

search—and that such individuals often tend to be highly opinionated.

Many of them are also adept at making money, though in the past they have tended to apply these talents less to themselves than to the colleges which support them. Partly as a result, there is no shortage of start-up capital in Cambridge. Some comes from established financial institutions (the local branch of Barclays Bank has been a particularly important source of funding) or from venture capital firms. In addition, several colleges have been able to provide important investments in basic facilities required by embryonic companies. St. John's College, for example, has recently announced that it is linking up with Utah entrepreneur Wayne S. Brown to

set up an Innovation Centre on land close to Trinity's Science Park, drawing heavily on the experience of a similar center established by the University of Utah in 1978.

The mythology that provides a key ingredient to the Cambridge "culture" does not always work, however. Acorn Computers, a local company with close links to the university computing laboratories, was widely quoted as one of Cambridge's success stories but it virtually collapsed last month and was bought out by the Italian company Olivetti. Acorn blames part of its difficulties on its failure to achieve a targeted 10 percent of the American educational computer market (it currently enjoys 75 percent of the British equivalent). This was despite an

aggressive advertising campaign in the U.S. press featuring a double-spread photograph of Trinity College, and a reminder that the company's computers come from the same home as Isaac Newton.

Overall, however, the failures have been relatively small. Segal claims that the "Cambridge phenomenon" should not be compared to the Silicon Valley of today, but to where it was 25 years ago. Others are reserving judgment, pointing out, for example, that so far the number of new jobs created in the area has been relatively low. But Cambridge is in no hurry for instant remedies; a university that was endowed in 1231 is used to thinking in the long term, and can afford to wait.—**DAVID DICKSON**

Who Runs NIH?

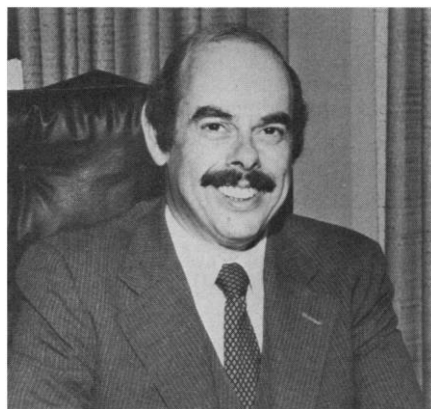
Pending legislation would create two new institutes and several new commissions; NIH calls it micromanagement by Congress

Although biomedical researchers often like to think otherwise, the National Institutes of Health (NIH) is very much a creature of the United States Congress. It has ever been thus, but the ties that bind the NIH to the will of Congress are growing stronger as legislators take more and more initiative in directing research from Capitol Hill.

For several years, Congress has been trying to agree on comprehensive new legislation governing the NIH. Late last year the House and Senate finally approved a compromise bill that would substantially extend congressional reach into NIH's programs and projects. That bill, which President Reagan vetoed in October, would have added two new institutes to the current 11—one for arthritis and one for nursing.* It would have established in law the requirement that NIH create a new administrative post for "disease prevention" in some institutes, and mandated numerous special task forces or commissions to study problems singled out by members of Congress and the special interest groups that lobby so effectively. Among the new commissions would be one on lupus ery-

thematosus, one on spinal cord injury, and one on so-called "orphan" or rare diseases.

The Administration consistently opposed the reauthorization bill and on 30 October the President vetoed it, saying that the new institutes and special committees were "unnecessary" and "expensive."



Henry A. Waxman

Shaping NIH from the House.

But the Health Research Extension Act, over which Congress labored so painstakingly, is anything but dead. It is expected that by the end of March the bill will be reintroduced in both houses of Congress with no more than minor modifications to language in the vetoed version. The new bill will be no more appealing to the White House than the

old and a second veto is widely anticipated. However, circumstances in Congress have changed. The first veto came on a bill passed in the waning days of a congressional session just before the election. Congressional aides predict that this time the chances that a veto will be overridden are very good.

