concern that they may actually destroy the Indian populations. Thus, the persistence of these diseases may ultimately be no more certain than if the population became immune.

The geographical features that separated the South American Indians from important sources of evolving disease agents and the filtering effect of the Bering and Panamanian land bridges may have protected the people we studied from a number of diseases, including tuberculosis and malaria. However, another factor, their small population concentrations, would have protected them from many diseases even if the disease agents reached the area. The small population groupings that characterize the Amazon tribes are a very general phenomenon among primitive cultures, and similar groups have been studied with similar results in Australasia (*15*). It seems probable, moreover, that ancient man was also divided into small social groupings. Unless ancient conditions were fundamentally different from those of surviving primitive cultures, measles, influenza, smallpox, and poliomyelitis could not have been present during the period of human emergence nor through most of man's history. The time that we have had in which to adapt to these diseases is probably less than 200 generations.

Summary

Incidence of various infectious diseases in several Amazon Indian tribes has been determined serologically. Diseases that infect only man fall into two distinct categories. Those which can persist in an individual for a prolonged period are highly endemic, but those which are infectious only in the acute phase die out quickly after introduction. The suggestion is made that the latter diseases could not perpetuate themselves before the advent of advanced cultures and did not exert selective pressures on the human genetic constitution until relatively recently.

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27. Original data used in this article have mostly been published in the *American Journal of Epidemiology*. Tests were performed by F. P. Pinheiro, A. S. Evans, J. P. Woodall, W. J. Heirholzer, E. M. Opton, J. E. Emmons, B. S. West, and G. Wallace. Travel support was received from the Pan American Health Organization.

NEWS AND COMMENT

Ford's First Budget: DOD, Energy R & D Up, Health Is Ailing

Considering that the United States is deep in the throes of a recession, two cheers from the research community may be in order for President Ford's first budget. Overall, the White House is asking Congress to increase the federal commitment for research and development in fiscal 1976 by 15 percent to $21.6 billion in obligations, with an additional billion dollars for new R & D facilities. Outlays for the conduct of R & D are projected to rise by 11 percent to $20.7 billion, or about 3 percent more than the budget makers believe the cost of doing research has risen in the past year.

As was the case last year, defense and energy took the lion's share of growth while health research came out the loser.

During a day-long round of briefings for reporters on 1 February, officials of the Office of Management and Budget were at pains to note that these increases were among the largest for R & D since the middle 1960's. And in fact, it appeared that R & D fared better than some other sectors of the $93 billion that the Administration considers to be the "relatively controllable" part of the federal budget. Commitments for environmental programs, including pollution abatement, for example, would go up only about 7 percent during fiscal 1976, which begins 1 July. Aid to elementary and secondary education would decline by a few percent.

Still, there are bleak spots for science in the new budget that Congress may or may not choose to brighten this spring.

Basic Research

Health research stands out in this respect. Federal support of medical schools, including both research and training, would decline slightly in the new budget. Funds for the National Institutes of Health would sink substantially in practical terms, with even the specially favored cancer program receiving far less than it had expected.

Moreover, according to the OMB's analysis of the R & D budget, outlays for colleges and universities—traditionally presented as a measure of basic research support—would rise by only 2 percent to $2.3 billion in fiscal 1976, considerably less than inflation's bite.* Academe's share of the soaring federal energy budget would rise from

$106 million to $116 million, but the proportional share of the energy budget would remain about 8 percent.

Budget officials, however, cautioned that these figures involved a great deal of guesswork on the part of federal agencies and should not be taken as accurate indicators of basic research vitality. H. Guyford Stever, who is both director of the National Science Foundation and the President's titular science adviser, said that while he thought the budget for the most part was gratifying, "we would have preferred a higher number" for basic science support, which, overall, should rise about 8 percent.

Whatever the Congress eventually does with a President's budget proposal, it is at least significant as a major policy pronouncement. While this budget is no exception, it expresses no new directions in science policy; and it is hard to see that any exist between the lines of figures. It is, on the whole, a status quo budget that for the most part extends the trends of recent years.

Energy

Obligations for energy now clumped almost entirely in the new Energy Research and Development Administration (ERDA), would, after 2 years of phenomenal growth, rise by a more modest 10 percent to $1.84 billion; outlays for energy, however, are projected to go up by 36 percent in the new year, to $1.66 billion.

