

## GENERAL SCIENCE

# STS Scholarship Winners

The scholarships of the 22nd Science Talent Search were won by young gifted scientists with interests in mathematics, genetics, astronomy, biochemistry and psychology.

## See Front Cover

► THE MOST PROMISING young scientist of the year is 16-year-old Sylvain E. Cappell, a New York City boy whose project was based on the theory of semi-cyclical groups with special reference to generalized non-Aristotelian logic.

As top winner in the 22nd Science Talent Search conducted by Science Clubs of America, a SCIENCE SERVICE activity, he has been awarded the \$7,500 Westinghouse Science Scholarship. The judges selected him from a field of 3,274 high school seniors in the nation who submitted completely qualified entries.

Four other scholarships were awarded: \$6,000 to Arthur M. Shapiro, 17, of Philadelphia, Pa., who studied genetics in sulphur butterflies.

\$5,000 to Gary A. Wegner, 18-year-old Bothell (Wash.) High School senior who is well on his way to becoming an astronomer and already is in demand as a speaker of authority on his favorite topic.

\$4,000 to Alan S. Campbell, 16, of Fairfield, Conn., whose project dealt with investigations into the mechanism of the Molisch reaction.

\$3,000 to a charming California girl, Anita F. Ware, 17, of Rialto. Anita's work proved that it is possible to imprint a reaction in chicks without any visual experience, using an auditory stimulus.

First alternate to the \$3,000 scholarship is Mark Weiss, 17, of Coral Gables Senior High School, Coral Gables, Fla. His project report was on "White and Far-Red Light on Mitochondrial Respirations as an Explanation for Photomorphogenic Phenomena."

Second alternate named is Deborah Chase, an attractive 17-year-old senior at Bronx High School of Science, New York City. Debbie has presented a report on her study of viruses.

Eight girls and 27 boys received Westinghouse Awards of \$250 each in recognition of their top level ability and promise as creative scientists of the future.

Seen on this week's front cover are the five happy top scholarship winners just after the announcement of the awards at the Hotel Statler Hilton, Washington, D. C.

The investigation that top winner Sylvain Cappell reported as part of his entry concerned development and study of a new type of group numbers, and a new method of studying abstract groups. Such groups, a generalization of addition circuits of Boolean algebra, may ultimately have widespread applications in computer design. They are multi-valued generalizations of two-valued circuits.

Sylvain plans to enter Columbia University this fall. After earning a doctorate in mathematics, he hopes to join a university faculty and do research work in pure mathematics. His work has been done at

Columbia University and the International Business Machines' Watson Laboratory. Hobbies which interest Sylvain include mathematical games and puzzles, and Baroque music.

Arthur Shapiro, a senior at Philadelphia's Central High School, plans to work toward a biology degree at the University of Pennsylvania and later do research in biology or genetics. As a result of his study of genetics in butterflies, he has had articles accepted by the Journal of the Lepidopterist's Society. As a side effect of his butterfly studies, Arthur has long been an ardent hiker. Another hobby is stamp collecting with specialization in 19th century Canadian stamps.

Gary Wegner is well on his way toward his goal of becoming an astronomer at one of the leading observatories. His high school science teacher considers Gary one of the top authorities on planetary observations in the Pacific Northwest. Gary's planetary observations have extended over six years. By studying the markings of the planets, Gary feels two factors influencing the evolution of a planet are tidal distortion by other bodies and the amount of internal heat generated by contraction.

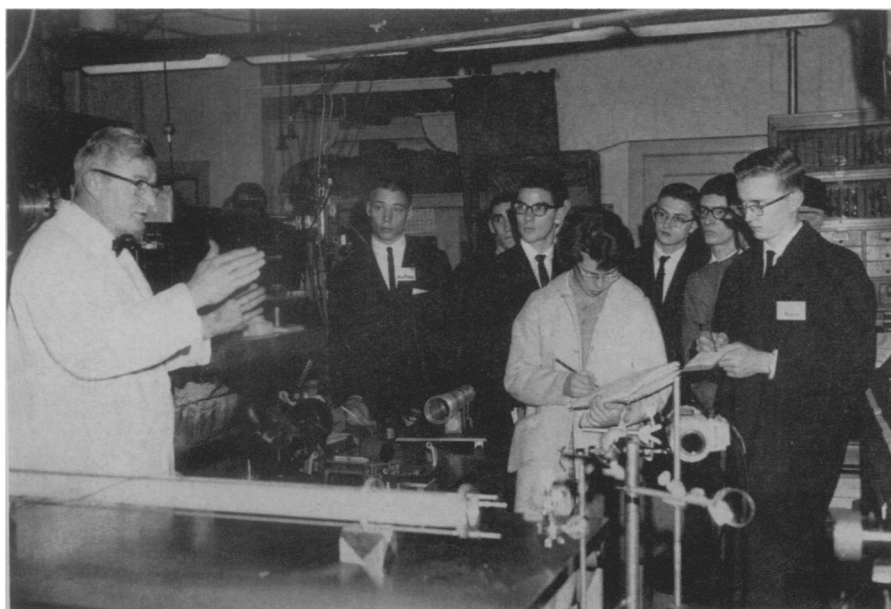
Alan Campbell submitted a report on his project on the Molisch reaction, the blackening of chloroplasts in the presence of silver nitrate and light. His project presents evidence that the same system supplying energy from light in photosynthesis also is responsible for the Molisch reaction, which has not been fully explained.

Alan's activities include scouting, coin collecting, and a hobby of bagpipe playing which added interest to the free time during the Science Talent Institute. He plans a life of teaching and basic research.

Anita Ware plans to become an experimental psychologist. Differing from most experimenters who consider formation of a social bond in early life to be the result of a visual imprint, Anita tested two groups of chicks with auditory imprints. One group had no visual experience while the control group had usual visual experiences.

She found that none of the control group had been imprinted while 75% of the test group proved Anita's point that sound is capable of imprinting a social response.

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Westinghouse

VISIT TO NBS—Karl F. Nefflen, physicist in the engineering metrology section of the National Bureau of Standards, explains the gas laser to a group of winners. (For story, see SNL 83:133, March 2, 1963.)

**TOP SCIENCE TALENT**—Scholarship winners and alternates are shown with their projects at the Science Talent Institute. Top, left, Sylvain E. Cappell; right, Arthur M. Shapiro with Dr. Watson Davis. Center, left, Gary A. Wegner; center, Alan S. Campbell; right, Anita F. Ware with Dr. Glenn T. Seaborg, chairman of the U.S. Atomic Energy Commission and STS judge. Bottom, left to right, Mark Weiss, Deborah Chase.

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