

# On to Dallas for Science Fair!

Phenomenal development of science fair activities and influence is highlighted by the 17th International Science Fair to be held in Texas—By Shirley Moore

➤ ALL PREVIOUS records will become obsolete when the 17th International Science Fair opens in Dallas, Texas, on May 11.

The Fair itself will be the largest in history with more nationwide, state and regional fairs participating.

More finalists than ever before, all of them high school students in the 10th, 11th or 12th grade, will be competing for international honors awarded by the ISF, Federal agencies and professional organizations.

A record number of judges is expected to study the finalists' projects, discuss their work with the hopeful young pre-scientists and argue the relative merits of projects within each field of science.

There will be more awards for outstanding exhibitors to take home and more recognition to open doors of opportunity into laboratories, universities, summer jobs and eventual careers.

It is a safe prediction, based on previous fairs, that the science projects will reflect greater sophistication and that the finalists will be even more impressively informed about new research and current "hunches" of professional scientists.

## Widening Influence

The widening circles of influence created by the impact of the International Science Fair will reach into more areas of the globe with new countries participating this year and others planning to join the international event in the future.

SCIENCE SERVICE, which has coordinated the Fair since its modest beginning in 1950 with 13 fairs and 30 finalists meeting in Philadelphia, reports that 227 fairs will send some 427 high school students as representatives of the best teen-aged scientific efforts in their areas. Eleven of these fairs are in countries outside of the United States and include newly affiliated fairs in West Germany, the Philippines and Costa Rica in addition to those which previously have sent finalists from Canada, Japan, Sweden and Puerto Rico.

The finalists, escorts, educators, reporters and observers, totaling some 1,200 members of the Official Party, will begin arriving in Dallas as early as Sunday, May 8. The students will set up their projects in the Dallas Memorial Auditorium on Monday and Tuesday in time for the judging procedures on Wednesday. Well over 400 ISF and special award judges, repre-

senting a wide spectrum of disciplines, will study the exhibits and project reports and will interview the finalists during the evening.

Judging decisions will be arrived at sometime Wednesday night and will be firmly based on the judges' estimate of each finalist's creative ability, scientific method and thought, thoroughness, skill, clarity and the dramatic value of the exhibit.

Awards will be announced on Thursday at a Health Awards Night which will include a barbecue dinner, a Special Awards Luncheon on Friday and the culminating International Science Fair Awards Banquet on Friday evening, May 13.

## Encourage Experimentation

ISF awards to the winners will be more than \$5,500 in the form of \$100, \$75, \$50 and \$25 prizes given in various categories of the physical and biological sciences. These awards are specifically designed to encourage further scientific experimentation by making possible the purchase of apparatus and books. In addition, special awards ranging from plaques, trips and summer jobs in scientific laboratories to

cash awards will be presented by 26 or more professional organizations, Federal agencies and the Armed Forces.

## Dallas Science Features

A number of committees of Dallas residents have been working for many months to conclude detailed arrangements for welcoming, transporting, housing, entertaining and edifying the entire Official Party. In cooperation with SCIENCE SERVICE, special seminars in seven areas of science are to be scheduled for finalists, with Dallas scientists conducting the discussions. Science tours have been planned for the Official Party to a great variety of installations in the Dallas area. The tours will offer unusual opportunities to observe facilities and research such as those at: The Collins Radio Company, Space Systems and Antenna Division, where the visitors will learn about antenna research for communications via relay satellites and other space vehicle programs, moon bounce studies, data processing, telemetry, automatic tracking and similar functions of the division.

The Graduate Research Center of the Southwest, where the Laboratory of Molecular Sciences carries out basic research on the genetics of bacteria, control of the synthesis of enzymes, control of genetic recombination, regulation of metabolism and related questions; while the Laboratory of Earth and Planetary Sciences, atmospheric and space sciences division, investigates the history of the earth's atmosphere, atmospheric structure and dynamics, interplanetary plasmas, ionospheric structure and composition, geomagnetism, cosmic rays, aurora and interplanetary atmospheres.