Nuclear fission and fusion would retain their 60 percent share of energy money, rising $160 million to $1.1 billion. Solar and geothermal R & D would rise by $20 million to $123 million. In all three areas, however, there is less than meets the eye. Last December, as part of his budget-cutting, inflation-fighting strategy that has since gone mostly by the board, President Ford had the OMB "defer" about $80 million for nuclear research and $5 million for solar and geothermal work that was supposed to have been committed this year. Instead, this money now appears as part of the increase proposed for fiscal 1976. If, under new legislation restricting the President's impoundment powers, the Congress disapproves these deferrals, the money will go back into the fiscal 1975 budget.

* Officials of the National Science Foundation say the best, if imperfect, measure of the rising cost of R & D is the GNP deflator, an economic index currently running at an annual rate of about 8 percent.

Support for fossil fuel and conservation R & D would remain essentially flat.

Also within ERDA's budget, money for biomedical and physical research would rise about 10 percent. There will be no money for the positron-electron storage rings that Stanford University wanted to build, but the Administration has granted a reprieve to Argonne National Laboratory's ZGS accelerator, which, by virtue of seniority, heads the OMB's death list. The only apparent casualty in the ERDA budget is a $1.8 million program to develop a nuclear-powered artificial heart, a device that will now go the way of the nuclear rocket and the nuclear airplane.

Space

The space agency budget, although not destined for any real growth, would at least stop its downward slide of recent years. An increase in obligations of $200 million to a level of $3.5 billion is earmarked mainly for the space shuttle project, which now consumes about one-third of the National Aeronautics and Space Administration budget. Preparations are continuing for the joint Apollo-Soyuz earth orbital flight with Soviet cosmonauts this summer as well as for the launching of two Mars-landing Viking spacecraft. There will, in addition, be money for launching a third earth resources satellite early this year (*Science*, 29 Nov.).

The NSF

The National Science Foundation budget presents some complications. Depending on how one looks at it, the NSF either is getting a cost of living increase or it is getting something less than that. This year, NSF's congressional appropriations are $769 million. Of this amount, $52 million in solar and geothermal programs have been transferred to ERDA, leaving the NSF with $717 million. The new budget calls for an 8 percent increase to $775 million. But almost half of this increase, or $20 million, consists of money that is to be deferred from the current budget and passed along to next year's.

The NSF director, H. Guyford Stever, told reporters that his new budget contains an increase of 13 percent for basic research programs and a cut of about 5 percent in NSF's Research Applied to National Needs program (the result of a reduction in energy programs not transferred to ERDA). This boost for basic research interrupts a steady swing toward applied research that marked science policy in the Nixon years.

The NSF's only "new start" will be a proposed $4 million program in climate dynamics aimed at an improved understanding of the climatic shifts that have lately affected world food supplies. Apparently the only sizable cut, apart from RANN, is one of $7

Conduct of research and development by major departments and agencies (in millions of dollars). (Official budget figures.)

Department or agency	Obligations			Outlays		
	1974 actual	1975 estimate	1976 estimate	1974 actual	1975 estimate	1976 estimate
Defense-Military functions	8,396	8,833	10,608	8,791	8,913	9,997
National Aeronautics and Space Administration	3,024	3,327	3,526	3,181	3,107	3,390
Energy Research and Development Administration	1,475	1,893	2,346	1,475	1,893	2,346
Health, Education, and Welfare	2,286	2,092	2,285	1,888	2,176	2,223
National Science Foundation	556	619	680	571	573	630
Agriculture	384	428	468	377	428	470
Transportation	370	368	402	328	372	379
Interior	198	303	315	202	259	312
Environmental Protection Agency	177	287	300	163	230	304
Commerce	181	211	230	177	204	220
Veterans Administration	87	102	102	80	96	97
Nuclear Regulatory Commission	44	59	96	42	55	88
Housing and Urban Development	65	58	65	58	56	61
Justice	37	67	45	44	58	45
All other	127	135	134	143	155	138
Total	17,408	18,780	21,602	17,522	18,575	20,698
Total, conduct of research	7,163	7,545	8,256	6,783	7,435	8,188
Total, conduct of development	10,245	11,235	13,346	10,739	11,140	12,511

million or 12 percent in the NSF's education programs.

To a significant extent, the NSF's science advisory apparatus helped the OMB shape the research and development portions of the new budget. And Stever, for one, was evidently rankled a bit by widely reported complaints emanating from the AAAS meeting in New York to the effect that science policy was rudderless and drifting in the absence of an outpost in the Executive Offices. Stever said he agreed that the advisory structure needed strengthening, but he added, rather tartly, that "it's good that [science] is drifting upward."—ROBERT GILLETTE

Budget Policy

The bicentennial budget is a record federal budget ($349 billion) with a record peacetime deficit ($52 billion), but even holding to these levels will require cuts of $17 billion prescribed by the President and, in effect, a new fiscal year's resolution renouncing new legislation.

