

Other work on the adult frog (13) indicated the release of neurosecretory products to the cerebrospinal fluid when the normal pathway is interrupted. In any case, it is clear that the high level of thyroid activity at metamorphic climax depends upon the integrity of the median eminence-pituitary pathway. Since this pathway is itself brought into being by the activity of the thyroid gland during prometamorphosis, climax automatically follows the completion of that process in normal development.

The extreme activation of the metamorphic system at climax completes the maturation of the neurosecretory system. This system, like such other tissues as the legs and tongue, then loses its developmental response to thyroid hormone. The positive feedback effect of thyroid hormone upon the development of the neurosecretory mechanism therefore ceases and is replaced by the negative (inhibitory) effect of high thyroid level upon this system that is characteristic of the adult mammal. According to our present concept, this inhibition removes the substance responsible for desensitizing

the TSH cells. With the restoration of their sensitivity to negative thyroxin feedback their activity ceases until the level of thyroxin and thyroid-stimulating hormone falls again to extremely low levels. Hence the thyroid gland becomes inactive, as it is characteristically found to be at the end of metamorphosis. This concept of the metamorphosis-activating mechanism of the tadpole is schematically summarized in Fig. 2.

The significance of the findings reported here may be limited to the amphibians. It is possible, however, that the dramatic events of amphibian metamorphosis are merely extreme examples of processes which take place in all vertebrates, albeit in a more gradual and inconspicuous manner in non-amphibians. In any case, the fact that the differentiation of the median eminence can be suppressed by withdrawal of thyroid hormone and that its normal structure can be reconstituted by treatment with thyroid furnishes an insight into the developmental mechanics of one of the crucial links in neuroendocrine pathways of vertebrates—namely, the median eminence.

References and Notes

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News and Comment

AIBS: Happy Ending in Prospect, But Case Adds to Congressional Skepticism on Support for Science

The American Institute of Biological Sciences (AIBS) appears to be bounding back from its brush with extinction, and, with the crisis now passed, it would be useful to look into some of the broader implications of the institute's misadventures.

First of all, it might be noted that despite a haunting fear that seems to afflict some of the principals in the case, Congress is not very interested in AIBS's woes. Things might change, of course, but at the moment, there is not

a flicker of a possibility that any congressional committee will poke into the matter. Persons close to the committees with direct jurisdiction over the National Science Foundation point out that the NSF-AIBS relationship is small pickings when compared with the things they have on their minds early in the session.

These committees include the House Science and Astronautics Committee, which is up to its neck in fending off criticism of the administration's plans to expand the space budget by \$2 billion next year, and the Military Operations Subcommittee of the House Government Operations Committee,

which finds NASA and the Atomic Energy Commission much more interesting than NSF.

However, while Congress appears to be uninterested in the specifics, the AIBS case—which was well publicized in the Washington press—contributed to the already widespread congressional feeling that something is amiss in relations between science and government, a feeling that the money doled out by Congress for the support of science just isn't being carefully looked after in large segments of the scientific community. The outcome is not going to be reflected in a single decisive act. Rather, it is going to show up in increasing congressional skepticism toward the scientific community. This has already been felt by the administrators of the National Institutes of Health. They are still relatively well off, but the blank check days are going fast, and it is experiences of the AIBS sort that convince Congress that the sooner they go, the better.

Within the scientific community, the AIBS revelations have elicited reactions that suggest that Congress's grounds for concern may not be at all

far-fetched. A number of persons have commented that since AIBS's missteps apparently involved little more than diverting funds to a scientific film series, it makes no difference that NSF gave it those funds for other purposes. It all went for science, this theory contends, and it is outrageous that NSF should harrass AIBS over the book-keeping. When it is pointed out that NSF money was accepted with the understanding that it would be used for specific purposes, a number of persons have answered to the effect that if Congress is worried about misuse of money, it should devote its time to the space program.

