EDUCATION

Science Youth Program Grows

When need for future scientists was unappreciated before Pearl Harbor, there were beginnings of National Science Youth Program which now has become world-wide.

LONG BEFORE our fear of sputniks and Russian education created a renaissance in science interest, a nationwide program supplementing American science education had begun.

Even before the time of Pearl Harbor, the basic structure of the National Science Youth program, which has been developed and operated at the national level by Science Service, was planned. Before World War II there was little national appreciation of the fact that large numbers of scientists of high creative ability, and engineers of great technical skill would be needed in the future. As a matter of fact, only a few years earlier a government agency had predicted that there would be an oversupply of scientific and technical personnel, a forecast which was regretted by those responsible for having ventured it.

Science Service, the institution for the popularization of science, had been engaged in reporting and interpreting advances in the world of science and technology since 1921. Out of this experience there came the conviction that there would be greater, not less, demand for well-equipped scientists of all descriptions. The war in Europe was a menacing sign that science would be used for purposes of destruction and that even greater research and knowledge was necessary in order to protect us from the forces of aggression.

The world was in virtual ignorance, despite the warning of some alert scientists and writers, of the release of atomic energy and the implicit possibilities of the atomic bomb. Not even security had been thrown about such knowledge of the fission of uranium and its possibilities.

Efforts for the Future

At this point in America's prewar state, Science Service was determined that there should be a widespread effort at finding the potential creative scientists of the future and a concerted attempt at inspiring them so that as many of them as possible would be encouraged to go on to college and to equip themselves to become the scientists of the future.

There were some efforts to give youth scientific opportunities. As always, bright boys and girls with perpetual questions in their eager minds had undertaken their own youth-for-research projects. Rising partly out of exhibits shown by the American Institute of the City of New York at the New York World's Fair, there were some science clubs and a number of science fairs in leading cities, patterned from the first held in New York City.

When, in 1941, Science Service learned that this effort might have to be abandoned, it was determined that the institution that had pioneered in putting science in the newspapers should turn some of its efforts toward science for youth. With the existing group of some 700 science clubs as a basis, Science Clubs of America was instituted.

To teachers of science primarily in the secondary schools the offer was made that if they desired to become sponsors of groups of students interested in extracurricular or classroom activities in science, they would be affiliated with Science Clubs of America without fee and sent the essential materials needed for organization and conduct of a science club or group.

Until the organization of Science Clubs of America a fee had been charged for such affiliation but the furnishing of cooperation without charge proved to be essential and effective in securing the maximum participation on the part of science teachers and others.

Science Clubs Growing

There has been a steady growth in the number of groups affiliated with Science Clubs of America until now the number is 25,000, of which approximately 500 are overseas. Multiple mailings to all the sponsors during the school year bring them such materials as the annual Sponsor Handbook, How to Organize a Science Club, announcement of October National Science Youth Month, and various booklets issued in cooperation with professional organizations, such as the Edison Foundation and the American Dental Association.

The Science Talent Search was created and begun at the beginning of Science Service's sponsorship of National Science Youth activities. Up to that time there has been no effort to identify and give special opportunities to those still in high school who have the potential ability to become creative scientists of the future. Individual universities had undertaken a selection of high school seniors of high ability for scholarship opportunity, but there had been no national program to identify and implement science talent at the high school level.

While the drive for potential scientific personnel useful in the war effort had not yet begun, Science Service with the support of Westinghouse began the Science Talent Search, seeking among the senior high school students of the nation those who have high scientific potential as judged by an aptitude test, educational record, and science accomplishment as shown by recommendations and a report of an experimental project. The mechanism of the Science Talent Search proved so successful that it has remained virtually unchanged for almost two decades. Thousands of promising young scientists have been recommended to the colleges and universities of the nation, and in addition to the Westinghouse scholarships awarded have received major support from the institutions of higher education. Some of those identified in the Science Talent Search are now occupying responsible positions in research. Some 95% of those winning honors in the Science Talent Search entered college (honors are now given to about 10% of the entries) contrasted with about 50% of all high school graduates. Experience shows that of the honors and winners group about half of them achieved the Ph.D., or its equivalent, which contrasted with less than 5% of the general run of high school graduates.

It was found in Science Talent Search studies that interest in science develops at an early age. While the identification of science talent during the terminal year at high school was an essential and effective procedure, the inspiration and practice of science in the early years was necessary to developing the interest and ability of young scientists. For that reason the place of the science club in this process was emphasized and encouraged.

Just as professional adult scientists have the goal of scientific publication in journals or through papers read at meetings, there is need for a culmination of the scientific work of the young scientists. Projects, undertaken in much the same manner as researches of more mature scientists, may be in progress throughout the year but they are often begun in the fall with the reopening of school. The holding of a science fair in the spring, toward the close of the school year, proved to be an effective way in which the science projects of the young scientists could be shown to fellow students, teachers, parents and the public.

