

GENERAL SCIENCE

Research of STS Winners

Independent scientific work of high excellence done by final competitors for Westinghouse Science Scholarships coming to Washington for the Science Talent Institute.

► **HIGH SCHOOL** scientists, who may be leaders in tomorrow's world of science, will meet in Washington on Feb. 25 for the five-day Thirteenth Annual Science Talent Institute.

They will bring with them exhibits they have made demonstrating projects in their particular field of research. The 40 young scientists who will participate in the Science Talent Institute will compete for \$11,000 in Westinghouse Science Scholarships. The scholarships range in value from the grand prize of \$2,800 to \$100.

Analyses Speeded Up

► **A NEW** laboratory technique to speed up chemical analyses now done by the colorful chromatography method has been developed by Edward Patrick Scanlon, 17, of Minneapolis, Minn.

He uses a spinning glass plate that slings drops of unknown solutions out on filter paper. The filter paper is put on the center of the turntable and the chemical solution in turn is dropped on the paper.

As the whole assembly turns, centrifugal force speeds up the rate at which the solution distributes itself over the filter paper. When a "developer" is applied, colors appear that tell trained chemists what metals are in the solution.

The young DeLaSalle High School senior built his laboratory aid himself. He attached a glass plate to the shaft of an electric motor.

Planetarium for \$12

► **AN ATTIC-SIZED** planetarium that projects stars, planets, the sun and a meridian line has been built in the home of 17-year-old Victor A. Schmidt in Baltimore, Md.

The Milford Mill High School senior constructed his planetarium at a cost of only \$12. It is the outgrowth of two years' work that produced, all told, three different planetariums.

The current model was designed to eliminate most of the shortcomings of the first two models. Victor's finished instrument resembles in many ways the Spitz projectors used in a planetarium in Baltimore.

Victor's planetarium is situated in his attic bedroom. A black "skyline" is painted around the walls. Room lights can be dimmed out at the start of a demonstration.

His \$12 projector is driven by a store display electric motor that turns the whole assembly once every three minutes. The projector can be adjusted to show star posi-

tions as viewed from the North Pole. In addition to projecting constellation outlines, stars, planets and the sun, Victor's outfit also can show eclipses and the polar aurora.

Disfigured Cacti Cause

► **WEAK TRACES** of radioactivity in the soil at Pinnacle Peak near Phoenix, Ariz., may be the cause of disfiguring blemishes on cacti growing there, 16-year-old Susan H. Lee of the North Phoenix High School has concluded.

Susan had samples of the soil analyzed at the U. S. Bureau of Mines to determine their content and radioactivity. Radiometric tests showed all samples had slight traces of uranium.

Soil obtained from around the plant's base about six inches below the surface displayed enough radioactivity to be detected by a Geiger counter.

The disfigured plants are called "crested cacti." The crests cause the cactus to fan out in abnormal growth. One scientist who previously studied this condition put forth his belief that the crestations were caused by arsenic or strychnine poisons in the earth.

Susan ran experiments on 30 cacti, feeding some with dilute solutions of strychnine sulfate and arsenious oxide. Half of her samples died. The half that lived did not develop crests.

On field trips to the Pinnacle Peak area, the high school senior also discovered that crested cacti seem to grow in clumps. Disfigured cacti seemed to be clustered in areas having a "radius of disfigurement" of 300 feet. Cactus plants growing outside that area were normal.

Run Allergy Studies

► **TWO OF** the eight girls who won national honors owe their success in part to their allergies.

Mary Jeanne Kreek, 17, a senior at the Woodrow Wilson High School in Washington, D. C., was told five years ago that she was allergic to 36 things. Deciding to live "adequately instead of neurotically," she delved into the science of allergies to discover what she could learn about them.

The other girl is 18-year-old Carol Jean Gansz, senior at the Evanston Township High School in Evanston, Ill. Carol has done a lot of nose-blowing because of pollens and spores of fungi. She also decided to find out what she could about it.

Mary Jeanne made extracts of house dust from her vacuum cleaner, duck feathers from her pillow, and hair from her head.

She compared her allergic reaction to her home-made extracts with her reaction to the extracts normally used in allergy tests. She discovered that her reaction to her own extracts was sometimes stronger, and sometimes weaker, than her reaction to the "normal" extracts.

She suggests that more accurate diagnoses might be obtained if the sufferer is tested with extracts made from his home irritants rather than with the samples ordinarily used.

Meanwhile, Carol was trying to learn whether the smoky atmosphere from autumn bonfires had anything to do with her allergies. She ran experiments using small leaf fires. She set up stations around the fires to catch pollen and spores of fungi on microscope slides. After analyzing her slides, she concluded that smoky air does carry more allergens than the general atmosphere.

Mary Jeanne plans to study medicine in college and hopes to become a physician. Carol intends to study liberal arts and sciences. She expects to become a biological research worker or a science teacher.

Ancient Bronze Restored

► **AN UNUSUAL** method of restoring ancient bronze relics has been worked out by Robert J. Rodden, 17-year-old senior at the New Brunswick High School, New Brunswick, N. J. This teen-aged scientist has shown that bronze relics often can be restored with a treatment of Versene, a short name for ethylene diamine tetra-acetic acid.

Bronze pieces covered with a 1/8-inch-thick crust of corrosion required about two weeks to clean in a 3.4% solution of the acid, he found. If the corrosion was 1/4-inch thick, cleaning time increased to three weeks.

The acid ate away the corrosion products and minerals, and loosened earth particles in the crust around the bronze. It left a thin layer of copper oxide beneath, through which some of the original designs on the bronze relics could be seen.

Science News Letter, February 20, 1954

PHYSICS

Microscope "Sees" Atomic Particles

► **A MICROSCOPE** that spots clusters of radioactive atoms in metal or living tissue has been created at the University of Michigan by William Kerr, assistant professor of electrical engineering. The microscope speeds up a slow process now involving photographic plates.

A sample of the material to be examined is placed under the microscope and searched for radioactive atoms that emit beta rays. When the location of the greatest activity is found, the researcher then shifts to an ordinary microscope lens system to examine the sample visually.

Science News Letter, February 20, 1954