New Jersey is taking a similar attitude. Senator Harrison Williams (D–N.J.), testifying at recent hearings on deepwater terminals, observed that New Jersey already is the nation's most densely populated state and has much of America's chemical and petrochemical industry. Yet, at the same time, New Jersey is a major tourist state, with some 500,000 people a day using its beaches at the peak of the summer season. The new refineries and chemical works that would accompany an offshore terminal is "something that the people of [New Jersey] would not appreciate and would know they could not tolerate," Williams said.

In theory, New Jersey and Delaware could accept the offshore terminal but, by restricting growth of refinery capacity, force the oil companies to pipe all or most of the crude on to refineries in other states. The state officials shrewdly recognize, however, that construction of the terminals might be followed by persistent efforts on the part of the oil and chemical industries to overturn that restrictive policy.

All coastal states clearly do not regard offshore oil terminals and more refineries and chemical works as a dreary prospect. Indeed, all of the Gulf states except Florida (where tourism is king) very much want to have such terminals and the industrial growth they can bring. Louisiana and Texas are actively pushing the industry-sponsored LOOP and Seadock proposals, and Mississippi and Alabama are promoting the idea of an Ameraport terminal sponsored by the states themselves. In the case of each of these proposed Gulf terminals, the expectation is that part of the crude oil received would be processed at local refineries and part would go through existing pipeline systems to refineries in other regions, especially the Midwest.

Flexible as it is in application, the offshore terminal of the SPM type can be used for either the dispersion or the concentration of refinery capacity. How, then, to place these facilities in such a way, and under such conditions, that they will bring growth only to those places where the people want it and where it can be assimilated without intolerable stress? From the extensive discussion of this question before congressional committees, a few observations can be ventured.

The solution is not to be found in simply having the federal government let the coastal states decide whether they want a terminal or not. In the first place, few such facilities are needed. In the second place, a state such as Alabama or Mississippi where the environmentalists are weak and the powers-that-be are industry-hungry, might rush ahead with plans for terminal development and pay only lip service to the environment. By the same token, one can argue that, under some circumstances, the national interest would be poorly served by allowing a state to veto plans for a terminal.

The best solution seems to lie in making the licensing of offshore terminals and related onshore facilities (tank farms and pipeline) clearly a federal responsibility, subject however to certain major conditions. A prime prerequisite would be that no terminal will be licensed until a coastal zone management plan is prepared by the affected states according to guidelines ensuring that industrial growth does not flout environmental quality standards or result in major losses of wetlands or other natural resources.

Under the Coastal Zone Management Act of 1972, the states are responsible for preparing such coastal zone plans, with the only penalty for nonparticipation or inadequate performance being the denial of coastal management grants. There is strong sentiment among some senators now considering legislation pertaining to offshore terminals that the licensing of such facilities must be closely tied to land use regulation in the coastal zone.

Inasmuch as hearings already have been held this year in both the House and Senate on bills looking to a "Deepwater Port Facilities Act," Congress could enact legislation in this field by sometime early next year. At this point, it is much too early to predict what that legislation will prescribe. What can be said is that, on the offshore terminals issue, Congress has the time and the information (several useful government studies and impact statements have been done) to follow the dictates of its own National Environmental Policy Act and adopt a policy that makes both economic and environmental sense.—LUTHER J. CARTER

Biomedical Research 1973: Cancer, Heart Disease, and Everything Else

Since the winter of 1971, the Congress and the President of the United States have officially declared war on two of the nation's most devastating killer diseases. In so doing, they have divided the biomedical world into three unequal parts. First, there is cancer. Heart disease is second. Then comes "everything else." Very few people are content with this state of affairs.

From the outset, investigators whose research falls into the category of "everything else" have been distressed by the favoritism that cancer and heart research are getting, as they see it, at their expense. And they have quietly and persistently said so.

After the National Cancer Act of 1971 and the National Heart, Blood Vessel, Lung, and Blood Act of 1972 became law, with their provisions for significant increases in funds for the National Cancer Institute (NCI) and the National Heart and Lung Institute (NHLI), the rest of the National Institutes of Health (NIH) slipped from view. For the last year and a half, attention has focused on the cancer and heart institutes as each geared up to launch its special crusade. A major feature of that gearing up has been the creation of detailed plans to spell out just how the wars on cancer and heart disease will be fought. The plans took ages to prepare and months to work their way through the bureaucracy before they could be released. Finally, the heart plan is out. And, the first parts of the cancer plan, which will not be complete before January, have been made public. In each case, the plans anticipate funding levels that are higher than the Administration is willing to spend. In making them public, Administration officials made it clear that even these

