the director of the Office for Civil Rights of the Department of Health, Education and Welfare, maintained that his agency had a necessary concern in protecting the rights of women and members of minorities, people "who have been classically excluded from universities."

The conference was entitled "The University and the State: The Proper Role of Government in Higher Education." However, many of the discussions repeatedly gravitated toward one particular aspect of Federal intervention, affirmative action.

The sponsoring organization, the University Centers for Rational Alternatives, has helped lead the opposition to the Government's system of targets and goals for adding more women, blacks and other minority members to the faculties of higher educaticnal institutions.

Spokesmen for the group call the targets and goals "quotas" and allege that such an approach is "reverse discrimination."

One panelist, Dr. Kenneth S. Tollett, spurred a caustic exchange of opinions by his remarks on this issue.

"We are very much disturbed by those who seem to be disturbed by what the Federal Government is doing in higher education," said Dr. Tollett, director of the Institute for the Study of Educational Policy at Howard University. "We're not sure they are upset by the red tape or disturbed by the support and advancement that the Federal Government has brought for blacks in higher education."

Question of Racism Raised

Members of the audience objecting to Dr. Tollett's comments charged that he unfairly raised the specter of racism.

Beyond the question of affirmative action, there was hardly any specific mention by the critics of how they thought thhe Federal Government was infringing on academic freedom.

The concrete examples of the effect of Federal intervention revolved around financial matters.

Institutions of higher education have had to add staff members and spend greater sums of money to deal with the increasing number of forms that must be filled out to comply with regulations that are similar to those imposed on business and industry.

Rules covering occupational safety, welfare, retirement programs, equality of opportunity and other aspects of employee relations have been involved.

"I would estimate that Columbia University spends easily in excess of $1 million each year in meeting its various Federal reporting obligations," said Dr. William J. McGill, Columbia's president.

A recent study by the American Council on Education found that the average institution of higher education spent just under 1 percent of its total budget to meet the paperwork requirements of the Federal Government.

In return, the nation's colleges and universities are receiving the benefit of $15 billion a year in Federal assistance, according to Chester E. Finn Jr., a researcher for the Brookings Institution, who spoke at the conference.

"Authority is deeply resented in any form," Solicitor General Bork told the conference. But he added, "There is a pleasure which is nonetheless real, even if perverse, in seeing elitist institutions scream when the remedies they have prescribed for others are applied to them."

Wash. Star
Dec. 11, 1976, Op-Ed

John P. Roche

Affirmative action: every legitimate break

Previously I suggested that the goal of "affirmative action" programs cannot be a quick fix.

Problems that have been ignored for decades, if not centuries, cannot be remedied by ignoring their bases. Requiring schools to admit a quota of the "unqualified" is, in fact, a cheap way of ducking the structural issue: enlarging the pool of qualified applicants.

Once this has been accomplished — and we have been moving towards it more rapidly than many realize — another question comes up: Assuming there are three candidates, equally qualified, for an opening in graduate or professional school, or an academic post, is it legitimate to choose the woman or the black in preference to the white male?

My answer to this, one on which I have acted over the years, is, "Of course."

First, it seems to me thoroughly in keeping with the American tradition that accords certain benefits on the basis of experience. Veterans, for example, have been given certain breaks over non-veterans, though most were drafted and never fired a shot. There is no reason why women or members of minority groups should not — assuming full qualifications — go to the head of the line.

Second, I believe this sort of affirmative action is important in developing diversity, a particularly significant value in the educational context. I suspect one of the reasons I got my first job as an instructor at Haverford College grew from such an unarticulated form of affirmative action.

I became vaguely aware of this possibility when, in the fall of 1949, the political science departments at Haverford, Swarthmore and Bryn Mawr held a joint dinner. I felt a bit like a cat at a dog show. All evening the discussion centered on "Carl," "Bill," "Arthur" and other luminaries of the Harvard government department. I appeared to be the only person present who had not received his doctorate on the Charles!

In short, it seems to me essential to a healthy educational environment that all the peas don't come from the same pod. This applies even more forcefully to women against whom discrimination has (with rare exceptions) been utterly irrational.

Thirty years ago, for example, women who attended law school were expected to go forth in the world and be — law librarians! If you suggested a woman to a big firm (on the sound basis she topped her class) there would be a profound silence — after all, she might get married, have children and generally destroy the firm's morale. Universities, with even less justification, followed much the same pattern.

To summarize, as one whose whole career was founded on an affirmative action program, I am not going to abandon the concept because some idiots have diverted the concept from its proper course.

The Supreme Court should sustain the California ruling outlawing reverse discrimination by quotas. For a university, of all places, to enshrine such anti-intellectual nonsense is bad enough, but even worse are the rulings by various government agencies that, while on their face repudiating quotas, demand body counts.

At the same time that I repudiate what Nathan Glazer has called "affirmative discrimination," I insist that, on the level of common sense, every legitimate break be given to qualified women, blacks or members of other historically disadvantaged groups.

We are, after all, a national community with roots in the past and, although I refuse to feel guilty for sins I have never committed, I am quite willing to take exceptional action to cope with the consequences of past discrimination. It's not just that we owe it to "them"; we owe it to ourselves.

Wall Street Jour.
Dec. 8, 1976, p. 46

Red Tape in Academe

Universities See Their Autonomy Slipping Away Due to U.S. Rules on Bias, Pensions and Privacy

By JONATHAN SPIVAK
Staff Reporter of THE WALL STREET JOURNAL

The unwanted intrusion of Washington bureaucrats is a familiar grumble of conservative businessmen. But now these same complaints are coming from an unexpected quarter: the often-liberal presidents of American universities.

Listen, for example, to Derek Bok of Harvard: "Government should not penalize you legislatively without giving you a chance to state your case." Or Kingman Brewster, of Yale: "The mere fact that the cause is a good one does not mean it justifies bypassing the Constitution."

The reason for these complaints is the belief that the government is engulfing the universities in bureaucratic rules and regulations which are costly to implement and which challenge the universities' autonomy. Once, these same educators were allies of Washington. Now they feel bitter and estranged by the demands imposed by such requirements as occupational health and safety standards, bans on discrimination in hiring, and new pension and privacy laws.

The costs of compliance can be painful. The American Council on Education, which represents most of the nation's colleges and universities, has found that compliance with a dozen federal programs costs $9 million to $10 million a year at six representative schools, and consumes 1% to 4% of operating budgets.

Linking Dollars to Demands

The government can impose its will because the universities depend on federal aid, and many of the demands are linked to the receipt of government dollars. Federal support for higher education totals $2.6 billion a year, up from $538 million a decade ago. Most major universities get about one-third of their income from the federal government; the University of California, for example, receives $275 million a year for its nine campuses. Ironically, the institutions are crying out for more federal money even as they protest federal controls.

Certainly these controls are far-reaching. An amendment to an educaton law, designed to protect students' privacy for example, makes it difficult for schools to publish complete student directories because any student can insist that his presence at a university not be disclosed publicly. And before Congress recently softened the amendment, the institutions couldn't legally reveal grades to students' parents.

Yale's Mr. Brewster sees a particular hazard in the recently enacted health manpower law which requires U.S. medical schools, all of which are government-aided, to accept all American students who have completed part of their education at foreign medical schools. This, he fears, sets a precedent for federal control of university admission policies generally. For this reason, some medical schools are considering avoiding the requirements by refusing all federal aid.

The schools' bill for federal health and safety requirements is estimated to be $3 billion. The rules dictate such things as the height of safety railings; one school complains it had to paint its fire extinguishers red; another had to outfit science students with goggles.

At Harvard, an unofficial study estimates that nondiscrimination requirements have raised the university's cost of hiring a faculty member by at least $6,800, largely though added expenses for advertising, interviewing and processing of applications. For the same reason, Notre Dame claims it now spends an added $2,000 a year in recruiting a woman faculty member and $5,000 a year more in the case of a black professor.

The universities must process four similar forms for each student who seeks a federally insured loan to finance tuition. They claim that the government fails to reimburse them fully for this paperwork. Harvard complains that meeting the reporting and other requirements of the new federal pension law costs $500,000, without any improvement in employes' coverage.

Accusations of unnecessary federal interference came not only from powerful private institutions, such as Harvard, but also from the big state universities and small liberal arts schools. The complaints have won a sympathetic hearing in Washington, particularly from David Mathews, Secretary of Health, Education & Welfare, who is the former president of the University of Alabama, a post to which he will shortly be returning. "If we make the universities the home for people who are more adept at dealing with forms than ideas, we have corrupted the institutions in such a way that they have very little hope of doing what society wants them to," he says.

An Effort to Cut Red Tape

With the backing of President Ford, Mr. Mathews is leading a government effort to reduce red tape and to lessen the regulation of universities. President-elect Jimmy Carter is expected to pursue the same goal.

An advisory committee, headed by Joseph Sutton, vice president of the University of Alabama, has offered 16 recommendations to ease the universities' burden. Among the proposals: reimbursing the universities for the cost of complying with federal regulations, and consolidating the sometimes conflicting civil rights enforcement activities of three government agencies.

The universities have their own ideas for dealing with the government. The Council on Education wants to be consulted on federal educational regulations before they are issued in final form. Influential university leaders, like President Bok of Harvard, urge fellow-educators to make their case to Congress before it can impose new burdens on them.

They can claim some success in swaying Congress. The Higher Education Act passed this year, gives the institutions an extra $10 for each government grant or loan to students, and raises to 4% from 3% the share allowed them for processing the applications. The universities p ersuaded lawmakers not to discourage charitable contributions in this year's Tax Revision Act, and they stopped the Postal Service from raising rates on college catalogs.

Not everyone in academia is critical of Washington, however. Some educational leaders praise the government for imposing needed national goals, such as non-discrimination, which they feel the universities were late in recognizing and lethargic in pursuing. "In a sense, the universities brought this on themselves," contends Jean Mayer, the new president of Tufts University.

Two Schools Defy Government

"I'm not much impressed by the argument that the federal government is about to suffocate higher education; on the contrary, I want more federal legislation and support," Robert Wood, president of the University of Massachusetts, said recently in a letter to an education magazine.

Still, two schools have openly defied the government, Hillsdale College in Hillsdale, Mich., and Brigham Young University in Provo, Utah. They are challenging the HEW Department's regulations against sex discrimination on political or religious grounds. Brigham Young, a Mormon institution, claims that government rules forbidding discrimination against women who have abortions conflict with its own code of sexual morality.

Yale's Kingman Brewster has taken the lead in expressing academia's broad objections to Washington's demands. A former law professor, Mr. Brewster percelves a real constitutional threat in the government's willingness to attach conditions to its support of higher education to achieve other social purposes. He says: "I think one of the real dangers is the ease with which the Congress can attach any damn condition to the grant or contract, which is wholly contrary to the notion of a government of limited powers."

Clearly, the universities' standing on Capitol Hill has sagged from the peak it reached in the mid-1960s. Legislators have been angered by the steady rise in tuition costs, what they see as an arrogant "we can do no wrong" attitude among some academics, and the opposition of many universities to federal aid to individual students rather than to the institutions themselves. "We don't have any heroes left to help us," frets one university official.

Uncle Sam as a Cop

As a result, increasing government requirements are installing Uncle Sam as a cop on the campus and are giving fits to university administrators. Among the particular causes of their complaints:

DISCRIMINATION IN HIRING: The move to increase hiring of minority faculty and women is probably the single most controversial federal undertaking on campus. It poses the threat of a cutoff of federal research and other grants if the institutions fail to take "affirmative action" to recruit more women, blacks and other minorities for faculty posts. Many university officials fear the cost and bureaucratic headaches of compliance outweigh the gains. They also claim non-discrimination requirements have lowered academic standards for minority students at some law, medical and other graduate schools as efforts have been made to develop potential faculty members.

DISCRIMINATION BY SEX: The Higher Education Act of 1972 bans all forms of sex discrimination on campus and has enveloped universities in a web of regulation. One immediate impact has been to open up athletic facilities to women and force higher spending on women's athletics. At Yale, the huge Payne Whitney gym is now used by women as well as men, and in the last year the university's outlays for women's sports have increased to $500,000 from $300,000 annually.

DISCRIMINATION AGAINST THE HANDICAPPED: The Vocational Rehabilitation Act of 1973 bans discrimination against the mentally and physically handicapped in federally aided programs. It's likely to be a big sleeper. Recently issued HEW regulations extend the definition of handicapped to millions of the mentally ill, alcoholics and drug addicts, and require that handicapped students be given equal access to educational opportunities. The universities complain that the cost of modifying buildings for the physically handicapped will be immense. They want to pool resources and provide access for the handicapped on a regional basis only, but so far HEW officials have said no.

PRIVACY PROTECTION: The Privacy Act gives students the right to read information on them in university files, such as instructors' evaluations and records of disciplinary action, and to control its disclosure to third parties. Some professors complain that these requirements will deter them from candid evaluations, making letters of recommendation useless. In any event, it's not a fit area for federal intervention, some say. "The more you bureaucratize our lives. . . you have constrained relations between students and professors," argues Harvard's counsel, Daniel Steiner.

Mothers

cont. from page 1

Sandra Sanford, a supervisor of single-parent services in Prince George's County, has worked with scores of pregnant teenagers, and while she finds that ignorance of contraceptive techniques a part of the problem, a much more important aspect is ignorance of what parental responsibility entails.

Sanford believes that a large number of young girls, "consciously or unconsciously get pregnant to satisfy their own need for love." They may come from families where their own emotional needs are not met and may think of a baby as someone who will give them unquestioningly the love they crave, she said.

"They don't seem to understand that the baby will grow up, that it will have physical and emotional needs they may not know how to meet. Many of them seem to think of a baby almost like a doll.

"Many times, after about a year, the grandmother will be taking care of the baby, while the mother returns to school. When that happens, the mother may find herself more in the role of a sister to her own child, and the mother may resent it to the point where she will go and get pregnant again"—like getting a new doll.

Sanford says that many of the girls she counsels either get pregnant or decide to keep their babies once they are accidentally pregnant for a hodgepodge of questionable reasons: They believe it will help them hold on to their boyfriends or that it will confer upon them certain adult privileges. "Some keep their babies for monetary reasons —$89 a month if they are under 18 and living at home, $156 if they are over 18."

Both she and Morse doubt that there are very many women who do it for the money, however. As Morse puts it, "If that old canard about having babies for the welfare check is true, then why are there so many Medicaid abortions? (Approximately 7,000 of the nearly 10,000

cont. on page 4

narrow black tube down the throat of a sedated but awake patient. He peered down the tube to examine a whitish-pink cavern splitting into two tunnels, the bronchi, that carry air to the lungs. A bundle of tiny glass

also enable doctors to examine organs previously accessible only through major exploratory surgery.

Fiber optic medical probes function much like tiny flashlights. Bundles of the

the touch of a button.

For some applications, the future is now. AT&T's research arm, Bell Telephone Laboratories, is testing a 144-fiber cable that could transmit 60,000 telephone

operate over its lifetime, engineers say.

A patent search for technology trends

Latest study by U.S. Patent Office zeroes in on fields of active technology and high foreign interest. It also shows that costs of getting a patent in men and money are rising sharply

The table on p. 31 is a summary of chemical activities uncovered by the U.S. Patent and Trademark Office in its ambitious program of screening U.S. patents and reported in its "Technology Assessment & Forecast, Sixth Report."

The goal of the program is twofold:

- To isolate areas of high scientific activity, which presumably will be a prelude to major new commercial developments.
- To identify areas in which residents of foreign countries are receiving a disproportionately high share of U.S. patents. This may indicate that the U.S. research and development effort is lagging in those areas.

Genesis of the Forecast: Almost 4 million patents have been issued in the U.S. since the first one was granted on July 1, 1790. For classification purposes, the Patent Office divides all patents into more than 300 broad technological groupings (classes) and almost 90,000 specific technological categories (subclasses). The office, with considerable logic, considers this data bank a unique national resource. And to foster "use and useability," it has set up the Office of Technology Assessment and Forecast (OTAF).

For some time, the Patent Office has been intrigued with the possibility of using computerized scanning of files to spot patent trends. Five years ago, for example, it suggested that such a system might have given advance notice of key developments such as the Dutch approach to continuous welding and Sweden's development of tower cranes (*CW Washington Newsletter, July 21, 1971*). When it set up the new system (*CW, Apr. 5, 1972, p. 37*), the Patent Office said a trial run showed that the spate of patents on glassmaking could have presaged the use of float-glass.

Proof of the Program: Those test runs had, of course, the formidable advantage of hindsight. The proof of the program has to be its ability to forecast and project. And to that end, OTAF has been constantly refining its approach.

In its sixth report, for instance, it includes a number of two-page mini-reports. They give a brief description of the activity, a summary of recent trends and activity data. The latter consists of a tally of U.S. patents for the years 1966 through 1975, broken down by country of origin and by year of grant and year of application. For the first time, data on patent applications from 1966 through 1973 are included, which, says OTAF, gives a more accurate reflection of activity.

In addition to the mini-reports, the latest study contains seven examiner reports prepared in greater depth by knowledgeable patent examiners. Three of direct interest to the chemical process industries are:

- Catalytic mufflers. In the 1966-1975 period, 236 patents issued on catalytic treatment of automotive exhausts and in 1966-1973 a total of 164 patent applications in the area ended up as U.S. patents.

The examiner, George O. Peters, traces the history of patents in the field, notes that additives to increase the stability of ceramics and active and corrosion-resistant alloys crop up frequently. He also points out that some recent patents have centered on catalysts that are more stable to the wide variety of operating conditions encountered in treating automotive exhaust or to compensating for such variations. He feels the major effort will continue to be to extend catalyst life and to develop materials that will better accommodate the wide range of temperature and operating conditions.

- Algicides. During the 1966-1975 period, 288 U.S. patents issued on algicide compositions; and in 1966-1973, there were 213 patent applications that resulted in issued patents.

Examiner Glennon H. Hollrah lists a variety of algicides categories and their mode of action. He reports that while a number of compounds possess broad-spectrum activity, usually several organisms are resistant to a single type. These resistant types may thrive while the others are being killed off, so the idea of using mixtures should come in for considerable research attention. Moreover, many of the combination being patented exhibit synergism and he feels that more work on synergism is in the cards. At the same time, he feels that work will continue on bringing out new and different algicide compositions.

- Aminoglycoside antibiotics. From 1966 through 1975, 151 U.S. patents were granted on these compounds; and in 1966-1973, 124 applications resulted in issued patents. The category includes potent antibiotics such as streptomycin and neomycin. Original research effort aimed at isolating and purifying naturally occurring materials. Then structural modifications and synthesis of analogs proved rewarding.

More recently, says examiner Johnnie R. Brown, new analytical methods (such as thin-layer chromatography, mass spectrometry, X-ray analysis) have facilitated discovery of new natural compounds. He expects the future will see development of new, more effective aminoglycosides. He also thinks that refinements in isolation techniques (including gel and molecular-sieve chromatography) will permit more effective separations to obtain crystalline products. And that will facilitate structural determinations.

Energy, Too: In a separate section of the report, OTAF looks at energy technologies. The percentage growth rates between energy patents and those in the rest of the report are not comparable. In the energy section, the base period is the preceding decade, 1963-1972. In the earlier section of the report, the base is the entire body of patents that have issued in the subclasses.

Among the fields that could have a big impact on the CPI (with percentage growth in patents between 1973 and 1975):

- Fuel from waste (31.1%). The category includes equipment and processes for generating gas (e.g., methane), liquids (e.g., synthetic oil) and solids (e.g., logs and briquettes) from municipal, industrial and other wastes. Recent efforts are aimed at improving efficiency, increasing energy content and producing cleaner fuels.
- Geothermal energy (46.6%). In this category are methods of tapping geothermal energy and from temperature differentials in natural fluids (as in the sea). New work is aimed at increasing the efficiency and, in the case of hot brine, reducing the corrosive effect of the brine minerals on equipment.
- Direct conversion of solar into mechanical energy (11.9%). The methods generally employ a thermally expansible or vaporizable working fluid that

Chemical activities revealed by U.S. patent screening program

Five chemical technologies with high foreign ownership of U.S. patents

Technology	Focus	Average annual growth of U.S. patents issued (1973=1975)	Foreign ownership of U.S. patents issued (1973=1975)
Polypyridyls	Chlorinated bipyridines as pesticides; ultraviolet stabilizers for plastics; intermediates for dyes and pharmaceuticals	15.1%	79.6%
Axole derivatives	New optical brighteners for textiles; pharmaceuticals; antihalation agents in photography	5.5%	77.3%
Blast-furance fuels	Use of liquids as fuel; production of blast-furnace gas; injecting fuel into the furnace	6.2%	76.9%
Pyrazolines and pyrazolidines	Pharmaceuticals; intermediates; optical brighteners; light-sensitive photographic agents	7.1%	72.7%
Fermentations	Nucleic acid derivatives for pharmaceuticals; L-glutamic acid seasoning agent; single-cell protein; penicillin precursors	6.1%	66.0%
Seven high-technology areas in chemistry			
Photothermic compositions	Support film with a light-stable organic silver salt, light-sensitive silver halide, a reducing agent and a transparent polymeric binder. On exposure to light, the compositions develop a latent image that can be developed by heat alone	28.0%	32.3%
Plant growth retarders	Methods to control turf grass with minimal toxic side effects; to reduce lodging in cereal grains; and to stunt sugar cane growth to boost sugar concentrations	25.4%	30.9%
Catalytic mufflers	Single-and multistage oxidation-reduction employing monolithic ceramic supports as well as metallic or less porous supports	22.4%	35.3%
Tissue culturing	Methods to prolong red blood cells in storage; to treat blood cells in vitro to inhibit sickle-cell anemia; media and processes for culturing mammalian cells	22.2%	20.0%
Olefin disproportionation	New catalysts to improve the yield of ethylene and butene from dimerizing propylene	17.4%	24.2%
Algicides	A broad variety of compounds to control algae and the synergistic effects of mixtures	17.3%	15.0%
Aminoglycoside antibiotics	Structural modifications and isolation of new naturally occurring compounds with higher antibacterial activity or lower toxicity or both	16.3%	49.5%

heated by solar radiation. The pressurized fluid so produced drives a fluid motor. In one patent cited (3,287,901), solar energy heats a low-boiling substance (such as carbon dioxide) to a gas that drives a turbine.

More for Less: In another section, OTAF shows the increasing cost of obtaining a successful patent application in both manpower and money. It selected six industrial groups: food and kindred products; chemicals and allied products; fabricated metal products; machinery (except electrical); electrical and electronic machinery, equipment and supplies; measuring, analyzing and control instruments along with photographic, medical and optical goods and watches and clocks.

Results are revealing. For the six industrial groups, the number of patents per million dollars spent declined from 4.8 in 1965 to 3.3 in 1973. And the manpower necessary to obtain a patent application rose from 6.0 in 1965 to 7.9 in 1973.

For chemicals, the situation was somewhat better. In 1965 the number of successful patent applications was 5.3 per million dollar of R&D effort. In 1973 this dropped to 3.9. And in 1965 the manpower-to-patent application ratio was 5.1; in 1973 it rose to 7.4

Restricted Conclusion: The data clearly indicate that for chemicals and other industries the personnel and money needed to obtain a patent is rising sharply. However, this does not necessarily mean that R&D productivity is falling off. OTAF offers a number of explanations.

First, it is possible that the increasing complexity of technology makes it more difficult to find a patentable invention. Second, it is possible that the newer patents cover broader pieces of technology. A third possibility is that U.S. industry may have become less concerned with patents. And if that's the case, it would also explain the sharp increase in U.S. patents issued to foreign owners.

In short, the section on efforts needed to obtain a patent has to be assessed with considerable caution. But that is true of the entire report, which should be viewed as a long-range forecast that can provide a measure of guidance in planning.

viewpoint

Toxic controls: maybe we'll get lucky

By the time you read these words, President Ford most likely will have signed the toxic substances control bill into law. It is academic now, of course, but we still feel this umbrella legislation is, in its present broad form, unneeded. (Interestingly, Allied Chemical was sentenced last week in connection with Kepone pollution under provisions of the Federal Refuse Act of 1899 and the Federal Water Pollution Control Act, as amended in 1972.) Still, we don't think toxic substances legislation of itself will topple the chemical industry. Several industry leaders have said it is a law they can live with. The Manufacturing Chemists Assn. has endorsed it. Typical of comments: it is "tough but workable."

In fact, among large chemical companies, only Dow Chemical continues to publicly object and question its need. Meanwhile, among small chemical companies, Fike Chemicals continues its worried protest.

Indeed, feisty Elmer Fike, president of the small Nitro, W. Va., firm, probably has sized up things as well as anyone. "Few really understand the bill and its implications," Fike recently told *CW*'s environment editor, Irvin Schwartz (*CW, Sept. 22, p. 13*).

But we can conjecture. And we don't like some of the possibilities.

While Fike obviously has his own ax to grind (as do we all), his oft-repeated complaint that stringent toxic substances legislation will be harder on small companies than on large ones is plausible. To be sure, the bill as finally passed by Congress eases certain provisions where small firms are concerned (exemption, for example, from reporting requirements, lower fees). But in any serious contest with the government, larger companies almost certainly will fare better if only from the standpoint of staying power. The ultimate result could be a significant and unwelcome shift in composition of the industry and a lessening of competition.

Innovative potential, a hallmark of the chemical industry, may also suffer. For one thing, smaller companies have often been in the innovative vanguard. And even for larger companies, the increasing burdens associated with new-product development are bound to influence R&D budgets.

But the aspect of the pending law that troubles us the most is the arbitrary power over the industry, and therefore indirectly over every citizen, that it places in the hands of a single Washington agency. Environmental Protection Agency officials, we are told, insist this should not be a concern. "Don't worry," they say in effect. "We're reasonable people." And EPA Administrator Russell E. Train has promised a "go-slow" approach in enforcing the law (*CW, Feb. 18, p. 12*).

But can we count on EPA officials to continue to be reasonable or for such reasonable people to be followed by equally reasonable successors? Recent pronouncements by Train himself might make one wonder. At last June's spring luncheon of the Drug, Chemical and Allied Trades Assn., Train came across as "firm but fair" (*CW, June 30, p. 5*). At the December 1975 meeting of the Chemical Specialties Manufacturers Assn., he seemed conciliatory (*CW, Dec. 17, 1975, p. 5*). But at the October 1975 meeting of the American Forestry Congress, he was urging environmentalists to "rally together to fight for the real essentials" (*CW, Dec. 3, 1975, p. 5*). And last February at the National Press Club, he described Americans as "often engaging in a grim game of chemical roulette," "without their knowledge or consent" (*CW, Mar. 10, p. 5*). The chemical industry could presumably live with the Train of June and December past. But what of the Train of October and February? And how about the Train of days to come or future EPA administrators?

In spite of some compromise in the industry's favor, the current bill still sets the administrator up with a great amount of arbitrary authority and broad latitude. If the industry is to live with toxic substances controls, it will apparently be largely at EPA's discretion and on its terms. We may get lucky. But then again, we may not.

Patrick P. McCurdy

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cial private lines, commercial phone equipment and fancy Design Line telephones that A T & T introduced two years ago. If part of that business is lost to competitors, rates to home subscribers will have to go up. A T & T claims it subsidized home service to the tune of $4.6 billion last year.

Opponents of the bill question Bell statistics. One public study in Massachusetts showed that Bell's local phone service was returning 26% on investment. The notion that home phones were subsidizing other services, instead of the other way around, was supported in a report last week by the FCC. Opponents of the bill also point out that in the company's third quarter (ending Aug. 31), A T & T earned $1.01 billion, up 25% from the same period last year—the largest amount ever earned in a single quarter by a U.S. company.

Industry United. The bill has already gained the nominal backing of 16 sponsors in the Senate and 175 in the House. Also supporting it is the Communications Workers of America, whose members stand to lose jobs to foreign equipment makers. The independent phone companies back the bill because they receive substantial revenues from traffic over A T & T long lines. Some small companies get as much as 85% of their revenues that way. Says Jack E. Herington, chief lobbyist for the independents: "This is the only time the industry has been united on an issue."

Currently, the competition the bill seeks to eliminate is not big. Between them, the specialized communications carriers and the equipment makers had revenues last year of only $178 million, *v.* Bell's $28.9 billion. Clearly—although A T & T Chairman John D. deButts denies it—the bill is aimed at stifling newcomers to the lucrative communications markets of the future. Those potential billion-dollar markets are in such areas as facsimile communication, satellite transmission and computers that "talk" to each other over great distances. With its bill, the telephone establishment wants a guarantee that it will have the biggest slice of the action.

CRIME

Tobacco Road

Late one muggy afternoon last month, two men carrying bulging paper bags got out of a 1975 Mercury Marquis, walked up to a cigarette wholesaler's warehouse in Queens, pushed a bell above the steel door and were admitted. A few minutes later, another man rang the bell. "Whaddaya want?" he was asked over an intercom. "This is Jerry. I came to pick up the order," said the caller. "It's too late. I can't give you the stuff," said the voice, clicking off. The caller made a quick gesture to a building across the street. Out stepped Patrick Vecchio, assistant director of the special investigations bureau of the New York State tax department, carrying a bullhorn. "We are state investigators," announced Vecchio over the amplifier. "Open the door."

Thus began the most successful series of raids that Vecchio and his men have ever carried out. Their quarry: cigarette smugglers. Inside the warehouse, they found three tax-stamp counterfeiting machines—two still in the paper bags brought by the men from the Mercury, the third already mounted and in operation. Fanning out, Vecchio's men raided four other tobacco distributors, confiscated 50,000 cartons of cigarettes and arrested eleven men—including three major wholesalers and Murray Kessler, 52, identified by police as a high-ranking member of the Vito Genovese mob. But, says Vecchio, "it was only a drop in the bucket."

That is right. Cigarette bootlegging —"buttlegging" to police—is a multimillion-dollar business. It is a phenomenon of the past decade, when hard-pressed state governments discovered that levying stiff cigarette taxes was a politically painless way of raising money. The taxes, however, are easy to evade. Buttleggers, according to one police source, now smuggle nearly half a billion cartons a year—or one-sixth of all cigarettes smoked—into 42 high-tax states. The Council Against Cigarette Bootlegging, an organization financed by the tobacco industry, estimates that 44 million cartons will be smuggled into New York State alone this year, at a cost of $110 million in lost tax revenue.

In New York City, where cigarette taxes have grown from 9¢ to 23¢ a pack since 1965, some experts believe that half of all cigarettes sold are contraband. The number of legitimate dealers has been cut in half, and those that are left are either going broke or salting their stocks with untaxed packs. Says Murray Baratz, Secretary-Treasurer of the tobacco distributors' workers' union: "If nothing is done to correct the conditions, there will be in the very near future only bootleggers."

The principal source of bootlegged cigarettes is North Carolina, where tobacco is king and the state tax is only 2¢ a pack. On one 100-mile stretch of highway, known locally as "Tobacco Road," there are more cigarette dealers than pine trees, and their lots are jammed with out-of-state cars loading up for the run north. Profits average $1.25 a carton and the risk is relatively low: according to police, the odds against getting caught are 200 to 1.

Small operators, although still numerous, are being muscled out of the buttlegging business by organized crime. Police say all five of New York's Mafia families have moved heavily into the business, and that their profits from the illicit trade now approach $100 million a year.

Elusive Racket. The Mob's operation is highly sophisticated. Some families are believed to own North Carolina dealerships, which supply them with cigarettes free of the North Carolina tax stamp. Their trucks are equipped with two-way radios and escorted by scout cars on the lookout for police. On a typical run, the cigarettes are loaded onto giant tractor-trailers capable of hauling as many as 60,000 cartons at a time. As they near their destination, they are transferred to smaller trucks to reduce the risk of detection and the loss in case of seizure. Once in New York, some of the cigarettes are sold at cut rates—often 35¢ a pack below normal retail prices—by underworld operatives in bars, offices, factories, beauty

TAKING INVENTORY OF CONTRABAND CIGARETTES IN A POLICE WAREHOUSE

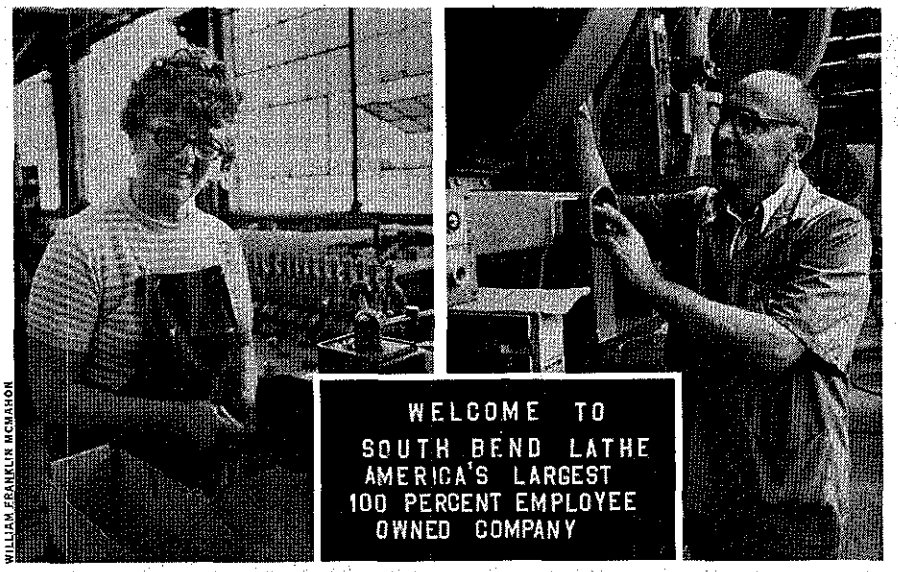


UPI

parlors and apartment buildings. Others are marked with counterfeit tax stamps and distributed to ostensibly legitimate retail dealers. The counterfeiting, say state authorities, is often so expert that it can be detected only by laboratory tests.

Against these dodges, police are all but helpless—partly because of budget and personnel cuts, although it is difficult to see how even vast hordes of police could stop this particular, elusive racket. Also there has been a concerted lack of interest on the part of the courts and state prosecutors. Only nine buttleggers were sent to jail in New York City last year—seven of them for three months or less.

A New York State task force of police and tax officials conducted hearings last spring, then issued three recommendations: tax laws should be stiffened, police should be given more money and enforcement powers, and cigarette taxes should be slashed by as much as 10¢ a pack to reduce the smugglers' incentive. The last proposal is probably utopian. Cutting taxes might well reduce the buttleg traffic, but it would also cost the state an estimated $33 million a year in lost revenue—assuming, of course, that the buttleggers do not take over all the business.



WILLIAM FRANKLIN MCMAHON

INDIANA WORKERS KEEP A FALTERING BUT SOUND BUSINESS GOING
"You've got your hand in my pocket if you don't do your job."

INVESTMENT

More Worker-Owners

WELCOME TO SOUTH BEND LATHE AMERICA'S LARGEST 100 PERCENT EMPLOYEE OWNED COMPANY. So reads the proud sign in front of a sprawling red brick factory in South Bend, Ind. Little more than a year ago, the 70-year-old machine-tool maker faced liquidation because its performance was not up to the expectations of its owners, Amsted Industries Inc., a Chicago-based conglomerate. But South Bend was a solid company with good years ahead of it, thought some of its top executives. They went shopping for a way to buy the company and pump in enough working capital to keep it going until times got better. Today South Bend is doing well and is totally independent, with most of its stock already deposited in a trust in which each of the company's 440 employees share, according to salary and seniority. SBL's turn-around probably owes much to the U.S. economic recovery, which has sharply driven up orders for machine-tool producers. But the company might not exist at all were it not for a financial device called ESOP, or Employee Stock Ownership Plan.

ESOP is no fable. The device is becoming increasingly popular as a way for companies to raise needed capital and give employees a stake in the business. As in the case of South Bend Lathe, an ESOP can help a basically sound business to keep going when it would otherwise be sold off or closed down. But its use is not limited to such last-chance situations. According to the Internal Revenue Service, more than 250 firms now operate some form of ESOP program, including such corporate successes as Hallmark Cards of Kansas City, Mo.; Gamble-Skogmo, a Minneapolis-based retailer with 18,000 employees; E-Systems, Inc., a Dallas defense contractor; and Houston's Zapata Corp.

Tax Break. The main attraction is that an ESOP gives a company a huge tax break. The mechanism: an employee trust is set up, borrows money and uses it to buy newly issued stock from the company. Then the company makes contributions to the trust that are used to repay the loan; they are contributions to an employee benefit plan and are tax deductible. Had the company borrowed the money directly, it would be able to deduct only the interest as a business expense. When the money goes through ESOP, the company can in effect deduct principal repayments too, thus cutting borrowing costs by as much as half.

Even that is not all. In recent years Russell B. Long, the conservative but populist chairman of the Senate Finance Committee, has become an evangelical disciple of Louis O. Kelso, a San Francisco attorney who has long championed various forms of "worker capitalism." In 1974 and 1975, Long pushed through legislation increasing the 10% investment-tax credit that a company gets for purchases of new equipment to 11% —provided that the extra 1% is used to pay for company stock distributed to employees through an ESOP. This year Long pushed further; that 1% special credit (which is directly subtracted from the tax a company owes) has increased to 1½% in the tax-reform bill that Congress passed last month (TIME, Sept. 20). The extra half-point, however, is available only if employees dig into their own pockets and invest a matching amount in the company's stock. American Telephone and Telegraph Co., which has more than 770,000 employees, is now considering setting up a limited ESOP. Such a plan could have saved Ma Bell $80 million in 1975 taxes alone.

Critics of the tax breaks argue that they amount to a gift from the Government that will mainly benefit high-salaried workers in such capital-intensive industries as oil drilling and machine tools. They are the industries that use the investment-tax credit most heavily, and their capital needs make them especially likely to grab at what amounts to a chance to borrow at low cost.

But the ESOP idea has strong support from Congress's Joint Economic Committee, and the Economic Development Administration of the Department of Commerce is actually requiring that some companies to which it gives loans establish ESOPs.

The most powerful defense of ESOP comes from Long, who waxes as fervent on the subject as Kelso. The Louisiana Democrat contends that the idea will spur managers to invest more of the $3 trillion to $5 trillion that economists say will be needed over the next decade to modernize U.S. industry—besides the philosophical benefits to capitalism of having workers become owners. ESOP, says Long in a burst of lyricism, "is better than Geritol. It will increase productivity, improve labor relations, promote economic justice. It will save this economic system."

Measuring Up. Labor leaders have been ambivalent about ESOP, but at South Bend Lathe, United Steelworkers Union members are enthusiastic, and two local representatives sit on the company's board of directors. Union Organizer June Molnar, 26, a tool and cutting grinder, reports that workers check out new recruits to be sure they measure up. Slacking off is not tolerated. Says Molnar, who expects to get about $2,000 deposited in her ESOP account this year: "It's 'Hey, you've got your hand in my pocket if you don't do your job.' " Molnar's boss, SBL President Richard Boulis, 53, is just as ebullient. Contemplating a 20% rise in productivity in the past year and close to 10% more pretax profits during the first year of independent operation, he exults, "Worker-owned companies are the way to go."



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market newsletter

Polyester film prices are hiked by major marketers

Polyester film prices have been raised by Celanese, Du Pont and ICI United States. Celanese, which led off with an effective date of Aug. 1, hiked tabs 7-13%, with 75-gauge Celanar 2000 for audio tape applications up 15¢/lb., to $1.45/lb.; 300-gauge 3000 for drafting and reprographic uses up 9¢, to $1.42/lb.; 300-gauge treated film for drafting up 9¢, to $1.50/lb.; and 50-gauge 2000 for packaging up 15¢, to $1.60/lb. Du Pont's increases, effective Aug. 2, average 10%, with Mylar S and D films for reprographic uses up 20¢/lb. in 48-500 gauges, 700-gauge D film up 25¢/lb. Most other boosts were 10-15¢/lb. ICI U.S. made its increases, generally about 15-25¢/lb., effective Aug. 9, with customers having the option of buying at existing prices for shipment by Sept. 1 under a past purchase ratio.

Markets for industrial oils and lubes will top 1.2 billion gal. in 1976

Markets for industrial oils and lubricants have rebounded well this year, will hit about 1.25 billion gal. vs. 1.14 billion last year. Longer-term, they're expected to resume their 1.7%/year uptrend, reaching 1.385 billion gal. in 1981. That's the view of a major producer. But consultant Charles H. Kline (Fairfield, N.J.) takes a slightly more optimistic view. He estimates 1981 demand at 1.455 billion gal. vs. 1.22 billion in 1976. Kline pegs the volume of machine oils, the biggest category, at 570 million gal. in 1976 and 700 million in 1981. He figures metalworking oils at 245 million and 280 million gal., greases at 95 million and 195 million. Average value is about $1/gal.

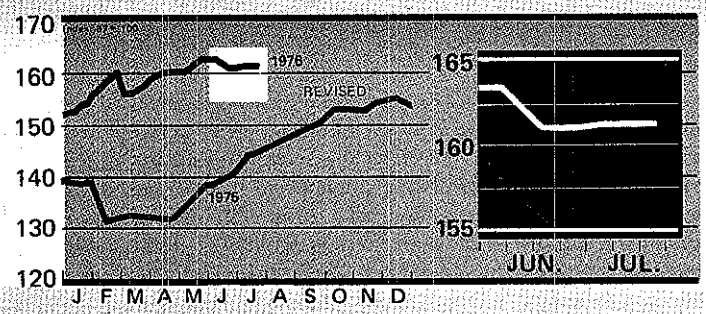
Silicone producers increase more prices

Silicones producers are continuing to raise prices. Dow Corning posted an increase of 6-12% for one-part general industrial- and construction-grade silicone sealants, effective Oct. 15. Examples: Silastic 732 RTV sealant and 781 building sealant, up 6%, to $1.99/cartridge; 790 building sealant, up 12%, to $1.85/cartridge, and up 10% in bulk, to $17.50/gal. In other moves, General Electric boosted RTV construction sealants 7.4-9.4%, effective Sept. 1, industrial sealants by similar percentages on Sept. 15 and other construction sealants effective Oct. 1.

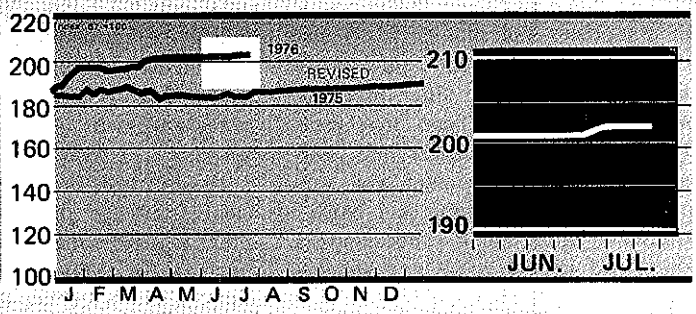
Plastic resin production exceeds sales and use

Plastic resin production outpaced sales and use in May. The Society of the Plastics Industry says that May output of thermosets rose 37.1%, to 312 million lbs., while sales and use increased 32%, to 295 million. Production of thermoplastics jumped 52.9%, to 2.3 billion lbs., and sales went up by the same margin, to 2.14 billion.

chemical output index



cw chemical price index



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Wash. Star
Nov. 29, 1976 Edit.

Working, learning and playing

"Clearly," writes Liz Gallese of the *Wall Street Journal* in a fascinating report on the nation's latest educational hobby-horse, "the case for career education hasn't been proved to everyone's satisfaction."

We would go farther. Not only is the case unproven. A great many parents whose school-age children are, or soon may be, targeted for indoctrination in the work ethic probably know little or nothing of "career education."

The program, launched by Dr. Sidney Marland during his recent term as U.S. Commissioner of Education, flourishes in a climate of public inattention. And it does flourish. "Some 9,000 of the country's 17,000 school districts have launched programs," writes Ms. Gallese. "But the biggest impetus has come from federal legislation. One bill has provided $64.5 million since 1968 . . . . Another bill set up the U.S. Office of Career Education and authorized $15 million annually for four years."

The idea — the exact goals of career education are less than definite — is roughly this: Children must be drilled from the earliest grades in the direct connection between study and work — "the world of work," in the favorite cant phrase. The director of the Office of Career Education sees it as "an effort to put proper emphasis on education as preparation for work." "We can no longer afford," says another booster of the program, "to send people to school just to send them. They must have a purpose, and that purpose is preparation for careers." There is a certain exasperating obtuseness in these statements, as if those who make them do not understand how many eternal questions of educational philosophy they beg.

In any case, Ms. Gallese reports that first-grade children in Old Bridge, N.J., "spend two weeks . . . behind the scenes at a local clothing store, drawing pictures of people weaving cloth," while others, for homework, "record the sizes they take in shoes, pants and hats."

The occasional field trip to see how clothes are made and fitted would be objectionable only to educational curmugeons. But *two weeks*? Obviously, the ambitions of career educationists go well beyond the familiar susceptibility of teachers and students to entertaining distractions from reading, writing and arithmetic.

Indeed, of primary interest to us — and, we are glad to note, to the doughty skeptics of the Council on Basic Education, which keeps a jaundiced eye on educationist fads — is the attempt to clothe familiar distractions from schoolwork in high-flown theorizing.

