

GENERAL SCIENCE

Summer Science Harvest

Fall brings evaluation sessions and planning meetings of industrial, professional and educator groups sponsoring special summer programs for student scientists and science teachers.

By SHIRLEY MOORE

► WHEN THE autumn breeze turns brisk, it is harvest time for another hopeful planting of "summer science."

Annual planning meetings first weigh the summer's gain in helping and encouraging student-scientists and science teachers. Then next year's activities are organized on the basis of this firsthand experience in a very new field.

The story of this past summer's progress is an exciting one. Of particular interest are the reports of industries, professional organizations and school systems on their recently concluded programs. Some of the sketched-in experiments are ready to be developed and broadened in scope, and still other innovations now may be tried out.

Next summer may well be the most "scientific" in history in terms of unprecedented opportunities for students and teachers to explore their special interests under expert guidance. Many educational programs look forward to expansion, and more and better summer-science jobs are expected to be available for students.

Satellite Summer

In this summer of the satellites, nearly every corner of the country had some sort of science activity going on. The possibilities ranged through concentrated learning, learning and earning at the same time, and even vacation entertainment with a distinctly scientific flavor.

Summer science schools, camps, courses, institutes and seminars flourished on college campuses, in the mountains, at the seashore, in city schools and in museum workshops. They were held for a few days, or on Saturday mornings, or they were in session during most of the summer. Age groups from small children to teachers with doctorates were represented in the various programs.

Whatever the details, or however new and frankly experimental the plan was, all of these activities were bound together by a common idea and all of them shared an atmosphere of the most infectious kind of enthusiasm.

This was evident, for example, in a Maryland "pilot" experiment involving 121 fifth and sixth graders of high ability in six weeks of "school for fun." With the cooperation of elementary and high school teachers, plus professional scientists and laboratories in Montgomery County and nearby Washington, these youngsters explored such advanced subjects as computers, atomic physics, cosmic rays, astronomy, chemistry and paleontology. They astonished visiting lecturers and their hosts on field trips by the

depth of their searching questions and what one of their teachers called their tiger-like "ferocity" in tracking down and understanding the answers. That they were interested, but not in the least over-awed, by the advanced science presented to them is illustrated by a sixth grader's challenging a 704 computer to a game of checkers. Another lad demonstrated his own binary and ternary system of counting which involved very rapid flashing of fingers and knuckles in a series of combinations.

On the high school level, such famous programs as the ones at the Jackson Memorial Laboratory, Bar Harbor, Me., and other specialized centers again admitted competent students for intensive work in vacation surroundings.

Loomis School, Windsor, Conn., held its second summer precollege Science Center, cosponsored by the Dorr Foundation and a number of Connecticut industries, for 35 boys in the 10th and 11th grades. A nine-week summer session was held for 26 girls and boys by St. Mark's School, Southboro, Mass., and the Worcester Foundation for Experimental Biology, with emphasis on advanced laboratory work in biochemistry and

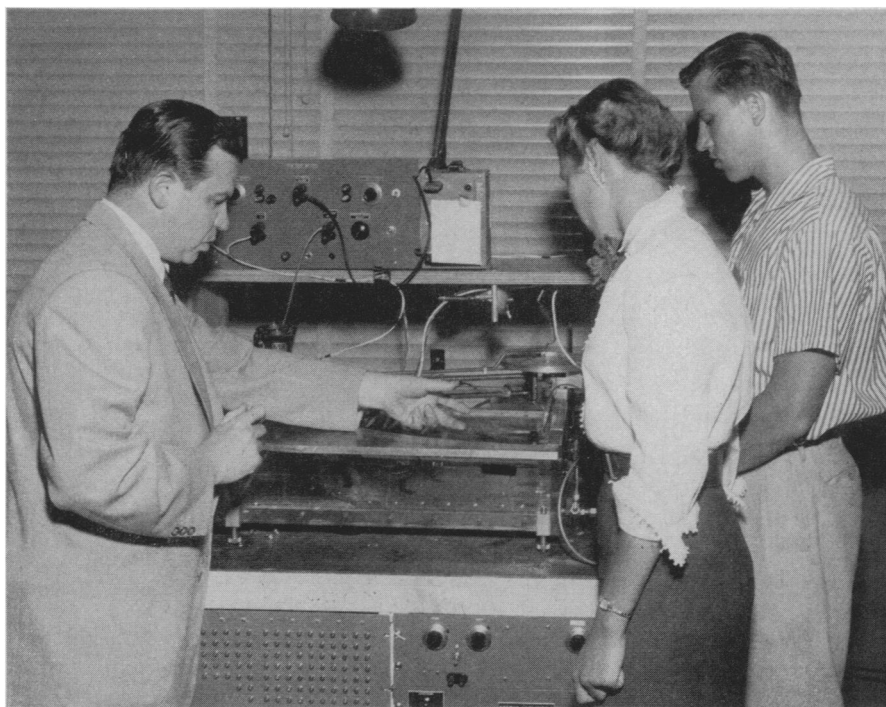
physiology. This program was in its fourth highly successful and productive year.