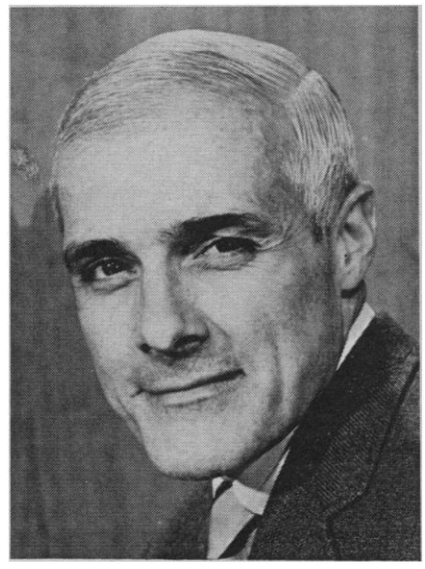
pet programs are going to have to do with less money than they would like. The contention is that the cancer and heart planners failed to take into account the need to spend some of the country's limited health dollars on "everything else." (Specific aspects of the cancer and heart plans will be discussed in an article next week.)

At issue is a question that everyone now refers to as one of "program balance." Robert Marston, former NIH director, was asked about that last fall as the health budgets for fiscal 1974 were being prepared.

On 6 October 1972, Marston, who was fired by President Nixon in December, sent a memo to the assistant secretary for health and scientific affairs in the Department of Health, Education, and Welfare (HEW) stating his position. He had, he said to Merlin K. DuVal, who was assistant secretary at the time, three concerns about the budget. The first had to do with the NCI's request for funds. The cancer people were asking for $640 million, the top figure possible under the law. Marston said, "Our review [of their budget] fails to identify any area which does not give some promise for improvement of our knowledge about and our ability to control cancer." Thus, he gave the request his tacit approval, even though, because of the special status of the NCI under the new law, Marston had no real authority in the matter one way or the other.

Marston's second concern had to do with the way the NCI proposed to spend its money if the Office of Management and Budget (OMB) went along with the request for the full $640 million. (It has not.) Reiterating the NCI's own statement that "the scientific knowledge base is the single most important factor influencing the program's rate of growth," Marston argued that the NCI should spend more of its money on basic research grants than it intended to.

The third issue to which Marston spoke dealt with the relationship of the proposed NCI budget, and that of the heart institute, to the rest of biomedical research. His position was quite clear. He did not like it. "We would be concerned with a budget that increased cancer by $208 million, heart by $23 million and the rest of biomedical research by $28 million," Marston wrote. "Such a budget would belie any assertion that cancer research growth was not at the expense of other research."



Edwards favors balance.

That was written in the weeks preceding completion of the President's budget for fiscal 1974. As it turned out, when the budget was released in January, neither cancer nor heart research did as well as their proponents wished, and everything else suffered even more than was feared (*Science*, 9 February). The budget request for the cancer crusade was a mere $500 million, not $640 million; the NHLI was allotted $265 million by the OMB rather than the $460 million Congress had said it would approve; and for everything else, funds were actually cut below existing levels.

Even members of the National Cancer Advisory Board and the National Heart and Lung Advisory Council expressed concern at what was happening to other areas of research. They said what any basic scientist considers the obvious—that one area of research simply cannot prosper intellectually in isolation from others and that, because there is so much fundamental information that remains to be discovered, it is impossible to know where new leads will come from.

Marston subsequently said he was glad that he was not the one to have to go before Congress to justify the President's budget. John Sherman, deputy director of NIH who was acting director for months after Marston's ouster, made the trip to the hill to testify that the budget was reasonable because he had to, not because he believed it. Robert S. Stone, the man who became the director of NIH in May (*Science*, 22 June), has not said much about the way the government's research money is divided up. So far, at least in public, Stone has confined himself to saying that "balance" is a "subjective" word and that whether things are in balance depends very much upon the perspective of the beholder. He is not saying what his perspective is.

There does, however, appear to be one man in the upper echelons of the federal government who is saying what the biomedical research establishment has been waiting to hear. Charles C. Edwards, who became assistant secretary for health last April, is not at all convinced that there should be continued expansion of the cancer and heart programs at the expense of everything else. Work on the President's budget for fiscal 1975 is well under way already, with the time for real decision-making fast approaching. Edwards says flatly that if the funds available for research in areas other than cancer and heart disease are down again in fiscal year 1975, "We will not have done our job."

In a recent conversation with *Science*, Edwards discussed what he thinks his job should be and talked about some general changes he would like to see in the way the nation's health budget is formulated.

To begin with, Edwards believes that health was shortchanged in the fiscal 1974 budget, in part because there is no single voice to defend health programs before the OMB. Edwards would like to be that voice.

The whole situation would be better, Edwards contends, if there were a fixed health budget with a stable rate of growth and an orderly management system to determine how to allocate funds among competing programs in the health field. He wants his office to become more involved in setting health policy and in outlining budget strategies than it has before, although he insists he does not want to try to become involved in the day-to-day running of HEW's numerous health-related activities.

