

GENERAL SCIENCE

Winning Science Projects

Studies of Jupiter and Mars, the control of viruses and the bases of the pyramid of life won top honors for six of the 40 Science Talent Search winners.

➤ AS MAN PUSHES OUT into space, astronomy and astrophysics become more important, two of the 40 winners of SCIENCE SERVICE's Science Talent Search for the Westinghouse Science Scholarships and Awards pointed out.

Working with a home-made, eight-inch reflecting telescope and self-designed camera, 18-year-old Jack Gilbert Hills of Independence, Kans., viewed and recorded information gained from Jupiter during 240 hours of vigil.

Included in Jack's studies were the rotational periods and atmospheric currents of the planet. He found that the rule of least squares, a mathematical invention, seemed to be better than the conventional graphical method in determining the rotational periods. He also reported that there are two main atmospheric currents on Jupiter, one in the equatorial zone and the other in higher latitudes.

Another young astronomer, Clark Russell Chapman, 16, Buffalo, N. Y., carried out lengthy observation programs on Jupiter and Mars with a 10-inch reflecting telescope and other instruments during 1960 and 1961.

On forms which he designed, Clark recorded the appearance of the topography of Mars and mapped the entire planet. He also derived the rotational periods for the various Jovian atmospheric currents in 1960. He developed new methods for making drawings of both Mars and Jupiter.

Clark was able to make 60 drawings of Mars, although some of his planned programs were severely hampered by the extreme winter weather. He traveled to the Pan American College Observatory in Edinburg, Tex., to observe Mars through the 17-inch reflecting telescope there.

Both of the young men hope to study astronomy and related fields in college.

They will come to Washington, D. C., Feb. 28 through March 5 to discuss plans with other winners of the Search. They will also compete for part of the \$34,250 in Westinghouse Science Scholarships and Awards. The annual Search is conducted by Science Clubs of America, an activity of SCIENCE SERVICE.

Controls for Two Viruses

Two other winning high school students working separately have possibly found controls for two separate viruses, one the cause of cancerous tumors in chickens and the other the cause of fever blisters in humans. Both boys are students at Coral Gables High School in Florida.

Jack Steven Catlin, 17, of Miami, studied the effects of calf serum on the virus that

causes cancerous lesions in chicken embryos. He found that the serum inhibits the effects of the virus, which may be related to the change in the composition of the serum of humans with cancer.

The virus, Rous sarcoma, has been widely studied to find the effect of viruses on the formation of cancerous tumors. These tumors can be transplanted and inoculated, which seems to link the formation of cancer with the virus.

Jack's findings are a step forward in the field of cancer research and the chain of understanding the cause of cancer.

Mitchell Jay Fruitstone, 17, of Coral Gables, won honors with his discovery of an interferon (a protein produced by disease-causing viruses) that is highly effective against Herpes simplex virus, cause of an inflammation and blistering around the lips following a cold or intestinal illness.

Mitchell's discovery is believed to be the first interferon highly effective against Herpes simplex virus. He demonstrated this new type of interferon in cell cultures and eggs. He next intends to test the new substance using laboratory animals.

This interferon, unlike most others, is not species specific, Mitchell wrote in his report. That is, it may be effective against more than Herpes simplex virus. Even if it is not, scientists may soon have an effective combatant against "fever blisters," shingles and several neurological diseases through the work of this teen-aged scientist.

Study Bases of Life

The base of the chain of life has been found to exist free in the sediment or mud of shallow waters by Philip Lee Harnage, 17, of Desert Hot Springs, Calif. He discovered that the deaminase enzyme of denitrifying bacteria exists in greater quantities in the mud than in cells.

The enzyme produces nitrogen as a by-product in the conversion of proteins to carbohydrates. Nitrogen is an important nutrient in the life of phytoplankton, the tiny plants that are the main diet of fish. And fish, in turn, feed other fish and mammals, including man. Thus the enzyme is a tiny base in the pyramid of life.

The enzyme is from *Flavobacteria piscicida*, a bacterium first noted during investigations of the "red tide" because of its pigmentation. The bacteria live best in the top quarter inch of the mud in shallow waters, and are very important to the nutrition of phytoplankton because of the nitrogen by-product.

Philip's project took nine weeks and was completed during the National Science Foundation Summer Science Training Pro-

gram at the Institute of Marine Science last summer.

His results and high scholarship and test grades won him honors.

Another young scientist, Judith Marie Jaime of San Bernardino, Calif., won honors with her study of "The Danger of Radioactive Contamination of Kelp," another basic food in the life pyramid.

Judith noted in her report that kelp and other related seaweeds contain amino acids that make up protein and therefore offer a potential food source for aquatic life.

Her study observed that this food source could be lost because the amino acids would absorb radioactivity if the oceans became contaminated. She proved that the absorption characteristics of these seaweeds make it possible to identify the amino acids by use of a Geiger counter or hypersensitive film.

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SPACE

All Astronauts Share In Responsibilities

➤ WHAT HAPPENS to astronauts too old to fly?

They will just "phase" away into space flight management, Col. "Shorty" Powers, chief press officer for the seven Mercury astronauts, told SCIENCE SERVICE.

The seven trained space pilots "represent an important resource upon which we can and are building in support of our future more ambitious space flight undertakings," Robert R. Gilruth, director of the National Aeronautics and Space Administration's Manned Spacecraft Flight Center, said.

The Center is the nation's only experienced management agency in the field of manned space flight research. It is currently conducting Project Mercury and has begun the development of Projects Apollo and Gemini.

The Mercury astronauts, most of whom have not had a chance to manage a spacecraft in outer space, already have had a whirl at management on earth, and appear to be good at it.

They have made a major contribution, according to Director Gilruth, to the work begun on Project Apollo, the program to get a three-man crew to the moon and back.

Project Apollo has been under way for almost two years. During this period the seven space pilots have worked with the team assigned to define, design and develop working guidelines. Their recommendations, particularly on design, have been significant.

The astronauts also are working on Project Gemini, the two-man spacecraft program named for the twin stars Castor and Pollux. The spacecraft, a larger adaptation of the Mercury capsule, will be used to develop space rendezvous techniques and for earth orbital missions lasting a week or more.

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