Implicit in this sort of thinking, which does not seem to be rare, is the strong feeling that the scientific community is somehow ethically above the mass of men, and that all that Congress has to do is provide funds and let the scientists take it from there. Perhaps it is on a higher ethical plane, but Congress is not going to think so unless the scientific community demonstrates, without any exception, that it is alert and self-regulating whenever scientists go astray.

Meanwhile, one sidelight of the AIBS affair has received virtually no attention. AIBS as an organization is apparently going to emerge from this crisis in better shape than ever. But along the way, on two weeks notice and without severance pay, it laid off 36 members of its staff as an economy measure, including several who had been employees for 3 years. AIBS's financial plight provided no alternative to this move, but it is ironical that the only individuals to suffer from AIBS's financial irregularities were innocent bystanders.

—D. S. GREENBERG

Manpower: Activist Administration Finds Congress Hard To Convince on Bigger Investment in People

One remedy which the problem-solvers and policy-planners of the Kennedy administration have been prescribing for a variety of political, economic, and social ills bears the academic brand name of "investment in human capital."

The idea that the national interest obliges the federal government to assure the supply of certain types of specialized manpower is at least as old as the service academies, but the effort to apply the principle much more

As of this week, AIBS reported that its appeals for financial assistance had drawn more than 12,000 replies containing membership fees and contributions totaling \$110,000. The Institute, whose difficulties were detailed in this space on 25 January, said the returns included more than 5500 direct memberships at at least \$10 each. These are considered to be of critical importance for AIBS's future, since the organization's financial woes could in large part be attributed to the fact that it was organized as a society of societies, and heretofore had only a handful of direct members. Meanwhile, an audit is continuing to determine AIBS's total liability to the National Science Foundation. This has been tentatively set at \$331,570, but the total seems likely to come down appreciably when detailed discussions get under way. With the exception of a small Russian translation project, all work funded through AIBS is continuing.

widely seems to follow the flourishing precedent of heavy federal support of university research and graduate education in science over the last two decades.

The argument that the government is a big consumer of scientific and technical manpower and that it therefore should assist in producing such manpower has been tacitly accepted by Congress as part of the logic of the cold war. Efforts by the administration to invoke the national interest in behalf of manpower programs in other "shortage" fields, however, have met with mixed success.

Limited Acceptance

Because unemployment carries a political charge smaller only than defense in making activists of members of Congress, the administration won enactment of programs to train unemployed workers in skills for which there is a demand, both in the Area Redevelopment Act and the Manpower Retraining Act. The Juvenile Delinquency Act of 1961, which was passed on the strength of assurances that it provided a cooperative effort among federal, state, and local agencies and did not infringe upon local prerogatives, carried funds to support university training programs for youth workers and stipends for students in these programs.

In other fields, notably education, the administration has failed to convince Congress of the urgency of passing new programs to increase the supply of manpower to meet certain national needs.

Administration policy spokesmen and their speechwriters have taken great pains to assert the unity and coherence of the President's total legislative pro-

gram and to demonstrate how each part contributes to two prime and interrelated purposes: assuring national security and assuring economic growth.

Though "pragmatic" seems to be the word to describe the operating style of the Kennedy administration, the working pragmatists seem to feel most comfortable when they have a theoretical sanction for policy. In their efforts to bring a variety of manpower programs in under the big umbrella of the national interest, administration spokesmen have shown at least a rough-and-ready grasp of a set of theories which describe investment in humans as a significant factor in economic growth.

These theories, which are identified with such university economists as Theodore W. Schultz of the University of Chicago and Gary S. Becker of Columbia, in general hold that the income of both individuals and nations is related not only to physical capital but to other, less-tangible resources such as education, health, on-the-job training, access to job information, and opportunity to migrate.

The economists have been seeking means to explain past economic growth and to predict future growth. Their analyses, for example, of postwar economic recovery in Europe, where human capital in terms of education and needed skills was plentiful, and of the problems of underdeveloped countries, where such human capital is relatively meager, have won wide attention over the past decade.

In simplified form, the "investment in humans" theories have percolated through the policy-making machine and are as familiar in the Labor Department and the Office of Education as in the Peace Corps and the Agency for