

GENERAL SCIENCE

Youth Explores Science

The 40 Science Talent Search winners all worked on projects that displayed ingenuity, originality as well as scientific know-how. The versatility of the group is evident.

BELONGING to a generation that seems destined to do a good deal of moving around in space, three 17-year-old "sky scientists" have been looking into the finer details of what goes on out there.

Extensive studies of weather and atmospheric have been made by Dennis G. Baker of Winchester, Mass., and James V. Mardis of La Mesa, Calif., while Samuel R. Friedman of Washington, D. C., has been analyzing dark markings he observed on the planet Saturn. The reports of these young researchers helped them to earn national recognition as three of the top 40 winners of the 19th Science Talent Search conducted by Science Clubs of America, an activity of SCIENCE SERVICE.

Four years of climatological data on the weather gathered by Dennis include detailed daily records of temperatures, precipitation, and optical phenomena such as rainbows, auroras, halos, coronas and sun dogs. The notes of this future atmospheric physicist contain 12,000 hourly and 1,500 maximum-minimum temperature readings, data on the frequency of thunder during thunderstorms, photographic records of cloud forms occurring at his Massachusetts station, and observation on the length of the growing season of various plants.

James explains his special subject of atmospheric as audio-frequency electromagnetic waves that are emitted when conditions in the upper atmosphere are violently changed. The characteristics of the signal received "fingerprint" the upper atmosphere, yielding an amazingly accurate picture of meteors or missiles re-entering the atmosphere, radiation from the sun or nuclear weapons, or large amounts of gases ionized at low altitudes.

Analyzing more than a hundred drawings he has made from his observations of Saturn during the spring and summer of 1959, Samuel has concluded that visibility of the dark markings of the North Equatorial Belt on Saturn is greatly affected by the reflection of light from the rings and/or possible inaccuracies in his drawing technique.

To increase the statistical accuracy of his study, Sam plans to analyze available drawings from observations of Saturn made in the summer and fall of 1958 and to include more than 300 drawings of Jupiter in his calculations.

Talented Girl Scientists

THE "BREATHING" of plant cells, a substance in beans and peas that coagulates human blood, and the story of ancient forests told by fossil pollen grains have been the special concerns of three feminine scientists from high schools in New York, Ari-

zona and Wisconsin who are among the 40 winners.

Challenged by the importance of explorations going on in biochemistry, Barbara A. Ash, 17, of Tonawanda, N. Y., has studied the "breathing" of plant cells. Investigating the respiratory intensities of the tissues of potatoes, carrots, cauliflower, rutabaga, radishes and apples, she found that carrots and cauliflower absorb much more oxygen per gram than any of the other tissues she tested.

Another 17-year-old was finding a substance in native beans and peas that causes clumping of human red blood cells. Having learned that most of the research in this field has been done in Israel, Gayle A. Edlund reasoned that, since Arizona's climate is similar to that of the Middle East, it might be possible to find such agglutinins, or lectins, in the plants of her own state.

In the 22 species of beans and peas she studied, she identified four lectins, two of which have never been reported.

In Marshfield, Wis., Virginia V. Perner, also 17 years old and the sixth consecutive

Science Talent Search winner from Columbus High School, has studied the post-glacial vegetation of peat bed areas in five counties. After removing fossil pollen from samples of the peat, Virginia counted, identified and made photomicrographs of the pollen grains.

From 10,000 counts of fossil pollen she has identified 15 species of plant life and established that pine was dominant in the forests of all five counties.

Aphids and Centipedes

APHIDS, the tiny pests that cling stickily to nasturtiums or chrysanthemums cut for your table arrangement, and the "thousand-legged" that runs out from under your woodpile are particular enthusiasms of two young scientists in New York and Florida.

To find out more about aphids, Richard A. Applebaum, 16, of Brooklyn, raised them on nasturtiums in four boxes, each of which was covered with a different colored gelatin-film filter. He found that both red and yellow light stimulate reproduction of wingless aphids, but cut down on the number of winged offspring which spread plant virus diseases. Blue light seemed to reduce reproduction, but encouraged winged offspring.

Centipedes and millipedes are "misunderstood and disregarded" arthropods, according to William J. Platt III, 17, of Gainesville, Fla.

This future entomologist has spent many months and some 800 hours on field and

(Continued on p. 189)



RARE CENTIPEDES—Two of the centipedes given to the Smithsonian Institution by William J. Platt III, of Gainesville, Fla., one of the 40 winners of the Science Talent Search. One of the rare centipedes was the first female specimens of *N. xenopus* (Bollman).

