

## GENERAL SCIENCE

# Winners' Science Projects

Science projects of the 40 top Science Talent Search winners cover a wide variety of subjects, including space, astronomy and plant and animal physiology.

► TWO HIGH SCHOOL BOYS have won top honors with their space studies.

Stephen Sinclair, 18, studied the possibilities of increasing the human life span for long distance space travel by means of inducing hibernation.

Stephen, who lives in Phoenix, Ariz., has done volunteer work as a hospital orderly, and plans to study medicine at Stanford University after graduation from North Phoenix High School. A varsity swimmer and diver, Stephen has amassed 14 trophies, 96 medals, and 201 ribbons in AAU-sponsored meets.

Herbert Gordon Solberg Jr., 17, Las Cruces High School, N. Mex., centered his space studies in the field of astronomy. Using a telescope, he made systematic observations of Jupiter's inner three satellites, first seen by Galileo, in order to measure Jupiter's equatorial diameter.

He timed 22 transits and calculated the average to be 88,220 miles. Gordon, a former National Science Fair winner, also is interested in geology, desert floral ecology and writing. After graduating from Las Cruces High School, he plans to major in either astronomy or physics at the University of Arizona.

## Three Study Vegetables

Studies of common vegetables helped three high school seniors win trips to Washington, D. C.

Ursula DeVonis, 17-year-old senior at Nazareth Academy, Rochester, N. Y., studied the possibilities of using beet, red cabbage and eggplant extracts as acid-base indicators. Using bromthymol blue as a reference in her experiments, she found that beet extract would be useful in titrating, or determining the strength or concentration of solutions. Red cabbage is useful in titrating a weak acid and strong base or a strong acid with a weak base.

Ursula's findings agree with those of stubborn youngsters at dinner tables: eggplant is not useful. Ursula plans to study chemistry at Nazareth College, Rochester, N. Y.

Another young lass, Clare Ofsowitz, 17, Miami, Fla., studied the respiration of potato tubers. She says that "potato mitochondria, complex chemicals in the metabolism and secretion of cells, have very different membrane properties than those in animal tissue." After graduation from Miami Senior High School, Clare plans to study botany at the University of Wisconsin.

Howard Spielman, 17, of Far Rockaway (N.Y.) High School, studied the effects of neutron and gamma radiation on the photo-periodic responses of the radish plant. He exposed more than 3,000 radish seeds

to varying specific doses of radiation and analyzed the variations in the vegetative growth of different parts of the plant under different colors of light.

He found that 2.5 hours of neutron radiation completely inverted the normal trend of photoperiodic growth, or the effects of alternating periods of light and darkness on growth. He also found through analysis with an electron microscope that the neutron radiation had a marked effect on the photoperiodically controlled structure of the cell walls.

Howard is an Eagle scout and has won awards in the New York City science fairs. He hopes to attend Yale University.

## Interest in Chick Hatching

Complex studies of chick hatching and pigeon raising have won Washington trips for Joseph Locker, 16, of Taylor Allderdice High School, Pittsburgh, and Lee Snyder, 18, of Huron (S. Dak.) High School.

Joseph incubated chick embryos at varying temperatures and found that both above and below the normal 100 degrees

Fahrenheit, lymphocytes in the bursa of Fabricius, an organ like the human thymus, were inhibited.

The thymus also showed a slight inhibition. In spleen incubated at 90 degrees the white cells were found to be very immature.

These effects are similar to those obtained when the male hormone testosterone was injected.

Joseph plans to study medicine at Harvard, eventually doing research in the field of endocrinology.

Lee studied the loss of pigmentation in pigeon feathers. He determined that the reduced number of pigment cells in the feather sockets of some pigeons is inherited, and loss of feathers depletes the supply of pigment cells.

Lee has a full range of interests which include literature, chemistry, debate, mountain climbing, snare drums and mandolin, alpine ecology and poetry.

He plans to study chemistry at Harvard University and hopes eventually to earn a doctorate in biochemistry or genetics.

All these young scientists are among the 40 winners in the 23rd annual Science Talent Search administered by SCIENCE SERVICE. They will attend the Science Talent Institute in Washington, D. C., Feb. 26 through March 2 where they will compete for \$34,250 in Westinghouse Science Scholarships and Awards.

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## Battle of Computers Topic of TV Show

► TWO IDENTICAL COMPUTERS will fight out a game of Old Maid as they are cheered by their owners, Charles Howard, 14, and Raymond Pokorny, 12, both of St. Louis, Mo., on Science All Stars, ABC-TV feature scheduled for Sunday afternoon, March 1.

They will be followed by George Fargher, 16, of LaPorte, Ind., who will use his own electrocardiograph to detect the minute heart impulses of a water flea. George won an award in the boys' zoology section at the 1963 National Science Fair-International.

Microwave sending and receiving as it relates to satellite control will be discussed by Eric Small, 17, of New York. He will use a microwave system to trigger a relay and cause a "satellite" to fall from the studio ceiling.

The boys will be joined on the program by one of the nation's leading engineers, Dr. Eric A. Walker, president of Pennsylvania State University.

Each week the series presents work of outstanding student scientists, together with guest scientists.

The show, directed by Steve Carlin, is produced in cooperation with SCIENCE SERVICE, a pioneer in science youth activities.

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American Cyanamid

**DUSTING MACHINE** — *This dusting device permits scientists to dust plants with insecticide under simulated field conditions at American Cyanamid Company's Agricultural Research Center at Princeton, N. J. A single plant can be treated as though it were one of thousands being dusted on a large farm.*