To most of us, it may seem exactly the wrong kind of theorizing. To most of us, that is, it might seem that American public education suffers enough now from gross utilitarian preoccupations, and needs no further coaching in them. Let education be useful, by all means; let it appear so to students, no harm in that. But it hardly follows that children of elementary school age should be dragooned into anxiety about career choices long before they're mature enough to consider those choices — and at the probable expense of basic academic instruction, at that.

As we were reading with some apprehension of the latest strides in career education, there came opportunely to hand the reflections of President Steven Muller of Johns Hopkins University on the undergraduate frame of mind. If Dr. Muller is to be believed, and he is a first-hand observer, what students need today is not systematic indoctrination in the work ethic from infancy up, but greater faith in the joy of learning from adulthood down.

Dr. Muller's observations form, in both tone and content, a healthy antidote to career education faddism. Johns Hopkins students, as he sees it, are too much affected — even depressed — by "an adult American world in which a sharp and unhealthy distinction persists between work and pleasure — a world in which extreme utilitarianism has driven pleasure out of work and sensible purpose out of pleasure . . . . The tendency today in universities and colleges is to become even more explicitly prevocational . . . to dismiss learning as a frivolous luxury and to focus on what is considered socially useful in the most immediate sense . . . . What is missing increasingly on campuses and throughout American life is the intellect at play, the joy of learning not for economic gain but for relaxation . . . . No human society can sustain itself on the basis of work alone, but the ultilitarian imperative nurtures the concept of leisure as an escape from work."

Perhaps it is mere coincidence, not a sign that the students at Dr. Muller's institution and others already suffer from the grim indoctrination of the career education theorists, that the scene he laments is just the dubious ideal they seek.

Certainly his comments invite a question. If, as he suggests, students are unhealthily obsessed by pressure to make an immediate, direct connection between their studies and "the world of work," why should the taxpayers be spending millions of dollars to aggravate that obsession, and indeed extend it all the way down to the first-grade level?

Work has its place. But there is every indication that our school-age youngsters need no instruction in its value. They need, rather, to be taught the importance of training their minds and enriching their spirits, with the expectation that if they do so the opportunity for useful work will not be lacking.

Wash. Post
Dec. 10, 1976, p. A-30

Delay Urged in State College Desegregation Case

RICHMOND (AP)——Further arguments on desegregating Maryland's public colleges and universities should wait until the entire Fourth U.S. Circuit Court of Appeals can hear the case, a three-judge panel said Thursday.

Judge C. Braxton Craven said he was concerned that a decision by the panel could place the Fourth Circuit Court on a collision course with the U.S. Court of Appeals for the District of Columbia, which may also have jurisdiction in the dispute.

The appeal by the Department of Health, Education and Welfare is on a ruling by a federal judge in Baltimore, but the HEW action that led to the Baltimore ruling was based on an order from a federal judge in Washington involving Maryland and several other states.

"We think it would be best to let the whole court decide," said Craven, agreeing with HEW's position that the case was important enough to warrant a full-court hearing.

Wash. Star
Dec. 9, 1976, p. 1

IN FOCUS

Virulent New VD Strain Has Nation's Doctors Worried

By Lance Gay
and Robert Pear
Washington Star Staff Writers

Why? 'Superbug' just laughs at penicillin shots

SALT LAKE CITY — In the third week of August, a 16-year-old woman dragged herself singly and painfully into the modern mountainside emergency room of University of Utah Medical Center complaining of abdominal pains.

She was routinely admitted to a room and doctors took blood samples and cultures and began running tests to find out what caused the pains that got more severe as the hours passed.

She had a pelvic inflammation "and the hospital did every test they could think of and couldn't come up with what caused it," recalls Bonnie Bullock, the director of the Salt Lake County Venereal Disease Clinic.

Then they decided to see if it was gonorrhea. The test unequivocally proved it was. But then the hospital lab technician did an unusual thing. Instead of assuming it could be treated with penicillin, as it normally is, the technician tested to see what drug would kill the strain and found that it was strangely resistant to penicillin.

"THEY THEN CALLED us to see if we knew anything about this," recalls Bullock. "Well, we had heard of a new strain of penicillin-resistant gonorrhea and told them the test they had to do to see if that was it. . . .

"It was."

That was almost four months ago. The county now reports it has 16 cases of the powerful and dangerous new strain that appears to be slowly spreading through the bedrooms of America after being discovered in the brothels of the Far East and the Philippines.

"We thought we had it all isolated until yesterday, but then we had one person who named 29 contacts in a three-month period. We now have a problem," Bullock said.

As most high school students can tell you, gonorrhea is as common as the common cold, easily diagnosed through symptoms in the male and quickly cured with a simple shot of penicillin.

THAT'S TRUE OF common gonorrhea. But not this strain.

D.L. Gunter, chief of the V.D. control unit for the State of California, has dubbed it "the Superbug" because of its resistance to penicillin and its apparent virulence.

There is another drug recommended for treatment of penicillin-resistant gonorrhea — spectinomycin, sold by the Upjohn Co. under the brand name Trobicin.

But be forewarned: According to Dr. Harry Gibbons, head of the Salt Lake County Health Department, physicians in England report they have two cases in the seaside industrial center of Liverpool that seem to have developed resistance even to that drug.

Because of the virulence of the mutated strain and its threat to society, Gibbons last week asked the county's top prosecutor to be ready to issue warrants, if needed, to bring in and isolate anyone suspected of having the disease.

"WE'RE GOING TO lose our nice-guy image over this," says Bullock, "but if necessary we're going to get a little tougher. In the past we've relied on patients bringing contacts in and giving them medical and not moral assistance. That might change."

"Salt Lake City is a relatively isolated community," explains Gibbons, who believes that his cases may be the first in the nation indicating secondary spread of the disease. "There's no reason why we still can't get a lid on it and control it."

One of the first two confirmed cases in the nation was spotted in the Washington area by Dr. William J. Marek, health officer of St. Marys County, Md.

cont. on page 5

cont. from page 3

reported abortions in D.C. were either paid by Medicaid or performed free at D.C. General Hospital. How many were performed by private physicians and unreported is anybody's guess.)

If what Sanford says is true—and social workers everywhere tend to confirm her—then it is no wonder that the what-to-use-and-where-to-get-it advice that has been a major part of the sex-education programs for so long is not having any significant effect in reducing the number of out-of-wedlock births among teenagers.

A more hopeful direction may be the trend already established in some high schools where childrearing classes are a regular part of the curriculum, often with the students' own children in the nurseries. In addition to teaching these young parents and potential parents important lessons in parental responsibility and in the necessity for enhancing their children's physical, emotional and intellectual growth, they also can help to drive home the fact that parenting is hard work, not an escape from anything.

Emily Moore, director of Planned Parenthood of Metropolitan Washington, believes that giving young people a sense of the reality of childrearing is as important as birth-control techniques in giving them the basis for an intelligent choice between having children or not having children.

Finally this: One reason we believe it is wise for youngsters to delay raising families is that having children too early can place severe limits on their educational and vocational aspirations.

That so many young girls, especially from low-income families, decide to keep their babies may be a way of saying that they never expected much in the first place and, therefore, saw themselves as having little to lose.

It will take far more than sex education to deal with that one.

N.Y. Times
Dec. 12, 1976, p. E-8

Some Drugs Are Clarifying the Mind

By RICHARD M. RESTAK

In the hallway outside of the Society for Neuroscience meeting last month in Toronto, a group of young neuroscientists were swapping research gossip. "The catecholamines are out — the endorphins are in" was the group's summation delivered by a neurochemist.

The endorphins, a new class of naturally occurring opiates found in vertebrates as far-ranging as albino rats and Mensa scholars, are providing the stimulus for a fresh assault on the biochemical basis for mental illness. Where the research may lead, and what contributions the endophins may finally make, remains speculative. "It's just too early to tell," according to Dr. William E. Bunney, chief of the adult psychiatry branch of the National Institute of Mental Health.

Although the endorphins are the most recent attempt at a biochemical "fix" on mental disorders, the idea that biochemical factors might be important is not a new one. It was in the 1950's and '60's that the major tranquilizers and anti-depressants were developed. At the same time other scientists were learning how nerve cells communicate with each other at special contact points (synapses) via chemical messengers (neurotransmitters). It was not long before one class of neurotransmitters, the catecholamines, provided an imperfect but still useful biochemical model for mood disorders based on transmitter imbalance.

Equally important were studies coming out of Harvard and the National Institute of Mental Health demonstrating that the genes play a significant role in schizophrenia, our most challenging and crippling mental illness. Although the exact contribution of heredity is controversial, the evidence so far favors a genetic predisposition that in combination with key environmental stresses can trigger the full-blown illness. "Genetic predisposition is an overwhelming argument for biochemical causation," according to Dr. Seymour Kety, professor of psychiatry at Harvard Medical School. "The genes are biochemical units regulating biochemical processes."

Much of the early experimental work was taken up with the prosaic task of perfecting tools for biochemical exploration. Experimental methods are now available to pinpoint the site of action of a drug and the neurotransmitter it affects. In addition elaborate maps are in preparation that will soon tell the location of naturally occurring neurotransmitters, where they are released, even the precise cells where they act.

Although at least 15 possible biochemical neurotransmitters are now known, only four are usually invoked in psychochemical theories of mental illness—dopamine, norepinephrine, acetylcholine and serotonin. Researchers are far from an air-tight theory specifically relating any of these chemicals to a major mental illness. Still, certain generalities are possible. Depression seems to be associated with a deficit of dopamine or norepinephrine at the synapse, while just the opposite occurs in mania. Schizophrenia may be due to disturbances in the dopamine system, as suggested by the action of anti-schizophrenic drugs which act selectively on dopamine receptors.

Suicide Predictor

One of the more controversial areas of research involves recent attempts to identify biological markers that could predict vulnerability to a mental illness. If such markers could be found in samples of blood or urine, for instance, some individuals might be diagnosed soon enough for prevention, or at least early treatment. Some critics of such research consider the approach unethical in the absence of a cure for any of the major mental illnesses.

Less controversial is the search for a biochemical indicator of suicide potential. One test developed at the National Institute of Mental Health 10 years ago, and involving urinary steroid concentrations, has not been entirely replicated by other workers. "Since we're missing somewhere between 5,000 and 25,000 suicides a year," states the test's discoverer, Dr. William E. Bunney, "it would be tremendously valuable to develop a highly accurate predictive test. But even with our present test, a clinical suspicion of suicide combined with repeated high urinary steroids should alert a psychiatrist that his patient may be acutely suicidal."

Research may eventually lead to better methods of diagnosing, defining and treating mental illness. Already some psychiatrists are employing amphetamines as helpful diagnostic tools in questionable cases of schizophrenia. In defining mental illness, future psychiatrists may substitute biochemical determinations for their present reliance on confusing and sometimes contradictory symptoms. Although basic brain research has not resulted in a "cure" for any mental illness, significant advances have already been made. It is now possible, for example, to measure in the laboratory the antipsychotic activity of untested drugs, thus making possible a prediction of a new drug's clinical effectiveness.

Despite these revolutionary changes in our approach to mental illness, few researchers expect biochemistry to supply all the answers. Future attempts at prevention are likely to remain oriented more to changes in a patient's lifestyle rather than in his biochemistry. "Although schizophrenia, for instance, has both a genetic and a biochemical component, it is still best understood in terms of a heightened vulnerability to stress" according to Dr. Ernest Hartman, professor of psychiatry at the Tufts University School of Medicine in Boston. "In times of stress there may be a shift in the balance of neurotransmitters resulting in the development of schizophrenic symptoms in predisposed individuals."

When it comes to treatment, psychiatrists are divided over the likely effect of future biochemical discoveries on traditional methods of psychotherapy. Many authorities believe that psychological approaches, including psychoanalysis and the other "talking" therapies, will remain necessary and valuable. Others believe that simple biochemical remedies will increasingly supplant or supplement more time-consuming methods. But according to Dr. Hartman, "We're not by any means headed for a 'take this chemical and call me in the morning' approach to the mentally ill."

Richard M. Restak is a neurologist in Washington, D.C.

Balt. Sun
Dec. 13, 1976, p. 1

U.S. drug council urges less strict marijuana laws

Washington (AP)—The government should consider reducing penalties for marijuana smoking because of the "relatively high price" society pays to enforce anti-marijuana laws, a federal drug abuse panel says.

In a report to President Ford, the Strategy Council on Drug Abuse said it unanimously believes marijuana is harmful and "federal policy ought to strongly discourage its use."

The council stopped short of a recommendation that criminal penalties for marijuana use be eliminated. But it questioned the usefulness of criminal sanctions against marijuana smoking because of its "widespread recreational use" and "the relatively low social cost associated with this type of use."

The council, which includes four Cabinet members—Henry A. Kissinger, Secretary of State; David Mathews, Secretary of Health, Education and Welfare; Donald H. Rumsfeld, Secretary of Defense, and Edward H. Levi, Attorney General—issues recommendations annually on federal anti-drug strategy.

Mr. Ford may leave the 56-page report for his successor to act on. President-elect Carter has said he favors decriminalizing the possession of small amounts of marijuana but increasing penalties for selling and distributing the drug.

The report said criminal sanctions do discourage some potential marijuana smokers, but it added:

"On the other hand, society pays a relatively high price for this form of deterrence. High in terms of stigmatizing casual users with criminal records; high in terms of diverting limited criminal justice resources from other, more serious matters; and high in terms of contributing to an atmosphere which nurtures disrespect for the law.

The council said the government should study the experience of eight states and three countries that have reduced marijuana penalties in various ways. The states are California, Alaska, Colorado, Maine, Minnesota, Ohio, Oregon and South Dakota. The countries are Italy, the Netherlands and Colombia.

The council said marijuana was the most widely used illicit drug in this country. But it said serious health crises resulting from marijuana use were only half as frequent as those resulting from tranquilizers, a third as frequent as those from barbiturates and only slightly more frequent than those resulting from aspirin.

Robert L. DuPont, director of the National Institute of Drug Abuse, called the council's report "a very positive step."

Mr. DuPont has long favored civil instead of criminal penalties for marijuana use. He has estimated there are 400,000 arrests each year in the United States for marijuana possession.

"If you assume they cost only $100 apiece, a very minimal estimate, that comes to $40 million a year," he [illegible].

Wall St. Jrnl; 6/26/78; p.1

Research Squeeze

Rockefeller University Decries Less Financial And Scientific Freedom

As Its Endowment Shrinks, Use of U.S. Funds Brings Monitoring and Cutbacks

The Fear of 'Peer Reviewers'

By Jeffrey A. Tannenbaum
Staff Reporter of The Wall Street Journal

NEW YORK – "To explore . . . to dream."

Medical research was in its infancy at the turn of the century. The goals laid out for the fledgling Rockefeller Institute for Medical Research by Dr. Simon Flexner, the first director, were suitably lofty.

Indeed, the sustaining fortunes of John D. Rockefeller must have looked inexhaustible. "The founder and his advisers," Dr. Flexner told his colleagues at one point, "have said to us again and again, in effect: 'Don't be in a hurry to produce anything. Don't worry about making good. We have faith that you will make good, and if you don't, the next fellow will.' "

This was stirring stuff, and it worked. Over the years, Rockefeller scientists made any number of major discoveries (including the first indications that DNA transmits hereditary information), and collected an astounding total of 16 Nobel prizes. The institution – renamed Rockefeller University in 1965—became one of the most prestigious scientific bodies.

Infusions of Reality

But, in its 77th year, the founder's creation is suffering some jarring infusions of reality. A current researcher, Dr. Edward H. Ahrens Jr., says he occasionally is awakened by a nightmare in which he is being chased by "peer reviewers." These are scientists working elsewhere who have been designated to come in and evaluate the work done at Rockefeller with federal grants.

No wonder Dr. Ahrens has been having bad dreams: A peer review team's recent disparaging report about his biggest project—a study of 1,400 patients with high cholesterol—was followed by a decision at the National Heart, Lung and Blood Institute not to renew financing for the project.

"I was absolutely astonished," says Dr. Ahrens. "I was convinced that we had done well." He had been requesting $8.5 million to continue his study for five more years. The decision also was a blow for Rockefeller; 35 employes associated with the study had to be laid off.

The episode, taken in the national context of tight research monies, illustrates a squeeze affecting other scientific institutions as well as Rockefeller. As the dependence on outside financing grows, scientists lose some of their freedom to choose their projects and nurse them along, if necessary for many years. And that is just one aspect of the financial crisis confronting Rockefeller.

The Yankees of Science

Once unrivaled in U.S. medical research because it was virtually alone, Rockefeller today has dozens of competitors. But Rockefeller always is counted among the best. "This is the New York Yankees of the scientific community," says George Barany, a 23-year-old postdoctoral fellow performing chemistry research that eventually may aid diabetics. "Baseball players dream of wearing a Yankee uniform, and science people dream of working at Rockefeller." (Mr. Barany himself is so bright that he was admitted as a Ph.D. candidate at age 16, without having gone through college.)

Whether the Rockefeller team can maintain its winning record isn't clear. But the biggest barrier to its doing so is clearly a shortage of money. Given Rockefeller's luxuriant history, it is as if King Khalid were suddenly hard up for oil.

But the problem is real enough. During the past decade, Rockefeller has accumulated deficits exceeding $15 million. The annual deficit—it was $1.1 million for fiscal 1977 on a $37.9 million budget—has been narrowing only because of severe cost-cutting and retrenching.

"Just Making Do"

On Rockefeller's 15-acre Manhattan campus, which comprises 22 buildings along the East River about a mile north of the United Nations complex, the mood clearly has changed. Says Albert Gold, a vice president: "The environment has changed from one of heady growth to one of just making do."

Signs of the leaner times are prevalent. A celebrated painting, David's "Antoine-Laurent Lavoisier and His Wife," no longer hangs in the campus library; by selling it, the university raised more than $4 million to help prop up a diminished endowment. Strip steaks have been dropped from campus menus. Rockefeller even has started taking in laundry: An outside customer pays the campus laundry about $30,000 a year for service. Such economies were unheard of in Rockefeller's past.

If science is essentially "the absence of prejudice, backed by the presence of money," as Henry James put it, then the university started out with an enormous advantage: backing from the oil magnate who gave it his name (and a guarantee of freedom in research).

And the institution rapidly made good. Almost by itself, Rockefeller won respect for the U.S. in medical research, which had been dominated by the European laboratories named for Louis Pasteur, Robert Koch and others. In 1917, for example, Rockefeller developed a technique for freezing human blood, thus helping make blood banks possible.

Under Detlev W. Bronk's rule from 1953 to 1968, Rockefeller broadened its scope—adding physicists, philosophers and behavioral scientists—and rapidly expanded. Mr. Bronk was a self-centered autocrat ("The color of your toilet paper was his business," one scientist recalls), who hoped to make Rockefeller as distinguished in the humanities as it was in medical science. He also started taking on students (postgraduates only, a policy still in effect) and changed the institution's name to Rockefeller University.

The expansionist policies were continued briefly under the current president, Frederick Seitz, who is due to retire Friday. But Mr. Seitz, a shy, soft-spoken man, soon had to backpedal. Although it had begun earlier, Rockefeller's financial crisis arrived in full force after the 1973 Arab oil boycott aggravated U.S. inflation. Rockefeller's costs were soaring. Its income wasn't.

Clouding the financial outlook, moreover, were declines in the market value of Rockefeller's investments and an end to the post-Sputnik boom in federal research outlays. At its low point, in June 1974, the university portfolio was valued at $152.7 million, off from $213.3 million a decade earlier (the January 1978 figure: $167 million). In constant 1972 dollars, federal spending for basic research is no higher than a decade ago.

Faced with mounting deficits, Mr. Seitz slashed spending and intensified a search for new funds. The retrenching aroused considerable controversy because Mr. Seitz, as one measure, sought the resignations of some tenured faculty members, a move that seemed threatening to much of the faculty. Five eventually resigned, wiping out the philosophy faculty. With funds short, Mr. Seitz says, it was best to save money for more traditional research areas. Rockefeller today has 76 tenured faculty members, plus 342 junior associates and 115 students (who get their education tuition-free). Despite Mr. Seitz' pruning of the staff, insiders complain that the faculty still includes some 20 or so unproductive senior researchers.

The new fund-raising effort, begun in 1971, to date has brought in $59 million, largely from foundation grants. (Over $22 million has come from the Rockefeller family, the Rockefeller Foundation and the Rockefeller Brothers Fund.) However, the new monies include only $10.8 million in unrestricted funds for the endowment, compared with the $14.9 million that was withdrawn in recent years to meet deficits.

But Rockefeller's projections are mildly optimistic. "I think we can hang on," says Joshua Lederberg, Rockefeller's president-designate, a geneticist who is currently at Stanford University. "I think we're pared down to the point where there's the right balance between the commitments and resources." Rockefeller before long may even be able to resume modest growth, he says—perhaps one new laboratory a year.

Volatile Chemistry

Rockefeller remains stronger financially than many of its rivals and is still attractive to both students and faculty. For the students (there are 85 Ph.D. candidates and 30 students in a joint M.D.-Ph.D. program with Cornell University) there is an opportunity to work with renowned scientists. That is not always easy, for the scientists' egos are sometimes even larger than their credentials. The human chemistry can be explosive, and blow-ups—for example, shouting matches over who will deign to clean the glassware—aren't uncommon.

Unlike most U.S. universities, Rockefeller has no departments. Instead, it is organized into 64 laboratories, each dominated by one or two senior scientists. To get ahead, a young researcher must march to the orders of a senior colleague, whereas at most universities he might have more independence. However, "Plato was willing to make a hell of a sacrifice to sit at Socrates' feet, and he still is," a Rockefeller official says.

For the senior faculty the compensation is pleasant, averaging over $41,000 a year. But the major attraction is the absence of teaching chores; Rockefeller hasn't any formal classes. James E. Darnell Jr., a cell biologist who quit as a department head at Columbia University to join Rockefeller in 1974, says he gained up to five more hours a day to perform research by shedding the teaching burden.

Although one physics professor is said to ride a skateboard around his laboratory, and the students hold an annual contest hurling uncooked spaghetti, the atmosphere on campus is decidedly serious. The emphasis is strictly on research. The absence of departments means that the researchers can work within a wide range of disciplines, switching periodically if they so choose.

"Do It Well"

Stanford Moore, now a white-haired eminence with a formal manner, is a Nobel Prize biochemist who has worked at Rockefeller since 1939. Over the years, he has taken advantage of the institution's flexible structure to switch from aeronautical engineering to organic chemistry to biochemistry.

"I've had a rare opportunity to explore things without any predetermined limits," he says. "The only requirement was this: Whatever I did, I had to do it well."

Rockefeller's flexibility has withstood time, as has its commitment to medical research. At present, its laboratories are exploring enzyme reactions, cardiac physiology, parasitology and a host of additional areas. Six of the laboratories are associated with the university's 30-bed Clinical Research Center, part of a 40-bed hospital where immunological disorders, lipid metabolism and diabetes are among subjects under study.

Almost every year, Rockefeller has significant progress to report. Last year, its researchers disclosed the development of a simple new technique for measuring the body's daily rate of synthesizing cholesterol. In 1976, Rockefeller announced the first continuous cultivation in a test tube of the parasite that causes malaria in man—a step toward a possible vaccine against the killer disease.

Rockefeller's prowess continues, but under duress. The increasing reliance on outside funds has given outsiders a major role in setting research priorities. Of Rockefeller's $37.9 million budget for fiscal 1977, $20.2 million came from outside sources, mainly government agencies.

Vanishing Windfalls

Once self-sufficient, Rockefeller now must compete for limited federal dollars. Generally, it has been doing well, but it is saddled with the usual problems associated with federal grants. The main problem is that political decisions—to wage the so-called war on cancer, for instance—can cause swift changes in funding priorities. Windfalls can blow away as fast as they appear.

Budgetary cuts at the National Institute of Mental Health, for example, almost have dried up its new monies for neurochemistry projects. Jay M. Weiss, a Rockefeller researcher, says he had counted on getting $42,000 for his project last December. But the money didn't come until June 1, and it was drastically reduced $20,000. "I'm distraughtabout the vicissitudes in funding that sometimes occur on the basis of legislative whims," he says.

When they do get money, the researchers lose some freedom to switch directions when science seems to so dictate (since research grants always are tied to specific proposals). James Darnell, the cell biologist, says he has federal grants to study both viruses and cells—and was threatened with the loss of the viruses funding because, for a while, he concentrated on cells. "Experienced researchers need more flexibility in the handling of funds than they've got," he argues.

A further problem is that the outside scrutiny that comes with outside dollars doesn't always enhance research, Rockefeller maintains. Anthony Cerami, a biochemist with a federal grant to study sickle-cell anemia, says so many outsiders demanded to monitor his research that he dropped the project, figuring the money had come "with too many strings attached."

It is the premier problem at Rockefeller today—the difficulty of living on someone else's money. "Suddenly, we're finding ourselves face to face with reality," says George A. Miller, a Rockefeller psychologist, "and a lot of us don't like it."

cont. from previous page

District of Columbia alone showed a decline, four-tenths of 1 percent, to $14,001. Among the lower-income states, Kentucky fared poorly, with a gain of nine-tenths of 1 percent, to $11,019. The gain in Texas was also small, 1.7 percent to $12,672.

The survey also reported unevaluated data showing that the total number of people below the poverty level in the South as a whole dropped 16 percent from the 12 million reported in the 19[illegible] census.

THE GREEN SHEET

News About the U.S. Department of Health, Education and Welfare

Balt. Sun, 6/26/78

Title IX progress—II

Kehoe bases opposition on costs at Maryland

By ZENT BAKER

The breaking down of stereotyped sex roles—aggressive male, retiring female—was not a viable issue in the United States until the turbulent 1960's, when women's liberation and massive student unrest exploded into prominence.

It had been considered unfeminine—almost anti-feminine—for girls and women to engage in vigorous physical activity, and athletics remained a male-dominated province.

Consequently, American women tended to do poorly in international competition against nations where heavy emphasis was placed upon female athletics.

Jim Kehoe, the retiring University of Maryland athletic director, has had no quarrel with the philosophical purpose of Title IX legislation, which demands an equivalent opportunity for athletes, regardless of sex.

But, as he did five years ago, when the issue first became inflammatory, Kehoe opposes Title IX for what he calls the unwarranted financial stress its provisions make on the overall Maryland athletic budget.

"I feel no differently today than I did at the beginning," declared Kehoe, who abruptly announced his resignation recently. "My concern has always been financial, not moral, ethical or philosophical. The problem is pure and simple, the bottom line. There has been an unbelievable escalation in the cost of everything."

"Obviously, I'm not opposed to Title IX from a financial standpoint," countered Chris Weller, Maryland's women's athletic director.

Maryland has responded favorably to the dictates of Title IX. Affected tremendously by the legislation because it is a public institution with the largest budget and because its athletic department is self-supporting, the university offers nine full-time varsity sports for women.

Competitely, the Maryland women were winning contests by a 6-to-1 ratio recently and had produced several national championship contenders, including a basketball team that finished as the Association for Intercollegiate Athletics for Women runner-up, the highest placing ever by a Terrapin basketball team.

By next fall, the women's program will benefit from a full complement of 65 athletic scholarships, awarded on a percentage basis comparable to those received by men's non-revenue sports. Indisputable evidence that the Terrapin co-eds have arrived surfaced when women's athletics was blamed for a three-step, $10 increase in the mandatory athletic fee imposed upon the student body.

"The women's teams are doing better than our men's," Kehoe pointed out. "Even if this thing wasn't my idea, I don't believe in doing things halfway. Now, if we don't watch out, I'm going to have to believe there is discrimination against the men."

Miss Weller strikes a concordant note when asked if her department has been granted sufficient autonomy.

"Each coach has her own operating budget to use as she pleases," she said. "Kehoe has not really gotten into it unless it had a direct relationship with another sport. Our facilities have improved and are pretty much equitable, with the exception of the revenue sports. And, our equipment is the best."

A new physical education building will relieve the present stress on the use of facilities, she noted. "I feel we've done a good job, and many, many more changes are coming next year," she added. "All this may have occurred anyway, but I don't believe it would have happened as fast or been nearly as dramatic without Title IX."

From a relative nickel-and-dime operation, Maryland women's athletics has risen to a near-$500,000 annual enterprise, according to a figure supplied by Kehoe. The success of the teams spawned "a strange paradox," Kehoe contended. "It can be self-defeating because the more success, the more it has cost us to send them to national competitions. It cost us $35,000 this year."

Kehoe remains acrimonious toward the "typical bureaucrat who makes the decisions but has never been down in the trenches" and fears the future economic shock waves. A further cutback in men's non-revenue sports is probable, no massive input of new revenue is foreseeable and a rise in ticket prices for men's football and basketball appears unavoidable.

These are factors Kehoe obviously weighed when he decided to quit at age 60.

Kehoe envisions no meaningful income from Maryland women's athletics, except basketball. "The problem is major expenditures before you can have a net," he maintained, "outlays for ushers, all the support personnel. When something is free, you don't gain anything, but you don't lose that much. How do you resolve a situation where everything is going out and nothing's coming in?"

The objections intensify when Kehoe, who built Maryland into a respected men's track power on shoestring budgets and sheer willpower, discusses the imposition of the legislation when "they didn't give us a nickel to do it with. I find that a little unusual. The athletic department doesn't receive 5 cents in federal assistance, and I've always felt the government has no business in this area. It's an intolerable burden.

"I couldn't operate like HEW," he continued, referring to the United States Department of Health, Education and Welfare. "I haven't been able to pay anybill on a philosophy discourse. I haven't been in one of those ivory towers or glass domes in Washington, and I haven't had billions of dollars to lose down the crack.

"This has nothing whatsoever to do with bias, male chauvinism or discrimination. It's too idealistic and impractical. It must be a problem when only 3 per cent of all institutions in the country are in the black. It can't be that all these people are that incompetent or ill-advised."

Inflation, recently shown in a poll as the foremost concern of the American people, is a particularly troublesome area to those selling entertainment.

"With the economy as it is, people have got to concern themselves with essentials," Kehoe concluded. "The first to suffer will be the entertainment dollar. All things being equal, they can't reduce for necessities. It all comes down to the ability to pay the bill.

"I absolutely won't buy anything I cannot afford. I believe you should pay your way. This other philosophy is why we're in such horrible trouble today."

Tomorrow: Dorothy McKnight, former women's athletic director at the University of Maryland, suggests some changes for the collegiate athletic structure to better serve both men and women students.

Phila. Inq. 6/26/78

Hearings on boarding homes begin

By Lacy McCrary
Inquirer Trenton Bureau

TRENTON — The mistreatment of boarding home residents and the theft of their public assistance checks are two topics that will be dealt with during five days of public hearings on boarding homes.

The hearings, conducted by the State Commission of Investigation (SCI), begin today.

The SCI investigation, which began more than nine months ago, is only one part of a multifaceted probe of boarding home problems. Others, looking into the situation are the state attorney general's office, a state Senate committee, the FBI, the IRS, the U. S. Department of Health, Education and Welfare (HEW) and the Atlantic County Prosecutor's office.

Joseph Rodriguez, SCI chairman, said the five days of hearings would center on the "misappropriation of funds and profiteering by insensitive operators" of both licensed and unlicensed boarding homes.

More than 40 persons, from state health department officials to boarding home operators and residents, have been subpoenaed to testify at the hearings.

Rodriguez said the hearings would present details of the "mistreatment and intimidation" of the boarding home residents, most of them elderly, and of the ineffectiveness of state laws and procedures for administering and monitoring the boarding home system.

For the last six months, The Inquirer has investigated allegations of neglect and abuse of boarding home residents, many of whom are former patients of state mental hospitals.

The Inquirer has reported that the state's monitoring of the operations of the estimated 1,800 boarding homes is inadequate and that in many cases, it is nonexistent. Only about 270 of the homes that are licensed by the state are checked regularly. These checks have been ineffective.

On Thursday Gov. Brendan T. Byrne's cabinet-level task force issued a scathing report on boarding home conditions, charging that many of the 40,000 residents live with "overcrowding, filthy rooms and lack of safety equipment."

The 168-page report by the task force recommended that the Legislature consider a number of reforms to correct the abuses and widespread neglect.

Among the reforms suggested by the report were issuance of a model municipal ordinance to establish a statewide standard for boarding home's, establishment of a relocation program for residents of substandard boarding homes and issuance of bonds by the state to find a comprehensive clean-up program.

About 10,000 boarding home residents in New Jersey have been declared by the state to be totally disabled. They receive as much as $308 each in Supplemental Security Income (SSI) benefits. The federal government supplies $178 of that and New Jersey contributes $130.

Each totally disabled resident of a state licensed boarding home can qualify for the $308 monthly payment. However, the payment for disabled residents of unlicensed facilities is only $202 a month because the state contribution is less.

There are no controls over how these funds are collected and spent by the boarding home operators. Many boarding home residents have told The Inquirer that they routinely hand their entire checks to the operators of their home.

Michael Siavage, SCI executive director, said that evidence of profiteering by boarding home operators and the direct theft of the residents' assistance checks, would be documented at the hearings.

"The profiteering does not occur as a result of there being fat in the system," Siavage said. He said the profiteering was by operators who were willing to reduce the quality of life in the boarding homes in order to make more money.

"The money going to boarding homes (in the form of SSI checks to residents) appears to be barely sufficient to sustain a reasonable level of existence," Siavage said. But the income becomes less than sufficient, and the level of existence suffers, he said, because the operators are bent on making profits that are unacceptably high by SCI standards.

Rodriguez said that after the hearings the SCI will send to the legislature its proposals to correct the abuses and problems.

The hearings will be televised from 9:30 a.m. to 5 p.m., Monday through Friday, by New Jersey Public Television, channels 23, 50, 52 and 58. The public television network will show taped highlights of major testimony each night at 10:30 p.m.

File Editorials

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THE GREEN SHEET

News About the U.S. Department of Health, Education and Welfare

Pittsburgh Post-Gazette; 8/31

Rowland Evans and Robert Novak

Joe ('Mr. Quota') Califano and the Bakke Case

WASHINGTON — A drama that began four months ago in a nasty confrontation between Jewish leaders and Health, Education and Welfare Secretary Joseph Califano is nearing a climax in the Oval Office when President Carter — urged on by Califano — is expected to back racial quotas in a Supreme Court test.

Leaders of eight national Jewish organizations left a June 6 meeting with Califano complaining about the secretary's "insensitivity" and "inflexibility." What most surprised them was Califano's revelation that he wanted the government to support the University of California's quota system on admissions — the famous *Bakke* case before the Supreme Court.



HEW Secretary Joseph Califano

THE PRESIDENT must now decide whether to support Califano. Senior presidential aides insist no decision has been made. But insiders at HEW and the Justice Department take it for granted Carter will intervene against Allan Bakke, a white applicant denied admission to the University of California at Davis Medical School to make room for a black applicant with inferior entrance qualifications to fill a university racial quota.

If Bakke loses, Califano's HEW will demand that all universities impose racial quotas. Since that runs counter to the anti-quota philosophy expressed by both the President and Atty. Gen. Griffin Bell, why are they ending up on the pro-quota side? Nobody is quite sure, but the best answer may be the persuasive powers of Joe Califano: Mr. Quota.

With characteristic vigor, Califano opened the fight March 18 by openly endorsing quotas, then on March 30 backed away from the word "quota" — but not from the concept. Jewish leaders promptly requested a meeting. They were not reassured by Califano's June 5 speech at City College of New York when he supported "goals" instead of "quotas."

The confrontation in Califano's office two days later was a disaster. As described in a July 13 memorandum by Ira Giffen of the Anti-Defamation League (ADL): "The meeting was a disheartening experience . . . I left convinced that Secretary Califano will push reverse discrimination and quota systems although, for public relations purposes, he may call them by other names. Our appeals for justice, fair play, reasonableness and, indeed, logic seemed to fall upon deaf ears."

Giffen's memo continues: "The secretary's response was not at all responsive . . . To our utter dismay, he told us that he had already requested the Department of Justice to enter the Bakke case in support of the University of California."

Califano "seemed to believe" racial identification is required by statute, which is not the case. "It was my conclusion," Giffen's account continues, "that the secretary either does not know the statutes . . . or else he chooses to misconstrue them." According to Giffen, the secretary said "he was doing no more than what the Congress and the courts required and he advised us to take our concerns to the Congress."

That this was disingenuous was suggested July 27 when Califano addressed the National Urban League. He asserted he had helped kill a congressional proposal that he incorrectly described as prohibiting him "from using any funds for affirmative action programs." In truth, the amendment would have prevented HEW funds from enforcing "ratios, quotas or other numerical requirements" for student admission — but would permit "goals and timetables"; in other words, affirmative action.

On July 25, seven major Jewish leaders wrote Califano urging support for Bakke's anti-quota position; the letter was not even acknowledged.

THE ULTIMATE decision is the President's, but that does not encourage anti-quota forces. "I am sure the decision will be solely political," one embittered Jewish leader told us, meaning Carter will offer blacks in quotas what he does not give in social spending programs. The Jewish lobby presumably will not protest strenuously because of larger interests in the Mideast.

But more is involved than pitting racial groups against each other. Edward Bennett Williams, Califano's former law partner, stated it well in a speech last October "The total egalitarians miss the point. They would divide the wealth equally, impose quotas and ratios in education, in employment and in the political process, regardless of merit, overlooking the crucial that all human progress throughout human history owes its origin to the talented and the enterprising."

Although it is hard to imagine Jimmy Carter and Griffin Bell disagreeing with those words, they are headed pell mell in the opposite direction— thanks to a strong push from Mr. Quota.

Mcntgomery Advertiser; 8/26

Alabama funds for abortions cut off by state Medicaid officials

By LINDA PARHAM
Advertiser Staff Writer

Related story, page 10

Alabama cut off Medicaid funding for abortions last week after state Medicaid officials received word that federal financing would no longer be available.

The cutoff affects abortions in all cases with four exceptions: pregnancies in which the life of the mother is in danger, pregnancies resulting from rape or incest and ectopic (tubular) pregnancies.

Jack Worthington, state commissioner of medical assistance, said Thursday that he received a telegram from U.S. Department of Health, Education and Welfare officials in early August which warned that federal funding would be halted. The cutoff at the federal level results from the dissolving of a federal district court order which prevented the enforcement of the Hyde amendment to the 1976 appropriations bill for the Departments of Labor and HEW.

The Hyde amendment, which has been hotly debated in Congress both in 1976 and 1977, was passed last year but did not go into effect immediately because of the federal district court order. The amendment halts federal spending for abortions which are not needed to save the lives of mothers.

The HEW telegram which Worthington received noted that a joint conference committee of the U.S. Senate and House debating a 1977 Hyde amendment interpreted the amendment to also exclude ectopic, incest and rape cases from the cutoff.

While some states have elected to continue Medicaid funding for abortions which do not fall into those exempted categories, Alabama traditionally does not offer Medicaid services unless state funding is matched by federal financing.

Alabama also faces a crisis in Medicaid funding for mandatory programs such as nursing home services, Worthington noted. The current shortage of Medicaid monies, which may be the focus of an anticipated special session of the Alabama legislature this fall, renders unlikely the possibility that the state would elect to continue abortion services with solely state funds, Worthington predicted.

There remains the possibility that Medicaid funding for abortions could be reinstated on a totally state-funded basis as the result of the current reorganization of Alabama's Medicaid program.

That decision is in the hands of Gov. George Wallace.

"It's up to the governor what direction we will take on abortions," said Worthington, who said total state funding would be improbable unless the Alabama Legislature provides appropriations to cover the service.

The state clinics, laboratories and doctors across the state who were notified last week of the cutoff were also told the HEW guidelines do not apply to birth control measures such as "drugs or the use of devices to prevent the implanting of the ovum."

An announcement on the reorganization of Alabama's Medicaid program will probably be delayed until after a meeting in Washington, D.C., between the governor, state Medicaid officials and HEW Secretary Joseph Califano. No date for that conference has been established.

THE GREEN SHEET

News About the U.S. Department of Health, Education and Welfare

Milwaukee Jrnl; 8/30

Welfare Fraud: Easy to Do, Hard to Find

By James Parks
of The Journal Staff

Work is the most common source of detected welfare fraud in Milwaukee County, according to county officials and court records.

Financially pressed aid recipients — almost all women — get jobs and fail to report their earnings, violating welfare rules and state law.

Most earn too little to make them ineligible for all welfare aid, but their grants would be cut were they to report their earnings.

Most Need the Money

"We don't have many 'Welfare Queens,'" said Asst. Dist. Atty. George Prietz, who has prosecuted many welfare fraud cases.

"They (the cheaters) are very simple people doing very simple things. In most cases they needed the money. They don't



put the money in Swiss banks. In the typical cases, they spend every penny on their families.

"Ninety-nine percent are first offenders. They don't even have driving violations; they don't even have cars."

Asst. Dist. Atty. Darryl K. Nevers, who now issues charges in welfare cases, agreed. "Most of the people I charge are extremely unfortunate individuals," Nevers said.

Like Prietz, he finds welfare fraud a particularly obnoxious crime.

Harms Other Recipients

"The cheaters put a stigma on all welfare recipients. ... It's not fair to the honest recipients who obey the rules," Nevers said.

Cheaters should be punished to prevent a backlash against all recipients, Prietz said. Most now get two to five years' probation and are ordered to pay back what they stole, usually in monthly increments of $25 to $50.

After conviction, most cheaters continue to work and draw welfare. Frequently, the repayment merely is deducted from future welfare checks.

"Out on the street, they know that all they'll have to do if they get caught is to pay back the money," said a sheriff's deputy who is one of eight full time fraud investigators.

Plenty of Work

Still, the number of solid fraud complaints could keep twice the present number of sheriff's deputies busy, said Sgt. Phillip Bialk, head of the fraud squad. In an economy move this year, the county reduced the number of investigators from 10 to 8.

The fraud squad received 1,500 complaints of suspected fraud in 1976, more than half of them from welfare case workers. Most of the rest came from citizens. A big backlog keeps investigators working on only the most promising cases.

Jail Seldom Justified

Only in the rare case of a repeat violator, however, do Prietz and Nevers think a jail term is justified.

"Most welfare fraud defendants are women with children," Nevers said. "If you send them to jail, you have to send their children to foster homes. It's a question of what happens to these children. The mother still loves them."

And welfare fraud in the county is not necessarily rampant. Detected fraud is about $1 million a year, or about 1% of total aid, based on figures for the first half of 1977.

State and national studies show that the Milwaukee County Welfare Department is one of the most tightly administered in the country. Even so, about 5% of the department's budget is misspent, according to the studies, as much of it due to errors by employes as deception by clients.

Many Misunderstandings

About 15 criminal fraud charges are made each month, and many other cases are handled without formal criminal charges being filed, usually after recipients agree to repay the money, Nevers said.

The charges are handled informally for many reasons, law enforcement officials say. Sometimes the amount of the fraud is small, or overpayments resulted from a misunderstanding between a caseworker and a recipient. Often, clients do not understand the intricacies of welfare regulations.

"Unfortunately, many of them are ignorant," Bialk said. "And many of them don't know the difference between right and wrong."

In many other cases, investigators are unable to get enough evidence to prove fraud, although they are certain an irregularity has occurred.

Many detected cheaters are caught in a net of internal welfare department checks and cross checks.

Using computers, the department combs the rolls each month for duplicate addresses, Social Security numbers and case numbers. Marriage license and county payroll lists are compared with welfare rolls, and the computer cranks out special reports on working recipients.

> *"In what other crime can you fill out a form and have somebody send you the loot in monthly installments.?"*
>
> —An assistant district attorney

First Screening

The first line of defense against fraud is thorough documentation of the family's size and financial circumstances when recipients first apply for welfare.

Welfare studies and fraud cases indicate the system is effective in keeping ineligible persons off the rolls. The biggest problems arise after recipients are certified for aid.

"The system is partly to blame," one fraud investigator said. "There's no way a woman with one child can make it on $300 a month. So she gets a job and doesn't report it."

Often, the earnings are detected when a recipient is called in for a regular six month review, when he must, in effect, reapply for aid.

Verified With Employer

At this review, recipients often admit they have been working, investigators said. They often lie, however, about the length of time they have been working and the amount they have earned. To verify the information, caseworkers refer job reports to the fraud squad, which calls the recipients' employers.

Prietz thinks a lot more checking is necessary to root out fraud. "Cheating is so easy," he said. "All you've got to do is to check 'no' instead of 'yes' when you fill out the form. And your conscience doesn't bother you very much because your kids will get better clothes.

"They can go on for years if they don't do anything to call attention to themselves. In what other crime can you fill out a form and have somebody send you the loot in monthly installments.?"

Advocates Overhaul

While Prietz favors an overhaul of the welfare system, including more generous payments, he thinks a lot of little things could be done to tighten it up now, particularly the use of computers to do more crosschecking.

"We're not even doing a good job of running the bad system we've got," he said.

In cases prosecuted from December through April, failure to report income from work accounted for 60% of the charges.

The amount of fraud in these 26 cases ranged from $508 in four months, to $10,613 in nearly four years. About $2,100 in a 13 month period was involved in the typical case.

None of the 26 earned enough to make them ineligible for aid, and all would have been able to keep a substantial part of their earned income had they reported it to the department.

