

year by Science Service's Science Clubs of America for the finalists of nearly 150 affiliated regional fairs.

Projects' Scope Broadens

The scope of the projects has done some growing, too. The once-upon-a-time exhibit of several butterfly specimens casually mounted in a box top has given way to expert demonstrations and astonishingly mature research work.

The younger generation keeps up with the latest developments, and many a professional scientist has been amazed to see the newest design in artificial kidneys or ultrasonic interferometers or rockets very competently exhibited at a science fair. These are not just models, copied from drawings. They involve real understanding of the principles and often include new features designed by the young exhibitor. If it is a winning project, some work had been done with the equipment after it was built.

At the most recent National Science Fair, held in Los Angeles last May, high school students showed judges and visitors a new fuel additive, a spray method of autogenous skin grafting, an original design for a liquid fuel rocket which eliminates pressurized fuel tanks, a new type of photographic wide-angled lens, and a study of electroluminescence demonstrating that the excitation voltage varies with the doping material and is proportional to the distance between the electrodes. These are just some samples of the 231 exhibits.

A few of the more complicated projects have grown so large that some fairs now discourage exhibitors of extremely heavy apparatus from competing for the honor of being sent to the National Science Fair as representatives of the regional fair. The cost of transporting such massive equipment sometimes exceeds the entire expense of sending the finalist!

Four-Ton Project

A few years ago, for instance, a 17-year-old finalist's betatron project weighed four tons and had to be sent to the National Fair in a 35-foot moving van. Its young builder had spent four years putting it together and it included, besides the betatron itself, 7,000 pounds of lead shield, 10,000 pieces of steel, 130 capacitors, 14 switches, and an unknown number of miles of wire. (In operation, the device was reported to sound like "a herd of bull moose in distress.") After the fair was over, the exhibitor presented his project to a university where it is now in use.

Regardless of size or simplicity, the experience of doing an independent project and of the contacts with other science-minded students and mature scientists often starts a chain reaction of enthusiasm.

Many youngsters learn, to their own surprise, what ability they have in science. Suddenly they want very much to study science and mathematics courses, looking forward to college training in one of the sciences or in science and math teaching. Others, the already eager science-aspirants,

are more convinced than ever that they have chosen an exciting and rewarding career.

The United States Office of Education reports that this year, for the first time in nearly half a century, the percentage of high school students taking mathematics and science has increased. There are probably many reasons for this increase, but successful personal experience with physics, chemistry, or mathematics would come high on the list, in the opinion of most researchers, of what makes a scientist.

Of the 444 finalists in the Seventh and Eighth National Science Fairs, well over 90% of the boys and girls looked forward to careers in research science, medicine, engineering, science teaching, technical laboratory work or related fields. What is more, studies have shown that up to 88% of the students who reach the level of the national fair actually do go into such careers.

Apparently encouraging the younger generation to do what comes naturally is an inspired way to fill in some of the gaps in our scientific manpower!

Science News Letter, October 12, 1957

RADIO

Saturday, Oct. 19, 1957, 1:30-1:45 p.m., EDT
"Adventure in Science" with Watson Davis,
director of Science Service, over the CBS
Radio network. Check your local CBS station.

Dr. James A. Reyniers, research professor
of bacteriology, University of Notre Dame,
Notre Dame, Ind., will discuss "Germ-Free
Life."

PUBLIC HEALTH

Stomach Not Hurt by Swallowing Plutonium

► SWALLOWING large amounts of radioactive plutonium will not hurt the stomach or intestines, Drs. Maurice F. Sullivan and Roy C. Thompson, General Electric Company, Richland, Wash., report in *Nature* (Sept. 28).

Their finding disagrees with the earlier idea that these organs are sensitive targets for radioisotopes, especially those that give off alpha particles.

They tested the effects of plutonium-239, an alpha-emitting isotope, on a group of laboratory rats. Very large doses of the isotope could be eaten before any symptoms of intestinal radiation damage appeared.

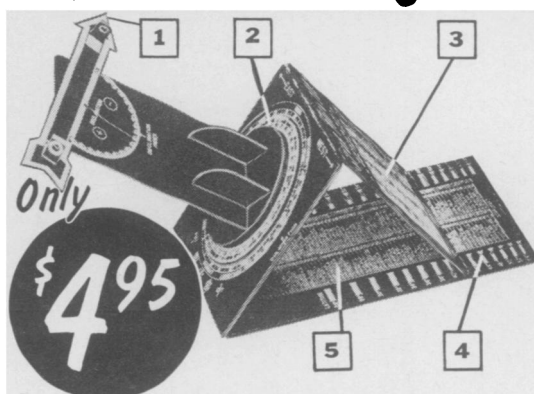
For all practical purposes, the dangers from such isotopes in the stomach and intestines can be ignored when calculating the maximum permissible radiation exposure.

Alpha particles probably cause no damage because they travel only short distances and the radiation-sensitive cells of the intestinal wall are too far away to be affected by them. Also, the particles have such low energy that a single sheet of paper can stop them.

With beta-particle emitters the situation is different. Tests with yttrium-91 showed that this isotope, when ingested, caused as much damage as heavy X-ray exposure.

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