His point is that someone should be looking at competing demands for money and asking which ones are more important than the others. Naturally, in submitting its budget request, each agency within HEW asks for the maximum amount of money, and, in the end, OMB is left to sort things out. Edwards is saying that there should be more sorting out within the department. He is all in favor of curing

cancer but, like many research scientists, is not sure that spending $500 million or $640 million in the present manner will do it. Furthermore, he feels strongly that someone should be asking where problems of nutrition, alcoholism, and drug abuse fit into the total picture of the nation's health. "We need a health voice with an overall view and only a partial sense of advocacy," he said.

To help him in his efforts to better coordinate budget policies within health, Edwards has considerably expanded his own staff in a major reorganization of HEW that took place in May. There used to be 209 persons in the office of the assistant secretary for health. Today, there are nearly 1000, and many of those who have been added will be dealing with budget matters. The majority of the "new" employees were already on the HEW payroll, working in other agencies such as NIH or the now disbanded Health Services and Mental Health Administration. Now, at least on paper, the assistant secretary for health has a much more powerful role than ever before. But the extent of his influence and the degree to which his views about the budget-making process will really affect the biomedical community cannot be measured until January, when the fighting will be over and the fiscal 1975 budget released.—BARBARA J. CULLITON

The NOAA Budget: Agency's Role in Ocean Research Threatened

The National Oceanic and Atmospheric Administration (NOAA) has, for the last 8 months, been afflicted with the budgetary equivalent of the 40 days and 40 nights of rainfall that fell on Noah and his ark. If the trends signaled in the recent actions continue, NOAA's role in ocean research, which it considers half of its mission, could be all washed up.

To an outsider, it might seem that, when a federal agency receives smaller budget increases than expected (as have most science agencies in recent years), simple belt-tightening is the result. But in the case of NOAA's 1973 and 1974 budgets, small increases were accompanied by impoundments of $43 million by the Office of Management and Budget (OMB). This caused shifts in funds, bringing about the most drastic realignments of other programs in the agency's 3-year history. Although international programs have been allowed to grow, marine science and fisheries work has been substantially reduced and emphasis on atmospheric programs has been shifted. Approximately 600 scientists, technicians, and support staff have been dislocated; and, although 400 were offered other jobs or retired, 246 are unemployed. Making the changes, one top NOAA administrator has said, was "a nightmare."

Last December, OMB told NOAA administrators that the agency would receive only $353.6 million of the record $389.3 million budget that both the Administration and Congress had sought for fiscal 1973. OMB told NOAA some of the impounded money would be restored in fiscal 1974 but there would be no new increases that year, giving the agency $385 million. NOAA Administrator Robert M. White and Associate Administrator John W. Townsend, Jr., were also handed a list of priority areas slated for increases. Thus, while a congenital optimist might conclude that NOAA's budget actually increased by $32 million from 1973 to 1974, what actually happened was that to accommodate the OMB-dictated increases in some programs, White and Townsend were forced to make major and painful cutbacks in others.

The major cuts were in oceans research, which Thomas Malone, a respected member of the National Advisory Committee on Oceans and Atmospheres, terms "a premature truncation of NOAA's expanding into the areas outlined for it by the Stratton Commission" which argued in January 1969 for a large U.S. presence in ocean work. Cuts in ocean-related research areas totaled $28 million—or roughly the cost of building 28 miles of rural highway. "We have to fight as hard with OMB for $500,000 as the highway administration fights for $5 million and the defense department fights for $5 billion," Townsend philosophized in an interview. He added, "But the loss of . . . two research vessels made us madder than hell."

The vessels he referred to are two of NOAA's largest research ships, the *Surveyor* which cost $8 million to build and the *Discoverer* which cost $10 million, each of which cost $1.5 million a year to operate. "We were told to get out of marine geophysics and that's what these ships largely did," Townsend explained. In addition, NOAA's mapping of the continental shelf was canceled. Expansion of its survey of the seaward U.S. boundary, of tides, and of estuaries was also cut back. Its Marine Minerals Technology Center was closed and a marine mining test was canceled. All of which led one elder don of oceanography, who asked not to be named, to speculate that NOAA appeared to have lost out to "hatchet men" in the Department of the Interior, whose Geological Survey (USGS) "is the most powerful scientific block in government. They don't want any geophysical research they can't run themselves. And they're not oceangoing types." If the USGS is one enemy of NOAA's ocean geophysics programs, apparently the oil and minerals industries are another. One official noted, "The oil companies get upset if those maps get too detailed." Officials declined comment on whether oil interests had a role in the decision to chop NOAA's geophysics research, but the move nonetheless appears to be a victory for NOAA's foes.

NOAA also decided it should get out of the earthquake business. NOAA's seismology programs, totaling roughly $2 million in fiscal 1973, have been canceled. Efforts have been made to transfer the 68 scientists involved and their support staff to other agencies. This decision was a response to a General Accounting Office report last September accusing three government agencies, including NOAA, of triplication of effort in their earthquake research (*Science*, 6 October 1972). Outside scientists, however, while agreeing that some consolidation was in order, noted the inconsistency in the Administration's favoring earthquake research,