The bill will also be considered at a time when congressional interest in NIH is high because of the fight that is taking place over the Administration's recent move to subvert the intent of Congress by ordering the institutes to fund only 5000 new grants in 1985, rather than the 6500 grants the budget would have allowed (*Science*, 1 March, p. 1016). Legislators have been flooded with complaints about the unexpected cutback and as a result Congress is acutely aware of the biomedical research community right now, and largely sympathetic. In fact, pressure has been so great that there are signs the Administration may be forced to work out a compromise in which the number of new grants is, perhaps, in the 5800 to 6000 range.

The issues that are being debated in the context of the pending legislation go to the heart of the question, "Who's running NIH?" Two aspects of this are important: those pertinent to provisions in the current bill and how they got there, and those related to provisions that were left out in the process of House-Senate compromise but which

*The history of the reauthorization bill and its veto by the President was traced in a series of news articles in the following issues of *Science*: "NIH bill passes House," 2 December 1983, pp. 992-993; "A nursing institute for NIH?," 23 December 1983, pp. 1310-1312; "Congress votes NIH a big budget boost," 26 October 1984, pp. 417-418; "Veto looms over NIH legislation," 2 November 1984, p. 517; "President vetoes NIH bill," 16 November 1984, pp. 811-812.

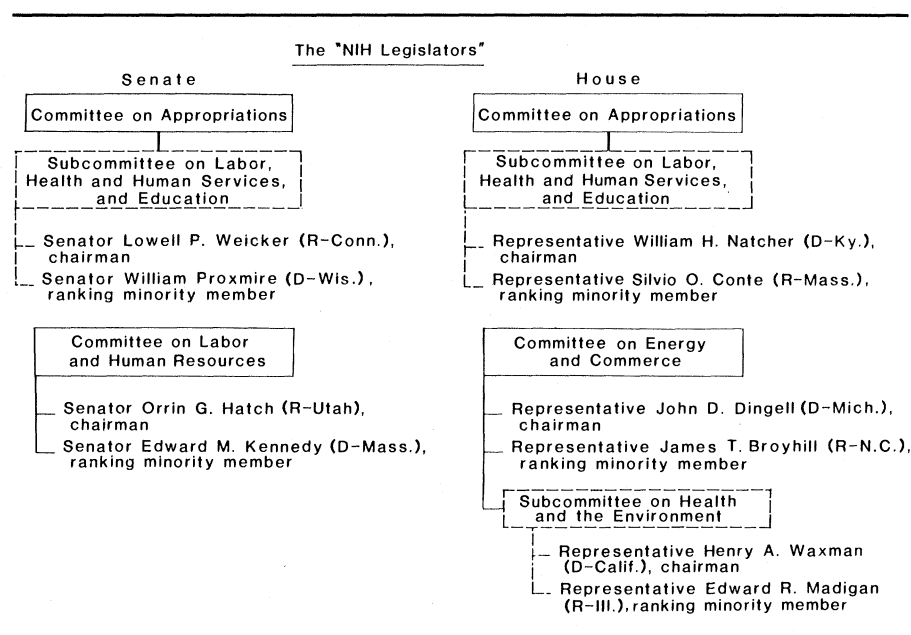
are likely to come up again during the next couple of years.

There is no question that critics have a point when they say that the bill puts Congress in the business of micromanaging NIH or that Congress has responded to a host of special interest groups. For instance, the bill not only creates a National Institute for Arthritis and Musculoskeletal and Skin Diseases, it specifies that research include studies of "sports-related disorders" and that a government-wide interagency coordinating committee be set up to oversee the new institute's work.

Supporters of the bill counter with an argument that also has an element of truth—namely, that the NIH is resistant to ideas for new initiatives if they come from the outside and that it is sometimes slow to capitalize on scientific opportunity with respect to major, serious diseases such as arthritis. The NIH, backed by the Association of American Medical Colleges and the American Medical Association among others, has steadfastly opposed the creation of any new institutes, arguing first, that the administrative costs of about \$5 million of running an institute simply drain funds from research, and second, that adequate research in the field is already being conducted. The powerful arthritis lobby, which includes senior citizens' groups, believes none of it. Furthermore, a case can be made that certain areas of basic research are ripe for development in arthritis.