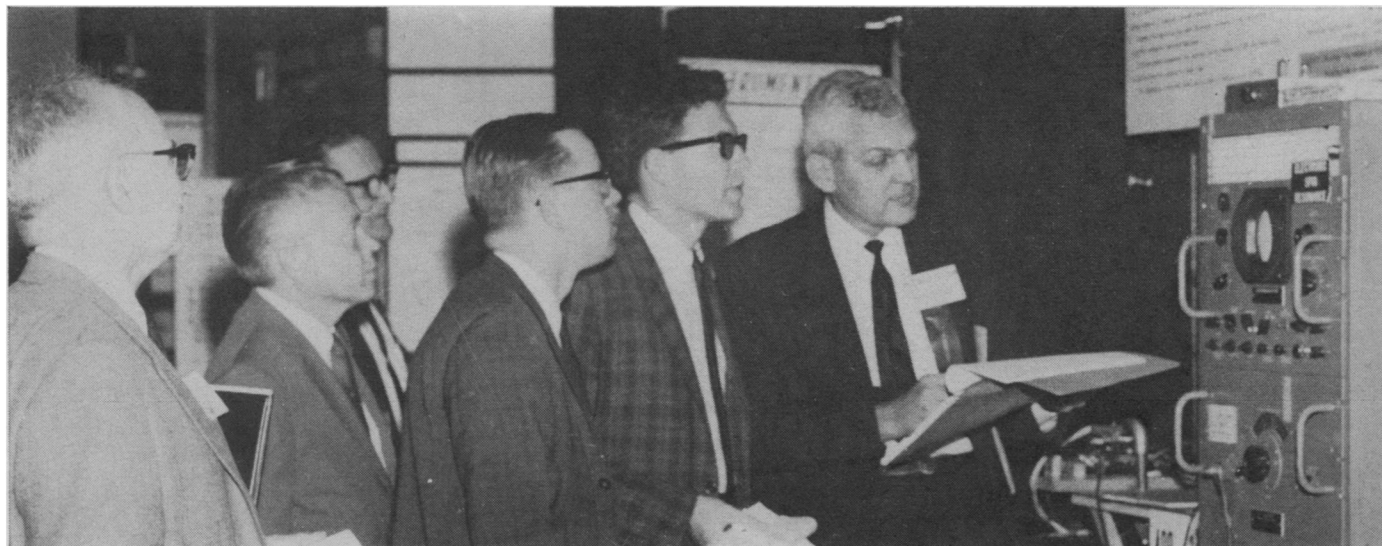
## 'Space on Earth Center'

The Ling-Temco-Vought, Inc., whose astronautics division includes a unique "Space on Earth Center" with simulators for manned aerospace flight, space environment and automatic control evaluation as well as research laboratories studying behavioral sciences, physiology, biophysics and bioengineering; and the Vought aeronautical division, responsible for manned and unmanned vehicles and systems, has one of the most extensive wind tunnel laboratories in the industry.

The Socony Mobil Oil Company, Inc., field research laboratory, where research and development include phases of geoscience relevant to dis-



**COSTA RICA'S WINNER**—Costa Rica's first contribution to the International Science Fair is attractive Flory Roldan whose project details the complete story of coffee.



**JUDGES SCRUTINIZE EXHIBIT**—Many teams of judges ponder each science project before launching into personal interviews with the finalists exhibiting at the International Science Fair, as this team did at last year's Fair.

covering and recovering petroleum and natural gas, and investigation ranges over seismology, geophysics, geochemistry, geology, nuclear physics, fluid mechanics, reservoir engineering, paleontology, and other special fields.

The Texas Instruments, Inc., where industry's broadest line of semi-conductors, transistors, diodes, rectifiers is manufactured and the Geophysical Service pioneers in applying reflection seismic method to oil exploration and makes use of digital data analysis in solving geologic problems.

The Texas Research Foundation which conducts 17 "farming systems" or series of plots representing different systems of farming.

The University of Texas Southwestern Medical School, whose research laboratories are investigating living cells, organ transplants, heart disease, environmental health and other current medical problems of great interest.

### Science and Technology Exposition

A Science and Technology Exposition will be held in conjunction with the International Science Fair and will be held in the Memorial Auditorium, with a special showing for the Official Party on Wednesday afternoon, and public admission on Thursday and Friday when the ISF is open to visitors. Educational exhibits are being prepared by the Armed Forces, other agencies of the U.S. Government and professional organizations, geared to the interests of science-minded students and adults.

