

fession distinct from medicine. On the other hand, many observers say that, as long as health delivery is ruled by physicians, psychologists who call themselves health providers will be locked into the much-criticized "medical model," whose guiding tenet is the treatment of disease rather than the amelioration of circumstances that foster it.

Because of all these ambivalences, people involved in community mental health centers can't decide what to think about the CAPPS suit. Jonas Morris, executive director of the Council on Community Mental Health Centers, says he likes the idea because he would support any action that would make insurance dollars available for mental health services by providers other than physicians. He fears, however, that reimbursement for the services of private practitioners will encourage their proliferation and manpower will be drained out of the centers. This means the middle class would

all go into private therapy and leave the centers to the poor, a development that would inevitably result in a deterioration of services and reinforce the perennial segregation of the poor from everyone else. The proliferation of private practice would also raise overall health costs, since charges for treatment are higher in the private sector.

Therapy as Social Service

There are quite a few people who believe psychology doesn't even belong in the realm of health (or health insurance). These people believe in the "human services integration" model, where health, mental health, welfare, job and legal counseling, vocational rehabilitation, and so forth are all combined in a single agency. These people believe that the causes of mental disorder are external—poverty, discrimination, drugs—and that if a middle-class person wants to get rid of his neuroses and become "self-actualized," he can pay for it out of his own pocket.

These people have serious doubts about the value of "professional" therapy. Writes one psychiatrist from the National Institute of Mental Health: "Study after study has failed to demonstrate a significant outcome difference in psychotherapy as practiced by psychologists, social workers, psychiatrists, 'nonprofessional' counselors and even parents."

Most professionals emphatically reject this antiprofessional view. But the opinion is shared to a large extent by no less a figure than the prestigious George Albee of the University of Vermont, a past president of APA. And Carl Rogers, a towering figure in the development of psychotherapy over the past 30 years, has decided credentials don't really mean anything.

Nonetheless, a doughty band of clinical psychologists is pressing for recognition as a full-fledged and distinct profession, realizing that, if they don't decide who they are, someone else will.—CONSTANCE HOLDEN

The Health of U.S. Science: NSB Says the Prognosis Is Guarded

To researchers who have had to make do with the constricted federal budgets of the past 5 years, it will doubtless come as no surprise to learn that American science, if not quite gone to seed, has passed the peak of its bloom. But has the nation's capacity to do research—the best research—significantly diminished? And if so, by what quantitative measures? Has all that anguish in academe been founded on real, or on mostly anticipated, losses of support? And how seriously has inflation undermined the small but regular increases in federal R & D money?

The answers to such questions, for the most part, have been fragmentary and more qualitative than numerical. A new report* from the National Science Board, however, takes a noteworthy step toward rectifying these deficiencies. In a 145-page analysis of

the "state of the science enterprise," released by the White House on 5 September, the NSB provides a wealth of vital statistics from the period of 1965–72, as well as some graphic vindication of fears that the nation's R & D enterprise has been allowed, in the current phrase, to twist slowly in the wind. In any case, the report of the NSB—the policy-making directorate of the National Science Foundation—makes for an interesting contrast with the more charitable diagnoses of the health of science which the White House publishes annually in its budget documents.

The gist of the report is that American science and technology maintain a position of dominant but perceptibly deteriorating world leadership. The NSB cautiously suggests that signs of declining vitality may be reflected in what appears to be the slowly diminishing ability of U.S. manufacturers to compete with Western European and

Japanese industry, both in low- and high-technology markets.

Apart from these generalities, the NSB attaches rather few interpretations to the report's mass of statistics, in part because it regards the report as the first word, not the last, in a long-term effort to develop reliable measures of the health of science. In 1968 Congress assigned the NSB the duty of producing an annual "state of science" report, but the board's four previous annual reports dealt mainly with narrow segments, such as graduate education or the environmental sciences. Now the board (or more accurately, the NSF staff that assembled the report for the board) has set out to develop what the report's introduction terms "a system of indicators for describing the state of the entire scientific endeavor." Such a system, the report's introduction says, should ultimately provide an "early warning of events and trends that might reduce the capacity of science—and subsequently technology—to meet the needs of the nation."

Following are summaries of the report's major sections.

International standing. The United States still produces a larger share of the world's scientific and technical literature than any other nation; as one measure of the quality of this work, American researchers enjoy the highest

* National Science Board, *Science Indicators 1972* (Stock No. 3800-00146, Government Printing Office, Washington, D.C., 1973), \$3.35.

frequency of citation in every major field excepting systematic biology and mathematics (where the United Kingdom leads). However, the proportion of the gross national product devoted to science and technology—an indicator of overall national R & D effort—has declined in the United States from a peak of 3 percent in 1964 to 2.5 percent in 1972, lower than at any time in the previous decade. France and the United Kingdom underwent similar declines, but the latter, along with West Germany, plateaued at about 2 percent in 1971. In Japan and the Soviet Union, the fraction of GNP spent on research and development rose almost as fast as it fell in the United States; the Soviet Union surpassed the United States in 1969, and the gap has been widening ever since.