Can Keep Part

Recipients are allowed to keep the first $30 of their earnings, plus a third of any amount over $30. In addition, some work expenses (union dues, for example) are deducted from the total earned.

Examples of these cases from court records are:

A woman who went on welfare in 1966 got a job at a South Side factory in 1972 and worked there 43 months, earning $25,728. She collected $17,059 in welfare during the same period.

Had the woman reported her earnings, she would have received only $6,446 in aid, making the fraud $10,613. Legally, she could have kept about $15,000 of the nearly $26,000 she earned.

She pleaded guilty, was given five years' probation and was ordered to repay the money in $30 monthly increments. Under the law, she could have been jailed for 15 years.

A 33 year old woman, who went on welfare in 1968, started working at a nursing home in 1975. She worked a year, earning $4,707 and drawing $6,252 in aid. Eligible for only $4,344, her fraud was $1,908.

She legally could have kept $2,800 of the $4,700 she earned.

Failure to report unemployment compensation accounted for 10% of the convictions. To detect this kind of fraud, welfare officials routinely check unemployment compensation records in those cases where welfare clients appear to be eligible for unemployment payments.

Irony of System

Prietz noted the irony of prosecuting recipients who got jobs to improve their living standards. "The women who get prosecuted are the ones who have the best chance of making it (off welfare)," he said.

Most of the other cases fell under what officials call failure to report a change in circumstances — cases in which the recipients were eligible for welfare, but not for as much as they had received.

Examples from court records of this type of fraud were:

A woman who married, making her (but not her children) ineligible for aid.

A woman who was receiving aid for her four children, but who did not tell welfare officials that one child has gone to live with relatives.

In another type of fraud, a recipient moved to California without informing welfare officials. The recipient's sister was charged with collecting her checks for two months.

In four other cases, recipients reported their checks stolen, collected duplicate checks, then cashed the original checks.

File w/ editorials

FROM THE STANFORD OBSERVER
NOVEMBER 1976

'It's unwise to trust only saints, saviours'

"If the only leadership we as a people will dignify with our trust is a leadership of saints and saviours. . .we are in for some tough times indeed," President Richard W. Lyman of Stanford told a *Time* magazine conference on leadership, in Washington D.C.

"We are in danger of coming to believe that no one can be trusted to speak of moral issues or enlist moral energies unless he or she owns nothing, carries no organizational responsibilities, possesses no authority of office or status—in short is untrained and inexperienced at coping with moral problems in public life. . .

"It has been a point of pride with Americans, from colonial times, to be mediocre followers, and to put stress on the virtues of the individual who is from Missouri, takes orders gracelessly, and who would much prefer to strike out for the open country and be free of institutional constraints.

"Clearly the myth long outlived the realities of accomplishment. In World War II, with the frontier long closed and the greatest bureaucracies ever to run a war at work on both sides, the American GI was supposed to be—and often was—the 'take-charge guy,' the resourceful individual who, unlike the robots from less-favored lands, would respond to altered circumstances or sudden crisis with ingenuity and courage, and without waiting for orders."

Lyman said there is "a pervasive unwillingness to take the time and trouble to understand the institutions we have developed and must work with and through and their inherent limitations, with which

See TRUST, p. 8

Trust

continued from p. 1

leaders must come to terms.

"This, as much as the actual failure of these institutions, breeds cynicism or its Siamese twin, Utopianism, fills the air with outrage, and overloads the courts with litigation.

"Scapegoating leadership becomes a much easier way of explaining any institutional failures than serious attention to what the institution is being asked to do, and how well adapted it is to doing it.

"As someone (else) has said: 'Americans today expect more and more from a government they trust less and less.' And that is true for other kinds of institutions as well.

"Not only is more expected, but responses to almost any problem are sought from almost any institution. No longer do people look to business to solve business problems, educational institutions to solve educational problems, and so forth.

"Any organization, provided it's large enough to be visible and to be suspected of having disposable assets under its control, is asked to solve any problem, however irrelevant to its mission, experience, or capacity. . .

"An institution, asked to perform a service it is not equipped to perform, responds ineptly. The ineptitude is not seen as a predictable result of a misdirected request, but of the incompetence or worse of the institution and its leadership.

"Perhaps this is the result as much of poor leadership as poor followership.

"Businesses too quick to proclaim themselves, through so-called institutional advertising, interested in practically anything but earning profits; universities too willing to let their basic tasks of education and research be shunted aside in the interests of taking on tasks of social reform they are not equipped to manage; political leaders promising not only to govern us well and honestly, but also to restore the lost authority of the family and resolve for us the moral dilemmas of abortion—we are all asking for public disillusionment each time we wax thus expansive."

Lyman currently heads the Commission on Federal Relations of the Association of American Universities.

File Editorials

Science and law

Howard T. Markey, Chief Judge of the U.S. Court of Customs and Patent Appeals, gave an address earlier this summer on science and the law before the New Jersey Patent Law Association. Here, verbatim, is a small part of what he had to say. The full text of the address, which marked Markey's receipt of the Jefferson Medal, is published in the June 1977 issue of the Journal of the Patent Office Society.

Like all good marriages, that of science and law is not formed of identical partners but of different partners complementary to each other. The differences, though profound, are not fatal. Science seeks knowledge of facts; law seeks justice which may rise above and beyond the facts. Justice may be tempered with mercy; a fact may not. Science can tell us the amount of shoe leather consumed in a given march; law is the music we march by. Science is a metronome for the melody of the law.

Science rests on the material; law on the moral, ethical, and philosophical. Science teaches us what we can do; law tells us whether we should. Science seeks certainty; law deals with the uncertainty of the human will. Science emphasizes the general; law the particular. Scientific proof is standardized; legal proof varies with probabilities. Science determines; law compares. Science finds fixed relationships; law establishes rights and duties. Science analyzes and predicts phenomena; law clarifies and controls conduct. Science describes; law prescribes.

The things of science are only those which can be observed. The things of law, like justice and mercy and truthfulness and reasonableness and honesty and compassion and responsibility, cannot themselves be seen.

The laws of science, like gravitation or Newton's laws of motion, are inviolable. The laws of humanity can be broken. Hence we prosecute the outlaw and not the falling rock.

Science weighs, counts, and measures matter; law defines and protects the values a society holds dear.

Man has learned to build on knowledge and experience in the fields of science and the application of science we call technology. He has not yet learned to do so in morals and ethics, where every baby starts from scratch. Yet there is hope, for with every new baby our troubled race gets a new start. And to the extent that law rests on morals and ethics, not just on force, we may someday begin to build an ethical structure of grandeur and excitement equivalent to that of science. To do so requires an understanding of the relationship between law and science beyond their differences.

As in every good marriage, the partners need each other. The relationship of need finds law needing to employ the empiric methods of science, where they fit, in a lawyer's world so dependent on and infused with science. And science needs law to aid in determining the monumental ethical questions it now confronts and which it cannot answer empirically, like the use of experimental drugs and procedures on human beings, genetic experiments like those with recombinant DNA, modifications of the environment, the effects of "social engineering," treatment of laboratory animals, and the relationship of science to politics.

As in human marriages, each partner brings an influence on the other. Science and technology move the law toward new fields and the need to change and grow. The law tames, controls, and channels science and technology.

The blindfolded lady of justice, like many wives of dynamic men, has been a helpmate and a softening influence on her scientific partner from the time man crawled from the swamps until he walked on the moon. When the lady's counsel has been ignored, the purveyors of perverted science have ended by burning humans in furnaces and by making lampshades of human skin.

Only the law can deal with threats to life, liberty, and the pursuit of happiness, like those which lie in the technology of computer data banks and electronic surveillance devices. In a broader sense, unless law controls science, man will become, in Thoreau's phrase, "the tool of his tools."

Thus science and law must be treated as legitimate lovers, not as living in sin. □

C&EN editorials represent only the views of the author and aim at initiating intelligent discussion.

funds to eligible former stu- closed, but the company ployment claims.

WASH STAR
NOV. 9, 1975

Ralph Nader

'The Bigger, the Better?'

For over 100 years the slogan, "the bigger, the better" has guided the business community.

Even today, few executives would question the validity of such a slogan. Banks with assets exceeding $30 billion, oil companies with sales over $30 billion annually and insurance companies with millions of policyholders are believed to be big because they are better for consumers and the country.

ARE THEY? Let's look at the bigness issues a little more closely:

1. Smaller companies can do a better job for the consumer than the giants are doing in the same industry. This is true, for example, in the pricing of life insurance or servicing by truck companies. Small businesses, whose owners know they can win under fair competition, are unable to fight the political and predatory market practices of their opposing goliaths.

2. Companies can become so large that government cannot allow them to fail. While small business is perfectly free to go bankrupt, big business can go to Washington — for a bailout. Apart from the more sensational welfare case of the Penn Central, big corporations are in Washington all the time asking for handouts on the grounds that if they don't get them they will go broke and damage the economy.

3. Giant corporations very often mean giant monopolies or giant monopolistic practices, which fleece consumers out of billions of dollars, as detailed by the Senate anti-monopoly subcommittee over the years. Frequently big business forces small business to go along with their anti-monopoly violations.

4. **BIG** corporations, historically without much of an innovative record, just as historically have lunched off lone inventors or small firms. A Department of Commerce study in the mid-'60s showed that individuals were the source of most inventions that helped build the economy, not the fabled corporate laboratories.

In 1964, Donald Frey, vice president of Ford Motor Co., noted that auto suppliers, not the big auto companies, were the prime source of innovation.

5. Big corporations gravitate toward massive technologies because it is more profitable for them and more expensive for consumers. Recently, big technology is more likely to induce tax concessions or government subsidies.

In the quest for energy adequacy, why develop the abundant agricultural wastes and residues or other solar energies when there are more complex, expensive and government supported technologies like nuclear power around?

6. **BIG COMPANIES** can resist more strenuously the displacement of their existing technology by a more abundant form of new technology that is cheaper for the consumer. AT&T has preferred underseas cables at the expense of satellites; the three television networks long opposed cable TV development with its dozens of channels.

7. Big companies can control government and abuse significant political power more easily. Du Pont in Delaware, Union Camp in Savannah, Ga., and U.S. Steel in Gary, Ind., are only a few of the company states or company towns where bigness becomes virtual government. It is hard to think of small business overthrowing South American countries.

8. Conglomerate companies can afford to ignore one consumer sector if they can profitably shift to other consumer sectors, compared to firms rooted entirely in a smaller community. In such a case, only small business can fill the gap.

9. Large corporations encourage widespread community rootlessness by requiring constant moving of families between branch offices or plants.

10. Big companies are more likely to be inefficient than smaller-scale alternatives. Prof. Joe Bain has shown how, in several major industries, it is plant size, not company size, that determines efficiencies. The steel industry is a case study of that point. One giant publisher recently contracted for a series of books to a tiny publisher because it was cheaper than doing it in-house.

THE WHOLE question of efficiency needs a fresh review in other contexts as well, such as the side effects, maintenance costs, or injuries to consumers.

There need not be a reverse dogmatism in favor of all small enterprises to justify a critical examination of business bigness in our economy. Or to justify asking what such bigness is doing to our society's preferred values of individual initiative, responsibility and freedom from the giant organizations' conforming pressures.

MAR. 14, '76
WASH. POST

A Closet Capitalist Confesses

By Michael Novak

THE DAY I HEARD Michael Harrington say that most liberals are "closet socialists," I knew by my revulsion that I had to face an ugly truth about myself. For years, I had tried to hide, even from myself, my unconscious convictions. In the intellectual circles I frequent, persons with inclinations like my own are mocked, considered to be compromised, held at arm's length as security risks. We are easily intimidated.

The truth is there are probably millions of us. Who knows? Your brother or sister may be one of us. The fellow teaching in the class next to yours; the columnist for the rival paper; even the famous liberated poetess—our kind, hiding their convictions out of fear of retribution, lurk everywhere. Even now we may be corrupting your children.

We are the closet capitalists. Now, at last, our time has come. The whole world is going socialist. Nearly 118 out of 142 nations of the world are socialist tyrannies. A bare 24 are free-economy democracies. We are the world's newest, least understood and little loved minority. It is time for us to begin, everywhere, organizing cells of the Capitalist Liberation Front.

I first realized I was a capitalist when all my friends began publicly declaring that they were socialists, Harrington and John Kenneth Gailbraith having called the signal. How I wished I could be as left as they: Night after night I tried to persuade myself of the coherence of their logic; I did my best to go straight. I held up in the privacy of my room pictures of every socialist land known to me: North Korea, Albania, Czechoslovakia (land of my grandparents) and even Sweden. Nothing worked.

When I quizzed my socialist intellectual friends, I found they didn't like socialist countries, either. They all said to me: "We want socialism, but not like Eastern Europe." I said: "Cuba?" No suggestion won their assent. They didn't want to be identified with China (except that the streets seemed clean). Nor with Tanzania. They loved the *idea* of socialism.

"But what is it about this particular idea you like?" I asked. "Government control? Will we have a Pentagon of heavy industry?" Not exactly. Nor did they think my suggestion witty, that under socialism everything would function like the Post Office. When they began to speak of "planning," I asked, who would police the planners? They had enormous faith in politicians, bureaucrats and experts. Especially in experts.

"Will Mayor Daley have 'clout' over the planners?" I asked, seeking a little comfort. "Or congressmen from Mississippi?" My friends thought liberal-minded persons would make the key decisions. Knowing the nation, I can't feel so sure. Knowing the liberal-minded, I'm not so comforted.

Since they have argued that oil companies are now too large, I couldn't see how an HEW that included Oil would be smaller. My modest proposal was that they encourage monopoly in every industry and then make each surviving corporation head a cabinet officer.

See CAPITALISM, Page C5

Novak is a Catholic theologian whose books include "Choosing Our King."

Capitalist Confesses

CAPITALISM, From Page C1

Practical discussions seemed beside the point. Finally, I realized that socialism is not a *political* proposal, not an *economic* plan. Socialism is the residue of Judaeo-Christian faith, without religion. It is a belief in community, the goodness of the human race and paradise on earth.

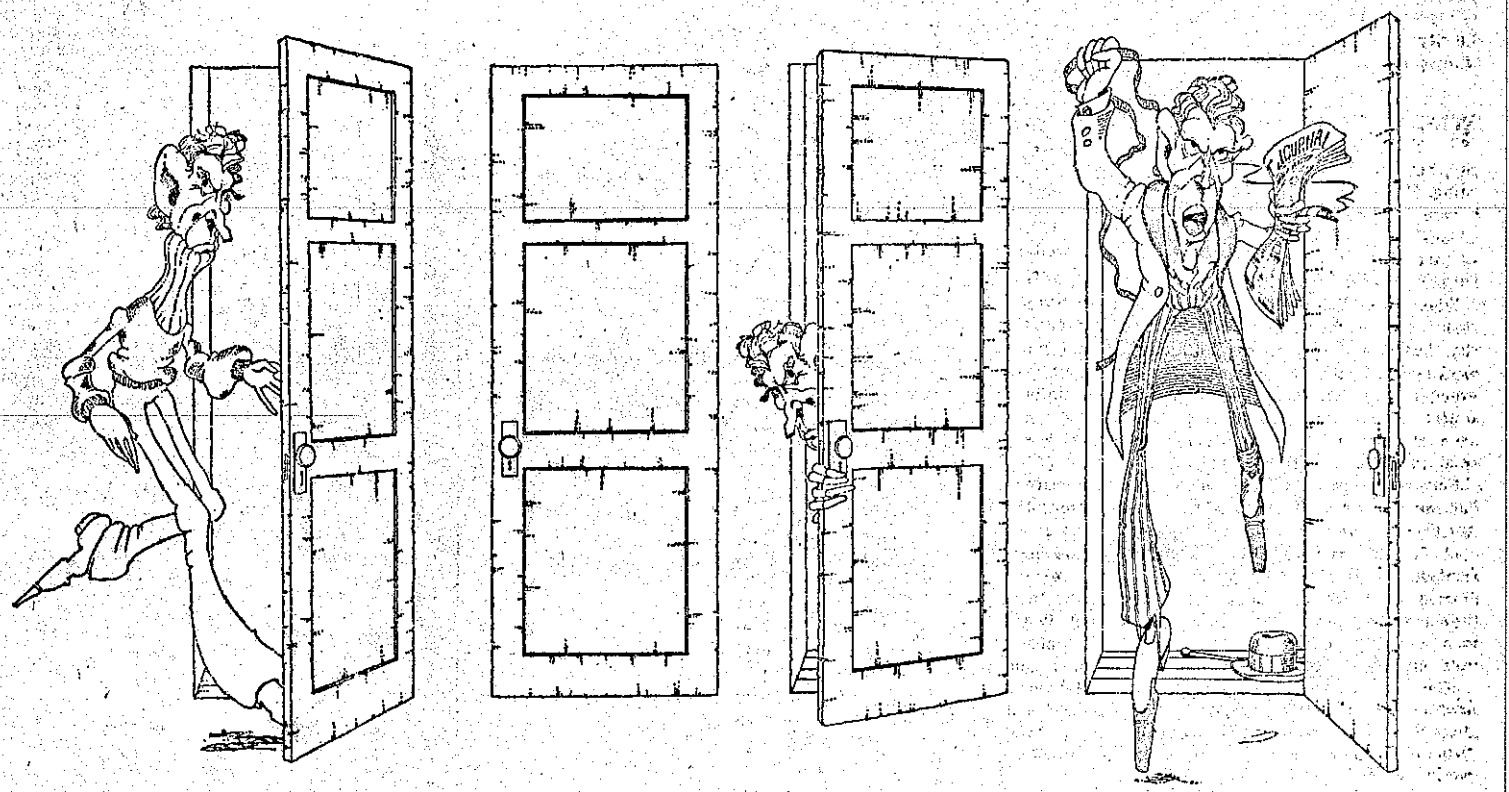
THAT'S WHEN I discovered I was an incurable and inveterate, as well as secret, sinner. I believe in sin. I'm for capitalism, modified and made intelligent and public-spirited, because it makes the world free for sinners. It allows human beings to do pretty much what they will. Socialism is a system built on belief in human goodness; so it never works. Capitalism is a system built on belief in human selfishness; given checks and balances, it is nearly always a smashing, scandalous success. Check Taiwan, Japan, West Germany, Hong Kong and (one of the newest nations in one of the recently most underdeveloped sectors of the world) these United States. Two hundred years ago, there was a China, and also a Russia. The United States was only a gleam in Patrick Henry's eye.

Wherever you go in the world, sin thrives better under capitalism. It's presumptuous to believe that God is on any human's side. (Actually, if capitalism were godless and socialism were deeply religious, the roles of many spokesmen in America would be reversed in fascinating ways.) But God did make human beings free. Free to sin. God's heart may have been socialist; his design was capitalist as hell. There is an innate tendency in socialism toward authoritarianism. Left to themselves, all human beings won't be good; most must be concerned. Capitalism, accepting human sinfulness, rubs sinner against sinner, making even dry wood yield a spark of grace.

Capitalism has given the planet its present impetus for liberation. Everywhere else they are hawking capitalist ideas: growth, liberation, democracy, investments, banking, industry, technology. Millions are alive, and living longer, because of medicine developed under capitalism. Without our enormous psychic energy, productivity and inventions, oil would still be lying under Saudi Arabia, undiscovered, unpumped and useless. Coffee, bananas, tin, sugar and other items of trade would have no markets. Capitalism has made the world rich, inventing riches other populations didn't know they had. And yielding sinful pleasures for the millions.

Six per cent of the world's population consumes, they say, 40 per cent of the world's goods. The same 6 per cent produces more than 50 per cent; far more than it can consume. No other system can make such a statement, even in lands more populous, older and richer than our own. As everybody knows, hedonism requires excess.

Look out, world! The closet capitalists are coming out. You don't have to love us. We don't need your love. If we can help you out, we'll be glad to. A system built on sin is built on very solid ground indeed. The saintliness of socialism will not feed the poor. The United States may be, as many of you say, the worthless and despicable prodigal son among the nations. Just wait and see who gets the fatted calf.



By John Twohey—The Washington Post

PATENT CHIEF

Continued from 10th Page

vironment, medicine or anything else, the more important become the incentives which patents provide."

A patent gives an inventor a 17-year exclusive right to use the invention. Last year, 104,000 patent applications were filed and 70,000 granted.

California was the most inventive state last year with 7,603 patents issued.

To some, the word "inventor" brings to mind a picture of an old eccentric holed up in his basement, but today inventing is big business. Slightly more than three-fourths of all patents issued last year were assigned to corporations. About one-third of all applications in 1974 were from foreign applicants, compared with only 22% in 1964.

Dann is disturbed that "courts are not as friendly as we wish they were" in enforcing patent protection. If a patent is in dispute it is up to the courts, not the patent office, to settle the matter.

About 1% of patents are litigated, he says, "and about half get knocked out."

Dann's office has taken an active role in promoting energy and environment-related inventions. It takes an average of 21 months from the time an application is filed until a patent is granted. But Dann has ordered priority handling of energy and environment applications, which expedites the process by eight to 10 months.

Since 1970, about 1,400 environmental patent applications have been granted priority handling, and 766 have been issued. Another 4,676 have been issued through regular processing.

Priority was given energy patent applications in October, 1973. So far out of 162 applications, 36 have been issued.

The Patent & Trademark Office has more than 2,800 employes, including 1,200 science and engineering professionals. It currently is operating on a $76 million budget, compared with $72 million a year ago.

"But most of that increase is inflation," Dann says. Fees paid by applicants cover about 40% of the patenting process, but there are bills in Congress that would boost fees to meet 50% of costs.

The office also processes about 35,000 applications for trade-marks each year and issues about 25,000. It's up to the examiner whether a proposed trademark is confusingly similar to one already issued.

Disreptuable companies which promise to help inventors get patents and practically guarantee riches are among Dann's major concerns. Most do no more than collect fees from inventors.

The Patent office has no regulatory control over these firms and can't take action against them. But the Federal Trade Commission has moved against some of them after their operations were publicized.

Dann offers this advice to would-be inventors:

"I suggest they check with the Better Business Bureau (to see if the firm is reputable), check with their banks and ask to see a list of satisfied customers—then check with the customers to see to it that they really are satisfied.

He says that a visit to a good patent attorney might be an even better move. Dann was chief counsel of the patent division of DuPont Co before he was nominated to his present post in 1973.

Dann also recommends that the budding inventor visit the Commerce Department field office in Westwood, where patent literature and market directories are available.

PAGE 2 OF 2

Ancker-Johnson airs views on technology

Commerce Department official urges early development of federal technology policy, also favors science court

Dr. Betsy Ancker-Johnson has been the Commerce Department's assistant secretary for science and technology for three and a half years, during which period she has served three successive secretaries of Commerce. In the current secretary, Elliot Richardson, Ancker-Johnson has found a particularly receptive ear.

"If you scratch, you will really find him a scientist and engineer who is very much interested and is surprisingly well-versed in questions of science and technology," Ancker-Johnson tells C&EN in a recent interview. (Richardson is a lawyer by training.) Much to her delight, he has gone to bat for her on more than one occasion. Ancker-Johnson's delight may very well be short-lived, however. This being an election year, Richardson's tenure at the Commerce Department is uncertain, and Ancker-Johnson is likely to be reporting to a new boss in a few months. Nevertheless, she is undaunted and speaks enthusiastically of the many things she hopes to accomplish.

First on Ancker-Johnson's list is the development of a U.S. technology policy. "What we have now is a whole bundle of strategies—there is no policy as such," she says. But one should be developed quickly, she adds, because indicators have shown that the health of U.S. science and technology, and especially technology, is not as good as it ought to be.



Photos by C&EN's Ling-yee Gibney

"We are not in a strong position vis-a-vis our trading partners and competitors that we have been in the past." Moreover, Ancker-Johnson points out that among the series of strategies that have been called a technology policy is the practice of compulsory licensing, which further weakens the health of science and technology. Under this strategy, she explains, "we've not only had to make technology that has been developed in some place—say General Electric—available to other parts of the private sector but to foreigners, and generally speaking, free or virtually free. So you don't have the royalties coming back to feed the R&D machine to keep it good and healthy."

Technology is an economic issue and must be scrutinized from the industry's (or commercially oriented) point of view, Ancker-Johnson tells C&EN. There are four options that she believes the Commerce Department should take immediately to foster technology and in particular technological innovation. The latter, she notes, should result in an aggregate of new methods for producing goods and services that either have not existed before or can now be supplied (as a result of innovation) using fewer raw materials, less energy, and less money.

Taking up these options will mean adding new functions to some of the six offices Ancker-Johnson heads—National Bureau of Standards, Patent & Trademark Office, Office of Product Standards, National Technical Information Service, Office of Telecommunications, and Office of Environmental Affairs. Option one has to do with the fact that "there is really no competence within the federal government (and hence, elsewhere) to analyze where we are going with the piecemeal strategies that we call a technology policy," Ancker-Johnson says. What she would like is a small analytic office set up immediate to her secretariat to analyze these various strategies.

Option two would be to promote consumer technology and to increase the Department of Commerce's ability to react to market-place desires. An example, says Ancker-Johnson, is providing a standard means of measurement such as for auto tire durability. NBS would do the technical work, and a small office would be established to handle policy matters. This way, explains Ancker-Johnson, "NBS will preserve its credibility as that absolutely neutral and absolutely reliable source of technical information and scientific information."

The third option would be to fund generic research that is too risky or expensive for any one company or industry, such as research on how to improve the wear of cutting tools. If research proves the technology worthwhile, it then can be picked up by the commercial sector. "We are not interested in funding things that are nice to know, but things that will increase productivity," Ancker-Johnson asserts. The National Technical Information Service would administer this program of generic research. It would be responsible for diffusing the technology to industry, and to state and local governments. "Technology transfer must be done person-to-person and not by shipping papers out the door," she emphasizes.



Option four would be to analyze and assess the scientific and technical implications of regulations, and their impact on development of new technology. At a time when productivity is low, and compliance with regulations—some of which may be unnecessary—is costly, it adds to "our burden of our not being as competitive in markets of other countries that do not regulate their industries as stringently," Ancker-Johnson says. "So we must avoid this helter-skelter making of laws and regulations." She cites the case of the Environmental Protection Agency's standards on sulfur oxide emissions. A well-known epidemiologist recently had told Ancker-Johnson that despite the billions of dollars worth of equipment put in by industries to control sulfur oxides, it may well turn out that the culprit is the H+ ion and it should be controlled, not sulfur oxides. Ancker-Johnson has in mind the Office of Environmental Affairs to operate this last option.

Ancker-Johnson is against the patent bill passed by the Senate. She is the chairman of the Committee on Government Patent Policy, which is part of the

White House Federal Coordinating Council on Science, Engineering & Technology. And the committee has drafted a bill that Ancker-Johnson hopes will be introduced before the close of this session of Congress. Essentially, the bill would make a "major change in patent policy," making it the practice rather than the exception for the inventor or assignee to take title to inventions made with federal funds. "This will mean that much of the technology paid for by the taxpayers now will get used by the taxpayers," Ancker-Johnson says.

As one of the sponsors of a "science court" experiment, Ancker-Johnson thinks that as the number of science and technology related issues get bigger and as society gets more and more complex, it would help to have such a mechanism as a science court. Ancker-Johnson does not like the word "court," as it implies that policies will be made when in fact all the court does is to present the facts. Unfortunately, she says, the word was picked up by the press and now it's useless to "unhinge" it.

What the court would do would be to bring in scientists and engineers with different viewpoints to debate on an issue, such as the theory that chlorofluorocarbons discharged from aerosols may be depleting the stratospheric ozone. These scientists and engineers will ask non-value-laden questions and agree to what the facts are today and what further research should be undertaken. They then would leave the decision to policy makers. The court idea is still in the discussion stage and Ancker-Johnson says that a colloquium to get public input on how to set up an experiment will be held Sept. 20 to 22 in Leesburg, Va.

The fact that she is a woman and one of the few female Presidential appointees doesn't bother her, but Ancker-Johnson admits that the Commerce Department is a male chauvinistic agency. However, she says, Richardson has done a great deal to change the tone of the agency. "If he stays around long enough, I am sure he will change it a great deal more, hopefully irreversibly," she quips. Ancker-Johnson comes with splendid credentials. She is a solid-state and plasma physicist, and has taught at the universities of California and Washington. She also has worked at Boeing, Sylvania, and RCA.

Ling-yee Gibney, C&EN Washington

GAO negative on synthetic fuels

A recent General Accounting Office report on the Administration's plan for developing a commercial synthetic fuels industry has created quite a stir on Capitol Hill. In no uncertain terms GAO concludes that federal "financial assistance for commercial development of synthetic fuels should not be provided at this time." That conclusion came as something of a shock to three House committees.

The three committees, after a year of work, had just reached agreement on provisions of a bill, H.R. 12112, providing loan guarantees for commercializing various energy technologies, with the emphasis on synthetic fuels. The full House already has rejected once a federal loan guarantee program, and fearing a repeat performance, the committees involved swiftly summoned GAO and Energy Research & Development Administration officials to the Hill last week to elaborate on or refute the report's conclusions.

The basic premise underlying GAO's negative conclusion is that the output from coal liquefaction and gasification and oil shale plants will not be competitive with domestic and imported oil and natural gas prices. GAO points out that the estimated regulated price of high-Btu synthetic gas—$2.61 to $3.02 per thousand cu ft—is about double the proposed Federal Power Commission domestic price for new natural gas. Oil produced from coal or oil shale could cost from $15 to $18 per bbl, far higher than the current $12-per-bbl price of foreign oil. Furthermore, GAO says, the development of a synthetic fuels technology would require creation of a substantial industry infrastructure to sustain it once it is in place.

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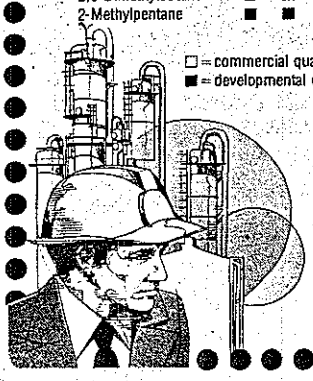
	Research	Pure 99%	Tech. 95%
PARAFFINS			
Methane	■	□	
Ethane	■	□	
Propane	■	□	□
Isobutane	■	□	□
Normal Butane	■	□	□
2,2-Dimethylpropane	■	□	□
Isopentane	■	■	□
Normal Pentane	■	■	□
2,2-Dimethylbutane	■	■	■
2,3-Dimethylbutane	■	■	■
2-Methylpentane	■	■	■
3-Methylpentane	■	■	■
Normal Hexane	■	■	■
2,4-Dimethylpentane	■	■	■
Normal Heptane	■	□	
2,2,4-Trimethylpentane	■	□	
2,3,4-Trimethylpentane	■	■	■
Normal Octane	■	■	■
Normal Nonane	■	■	■
Normal Decane	■	■	■
Normal Undecane	■	■	■
Normal Dodecane	■	■	■
Normal Tridecane	■	■	■
Normal Tetradecane		■	■
Normal Pentadecane			■
Normal Hexadecane		■	■
CYCLOPARAFFINS			
Cyclopentane	■	■	■
Methylcyclopentane	■	■	■
Cyclohexane	■	99.5	98
Methycyclohexane		■	■
cis-1,2 Dimethylcyclohexane	■		
trans-1,2-Dimethylcyclohexane	■		
Isopropylcyclohexane	■		

□ = commercial quantities
■ = developmental quantities



	Research	Pure 99%	Tech. 95%
OLEFINS			
Ethylene	■	99.8	
Propylene	■	□	
Isobutylene	■	□	
Butene-1	■	□	
trans-Butene-2	■	■	■
cis-Butene-2	■	■	■
Butene-2		■	□
2-Methylbutene-1		■	■
3-Methylbutene-1	■	■	■
2-Methylbutene-2	■	■	■
Pentene-1	■	■	■
4-Methylpentene-1	■	■	■
cis-4-Methylpentene-2	■	■	■
trans-4-Methylpentene-2	■	■	■
4-Methylpentene-2		■	■
2-Methylpentene-1	■	■	■
2-Methylpentene-2			■
Hexene-1	■	■	■
Heptene-2			■
2,4,4-Trimethylpentene-1	■	■	■
2,4,4-Trimethylpentene-2			■
Octene-1	■	■	■
mixed Normal Octenes			■
CYCLOOLEFINS			
Cyclopentene	■	■	■
Cyclohexene	■	□	

	Research	Pure 99%	Tech. 95%
DIOLEFINS			
Butadiene-1,3	■	□	
AROMATICS			
Benzene	■	■	
Toluene	■	■	
Ethylbenzene	■	■	■
ortho-Xylene	■	■	
para-Xylene	■	■	
meta-Xylene	■	■	■
1,2,4-Trimethylbenzene	■	■	■
Isopropylbenzene	■	■	■
n-Propylbenzene			■
Isobutylbenzene	■	■	
sec-Butylbenzene	■	■	■
tert-Butylbenzene	■	■	■
n-Butylbenzene	■	■	■
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MAY 9 1975

Los Angeles Times
Business & Finance
10 Part III TUESDAY, MARCH 4, 1975

Patent Chief Sees Threat to U.S. Energy Technology

BY RON S. HEINZEL
Times Staff Writer

The head of the U.S. Patent & Trademark Office fears that a movement in Congress to give the government exclusive rights to patents arising from federally funded research and development programs could hamper the Administration's attempt to solve the energy crisis.

C. Marshall Dann, commissioner of what was formerly the Patent Office, a Commerce Department unit, said in an interview that President Ford's long-term energy program will largely utilize technology that has not yet been developed or commercialized.

"Now if you had a problem to solve which required inventive technical solutions, you would think that in addition to supplying whatever funds were available the one thing you would try to do would be to provide all the incentives possible."

Despite this, Dann says, "there are strong voices in Congress more concerned with dividing up the rights in whatever technology we have or may create than in providing the best climate for the creation of new technology."

Dann says the federal government currently funds more than half the research and development (R&D) programs in the United States and gets about 5% of the patents. "But it doesn't do much with them," he adds.

He says critics want:

—All inventions developed through federally funded R&D to belong to the government, excluding the contractor who did the work. "But this tends to discourage participation in government programs by the most competent organizations—the best talents aren't attracted."

—A ban on exclusive licensing of government-owned patents. "This will sometimes mean that the invention will be used by no one."

—Those taking on a government R&D contract to be required to license their privately developed patents and technology used as background for federal programs. "This tends to insure that the most competent and experienced firms won't seek a contract, since they have usually invested a great deal of money in acquiring their technology."

—Compulsory licensing of energy-related patents developed with private funds. This would let competitors share in the benefits and "provides a powerful disincentive for any private concern to do any research at all in the energy field."

The patent system in this country is rooted in the Constitution. Article 1, Section 8, gives Congress the power to "promote the progress of science and useful arts, by securing for limited times to . . . inventors the exclusive right to their . . . discoveries."

"If the patent system has any virtue and if it helps achieve the Constitutional objective, as has been supposed for 185 years," Dann says, then it is needed in the energy situation. "The more important the technological goal, whether it be energy, the en-

Please Turn to Page 17, Col. 1



THE COMMISSIONER—C. Marshall Dann, commissioner of Pate Trademark Office, believes proposed changes in U.S. patent p could have an adverse impact on nation's long-term energy prog

Times photo by Joe Ken

TO Neil Reiner

Boeing Co. P Higher Earnin

Boeing Co., Seattle, Monday reported net income of $72,432,000 or $3.42 a share for the year ended Dec. 31, 1974, up 41% from $51,215,000 or $2.38 a share in 1973.

The aircraft manufacturer said sales totaled $2,720,07[illegible]

PAGE 1 OF 2

Letters

ACS divisions' viewpoint

SIR: The Divisional Officers and Councilors Caucus agrees with Dr. Henry A. Hill that the functions of the national divisions are among the most important in the American Chemical Society. The articles of incorporation of the society are quite specific.

"Sec. 2—That the objects of the incorporation shall be to encourage in the broadest and most liberal manner the advancement of chemistry in all its branches; the promotion of research in chemical science and industry; the improvement of the qualifications and usefulness of chemists through high standards of professional ethics, education, and attainments; the increase and diffusion of chemical knowledge; and by its meetings, professional contacts, reports, papers, discussions and publications, to promote scientific interests and inquiry, thereby fostering public welfare and education, aiding the development of our country's industries, and adding to the material prosperity and happiness of our people."

There are many of us who feel that the objective of highest regard in our society should be the preservation and furtherance of chemistry as a science. We also believe that to ensure the attainment of this objective that it is necessary that those elements of the society which represent science, namely, the divisions, be given a larger voice in council and appropriate representation on the board.

In practice, however, the situation in the society is that the council is composed of delegates elected by local sections and by divisions with a very large majority—approximately 80%—being local section councilors representing geographical regions. Additionally, the directors of the society are elected from a region or at large. No director is elected as a representative of the divisions or a major segment of chemistry.

The Divisional Officers and Councilors Caucus submits that we belong to the American Chemical Society because we are first of all chemists; we belong to the divisions because they represent our particular fields of chemistry; and we support the divisions with our dues and our time and efforts because the divisions provide professional contacts and the scientific content of the national meetings. Our membership in a local section is an accident of the place where we live.

We, therefore, support the concept of a Commission on Scientific Affairs which is being proposed by the Subcommittee on Organization & Governance as a means of giving the divisions a larger voice in the affairs of the society without major changes in the makeup of the council or the board.

Despite Dr. Hill, there *is* a problem. We cannot go along with his "status quo" point of view.

One of many relevant points is that the division and the national meetings of the society are not supported out of national dues, as are local sections and regional meetings. The 16 largest local sections, having a combined membership approximately equal to the membership of the 28 scientific divisions, receive approximately $85,000 as a rebate from national dues. The divisions receive nothing from national dues. These same 16 local sections are represented by 148 councilors, 36% of the total in council, whereas the divisions have only 56 councilors.

In regard to Hill's statement, "I would hope we would not waste too much time trying to restructure the whole society in order to provide the divisions with their needs," we would agree that there is no time to waste and that there *are* needs. We doubt that "restructuring the whole society" is necessary but if that is what is needed to put scientific interests into ACS affairs, it is well worth the effort. The caucus sincerely regrets that the president-elect has taken a public stance so opposed to what an important segment of the society is working toward: a renewal of the American Chemical Society's commitment to chemistry as a science.

J. Kenneth Craver
Chairman, Divisional Officers and Councilors Caucus, ACS

Frederick G. Cottrell

SIR: While we enjoyed Arthur L. Norberg's "Chemistry in California" (C&EN, Aug. 30, page 26), a review of the history of chemistry in that state would be incomplete without mention of air pollution control pioneer Frederick Gardner Cottrell.

Cottrell, inventor of the electrostatic precipitator and founder of Research Corp., the New York foundation for the advancement of science, entered the University of California, Berkeley, in 1893 at the age of 16, qualified for a bachelor's degree in 1896, and was awarded a fellowship from which he found it necessary to resign for economic reasons. Combining teaching with study, he later pursued graduate work in physical chemistry at the universities of Berlin and Leipzig, receiving a Ph.D. from the latter institution in 1902.

Benjamin I. Wheeler, in search of the best possible man to fill the newly created post in physical chemistry, offered the job to Cottrell at the urging of Edmond O'Neill and with the backing of Willard B. Rising—this, as legend has it, after cabling the scientific capitals of Europe for other recommendations and receiving a unanimous vote for O'Neill's candidate.

Although he received a number of attractive offers, including several from W. R. Whitney of General Electric Research Laboratories, Cottrell accepted and chose to remain at Berkeley for the next nine years, and it was there that the first experimental precipitator took shape. With backing provided by O'Neill, Harry East Miller, a consulting chemist, and attorney E. S. Heller, Cottrell organized a business venture to apply precipitation to the collection of acid mists, dust, salts and fumes from early smelters, chemical, cement, and other industrial plants.

By 1911, the year that Cottrell heeded the call to government service with the U.S. Bureau of Mines, the precipitation venture was on the road to success. Although it had long been his intention that academic science should benefit from the business, should it prove profitable—and with this O'Neill, Miller, and Heller were later to agree—Cottrell was faced with the problem of finding an agency to receive the infant enterprise before he embarked on his new career. The problem was solved with the assistance of Charles D. Walcott, secretary of the Smithsonian Institution, who helped Cottrell enlist an impressive board of directors for a nonprofit corporation. Thus Research Corp. was chartered "to render inventions, patent rights and letters patent more available and effective in the useful arts and manufactures and for scientific purposes," and "to provide means for the advancement of technical and scientific investigation, research and experimentation by contributing the net earnings of the corporation . . . ."

Since its founding in 1912, Research Corp. has contributed some $55 million in grants-in-aid to approximately 7000 investigators. Additionally, its patent program has evaluated roughly 10,000 inventions made at hundreds of scientific and educational institutions and successfully patented and licensed a significant number for further development in the public interest.

The foregoing is especially timely in view of the fact that 1977 will mark the 100th anniversary of the birth of Frederick Gardner Cottrell, and, in his honor, a two-day Cottrell Centennial Symposium will be held at California State College, Stanislaus, next year.

James S. Coles
President, Research Corp., New York City

Compliments!

SIR: Rebecca L. Rawls and Dermot A. O'Sullivan are to be complimented for their excellent technical article "Italy seeks answers following toxic release" (C&EN, Aug. 23, page 27). Many chemists may not be aware of the chemistry involved in this tragedy and the average newspaper or magazine news release would ignore such information if it was available. Undoubtedly, the article reveals good detective work on the part of the authors in addition to high-quality technical reporting.

The editors of C&EN should be encouraged to continue to provide similar reporting of chemical-related news items in the future to give the chemists a technical awareness of what happened.

Erie, Pa. Paul R. Guevin Jr.

Seveso safety

SIR: In your Aug. 9 article (page 27) on the accident at the Seveso, Italy, 2,4,5-trichlorophenol plant, you report that ethylene glycol was used as the reaction solvent. The advantage of the ethylene glycol method is that no pressurized reaction vessel need be used. However, its disadvantage is that an explosive polymerization reaction of the ethylene glycol is possible. This can occur if hot spots develop in the reaction mixture. The normal reaction temperature is 180° C. A hot spot at 230° is said to be enough to initiate the explosion. The 1968 explosion at Coalite Co. in England was caused in this way. An account may be found in *Nature*, **232**, 395 (Aug. 6, 1971).

Stewart Colten
Environmental Protection Agency, Washington, D.C.

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Provisional Patent Applications: File Early, File Often

BY MICHAEL A. GOLLIN OF KECK, MAHIN & CATE

Michael Gollin is a partner in the intellectual property and technology group of Keck, Mahin & Cate, a national general practice law firm. He can be reached at 1201 New York Avenue, N.W., Washington, D.C. 20005, phone (202) 789-8921, fax (202) 789-1158, email mgollin@keck.com.

One of the first steps in commercializing an invention is filing a patent application — a time-consuming, expensive, and sometimes nerve-wracking event. Fortunately, the new provisional filing system will make it easier for companies, universities, and individual inventors to file patent applications earlier and more often. How can people take advantage of this system, and what should they watch out for??

The U.S. Patent and Trademark Office began accepting provisional patent applications on June 8, 1995 under new legislation.[1] The provisional filing system provides inventors with a new tool to preserve patent rights effectively and economically. In a nutshell, an inventor may now file a simple, inexpensive application that is not examined for patentability. Within one year, the applicant may file a regular application based on the provisional application. The principal advantages of a provisional application are:

Simplicity. The PTO has stated that it wants to maintain maximum flexibility for provisional applications.[2] The applicant needs to file only a cover sheet and a specification. There is no requirement for claims, an inventor's declaration or oath, or any particular format. There is no duty to disclose prior art. The provisional application will not be examined or published in its initial form, so the organization and content of the application may be less polished than with a regular application.

Cost. The filing fee for a provisional application is about one-fifth of the fee for a regular application — $150 ($75 for a small entity). This low fee has led one of my clients to nickname the provisional system "the $75 story." As with a regular application, the fee can be paid with the application or thereafter. There are no expenses for prosecution in the first year as there are for regular applications. The cost of preparing and filing a provisional application will likely be about 25% to 75% less than the comparable cost, with prosecution in the first year, for a regular application.

Patent term extension. The patent term for all applications filed June 8, 1995 and thereafter extends 20 years from the filing date. The filing date of a provisional application does not start that clock running. In other words, filing a provisional instead of a regular application can extend the patent term by one year. Meanwhile, the applicant has created an assignable intellectual property asset and may use the term "patent pending" even during the provisional year.

Protecting authors. It often happens that a researcher realizes the commercial potential of his or her work just before a conference or publication date. This is an ideal situation for a provisional application. In the past, the researcher and patent attorney would have to rush to rework and expand the manuscript and figures to satisfy formal and substantive requirements, add claims, and file a regular patent application. This takes time and costs money, and given the deadline, the choice is to do it poorly or not at all, thus jeopardizing foreign patent rights. Now, the author may instead quickly file whatever is being disclosed (manuscript, transparencies, slides) as a provisional application, before the conference or publication date. Even if the provisional application is not adequate by itself to support patent claims, it serves an important defensive purpose: the publication cannot be cited as a prior art reference against the patent application, in the U.S. or abroad, and so the publication results in no loss of rights.