Another 100 students, all boys, were "charter members" of a six-week advanced studies program at St. Paul's School in Concord, N. H. Forty seniors attended a 12-day institute at State University Teachers College, New Paltz, N. Y.

The Science and Mathematics Camp at the University of Kansas, Lawrence, Kans., conducted its third annual session from June 15 through July 3, with 75 recommended high school students working under college faculty members. Housed in dormitories with Music and Art Camp students, the pre-scientists carried out their own experiments in laboratory or field work in everything from anatomy and astronomy to radiation physics and zoology. A special Apprenticeship Program was initiated this year to give outstanding graduates of the Camp three additional weeks to venture further into their particular fields.

The 25 teen-agers who attended the first Fairfax County (Va.) Summer Science Institute summed up the reactions of most such pre-scientists. At the concluding session of this new experiment, when they were asked to evaluate the program and make frank suggestions, they offered such comments as:

"Tell the scientists to talk over our heads and tell us what we don't already know something about."



FIRSTHAND SCIENCE—Two Los Angeles high school science students, Sharon Lisle and Robert Writer, see science principles in action at the Hughes Aircraft Company, Los Angeles, as part of the Hughes Summer Education Program. Dr. L. M. Field, laboratories associate director, is explaining the functions of an electrolytic tank.

"Let's concentrate on really obscure work, not on what any reasonably bright student can read in a book."

"The whole purpose of an institute is to get people to thinking, discussing and organizing ideas. Give us more chance to do this!"

"Let us try things for ourselves with our own hands. Never mind the demonstrations."

This sampling of the many similar programs all over the country suggests the intense, responsive interest generated in students, teachers and scientists. Nearly everyone comes out of such an experience a dedicated missionary bent on getting other people to start similar activities next year. The current fall evaluation sessions are harvesting many practical recommendations for next summer's pioneers.

Educating Teachers

The teachers had their own institutes, too, financed for the most part by the National Science Foundation. Held at universities all over the country, they attracted more than 6,000 science and mathematics teachers to refresh their knowledge of their subjects and to learn the newest ways of teaching them. According to present reports, about 16,000 teachers will attend these institutes next summer.

The Summer Education Program of the Hughes Aircraft Company, Los Angeles, Calif., is an example of the many summer science programs set up by industry. Now in its third year, this summer's program included more than a hundred teachers from universities, junior colleges and high schools, many college graduate and undergraduate students, and six gifted high school students from the Los Angeles area—all of whom held salaried jobs at the company laboratories while they took seminar courses at the plant.

Perhaps the most valuable harvest from the reports of these widely varying programs is the clear evidence of a belief that all of the year-long planning and work will have been well repaid if it has succeeded in stimulating even a few young people to aim for top-level science curricula and careers. However, the records show that a gratifyingly large percentage of these promising pre-scientists will show intensified interest in their science and math courses during this school year. Many of them will turn up as science or math majors in college and, eventually, as creative contributing scientists.

Science News Letter, November 15, 1958

Questions

ASTRONOMY—What element is being used in a new method for determining distances to the stars? p. 307.

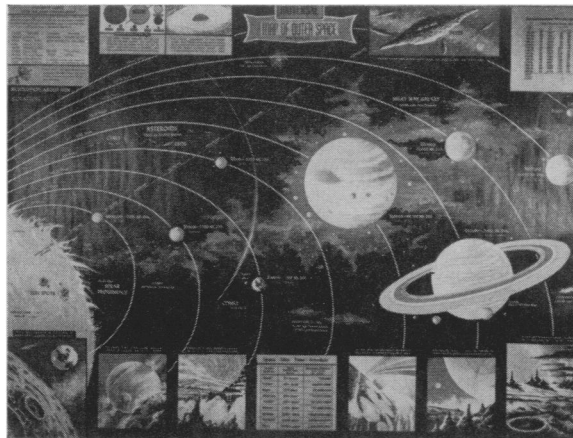
ENGINEERING—Where in New Zealand is the installation for converting steam to electric power located? p. 309.

GENERAL SCIENCE—Who are the persons most susceptible to hypnosis? p. 311.

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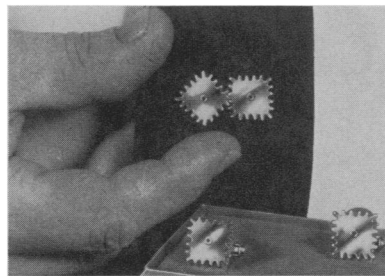
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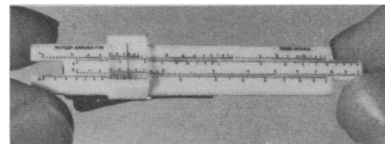
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