The Administration's budget strategy is a product of necessity. The projected deficit—which rose some $5 billion in the two weeks before the budget was unveiled—is attributed to a sharp decline in revenues caused by the recession and a related rise in such accounts as unemployment compensation.

The stated aim of the Administration in the budget is to fight both recession and inflation, a tricky undertaking, which can be compared to devising a plan to fight simultaneous flood and drought. The extent of the country's economic difficulties have compelled the Administration to abandon pretensions to "fine tuning" the economy in the way that was discussed a year ago. It is certainly ironical that a President and his top economic advisers, who are committed to a fundamentalist brand of economic policy, and a few months ago were espousing tight controls on federal spending to counter inflation, have been moved by events to put forward a big-spending, big-deficit budget. The President, however, has declared his determination to hold the line on the deficit where he has drawn it. But, if he is to fight recession and inflation on his own terms, he may also have to fight Congress.

The new Congress, with a big Democratic majority and a fresh passion for self-determination, seems to be deploying to push its own policies in such major sectors as the economy and energy. In an appearance at the principal budget briefing in Washington, Ford stressed his $17 billion program of budget cuts in a way that seemed both an appeal and a challenge to Congress.

Defense

One area in which an early collision between Congress and the Executive seems likely is that of the Department of Defense (DOD) budget. DOD remains the biggest spender on R & D among federal agencies and the requested increase—from $8.8 billion in new obligations this year to $10.6 billion next year—is larger in absolute and percentage terms than for any other sector of the R & D budget including energy.

Funds for research would go up $232 million to over $2 billion and, for development, up $1.5 billion to $8.6 billion. Defense officials say that the increases would more than offset the effects of inflation and provide for an increase in R & D funding in real terms. Funds for research and development in universities would rise from $197 million to $213 million, which represents a modest start toward carrying out DOD intentions to shift more basic research to the universities (*Science*, 22 Jan.).

Much of the increased funds would be earmarked for development work on new weapons systems. Some $672.2 million is asked for the B-1 bomber compared with $445 million this year and $732.5 million for the Trident submarine against $640.2 million in the current year. For the so-called Air Combat Fighter (ACF), $273 million is being requested compared to only $32 million this year. General Dynamics recently won the competition to develop the ACF, a lightweight fighter intended to be less costly than other new tactical fighters. For the transition period created by the shift of the start of the fiscal year from 1 July to 1 October, $168.3 million is budgeted for the B-1, $171.5 million for the Trident, and $82.5 million for the ACF.

The B-1 and Trident programs have run into controversy on Capitol Hill and, as the authorization and appropriations process proceeds this year, they are likely to come under especially close scrutiny.

Although DOD is requesting a total of $104.7 billion in new obligational authority—up some $15.7 billion over last year—Defense Secretary James S. Schlesinger is pressing the argument that the boost represents a bare minimum because the buying power of the DOD budget has been eroding steadily. Inflation, the costs of paying the volunteer army, and the price of more sophisticated hardware are the major factors. Defense officials assert that in terms of constant dollars the military budget is lower than at any time since 1964 and has been declining both as a percentage of the federal budget and as a share of the gross national product. Schlesinger and his aides are also sure to advance the analysis that in recent years the Soviet Union has surpassed the United States in military spending—in real terms—and that the U.S. is faced with the prospect of losing the lead, particularly in military technology, it has held over the Soviets.

To a Congress which has shown growing skepticism toward such arguments and is looking for a substantial chunk of controllable expenditures to control, the military budget may well seem to provide an opportunity for it to assert itself.—JOHN WALSH

Biomedical Research Budget Drops Again

It has been a long time since the release of the President's budget has brought good news to biomedical research. Last year, the only real increases were for the cancer and heart programs. This year, the news is uniformly bad. And it is difficult to evaluate because it may be meaningless right now to make specific comparisons with other years because of a very recent development—the "rescission budget."* In any event, it appears quite likely that in fiscal 1976, the National Institutes of Health (NIH) will have less money for the support of biomedical research, not more.

There are always at least three sets of figures that have to be distinguished in any discussion of the federal budget. First, there is the one representing the amount of money the President is asking Congress to appropriate during

* The rescission budget message applies to all areas of federal spending. Here we are discussing only those aspects that apply to biomedical research funded by NIH.