Fair: Nucleus for Activity

Science fairs had begun about a decade before Science Service's participation in a science youth program. With the Science Clubs of America organized and the growing participation of science club sponsors, Science Service endeavored to inspire and implement more science fairs, both in individual high schools and upon a local and regional level. Suggestions were issued as to how groups of teachers, school officials, and students themselves could obtain the cooperation of newspapers, industries, colleges and universities, service clubs, museums, and other local and regional organizations in the conduct of science fairs. Committees organized in this way to conduct science fairs became the nuclei of science youth activities in cities and regions. Some of these committees or councils went beyond the mere holding of science fairs and participated in such activities as supporting science teaching itself, strengthening of science curricula in the schools, and the organization of industrial cooperation with

schools, involving scientist substitutes for teachers upon special occasions, lectures by scientists in the schools, and visits to industries and colleges by students and teachers.

In 1950, science fairs throughout the nation on a local and regional basis had become so numerous that Science Service determined to inaugurate the National Science Fair. National Science Fair serves as a culminating activity of the Science Youth program during a school year. It is an effective experience for the finalists, a maximum of two from each of the approximately 200 regional fairs now affiliated with the National Science Fair. More important, it is an incentive to organizing local and regional fairs through the desire of each area to participate in a national activity.

The hope that any young scientist anywhere in the United States will be able to enter a local or area science fair preliminary to the possible participation in the National Science Fair is rapidly becoming achieved. Among the states that are completely covered with science fairs, so far as the territory from which they draw is concerned, are Indiana, Texas, Montana, Wyoming, Colorado, New Mexico, North Dakota, South Dakota, Arkansas, Louisiana, Mississippi, Alabama, Florida, Georgia, North Carolina; South Carolina, Delaware, Rhode Island.

The National Science Fair became international in 1958 through the entry of finalists from Japan's National Fair. Plans are under way for other countries, and areas in other countries, to enter in future years. It is possible in addition to the National Science Fair there will also be some form of international science fair justified in the coming years.

Science Service's service to newspapers which are widely published throughout the world, serves youth as well as adults in conveying promptly news and interpretation of the fast-moving developments in science and technology. In many cases the newspapers that cooperate in the National Science Youth program, supporting science clubs and science fairs locally, also utilize the news and feature reports of Science Service.

The SCIENCE NEWS LETTER, issued weekly to a growing audience that includes many science teachers as well as the general public, is also an effective medium for conveying science information to youth, both directly through subscription by the young scientists themselves and through their school groups and libraries.

Because experimentation is the essence of science learning, a series of experimental kits, issued monthly under the title THINGS of science, was inaugurated in the early days of Science Service's science youth activities. These have been widely used to introduce experimental science to beginners. Unless the student does experiments himself he cannot understand science effectively. The THINGS units, costing little, can be used individually and expended in the using. Since these kits also present new and novel materials from time to time they have been of great usefulness in informing professional scientists, industrialists and others about new scientific and technical developments.

For a specialized field, and especially for high school teachers, Science Service publishes CHEMISTRY magazine eight times a year. There are other Science Service aids to education and science youth activities, such as books, color slides, etc.

Because nationally as well as locally the opportunities for aiding science youth are large, many national organizations are interested in science for youth. October is designated as National Science Youth Month each year and more than 30 national organizations join with Science Service in this event at the beginning of the new school year.

Added support for Science Service's National Science Youth Program will enable a greater service to be made to young scientists, their teachers, the educational system and the public. Among the organizations that have given grants for youth activities are the National Science Foundation, Westinghouse Educational Foundation, Sloan Foundation, Dupont, and Charles F. Kettering.

Since Science Service is a nonprofit institution, with trustees nominated by the National Academy of Sciences, the National Research Council, the American Association for the Advancement of Science, the E. W. Scripps Estate, and the journalistic profession, contributions to Science Service are income tax deductible. They will pay great dividends in better scientists and citizens for the future years.

Science News Letter, October 10, 1959

EDUCATION

Eisenhower Urges Science Youth Participation

PRESIDENT Eisenhower has urged participation in National Science Youth Month, being observed this month, "in communities everywhere as a means of strengthening all phases of education, and stimulating in young students a strong regard for the traditions of intellectual excellence."

"National Science Youth Month," the White House statement said, "will be observed throughout October by numbers of Americans alert to the need to help young persons develop their scientific abilities.

"High school students and their science teachers will be joined by 33 national civic, professional, industrial, labor, and educational groups in the observance under the auspices of SCIENCE SERVICE.

"Encouragement of scientific education provides everyone with an opportunity to help develop a vital national asset. It can further give to all Americans an opportunity to share more fully in the adventure and excitement of science and to gain a more intelligent understanding of the increasingly scientific world in which we live."

Science News Letter, October 10, 1959

Do You Know

Food spoilage annually costs Americans more than the total defense program.

Aluminum is one-third lighter than steel.

Some *bacterial cultures* produce distinct fruity and oniony odors on chilled muscle of cod and haddock during early spoilage.