Flexibility. Provisional applications fit into many different strategies because of their flexibility, as elaborated below.

WHAT TO DO AFTER FILING

The provisional application automatically becomes abandoned after one year. The applicant has several options before that point; the key to taking advantage of the provisional system is to know which option to choose. In many cases, the best strategy is to preserve the maximum scope and duration of patent rights at minimum cost, and to defer costs as long as possible.

Convert to a regular U.S. application of the same scope as the provisional. An applicant who decides to proceed with patent prosecution may add claims and an inventor's declaration to the provisional application, and then refile it as a regular application. This option makes sense only if the provisional application satisfies all the standards of a regular application. That is, the original specification must (a) enable a person of ordinary skill to practice the invention, (b) disclose the best mode of the invention, and (c) include drawings necessary to understand the invention.[3] This situation will most commonly arise at companies with in-house patent staff.

File additional provisional applications claiming improvements as they are discovered, then combine them in a regular application. In Japan, it is common to file several provisional applications on small advances or closely related inventions, then consolidate them in a regular application one year after the initial filing. This is now an option in the U.S.

File a U.S. continuation-in-part application (CIP) adding new subject matter. If the invention is developed further after the provisional filing (or if the provisional specification was inadequate), new matter can be added to the original specification in a CIP. However, the ability of the provisional application to defeat prior art depends on the extent of the original disclosure. Hence the importance of a good disclosure in the provisional application — one that provides support for the claims that will ultimately issue.

File an application under the Patent Cooperation Treaty (PCT) designating the U.S. The provisional filing system dovetails nicely with the system of international applications under the PCT. Foreign applications made within one year of an initial U.S. application — whether a provisional or regular filing — may claim priority from the filing date of the U.S. application. A PCT applicant can designate most countries, including the U.S., for national protection. National prosecution begins as late as 18 months after the PCT filing. Thus, the applicant can postpone prosecution in the U.S. for a total of 30 months after filing the provisional application, while preserving all rights and synchronizing prosecution in all countries.

File a PCT-CIP. An applicant may combine the previous two approaches by adding new matter to a provisional application, and filing the CIP as an international PCT application, designating the U.S. Where the applicant has improved on the initial invention, and is in no rush to obtain issuance of a U.S. patent, this can be a very effective strategy for global protection.

For example, an inventor files a provisional application on September 4, 1995, before presenting the invention at a conference. On September 4, 1996, the inventor can file a PCT application claiming priority from the provisional application, and adding results from research in the intervening year. National applications in the U.S. and foreign countries need not be filed until March 1998, and prosecution begins thereafter. Minimal costs will be incurred while preserving global rights for two and a half years.

Let all rights go abandoned. If prospects for commercialization fade, funding is unavailable, or the technology is given a low priority, no further action need be taken. The provisional application will go abandoned. Little time and money has been wasted.

CAVEATS

According to one survey,[4] the most significant advantages people expected for provisional applications are: the extra year of protection; the ability to delay costs in the U.S. and abroad; the possibility of flexible CIP practice; and the ease of earlier filing. The most serious concerns

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LANDLORD LIABILITY FOR TENANT INFRINGEMENTS

Continued From Page 6

> caused the loss to distribute the costs and to ship them to others who have profited from the enterprise. In addition, placing responsibility for the loss on the enterprise has the added benefit of creating a greater incentive for the enterprise to police its operations carefully to avoid unnecessary losses.

Polygram International Publishing, Inc. v. Nevada/TIG, Inc., 855 F.Supp. 1314, 1325 (Mass. 1994). The COMDEX trade show organizer, which rented booths to exhibitors, was subject to vicarious liability where the organizer exercised authority and control over exhibitors through rules and regulations "inconsistent with the usual relationship of landlord and tenant" and profited not only from renting booth space but also from charging admission fees to view the exhibits. 855 F. Supp. at 1329.

CONTRIBUTORY TRADEMARK LIABILITY FOR FLEA MARKET

In *Hard Rock Cafe Licensing Corp. v. Concession Services, Inc.*, 995 F.2d 1143 (7th Cir. 1992), the plaintiff sought to impose liability on the owner and operator of a flea market for trademark infringements by vendors. The Court refused to impose vicarious liability on the landlord, recognizing

> Secondary liability for trademark infringement should, in any event, be more narrowly drawn than secondary liability for copyright infringement.

955 F.2d 1143, 1150 (7th Cir. 1992). The Court held, however, that the flea market owner could be liable for contributory infringement, relying on tort cases in which a landlord is responsible for the torts of a tenant on its premises if the landlord knew or had reason to know the tenant would act tortiously. "Contributory infringement" permits the imposition of liability

> if a manufacturer or distributor intentionally induces another to infringe a trademark, or if it continues to supply its product to one whom it knows or has reason to know is engaging in trademark infringement, the manufacturer or distributor is contributorily responsible for any harm done as a result of the deceit.

Inwoods Lab's, Inc. v. Ives Lab's, Inc., 456 U.S. 844, 854, 102 S. Ct. 2182, 2188 (1982); see *Gershwin Publishing Corp. v. Columbia Artists Management, Inc.*, 443 F.2d 1159, 1162 (2nd Cir. 1971) (copyright liability). The court could not determine if the flea market contributed to the infringement by failing to investigate suspected counterfeiting. *Hard Rock Cafe*, 955 F.2d at 1149.

The trial court actually imposed a duty on the landlord to seek out and prevent trademark violations. On appeal, the court held that the landlord had no affirmative duty to take reasonable precautions, but could be held liable if, understanding "what a reasonably prudent person would understand," the landlord had reason to know the vendors were engaging in trademark infringement. Perhaps emboldened by this precedent, Polo Ralph Lauren Corporation, Rolex Watch USA and Louis Vuitton reportedly have filed suit alleging contributory trademark infringement against commercial landlords of three stores in New York City's Chinatown in which tenants have engaged in ongoing sales of counterfeit goods.

A CONTRARY VIEW

Recently, a District Court in California refused to find vicarious or contributory liability for copyright and trademark infringement claims against the operator of a swap meet. *Fonovisa, Inc. v. Cherry Auction, Inc.*, 847 F.Supp. 1492 (E.D. Cal. 1994). A district court in Minnesota has also refused to find a discount department store operator liable for alleged patent infringement by a licensee of space. *Maxwell v. K-Mart Corp.*, 851 F. Supp. 1343 (D. Minn. 1994); Id., 1995 W.L. 104719 (Feb. 27, 1995).

Copyright infringement. The *Fonovisa* court held contributory infringement did not exist because "merely renting booth space is not 'substantial participation' in the vendors' infringement activities. . . . Any 'participation' was passive, at most, and not nearly 'substantial' enough to warrant defendants the label of joint tortfeasors." *Fonovisa*, 847 F.2d at 1496. Vicarious liability for copyright infringement did not exist because there was neither direct financial benefit nor "power to supervise the direct infringers in the general course of business, *e.g.*, what to sell, whom to hire, how much to charge." Id. at 1496-97.

Trademark infringement. The *Fonovisa* court held that a lease of space was not a sufficient contribution to the infringing activity to give rise to joint liability. Referring to the *Hard Rock Cafe* decision, the Court stated

> Rather than identify a duty which originates independently from trademark law, the Court essentially reasoned that since the swap meet knew what was going on and might have done something to stop it, it should have. This Court refuses to follow this results-oriented course to impose liability on third parties who have never had a traditional role in enforcing the Lanham Act.

847 F.Supp. at 1498.

An appeal of the District Court's decision is now pending. The International Anti-Counterfeiting Coalition, Inc. and Recording Industry Association of America, Inc. have filed an *amicus curiae* brief arguing that claims for contributory trademark or copyright infringement or vicarious copyright infringement can be plead against flea market owners.

Patent Infringement. The *Maxwell* court held that K-Mart Corporation and Shopko Stores, which leased space to Melville Corp. or Morse Shoe, Inc. under a licensing agreement to operate shoe departments in return for a licensing fee based on a percentage of revenue from shoe sales, were not liable for "actively and knowingly aiding and abetting another's direct infringement." Morse Shoe, Inc. and Melville Corp. not Shopko or K-Mart sold the allegedly infringing shoes. Consequently, the department stores were not liable for actively inducing infringement by Morse Shoe, Inc. or Melville Corp.

> Proof of actual intent to cause or encourage the acts which constitute the infringement is a necessary prerequisite to active inducement. . . . The patent laws prohibit K-Mart from infringing or actively inducing the infringement of another. The patent laws do not impose an affirmative duty on K-mart to stop the infringement of another. Maxwell has produced no evidence which tends to show that K-mart intended to induce Melville's alleged infringement of the Maxwell patent.

851 F. Supp. at 1349.

CONCLUSION

Thus far, the cases have not imposed a duty on the landlord to police counterfeiting activity. An authority to police retained by the landlord, however, might give rise to a duty to exercise that authority. Where counterfeiting activity has previously occurred, the landlord may be sued based on allegations the landlord should reasonably be aware of ongoing copyright violations. The risk that vicarious copyright infringement liability will eventually be imposed increases where the landlord's receipts can be directly linked to the profits of the sale of counterfeit goods. In addition, the more services the landlord provides, in addition to the space itself, the more likely the intellectual property owner will argue that the landlord substantially participated in the infringement. Without careful consideration of the effect of lease provisions, a landlord risks suit by simply "turning a blind eye" to notorious and continuous sales of counterfeit goods on commercial premises. ■

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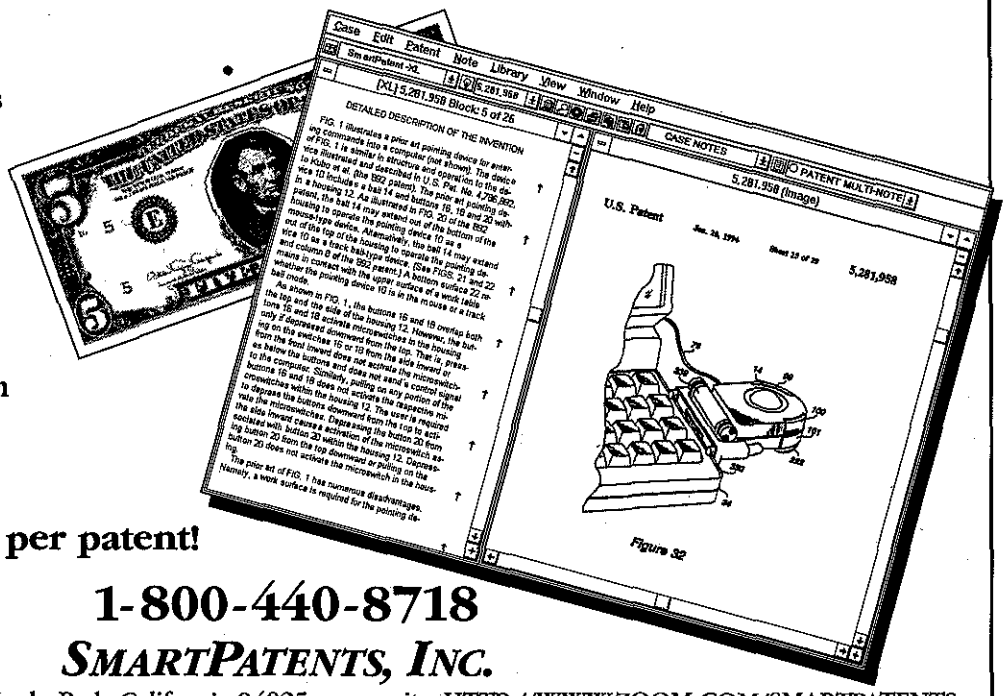

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PROVISIONAL PATENT APPLICATIONS

Continued From Page 15

people had were the additional cost if one merely refiles the provisional as a regular application; and the increased likelihood of producing an inadequate disclosure, especially if there is no patent attorney involvement. The following caveats must be considered in each situation to decide whether the advantages of a provisional application outweigh the disadvantages.

- The total cost to obtain a patent may be slightly higher, even though significant costs are postponed. In the situation where no new matter is added after the provisional is filed, the cost of filing the provisional application is added to the cost of filing a regular application. On the other hand, if a CIP is filed, filing a provisional will reduce the total cost.
- Patent issuance is delayed one year, along with remedies for infringement. If competitors are likely to enter the market quickly, it is desirable to obtain a patent as early as possible. This consideration is particularly relevant for information technologies, where the first years of protection are far more important than the last years.
- The informality of the provisional system may lull an inventor into a false sense of security. The value of an application depends directly on the adequacy of the disclosure. If the initial disclosure is inadequate, and the applicant publishes or sells the invention before all relevant information is put in a CIP, commercially significant claims may be unobtainable or invalid. It remains crucial to consult with a patent attorney or agent to be sure that the enablement and best mode standards are satisfied for the invention, and that the provisional route is the best choice. Do-it-yourselfers, beware.
- A provisional application starts the clock running on the one-year period for foreign filing. The applicant needs to be prepared within that time to determine ***both*** whether to add material to the provisional, and where to file foreign applications.
- A provisional application may not claim priority from a foreign application (or a prior U.S. application).
- Inventorship cannot be determined with certainty for a provisional application because claims are not required. Fortunately, inventors can be removed or added when a provisional application is refiled as a regular application, so long as there is at least one inventor in common. Nonetheless, it may be more difficult to obtain inventors' declarations and assignments one year after filing the provisional application.

SUMMARY

Although there is no single answer to the questions of whether and when to file a provisional application, some generalizations may be helpful:

- Where imminent publication, public use, or sale of an embodiment of an invention is imminent, a provisional application should be filed for defensive purposes.
- Where research related to the invention is ongoing, improvements are expected within one year, commercialization is not assured, and cost delay is desirable, provisional applications will be preferred. This scenario is common for biotechnology.
- For discrete, complete inventions, ready for market, where patent issuance is desired promptly, it will still be best to file a regular application. This scenario is more likely for electronics and mechanical inventions.

The specific strategies will differ for corporations, research institutions, and individuals. But the provisional filing system will no doubt become an integral part of any comprehensive strategy for protecting intellectual property. ■

ENDNOTES

1 The Uruguay Round Agreements Act of 1994 (URAA), P.L. 103-465, codified at 35 U.S.C. § 111(b).

2 "Questions and answers regarding the GATT Uruguay Round and NAFTA changes to U.S. patent law and practice," U.S. Patent and Trademark Office (February 23, 1995), p. 24.

3 35 U.S.C. § 112, ¶1, and § 113.

4 Konkol, "Provisional applications — To file or not to file," Conference on Patent Aspects of GATT, American Bar Association, Arlington, VA, (February 24, 1995).

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VALUING TRADEMARKS, PATENTS AND OTHER INTANGIBLES

Continued From Page 9

THREE CASE STUDIES: MACY'S, WESTERN UNION, KAYSER-ROTH

Macy's, as a major retailer with substantial tangible assets, also has a corporate name, brands and trademark with great value. Because of the complex nature of the debt and the creditor interests, the intellectual property and intangible assets of Macy's became the focus of debate over value — Some creditors wanted minimum value, others maximum value. Multiple CPA firms and valuation firms were hired by various groups. However, no consensus was reached. Finally we were called in. Specifically we were asked to help establish the value of the Macy's name and brands in their current use, to identify other uses and extensions of the brand and the trademarks, to determine the relative strength of these intangible assets, and the market royalty rates for use of these assets, in order to establish value. That value was, in our view, in excess of $400 million.

In the Western Union case, the company was placed in involuntary bankruptcy by various outside groups. As the largest provider of money transfer and credit check services, in the US and foreign markets, Western Union has a very strong family of intangible assets. The intangibles were in fact the key assets: The global Western Union name, was the primary asset, combined with the international agent network. Again, we were called on by the Courts to establish royalty rates and value, as in the Macy's case.

The third example is that of the Wingspread Corporation, in a different situation where the bankruptcy courts were in the process of liquidation of a manufacturing company. Formerly Gulf & Western's Kayser-Roth Division, KR was a long-time manufacturer and marketer of apparel products. As a manufacturing company Wingspread's primary value was in its tangible assets. However, there were key intangibles, including brand names that formerly had great strength and consumer franchises. In addition there was some proprietary technology along with key patents and other operating intangibles.

The exhibit on page 9 illustrates the facts of each of these cases, and shows the differences and similarities among them. These underlying factors vary substantially, but the basic goal in each case was the same — To establish market value.

CONCLUSIONS

This brief overview of intangible assets and intellectual property, and their importance in reorganizations, bankruptcies and business, stresses accurate, market based values. This article is only a summary of a subject that is complex and increasingly important. However, there are half a dozen specific conclusions that we believe are important.

First, the increasing importance to a corporation of intangible assets, intellectual property and intellectual capital cannot be denied.

Secondly, there is increasing recognition by bankruptcy, tax and other courts of both the importance and value of intangible assets.

Third, there is a similar increasing recognition by creditors of the importance and value of these assets.

The fourth conclusion is that there is a new awareness that intangible assets and intellectual property can be valued accurately.

Fifth, these values can range from the hundreds of millions of dollars, as in the case of Macy's, to less than a million dollars in many cases.

The final conclusion is that the overall value of American industry's intangible assets is increasing substantially. Fortune Magazine did not overstate the facts when it concluded that intellectual assets can be worth three times the book value of a corporation's tangible assets. ■

COPYRIGHT REGISTRATION

Continued From Page 11

between competitors—in an employee raiding context or otherwise—liability insurance is generally not invoked. However, if a copyright infringement claim is made with regard to use of a trademark and logo, under most commercial general insurance policies an advertising injury claim may have been deemed made.[21] This may be good or bad from the plaintiff's point of view, but it almost certainly changes the dynamics of litigation. Before, plaintiff may have faced a defendant which had little money, either to defend or to pay out in settlement. Now, plaintiff may face a well-backed defendant but have access to a settlement fund.

Ingrates will have a different motivation regarding settlement in another respect as well. When/if there was little money available to defend or pay in settlement, one of the few options it had of value to a plaintiff was to agree to forebear from acting in a certain way. Now that an insurer is bearing the freight of defense, and will likely pay a substantial percentage of any settlement, the inclination to offer anything other than (largely someone else's) money will be reduced. Thus, before embarking down the road of copyright registration of the logo, know what your client's goal is. Is it to get compensation for wrongs committed and to find a way for defendant to make payment? Is it, on the other hand, to coerce Ingrates to refrain from past and threatened conduct? If the latter, triggering an otherwise dormant insurance defense will probably be unwise.

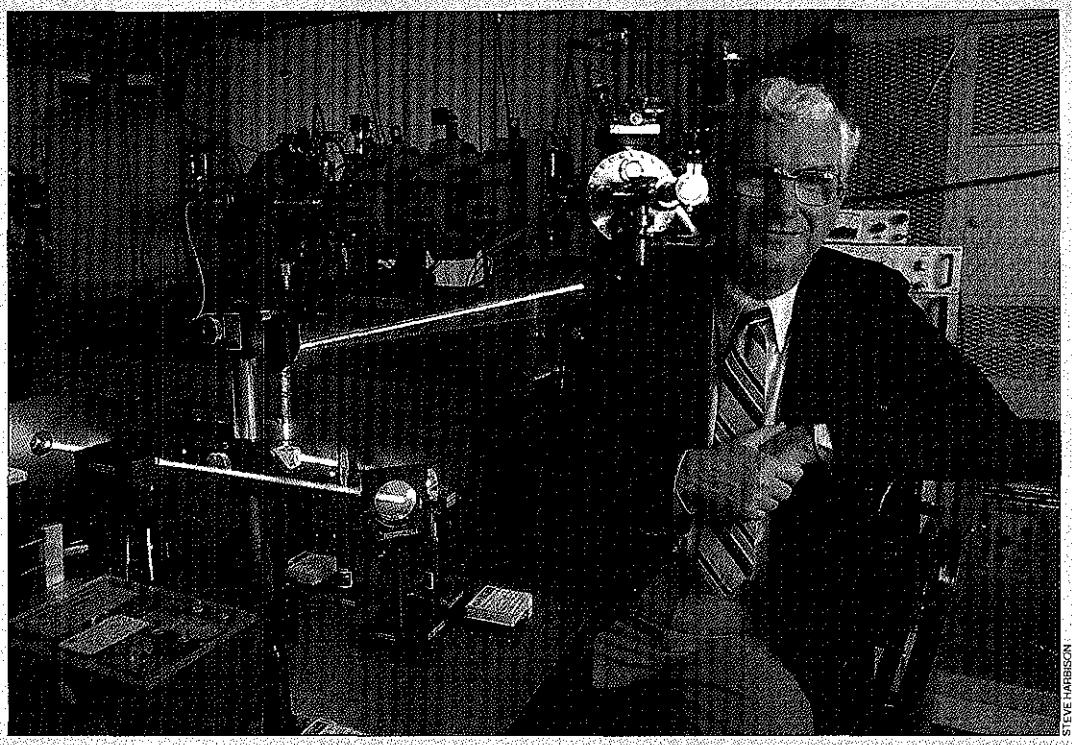
New Remedies

The remedies available in copyright litigation, and the basis for measurement, go beyond the straightforward lost profits analysis. Actual damages at law are ***presumptively*** inadequate for copyright infringement.[22] Therefore, preliminary and permanent injunctive relief at least against further use of the trademark logo should be available. Additionally, an alternative to seeking Trusting Boss's lost profits is to claim an award equal to Ingrates' wrongful profits.[23] However, on either damage basis, Ingrates would seek to apportion the damages to separate out that which was caused by infringement of the copyright and profits lost or earned which are not related to infringing activity.

If all other claims fail to carry a right to recover attorneys' fees, copyright litigation may assist. Under section 505 of the copyright statute, the court has discretion to award reasonable attorneys' fees to the prevailing party.

Finally, there is the unique animal known as "statutory damages." The special value of statutory damages is no proof of causation is required. Not only is copyright infringement a "strict liability" claim; it is also a "strict causation" theory as far as statutory damages go. Section 504© provides that the plaintiff may

NATIONAL LABS,



STEVE HARRISON

AT YOUR SERVICE

by Herb Brody

Forty years ago, World War II came to an end with the use of a terrifying piece of technology from new, top-secret government laboratories. Those facilities, at Oak Ridge, Tenn., Los Alamos, N.M., and a few other sites, have since grown into multipurpose "national labs" that perform wide-ranging R&D. While nuclear weapons still constitute much of their work, these labs are increasingly being enlisted to fight civilian battles. During the '70s the enemies were pollution and the energy shortage. The latest crusade: moving lab technology into the private sector to help restore the country's industrial competitiveness.

Closer collaboration with the private sector is helping to spawn new firms and shore up tired industries

The battle is being waged on several fronts. Patent policies, commonly cited as a major hindrance to commercialization of government technology, are loosening up. The labs now welcome private sponsorship for proprietary product development. A new exchange program lets companies send their technical people to work shoulder to shoulder with their colleagues at national labs, while the government picks up much of the tab. The labs are also being enlisted to apply their resources to aid struggling basic industries, like steel.

Until recently, the government took the position that the fruits of publicly funded R&D should be available equally to everyone. Thus any patent awarded for work at the labs became government property; the government then offered licenses to all interested U.S. companies for a small fee.

But these nonexclusive licenses discourage commercialization. Because the technology produced by the labs is unrefined—typically 90% of product development remains to be done when

Hal Schmidt (above) formed Atom Sciences with patents and consulting from Oak Ridge. "There aren't a lot of barriers now," he says.

The sensor consists of an optical fiber whose tip is coated with a material that glows in the presence of certain other compounds. The light, which varies in brightness with the concentration of the substance being sensed, travels down the fiber to a detector. Kelsius plans to use the technique in a blood-gas monitor; a fiber will be inserted into the bloodstream, and the fluorescence will indicate the levels of oxygen, carbon dioxide, and pH, says president Jay Schwalde.

Radtech (Albuquerque), a Los Alamos spinoff, is developing systems that use radio-frequency electrical current to heat and thus reshape the cornea, correcting visual defects. The company aims for a one-hour outpatient procedure that is simpler, cheaper, and less risky than the present surgical alternatives.

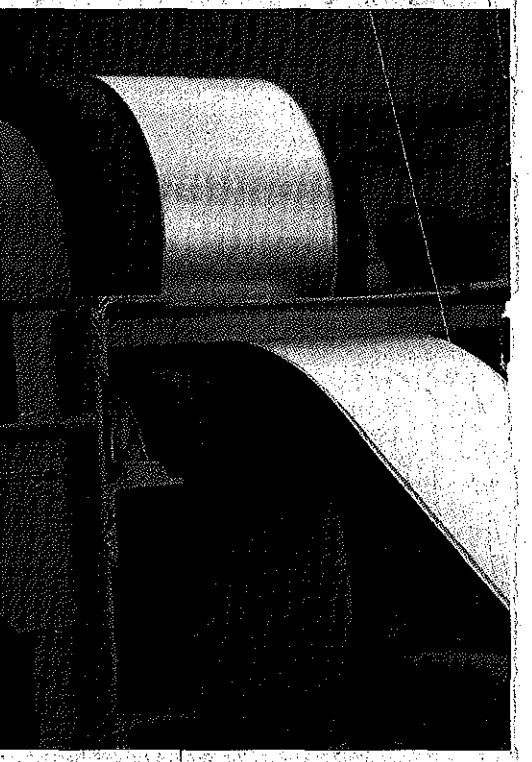
Consulting by lab staff is another important way to get know-how into industry. In the past, the national labs had discouraged—or prohibited—scientists from marketing the expertise they gained from government work. This restriction made it difficult, if not impossible, for would-be entrepreneurs to use laboratory scientists' skills. But more liberal policies have permitted the start-up of firms like Atom Sciences (Oak Ridge). The company aims to commercialize an ultrasensitive measurement system that uses precisely tuned lasers to ionize and then count the atoms in gaseous or solid samples. As little as 0.1 part per billion is detectable, and the system works on any element for which proper laser wavelengths are available, says cofounder Hal Schmidt.

The laser technique was invented several years ago by Oak Ridge scientist Samuel Hurst. While remaining on the lab staff, Hurst has been permitted to become a cofounder and vice-president of Atom Sciences, as well as a consultant to the firm—all capacities that had been off limits for lab staff. "There aren't a lot of barriers now" to such involvement, says Schmidt, recalling the stiff opposition he met in 1960 when he and colleagues started Ortec, a maker of nuclear particle detectors. Hurst concurs: "There is no longer a perception that the entrepreneurial process is a conflict of interest."

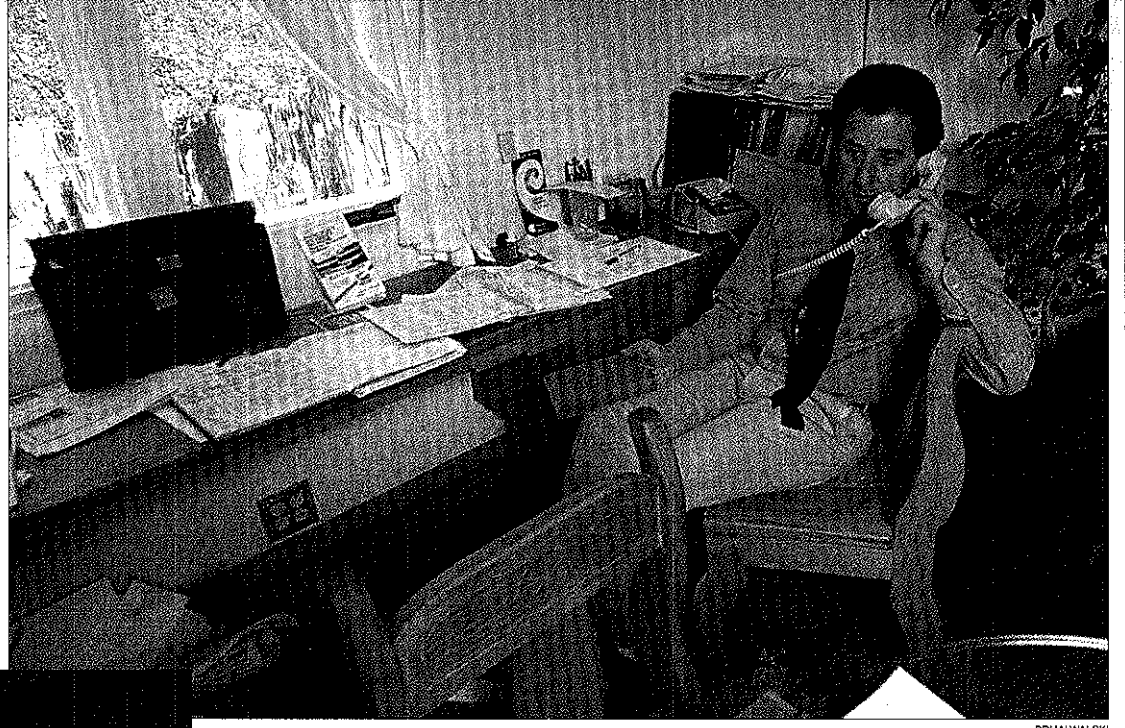
The labs are also more willing now to grant leaves of absence. Amtech, for example, was started locally by five scientists on two-year leaves from the Los Alamos lab. The company has acquired a remote identification-tag technology that the lab had developed for the Department of Agriculture. The tags are read from a distance by microwaves; an electronic circuit in the tag alters the reflected microwave beam in an easily detected way. DOA's goal was a label for diseased cattle that would keep them out of the slaughterhouse. But the principal application Amtech sees, according to R&D vice-president Jerry Landt, is keeping tabs on the contents of railroad cars—for example, making sure that all the cars in a single-commodity "unit train" stay together.

Although each national lab is changing, none has pursued technology transfer as aggressively over the past year as Oak Ridge. The sprawling facility at the edge of the Smoky Mountains in eastern Tennessee is setting the pace for the others in the national lab archipelago. This leadership dates from April 1984, when the contract for running Oak Ridge went from Union Carbide to Martin Marietta; the aerospace company beat out competitors Rockwell and

The business community is gradually becoming aware of the national laboratories' resources







BRIAN WALSKI



DAVE VAN DEVEER

Sandia's Stromberg (left) says companies now "realize it's worth bothering" to work with national labs. The ailing steel industry looks to the future by collaborating with the labs in developing radical steel-making methods, says National Steel's Dietz (above). Venture capitalist Silver (top) struck an unusual deal: His new company hired Los Alamos to develop a marketable product.

Westinghouse with a bid that heavily emphasized industrial participation and strengthening the local economy.

"We proposed doing business in a new and different way," says Carpenter at Martin Marietta Energy Systems, the subsidiary formed to handle the lab contract. For example, Martin Marietta has asked DOE for ownership of all patents the company deems to be of commercial potential—an "advance waiver of title" that would let Martin Marietta act with autonomy. As owner of the technologies devised at Oak Ridge, the company would grant other firms exclusive licenses to bring the inventions to market. Although DOE has not yet granted this waiver, Martin Marietta has begun negotiating license agreements with other companies in anticipation. "When the word comes, we'll be ready to go," says Carpenter. "We expect to have some home runs."

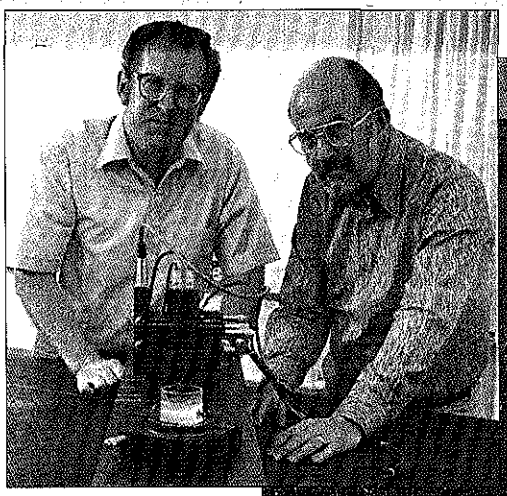
Martin Marietta also strongly encourages the Oak Ridge technical staff to serve as consultants—to "get our smarts out into the private sector," as Carpenter puts it. In contrast, Union Carbide had put a ceiling on how much a lab scientist was allowed to earn on the outside; some other national labs, particularly Sandia, continue to enforce tight restrictions on off-hours consulting.

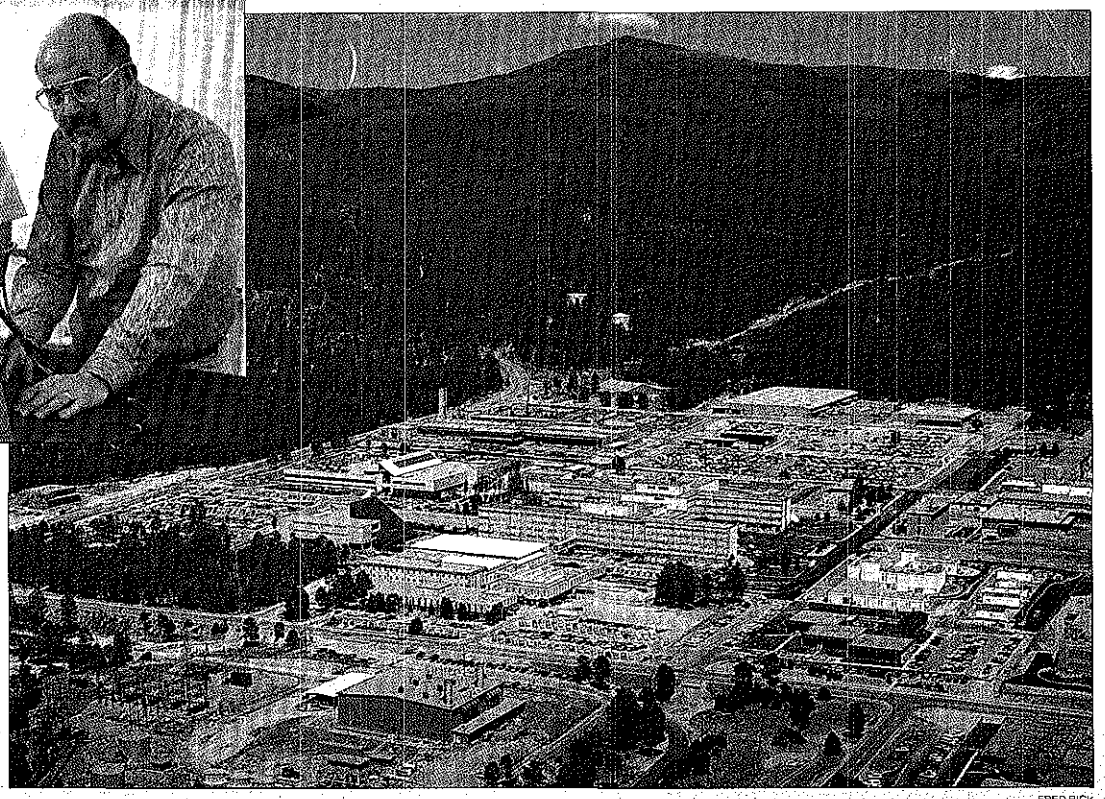
In another shift, Oak Ridge now welcomes private sponsorship of proprietary R&D. A number of companies, including Cabot (Boston), Homogeneous Metals (Clayville, N.Y.), and Universal Cyclops (Bridgeville, Pa.), are paying the lab to develop a new class of alloys with a unique property. Unlike most metals, which get weaker as they heat up, these "ordered intermetallic alloys," such as nickel aluminides, get stronger. This property is especially useful for engines, which operate most efficiently at higher temperatures. Present nickel aluminides are barred from structural use by their brittleness. Oak Ridge is working on ways to increase ductility and has obtained dramatic improvements by adding small amounts of other materials, such as boron.

Martin Marietta has also made a significant commitment to accelerating the growth of the local economy, having allocated 10% of its annual contract fee (for running the lab) to launching new companies. (The fee ranges from $5 million to $20 million, depending on Martin Marietta's performance.) In addition, the company has promised to build a 290-acre industrial park near the lab. The first tenant will be the Tennessee Innovation Center, a new subsidiary that will invest in and "incubate" high tech start-ups. The center is co-owned by Tran Tech Systems (Salt Lake City), which runs the similar Utah Innovation Center.

The Tennessee Innovation Center, a for-profit organization, identifies promising technologies at the national lab and "does everything necessary to make them commercially successful," says vice-president Melvin E. Koons. The center makes equity investments, typically of $50,000–$150,000, for start-ups that satisfy several key requirements—a product or service on the cutting edge of technology, potential for generating revenues of $7–10 million in 5–8 years, and a promise to locate in Oak Ridge.

The center tries to find commercial uses for inventions geared to specific government purposes. For example, a new lead-iron phosphate glass was de-





Los Alamos scientists Charles Gregg (left) and Gary Salzman are building a commercial prototype of their rapid-diagnosis system with private funding. Aerial view shows the lab's main technical area.

FRED RICK

for encapsulating nuclear waste. It turns out that the glass has some unusual properties that allow it to be poured as a liquid into precisely shaped molds. An exciting possibility is the direct casting of lenses, eliminating much of the expensive grinding and polishing needed for ordinary glass. The center hopes to invest in a start-up to explore further the material's commercial potential.

Despite all these efforts to make the national laboratories more relevant to industry, the labs are still largely cut off from industry scientists. DOE is seeking to remedy this isolation with a new lab/industry exchange program. Technical staff from interested companies—U.S. or foreign—will be able to spend a year working at a national lab, with the government paying part of their salaries and expenses. The program's $600,000 budget for this fiscal year should pay for 20–30 scientists, says Richard Stephens, director of university and industry programs in DOE's energy research office.

But whose agenda will the visiting scientist follow—the company's or the lab's? Stephens emphasizes that work should benefit both. "We don't want simply to augment a company's R&D," he says. "There should be a mutual interest."

The new industrial orientation of the national labs is not without its critics. The fostering of spinoff companies, for example, is seen by some as a potential distraction. Examples like Mesa Diagnostics at Los Alamos could tempt scientists to "think more of possible commercialization than of the value of their work to the government," says Everet Beckner, vice-president for energy programs at Sandia Corp., the AT&T subsidiary that runs Sandia National Labs (Albuquerque).

For instance, an entrepreneurially minded scientist may devote less attention to work on classified projects because there is less potential for commercial spinoff, says Frank Huband, head of technology policy at the National Science Foundation. And he warns that a "Russian farm" mentality could arise at the labs. In the Soviet Union, farmers are permitted to work a small private lot for profit; but a frequent result is that the farmers focus their energy and ingenuity on making the private lot more productive, while giving only minimal attention to the collective land.

In addition, some argue that spinning off new companies is an inefficient way for a lab to help the economy. "People hear that small companies are the biggest job producers, which is true, and they twist that into the false notion that *start-ups* are the biggest job producers," says Robert P. Stromberg, manager of technology transfer at Sandia. Most new companies don't survive long enough to provide many jobs, he says. Not surprisingly, then, much of Sandia's technology transfer involves established firms, such as large oil and gas companies.

One effective way to exploit national lab R&D arose informally, well before the current programs were conceived, with the Federal Laboratory Consortium (FLC). Over 100 labs, including the eight national labs, belong to what chairman Eugene Stark of Los Alamos calls an "organized old-boy network." A company in need of technical information or assistance contacts one of four regional coordinators, who check to see whether any federal lab is working on the topic. Legislation now pending would make FLC an officially recognized (and funded) organization, probably as an arm of NSF. Such a move would be a boon to technology transfer because "the FLC guys won't have to spend all their time begging for money," says one congressional staffer.

Thanks to the new programs and FLC's persistent efforts, industry is catching on that the national labs have turned a new leaf. "Companies are realizing that it's worth bothering" to do business with the labs, says Sandia's Stromberg. For many years, says Stark at Los Alamos, the labs turned down more requests for visits from the Japanese than they received from U.S. companies. That's no longer true. And "the companies involved now," he says, "are skimming the cream."

Herb Brody is a senior editor of HIGH TECHNOLOGY.

For further information see **RESOURCES** *on page 72.*

therefore contributing insufficiently to the national good. The Packard panel recommended that the size of each lab be "allowed to increase or decrease (to zero if necessary) depending on mission requirements," adding that "preservation of the laboratory is *not* a mission."

A direct outgrowth of the report, and a striking example of how the labs can be channeled to industry's service, is the "steel initiative." The plan is to use the potent scientific and engineering talents of the national labs to perform basic research that the ailing steel companies cannot fund themselves.

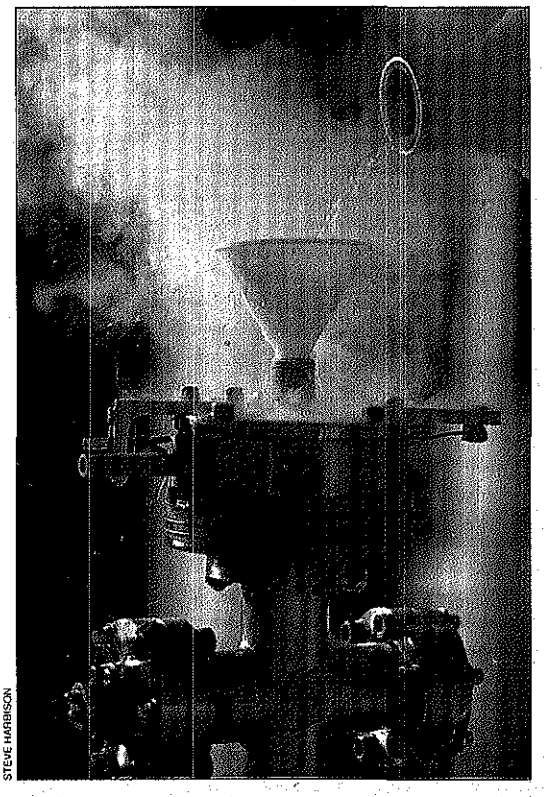
Because of financial hardships, steel company R&D is "typically geared for results in six months to a year," explains John Roberts, associate director of Argonne National Laboratory (Argonne, Ill.), which will do much of the work. The companies recognize the magnitude of their plight. The steel initiative will look 10–15 years into the future, says Roberts; it is to be a collaborative project in which steel companies like U.S. Steel, Bethlehem, National, Armco, and LTV will send their scientists to work in teams with the lab scientists to solve problems jointly agreed upon. "Incremental improvements aren't enough" to restore the industry's badly eroded competitive position, says Reginald Dietz, vice-president for research at National Steel (Weirton, W.V.). "We're going after 'leapfrog' technology that will put us a couple of steps ahead." The labs will work not on proprietary projects but on generic technologies that the entire industry should share.

One thrust of the program will be to find new ways to convert iron ore into liquid metal, bypassing the expensive coking ovens and blast furnaces now used. Another focus will be on casting the liquid metal into pieces close to the dimensions of the final product. One possibility is to use powerful, precisely shaped magnetic fields to confine the molten metal so it can be cast into thin sheets, obviating the need for strip mills to flatten thick billets. The technology loosely resembles that being developed to confine hot hydrogen gas for controlled nuclear fusion. Oak Ridge, which has a long-standing program in fusion, will contribute its magnet expertise to the problem of casting steel.

Shortly after the steel initiative was organized, George A. Keyworth II, Reagan's science advisor, asked the national labs to identify other industries that might benefit from a similar effort. The result was a proposed project for applied research on off-road machinery. In March, Argonne met with several manufacturers to determine which technical issues were appropriate for cooperative action. The resulting list includes advanced engines, electronic controls, and continuously variable transmissions. The lab hopes to begin work in fiscal 1987.

Unlike the steel initiative, the off-road equipment project will aim to develop specific products rather than basic technology. To make this work, the labs will have the liberty—unusual for the government—to keep proprietary secrets. "We won't have to tell Deere what we're doing with Caterpillar," says Argonne's director of technology transfer, Brian Frost.

Increasingly, the national labs are becoming spawning grounds for technology-based start-ups. From Oak Ridge's inception during World War II until 1980, about 20 companies started



STEVE HARRISON

A glass devised to encapsulate nuclear waste may be adapted for lens making by an Oak Ridge start-up.

up with technology developed at the lab, according to technology transfer manager Donald Jared; in the following four years, he says, there were more than 30 such spinoffs.

Some of these new companies are formed under arrangements that would have been unheard of a short time ago. Perhaps the most dramatic example comes from Los Alamos. Scientists there developed a way to identify viruses and bacteria in minutes, rather than the days or weeks needed with existing methods. A laser illuminates the sample with a beam that alternates between two kinds of polarization, and a detector senses the difference in how one polarization is scattered relative to the other. This difference, it turns out, correlates with certain features of the specimen's DNA molecule.

The procedure was invented at Los Alamos in a project funded by the National Institutes of Health. NIH had no interest in commercialization, though, and ceased its support while the device was still far from market readiness. The lab began looking for companies to acquire the technology. When David Silver, a Chicago venture capitalist, came to Los Alamos in 1983 in search of technologies ripe for commercial exploitation, the rapid analyzer stood out.

Silver raised $8.5 million through an R&D limited partnership with Prudential-Bache Securities (New York) and gave half the money to the lab to develop a commercial prototype. The partnership (a tax shelter to encourage investment in technology) acquired full ownership of the technology and then granted an exclusive license to a new company, Mesa Diagnostics (Los Alamos). Mesa is wholly owned by Silver's venture capital firm, the Santa Fe Private Equity Fund.

