

Other sponsors commented:

Caltech: Reorganization is a matter for IDA's trustees to decide, says President Lee A. DuBridge, and Caltech will go along with their choice. No unilateral action.

Columbia: Contrary to press reports, says a university spokesman, no decision has been taken; the matter is under discussion.

Illinois: The trustees' suggestion is under discussion, says Executive Vice President Lyle H. Lanier, but no decision has been reached.

MIT: Provost Jerome B. Wiesner says the proposed change in IDA or-

ganization has been discussed and the inclination is to go along with other universities in accepting it.

Michigan: The University wants to withdraw its corporate participation, but will name an individual trustee, says Vice President M. Radock.

Pennsylvania State and Stanford: No discussion yet.

Princeton: The faculty voted by a heavy majority that the proposed reorganization does not go far enough to remove university participation. President Robert F. Goheen will take the matter to the board of trustees again in June.

## BUDGET AX

### Research absorbs the cuts

When it comes to spending money, science and technology take less than 10 percent of the Federal Government's proposed \$186.1 billion budget.

But when it comes to saving money, another picture emerges.

There was a time when Congressional moves to chop funds from the Federal agencies' research allocations looked like so much empty threat; research and development funds couldn't possibly be cut without doing serious damage to the Federal programs of which they are a part.

But the picture has changed; the long-standing Congressional threat to hold Federal programs as hostage against President Johnson's demands for a 10 percent tax increase has become a reality. The President and his chief antagonist on the issues, House Ways and Means Committee Chairman Wilbur Mills, apparently reached agreement last week on the tax increase in return for a \$4 billion spending cut.

It is at this stage that the peculiar arithmetic of Federal budgeting becomes the handwriting on the wall.

Of the \$186 billion budget proposal for the fiscal year that starts July 1, only some \$39.5 billion are classed as "relatively controllable civilian programs." The other billions cover defense expenditures, locked-in trust funds for such programs as social security and medicare, farm price supports and other legislated expenditures against which the budget-cutters have no weapon.

And, even excepting defense, which is having its own R&D troubles, non-military research and development (SN: 2/10, p. 133) makes up 25 percent of the total from which the cuts will have to be made.

"It's going to be R&D, by definition," laments a budget-watching official of the President's Office of Science and Technology.

Either in the appropriations of funds

for authorized programs or in the authorization of new programs, several agencies, including the Atomic Energy Commission and the National Science Foundation have already felt the bite.

On the Science Foundation side, the House last week was deliberating a cut of \$100 million or more in the \$500 million proposed in President Johnson's budget for fiscal 1969 (SN: 2/10, p. 136).

If this 20 percent slice survives attempts to recoup planned for later Senate action, many scientists fear for the viability of the NSF for several years into the future.

Other science programs are also affected by budget cuts recommended by the House Appropriations Committee. Among these are the Office of Science and Technology, coordinator of Federal science policy, down \$735,000 from a \$2.5 million request (\$500,000 of the request was for a Presidential energy resources study which will have to be postponed), and the National Aeronautics and Space Administration—decreased by \$362 million to just over \$4 billion. About \$294 million of the NASA cut comes out of research and development funds (SN: 2/10, p. 135).

Also cut back, by authorization committees, have been the Atomic Energy Commission—down about 10 percent from the total budget request of \$2.9 billion, with a particularly heavy swipe out of AEC's nonmilitary functions; and the Department of Defense, for which the Senate Armed Services Committee recommended a three percent decrease in military research and development, slicing \$240 million from a total request for research, development, test and evaluation of \$8 billion.

"It's going to be hard on the universities and on science education," laments the OST official. "I hope we'll not be cutting back on the training of future scientists to the point where it will hurt later."

## CONTINUING PROCESS

### Memory: more than chemistry

Experience almost certainly leaves marks in the chemical structure of the brain. But that does not mean memory can be found there.

"We will never find the stuff of which memory is made. . . . Memory is not just something. It is an entire system in constant dynamic change."

These remarks, from scientists attending the third international conference on The Future of the Brain Sciences, reflect growing belief that the search for chemical memory is misdirected since memory is not only chemistry, but also a set of changing relationships within nervous tissue.

The search for chemical memory codes is like "looking for the difference between jazz and symphonic music by studying the bumps on a record," says Dr. Karl H. Pribram, neurosurgeon and psychologist at Stanford University School of Medicine, one of 50 scientists attending the New York conference, sponsored by the Manfred Sakel Institute in New York and the Foundation for Research on the Nervous System in Boston.

For most of its short life, the scientific investigation of memory has focused on finding a chemical basis. From this effort has come evidence that protein synthesis is apparently required for memory storage. Ribonucleic acid (RNA) and even DNA—the chemical genetic code—seem to play a role. Under the microscope, scientists have found protein macromolecules packed around nerve cells. These proteins theoretically respond to experience, changing the neuron's tendency to react and possibly creating new circuits.

The chemical evidence led several investigators to try memory transfer experiments. They ground up the brains of trained fish or rats, extracted RNA, and fed the residue to untrained donors, claiming chemical learning transfer. But the scientific community has never been convinced by transfer experiments (SN: 4/20, p. 376). For one thing, they depend too heavily on the concept of memory codes.

By current thinking, memory is both storage and process, both stable and transient. Experience causes biochemical changes in brain structure, but that very structure is in the process of constant alteration, continuous computing. Computing is also part of memory.

The conference advanced memory science along both biochemical and computer fronts.

Dr. Samuel Bogoch, conference chairman and director of the Boston research center, reported a nine-fold in-