

Biologist Top Winner

The scientific specialties of the STS winners include archaeology, biology, mathematics and organic chemistry, but their interests span an even wider range.

See Front Cover

► A MODEST 16-year-old molecular biologist, Henry Wagner Jr. of Gwynedd Valley, Pa., has been selected as the most highly promising young scientist of the year. He has already had a paper published in a professional journal in collaboration with a member of the faculty of Temple University Medical School, Philadelphia, Pa.

Judged top winner in the 25th Science Talent Search conducted by SCIENCE SERVICE, he has been awarded the \$7,500 Westinghouse Science Scholarship. The board of judges selected him from a nationwide group of 2,883 high school seniors who completed all of the rigorous STS requirements.

Four other scholarships were awarded: \$6,000 to Barry J. Klyde, 17, of Flushing, N.Y., another aspiring biologist who has been intensely interested in this field of research for as long as he can remember.

\$5,000 to David R. Jefferson, 17, of Beltsville, Md., an intuitive mathematician who is excited by "elegant" proofs.

\$4,000 to Kevin R. Binns, 18, of Des Moines, Iowa, a paleontologist whose investigation of an Indian burial ground suggests reappraisal of a little known period of archaeological history.

\$3,000 to Linda Sue Powers, 18, of Beckley, W. Va., who studied color changes in organic chemical compounds following exposure to light, heat or pressure.

The happy winners are seen on this week's front cover just after the announcement of the scholarships. They are from left to right: Henry Wagner Jr., Barry J. Klyde, Linda Sue Powers, David R. Jefferson and Kevin R. Binns. (Cover photo by Fremont Davis.)

Top winner Henry, after trying for several years, finally succeeded in being allowed to work in a research laboratory during his summer vacations. Merck Sharp and Dohme awarded him a training fellowship at Temple University Medical School where he carries out his own research projects under the general supervision of Dr. Stanley C. Glauser, associate professor of pharmacology.

Dr. Glauser instructed Henry, taught him techniques and made suggestions enabling him to investigate the sequence of amino acids in alpha-chymotrypsin, part of an animal protein. Dr. Glauser stated that Henry originated the idea, did all of the work on the research project and wrote the paper, reporting results which confirmed those of a British investigator. In 1965 Bio-

chemical and Biophysical Research Communications published the paper with Dr. Glauser and Henry as collaborating authors. The work was carried out under a U.S. Public Health Service grant.

In addition to his great interest in the structure of protein and nucleic acids, Henry enjoys photography, music and the Wissahickon High School Forum. He plans to major in chemistry at Harvard and looks forward to a university career in biochemical research.

Barry Klyde's research report which helped him win the \$6,000 scholarship, is the result of five years' work, averaging 25 hours a week to determine that it is possible to modify the viability of a certain genotype of the mouse by artificial selection. This research was the natural outgrowth of Barry's initial curiosity in genetics in seventh grade. While in eighth grade, he cleaned mouse cages at Columbia University each Saturday morning to earn the opportunity to talk to doctors and graduate students. Five years ago, his teacher introduced him to Dr. Dorothea Bennett, associate professor at Cornell University Medical School, who has offered him laboratory space and encouragement ever since.

While he is still a senior at Forest

Hills High School, Barry is also enrolled in a graduate seminar at Cornell University Medical School and has presented two papers. His leisure hours are devoted to other interests ranging from baroque and folk music to programming and operating a computer.

David Jefferson has developed a complete isosceles trigonometry that he says can easily be used in place of the usual right triangle trigonometry, believing that the choice of the right triangle was "one of convenience and not of necessity." An intuitive day-dreamer, he finds great pleasure in exploring new viewpoints and methods in mathematics.

Now standing first in his senior class at High Point High School, Jeff looks forward to preparing at Massachusetts Institute of Technology for a career in mathematics, probably researching abstract mathematics and writing philosophical essays. His many activities include participation in science fairs at the local, regional and international levels.

Kevin Binns has already contributed to his chosen field of paleontology and archaeology through the careful research reported in his STS paper and through his development of a new technique for dissecting fragile fossils by using an air abrasive unit. Universities and museums now are adopting his method to study the internal structure of fossils.

When Kevin excavated part of an Indian burial ground in Iowa, he unearthed a riddle in the form of shell
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Westinghouse

A VISIT TO WALTER REED—On the second day of the Science Talent Institute some of the winners made a tour of the Walter Reed Army Institute of Research, guided by Col. Hinton J. Baker, Assistant Commandant.

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crosses that clearly indicated direct or indirect contact with Christian influence, an idea contrary to the accepted history of the area.

Widely interested in activities both in and outside of Theodore Roosevelt High School where he is now a senior, Kevin hopes to continue his education at McGill University with plans of teaching paleontology.