It is a curious reversal of conventional practice, with the big government lab working for the small company instead of the other way around. The partnership pays the lab for use of its staff during regular hours and hires lab scientists as consultants after hours. "It's cheaper than hiring our own staff," says John Lonergan, Mesa's chief financial officer and vice-president for marketing.

It took two years to put the radical deal together, according to Eugene Stark, the lab's industrial liaison officer. The main hang-up was the patent. DOE had to waive its title to the University of California (which operates the lab), and then the university had to waive its title to Silver's partnership. Eventually, 11 contracts were needed to cement the agreement, according to Silver.

While the Mesa deal is unusual in its magnitude, it is one of a growing number of cases in which a small company is launched with national lab technology that would not have been available under old policies. For example, Keisius (San Carlos, Cal.) bought into the sensor business with an exclusive license to the technology of remote fiber fluorimetry developed at Lawrence Livermore National Lab.



STEVE HARBISON

Martin Marietta's Carpenter, shown with a corrosion-resistant hip replacement, is leading Oak Ridge toward greater commercial relevance.

the government ceases its work—it makes little sense for a company to embark on an expensive, risky product development effort using technology freely available to its competitors. Firms are "reluctant to invest the millions of dollars required to fine-tune inventions without the guarantee that a competitor could be precluded from receiving its own government license," explains Jon Soderstrom, director of of research and technology applications at Oak Ridge National Laboratory.

As a result, "for decades, what we did here didn't matter very much" to the industrial world, says William Carpenter, vice-president for technology applications at Martin Marietta Energy Systems, which operates Oak Ridge for the Department of Energy (DOE). Technology that's available freely to everyone is "of value to no one," he contends.

A wave of patent-policy changes began with the passage of the Bayh-Dole Act of 1980. This act allows small businesses or nonprofit organizations to retain title to inventions conceived during government-sponsored R&D. An amendment to the act, signed last fall, broadens the government's waiver of patent ownership. The new law states that nonprofit institutions (such as universities) that operate government labs under contract can retain title to inventions coming out of these labs. In addition, former Energy Secretary Donald Hodel ordered last February that the patent waiver be extended to cover large, for-profit companies like Martin Marietta, but as of this writing the rule had not taken effect.

The attention recently given to patent policy symbolizes the new concern in Congress and the administration over getting our money's worth out of the national labs. Such concern first became prominent in the Stevenson-Wydler Technology Innovation Act of 1980. The law declares technology transfer to be an official mission of the labs and requires that each lab spend 0.5% of its budget on moving the results of its R&D into industry.

Perhaps more galvanizing than the Stevenson-Wydler Act, however, was the sharply critical 1983 report on the labs by a presidential commission. The panel, chaired by Hewlett-Packard cofounder David Packard, urged greatly increased interaction between government labs and industry in order to make the labs "more responsive to national needs." It accused the labs of working without clear purpose, and

Forum

ECONOMIC PLANNING IN THE 80'S

Reagan's Hidden 'Industrial Policy'

By ROBERT B. REICH

THE 1984 Presidential campaign buried the idea of "industrial policy." Or did it?

Not long ago, several Democratic Presidential aspirants were talking about industrial policy. Although the precise meaning of the term remained elusive, the general idea was that the Government should be more purposeful in easing the transition out of basic industries like steel and textiles into high-tech businesses.

The argument was that without an explicit industrial policy — encouraging our older industries to reduce outmoded capacity and adapt newer technologies, channeling research and development funds to emerging industries and helping workers retrain — the changes would come slower and be more painful, and in the meantime the United States would have lost out to other nations that had made the transition more smoothly (notably, Japan).

The term "industrial policy" has fallen out of fashion, largely because the Democrats lost the election but also because the economic recovery of 1983 and 1984 suggested that there was no problem to begin with. The idea also went against the ideological drift of the times. The thought that Government should take a role in shifting economic resources smacked of central planning, and conjured up all the forbidden "isms." Anyway, how could the Government competently pick winners and losers? Wouldn't the whole program just end up being another trough at which the special interests fed?

It has taken a concerted effort by Ronald Reagan to rehabilitate the idea of industrial policy. To be sure, the term appears nowhere in his oratory. But his major policies are showing that Government can play an active role in transforming the economy from "sunset" industries to "sunrise." His three-step plan is a more ambitious industrial policy than the Democrats ever dreamed of proposing. Consider:



Shrinking basic industry. Standardized goods, such as basic steel, autos, textiles, commodity chemicals and others that rest on mass or large-batch production are particularly vulnerable to price competition. Thus, the easiest way to reduce their size is to increase their price in world markets — making it difficult for them to export and making it relatively easy for foreign producers to threaten them at home. And the fastest way to increase their price is to raise the value of the dollar by running huge budget deficits. Presto: the industries are forced to contract.

The Reagan plan to shrink America's basic industries has been enormously successful. Since 1981, when the value of the dollar began climbing to unprecedented levels as the budget deficit ballooned, some 2 million jobs have been lost in old-line manufacturing businesses. Steel, autos and others have been forced to reduce domestic capacity, set up operations abroad (or enter into joint ventures with foreign producers) and diversify into specialized niches.

Finishing off basic industry. Once they have been crippled by international trade, it is a relatively small matter to finish off "sunset" industries altogether. This would be accomplished with the passage of a new tax-simplification plan, which as proposed would eliminate any lingering incentives to invest in America's older industrial base.

The Reagan tax-revision proposal would end the investment tax credit, which has been worth approximately $25 billion a year — particularly to older, capital-intensive industries in need of modernization. The proposal also would reduce the pace at which plant and machinery could be depreciated; the present accelerated schedule has resulted in billions of extra dollars being channeled into basic industries. All told, the Reagan tax plan would rescind more than $200 billion of such tax benefits, which have proved critical to "smokestack" America.

Promoting high tech. America's emerging industries — advanced computers, lasers, fiber-optics, new materials, biotechnologies and so on — will benefit both from the lower rates in the new tax proposal and from its retention of the tax credit for research and development.

BUT more important to high tech is President Reagan's military buildup. Since 1981, about $400 billion has been channeled into new weapons — most depending on advanced technologies. This demand for state-of-the-art products has pulled these emerging industries down the "learning curve" to the point where commercial spinoffs are attainable.

Mr. Reagan would like another $400 billion for advanced weapons between now and 1990. At the same time, well over 60 percent of all the research and development funds for America's high-technology industries is coming directly from the Pentagon. President Reagan's "Star Wars" proposal would channel an additional $26 billion into these future technologies over the next five years.

Viewed as a whole, Mr. Reagan's budget deficit, tax plan and military buildup comprise an extraordinarily ambitious plan for shifting America's industrial base. This is industrial policy with a vengeance. But because Mr. Reagan is who he is — avowed defender of the free market from the depradations of big government — there are no voices to his right, vigorously denouncing Washington's vulgar intrusion into the temple of the marketplace. As only Richard Nixon could open relations with Peking, so only Ronald Reagan can make economic planning respectable.

But the President's industrial policy may be too ambitious. The collapse of America's basic industries is throwing off far more blue-collar workers than can be reabsorbed into other high-paying jobs, even during the recent years of record growth. What happens at the next downturn?

And our limited supply of scientists and engineers is straining high-tech industries' capacity to meet military needs while staying commercially competitive. What's missing from President Reagan's industrial policy is a plan for helping our work force adapt — through retraining, relocation and education and day care for the kids while the two careers adjust.

The plan is also risky. Such a broad leap from older industries to new carries a danger that the new ones will not be able to sustain our standard of living on their own. Even at best, how many good jobs will high tech deliver? And what happens if the bottom falls out of these fashionable technologies, as seems to be happening to personal computers of late?

A more gradual, responsible industrial policy would not force us to move so convulsively from "smokestack" to high tech but would help put high technologies into our older industries — and simultaneously upgrade workers' skills to handle the new manufacturing processes — to render the entire industrial base more competitive.

Ronald Reagan's industrial policy is a major experiment in economic planning. Ironically, it may yet prove the wisdom of Mr. Reagan's own rhetoric — that it cannot be done, at least not with such a heavy hand. ■

Robert B. Reich, professor at Harvard University's John F. Kennedy School of Government, was an early advocate of industrial policy. He is most recently co-author of "New Deals: The Chrysler Revival and the American System."

WASH. POST 7/21/85

State Officials Admonished To Aid Their Entrepreneurs

Some Experts Favor Cutting Tax Rates and Easing Regulations

By David S. Broder
Washington Post Staff Writer

MENLO PARK, CALIF.—State officials were told last week that the best thing they can do to guarantee a healthy economic future is to smooth the way for the would-be businessmen around them.

"Governors should make heros out of entrepreneurs," Los Angeles businessman Donald Gevirtz said at a conference here on state economic development strategies. "If they make a technological breakthrough or get 30 percent growth for five years, bring 'em to the statehouse and give 'em a medal."

Forget about chasing General Motors Corp.'s Saturn project, economists told the state officials, referring to the competition to land the big auto company's newest operation. Don't get into bidding wars for high-tech plants. It's far better to cut tax rates and simplify licensing and regulatory systems to reduce the "barriers" to aspiring businessmen and risk-taking investors, they were told.

The advice was greeted with a mixture of skepticism and enthusiasm from the 140 state government officials who attended the symposium on "development policy in an era of innovation and change."

The project, financed by a Commerce Department grant, was a joint effort of the Council of State Planning Agencies (CSPA) and SRI International, a consulting group headquartered here.

The officials from 27 states, the province of Ontario, and West Germany came here hoping for tips on ways to promote new jobs—a growing preoccupation of state and local governments in this era of declining factory and farm employment.

The message they heard had clear echos of the Reagan administration's supply-side economic philosophy. But it challenged much of the conventional wisdom on development strategies.

On the first evening, economic consultant Roger Vaughan told them that they should shift their focus from the creation of jobs to the creation of wealth—and realize that the entrepreneur who starts a new business is the key to the economic future of their states.

In the handbook Vaughan and his partner, Robert Pollard, wrote with CSPA project director Barbara Dyer for the conference, they said states should worry less about their unemployment statistics than the rate of new business formations. Half the jobs created each year, they said, come from self-employment or the formation of new businesses.

A parade of speakers cast doubt on some of the most popular economic development schemes—including recruiting out-of-state companies by granting tax concessions or competing with multimillion-dollar incentive packages to be the site of something like GM's Saturn facilities.

Far better, they said, to be sure that the tax system rewards risk-takers who start new companies and that regulations affecting them and their investors make it easy for them to expand.

The conference keynote speakers said there is a role for government investments in education, training and public works. But even there, they recommended entrepreneurial approaches. Force schools and colleges to compete, Vaughan said, by giving vouchers to would-be students and letting them shop in the education marketplace.

The strong emphasis on a free-market approach to job-creation was endorsed by the governor who helped put the conference together, New Hampshire Republican John H. Sununu.

Sununu, who started his own engineering company in college and had 130 employees by the time he graduated, told the conferees that states "are just papering over their problems" if they don't "clean out the negatives" in their tax and regulatory systems that inhibit formation of new businesses.

Arizona Gov. Bruce E. Babbitt (D), the cosponsor of the session, expressed general support for the entrepreneurial approach but said that it "leaves us with the excruciating task of dealing with the losers and those displaced" by economic change.

Assistant Secretary of Commerce Bruce D. Merrifield, said the Reagan administration's policies had helped create "a historically unprecedented climate for entrepreneurship" and urged the state officials to remember that "when government gets into the picture, it messes it up."

But others warned that the entrepreneurial strategy was no panacea for either rapidly growing states or those with declining older industries. Beth S. Jarman, executive director of the Arizona Department of Commerce, said that selling Babbitt's program for spurring new business "is the toughest political job I've ever done . . . . It's very difficult to build an entrepreneurial constituency, because they don't want to join anything," she said.

George D. Oriston, a Nevada economic development official, said the emphasis on entrepreneurship "leaves me empty . . . . Our state is going for quality of growth, and there are a lot of new firms we're going to turn down."

Jack Russell, a Michigan official, said conferees were "too easily seduced" by the notion of thousands of new businesses springing up and said his state could ignore the future of the Big Three auto companies only at its peril.

Robert Benko, an aide to Pennsylvania Gov. Richard L. Thornburgh (R), said, "This conference has persuaded me that entrepreneurs have become another interest group."

Pat. & Tm. Budget

(Continued from page 1)

rather than S. 866, which is the bill introduced in the Senate at the request of the Administration.

Access To Libraries

IPO also strongly supported a provision in the House-passed bill prohibiting the Office from charging the public to inspect records in the public patent and trademark search libraries. The Office earlier had proposed fees of at least $40 an hour for members of the public to search trademark records in automated form. At the same time the Office proposed to eliminate the paper trademark files. Officials said that eventually even higher fees would be instituted in the patent search library, and all paper patent files would be eliminated.

Banner testified, "Unfortunately the Office is taking automation of the search files as an excuse to charge the public for access to information in the patent and trademark search libraries...." He noted that these records have been available free of charge since the beginning of the Federal patent system in 1790 and the Federal trademark system in 1870. During the Senate hearing Chairman Mathias stated he could think of no direct precedent anywhere in the government for the Office's plan for charging the public for access to official records.

Automation

The authorization bill was amended in the House in response to an April 1985 report by the General Accounting Office entitled "Patent and Trademark Office Needs to Better Manage Automation of its Trademark Operations." GAO found that in attempting to automate its trademark operations, the Patent and Trademark Office failed to (1) thoroughly analyze user needs, (2) adequately assess the cost-effectiveness of its systems, (3) properly manage three exchange agreement contracts, or (4) fully test one of its systems before accepting it from the contractor.

While IPO did not testify on everything in the GAO report, IPO did oppose the exchange agreement contracts. IPO condemned the policy of entering exchange agreements with private companies restricting access by the public to Patent and Trademark Office records. According to IPO's statement, "such agreements amount to giving private companies monopoly rights in the dissemination of public information."



Rep. Mike DeWine (R-OH) questions witnesses at House Authorization hearing.

As passed by the House, H.R. 2434 includes provisions prohibiting fee revenue from being used for automatic data processing equipment or services and prohibiting the Office from using exchange agreements to obtain items or services relating to automatic data processing. IPO testified in favor of these provisions during the Senate hearing.

Outlook For Bill

At the beginning of the August Congressional recess, the Senate Judiciary Subcommittee was considering the House-passed bill in light of testimony presented at the Senate hearing. Confusion existed over the effect of the bill on the Office's automation projects. Patent and Trademark Office officials claimed the bill could seriously disrupt funding for automation. IPO maintained, however, that the bill would not have any major effect on the amount of money available for automation. With one small exception, the Office's budget contained enough public funds to cover all of the items, including automation programs, that are earmarked by H.R. 2434 for support by public funding.

After funding for the PTO is authorized, funds must be appropriated in an appropriations act. It was unclear in early August whether the Appropriations Committees will be willing to appropriate the extra money authorized by H.R. 2434 if the bill passes the Senate and becomes law.

Copies of IPO's testimony may be obtained from the IPO office.

IPO Urges Rewrite of Federal Labs Bills

IPO has recommended modifying or scrapping portions of three bills which have been introduced in Congress to encourage Federal laboratories to promote commercialization of inventions made by government employees. IPO's recommendations were made in a statement filed with a subcommittee of the House Science and Technology committee chaired by Rep. Doug Walgren (D-PA).

The bills as introduced would give Federal employee inventors at least 15 percent of the royalties when government-owned inventions are licensed to the private sector. IPO expressed strong opposition to the royalty sharing requirement. IPO said experience in the private sector shows inflexible royalty sharing schemes impair productivity in research labs. IPO believes the legislation would impair productivity in Federal laboratories as well.

IPO believes it is a mistake to forge a rigid link between commercial success

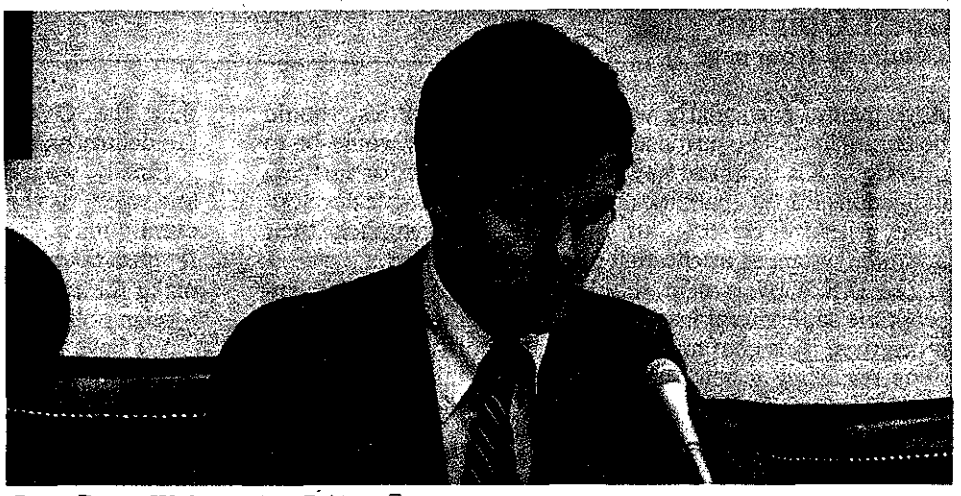
of inventions and compensation for inventors. Managers need discretion to decide whether to pay bonuses to inventors. Often the success of an invention depends upon the creative efforts of many other individuals besides inventors—for example, research directors, production engineers, and marketing personnel.

IPO also expressed concern that enactment of the proposed legislation would be viewed as a precedent justifying federal legislation covering private sector employees. American industry strongly opposes any legislation which would have the Federal government tell private companies how to compensate their inventors.

IPO emphasized that it supports the basic objective of the legislation of encouraging Federal laboratories to enter cooperative research and development arrangements with state and local governments, universities, and private companies. IPO's statement said, "It is important for the laboratories to have adequate authority to enter into cooperative research and development arrangements with other organizations...."

One of the bills pending in the House is H.R. 695, the "Federal Laboratory Technology Utilization Act of 1985", sponsored by House Minority Leader Bob Michel. An identical bill, S. 65, has been introduced in the Senate by Majority Leader Bob Dole. A somewhat different bill, H.R. 1572, has been proposed by Rep. Stan Lundine (D-NY).

According to the drafters of the



Rep. Doug Walgren (D-PA).

royalty-sharing provision, government employees must be given a "piece of the action" in order to provide incentives for them to cooperate with the managers of Federal laboratories in promoting commercialization. IPO noted, however, that managers in the Federal government already have authority to give cash awards up to $25,000 to government inventors. Some agencies, including NASA, have broader discretionary authority to reward not only inventors but other employees for scientific or technical contributions. IPO suggested that if government employees need more financial incentives, Congress should consider legislation similar to the NASA Act.

IPO also commented on two other provisions which are in H.R. 695 and S. 65, but not H.R. 1572. One provision gives government employees an exemption from key portions of the Federal conflict of interest laws. IPO said, "We can see no reason for exempting inventors from the conflict of interest rules which apply to other government employees."

The other provision gives government employees 100 percent ownership of inventions in certain situations where they cannot obtain ownership under Executive Order 10,096, which governs ownership today. According to IPO, the bills would give government employees complete ownership of inventions made entirely at taxpayer expense even when the inventions have immediate commercial value, if agencies do not file patent applications.

Congressman Walgren's subcommittee is expected to mark up the legislation in the fall.

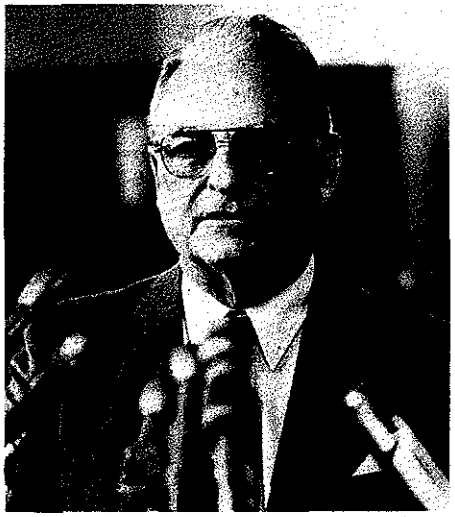
Quigg Nominated For Commissioner of Patents & Trademarks

Donald J. Quigg has been nominated by President Reagan to be the next U.S. Commissioner of Patents and Trademarks. The nomination was sent to the Senate on July 26.

Quigg has been Deputy Commissioner at the Patent and Trademark Office since 1981. He has been serving as acting Commissioner since Gerald J. Mossinghoff resigned in January 1985 to become president of the Pharmaceutical Manufacturers Association.

Before Quigg came to Washington he was chief patent counsel for Phillips Petroleum Company in Bartlesville, Oklahoma. He began his career with Phillips in 1946.

During Quigg's tenture as chief patent counsel at Phillips, the company



Commissioner-designate Quigg.

obtained the most patents of any company in the petroleum industry. In one three year period, the licensing income received by Phillips exceeded the company's research and development expenditures.

Quigg received the Silver Star as a member of the U.S. Army field artillery during World War II. He holds a Bachelor of Science Degree in Business Administration from the University of Oklahoma and a Juris Doctor from the University of Missouri.

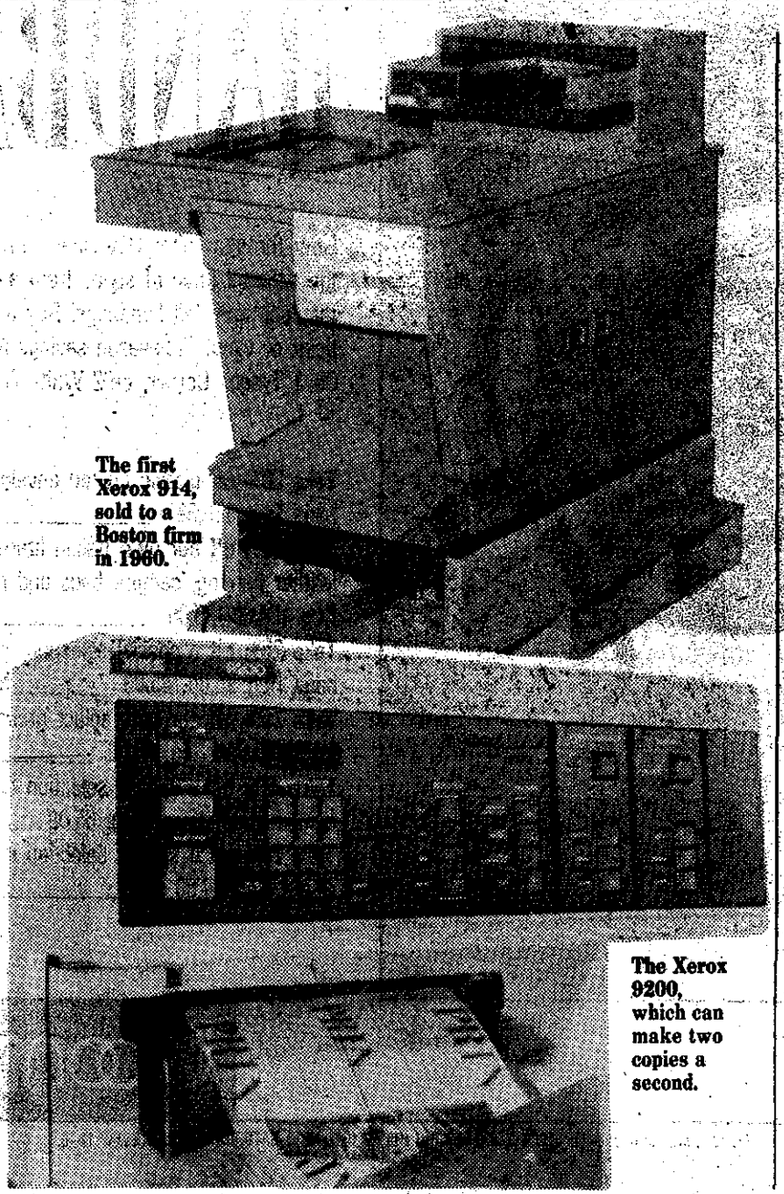
Quigg is a former member of IPO's Board of Directors. He was also active in several other associations concerned with patent and legal matters.

His Senate confirmation hearing is expected to be held in September.

The Deans of Duplication

Celebrating 25 Years Of a Xerox Original

By Michael Kernan
Washington Post Staff Writer



The first Xerox 914, sold to a Boston firm in 1960.

The Xerox 9200, which can make two copies a second.

You never saw so many blue suits.

The Xerox 914 Copier, the original, is 25 years old, and yesterday Xerox Corp. gave a 914 to the Smithsonian.

It wasn't your usual executive lunch: The room was filled with the very men who put that pioneering machine together, designed it, and manufactured and sold it.

This is one of the more hair-raising sagas of American industry, about a modest firm in Rochester, N.Y., named the Haloid Co., with 500 employes and a president named Joseph C. Wilson who was willing to spend—in perfecting and producing an invention that nobody knew for sure was really wanted—more than the firm made for an entire decade.

In the most literal sense, he bet his company on it.

"Joe Wilson found himself," said

See XEROX, B2, Col. 3

Adm. Inman In Command At Consortium

MCC Research Team Ready for Business

By Michael Schrage
Washington Post Staff Writer

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"Much to my surprise, I haven't needed to adapt my management style at all," said Inman, with a disarming deployment of his gap-toothed grin. "The management skills I've acquired through trial and painful error are serving me well here."

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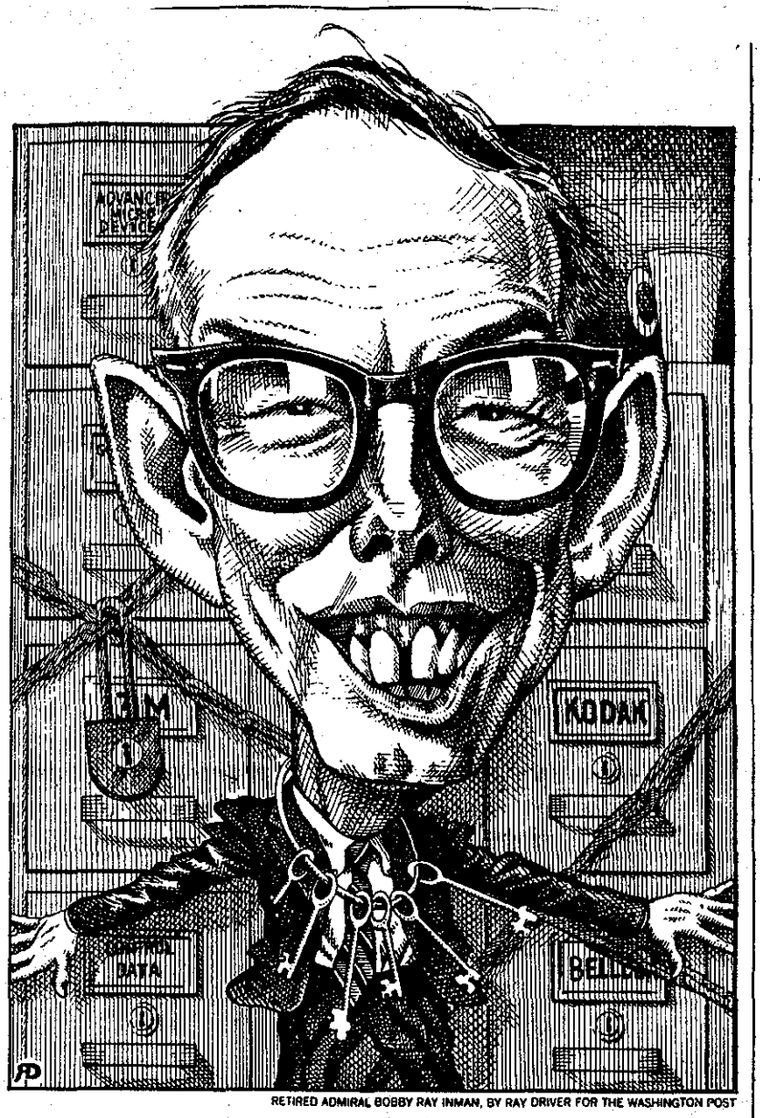

RETIRED ADMIRAL BOBBY RAY INMAN, BY RAY DRIVER FOR THE WASHINGTON POST

In many respects, MCC is the forerunner and model of what may prove to be the next generation of industry research and development—a cooperative of companies that share first-level research and development efforts that later will become proprietary products. MCC has about 300 employes and an annual budget approaching $100 million but has not disclosed what is being spent on specific programs.

"Mid- and small-sized companies simply don't sustain long and broad-scaled research in an industry where the prospect for technological surprise is high," Inman said.

Inman, who had retired from public service in July 1982, was assiduously wooed by Norris and other MCC members. He formally came on board in January 1983.

A superb politician with an ability to implement an agenda, he surprised and annoyed many of the members of his board by consistently rejecting many of the researchers initially offered up by the member companies as simply not good enough.

Moreover, although MCC's seven research programs—which range from semiconductor packaging to new computer architectures to parallel processing—originally were supposed to be run by scientists from MCC member companies, it turns out that six of the seven are independent and highly re-

See MCC, D8, Col. 1

The Washington Post 8-21-85

Copying Success

XEROX, From B1

David T. Kearns, the present chairman of Xerox, "in the position of having spent money he didn't have to build a machine he couldn't sell."

He did, however, think of a way to sell it. And created a $27 billion industry. And also made it economically feasible, for the first time in history, to print, just like that, a single copy of anything you wanted on paper.

And when Kearns called the copier "a marvelously free expression of a free society," he wasn't just waving his teeth. For, as one Xerox veteran pointed out, in the Soviet Union, where every sheet from every copier has to be logged, tagged and accounted for, underground literature is reproduced with carbon paper . . .

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In the beginning, there was this inventor.

His name was Chester Carlson, and he was a 29-year-old patent attorney who spent his weekends in a small room over a bar in Astoria, on Long Island, trying to build a copying machine. It was 1938.

Since the word xerography didn't exist, Carlson went to the public library and looked up articles on the ways that light affects matter. Seeking techniques that the big photographic companies probably wouldn't have bothered to explore, he hit upon electrostatics as a means of picking up an image and putting it down somewhere else.

But he was no good at lab work. How do you spread melted sulfur on a metal plate while preventing the substance from bursting into flame? Once you get it there, how do you give it an electric charge? Things like that.

Carlson's solution was radically simple: From a job ad in a technical magazine, he hired an unemployed physicist named Otto Kornei to work as long as Carlson could afford him. Within three weeks, on Oct. 22, 1938, Kornei had produced a glass plate with "10-22-38 Astoria" inked on it. He rubbed it with a silk handkerchief, giving it an electrostatic charge, then shone light through it.

The light neutralized the charge except where the inked marks were. When Kornei dusted the plate with powder, grains stuck to the charged areas, and when he laid waxed paper on the plate, the powdered image was transferred.

That historic device is already at the Smithsonian.

Other people had made paper transfers, of course. There were the wet-paper techniques—Thermofax by 3M, Verifax by Kodak—and there was carbon paper, which smudged your fingers. The great thing about Carlson's copies was that they were on ordinary paper . . . and they were dry. That's where the word Xerox comes from, in fact: the Greek *xeros* means dry.



The original Xerox machine and some of its developers, 25 years later.

Carbon paper, the workhorse of the office, was about to become—like the horse—obsolete. But it would take awhile.

For inventor Carlson, all thumbs in the lab, also was no salesman.

"He never came directly to Haloid," said Horace W. Becker, the engineer who helped bring the idea to the production line. "Tried to sell it to several large corporations, but they weren't interested. Then finally, the Haloid people saw something about it in a magazine, and in 1944 Wilson bought limited rights in it."

What did Haloid, a manufacturer of photocopy paper with sales of $5 million a year—and particularly Wilson, its driving force—see in a dry-copy machine? This is the fascinating part: Whatever he saw, it wasn't in sharp outline. It was hazy—a potential, a dream, a hunch. Yet Wilson had absolute, total, out-the-window faith in it: a machine that could make clear, dry copies on ordinary paper must be useful to somebody.

"When I got there in 1959," Becker recalled, "Wilson asked me to estimate what it would cost Haloid to produce this machine; he'd never done any market research himself. I gave my estimate, and the room went very quiet. The company had already spent several times earnings on the thing. So they tried to find someone else to build it."

Bell and Howell said the idea would never fly; the image would blur. IBM called for an Arthur D. Little survey. The survey showed that very little copying was done in the American office, not enough to warrant building more than, say, 5,000 machines.

"What they didn't ask," Becker said, "was: 'Why?' "

Why so little copying was done was that wet-sheet copies were a nuisance and cost 19 to 25 cents each.

"What they really researched was the carbon paper market. Nobody was looking at the possibility of copies being made at point of receipt."

Nobody, in other words, realized that the people who received a memo might want to copy it. In those far-off days, offices were tyrannized by the buck slip, a memo with various names on it that was initialed and passed along. A buck slip could take weeks to circulate through a large office staff.

Wilson pressed on. Over 12 years, Haloid spent $75 million to develop the machine, more than the firm had spent on all of its products in its 40-year history, and twice its earnings from all of its operations in sensitized papers.

When at last Wilson had his product ready to sell, he found himself pitted against Kodak's Verifax and 3M's Thermofax, both selling for under $400 and small enough to fit on a desk top. His new machine sold for $29,500 and was as big as a desk, weighing 648 pounds.

Wilson's solution was almost as ingenious as the Xerox machine itself: He offered to lease it for a mere $95 a month, with the first 2,000 copies free and additional copies costing 5 cents each. Plus, he would make repairs himself. Plus, the user could cancel within 15 days.

"Nobody bought it at first," Becker said. "But there weren't many cancellations, and few repairs. It ran pretty good. We could have done a better job if we'd had two more years, but then there wouldn't have been a company anymore."

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In 1960, Haloid Xerox Inc. changed its name to Xerox Corp. and sold its first 914 to Standard Pressed Steel of Boston. From the first day, the machine was mobbed by users. In the first month it made more than 100,000 copies.

Xerox had stumbled on an astonishing fact: A vast, unsuspected market was sitting right under everybody's nose. It was thought that 5,000 machines would saturate the market. Within two years, Xerox had produced twice that many; by the end of the 1960s, production passed 200,000. And copies: Xerox had figured maybe 10,000 copies a month from an average machine. Right from the start, machines were turning out more than 10 times that number. People in offices all over America were lining up to make copies. Some machines made 5,000 copies a day, and 120,000 a month was nothing special.

Even before the company went on the New York Stock Exchange in 1961, some of the faithful had bought stock. But the engineers, as Becker says, though they believed in the product, "saw only the problems; we weren't sure the company knew what it was getting into. The thing wouldn't feed, the motors wouldn't work, the relays didn't relay, and anyway, we were only going to make 5,000 of them."

As everyone knows, the stock split and split and zoomed out of sight. A share of Haloid Xerox bought over the counter in 1959 for about $100 would be worth something like $3,150 today.

Said Becker: "I didn't buy any, but my wife Gloria bought some on her own, without telling me. I'm very polite to her now."

Incidentally, the 914, named for the 9-by-14-inch paper it could take, ran somewhat better than pretty good. "There are still about 1,600 of them flailing away," Becker said. Of course, at seven copies a minute they are a mite slow compared with the 120 copies a minute the Xerox 9200 is capable of churning out; and the gray-scale reproduction has been improved since the 914, as well as paper-handling ability. Today, Xerox copies can be made for 2.5 cents a click. But the 914 is still around.

Paul A. Strassmann, a former Xerox vice president, is considered the philosopher of copying and has written a book about it. "One way of measuring the evolution of mankind," he said, "is through communication. Gutenberg was a watershed in western civilization. He made everybody a reader. Before, only priests and a few others had books. But it didn't come for free; printing was costly. Five hundred years after Gutenberg there were only 200,000 printers in the world.

"The significance of the late Chester Carlson is that he made everybody a printer. He brought printing to the masses, as Gutenberg brought reading. Suddenly you have 20 million printers in the world. This is an enormous democratization. Until recently, information was a privileged possession, but after Carlson—and Wilson's principle of transaction pricing—information becomes a commodity. Xerography makes information a commodity. Suddenly you can buy and sell information."

And the computer, he says, has taken the process one giant step further. In the next stage, Strassmann says, beyond Gutenberg and Carlson, everybody will be an author. The prospect is numbing.

Wall St Journal
7-8-83

FEDERAL AGENCIES with the worst public images are the Labor and Energy departments, according to a Roper public opinion poll. They suffer from public disdain of unions and from high energy prices. But 10 other departments get "favorable" ratings from a majority. A surprise: Highest rated is the Postal Service.

Adm. Inman In Command At Consortium

MCC Research Team Ready for Business

By Michael Schrage
Washington Post Staff Writer

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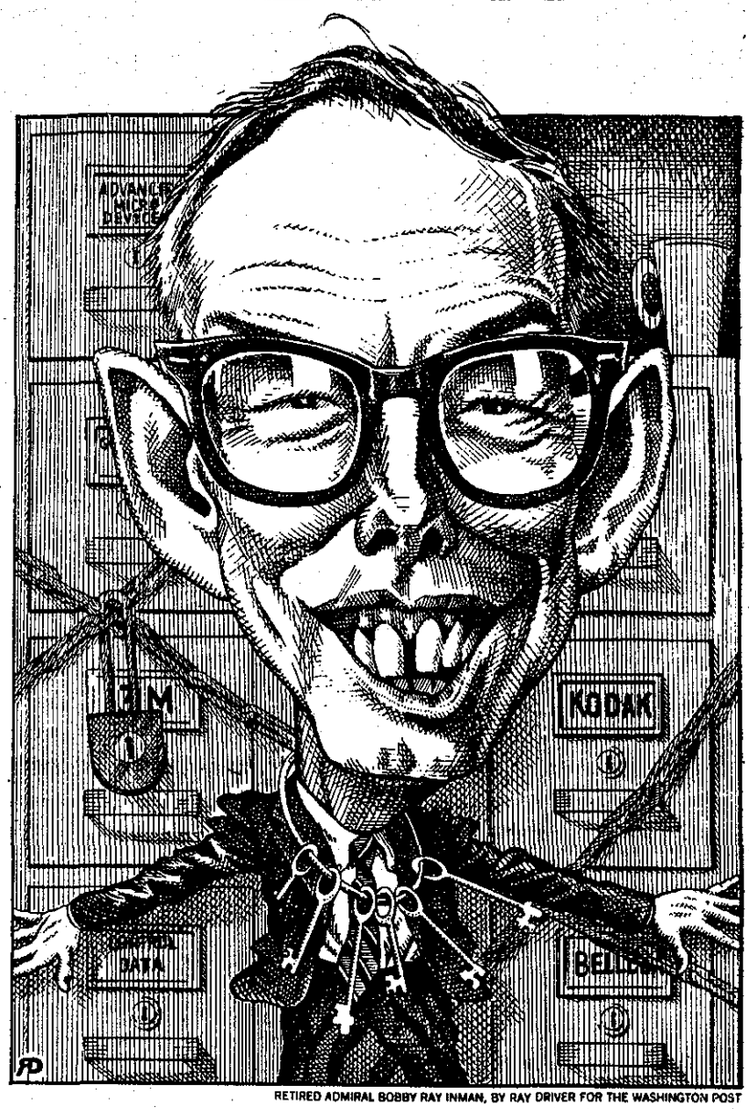

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Moreover, although MCC's seven research programs—which range from semiconductor packaging to new computer architectures to parallel processing—originally were supposed to be run by scientists from MCC member companies, it turns out that six of the seven are independent and highly re-

See MCC, D8, Col. 1

MCC Team 'Right on Schedule'

MCC, From D1

pected scientists individually recruited by Inman himself. Clearly, Inman has not lost his Washington-honed touch for assuring a comfortable level of autonomy.

Flashing the smile, Inman declines to view it that way, saying only that "we've been damn lucky" in getting the people he's recruited.

"I think he's a very effective leader," said MCC board member Samuel H. Fuller, Digital Equipment Corp.'s vice president for research and architecture. "He's strong and outspoken, and when you're trying to get 21 corporations to cooperate on something, that's what you often need to be."

Another board member, who asked not to be identified, asserted that Inman liked to create or impose a consensus rather than seek one. But he conceded that Inman was "very, very effective at managing us and managing our expectations."

Though MCC has been in operation for less than three years and has yet to publish any significant research, it already has captured some of the top researchers in computer science and a reputation as an intellectually exciting place to work. Teams of computer scientists are exploring futuristic forms of computer software that would imbue computers with a "common sense" capability at problem solving, for example. Other specialists are looking at computer-aided approaches to help crowd hundreds of millions of circuits on a silicon chip. Inman unabashedly asserts that MCC "is clearly a winner."

But MCC's member companies and Inman all concede that the real test of the consortium is just now beginning: Will MCC's research and development efforts ultimately translate into innovative products and services that give its members a technical edge in the marketplace?

"We've completed the start-up phase and it's now down to the business of research," said DEC's Fuller. "The hard problem is going to be technology transfer."

"My primary worry is technology transfer," said Inman. "I can't guarantee that all these companies will use these technologies."

In fact, that issue is of such paramount concern that Inman formed an ad hoc committee to force MCC members to address the technology-transfer questions within their own companies.

Even in the fast-paced high-technology industry, effecting a smooth transfer from basic research to prototype to production model has proven to be one of the thorniest problems facing American companies. Academic commentators on industry from Robert Reich to Ezra Vogel all comment that Japanese industry's skills at quickly bringing innovations to market give it a competitive edge.

"There's one resource that's scarce and that's time," said Palle Smidt, MCC's senior vice president of plans and programs. "There's more competition out there now. Revenue life cycles are down, product life cycles are down."

That creates an inherent tension in MCC, Smidt concedes. As computer product life cycles shrink with the pace of technological change, figuring out what constitutes useful long-range research becomes increasingly difficult. When does "long range" research blur into something with immediate commercial possibilities?

Inman and Smidt are leaving that up to the individual companies to decide.

"Our shareholders now have uninhibited access to the developmental know-how in their programs," said Smidt. "And in 12 to 18 months I think we'll see experimental uses and elements of our output in commercial use."

However, Inman concedes that MCC can succeed brilliantly as a research and development organization but ultimately fail in its mission if member companies are unwilling or unable to accommodate themselves to the flow of technologies that emerge from the consortium.

Indeed, Inman and Smidt agree that, with 21 major organizations participating, the odds are great that not all of them will prove adept at swiftly assimilating MCC technology. That could mean that four or five of the most aggressive corporations with a clear technology transfer plan reap the commercial benefits of the investments made by the other members. In essence, the slower companies effectively will have subsidized their competitors' advantage. That could lead to several companies choosing to drop out of the consortium.

In other words, MCC's very success could sew the seeds of discord. Inman says the consortium "could be viable with 14 or 15 members," but he hastens to add that he doesn't expect more than two or three of the 21 companies to drop out over the near term.

Actually, Inman seems more intent on attracting and keeping key researchers than mollifying certain shareholder problems. "I've tried to give them the feeling that they're the members of a club—an exclusive group, an elite group," far more so than he's done with his shareholders, Inman said.

The Austin location has not proven detrimental in attracting researchers from California or Ivy League climes, and Inman cleverly has secured a diversity of shareholders ranging from Boeing Co. to Eastman Kodak Co. to Minnesota Mining & Manufacturing Co. to assure that researchers have a broad market of companies for their innovations.

A random sampling of researchers affiliated with MCC reveals that they are happy with their working environment, adequately compensated and optimistic about the prospects for the application of their research.

"I think Inman has set the right tone for this place," said Doug Lenat, an artificial-intelligence researcher who came from Stanford University and the Xerox Palo Alto Research Center.

However, the tone also includes an overwhelming concern for the proprietary nature of the research. Elevators are equipped with special locking devices that prevent individuals without the appropriate card keys from having access to certain floors at the Austin complex of black glass buildings. Indeed, the seven programs are carefully partitioned so that companies not funding certain programs are expressly prohibited from receiving information from them.

Similarly, researchers—who traditionally have published papers and presented their findings in conferences—are reluctant to disclose anything beyond the sketchiest details of their work.

Indeed, Inman declines to publicly disclose the research milestones of MCC, arguing that, as a private enterprise, the organization is under no obligation to do so. Consequently, though, there is no real external way then of measuring how well MCC's disparate research programs are doing.

DEC's Fuller insists that "It's at least as ambitious as Japan's Fifth Generation" goals and that the 10-year research program is "right on schedule."

Inman visibly bristles at suggestions that this concern for secrecy reflects his national security background. He points out that he has a responsibility to protect his shareholders' investments—more important, he stresses that the lines between basic and applied research and development have blurred to the point that more information has to be considered proprietary and protected accordingly.

However, it may well be that MCC—as a consortium—helps define the new level of proprietary emphasis as companies increasingly rely on secrecy as well as innovation to protect a technical edge in the marketplace.

Rather than see secrecy emphasis as a threat to innovation, Inman sees it as a part of the reality of intensifying global competition.

The current membership is Advanced Micro Devices Inc., Allied Corp., BMC Industries Corp., Bell Communications Research (Bellcor), Boeing, Control Data , Digital Equipment, Eastman Kodak, Gould Inc., Harris Corp., Honeywell Inc., Lockheed Corp., Martin Marietta, 3M, United Technologies Corp., Motorola Inc., NCR Inc., Rockwell International Corp. and Sperry Corp. Reportedly, General Motors Corp., flush with its acquisitions of Electronic Data Systems Corp. and Huges Aircraft, also is exploring an MCC membership.