At the same time, the relative size of the American science and engineering work force (measured as researchers per 10,000 population) began waning in 1969 while those of France, the United Kingdom, West Germany, Japan, and the Soviet Union increased. The U.S.S.R. currently leads the major nations with 37 researchers per 10,000 population, while the United States and Japan are tied in second place, each having 25.

Without explicitly suggesting a link between these trends and the technological prowess of the United States in world markets, the report does point to several signs that Yankee ingenuity is not what it used to be. There is, for example, the "patent balance"—a measure of inventive output that compares the number of foreign patents awarded to Americans with the number of American patents awarded to foreigners. The balance is still in the United States' favor, but from 1966–70, foreign researchers narrowed the gap by 40 percent. "These data," the report concludes, "indicate that the rate of growth of patentable ideas of international merit has been expanding at a greater rate in other countries than in the United States."

Similarly, while the United States maintains a strong position as a net exporter of such "technology intensive products" as machinery, chemicals, aircraft, and instruments, the NSB foresees a deterioration of this superiority "in the near future." Two of the five industries most directly responsible for the favorable balance (nonelectrical machinery and chemicals) suffered their first net export decline in 1971. What's more, the United States is depending

increasingly on sales of high-technology products to developing nations, which eventually will want to produce such products themselves; on top of this, the NSB said, the R & D "intensiveness" of the five industries (the ratio of sales to money spent on R & D) has dropped by 25 percent in recent years, a trend that is likely to dull industry's competitive edge. The balance of trade in high-technology items is generally regarded as an important factor in the overall U.S. balance of payments position, which in turn is an important indicator of the nation's economic health.

Resources for R & D. The U.S. research enterprise effectively stopped expanding in 1968 when the rate of inflation nullified the growth rate of R & D funds. Although the actual amount of money flowing into science and technology never declined between 1961 and 1972, inflation in effect reduced the available money after 1968 by at least 6 percent and possibly more (no R & D "price index" exists, so analysts had to rely on consumer prices, which are believed to have risen less sharply than the cost of doing research). Considering federal funds alone (measured in constant 1958 dollars) R & D support dropped 12 percent during the first 4 years of the Nixon Administration. Concurrently, the number of men and women engaged in R & D peaked at 560,000 in 1969, then fell for the first time in a decade to a level of about 525,000 in 1972.

Almost all of this decline occurred in the industrial sector (which employs two-thirds of the nation's technical and scientific work force) as the Administration cut back R & D expenditures for defense and space. Health, environment, transportation, and energy research received increased portions of the federal R & D budget, but the withdrawal of federal funds from industry—combined with rapid inflation—cut the total amount of money effectively available for industrial R & D from \$14 billion in 1969 to \$13 billion in 1971. Had private enterprise not been rapidly increasing its contribution to industrial R & D during this period, the report indicates, the impact of federal belt-tightening would have been even more dramatic. By 1972, the slump in industrial R & D had bottomed out, and, with an increase in federal funding, showed some recovery.

Basic research. An amorphous creature, basic research is defined by different federal agencies in different ways,

so any count of money devoted to it is at best only an estimate. Construction of the National Accelerator Laboratory, for example, was not counted as a basic research expense, although the space agency does count the cost of launch vehicles and spacecraft in this category. Industries include an annual depreciation of facilities in their basic research accounts, but federal laboratories do not.

With these caveats in mind, the NSB report concludes that inflation more than offset small increments each year from federal and other sources. By 1972, basic research expenditures were, in effect, 6 percent below their peak year in 1968. Counting federal funds alone, in constant 1958 dollars, the drop appears even more precipitous. Between 1968 and 1972, there was a 16 percent reduction in basic research funds to industry, a 10 percent decline in money to colleges and universities, and a 7 percent drop for nonprofit institutions.

A second factor, besides inflation, helped to magnify the impact of these reductions, according to the report. Unable to turn off the flow of new, young researchers as quickly as the government could turn off money, colleges and universities continued to expand their research staffs even as federal funds declined. With less money available (because of inflation) and more people to spend it on (because of graduation) basic and applied research funds *per Ph.D. scientist and engineer* fell an average of 24 percent between 1968 and 1972. Hardest hit by this combination punch was physics (with an effective loss of 32 percent per researcher), clinical medicine (21 percent), and engineering (17 percent).

Additionally, NSF data bear out the widely voiced complaint that funding cuts hurt young researchers the most. The NSB report shows that the proportion of young investigators (those holding a Ph.D. less than 7 years) able to find federal grants fell from 65 percent in 1964 to 50 percent in 1970, as compared with a drop from 73 percent to 63 percent for senior investigators. Unemployment rates among all scientists and engineers reached a peak average of 3 percent in 1971, about half the unemployment rate that year for all workers. Among scientists and engineers 29 years old and younger, however, unemployment peaked in 1971 at 5.5 percent.