Youth Explores Science

(Continued from p. 181)

laboratory work, observing and recording in detail 20 different habitats and collecting some 500 specimens. Last summer while working with the Entomology Department of the State Plant Board of Florida, in conjunction with the National Science Foundation Summer Research Program, Bill collected one of the first recorded specimens of the female centipede, *N.xenopus* (Bollman).

This specimen and others have been given to the Smithsonian Institution in Washington, D. C., at the request of Dr. Ralph E. Crabill Jr., who has identified many of Bill's centipede specimens for him. Reports of their research helped these boys to become two of the 40 winners of the Science Talent Search.

Spook Light, Space Fuel

LAST SUMMER a 17-year-old Carthage, Mo., scientist traveled 12 miles southwest of Joplin, Mo., to a lonely northeastern Oklahoma road to chase a ghost. He solved the mystery of the famous Hornet "Spook Light" which had baffled other investigators for years.

As young William E. Underwood described his experience: "Soon after dusk a suffused glow appeared in the sky to the west over a range of hills, the center of the lighted area being in line with the axis of the road. The greenish-yellow ball appeared to descend out of the hills and rapidly advance toward us."

Continued observing sessions showed that the Spook Light varied in intensity and in the time of its appearance, and that it sometimes became duplex. A less frequent and weirdly dramatic effect was produced when the light approached and seemed to envelop him where he stood.

When he looked at the Light through a spectroscope, it had a continuous spectrum, so William deduced that it must have an incandescent source. When he took infrared films of the Spook, he became convinced that it was produced by total reflection of automobile headlights.

The physical features of the Spooky area further supported his theory, for U. S. Route 66, east and west, was in direct line with his observation point and Spring River crossed close by between the gravel road and the highway. Thus William concluded that the Spook was nothing more or less than the light of car headlights reflected over the range of low-lying hills.

Another 17-year-old scientist, of Houston, Texas, hopes to discover new information about a fuel that may propel missiles, space ships and helicopter rotors of the future.

Because this fuel, 98% hydrogen peroxide, has had important use in compact, simple rocket engines, William L. R. Cruce, senior at Spring Branch Senior High School, Houston, Texas, has embarked on an extensive testing program aimed at more complete understanding of the effects of catalysts on the rate and efficiency of its decomposition. His report of his work and projected tests contributed to his being

named one of the top 40 winners of the 19th Science Talent Search.

At the University of Texas Mechanical Engineering Propulsion Laboratory, Bill has nearly completed construction of a two-dimensional transparent chamber rocket engine which he designed as a test device.

The 40 winners went to the Science Talent Institute in Washington, D. C., March 3 through 7. During the Institute, the 31 boys and nine girls met eminent scientists, visited laboratories of unusual interest, and were interviewed by a panel of judges for the awarding of \$34,250 in Westinghouse Science Scholarships and Awards.

Science News Letter, March 19, 1960

Do You Know

Nearly five billion pounds of poultry and poultry products were certified as wholesome and healthful food during 1959, the first year of full operation for the Poultry Products Inspection Act.

The Bureau of Land Management of the Department of Interior is responsible for the conservation, management and development of more than 477,000,000 acres of the nation's public lands.

In order to thrive, pearl oysters require calm surface waters, a fairly constant mild temperature, and abundant plankton on which to feed.

More than 40,000,000 tons of chemical materials are required for each year's domestic agricultural production.

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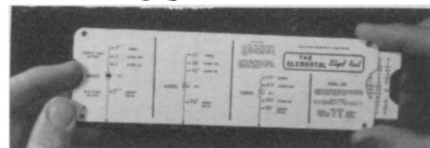
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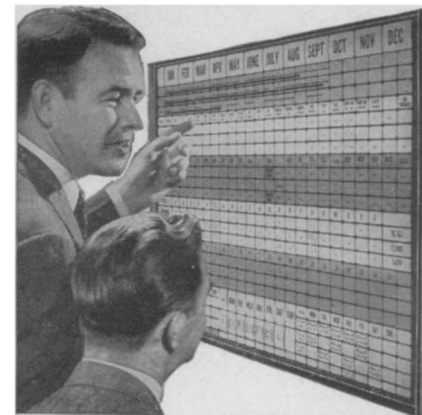
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