BOBBY RAY INMAN
. . . skills "serving me well here"

MCC Team 'Right on Schedule'

MCC, From D1

spected scientists individually recruited by Inman himself. Clearly, Inman has not lost his Washington-honed touch for assuring a comfortable level of autonomy.

Flashing the smile, Inman declines to view it that way, saying only that "we've been damn lucky" in getting the people he's recruited. "I think he's a very effective leader," said MCC board member Samuel H. Fuller, Digital Equipment Corp.'s vice president for research and architecture. "He's strong and outspoken, and when you're trying to get 21 corporations to cooperate on something, that's what you often need to be."

Another board member, who asked not to be identified, asserted that Inman liked to create or impose a consensus rather than seek one. But he conceded that Inman was "very, very effective at managing us and managing our expectations."

Though MCC has been in operation for less than three years and has yet to publish any significant research, it already has captured some of the top researchers in computer science and a reputation as an intellectually exciting place to work. Teams of computer scientists are exploring futuristic forms of computer software that would imbue computers with a "common sense" capability at problem solving, for example. Other specialists are looking at computer-aided approaches to help crowd hundreds of millions of circuits on a silicon chip. Inman unabashedly asserts that MCC "is clearly a winner."

But MCC's member companies and Inman all concede that the real test of the consortium is just now beginning: Will MCC's research and development efforts ultimately translate into innovative products and services that give its members a technical edge in the marketplace?

"We've completed the start-up phase and it's now down to the business of research," said DEC's Fuller. "The hard problem is going to be technology transfer."

"My primary worry is technology transfer," said Inman. "I can't guarantee that all these companies will use these technologies."

In fact, that issue is of such paramount concern that Inman formed an ad hoc committee to force MCC members to address the technology-transfer questions within their own companies.

Even in the fast-paced high-technology industry, effecting a smooth transfer from basic research to prototype to production model has proven to be one of the thorniest problems facing American companies. Academic commentators on industry from Robert Reich to Ezra Vogel all comment that Japanese industry's skills at quickly bringing innovations to market give it a competitive edge.

"There's one resource that's scarce and that's time," said Palle Smidt, MCC's senior vice president of plans and programs. "There's more competition out there now. Revenue life cycles are down, product life cycles are down."

That creates an inherent tension in MCC, Smidt concedes. As computer product life cycles shrink with the pace of technological change, figuring out what constitutes useful long-range research becomes increasingly difficult. When does "long range" research blur into something with immediate commercial possibilities?

Inman and Smidt are leaving that up to the individual companies to decide.

"Our shareholders now have uninhibited access to the developmental know-how in their programs," said Smidt. "And in 12 to 18 months I think we'll see experimental uses and elements of our output in commercial use."

However, Inman concedes that MCC can succeed brilliantly as a research and development organization but ultimately fail in its mission if member companies are unwilling or unable to accommodate themselves to the flow of technologies that emerge from the consortium.

Indeed, Inman and Smidt agree that, with 21 major organizations participating, the odds are great that not all of them will prove adept at swiftly assimilating MCC technology. That could mean that four or five of the most aggressive corporations with a clear technology transfer plan reap the commercial benefits of the investments made by the other members. In essence, the slower companies effectively will have subsidized their competitors' advantage. That could lead to several companies choosing to drop out of the consortium.

In other words, MCC's very success could sew the seeds of discord. Inman says the consortium "could be viable with 14 or 15 members," but he hastens to add that he doesn't expect more than two or three of the 21 companies to drop out over the near term.

Actually, Inman seems more intent on attracting and keeping key researchers than mollifying certain shareholder problems. "I've tried to give them the feeling that they're the members of a club—an exclusive group, an elite group," far more so than he's done with his shareholders, Inman said.

The Austin location has not proven detrimental in attracting researchers from California or Ivy League climes, and Inman cleverly has secured a diversity of shareholders ranging from Boeing Co. to Eastman Kodak Co. to Minnesota Mining & Manufacturing Co. to assure that researchers have a broad market of companies for their innovations.

A random sampling of researchers affiliated with MCC reveals that they are happy with their working environment, adequately compensated and optimistic about the prospects for the application of their research.

"I think Inman has set the right tone for this place," said Doug Lenat, an artificial-intelligence researcher who came from Stanford University and the Xerox Palo Alto Research Center.

However, the tone also includes an overwhelming concern for the proprietary nature of the research. Elevators are equipped with special locking devices that prevent individuals without the appropriate card keys from having access to certain floors at the Austin complex of black glass buildings. Indeed, the seven programs are carefully partitioned so that companies not funding certain programs are expressly prohibited from receiving information from them.

Similarly, researchers—who traditionally have published papers and presented their findings in conferences—are reluctant to disclose anything beyond the sketchiest details of their work.

Indeed, Inman declines to publicly disclose the research milestones of MCC, arguing that, as a private enterprise, the organization is under no obligation to do so. Consequently, though, there is no real external way then of measuring how well MCC's disparate research programs are doing.

DEC's Fuller insists that "It's at least as ambitious as Japan's Fifth Generation" goals and that the 10-year research program is "right on schedule."

Inman visibly bristles at suggestions that this concern for secrecy reflects his national security background. He points out that he has a responsibility to protect his shareholders' investments—more important, he stresses that the lines between basic and applied research and development have blurred to the point that more information has to be considered proprietary and protected accordingly.



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Dingell, in a letter dated April 22, tells Energy Secretary John Herrington to provide information about several issues. He also says, apparently on behalf of the subcommittee on oversight and investigations, of which he is chairman, that the subcommittee "expects you to inform us of any future efforts by that agency (Commerce) to 'run' the DOE or to dictate its policies or to try to dismiss DOE employees."

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"Left to itself, an independent DOE has in the last five years allocated R&D funds on the basis of internal anaylses rather than an industrial consensus on needs and priorities," the memorandum says. "Precious federal tax dollars have been spent unprofitably on all too many projects that, on their own without government subsidy, would not meet the market test. The recent withdrawal of major firms from shale oil development, when the DOE grants ended, is a case in point."

Dingell asks Herrington if he agrees with those comments, and asks him to explain how DOE allocates research and development funds.

Continuing to discuss the relation between Energy and Commerce, Dingell then quotes a letter from DOE dated Dec. 27, 1984: "Contractual provisions requiring reporting and delivery of information may meet this concern, if permitted by the Department of Commerce."

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ROUTING AND TRANSMITTAL SLIP

Date March 26, 1985

TO: (Name, office symbol, room number, building, Agency/Post)	Initials	Date
1. Dr. Merrifield		
2. Dr. Williams		
3. Lanse Felker		
4. Mike Rubin		
5. Fred Knickerbocker		

Action		File		Note and Return
Approval		For Clearance		Per Conversation
As Requested		For Correction		Prepare Reply
Circulate	X	For Your Information		See Me
Comment		Investigate		Signature
Coordination		Justify		

REMARKS

The analogy between the management problems of local schools and the Federal laboratories is easily drawn from this article.

DO NOT use this form as a RECORD of approvals, concurrences, disposals, clearances, and similar actions

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Norman Latker, Director, Federal Technology Management Policy Div.	H4837 HCH
	Phone No. 377-0659

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Inside the Administration

An Inside Washington Publication

An exclusive report on the Reagan Administration's economic, regulatory and management policies

Vol. 4 No. 18 May 3, 1985

In 'power play' over OMB reg authority

TREASURY OBTAINS SECRET AGREEMENT TO LIMIT OMB REVIEW UNDER E.O. 12498

In what one reliable source described as "sheer power play" by former Treasury Secretary Donald Regan, sources say the Treasury Dept. and Office of Management & Budget worked out an agreement late last year that virtually exempts Treasury from most of the newly instituted regulatory review requirements of Executive Order 12498. Sources say the unique OMB-Treasury agreement is likely to become both the envy and complaint of virtually every other federal agency now striving to meet with OMB's exacting new reg review requirements under the executive order, and has been kept secret apparently to avoid stirring jealousy and controversy. The Memorandum of Understanding between Treasury and OMB dramatically narrows the scope of regulatory authority OMB has over Treasury,

(continued on page 6)

To avert clash with Administration on compensation issue

SENATE COMMERCE TO VOTE ON UNIFORM PRODUCT LIABILITY BILL

Senate Commerce Committee Chairman John Danforth (R-MO), in a move to avert a near-term policy clash on product liability legislation with the Reagan Administration and influential business groups, has reportedly decided to urge his committee to vote out uniform product liability legislation (S. 100) this month with the proviso that the bill will not be considered on the Senate floor until the committee has had an opportunity to hold hearings on "no-fault" compensation schemes that would provide economic relief to persons injured by commercial products. Reportedly, Danforth has struck a behind-the-scenes compromise with the two major Senate proponents of product liability compensation legislation — committee member Slade Gorton (R-WA) and Christopher Dodd (D-CT) — in which both have agreed not to attempt to amend S.100 in committee in exchange for a promise from Danforth that the bill won't

(continued on page 7)

Critics see 'caving in' to oil & gas interests

WHITE HOUSE, IN POLITICAL CONCESSION, EYES RETAINING SPECIAL TAX BREAKS

Conceding what one source described as "political reality," President Reagan and White House Chief of Staff Donald Regan reportedly are weighing a recommendation by Treasury Secretary James Baker that the Administration retain special tax breaks for the oil & gas industry, as well as continue the tax-exempt status of fringe benefits, in the final overhaul of the Treasury Dept.'s tax reform plan. Sources say the Administration is under particularly "strong pressure" from powerful southern and midwestern legislators to continue to permit write-offs for oil & gas exploration, as well as from Senate Finance Committee Chairman Bob Packwood (R-OR) not to change the tax treatment of fringe benefits. While some assert that Baker in urging these major exceptions to the tax reform plan is merely acknowledging the realities of "power politics," others warn that such major concessions may tarnish the

(continued on page 5)

Under pressure from U.S. grain dealers

REAGAN 'FLIP-FLOPS' POLICY STANCE ON CARGO PREFERENCE BILL

The Reagan Administration, under pressure from U.S. grain dealers who are losing business to foreign competitors, this week reversed its position on cargo preference legislation — telling Congress it will not fight legislation that would permit certain farm export programs to ship on commercial vessels, rather than comply with existing law and use more costly U.S. flag ships. The Administration's abrupt policy turnabout directly contradicts an earlier White House statement opposing the bill. A recent court decision effectively overturned a longstanding federal practice of permitting certain agriculture exports to be shipped on commercial vessels despite existing law that requires federally supported exports to be shipped on the more costly U.S. flag ships. The decision, which the Justice Dept. is appealing, resulted in im-

mediate suspension of several U.S. Dept. of Agriculture programs and a loss in business for U.S. grain exporters whose customers are choosing foreign grain suppliers with cheaper shipping costs.

The White House last month offered Congress opposing policy statements on the legislation with Agriculture Secretary John Block saying the Administration would support a bill to restore the exemptions for certain agriculture programs; at the same time Transportation Secretary Elizabeth Dole said the White House had decided to oppose a legislative remedy and would instead appeal the court decision. The White House later issued a formal position statement, supporting Dole's perception of a high level meeting at which it was decided to oppose the legislation, saying that the Justice Dept. would appeal the court ruling in an effort to preserve the exemption for agriculture exports. Administration officials said the White House feared a legislative remedy would provide an "uncontrollable rolling stone for expensive export subsidies" that the federal government simply cannot afford.

The Reagan Administration, faced with a growing loss of business to U.S. grain exporters, is now willing to run the risk associated with the legislation, according to a high level official who said "we'd better win on the floor [of Congress] cause we're sure as hell losing in the field."

The Reagan Administration has been divided over the cargo preference issue with DOT officials, concerned with supporting the domestic maritime industry, opposed to extending exemptions — beyond a limited number of agriculture programs — to the cargo preference law, which is intended to assure a livelihood for the U.S. shipping industry. The law requires that at least 50% of exports funded in part or in whole by U.S. subsidies be shipped on U.S. flag vessels. DOT wants to avoid a congressional opportunity for other interests to add their own exemptions.

DINGELL CHARGES COMMERCE INTERFERES IN DOE AFFAIRS, CONGRESSIONAL DEBATE

House Energy & Commerce Committee Chairman John Dingell (D-MI) has charged that the Commerce Dept. has interferred in Dept. of Energy management by improperly seeking to replace a DOE official with one more "friendly" to Commerce's view of government patent policy. Dingell, through his oversight & investigations subcommittee, claims Commerce has engaged in about half a dozen improper activities within the Administration and before Congress, and has asked Commerce Secretary Malcolm Baldrige to investigate the allegations. Dingell last week delivered a lengthy memorandum to Baldrige, a copy of which was obtained by *Inside the Administration*, charging that Commerce officials, seeking to develop a federal patent policy, have sought to improperly influence DOE management involved with forming that agency's policy on release of patents developed under DOE contracts. He also alleges that Commerce lobbied Congress without authorization. Baldrige's office this week had no comment on the allegations except to say they are being looked at. But other Commerce officials maintained the charges "are without merit and have no foundation in fact." A key Commerce official claimed Dingell's "preference for contentious issues has provided an easy route for those wanting to block" Commerce's efforts to develop a federal consensus on patent policy.

The allegations follow a longstanding dispute between DOE and Commerce's Office of Productivity, Innovation & Technology, which has taken the lead for developing Administration policy regarding release of patents developed with federal funds. (OPTI itself has been at the center of some Administration/congressional controversy — the Administration proposing, with Baldrige's assent, to terminate the office, but congressional budget committees voted to restore FY-86 funding for the program anyway.)

OPTI last year accused DOE of not complying with a Presidential directive to release the rights to as many federally funded patents as possible. DOE has opposed OPTI's efforts to reform uniform government-wide patent policy because it would eliminate an exemption the energy agency has had to existing law, which requires agencies to relinquish as many patents as "possible." The Commerce-DOE feud grew as each agency sought to influence the Administration's position on legislation, reportedly written by OPTI and introduced by Sen. Robert Dole (R-KS). The new law establishes a presumption of patent ownership in favor of private government contractors.

DOE officials, hoping to preserve the agency's exemption, had, without Administration approval, lobbied Congress last year to reject Dole's bill. Dole complained to the Office of Management & Budget that DOE's unauthorized lobbying contradicted the Administration's official support for the bill as had been presented in earlier Commerce Dept. testimony. OMB directed DOE to halt all unauthorized communications with Congress and Dingell called for a General Accounting Office investigation into DOE compliance with Reagan Administration patent policy procedures. GAO, in the course of the DOE inquiry, reviewed a number of Commerce documents that, Dingell claims, suggested improprieties and he subsequently asked GAO to examine internal Commerce documents.

Dingell has also attacked OPTI's efforts to win passage of another Dole patent bill that would strengthen government laboratories' rights to patents developed with federal funds. Dole, who introduced the measure last Congress, may drop his support (the bill has not yet been introduced this session) rather

than fight Dingell's charges that OPTI has improperly lobbied Congress on the bill. Dingell complained to Baldrige that OPTI's plan to lobby for the lab bill — to "influence the direction of congressional hearings" and "work the Hill and the private sector as we did last year" — is objectionable.

WEISS THREATENS TO SUBPOENA DRAFT REGULATORY PLANS FROM FOUR AGENCIES

House Government Operations intergovernmental relations & human resources subcommittee chairman Ted Weiss (D-NY) is threatening to subpoena draft regulatory planning documents from four Reagan agencies if they don't comply with his demand for the documents by Wednesday May 1. Administration sources claim that the four agencies — including the Depts. of Health & Human Services, Treasury, Agriculture, and the Veterans Administration — already submitted the documents Weiss and ranking subcommittee member Robert Walker (R-PA) originally requested on March 6, but subcommittee sources insist the Administration still has not fully complied with their demands. Weiss' ultimatum — delivered in an April 24 letter to each department — is the latest in a series of Executive-legislative confrontations over the Administration's new Executive Order 12498, and represents the most serious challenge thus far to the Administration's claim of Executive privilege over draft documents submitted to the Office of Management & Budget under the order.

Weiss in a representative letter to HHS Secretary Margaret Heckler cites his subcommittee's "oversight responsibilities" and asks her to provide copies of the department's regulatory planning documents "as well as all agency memoranda, correspondence, and draft reports" that support the documents. In what sources say is an implied threat to subpoena documents the subcommittee believes the Administration is withholding, Weiss warns that all documents should be supplied by close of business May 1 "to avoid unnecessary confrontation." Sources say Weiss is "reserving the right" to call for a subcommittee vote to subpoena documents if the Administration does not fully comply with the request.

OMB Director David Stockman recently directed agencies to respond to a similar request from House Energy & Commerce Committee Chairman John Dingell (D-MI) by releasing their draft regulatory plans, but Stockman's April 19 directive did not authorize release of draft documents leading up to and supporting the regulatory planning documents, as requested by Weiss. Nevertheless, Administration sources apparently were surprised at Weiss' continuing demands, and some were puzzled as to what further documents Weiss wanted to see. Unlike Dingell, Weiss is not asking OMB to compile and release telephone logs of conversations between OMB and department personnel, but rather is asking for background documents that shed light on regulatory plans made under the new executive order.

Also unlike Dingell, sources say Weiss sent his demands to the agencies directly under his subcommittee's jurisdiction, and has been "scrupulously avoiding" any contact with OMB. OMB Director Stockman personally negotiated the release of documents requested by Dingell's subcommittee, although OMB later insisted that the decision to release documents was left entirely up to individual agencies. Sources say Weiss believes as a matter of principle that the decision to release documents should be made by each individual agency, and not the more secretive budget office.

The subcommittee's threat to subpoena documents will put OMB's earlier claim of Executive privilege over interagency communications to its first real test. Sources say the subcommittee does not believe OMB can claim Executive privilege on behalf of the Administration, but rather the decision to withhold documents from Congress must be made by the President personally.

OMB STALLS AUTO THEFT REGS PENDING REAGAN WORD ON GREY MARKET CONTROLS

The Office of Management & Budget reportedly is withholding approval of proposed auto-theft-control regulations, implementing legislation passed last year, pending decisions on whether to restrict so-called "grey market" imports — brand names sold at discount prices in the U.S. without authorization from the U.S. trademark owner. The grey market decision may require deletion of brand names for certain imported products, and that in turn may affect the nature of the auto theft regulations. But congressional pressure is increasing for promulgation of the regs, which will define what foreign car parts are to carry identifiable numbers designed to help in tracking theft, and the auto industry also wants the regs issued as soon as possible.

An official of the National Highway Traffic Safety Administration, which submitted the regs for approval in mid-March, said OMB has given no indication as to when it will release the regs. But NHTSA Administrator Diane Steed told Congress this week she is confident NHTSA will make the statutory Sept. 15 deadline.

The Reagan Administration is expected to reject a Commerce Dept. recommendation that it move to impose restrictions on grey market imports (Inside the Administration, April 26 p1) but OMB sources say any change in current policy could redirect "the desired thrust" of the auto theft regs. President Reagan

Charting the Way the World Works

BY DONELLA H. MEADOWS

THE Limits to Growth, which I wrote with several co-authors in 1972 to provide a popular account of the first global computer model, created an uproar that still echoes. Much of the problem was and remains public confusion about global models. The media depicted our model, done by the Systems Dynamics Group at M.I.T.—and the models that followed and sometimes challenged ours—as crystal balls predicting the future of almost everything and upholding wildly pessimistic or optimistic views of the world.

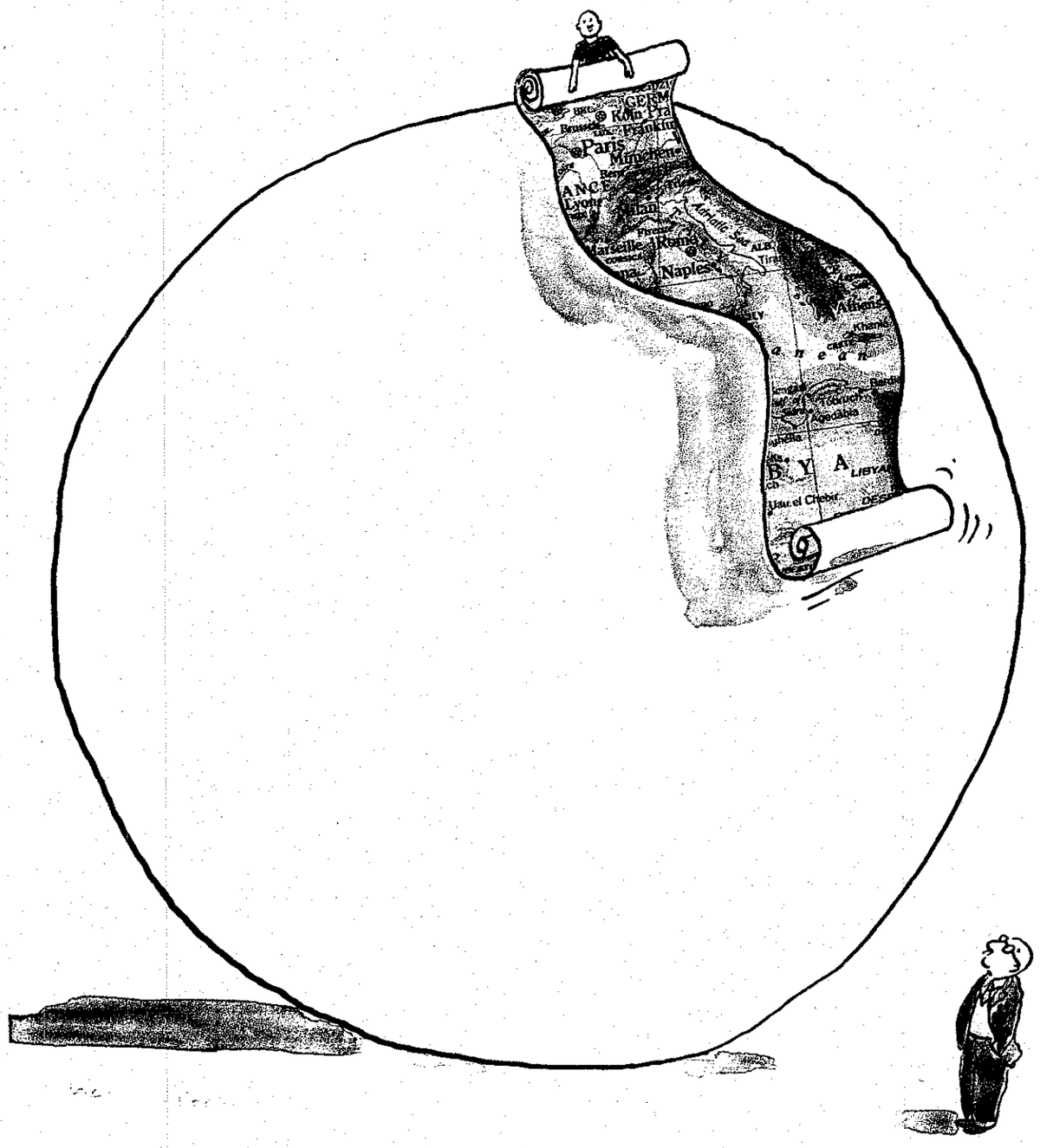
In fact, global models are not meant to predict, do not include every possible aspect of the world, and do not support either pure optimism or pure pessimism about the future. They represent mathematically assumptions about the interrelationships among global concerns such as population, industrial output, natural resources, and pollution. Global modelers investigate what might happen if policies continue along present lines, or if specific changes are instituted. For example, particular models have asked what would happen if growth continued at its present rate, if the European Common Market increased grain exports, or if infinite, free energy became available.

Since the first global model, the discipline has spread throughout the world. The Japanese have a global model. The Russians have, as far as I know, three of them. The World Bank and the United Nations have produced several models. To refute those coming from the rich countries, scientists in Latin America produced a model of their own. The U.S. Joint Chiefs of Staff commissioned a new version of a global model at a cost of $1.4 million. At a 1981 conference of the International Institute of Applied Systems Analysis (IIASA) in Vienna, representatives from 20 global-modeling groups made presentations. And no one knows how many other models exist within governments and corporations around the world.

Not surprisingly, the initial assumptions of these various global modelers are incredibly different. First, they disagree on methodology: Is it better to simulate the world as it exists, or to construct a model that optimizes it as it might be—if, for example, every government made basic human needs a first priority? Is it better to make guesses about "soft" factors such as political stability or to ignore them altogether?

Though they are made with conflicting ideologies in diverse nations, all global models basically agree on how to improve the state of the world.

ILLUSTRATIONS: MICHAEL CRAWFORD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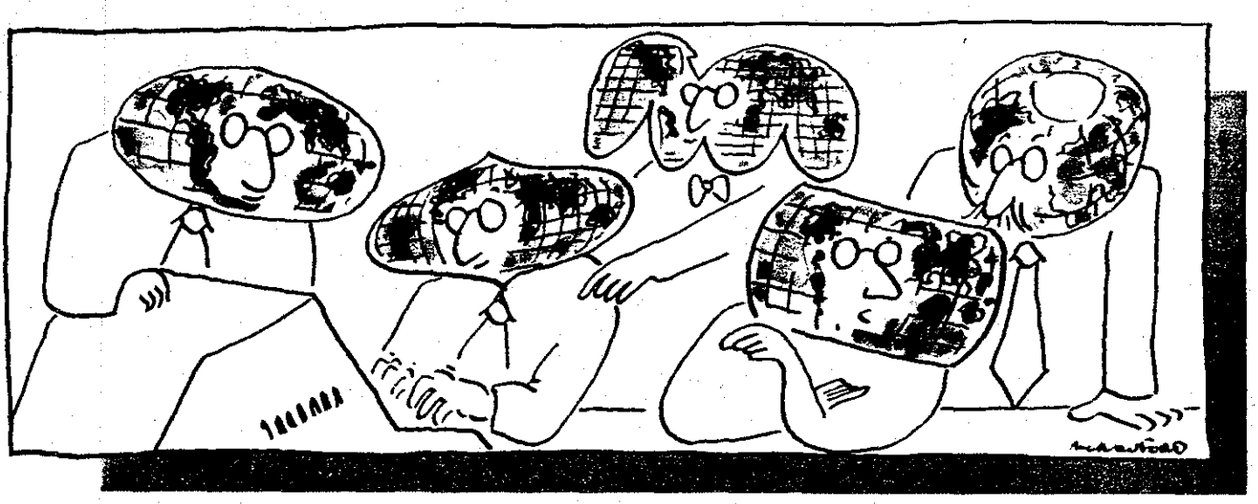
The substantive disagreements among global modelers form a catalog of the uncertainties of our era.



Then, there are substantive disagreements among the global modelers, which form a catalog of the uncertainties of our era. To what extent do free markets actually exist? How vulnerable, really, is the ecosystem? Does technology appear unexpectedly or as a result of social processes that can be controlled? Do governments act independently, and how much are they trapped by forces larger than themselves?

Above all, or perhaps I should say below all, because they are rarely addressed explicitly, are the divisive moral issues. Is man's inhumanity to man the primary global wrong, or is it destruction of the environment? What assumptions about human nature and political legitimacy do we who construct global models inadvertently build into them? What is our social responsibility: to serve a system or to challenge it, to raise questions or to provide answers, to redesign social systems or to empower others to do so?

The methods and philosophies of global modelers are so diverse that one would hesitate to call the models a single body of intellectual work, except that they are directed toward the same intertwined problems: population growth, poverty, resource scarcity, environmental deterioration, and international instability. Another point of commonality is that many of the models were made in response—sometimes heated response—to the ones that came before. Especially when the discipline first began, a major purpose of each model was to discredit the others and show how the whole exercise should be done. Thus, collectively the global models constitute a fascinating international debate. They reveal the world's knowledge, uncertainty, and opinion about global problems.

They do so in terms that are relatively precise and unemotional, adding a mathematical rigor to discussions of world issues. Every term must be defined precisely. Everything that is sold must be bought. The amounts of energy, labor, and capital allocated to various sectors of the economy cannot exceed the total amounts available. Such unremarkable and even simple-minded requirements allow more explicitness, complexity, and logical consistency than can ever be expected from the only other source of understanding about the world: the models in people's heads.

The world system is enforcing its regularities on the modelers. When the Japanese, the Soviets, the Americans, the Europeans, and the South Americans step back and attempt to integrate their most treasured assumptions about the planet, they find themselves in substantial agreement. Given the different starting points, the debate about global issues is leading to a surprising convergence of opinion.

Action and Reaction

The first global model was developed at the behest of the Club of Rome, a group of policymakers, academics, and managers who met in Bern, Switzerland, in 1970 to discuss 66 world problems such as hunger, pollution, and crime. The problems seemed interconnected, so Carroll Wilson of M.I.T., a mem-

ber of the club's executive committee, had invited someone he thought could draw the connections: his colleague Jay W. Forrester of M.I.T.'s Sloan School of Management. Forrester proposed constructing a global computer model. On the way home from the meeting, he worked out a rough model he called World1 on the back of an envelope, and then amplified it into the first detailed global model, called World2. A team headed by Dennis Meadows, then also at M.I.T., refined this model into World3, the basis for *The Limits to Growth*.

World2 and World3 are intended to answer a simple question that can be put this way: Population and capital growth are inherently exponential. The world's population is growing at such a rate that, if it were to continue, it would double in 40 years, quadruple in 80 years, and increase eightfold in 120 years. The physical growth of capital equipment, housing, and infrastructure is proceeding even more rapidly. Forrester asked what might ultimately limit population and physical growth on this finite planet, and how the world's adjustment to its limits might be smooth and controlled rather than unexpected and violent.

He concluded that no process exists that can reliably adjust today's exponential growth to the earth's limits, whatever they may be. Delays are too long, both in the process of making decisions and the time it takes for results. For example, so many children have already been born that even if each couple from now on averaged two offspring, population would continue growing for 70 years. Though industry might stop polluting, its toxic waste would linger in the environment for decades. The world's machines are too dependent on nonrenewable resources and too long-lived to be replaced quickly by machines that can use renewable resources. And the value of growth for its own sake is too deeply embedded in industrial culture for a different value to be quickly adopted.

Unless some deliberate process to slow growth is implemented, Forrester found, the most likely future will be "overshoot and collapse"—an irreversible destruction of the resource base followed by a decline in capital and population. However, if societies design a sustainable, equitable system instead of trying to correct problems caused by growth with still more growth, there are enough time and resources to provide a desirable standard of living for everyone.

The scientific community criticized World2 and World3 on several grounds, one being that they did not distinguish among different regions of the world. Thus, Mihaijlo Mesarovic at Case Western Reserve University, and Eduard Pestel at the Technical University in Hannover, West Germany, designed the World Integrated Model (WIM), to explore the same questions with more regional detail. These scientists reached similar conclusions, except that their warnings were expressed in even more urgent and dire language.

Over the years WIM has been modified, updated, and made more detailed at the behest of numerous clients, including several U.S. agencies and countries such as Mexico and Iran (during the shah's regime). This is the model that is being adapted for use by the U.S. Joint Chiefs of Staff.

Another criticism of World2 and World3 came from citizens of the Third World, who read into *The Limits to Growth* the implication that growth must stop in such a way as to freeze poor nations into an eternal state of poverty. They responded with the Latin American World Model, made at the Fundacion Bariloche in Argentina. This model is constructed around an explicit value: meeting basic human needs.

According to the model, the world could work well with that priority. Latin America and Africa could meet the basic needs of their entire populations through their own efforts by the year 2000. Asia would take longer and require outside aid. The rich countries would not collapse or even stagnate, and as human needs were met everywhere, the population would stabilize.

The Bariloche group did not explicitly model environmental and resource problems. But the modelers say that the planetary stresses of a just society would be much less than those of the greed-and-growth-oriented world of today. They estimate that decent living standards could be achieved for all with per capita economic outputs a third to a fifth as great as those needed if present inequities persist.

The modelers write that "the economically underdeveloped societies cannot leave their state of backwardness following the development patterns of the already industrialized—but not necessarily developed—societies. Even if it were possible, it is not desirable, as it would mean to follow the same road which led to the present situation of wasteful and irrational consumption, accelerated social deterio-

ration, and increasing alienation."

A coalition of agronomists from Wageningen University and economists from the Free University of Amsterdam constructed a model to see if adequate food could be produced for the expected doubling of the world population—up to 6 billion by the year 2000. They discovered quickly that there is already enough food for 6 billion people, so they changed the focus of their investigation to examine why it is that in a world with more than enough food, hunger persists.

The sophisticated model that emerged, called the Model of International Relations in Agriculture (MOIRA), represents food production, consumption, and trade for 106 nations. Each has 12 income classes and a government that may interfere with internal pricing and trade flows to satisfy political priorities. As each nation tries to maintain its domestic food supplies and prices at desired levels, it dumps its shortages or excesses onto the world market. The result is systematic amplification: a small fluctuation in wheat production in Kansas can become a major wave in consumption in Ghana. Large, rich countries can buffer their interface with the world market at considerable expense but small, poor countries cannot, and fluctuations in the world market sweep into their domestic markets. As the Dutch modelers say, "He who has the lowest dam gets the whole flood."

Hunger in this model results primarily from inequities in income distribution, both among families and among nations. These inequities are exacerbated by the impersonal workings of the world market. Measures such as food aid can have adverse effects, since they lower food prices in countries receiving the aid and discourage farming. However, two kinds of policies do help eliminate hunger: changes that give poor people the resources to earn a decent income, and efforts by the rich countries to keep food exports and imports constant so as to keep world prices stable and relatively high.

When President Carter asked Gerald O. Barney at the U.S. Council on Environmental Quality to study global prospects for the year 2000, Barney gathered existing models and forecasts of various government branches. These included population projections from the Census Bureau, food projections from the Department of Agriculture, and so forth. The result, called the Global 2000 model, was not only a rich collection of information about the world, but a fascinating comment on the state of global understanding of one of the world's most information-rich governments. The separate forecasts had never before been coordinated, and their makers often were not even aware that other projections existed. The assumptions and methods of these forecasts were not necessarily consistent. Indeed, the study concluded that "at present the executive agencies of the United States Government are not capable of presenting the President with internally consistent projections of world trends in population, resources, and the environment for the next two decades."

Even though these projections were not internally consistent, they were consistently gloomy. Global 2000 has become famous for that gloom, as if the study itself rather than separate government offices had produced the forecasts. The summary statement reads: "If present trends continue, the world in 2000 will be more crowded, more polluted, less stable ecologically, and more vulnerable to disruption than the world we live in now. Serious stresses involving population, resources, and the environment are clearly visible ahead. Despite greater material output, the world's people will be poorer in many ways than they are today.

"For hundreds of millions of the desperately poor, the outlook for food and other necessities of life will be no better. For many it will be worse. Barring revolutionary advances in technology, life for most people on earth will be more precarious in 2000 than it is now—unless the nations of the world act decisively to alter current trends."

The Global 2000 staff's own contribution to the bad news was to point out that the various forecasts are probably too optimistic because they were made independently. The energy forecasts assumed that enough capital would be available, the capital forecasts assumed that there would be enough energy, and the agriculture forecasts assumed that there would be enough of both. Because the sectors were not linked, as they are in most global models, they did not set up any of the truly difficult trade-offs that must be made in the real world.

These are but a few examples to illustrate the variety of the global models. Each model asks a particular question and focuses on one aspect of global complexity, each expresses the cultural and methodological viewpoint of its makers, yet each is constrained by mathematical rigor and the world database. However interesting the individual models

The media depicted the early global models as crystal balls predicting the future of almost everything.



are, I think their real value is in their juxtaposition. As each explicit representation of the world is added, the collection begins to hint at common insights into how the complex global system behaves and how it can be better managed.

The Common Ground

The common conclusions among the world models are both unsurprising and revolutionary. At some level nearly everyone understands how the world works, yet governments and people do not often operate in accordance with their understanding. While knowing that the world is an interdependent, richly varied system, we act daily as if it were made up of simple, separate pieces. Knowing that cooperation works better than competition, we continue to compete. Knowing that short-term results often differ from long-term ones, we go for the short-term payoff. Knowing that the environment flows through us with every breath, drink, and meal, we still think of nature as distinct from humanity.

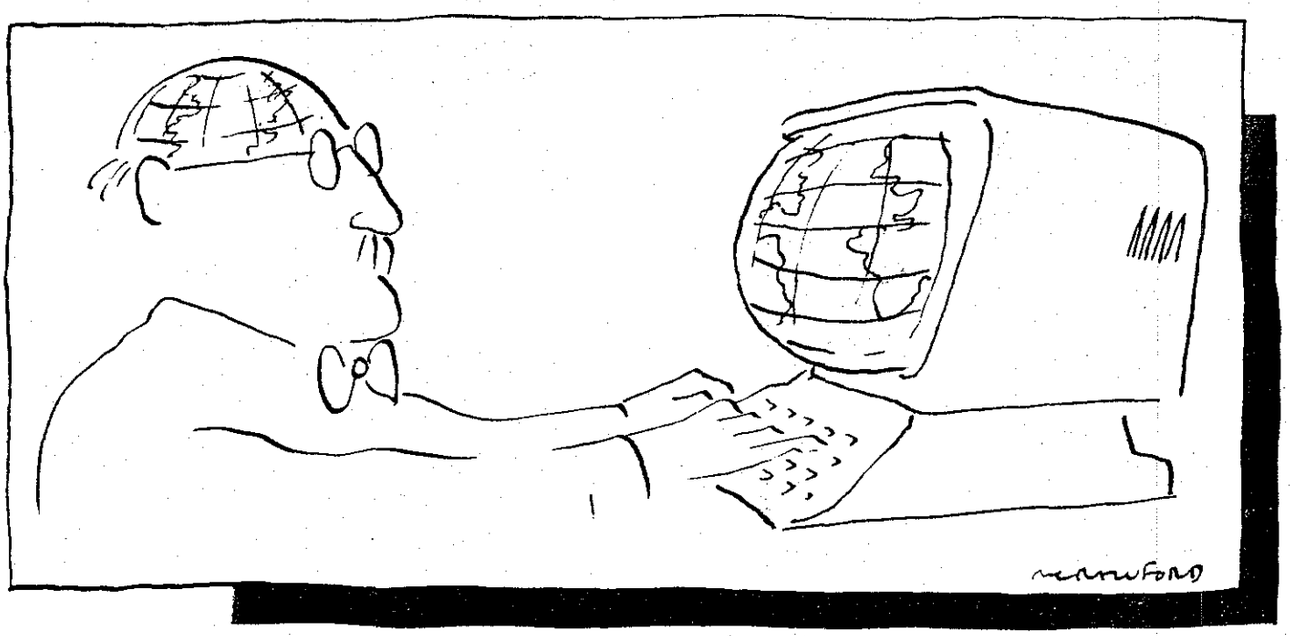
I have chosen common conclusions from the global models and have expressed them in my own words. But I believe each global modeler would agree that his or her work supports these conclusions, or at least does not contradict them:

☐ *Existing resources and known technologies can support all the needs of the world's people today and for some time to come.* People's needs are not being met and resources are being degraded because of inequities, wastefulness, and mismanagement, not because of any immediate physical scarcity.

The models illustrate this point with resounding unanimity. MOIRA shows how the world trade system transforms more than enough food for everyone into hunger for one in five. The IIASA Energy Model emphasizes how many technical options actually exist to supply energy. World3 shows how it is possible to make a transition to an economy that uses renewable resources to sustain high living standards for everyone.

The earth is a diverse, abundant planet. However, the assumption that most pervades decision making in our era is that there is scarcity. The reaction is to hoard and try to increase short-term production.

The world system is forcing its patterns on the modelers.



This reinforces the perception of scarcity in the short run and can create actual, though unnecessary, scarcity in the long run through wastefulness and degradation of resources.

☐ *Population and physical capital cannot grow forever on a finite planet.* Though overall scarcity does not now exist for the global society, it can be generated if rapid growth continues.

All the models recognize problems connected with population growth, even though some modelers began with strong reactions against the "anti-natalist bias" of World2 and World3. Agreement on the need to limit physical growth (of capital goods, infrastructure, and housing) is less unanimous, chiefly because some models represent the economy only as a flow of money rather than a stock of physical equipment. They do not account for the fact that physical equipment, like population, takes up space, requires a constant stream of energy and raw materials, and continually emits wastes.

A steady growth of electrical generating plants, factories, or any other capital equipment at 3.5 percent per year, a typical goal for industrial societies, implies a 32-fold multiplication in a century. It is not surprising that real growth rates rarely stay that high for that long. It is only surprising that so many people believe they should. The important questions are not how to promote all kinds of physical growth everywhere, but rather what kinds of growth should be encouraged in what places for how long to shape a sustainable and desirable way of life for everyone.

☐ *No reliable, complete information is available about the degree to which the earth's environment can absorb the wastes created to meet human needs.* The global models have mostly tried to quantify environmental stresses—such as how much carbon dioxide or sulfur pollution is dumped into the atmosphere—but they have not studied the ecosystem's reactions to those stresses. And even the effort to measure the stresses has shown that the data are totally inadequate. No reliable data exist on soil erosion, groundwater pollution, or disposal of radioactive waste. The makers of the U.N. World Model and WIM gave up on their environmental sectors for lack of information. Specific environmental effects, such as the death of forests in Europe, are only now beginning to be modeled seriously.

A conclusion of "we don't know" may not sound like much of a conclusion, but it is useful information in a world where policy is dominated by the belief that we do know, and that the limits to how much stress the environment can absorb are centuries away.

☐ *If continued, present policies will lead to an in-*

creasing gap between rich and poor. The world economic system is structured to behave exactly the way it is now behaving. Further operation of the system will not all of a sudden produce equity or eliminate poverty.

The models show that even fairly massive adjustments, such as vastly increased foreign aid, would not significantly redress global inequities. For example, in the IIASA Food and Agriculture Program model, 30 million tons of "free grain from outer space" were added to the world market annually. The result was that meat consumption in the rich countries rose, but hunger in the poor countries did not decline. The world system is replete with subtle mechanisms that capture any gains made in less-powerful parts and redistribute them to more-powerful parts. However, several models suggest that conscious policies to improve the lot of the poor can succeed without major sacrifice by the rich.

☐ *Technology can help but is not the answer.* No set of purely technical changes tested in any of the models was enough in itself to bring about a desirable future. This is epitomized by the finding that providing infinite, cheap energy, with no other change, simply exacerbates inequality, population growth, and environmental problems. Providing land or education for the rural poor in several models was much more beneficial to them than providing technologies that increase agricultural yields.

In the process of making a global model, one has to discard fuzzy mental-model concepts of technology as either the cost-free solution to all problems or the source of all evil. From a systems point of view, technology looks more like a tool to achieve goals. If a society's goals are to maximize material possessions, resolve conflicts through military aggression, and maintain hierarchies of power, its technologies—no matter how powerful—will not suddenly produce peace, justice, or environmental quality.

☐ *The interdependence among peoples and nations is much greater than commonly imagined.* Actions taken at one time and on one part of the globe have far-reaching and long-term consequences that are impossible to predict intuitively.

The models constantly surprise even their makers—as when MOIRA found that a small change in Kansas wheat production can undermine Nigerian food policy. A Japanese world model showed that that country's economy rises or falls with the welfare of its poorer Pacific-basin neighbors. When modelers simulated what would happen if all trade barriers were lifted, the results were very complex. Some nations benefited greatly while others lost badly, and it was surprising to see which nations fell into which groups. Free trade is neither the panacea nor the disaster that its advocates and opponents portray.

The results of economic shocks such as the 1973 oil price rise reverberate not only among all nations but also over decades of time. Some models indicate that the economic system still has not settled down from the turbulence caused by the first oil price shock, much less the later ones.

Most governments, especially of large nations, still assume that they can win while others lose. They believe they can act independently, without creating political, economic, or environmental repercussions outside their borders that will return to haunt them. When the repercussions come, they will continue to be surprised.

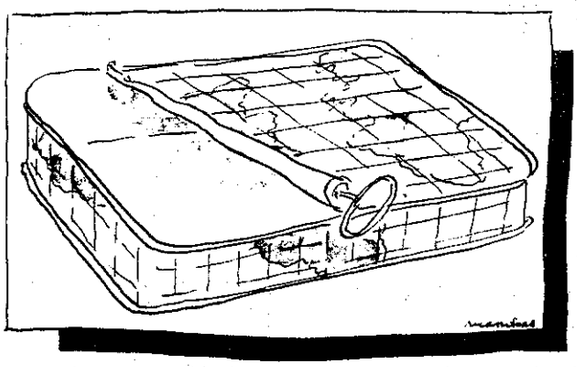
☐ *Policy changes made soon are likely to have more impact with less effort than the same changes made later.* By the time the need to face a problem becomes obvious, there may be no easy solution.

Resource pricing provides one of the classic examples of this principle. According to WIM, steady, slow oil price increases, well in advance of any actual physical depletion, benefit both producing and consuming countries. Gradually rising prices induce consumers to adopt alternatives to oil in a way that does not disrupt their economies, while producers' revenues are maintained. In contrast, the current battle between the oil cartel and the market produces disruptive price cycles in the short term and too-abrupt, too-late signals of scarcity in the long term.