The attractive, blonde, female member of the scholarship quintette, Linda Powers, gives every indication of achieving her dream of earning a doctorate in photochemistry, after undergraduate work at Duke University, and then teaching and doing research at a university. In addition to her exacting work demonstrating and amending a tentative theory of color change in organic chemicals, she has designed and built rockets, testing for best fuel concentration (the most successful went 250 feet up, landed 500 yards away); has built a lens and scope to experiment with light; has studied the environment and metabolism of seahorses; and has built a laboratory in the family basement, utilizing the vacuum cleaner as a ventilating device.

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PERSONALS

FORMOSAN BUTTERFLY, moth, beetle, dragonfly, cicada for sale. NOVELTY, Box 860, Taipei, Formosa.

She is a senior at Woodrow Wilson High School.

Larry E. Morse, 18, of Dayton, Ohio, was given a \$250 Westinghouse Science Award and named first alternate to the \$3,000 scholarship, and Mary Lou Silkworth, 18, of Amityville, N.Y., was designated second alternate and presented with a \$250 award.

In addition, nine girls and 24 boys received the \$250 Westinghouse Science Award in recognition of their top level ability and promise as creative scientists of the future.

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Dr. Meyers

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learn the news the whole town was talking about already.

But these are rather trivial matters to be speaking of when in the last 25 years all science and the world itself has changed so much. I have tried over the last few days to pick out only one great change which impresses me most of all and is most pertinent to the concept of the Science Talent Search. I have decided that it is the marked difference in general public attitude toward science education at the secondary school level.

When I was in high school we were not expected and not particularly encouraged to have an interest in theoretical science. If by some chance such an interest happened to exist it was taken about as seriously as Buck Rogers on the radio. Perhaps it was not as bad as all that. SCIENCE SERVICE had already been in existence for twenty years. There were science fairs in New York, science clubs existed here and there and in a few schools science was emphasized and well taught. Always then were the individual dedicated teachers like the high school chemistry teacher Dr. Seaborg credits with his own interest in his field, and like the biology teacher who convinced me to take the Science Talent Search examination. But these were the exceptions.

By and large I think it would be fair to say that science was segregated in the universities and left pretty much to the professions. There was very little we could do in high school beyond taking the three standard courses in elementary physics, biology and chemistry. If we wanted to do some outside reading we could go to the library and find books on history, literature and the arts, but except in the largest schools the science shelf was likely to be limited to a few handbooks on nature study. I saw few science books before I got to college and these few had to be obtained by mail through inter-library loans or were college texts loaned to me by my teacher.

It has been much easier for the Silver Anniversary group. Your projects show that you have had encouragement, help, materials and equipment to work with that would have been unheard of in 1942. In addition, about half of you have already had experi-

ence with science beyond the high school level, in summer institutes, college courses or scientific summer jobs. Such opportunities were rare indeed for us.

In the TV forum which some of you taped a point was brought up about the necessity and at the same time the difficulty of educating the general public in scientific matters. This is not an easy problem, but I think that the very fact that such a program can be broadcast—that there is enough public interest to make a forum on scientific matters possible is a tremendous step in the right direction. There are many people still who are not quite sure what you are talking about but they at least give you a measure of serious interest and respect that would have been unusual in 1942.

In a few minutes now we will know who gets the top awards. But, however that turns out, you are all already the winners of something more valuable than the largest scholarships. Doors have already been opened to you which we would hardly have dared approach 25 years ago. And while you are winners, you are all also in a sense contributors to what you have won.

By your very presence here, and by exhibiting and explaining your projects, you have once more brought to the attention of the public the importance and the possibilities of science at the secondary school level. In 1942 when the telegram about my scholarship was read and passed around by the local people who would be voting in the next school board election something was started which you are continuing today in ever increasing measure.

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MEDICINE

Brain Cancer Treated By Pocket-size Pump

➤ A 16-YEAR-OLD girl with brain cancer who was formerly unable to get out of bed is up and about, leading an almost normal life as a result of drugs constantly dripping into her bloodstream from a pocket-size pump.

Doctors at the Lahey Clinic, Boston, have treated the girl since 1964, following up a technique that has been successful with liver cancer patients. Dr. Elton Watkins Jr. in 1959 designed a portable pump for ambulatory liver cancer patients, who could carry it in a coat pocket. It was wound daily like a watch and carried a five-day supply of drugs in a disposable, replaceable bag.

Brain tumors are being treated very much as the liver cancers were. The pump drips the anticancer drug into either the carotid artery in the neck or the vertebral artery serving the cancerous area of the brain.

The American Cancer Society reported the research on brain cancer by Drs. Robert D. Sullivan and Wladyslaw Z. Zurek, with Dr. Watkins, all of the Lahey Clinic Foundation.

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