The tension is great. If the case for an arthritis institute can be argued either way, it is less clear that anything but a political argument can be mounted in defense of a nursing institute at NIH. The provision to establish a National Institute of Nursing within NIH was introduced last year in the House by Representative Edward R. Madigan (R-Ill.). No hearings were held and the fact that it ended up as part of the House bill must be attributed to political compromise. In the House, Representative Henry A. Waxman (D-Calif.) has been the most ardent advocate of legislation that would increase congressional oversight of NIH. To win Madigan's support, Waxman, who initially was cool to the nursing institute idea, agreed to go along.

In the Senate, opposition to a nursing institute initially was quite strong, especially on the part of Senator Orrin G. Hatch (R-Utah), chairman of the Committee on Labor and Human Resources. One issue still not completely resolved in many minds is just what nursing research is, and just what the institute would do: research on patient care or research by



Among the legislators that wield most influence over NIH are the members of the appropriations and authorizing committees.

nurses or some combination? In the end, doubts about the need for a nursing institute gave way to the political imperative of reaching a House-Senate compromise on the NIH legislation, and when the bill emerged from conference, the nursing institute was there. Congressional aides predict it will be in the new bill as well, even though some members continue to harbor doubts not about the importance of nursing but about the appropriateness of locating a nursing institute at NIH.

Indeed, political considerations at this point are playing a very powerful role in virtually all decisions about making any changes in the NIH bill. Two provisions were especially difficult to negotiate—those on fetal research and experimentation on animals. Each is emotionally charged and contentious; the groups that would ban such research outright are vocal and not without political clout.

Arguments over fetal research, for instance, have been a major stumbling block to passage of NIH legislation for the past few years. Therefore, instead of passing a reauthorization bill, Congress has taken the time-tested way around the problem by simply giving NIH authority to operate according to the status quo through a legislative device known as a "continuing resolution."

But last year, delicately crafted compromises were reached on the fetal research and animal experimentation issues. In each case, the extreme position that would ban such work or restrict it even more severely than at present was blunted. According to congressional aides and health lobbyists, there are indi-

cations that those compromises will hold as long as the NIH bill is not opened up for major revision in any way. It is unlikely that either house will hold hearings on the bill once it is reintroduced and moves will be made to bring it to a vote as quickly as possible.

Of the provisions that at one time or another were under consideration for NIH legislation but that never made it into the current bill, the most significant is Waxman's plan to rewrite the law in a very basic way to make each of the individual institutes subject to periodic reauthorization by Congress. This would give Waxman something he apparently very much wants and something both the Administration and the biomedical research community fervently do not want—even greater congressional control of the structure of NIH.

To understand what is at issue, one must understand something about the laws under which NIH now operates. Nine of the 11 institutes—the exceptions being cancer and heart—operate under permanent authority derived from section 301 of the Public Health Service Act, which gives the Secretary of Health and Human Services the power to establish and maintain research institutes. Thus, unless some active steps are taken to abolish an institute, the core nine will exist in perpetuity. The cancer and heart institutes are different.

The cancer institute case is illustrative. When Congress passed the National Cancer Act of 1971, launching the "war on cancer," it "authorized" the existence of the National Cancer Institute for a period of 4 years. At the end of

that time, according to the act, Congress would review the cancer institute's operations and progress and decide whether to "reauthorize" its existence for another period of time. In the absence of such a reauthorization (or a fallback continuing resolution), an institute subject to periodic reauthorization would go out of business altogether. It has been Waxman's position, as chairman of the reauthorizing committee in the House, that it is entirely appropriate for the committee to have the reauthorization power not over just cancer and heart, but over each of the institutes of the NIH.

At present, Waxman's subcommittee is responsible for reviewing the authorizing legislation for the cancer and heart institutes and also recommends maximum funding levels for each of the institutes through the congressional authorization process. But the subcommittee's influence is somewhat less than that of the appropriations subcommittee, which has the power to review the budgetary needs of each institute—cancer and heart included—and then determine actual funding levels that may or may not be as high as those approved by the Waxman subcommittee.

In this complex budget process, the heads of the institutes appear before the appropriations subcommittee every year to justify the budget request, for instance. But they do not have to appear before Waxman's subcommittee as well. If the law were changed to require periodic reauthorization, then each institute would have to appear before the authorization subcommittee as well.