Most kinds of environmental damage, such as desertification and contamination of groundwater, are thousands of time cheaper to prevent than repair. In India alone, bringing the birth rate down to two children per couple in 1995 instead of 2005 can make a difference of 300 million people. Creating equitable distribution systems is far less painful while there is still an abundance to distribute. But policymakers systematically postpone all such decisions as long as possible.

☐ *Many complex international programs and agreements are based on inconsistent assumptions.* Policymakers debate plans that are simply impossible to

Exponential growth cannot continue forever on a finite planet.



achieve while failing to notice real opportunities.

For example, several global-modeling teams have tried to find ways to meet the Lima targets developed by the U.N. Conference on Trade and Development, which specify what shares of world industrial output the Third World should provide by the year 2000. However, these targets were stated so vaguely that the teams could not represent them quantitatively without further interpretation. After representing them as best they could, the teams found the targets essentially unmeetable. And when they forced massive, unrealistic changes on the system so the goals could be met, the modelers found them not even desirable. For example, the Latin American World Model found that for Africa to produce the stipulated amount of manufactured exports, food production, education, and housing would have to decline.

If global models had no other use, they would be worth the price of making them just to impose clarity on the terms of international demands and agreements, and to save the trouble of arguing for conditions that are patently impossible to achieve. One case where a model has been used successfully for just such a purpose is in the Law of the Sea negotiations. Professor J. Daniel Nyhart of M.I.T. developed a model of the costs and returns of undersea mining that was used to debunk initial assumptions that this technology would yield a bonanza. The model enabled the negotiators to agree on international licensing and taxing systems.

A New World

Although something within us knows better, our mental models and those of our leaders cling desperately to the assumption that the future will not be very different from the present. Or that the future will be some smooth extrapolation of the present. Or at least that the future is to be predicted, not to be shaped by human decisions.

It is not possible to maintain those assumptions while contemplating the long-term trends of the world. Global models produce thousands of different simulated futures under thousands of possible sets of policies. None of those simulations proceeds far past the year 2000 without showing significant changes for better or worse. A smooth continuation of present trends can be ruled out as physically impossible.

One hardly needs a computer model to discover current trends that are far from sustainable. The world's use of nonrenewable resources such as petroleum cannot continue indefinitely. The amount of carbon dioxide in the atmosphere—up 30 percent since preindustrial times—cannot continue increasing without disrupting the global climate. Each year 20 million acres of tropical forest disappear, and there are 80 million more people to feed. Each minute the world spends $1 million on armaments and 24 people starve, most of them children.

The range of *real* possibilities includes some nearly unimaginable outcomes, including on the one hand nuclear winter and the end of everything, and on the other a world at peace in which everyone's physical needs are met sustainably. Both these futures are, as far as our present knowledge can tell, very possible, and the difference between them will be determined by the way the world's people understand their options and the way they act.

The global models have not given us the key to full understanding of our complex world. We will probably never have that key. What the global models have done, at least for those of us most closely involved with them, is to be what Stuart Bremer, director of a global-modeling group at Science Center Berlin, calls a "creative irritant." They have forced us to stand back and look at all the complexity, admit it, be humbled by it, and yet continue to keep confronting it. When we do, we see far too many negative trends to be complacent and far too many positive trends to be hopeless. We mainly see a lot of work to do.

DONELLA H. MEADOWS, adjunct professor of environmental and policy studies at Dartmouth College, worked in the System Dynamics Group at M.I.T. on the first global model. She is coauthor of Groping in the Dark *(Wiley & Sons, 1982), a description of the first seven global models, and is a research scholar of the International Institute of Applied Systems Analysis in Laxenburg, Austria.*

San Francisco Chronicle Thursday, April 25, 1985

Why Inventions Flee Overseas

By Michael Harris

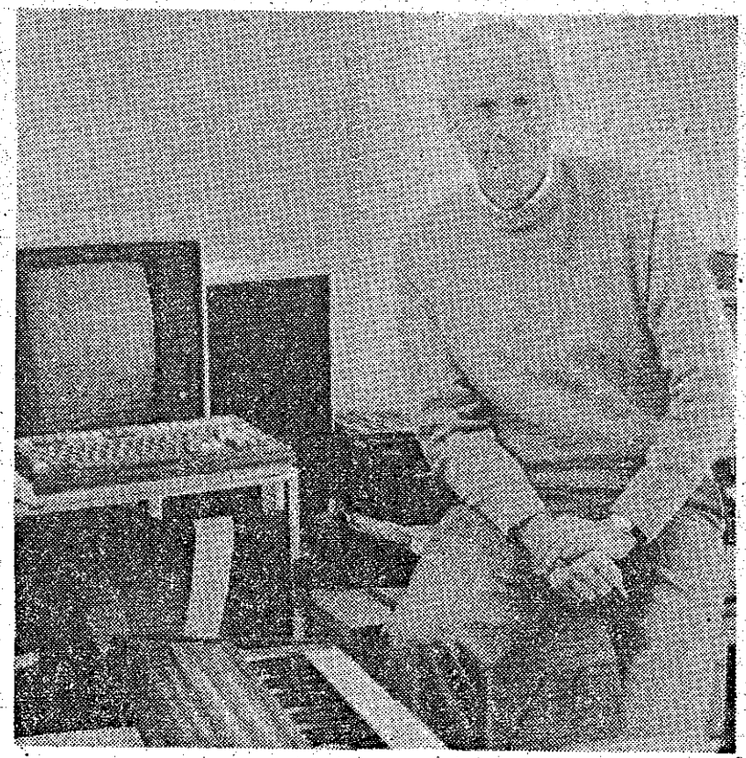
A new musical computer invented at Stanford University is a wonderful money-maker for Japan.

The Yamaha DX7 synthesizer has proven so successful in its first 18 months on the market that demand for the instrument has outstripped production.

Draper's, a Palo Alto music store near the Stanford campus, has already sold "well over 100" for $1995 apiece. More than 25,000 have been sold around the country and 25,000 more worldwide.

The result is that an invention that could have produced export income for the United States has instead increased the nation's record trade deficit.

A second Stanford invention, an acoustical microscope, will come to the United States this year under German and Japanese sponsorship. The device already has won co-inventor Professor Calvin F. Quate a $55,000 award from the Rank Prize Fund of England.



By Vincent Maggiora

Niels Reimers, Stanford's technology licensing director

No numbers are kept nationally or at most invention-producing universities, but some ideas born on campuses in the United States are produced abroad because domestic manufacturers fail to accept the challenge to develop them.

"We always attempt to reach American companies first," said Niels J. Reimers, Stanford's director of technology licensing.

But Reimers and some other university patent officials said they found that American willingness to take risks diminished sharply in the 1970s. So some schools turned to foreign companies after exhausting domestic possibilities.

"An American company sent five engineers and executives to look at the synthesizer," said Reimers. "They liked it but finally decided it was more of a technical challenge than they

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Why U.S. Inventions Profit Foreigners

From Page 29

were willing to take on. Several other American companies also declined to participate."

The acoustical microscope, which relies on sound waves rather than light to operate, originally was licensed to American Optical Co., but remained undeveloped in the United States and ultimately went to German and Japanese interests.

Reimers said Stanford earns about $4 million a year by licensing patents under its control — with about one-third of its income coming from foreign companies willing to undertake projects that Americans rejected.

Stanford is not alone in licensing its patents to foreign firms. Last year, Washington University in St. Louis issued a license to a Japanese firm to manufacture a local area network — a system to link computers over phone lines.

"We tried every U.S. manufacturer first," said Duke Leahey, the school's director of industrial contracts and licensing.

"We have a situation where U.S. universities are the best in the world in both basic and applied research, and where European and Japanese companies are hungry for new technology and are willing to take a flyer," Leahey said.

"Fortunately there are signs that things are getting better now, and many U.S. companies are becoming aware that technology will pass them by unless they invest in new ideas."

Washington University issued a limited license permitting the equipment to be manufactured only for sale outside the United States. The school hopes it will find an American company willing to produce it here after the Japanese show it can be done.

The University of Wisconsin Alumni Foundation, which is ranked third in patent licensing revenue after Stanford and the University of California, has had similar experiences.

"We don't publicize our figures, but probably half our revenue comes from abroad," said Marvin Woerbel, the foundation's director of licensing. Many of the foundation's products are pharmaceuticals not yet licensed for sale in the United States.

If and when the U.S. licenses are granted, he said, the foreign companies will be free to sell their products in this country.

At the Massachusetts Institute of Technology, which received about $2 million in patent licensing income last year — enough to put it in fourth place — approximately 15 percent to 20 percent came from abroad.

Arthur Smith Jr., director of the program, said MIT has instituted what he calls "an aggressive marketing program" in Europe.

But there are exceptions to the trend.

The University of California collected $2.6 million in patent payments during the 1983-84 fiscal year, almost all from domestic sources, said Roger G. Ditzel, director of the patent program for all UC campuses.

Spencer Blaylock of Iowa State University, serving a term as president of the Society of University Patent Administrators, said he thinks the Stanford synthesizer and microscope experiences are atypical.

He said he believes that about 25 percent of patent income received by American universities comes from abroad. But he added he "would be surprised if more than 1 percent" of the patent revenue is derived from products invented on American campuses, produced abroad and then sold in the United States.

Reimers said at Stanford that he sees signs that there may be greater willingness by American companies to license inventions that now go to foreigners by default. But he said some U.S. firms remain harder to deal with than foreign companies.

"We do sign most of our licenses with American companies," Reimers said. "But the guy who has to mobilize things may not have gotten all his ducks in a row, and the project may die."

VENTURE CAPITAL DIRECTORY

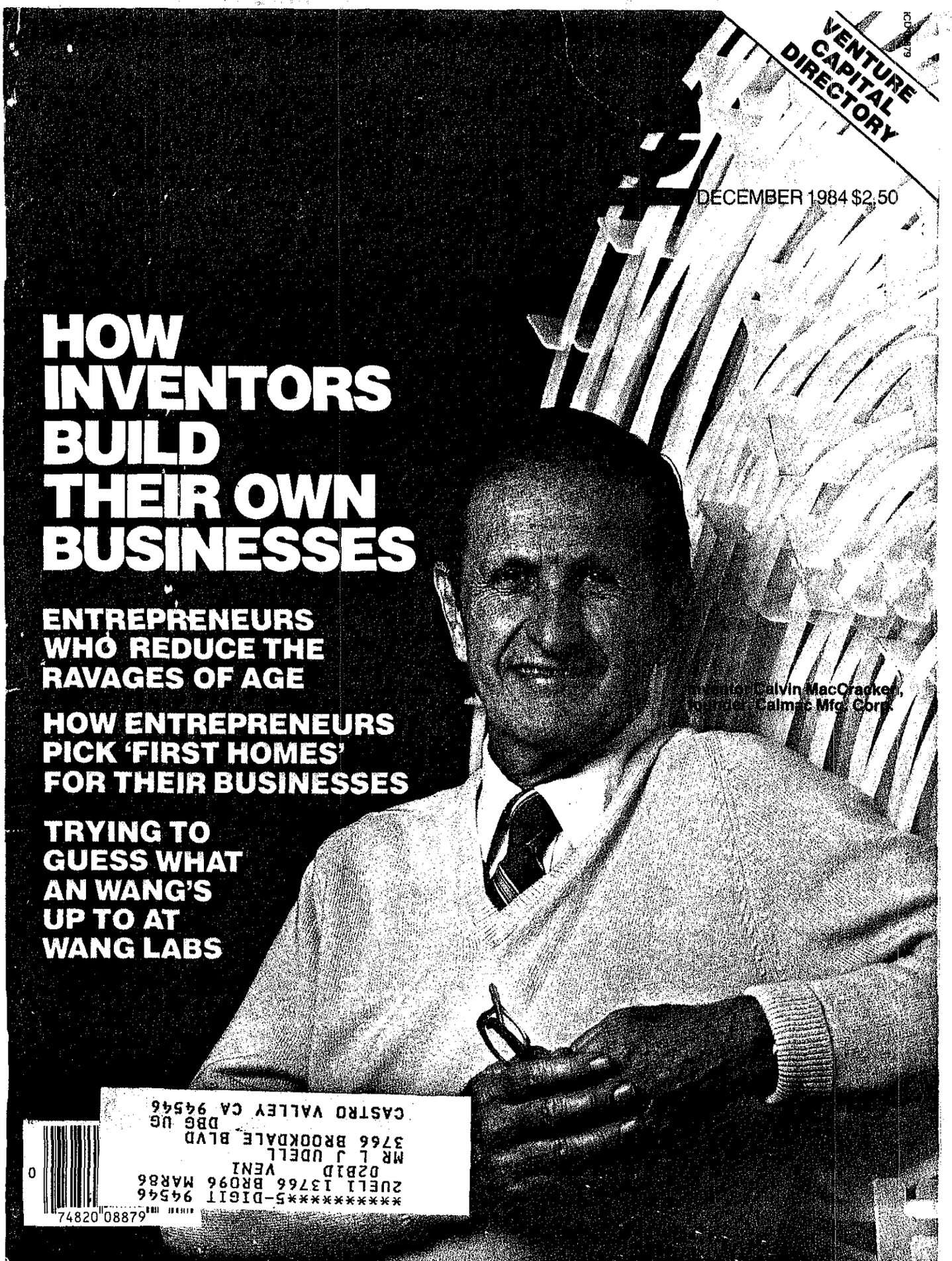
DECEMBER 1984 $2.50

HOW INVENTORS BUILD THEIR OWN BUSINESSES

ENTREPRENEURS WHO REDUCE THE RAVAGES OF AGE

HOW ENTREPRENEURS PICK 'FIRST HOMES' FOR THEIR BUSINESSES

TRYING TO GUESS WHAT AN WANG'S UP TO AT WANG LABS



Inventor Calvin MacCracken, founder, Calmac Mfg. Corp.

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Inventors

BY SABIN RUSSELL

Inventors are learning from entrepreneurs how to turn ideas into profits

In American mythology, independent inventors fit right in with apple pie, motherhood, and Old Glory. From garages and barns, back shops and basements, these lonely geniuses are said to build the stuff of the American Dream. So the story goes.



Caccavo

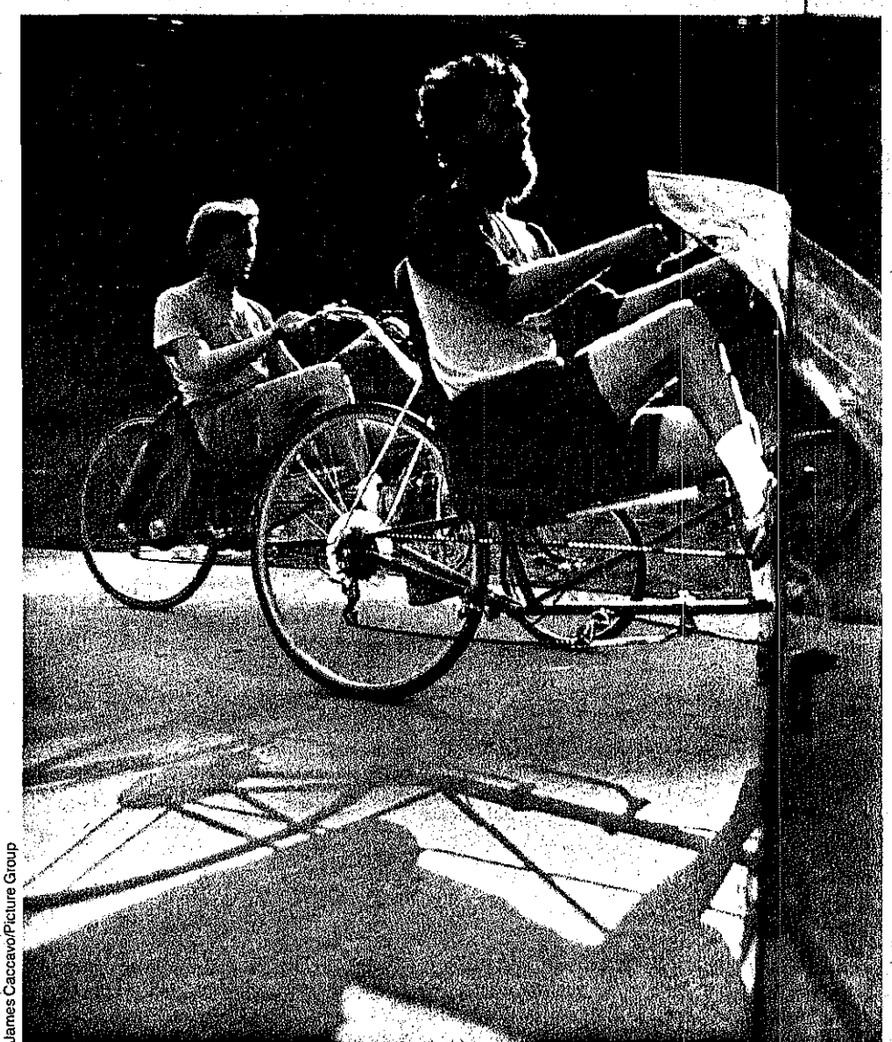
In reality, the American economy largely ignores the backyard inventor. Only 17% of patents issued this year will be assigned to individual inventors. In 1954 individuals accounted for 37%. "The notion of the individual inventor making it happen is increasingly more myth than fact," says O.J. Krasner, a professor of management at Pepperdine University in Malibu, Calif. "More and more, it takes an entrepreneurial team."

Increasingly, inventors are discovering that the entrepreneurial route—frequently in the company of a business partner—is not only potentially more lucrative than the traditional paths, but sometimes is the only option.

Robert Henry, the inventor of a new method of blood analysis, brought in a partner to turn his idea into an immunoassay business with projected sales of $500,000 its first year. Jerry Stubblefield, who designed a new athletic shoe, saw his company go from near bankruptcy to $8 million in sales when professional managers took over. R.M. "Rusty" Hammond, the inventor of a fold-away barbecue, is determined to run his business at arm's length. "Inventors are better off turning it over to someone else. They get too protective," he says.

The entrepreneurial route is not for every inventor. "It has always been the dream of the inventor that his idea be the nucleus of a business he runs himself," says Larry Udell, former president of the National Congress of Inventor Organizations. "Only one out of a thousand has the ability to be an inventor-entrepreneur. It's the intelligent inventor who recognizes his own limitations and starts to assemble a team."

As others who've started companies have discovered, entrepreneurship isn't an easy road. Like other entrepreneurs, inventor-entrepreneurs often have to take a back seat in management if the companies they found are to sustain their initial success beyond the first few years. But the transition may



James Caccavo/Picture Group

Partners Gardner Martin (foreground above) and Nathan Dean thought of their invention before they thought of starting a business. Without outside management help, sales of Easy Racers' recumbent bicycles have been slow

Come of Age



take place even more quickly for the inventor than for the average entrepreneur. "That's a wrenching personal experience that a lot of inventors don't want to go through," says Herbert Keirulff, professor of entrepreneurship at Seattle-Pacific University. Like other entrepreneurs, the inventor-entrepreneur is likely to achieve big success only on the second—or later—try, sometimes with a completely different invention.

And inventors have found that the network of financiers and consultants that has grown up to help new businesses isn't always suited to their needs. Venture capital doors are usually closed to the independent inventor. As New York financial consultant Burt Alimansky observes: "Investors don't invest in inventions. They invest in businesses. It's the organization that is going to attract the money."

Holder of 81 patents, Calvin MacCracken qualifies as one of America's most prolific independent inventors. (His *A Handbook for Inventors*, Charles Scribner's Sons, 1983, tells how it's done.) In 1947 he founded Calmac Mfg., Englewood, N.J., after co-developing the jet engine at General Electric. Launched in business by a $150,000 stake from American Research & Development Corp., one of the nation's earliest venture capital firms, MacCracken has developed and sold eight major product lines, ranging from solar swimming pool heaters to the Roll-a-Grill, the hot dog cooker at sports arenas, which slowly spins the dogs as they cook on a bed of heated rollers. MacCracken collects royalties from exclusive licenses on product lines he's relinquished. But he tells inventors to consider entrepreneurship as a route to licensing. "You don't get very much for your invention unless you've made and marketed the product yourself," he advises.



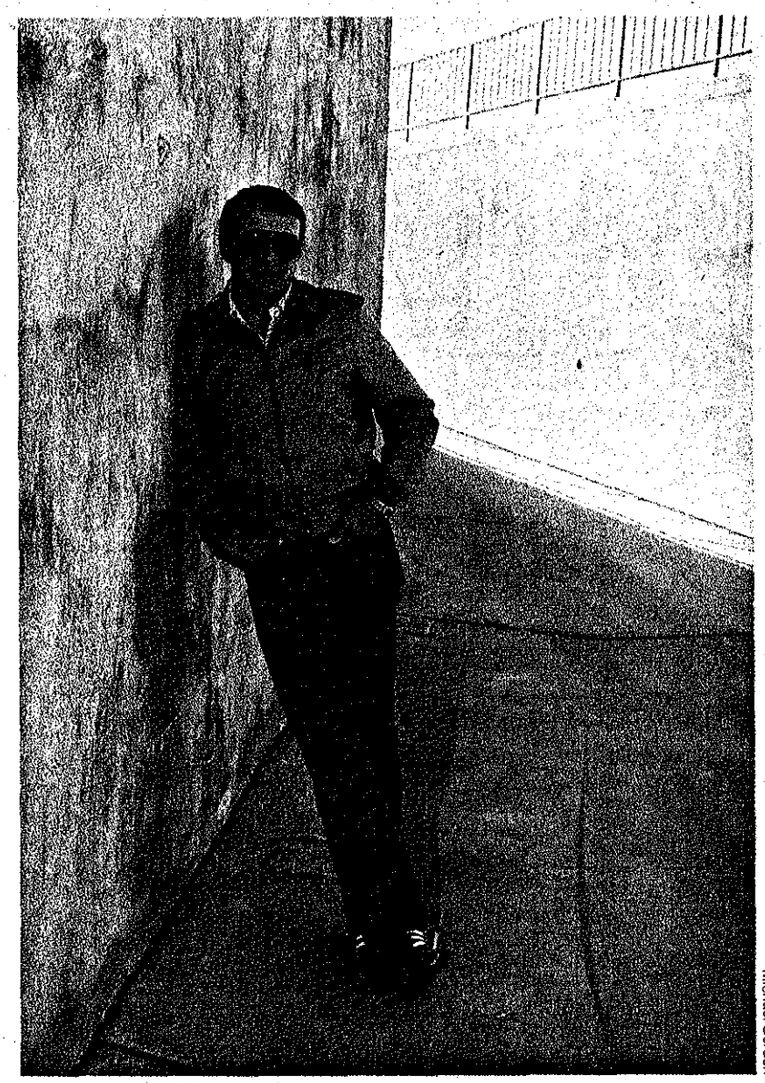
Bill Kelly

Holder of 81 patents, Calvin MacCracken (above) reaped $2 million in sales from Levload Ice Banks. "The big secret to starting a small business and having it succeed is hiring the right people"

Right now MacCracken is busy manufacturing his latest invention, which he is marketing in partnership with his 30-year-old son, Mark. Dubbed Levload Ice Banks, the system is designed to cut operating costs for commercial air conditioning in half. The device makes ice during night hours when electricity prices are lower, stores it, then uses it to cool buildings during the day when prices shoot up.

MacCracken anticipates earnings of about $300,000 on sales of $2.5 million for Calmac in 1984. About 80% of that comes from Ice Banks. The company has invested close to $1 million to bring Ice Banks to market, most of that from the sale in 1981 of his solar collectors to Besicorp for 1.2 million shares of Besicorp stock.

"Our barbecue is to other barbecues as the hide-



Michael Gordon

Even though he'd headed a corporate R&D effort, Bruce Vorhauer (above) knew no venture capitalist would back his idea for a contraceptive sponge. His company, VLI Corp., completed a $26 million public offering in 1983



Gordon



Gordon

a-bed is to a couch," says Rusty Hammond, a Fort Worth, Tex., inventor-entrepreneur. In 1982 Hammond revved up Leisure Mfg. in Des Plains, Ill., a company he'd mothballed from one of his earlier ventures, to produce the $995 folding grill. Despite a minimum of advertising, sales have reached $2 million, Hammond says. Unsatisfied, Hammond has enlisted the help of six "business angels" who are now preparing to invest $1.2 million in a plan to boost sales to $50 million in five years. Although Hammond is an experienced businessman, he wants to run Leisure Mfg. at a distance.

Jerry Stubblefield learned Hammond's lesson the hard way. A former high school physics teacher and basketball coach, he invented a radically different athletic shoe, featuring a shock-absorbing, "cantilevered" sole in 1977. After nearby Nike Inc. turned him down, he licensed the technology to Osaga, a shoe retailer backed by Japanese giant Mitsubishi. When Osaga foundered in 1980, he canceled the license, located a pair of business partners, and raised $850,000 in convertible debentures to launch Pensa Inc. in Tigard, Ore.

Eighteen months later, just as the firm was ready to ship its Avia basketball shoes, Stubblefield's partner announced the company was broke. "I understood what the athlete wanted in footwear, but I didn't understand business," he shrugs.

In September, 1982, Pensa was bailed out by a personal $250,000 infusion of funds from venture capitalist Henry Hillman, who took over the helm and recruited sales help from Nike. Stubblefield took a back seat as vice-president for R&D. With the aid of an additional $2.5 million in venture capital, Pensa's sales rose to $8 million this year from $1.8 million in 1982. The firm is now profitable, and Hillman expects sales of $20 million in 1985. Stubblefield keeps a 25% stake in Pensa. "Most inventors would like to become entrepreneurs," he says, "but what it takes is organization—marketing, sales, finance—and most inventors can't do it alone."

Robert Henry, the inventor of a new blood test, didn't try to do it alone. He got help from both a venture capital company and an outside partner. Henry was general manager of Union Carbide's European medical products division in France when the business was sold in 1981. He left and soon devised a technique to identify antibodies in the blood using dye polymers—giant molecules that can signal the presence of a disease by changing color in solution. Current techniques in the $400 million immunoassay business require use of mildly radioactive substances or costly enzymes to identify antibodies.

Once he had established the concept, Henry headed for the U.S. But he found that even an inventor with excellent credentials has a hard time getting a hearing from venture capitalists. After one year of pounding the pavement, he raised $750,000 in equity money from a team headed by CW Ventures in New York and an additional $800,000 through an R&D partnership in April, 1983. Henry's Photec Diagnostics Inc. of Little Falls, N.J., plans to release its first clinical product in the first quarter of 1985 and expects sales for the year to top $500,000.

Henry says he understood from the beginning that he would need a partner. Through CW Ventures, he found Jim Mongiardo, a 10-year veteran of

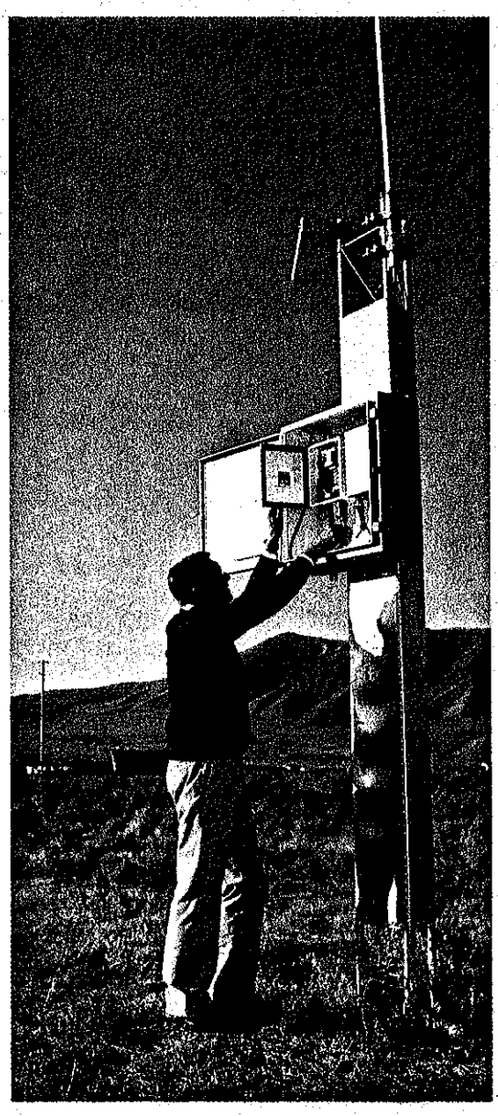
Schering-Plough Corp., who had been responsible for U.S. marketing. Since joining Photec as president last March, Mongiardo has assumed control of marketing and administration, freeing Henry to handle R&D and production.

CW Ventures is one of the rare venture firms that backs lone inventors. Crosspoint Venture Partners is another. The Palo Alto, Calif., firm manages $58 million in funds and nurses young startups in an 11,000-sq.-ft. incubator, where new companies can rent office space for one-tenth the going rate, according to partner John Mumford. One engineer, William Cargile, has been made a Crosspoint general partner. For a five year period, ending in 1979, Cargile had tried unsuccessfully to sell an electronic device that tested automobile shock absorbers, oblivious to a lack of demand for his product. "The big issue is marketing, not engineering," says Cargile. "That's what brought this inventor back to earth."

With $400,000 seed funding from Crosspoint, Cargile turned another idea into Software Security Corp. in November, 1983. The company manufactures an electronic lock designed to keep unauthorized users away from sensitive computer data. Without a $10 key that reads signals from the computer screen and translates them into a type-in access code, an information thief would have no chance to tamper with the software. Operation of the young company, recently renamed Gordian Systems Inc., has been passed to newly hired president Richard Otte. "The ideal situation for the inventor is to be in there for as long as he has to, and then to get the hell out before he fouls it up," says Cargile, who remains as chairman of the venture.

In the end, however, the independent inventor's most likely source of finance remains the small private investor who can be pursuaded to pony up $10,000 to $50,000.

These business angels, says William Wetzel, professor of finance at the Whittemore School of Business and Economics at the University of New Hampshire, are more likely than a venture capitalist to back an inventor because they tend to be willing to wait longer for a payback. In a 1981 Small Business Administration-backed study of business angels, Wetzel found that a quarter of a sample of 133 were willing to wait more than 10 years for a return or simply felt the length of time did not matter. (Venture funds, on the other hand, look for a return within 5 to 7 years.) With a small grant, Wetzel has launched a pilot program to identify business angels and match their investment interests with potential entrepreneurs. Entrepreneurs are charged $100 to sign up for this pilot computer matching service. Since the program was launched in May of this year, "the volume of activity has outstripped our expectations," Wetzel says.



Lance Iverson/Picture Group

Inventor John Kleppe (above) is using government contracts, a $750,000 private placement, and the sale of a prior business to get Scientific Engineering Instruments off the ground. Kleppe's invention bounces radio signals off the tails of meteors

Angel Echevarria borrowed $35,000 from relatives to launch a furniture ticking business 17 years ago. The business venture served as the springboard for his own invention, a waterbed mattress marketed as the Somma, which has boosted annual sales of privately held Angel Echevarria Co. Inc. to $36 million. Patented in 1978, the mattress contains seven water-filled cylinders that run from the head to the foot of the bed and use only three inches of water instead of the standard 10. The Los Angeles businessman was able to get his invention started with the help of a $250,000 SBA loan, but for the most part, Angel Echevarria has been his own angel.

Bruce Vorhauer, the inventor of a contraceptive polyurethane sponge, needed business angels to get his business off the ground and to rescue the company five years later. Vorhauer, a vice-president for research and development at American Hospital Supply, quit the company in 1975. It took $300,000 from a friend to launch VLI Corp. and two years of experimentation in a Newport Beach, Calif., kitchen before others began to take notice. The Ford Foundation backed initial clinical tests in Mexico City, and in late 1977, drug giant G.D. Searle loaned VLI $400,000 interest free in exchange for rights to buy the company. Beset with internal problems, Searle dropped the project, but in 1979 Schering-Plough signed a similar deal for a $180,000 loan. In early 1980, Schering-Plough dropped out.

"Two big drug companies had dropped me," recalls Vorhauer. "By the third quarter of 1980, things were grim." But in late 1980 a group of physician friends raised $500,000 in an R&D partnership in exchange for a 20% stake in the company. VLI's first round of venture capital financing, $2 million worth, followed in 1981 from Golder, Thoma & Cressey, Continental Illinois, and the Sprout Group. An additional $3 million came through in 1982, and after the

Inventors dream of running their own companies. It's hard for them to step aside

FDA approved Vorhauer's sponge in April, 1983, VLI completed a $10 million private placement. The firm netted another $26 million in a public offering underwritten by L.F. Rothschild, Unterberg & Towbin, N.Y., that October. VLI today is engaged in a major assault on the contraceptive market, having launched a $5 million national advertising campaign for its Today sponge. VLI showed a loss of $2.9 million on sales of $8 million through the first three quarters of 1984.

Not all inventors are ready to surrender control or take a back seat. Inventors interested in keeping control and willing to pass up fast growth are likely to turn to bootstrapping—generating capital from internal operations. Gardner Martin has bootstrapped the production of his recumbent bicycle, which retails for $850. Martin's idea for the Tour Easy developed out of his work with a cult of engineers who design aerodynamic shells for bicycles that race at Indianapolis and other speedways. Aided by his wife and a partner, Martin subcontracts manufacturing of the bicycle components and assembles them in a Watsonville, Calif., barn. Founded in 1980, Easy Racers Inc. earned $30,000 on sales of $100,000 in FY 1983, and Martin didn't pay himself a salary. In FY 1984, Easy Racers showed a small loss on sales of $110,000, and Martin did draw a paycheck. He's exploring the possibility of forming a limited partnership or securing an SBA loan to finance a plan aimed at quadrupling sales. "We're in a position now, that if we want to borrow some money, we probably can," he says. "I'm going to try to make $1 million in sales next year."

RELYING ON HUSTLE

For other inventors, like Boston's John Adams, bootstrapping is a way of life. Adams' career as an inventor began when he was a student at Harvard 15 years ago. Adams is the inventor of an array of products, including book holders for bathtubs, foldable luggage carts, and a plastic grabber to protect fingers from Brillo pads. Adams Products and Research Co. incorporated in 1975, generates revenues of "under $200,000" annually from the manufacture and sale of the inventions. Adams says that he has made hundreds of thousands of dollars on some of his ideas, but "if you love inventing, you find it gets eaten up with new projects."

No millionaire, Adams relys on hustle to finance his projects, cutting deals with banks, subcontractors, and business angels. He survives, he says, by constantly inventing new products and because of the good will of those "who do not call in their loans."

To sell his patent, John Yount, inventor of a method to chemically strip scrap fiberglass of its resins, had to get the attention of a prospective licensee, so he wound up starting his own company. Five years ago, Yount, now president of J.W. Yount Corp., a distributor of chemical degreasers and cleaners, in tiny Bullock, N.C., first tried to sell the idea to Owens-Corning Fiberglas, which buries 25,000 lbs. of scrap a day at a plant in Aiken, S.C. "They told me to take a flying leap," he says. Undaunted, he invested $25,000 of his own money and built a pilot plant himself. He began clearing $600 a day selling recycled fiber to such Owens-Corning customers as GAF. That brought Owens-Corning running. The company paid him $15,000 for an option on the patent and built a large pilot facility in Aiken for further testing.

Bootstrapping isn't necessarily either small or simple. John Kleppe's Scientific Engineering Instruments Inc. has supported its R&D phase through a combination of government contracts, corporate R&D work, and the proceeds from the sale of one of Kleppe's former companies. The Sparks, Nev., company builds components for a remote data acquisition network that relies on bouncing radio signals off meteorite trails. "Meteorburst" communications is, in fact, a little known but proven technology pioneered in the 1950s by military re-

PATENT HELP FOR INVENTORS

"A patent only gives you the right to go to court," muses Florida inventor John Pfanstiehl. "The average cost of a patent infringement suit is $250,000, and you usually lose."

Theoretically, a patent is a contract between an inventor and the federal government granting the inventor a 17-year monopoly on an idea in exchange for making it public. Unfortunately, in reality, the patent application process has proven time-consuming and costly, and the patents themselves ineffective protection.

But things are changing. An overhaul of the patent system begun in October, 1982, set up a new federal Circuit Court of Appeals for patent cases. Since then, say patent attorneys, appeals court Judge Howard Markey has dramatically shifted the balance of decisions in favor of inventors. "The court is clearly sustaining patents that would have been struck down in the past," says Boston patent attorney Martin O'Donnell. "The value of a patent today is stronger than at any time in this century." Markey's rulings are having the intended effect at the district court level.

Meanwhile, changes in patent office procedures also promise to improve patent protection by streamlining the application process. Commissioner of Patents & Trademarks Gerald Mossinghoff has doubled his budget to fund a $300 million program to computerize the office's massive filing system, with completion of the project slated for 1990. —*S.R.*

Most venture capital funds don't welcome inventors. Investors don't put money in ideas, says one consultant, they invest in businesses

searchers. The earth's atmosphere is bathed in billions of dust-size meteors, whose fiery arrivals on earth leave ionized trails that can amplify a radio signal. In effect, meteor trails can do for free what a $150 million commmunication satellite is designed to do.

Crucial to Kleppe's network is a system of transmitters that fire signals at randomly timed intervals. Called Popcorns, they transmit data up to 100 miles from the sites of remote sensors to a central station that can then use meteorburst to send the information anywhere within a 1,200-mile radius. Sales of the five-year-old research firm were only $133,000, mostly from R&D contracts, in FY 1984, but Kleppe says he is angling for a $4.5 million contract with the Egyptian government to report water levels along the Nile River. In July, 1984, the company raised $750,000 in a private placement. "The problem with marketing this," Kleppe acknowledges, "is that it sounds so bizarre." Still, Kleppe expects sales to reach $21 million by 1987.

Increasingly inventors can go to Uncle Sam instead of near relations for funds. Several new government research programs have increased funding for independent inventors. But competition is intense and some of the programs are slanted toward inventors with established research facilities rather than backyard tinkerers. Here, too, it seems inventors are more likely to succeed in getting a grant if they're part of a company.

REPAVING HIGHWAYS

One government program sponsored by the National Bureau of Standards and the Dept. of Energy is aimed at lone inventors whose ideas might yield energy savings. Out of 20,000 applications screened by the NBS since 1975, 180 have received grants totaling $14 million, says George Lewett, NBS chief of the federal Office of Energy Related Inventions. A study by Mohawk Research Corp., Lake Forest, Ill., found that every dollar put into the program generated $17 in sales and follow-on private risk capital. The program has a budget of $5 million for FY 985.

Among the beneficiaries of the federal grants is Dick Jeppson, a Carmel, Calif., inventor and entrepreneur who has developed a vehicle to resurface highways by melting the pavement with microwaves, remixing the asphalt, and rolling it out again. "You can make a new highway with the materials already there," says Jeppson, who shares his patent with Micro Dry Corp., a microwave drying equipment maker he founded in 1962 and subsequently sold. Jeppson's Microwave Pavement Heating Systems Corp. has used two federal grants totaling $89,000 to refine the concept, and he is now seeking $3.3 million in venture capital to develop a full-scale prototype.

With passage of the Small Business Innovation and Development Act in July, 1982, the stage has been set for substantial increases in government funding of independent inventors. Small Business Innovation Research (SBIR) grants totaling $125 million were awarded through 12 government agencies in FY 1984, and the figures will rise to $450 million annually by FY 1987. A National Science Foundation SBIR pilot program, launched with $1 million in 1977, yielded $8 of private investment for every federal dollar spent. Initial grants of $50,000 are designed to fund proposals for six months. Second phase grants run up to $500,000. But program administrators look for an equal commitment of third-party money before awarding a second phase grant.

The government programs aren't designed for the backyard tinkerer. According to Roland Tibbetts, SBIR program manager at NSF, only 19% of his agency's grantees to date are one- or two-person firms. "If you don't have a good research facility, forget it," says Tibbets. "We're aiming at high risk, university-quality research."

The SBIR program helped former IBM engineer John Bates get his invention off the ground, but, again, it took outside management to turn the idea into a substantial business. A $30,000 grant in 1981 helped the Endicott, N.Y., engineer build a model of his voice recognition system, which he had developed at home for nearly a decade. The most significant contribution may have been the SBIR-sponsored seminar he attended in June, 1982, where he met the speaker, businessman Peter Vollers. Seven months later, Bates and Vollers founded Vois Inc. Through Vollers' connections, the company raised $100,000 with the sale of a nonexclusive license, and the firm expected to close a $2.5 million R&D partnership to bring the product to market in 1985. "Without strong professional and financial management help, he would still be in his basement," says consultant Burt Alimansky, who helped arrange the financing.

Today's entrepreneurial climate bodes well for the inventor, but it does not guarantee success. "The opportunities for an inventor to realize delivery into the marketplace have certainly increased," says Pepperdine's Krasner, "but the potential of that process contributing much more is great." "The greatest need in the process of innovation is practical education for inventors on how to get their idea to market," says the Bureau of Standards' George Lewett. "We can out-invent the rest of the world," says Udell, "but you've got to get people turned on—there's got to be incentive."

Will Russia Dare Clean Up Its Economic Mess?

By Seweryn Bialer

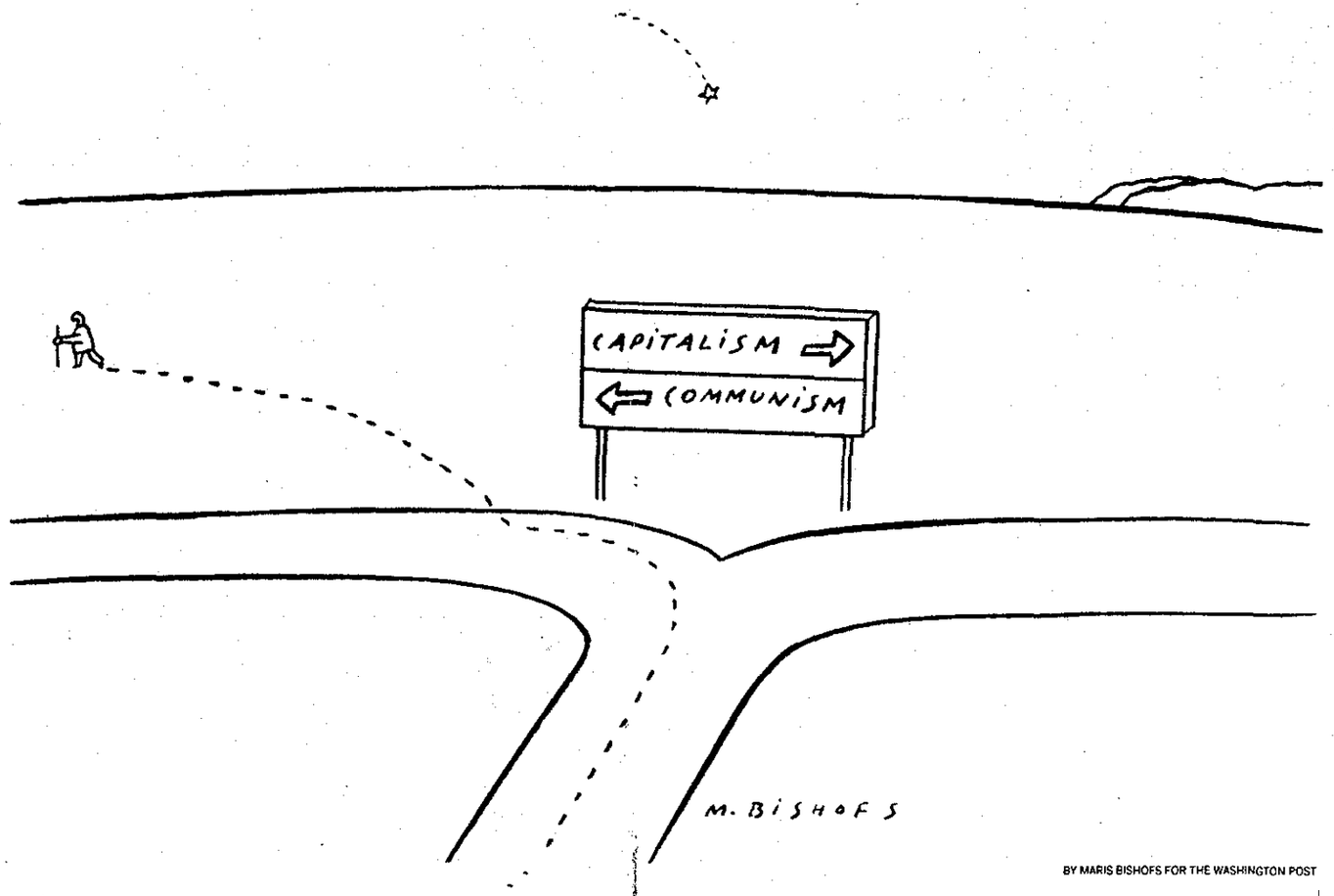
MIKHAIL GORBACHEV has come to power in Moscow at a time of grave crisis in the Soviet Union. The situation cries out for creative and forceful leadership. But will Gorbachev be able to provide it? Will a new Soviet leader really be able to make a difference?

