

## GENERAL SCIENCE

# Scientists as News-Makers

**His job is generally far from glamorous, but the Civil Service scientist is a key force in continued United States progress in many fields.**

► AMERICA'S LEADING employer of scientific talent is Uncle Sam. The Government keeps more than 165,000 scientists, engineers and technicians busy.

With few exceptions the Government-employed scientist is "Mr. Anonymous." He is accustomed to having his most important work received with little or no fanfare, or with unfavorable criticism and frequent misunderstanding. The "career scientist" pursues, for the most part, a career devoid of glory.

Yet he has made significant contributions to scientific knowledge and to the health and welfare of the people he serves.

From morning to night, few activities of human endeavor in the United States are unrelated to the work of scientists in Government.

Federal scientists assure the accuracy of the electric clocks by which our day is regulated.

Others forecast weather. Still others establish frequencies for radio and television stations from which we hear weather reports.

Federal scientists guarantee the purity of our food, and work constantly to improve its nutritional value.

They set size standards for the clothes we wear, and may have a hand in developing better strains of fibers from which clothing is made.

Other achievements, of course, are far more spectacular.

When research and development executives in major U. S. corporations were asked to name science's "Top Ten Conquests" in the 1950's, they listed seven in which Federal scientists made key contributions.

These were space penetration, hydrogen fusion, power from nuclear fission, solid state electronics, electronic computers, low-priced conversion of salt water to fresh water, and commercial jet aviation.

## Active in Five Areas

Predicting future headline-makers, the same experts cited five areas in which Government researchers are active. These are manned space flight, fusion power, thermoelectricity, cancer control and the synthesis of life.

To cite a few more impressive accomplishments among many, Federal scientists developed radar and sonar, the first fully automated electronic digital computer, the instrument landing system used by all commercial and military aircraft, the atomic-powered submarine, the long-range missile detection system we depend on for attack

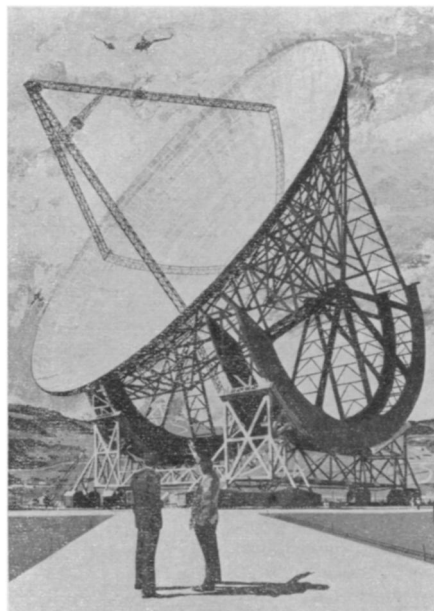
warnings, and the first anthrax vaccine safe for use on man.

The first widespread public awareness of the Government's function in research came with the birth of the atomic age. But the Government's first actual science activities date all the way back to 1807, when Congress authorized a coastal survey and established the technical bureau now known as the Coast and Geodetic Survey.

Later ventures included sponsorship of the Lewis and Clark expedition, which paid off in important botanical and zoological findings, and Samuel F. B. Morse's telegraph tests.

It was not until early 1900's, however, that permanent scientific bureaus with continuing programs were widely accepted as a legitimate Government function. There had been heated debate on the Federal role in science. There had even been arguments that Federal support for scientific and technical projects was unconstitutional.

Today, the Government has 11% of its white-collar workers in science or engineering. The core of the civil service scientific team is formed by 55,000 engineers, 21,000 physical scientists and 21,000 biological scientists.



**THE "BIG DISH"**—Federal scientists with the Naval Research Laboratory designed a giant radio telescope, with seven-acre reflector, to be completed in 1964 at Sugar Grove, W. Va. Cost may reach \$180,000,000.

During the fiscal year ending June, 1960, the Government put about nine billion dollars, or well over 10% of the national budget, into research and development. This was twice the amount invested for the same purposes, during the same period, by industry, foundations, educational institutions and other groups combined.

Of the 25 departments and agencies benefiting, the Department of Defense alone got better than two-thirds.

## Military Developments for Peace

Although defense spending chiefly involves weapons research, there is strong evidence that many military developments are destined in the long run for peacetime civilian use. This has certainly been the case in the past.

Long-range ballistic missiles, for example, may find a bigger place within our historical framework as aids to transportation and farming rather than as weapons of war. Missile-launched navigational satellites will give ships and planes extremely precise "fixes." Missile-launched weather satellites will benefit agriculture and other activities by making it possible to understand the forces that shape the weather.

Gases developed for warfare have been used in the treatment of eye ailments and cancer.

The frozen TV dinner, a boon to housewife and bachelor alike, was originally developed by the Air Force to provide varied, balanced fare for bomber crews on long missions.

Echo sounding, developed by the Navy to pinpoint enemy submarines, is now used by fishermen and navigators.

Clearly, the taxpayer and his defense dollars have been buying scientific and technological progress far beyond the "bigger bang for a buck" long associated with weapons spending as such.

By creating new products adaptable to civilian use, pioneering with new materials and processes, and evolving new management techniques, military research has led to new industries, new jobs and new approaches to a better way of life. Considered on this basis, and added to the basic defense factor of insurance against aggression, defense spending may be one of the biggest bargains the taxpayer is getting for his money.

William M. Ragan and Lawrence H. Clark of the Civil Service Commission have reported that scientific and technical achievements have been the basis for most of the top cash awards made under the Government's Federal Employees Incentive Awards program, set up in 1954.

Awards range from \$5,000 to \$25,000. The only \$25,000 award given to date went to Dr. William B. McLean, technical director of the U. S. Ordnance Test Station at (Continued on p. 206)