GENERAL SCIENCE

Taxpayers in New Role

TEN YEARS AGO, American taxpayers through their elected representatives decided that basic scientific research needed a big boost. So they set up the National Science Foundation and, through it, began paying the bills for advanced research on subjects from the slave-making behavior of ants, and its population consequences, to the mechanics of the atmosphere.

The taxpayer, of course, picked up the tab: $3,500,000 in the first year, growing to $152,773,000 for the current year.

In this, the taxpayer was doing a bold thing. He was and is patronizing science in the manner that czars and kings and noblemen and, more recently, governments have.

In doing this, Americans upset the predictions of some foreign observers. The observers had said a democracy devoted to equality would not promote the pursuit of knowledge and would not lift up and support its best minds with special favors.

But American taxpayers did. They set up the foundation and then encouraged its expansion, an expansion phenomenal even for a Government agency. The present headquarters on Constitution Avenue, with additional workers on 23rd Street, may soon be further expanded.

The foundation makes studies and policy suggestions and reviews the great number of requests for funds for research. It does not do research itself but makes grants to pay the bills for important research that cannot get private support.

The foundation has also found that to support research adequately, it must also support research facilities. In astronomy, for instance, the foundation is currently supporting the National Radio Astronomy Observatory in Green Bank, W. Va., and the Kitt Peak National Observatory near Tucson, Ariz.

Generally, scientists and close observers of science in America have had praise for the foundation's work. But there have been critics too.

The foundation has been applauded for the manner in which it has carried out its primary responsibilities: the awarding of research grants and fellowships.

Criticism, when it has come, has come mainly from scientists who had hoped the foundation would take a major position in forming science policy for the country. When Congress approved the foundation, Congress instructed it, in a manner that has been open to varying interpretations to establish science policy

The foundation itself has taken a fairly conservative view of its own power to make policy. Whether the foundation could take a more aggressive position without upsetting Congressional applecarts is open to serious question.

But there is no question that the foundation has provided an important stability to American science. Scientists with important work to do now know where to go for help. In 1960, these scientists got an average of $30,500 for an average period of 2.3 years per project.

The foundation was able to support 26% of the proposals received.

The foundation is also working to improve America's schools by supporting training of high school teachers. Funds are also used to help train graduate students, to train college teachers and to improve the content of courses in colleges.

And the foundation has moved to end the "translation gap." The foundation supports the cover-to-cover translation of 35 key USSR scientific journals. And it is making a series of studies of the organization and publication of scientific research in every major geographical area in the world, including the Soviet Union, Poland, mainland China, Czechoslovakia, Yugoslavia and Hungary.

Today, Americans are opening their wallets to pay for basic research, that type of research aimed primarily at increasing knowledge in science—the kind of work done by Galileo, Newton, Maxwell, Faraday, Gibbs and Einstein.

These scientists' work in the past revolutionized man's life, work and thoughts. The faith of the National Science Foundation is that its support of today's scientists will improve man's life tomorrow.

A lot has been done. Still, Dr. Alan T. Waterman, director of the National Science Foundation, warns in Science, 131:1341, 1960:

"The problems inherent in science and technology cannot be dismissed on the assumption that they can be met by the Federal Government without understanding, support, and local action by informed citizens."

Science News Letter, May 21, 1960

ASTRONAUTICS

U. S. Leadership Depends On Space Agency and AEC

UNITED STATES leadership in the conquest of space depends upon the close cooperation of the Atomic Energy Commission and the National Aeronautics and Space Administration, a former AEC Commissioner charges.

Dr. Willard F. Libby of the University of California, Los Angeles, said that the AEC and NASA, working together, can keep the U. S. ahead in space exploration by maintaining a strong educational program to provide adequate numbers of scientists and engineers trained in applications of atomic energy to space. The AEC has done this successfully for many years in such fields as nuclear reactors, he reported.

"Far more important" than the development of a rocket engine with a million-pound thrust, Dr. Libby said, is whether the next generation of engineers and scientists will be "interested in space."

Few possibilities of the world today are as exciting as some of the peacetime uses of space, Dr. Libby concluded.

Science News Letter, May 21, 1960

PUBLIC HEALTH

Oil Helps Survive Radiation

VICTIMS OF RADIATION sickness may be treated in the future with remedies as simple as olive and peanut oils.

This possibility was indicated in recent experiments by Dr. James K. Ashikawa described at the national meeting of the Radiation Research Society in San Francisco, Calif.

The scientist, a biophysicist at the University of California Donner Laboratory in Berkeley, found that mice could survive lethal doses of X-rays through treatment with common edible vegetable oils and with methyl oleate and triolein, chemically pure synthetic oils.

He got best results, he said, by injecting the oil—in an amount equal to about one-thirtieth of the mouse's total body weight—directly into the abdominal cavity of the irradiated animals.

As many as 90% of the treated animals survived a moderate X-ray dosage, compared with only 45% survival in untreated mice. And after still stronger irradiation, which killed all the untreated animals, some seven percent of those that received injections were able to survive the lethal rays.

Effective chemotherapy for radiation victims is badly needed, Dr. Ashikawa said. There is little chance for predicting a peacetime nuclear accident or a nuclear war. And the "anti-radiation pills" currently available, compounds containing the sulfhydryl group, have no effect unless they are taken before the radiation exposure occurs.

Still unexplained is the exact mechanism by which injected fats can ward off radiation sickness, although the scientist suspects the answer may possibly lie in a biochemical action involving the cell membranes, which are known to be attacked and weakened through radiation exposure.

The highest therapeutic values, Dr. Ashikawa reported, came from olive oil in which the content of stearate, a saturated fat, was increased by the addition of pure methyl stearate. Studies showed that stearate may also play a natural role in the body's defense against radiation damage, since irradiated but untreated animals were found to have a higher stearate content in the blood stream with a corresponding lower content of oleate, an unsaturated liquid fat.

In continued work, the scientist will attempt to explain the physiological mechanism through which the treatment operates and will search for more active chemical agents. Eventually, he believes, a combination of chemicals and other methods may prove to be the best therapy for human victims of radiation sickness.

Science News Letter, May 21, 1960