Such legislative authority would translate into enormous political power and, critics argue, would make the institutes, which function perfectly well as is, subject to the sometimes unguided whims or will of the Congress. Waxman counters by pointing out that the NIH is not a private university but a \$4.5-billion federal agency that ought to be subject to such congressional oversight. Furthermore, he argues that if each of the institutes were subject to reauthorization like cancer and heart, a desirable legislative consistency would be achieved.

The Reagan Administration, for its part, takes a diametrically opposed view. Whereas NIH officials and biomedical researchers generally resist Waxman's blanket reauthorization plan on the grounds that too much management from Capitol Hill is detrimental to science, the Administration broadly opposes congressional intrusion in Executive Branch agencies.

According to informed sources, a draft Administration bill, written with backing

from the Office of Management and Budget, is being circulated now among high officials in NIH and the Department of Health and Human Services. Unlike Waxman, who would achieve consistency by making the majority of institutes conform to the requirements made of the cancer and heart institutes, the Administration would abolish the special status of those two institutes and return them to the NIH fold, with everyone operating under the authority of section 301 of the Public Health Service Act. Anything as drastic as that would have the effect of wiping out the National Cancer Act and, with it, the special privileges that the institute enjoys. For instance, the NCI director is a presidential appointee, like the NIH director himself.

The Administration bill, which congressional staff have heard about but



Orrin G. Hatch

Initially opposed nursing institute.

which has not yet been presented, is thought to have little chance of going anywhere. "It sounds like the Administration blatantly thumbing its nose at Congress," said one aide, "which won't please either Democrats or Republicans."

Although Congress's influence over the growth and development of NIH has always been powerful, the nature of the relationship between legislators and NIH leaders has changed over the years. During the 1950's and 1960's, when NIH sustained a remarkable period of growth, deals were routinely cut among three key players: NIH director James A. Shannon, the late Senator Lister Hill, and the late Representative John Fogarty. Hill and Fogarty, who controlled the NIH appropriations committees in the Congress, enjoyed a close relationship with Shannon, which meant often that what

NIH wanted and what Congress wanted to provide were the same. For all their influence, no one thought that Hill or Fogarty wanted to micromanage NIH in the way that Waxman is accused of doing.

The role of Mary Lasker—private citizen, philanthropist, lobbyist—and her forces cannot be discounted in the NIH history. For instance, it was largely through Lasker's efforts—over the strong opposition of the NIH leadership and most of the biomedical community—that the National Cancer Act of 1971 came into being. Much was said against the idea that progress could be made in cancer research if enough money was available, but when the NCI's budget increased dramatically researchers lined up to get part of it. And a good case can be made that benefits have accrued to basic biological research in general as a result.

But where once there were Hill and Fogarty and Lasker, there are now many members of Congress and dozens of special interest groups vying for a piece of the NIH action. The process is not less political but it is messier, less controllable or predictable. And pressure from various groups for new institutes of special status of some sort mounts along with evidence that there is a correlation between high visibility and increased funding.

A recent report on NIH by the Institute of Medicine[†] says, for example, that "The longest period of sustained relative growth for a new institute occurred for the National Institute on Aging, which has grown faster than the remainder of NIH in every year since its first appropriation in 1976." Obviously cancer and heart research have benefited from special attention. And the National Eye Institute and the National Institute of Environmental Health Sciences, both relatively new in the NIH constellation, enjoyed substantial fiscal growth. The Institute of Medicine report notes that even though there is no proof of a direct relationship in all cases between changed status and increased funding, "Based upon the best evidence available, however, the committee concludes that establishing a new institute at least has not hampered the scientific effort, and may have helped it considerably."

However, the report also states that "Since 1970, there have been at least 23 new institutes proposed for NIH, 13 through the legislative process and 10 by other means." It is not hard to understand why NIH argues so consistently that enough is enough.

—BARBARA J. CULLITON

[†]*Responding to Health Needs and Scientific Opportunity: The Organizational Structure of the National Institutes of Health* (National Academy Press, 2101 Constitution Avenue NW, Washington, D.C. 20418).