Institutional capabilities. Oddly enough, all during this period of re-

trenchment in the universities and industry, the in-house laboratories of federal agencies appear to have done quite well for themselves. Even accounting for inflation, support of intramural research in such agencies as Defense, Interior, Commerce, and the NIH nearly doubled (from \$1.8 billion in 1961 to \$3.1 billion in 1972), with the fastest rise coming after 1969.

The NSB offers no comment on the fattening of the federal labs, but instead concludes the main body of its report by offering for contemplation two more declining trends in academe and industry.

With evident alarm, the board notes that federal support for R & D equipment and facilities has fallen 75 percent since 1965 and that, between 1966 and 1971, the proportion of NSF and

NIH grants allocated to permanent new equipment dropped by half (from 12 to 6 percent.) "Appropriate tools and plant" the report observes, are "as essential as expenditures for the performance of research itself." Similarly, the report notes that the Nixon Administration has funded only one major new research facility (the Very Large Array radio telescope being built in New Mexico at a cost of \$76 million), although an "evident need" is said to exist from some 30 other major facilities, ranging from a proposed \$10 million National Institute of Ecology to a \$20 million, 200-inch telescope in the Southern Hemisphere.

Finally, there is yet another worrisome trend to be considered in industrial R & D: small companies (fewer than 1000 employees) appear increas-

ingly to be pulling out of R & D and leaving it to major firms (those with 5000 employees or more.) Between 1958 and 1971, small firms' share of R & D dropped from 20 percent to 6 percent, while the large firms' share rose from 70 to 85 percent.

It is true that the actual number of small firms in business fell slightly, but not enough to account for a brain-drain of this magnitude. This trend ought to be investigated, and perhaps lamented, the NSB advises, for historically small firms have turned out more than their share of those luminous technological innovations that engender whole new industries. It is possible that the statistics misrepresent reality, says the NSB, "but it is also possible that they signal a declining rate of technological innovation."—ROBERT GILLETTE

Congress and Executive: Expanding an Adversary Relationship

When Congress returned on 5 September from its summer recess, it faced uncertainties as thick as the pall of late-summer heat and smog that hung over Washington. Relations between Congress and the White House had reached a nadir at the time Congress recessed; more recently both sides had expressed a willingness to cooperate, although neither side seemed particularly disposed to compromise. Then on the day that Congress reconvened, President Nixon in a news conference spoke of the "disappointing performance" of Congress, Hill Democrats bridled, and it began to look like a long hot autumn.

Watergate, of course, has contributed to the tensions, but the central issue still appears to be the contest between Congress and the President over where to draw the line defining the separation of powers. The dispute had been building during Nixon's first term, but developed into open conflict after Nixon's decisive victory in the 1972 election. Democrats in Congress accuse the President of violating the prerogatives of the legislative branch by impounding funds appropriated by Congress. Nixon, on the other hand, charges that Congress

has irresponsibly failed to put a limit on spending which he believes necessary to restrain inflation at home and support the dollar in world markets. There are other issues, of course, but the argument over impoundment has developed into a grudge fight.

Very important in the present conflict is the manner in which it is being carried on. In the past, disagreement between Congress and presidents has ordinarily followed a familiar sequence of congressional enactment of legislation, presidential veto, and congressional attempt to override the veto. Usually it has been possible to fashion a compromise acceptable to both sides.

Today the formula of vote, veto, and compromise is not working. Nixon has vetoed a half-dozen measures in this Congress, the Democrats have not been able to muster the required two-thirds vote to overturn the vetoes, and neither side has so far been willing to compromise. But most significant is that both sides are now going outside established patterns of action.

The Administration has made unusually heavy use of the impoundment device. In response, a number of court

suits have been brought—with some initial success—to gain release of impounded funds. At the same time, Democrats on Capitol Hill are accusing the Administration of using agency reorganizations and administrative subterfuge to work its will in areas where it has been rebuffed by Congress. Congressional Democrats, for their part, are dealing more toughly with agency officials—on occasion, for example, they have made public internal agency documents which in the past would have been kept confidential. In other words, a harsher adversary relationship is developing.

While differences range across the board, the sharpest encounters so far have come on domestic legislation, particularly on programs dating from the Kennedy-Johnson era, when spending on social and welfare programs rose steeply. A key measure is the appropriations bill for the Department of Health, Education, and Welfare (HEW) and the Labor Department. At issue is a \$32.8 billion appropriation passed by the House which contains some \$1.3 billion more than was requested in the Nixon budget. The bill is now before the Senate Appropriations Committee, which is expected to act promptly on it. Nixon has indicated he will veto the bill unless the Senate reduces the total. The Senate has traditionally raised the ante on HEW appropriations bills, so the stage seems set for another veto.

The bill in question contains funds for the 1974 fiscal year, which began on 1 July. If it seems odd that Con-