Gorbachev has inherited a non-competitive Soviet economy that is in a terrible state. A cumbersome system of central planning produces shoddy goods, and discourages any sort of creativity or technological innovation. The Soviet economy is simply incapable of participating in the high-tech, electronic age.

The economic crisis is compounded by a social crisis, manifest in a catastrophic decline of the work ethic and of discipline among Soviet workers and managers. Corruption and drunkenness are rampant. Upward mobility for the children of the Soviet working classes, once a major stabilizing factor in society, is declining precipitously. Workers' children no longer can expect to get higher education and better jobs than their parents.

A political crisis has also been obvious in the paralysis of leadership of the last half dozen years, when old leaders have proven incapable of meeting the many challenges before them. Crisis is also evident in ideology. Marxism-Leninism has degenerated into familiar, but irrelevant, sloganeering. With rare exceptions, Soviet books, movies and plays are dreary representations of a make-believe world of heroic workers and selfless officials that few citizens even pretend to recognize as real.

The most intriguing option available to Gorbachev and his colleagues under these circumstances would be radical reform — a broad and thorough overhaul of the economy and political institutions that would change the fundamental operating principles of the Soviet system. It would involve not a change *in* the system but *of* the system.



BY MARIS BISHOFS FOR THE WASHINGTON POST

But logical as such an initiative might seem to Western eyes — and tempting as it may be for the new leadership in Moscow — such sweeping change would face formidable opposition from within the system. Radical reforms can be attempted only by a brave, self-confident leader who is ready to assume major risks, and can convince his coalition that these risks are necessary.

To enter on such a road Gorbachev would have to be as ruthless and single-minded as Joseph Stalin was with his "revolution from above" in the 1930s, and as adroit a politician as was Nikita Khrushchev in the first seven years of his anti-Stalin campaign. For while almost everyone in Russia speaks about the urgent need for reform, a radical reform program in fact lacks a constituency from below.

Nevertheless, the possibility that Gorbachev and his closest collaborators will attempt radical changes cannot be excluded.

In the event they do, their policies are likely to borrow from Hungary's successful "new economic mechanism" or Yugoslavia's "market socialism." Those countries are now ahead of other communist societies in overall economic performance, consumer satisfaction, ability to absorb Western technology and ability to adjust to changes in the international marketplace.

See GORBACHEV, K2, Col. 1

Seweryn Bialer, professor of political science at Columbia University, travels often to the Soviet Union.

ment. The non-Russian nations of the Soviet Union will not rebel. The Soviet professional and middle classes will not endanger their careers by dissent. The Soviet party will not abdicate its dominant role. The Soviet military will not plot to take over power. Yet the crisis of the Soviet system is very real and if the trend is not reversed it may lead in the future to an authentic crisis of survival.

Assuming that a radical reform is not in the cards for the 1980s, how much can the Soviet domestic system improve under Gorbachev? Gorbachev need not transform the Soviet Union to be a successful leader, at least in the short term. For the last seven or eight years, Russia has been muddling down. Gorbachev will be a success if he can merely get the Soviet behemoth to muddle up.

Outside of radical new policies, there are at least four other approaches that Gorbachev can consider.

The first is the easiest — to shake up the system by reinstituting strong, vigorous, demanding central leadership. This is already happening. The top decision-making and executive bodies, the politburo, the Communist Party secretariat and the council of ministers will be purged of the old or inefficient, who will be replaced by the younger and energetic of proven talent.

The authorities will crack down on lax work habits and appeal to patriotism and pride to cajole a better performance out of the workforce. They will revive the policy initiated in the short-lived regime of Yuri Andropov of prosecuting cases of brazen and large-scale corruption. And they will try to teach modern managerial techniques to many of the nation's managers.

The second option is to reorder national priorities and redistribute existing resources.

Tinkering of this kind could have a real impact, as one example — that of energy — suggests. The major thrust of the existing Soviet energy program is to increase (despite soaring costs) petroleum production in the forbidding conditions of western Siberia, and to convert Soviet industrial consumers from oil to gas.

But, as we have learned in the industrial West, the most promising and least costly way to deal with the energy problem is to promote conservation. In Russia, that would require rewarding managers of individual enterprises for using less energy. But such an incentive would be almost a contradiction in terms for the Soviets, for whom more has always meant better.

Changes in policy are also likely in agriculture. Chernenko announced an extensive program to reclaim



MIKHAIL GORBACHEV

vast areas of marginal farmland. But there is good reason to doubt the effectiveness of this policy, and Gorbachev could radically alter it in favor of intensifying production and improving efficiency on existing farmland.

As much as 20 percent of the average Soviet harvest is wasted for want of adequate roads, trucks, railroad facilities, grain silos and fertilizer storage. I expect Gorbachev to concentrate on this problem.

A third option would be to make changes in Soviet organizations and the bureaucracy. Near the end of his career, Khrushchev tried to radically reorganize the Communist Party's huge bureaucracy. Other party officials resisted, and Khrushchev's tinkering was used against him by those who removed him from power in 1964. Khrushcehv's "harebrained schemes" are now famous in the Soviet Union, and their bad reputation will discourage Gorbachev from doing much in this realm.

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In agriculture, Andropov sent agricultural contract brigades to many collective farms, particularly in the important farming areas of Georgia and Armenia. Relatively small groups of collective farmers are assigned plots of land and agricultural implements. They sign production contracts with the government and are guaranteed rewards when they exceed quotas. This system could be improved and expanded.

A fourth option is to allow a little private enterprise.

Inadequate services in cities, from plumbing to shoe repair to small restaurants, could use a dose of private initiative. The poor quality of these services, which has given rise to a large illegal (or semilegal) "second economy," contributes to inflationary pressures and frustrations in everyday life. Allowing private services would depart from traditional communist ideologically. But such businesses would only exist at the margins of the economy, and would not endanger the party and state's political control over the economy as a whole.

The timidity of Soviet leaders has prevented such reforms in the past. This failure is an example of the psychology of Soviet functionaries for whom the concept of "spontaneity" is still a taboo, and who are aghast at the idea that anything could exist in Russia which is not entirely under their control. Breaking out from these psychological restrictions is a necessary precondition for reform.

Nevertheless, I would not dismiss all the reform steps that the new leader may undertake as mere cosmetic changes. Their cumulative effect may improve the Soviet domestic situation and even arrest the declining performance.

To a decisive degree, their effectiveness will depend on the strength of will, persistence and vision of Gorbachev himself, and particularly on his ability to shape a coalition within the Soviet hierarchy that is committed to reforms, both because of its loyalty to Gorbachev and because of its conviction that change is what Russia needs.

The outcome of Gorbachev's battle with bureaucratic inertia, political conservatism, ideological exhaustion and the present mood of pessimism will define to a large degree not only the Soviet domestic situation but also its international standing and aspirations.

Will Russia Dare Clean Up Its Economic Mess?

By Seweryn Bialer

MIKHAIL GORBACHEV has come to power in Moscow at a time of grave crisis in the Soviet Union. The situation cries out for creative and forceful leadership. But will Gorbachev be able to provide it? Will a new Soviet leader really be able to make a difference?

Gorbachev has inherited a non-competitive Soviet economy that is in a terrible state. A cumbersome system of central planning produces shoddy goods, and discourages any sort of creativity or technological innovation. The Soviet economy is simply incapable of participating in the high-tech, electronic age.

The economic crisis is compounded by a social crisis, manifest in a catastrophic decline of the work ethic and of discipline among Soviet workers and managers. Corruption and drunkenness are rampant. Upward mobility for the children of the Soviet working classes, once a major stabilizing factor in society, is declining precipitously. Workers' children no longer can expect to get higher education and better jobs than their parents.

A political crisis has also been obvious in the paralysis of leadership of the last half dozen years, when old leaders have proven incapable of meeting the many challenges before them. Crisis is also evident in ideology. Marxism-Leninism has degenerated into familiar, but irrelevant, sloganeering. With rare exceptions, Soviet books, movies and plays are dreary representations of a make-believe world of heroic workers and selfless officials that few citizens even pretend to recognize as real.

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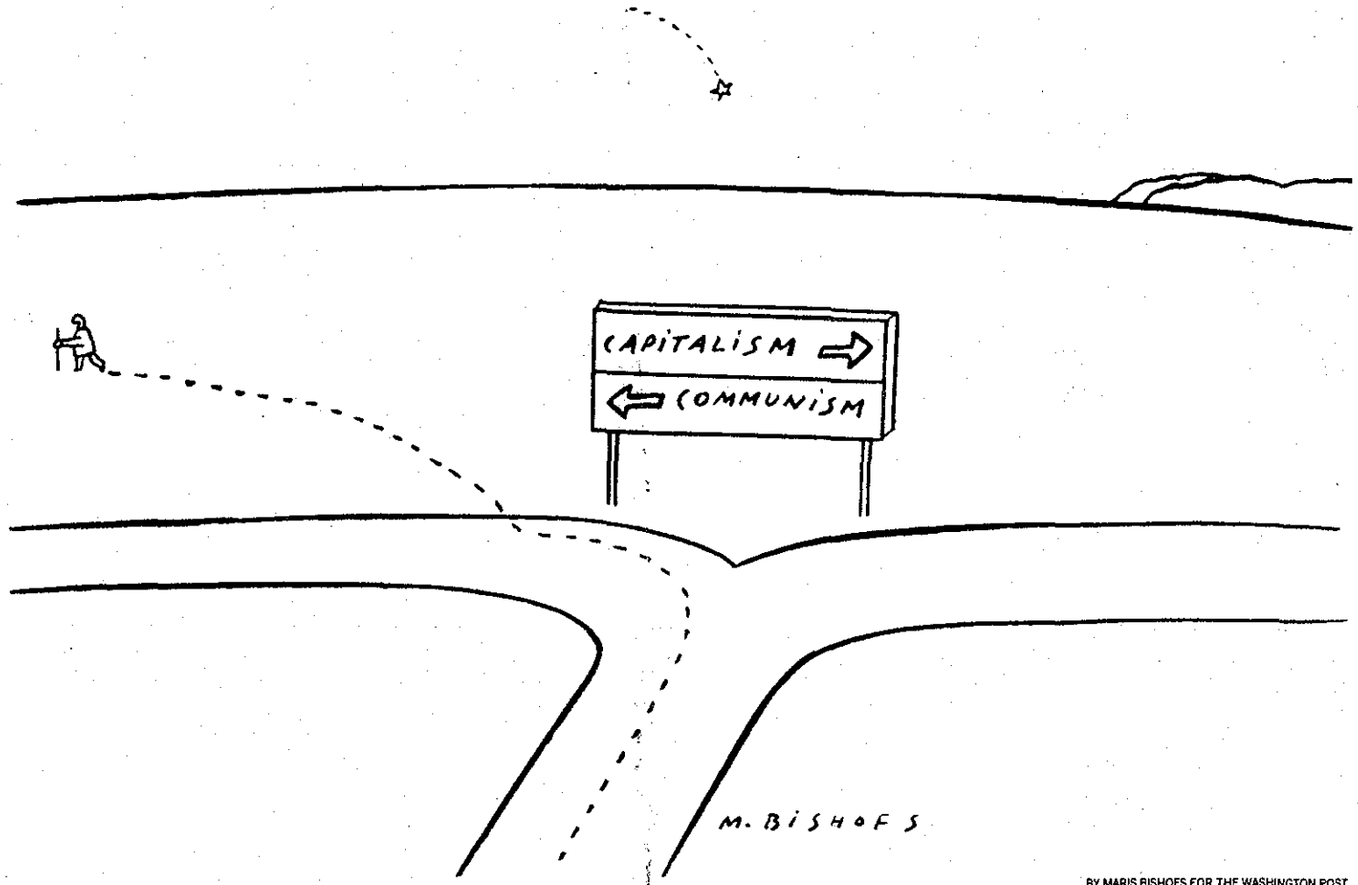

BY MARIS BISHOFS FOR THE WASHINGTON POST

But logical as such an initiative might seem to Western eyes — and tempting as it may be for the new leadership in Moscow — such sweeping change would face formidable opposition from within the system. Radical reforms can be attempted only by a brave, self-confident leader who is ready to assume major risks, and can convince his coalition that these risks are necessary.

To enter on such a road Gorbachev would have to be as ruthless and single-minded as Joseph Stalin was with his "revolution from above" in the 1930s, and as adroit a politician as was Nikita Khrushchev in the first seven years of his anti-Stalin campaign. For while almost everyone in Russia speaks about the urgent need for reform, a radical reform program in fact lacks a constituency from below.

Nevertheless, the possibility that Gorbachev and his closest collaborators will attempt radical changes cannot be excluded.

In the event they do, their policies are likely to borrow from Hungary's successful "new economic mechanism" or Yugoslavia's "market socialism." Those countries are now ahead of other communist societies in overall economic performance, consumer satisfaction, ability to absorb Western technology and ability to adjust to changes in the international marketplace.

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Assuming that a radical reform is not in the cards for the 1980s, how much can the Soviet domestic system improve under Gorbachev? Gorbachev need not transform the Soviet Union to be a successful leader, at least in the short term. For the last seven or eight years, Russia has been muddling down. Gorbachev will be a success if he can merely get the Soviet behemoth to muddle up.

Outside of radical new policies, there are at least four other approaches that Gorbachev can consider.

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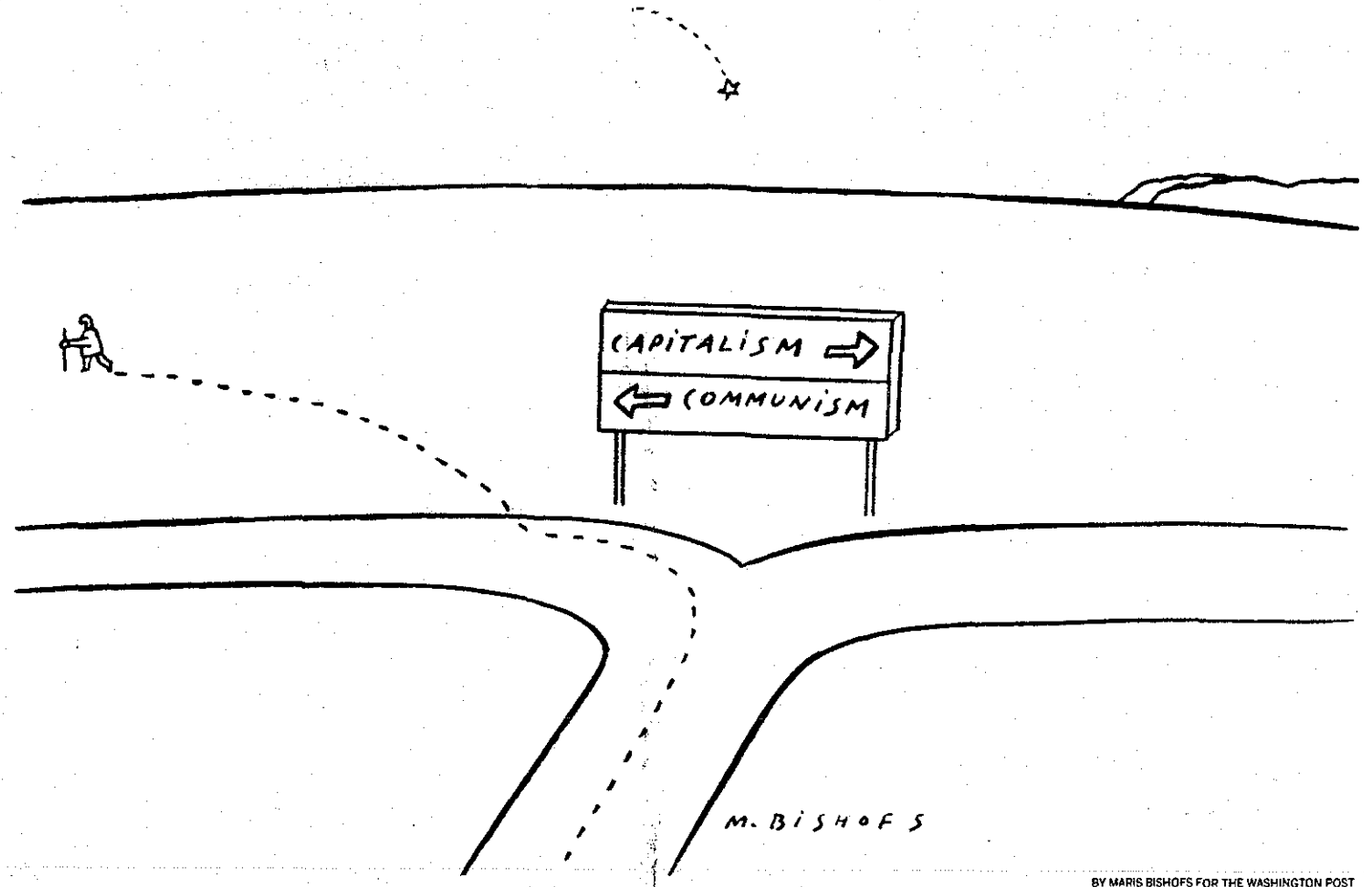

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Risks of Reforming Russia

GORBACHEV, From K1

The most recent, dramatic example of radical reform in progress is the People's Republic of China, where collective farms have been dissolved and peasants are working on their own farms, and where industry is being reformed to give more independence to factory managers, make prices more realistic, reduce government subsidies and accept more foreing investment.

However, domestic and international conditions in the Soviet Union are different from those in Hungary or China, where non-Hungarian or non-Chinese minorities compose only a small percentage of the population. The Soviet Union, by contrast, is a collection of diverse nationalities. Almost half the population is non-Russian and could be expected to take advantage of any economic decentralization to gain more political independence. The possibility of such loss of central control over the Soviet Union's non-Russian people raises risks few Russians are prepared to entertain.

Often in the West the foes of reform are identified as the top *apparatchiki*, the high-level party leaders, while the supporters of reform are identified as the managers of factories and collective farms, and the professionals within the system.

It is my opinion that such a picture is greatly distorted. As Gertrude Schroeder, a leading U.S. expert on the Soviet economic system, has remarked: "After 60 years of experience with the socialist economy run by government agencies . . . nearly everyone seems to have found ways to turn its shortcomings to individual advantage."

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The government bureaucracies and their local units would lose their reason to exist and would shrink in size. They would be reduced to accounting rather than leading. The lower- and middle-level bureaucrats would see their power diminished in favor of the power of the "invisible hand" of the market.

Moreover, the experts who advocate economic reforms are divided about the kind of reform they would like to see, a fact that could neutralize their influence. If the professional groups continue to speak in a divided voice, both proponents and opponents of radical reform within the leadership will be able to find and mobilize experts for their respective positions.

The most serious obstacles to radical reform are political. To adjust the prices of goods and services to realistic levels, for example, the enormous state subsidies of basic food items, apartment rents and transportation will have to be abolished or cut drastically.

This would require the imposition of a harsh austerity regimen on the Soviet people long before any major beneficial results of the reform were tangible. The lessons of Poland and its free-trade union "Solidarity" movement — which arose when the government tried to raise prices of basic goods such as food to realistic levels — probably teach the Soviet leadership to be extremely wary of such changes.

Finally, radical reform could affect the stability of Eastern Europe. Radical changes in the Soviet Union would encourage all reformers and liberals there to press for greater (and politically more dangerous) changes in their own countries.

Even if he is determined to do something radical, Gorbachev could only act after painstaking and time-consuming preparations. Sweeping changes would be more likely in the 1990s than in the remainder of this decade.

Considering all these barriers, a revolution may well be easier than a reform — or a radical reform might become the equivalent of a revolution. Recognizing this, many in Russia and the West who are skeptical about the chances that even a new, young and energetic leadership will embark on such a potentially dangerous enterprise, often speak of a "partial" radical reform.

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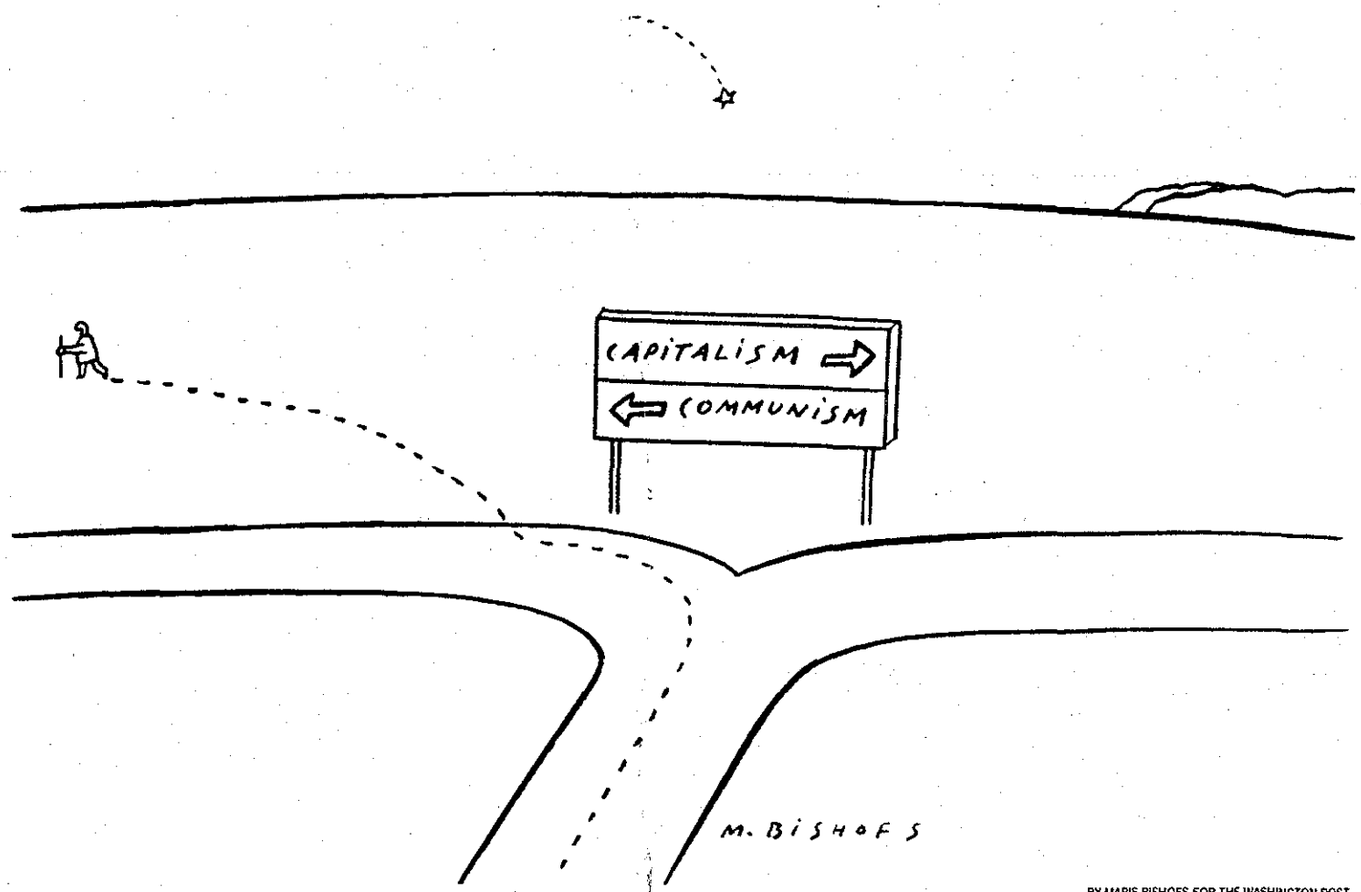

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As much as 20 percent of the average Soviet harvest is wasted for want of adequate roads, trucks, railroad facilities, grain silos and fertilizer storage. I expect Gorbachev to concentrate on this problem.

A third option would be to make changes in Soviet organizations and the bureaucracy. Near the end of his career, Khrushchev tried to radically reorganize the Communist Party's huge bureaucracy. Other party officials resisted, and Khrushchev's tinkering was used against him by those who removed him from power in 1964. Khrushcehv's "harebrained schemes" are now famous in the Soviet Union, and their bad reputation will discourage Gorbachev from doing much in this realm.

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The timidity of Soviet leaders has prevented such reforms in the past. This failure is an example of the psychology of Soviet functionaries for whom the concept of "spontaneity" is still a taboo, and who are aghast at the idea that anything could exist in Russia which is not entirely under their control. Breaking out from these psychological restrictions is a necessary precondition for reform.

Nevertheless, I would not dismiss all the reform steps that the new leader may undertake as mere cosmetic changes. Their cumulative effect may improve the Soviet domestic situation and even arrest the declining performance.

To a decisive degree, their effectiveness will depend on the strength of will, persistence and vision of Gorbachev himself, and particularly on his ability to shape a coalition within the Soviet hierarchy that is committed to reforms, both because of its loyalty to Gorbachev and because of its conviction that change is what Russia needs.

The outcome of Gorbachev's battle with bureaucratic inertia, political conservatism, ideological exhaustion and the present mood of pessimism will define to a large degree not only the Soviet domestic situation but also its international standing and aspirations.

Will Russia Dare Clean Up Its Economic Mess?

By Seweryn Bialer

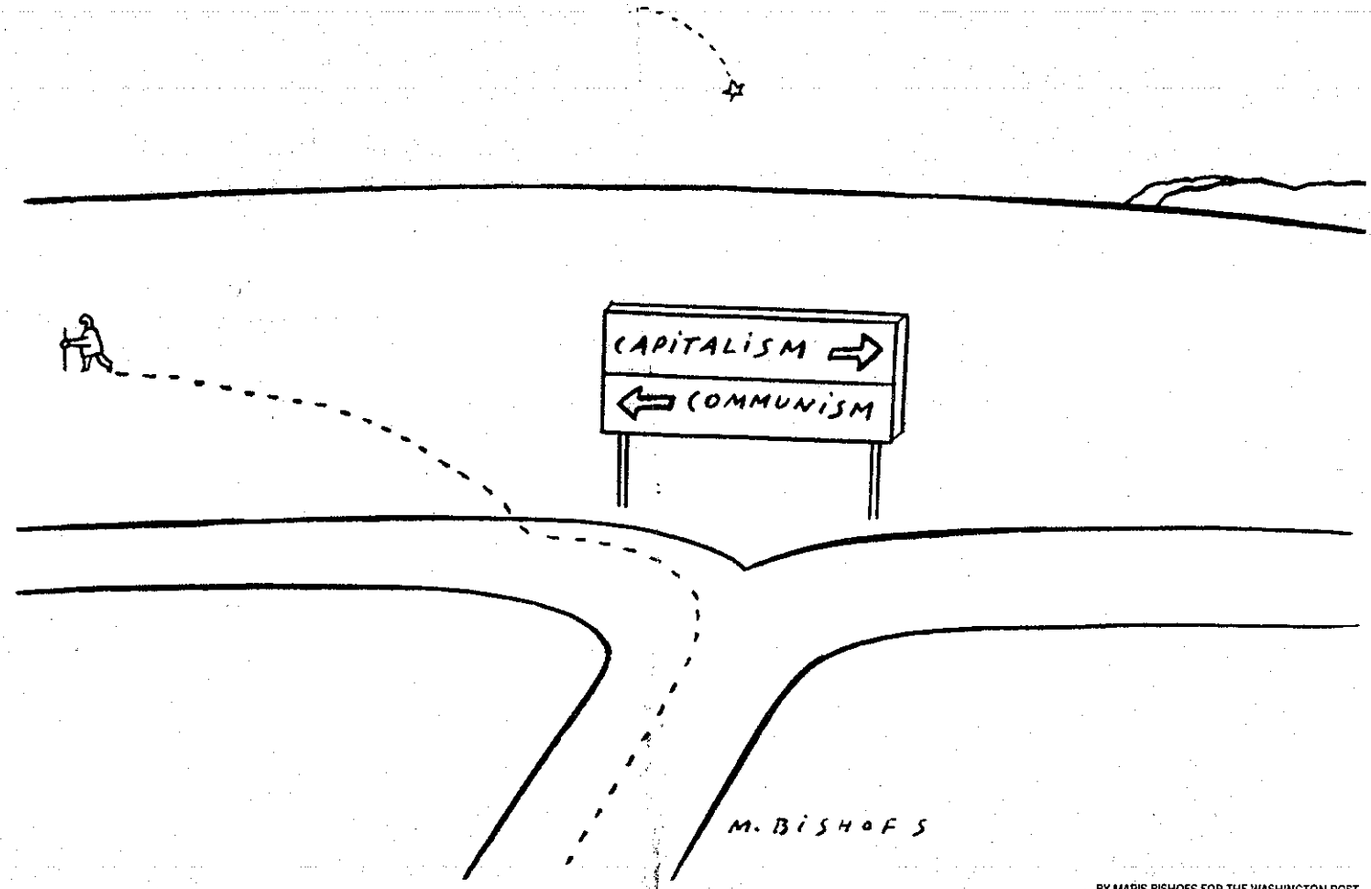
MIKHAIL GORBACHEV has come to power in Moscow at a time of grave crisis in the Soviet Union. The situation cries out for creative and forceful leadership. But will Gorbachev be able to provide it? Will a new Soviet leader really be able to make a difference?

Gorbachev has inherited a non-competitive Soviet economy that is in a terrible state. A cumbersome system of central planning produces shoddy goods, and discourages any sort of creativity or technological innovation. The Soviet economy is simply incapable of participating in the high-tech, electronic age.

The economic crisis is compounded by a social crisis, manifest in a catastrophic decline of the work ethic and of discipline among Soviet workers and managers. Corruption and drunkenness are rampant. Upward mobility for the children of the Soviet working classes, once a major stabilizing factor in society, is declining precipitously. Workers' children no longer can expect to get higher education and better jobs than their parents.

A political crisis has also been obvious in the paralysis of leadership of the last half dozen years, when old leaders have proven incapable of meeting the many challenges before them. Crisis is also evident in ideology. Marxism-Leninism has degenerated into familiar, but irrelevant, sloganeering. With rare exceptions, Soviet books, movies and plays are dreary representations of a make-believe world of heroic workers and selfless officials that few citizens even pretend to recognize as real.

The most intriguing option available to Gorbachev and his colleagues under these circumstances would be radical reform — a broad and thorough overhaul of the economy and political institutions that would change the fundamental operating principles of the Soviet system. It would involve not a change *in* the system but *of* the system.



BY MARIS BISHOFS FOR THE WASHINGTON POST

But logical as such an initiative might seem to Western eyes — and tempting as it may be for the new leadership in Moscow — such sweeping change would face formidable opposition from within the system. Radical reforms can be attempted only by a brave, self-confident leader who is ready to assume major risks, and can convince his coalition that these risks are necessary.

To enter on such a road Gorbachev would have to be as ruthless and single-minded as Joseph Stalin was with his "revolution from above" in the 1930s, and as adroit a politician as was Nikita Khrushchev in the first seven years of his anti-Stalin campaign. For while almost everyone in Russia speaks about the urgent need for reform, a radical reform program in fact lacks a constituency from below.

Nevertheless, the possibility that Gorbachev and his closest collaborators will attempt radical changes cannot be excluded.

In the event they do, their policies are likely to borrow from Hungary's successful "new economic mechanism" or Yugoslavia's "market socialism." Those countries are now ahead of other communist societies in overall economic performance, consumer satisfaction, ability to absorb Western technology and ability to adjust to changes in the international marketplace.

See GORBACHEV, K2, Col. 1

Seweryn Bialer, professor of political science at Columbia University, travels often to the Soviet Union.

Risks of Reforming Russia

GORBACHEV, From K1

The most recent, dramatic example of radical reform in progress is the People's Republic of China, where collective farms have been dissolved and peasants are working on their own farms, and where industry is being reformed to give more independence to factory managers, make prices more realistic, reduce government subsidies and accept more foreing investment.

However, domestic and international conditions in the Soviet Union are different from those in Hungary or China, where non-Hungarian or non-Chinese minorities compose only a small percentage of the population. The Soviet Union, by contrast, is a collection of diverse nationalities. Almost half the population is non-Russian and could be expected to take advantage of any economic decentralization to gain more political independence. The possibility of such loss of central control over the Soviet Union's non-Russian people raises risks few Russians are prepared to entertain.

Often in the West the foes of reform are identified as the top *apparatchiki*, the high-level party leaders, while the supporters of reform are identified as the managers of factories and collective farms, and the professionals within the system.

It is my opinion that such a picture is greatly distorted. As Gertrude Schroeder, a leading U.S. expert on the Soviet economic system, has remarked: "After 60 years of experience with the socialist economy run by government agencies . . . nearly everyone seems to have found ways to turn its shortcomings to individual advantage."

Soviet managers can hardly be described as supporters of radical reform. Their entire education, experience and expertise has prepared them to work within the system as it is and to exploit for personal benefit its loopholes and irrationalities. A change of the system would nullify their entire expertise and jeopardize their very jobs in favor of the younger, the better-educated and more adroit.

The government bureaucracies and their local units would lose their reason to exist and would shrink in size. They would be reduced to accounting rather than leading. The lower- and middle-level bureaucrats would see their power diminished in favor of the power of the "invisible hand" of the market.

Moreover, the experts who advocate economic reforms are divided about the kind of reform they would like to see, a fact that could neutralize their influence. If the professional groups continue to speak in a divided voice, both proponents and opponents of radical reform within the leadership will be able to find and mobilize experts for their respective positions.

The most serious obstacles to radical reform are political. To adjust the prices of goods and services to realistic levels, for example, the enormous state subsidies of basic food items, apartment rents and transportation will have to be abolished or cut drastically.

This would require the imposition of a harsh austerity regimen on the Soviet people long before any major beneficial results of the reform were tangible. The lessons of Poland and its free-trade union "Solidarity" movement — which arose when the government tried to raise prices of basic goods such as food to realistic levels — probably teach the Soviet leadership to be extremely wary of such changes.

Finally, radical reform could affect the stability of Eastern Europe. Radical changes in the Soviet Union would encourage all reformers and liberals there to press for greater (and politically more dangerous) changes in their own countries.

Even if he is determined to do something radical, Gorbachev could only act after painstaking and time-consuming preparations. Sweeping changes would be more likely in the 1990s than in the remainder of this decade.

Considering all these barriers, a revolution may well be easier than a reform — or a radical reform might become the equivalent of a revolution. Recognizing this, many in Russia and the West who are skeptical about the chances that even a new, young and energetic leadership will embark on such a potentially dangerous enterprise, often speak of a "partial" radical reform.

But a radical reform cannot be partial; it cannot be successful when introduced in small, gradual steps. The courage — and the wisdom — of the present Chinese leadership is reflected in their decision *not* to plan a piecemeal reform but to opt for comprehensive change of the economic system as a whole.

The magnitude and variety of domestic problems besieging the Soviet Union lead some Western commentators to proclaim, if not the imminent demise of the Soviet system, then at least the growing probability of a revolutionary crisis. But I am deeply convinced that their judgment about the nature of the Soviet domestic crisis is faulty.

The Soviet Union is not threatened with collapse. Soviet survival is not in doubt; Soviet *effectiveness* is. Decline can still be slowed or even reversed. This is a far cry from recapturing a new and lasting Soviet dynamism, but it is also far removed from any danger of disintegration.

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ment. The non-Russian nations of the Soviet Union will not rebel. The Soviet professional and middle classes will not endanger their careers by dissent. The Soviet party will not abdicate its dominant role. The Soviet military will not plot to take over power. Yet the crisis of the Soviet system is very real and if the trend is not reversed it may lead in the future to an authentic crisis of survival.

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engineering disciplines, and in a covering letter to the report, Robert M. White, president of the engineering academy, noted that "Without a complementary move to provide such support, cross-disciplinary research would be sapped at its roots."

Suh says the fears are groundless. "The rumor mill is churning out lots of wrong information," he says. It is true that new initiatives are claiming a growing share of the engineering directorate's budget, but even so, support for individual researchers has risen from $82.9 million in fiscal year 1983 to $95.4 million in 1985, he notes. "So far it hasn't been the case [that individual research awards have been squeezed], and I don't intend to make it the case."

Members of the fluid mechanics delegation say they came away from their 17 December meeting with Suh greatly reassured. In essence, he told them that the engineering centers program would not be allowed to grow at the expense of existing programs, and that he hoped to secure sufficient growth in the engineering directorate's overall budget to accommodate the new initiative.

Indeed, securing major growth in the directorate's budget is Suh's chief priority. The foundation's expenditure on engineering is "totally inadequate," Suh told *Science*, noting that it has sufficient funds to produce, on average, only one Ph.D. per engineering field per state per year. He says he hopes to see the total budget climb to $500 million by the end of the decade, a level that he still regards as "peanuts," but which would provide room for the centers and other initiatives he is planning. Those are the kinds of projections that make NSF's clients in the basic sciences nervous about their slice of the foundation's pie.

In particular, Suh says he would like to increase support for projects involving multiple investigators, expand the Presidential Young Investigator Awards program—a program begun last year that provides a flexible support to young researchers—and encourage more research in fields such as design that do not now have a strong science base.

He has already begun to put his stamp on the engineering directorate by withholding 10 percent of the directorate's budget for this year for possible reprogramming into priority areas. He has told program managers that the money will be available for high-risk, high-return projects.

As for the grumbling in the community, Suh says "It is what you expect when you do things differently."

—COLIN NORMAN

Europeans Adopt R&D Plan

Brussels. Research ministers from the ten member countries of the European Economic Community (EEC) agreed on 19 December to a major shift in the focus of their joint research efforts away from topics such as nuclear power and radiation protection—which have dominated these efforts since the community was established in the 1950's—toward technological fields that are likely to strengthen Europe's ability to compete commercially with the United States and Japan.

The shift is embodied in a 5-year, $1-billion package of research projects which was approved by the ministers largely at the urging of the outspoken commissioner for industry and research, Etienne Davignon, who has just reached the end of his 4-year term of office.

Davignon was largely responsible for one of the most significant developments in European technology policy in recent years, the EEC's strategic program in information technology (ESPRIT). The program, which will cost $1.3 billion over 5 years, will be jointly financed by the commission and European companies and is a direct response to the challenge from U.S. and Japanese computer industries. Full funding for the second year's operation of ESPRIT was approved at last week's meeting.

The broader research package represents an attempt to apply the same approach to a variety of precompetitive research projects in fields ranging from materials processing to biotechnology. The biggest new element in the package, for example, is a program known as basic research in industrial technologies for Europe (BRITE), which aims to get research workers together from universities, research institutes, and industrial laboratories to work on topics of industrial interest in more than one EEC member country.

The ministers agreed to allocate $100 million of the community's research budget to BRITE over the next 4 years. Fields in which joint research projects will be sponsored include laser technology, catalysis and particle technology, membrane science, polymer chemistry, and computer-aided design. According to Cyril Silver, head of the EEC's new technology division who is responsible for the BRITE program, the aim is to adapt to a European setting many of the ideas that have been explored in the United States in the past few years on ways of stimulating innovation in strategically important fields without requiring massive government-directed intervention.

Other new initiatives included in the package are a $45-million 4-year program to support efforts in biotechnology, primarily for research and training activities in national institutions, and a $50-million program aimed at stimulating greater cooperation between research groups in different EEC countries.

Working within severe budgetary limitations, the ministers were forced to cut back on some of their existing research activities to make way for the new programs. Research into the safety of nuclear reactors, for example, which was previously a separate project, is now to be made the responsibility of the EEC's Joint Research Center at Ispra in Italy, but without any extra funding being provided to the center.

The largest single cut will come in the fusion program, by far the biggest item in the total package. The commission had asked for $790 million over the next 5 years, but the ministers cut this back to $690 million, which will mean a reduction in the EEC's overall fusion effort. About half of this sum will be spent in the next 2 years alone, allowing full operation of the Joint European Torus (JET) at Culham in the United Kingdom. The cuts will be absorbed by stretching out the technology research programs that are directed by the next step after JET.

The overall package of $1 billion over a 4- to 5-year period was considerably smaller than the commission of the EEC had originally asked for, largely as a result of pressure from the British and German governments. However, the ministers agreed that almost half of this sum will be spent in the first 2 years; a review will be carried out at the end of this period to assess whether increased support is justified.—DAVID DICKSON

11/7/85

THE FEDERAL REPORT

Bureaucracy Baffles Inventors

'Better Mousetraps' Snare Little U.S. Marketing Support

By Keith B. Richburg
Washington Post Staff Writer

Stephen Austin thought he had hit upon a pretty good invention: the world's first permanent waterway-dredging system. It was an idea that the St. Louis engineer figured would save the federal government billions of dollars because it would make routine dredging obsolete and equipment last longer. At a time when Washington politicians were committed to reducing budget deficits, Austin assumed that he would find an eager buyer here.

But five years of trying to peddle his idea to the U.S. Army Corps of Engineers has left him broke and frustrated. He's had two cars repossessed, his phone bills run $300 a month, and he says he can't get anyone in the corps to return his calls.

"There are thousands of people out there like myself who have what they consider the better mousetrap, but can't do anything with it," Austin explained. "I've gone broke. I've gone bankrupt—it's a sad story. "I've gone through every penny I've got . . . . I mean, I don't have anything."

Most recently, Austin contacted the Office of Management and Budget, where staff member Joyce Morrison promised to at least find someone to return his calls. But Austin's tale is a familiar one to scores of citizens who think that they have a way to save taxpayers' money—only to encounter what to them is a nameless, faceless stone wall known only as "The Bureaucracy."

"We get a batch of letters every day from frustrated Americans who have good ideas, but no one will listen to them," said J.P. Bolduc, chief operating officer of the Grace Commission who now heads Citizens Against Waste. Bolduc said the group, an outgrowth of the commission, encourages phone calls from the public and receives about 1,000 each day, many of them serious, well-researched proposals.

"When these suggestions come in from American citizens," he said, "there is really nothing in government today that provides incentives for federal employes to pick it up and run with it. For the federal employe, it means nothing but additional aggravation and frustration, especially trying to convince superiors. And you're not going to get anything in the way of additional pay or a bonus, so your reaction to a new idea is to kill it."

Several government agencies say they are receptive to citizen-generated ideas. Also, several programs are aimed specifically at helping small businesses and individuals develop ideas.

The General Accounting Office has a 24-hour, toll-free "fraud hotline" for citizens to report waste. The hotline has received 53,000 calls over the last five years, and a GAO spokesman said that about $24 million has been saved as a result. But the GAO is better equipped to deal with reports of waste than with new ideas or inventions, although, the spokesman said, those suggestions are forwarded to the appropriate agency.

The Energy Department, for one, has an Office of Energy-Related Invention Programs that supports inventors—such as a California engineer who recently invented a microwave pothole paver. Jack Vitullo, the office's director, said that in the program's 10 years, 195 inventors have received support, and 70 more are waiting. The catch is that the inventions must first be energy-related, and the inventors must be having financial trouble getting their inventions developed.

Vitullo said he sympathizes with the problems of people such as Austin. "We have in both government and industry the so-called 'Not Invented Here' syndrome. They figure they've got a lot of important people who are paid a lot of money to come up with things themselves."

In 1983, Congress created a Small Business Innovative Research program, requiring agencies to set aside a small percentage of their research budgets for small companies. Agencies will first publish a list of potential research subjects, then small firms get to bid on them. A winner receives $50,000 to develop his idea, and more later if the agency likes it. But in these cases, the agency and inventor work closely from the beginning on a specific project.

That still leaves many people who feel that they have no place to go.

Some have turned to the OMB because of its high profile in the budget-cutting process. As Austin said, "I finally went to OMB. If anybody can shake 'em loose, they can."

"We're kind of the place of last resort for people when they've gotten the run-around from all the other agencies," said OMB's Morrison. "You, of course, have the cranks out there, but there are people out there with good ideas."

Among those who think they have a good idea are Norman and Beverly Halem of Cocoa, Fla. The Halems patented a gadget called the "Pass Master" that disconnects a car's air conditioner when its engine is accelerated, thus saving gasoline. Since 1978, the Halems have been negotiating with the General Services Administration, trying to get Pass Masters installed on government vehicles.

Although the Environmental Protection Agency tested the Pass Master and reported that it was an effective gas-saving device, GSA wanted more tests performed. In the meantime, it began converting its fleet to smaller, more efficient four-cylinder cars, that, it says, make the Pass Master less effective than it is on larger-engine models. Also, the GSA noted, the large auto makers were already developing a similar device.

"Frankly, we're fed up," said Norman Halem, who testified in 1979 at congressional hearings on the resistance encountered by small businesses. "I'm ready to drop the whole thing . . . . How many times can we go to Washington and stand up on a soapbox? We cannot afford to advertise. We have decided that in 1985 we cannot afford to push it anymore, we're going to just let it take its course."

The Halems see theirs as a case of a small firm competing with Detroit's giant auto makers, vying for a sympathetic ear in an atmosphere of which they say, "If it wasn't invented in Detroit, forget it."

But to the Halems and Austin, the larger concern is for the future of individual creativity in America.

"The fact that we will probably end up going out of business is not the issue," said Beverly Halem. "The issue is, what is happening to the inventiveness of this country if you're always considered too small, and all ideas have to come out of IBM? We've lost what America was founded on."

Said Austin: "I don't have what they call credibility because I'm small and I'm new. The stifling of creativity is so evident."

"It's a big problem, it really is a big problem," said Bolduc. "Maybe we need a [national] ombudsman, or maybe we need a built-in incentive system for employes who take these ideas and run with them."



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