Sampling some of the entries submitted by affiliated fairs which already have chosen their grand winners and designated them as ISF finalists, a highly interesting variety of projects is evident. For example, a 16-year-old Pennsylvania boy has built a compact, relatively simple, working model to demonstrate the use of computers in medical diagnosis. He believes it might be use-

ful in the teaching of diagnosis and might be developed into a device for testing diagnostic ability. This ISF finalist has been interested in science since third grade during which classes were rotated under a Ford Foundation experiment. He comments that the higher level of teaching achieved by the resulting specialization, particularly in the science class, stimulated him.

An 18-year-old student from Hawaii will exhibit his ideas of ways to prevent barnacle fouling. These methods include the use of fluorescent surfaces that repel barnacles, electrochemical action, and polyethylene which prevents the firm attachment of barnacles.

### 'Original Process'

An "original process" that will remove salt from seawater through the use of electrolysis and fuel cells combined in a regenerative cycle will be proposed by a 16-year-old Louisianan who believes that very little power would be required for such a process.

Another finalist from Louisiana, a 16-year-old girl, will exhibit her conclusion that various diets and degrees of rest affect the rate of learning and the performance of white rats.

An earth satellite that would measure gamma radiation, temperature, sun angle, earth heat balance and cloud patterns, and would detect nuclear explosions on the dark side of the earth as well as detecting and counting micrometeoroid impacts, is the subject of a Texas boy's project.

A 16-year-old girl from South Carolina will show a simple method of separating and identifying the components of a chemical mixture and will exhibit an alkaloid she has identified in one of the most important plants in her state.

The project of a feminine mathematician from Oklahoma, whose interest in science was awakened as soon as she learned to read at five years of age,

will demonstrate how a system of symmetries of a regular tetrahedron conforms to the structure of a group. She has developed a set of 12 elements and a binary operation.

### Future Scientists

One of the most uniquely valuable products of the International Science Fair is the accumulated information concerning thousands of pre-scientists and the heartening results of follow-up studies of finalists.

A recent survey, for instance, found that approximately 87% of the college undergraduates responding to the questionnaire are majoring in some field of science, and 89% of the college graduates reported majors in science or education. About 88.5% of those reporting on current career status are in scientific or teaching jobs, with 3.6% in non-scientific military assignments and 7.9% in other work unrelated to science. Some 97 publications are credited to previous finalists who answered the question.

SCIENCE SERVICE's cumulative files show that the first sparks of interest in science may glow very early in life and that perhaps 90% of the thousands of outstanding high school students had become enthused about science before they entered senior high school.

Many developed their initial inclination as early as eight to 10 years of age, inspired by their parents, books, magazines and the youthful urge to explore. The age of 12 has remained the peak of the pyramid, however, through all the years of studies and statistics. Apparently seventh grade offers facts, questions and experiences that stir many young minds. More specifically, seventh grade teachers generate some special momentum of their own, according to the reports of their students. About half of the 12-year-old beginners became science-oriented at

school and many have commented that their teachers provided the original impetus.

The ages of 10, 13 and 14 are nearly as productive of aspiring pre-scientists, with the 10-year-olds showing up as predominantly self-starters. On the other hand, statistics on the entire group of finalists reveal that nearly a third of them reported that the source of their personal "itch" to explore the realms of science was teachers, texts, laboratory experience, demonstrations and equipment at school.

Home influences were significant in the development of more than a fourth of the finalists who felt that their parents or other members of the family, home atmosphere and opportunities, family friends and activities and trips, and similar influences were responsible.

Other sources mentioned frequently during the years of SCIENCE SERVICE studies were, in order of effectiveness, books, magazines, pamphlets and other reading material; scientific equipment and kits; science fairs, clubs and other organization activities; curiosity, observation, "the need to know" and other personal drives; and such motivating forces as discussions with scientists,

visits to scientific institutions, television programs, and science seminars.

About half of the previous ISF finalists may reasonably be expected to change their minds about their specific choice of scientific specialty as they progress through college and graduate school and acquire immediate experience within the various disciplines.

Some, of course, will discover that they are not really scientists at all and can contribute much more to some other field. Even they, however, can be counted on to retain a particular empathy with scientists and the pursuit of scientific truths. Having had a personal glimpse of the "inexhaustible pleasure" inherent in science, they will almost inevitably be more knowledgeable voters, legislators, economists, conservationists, teachers, ministers, writers, or whatever. Certainly they can lend enlightened parental support and fairly intelligent advice if their children should someday show symptoms of science-susceptibility.

For information about the International Science Fair write to Science Service, 1719 N St., N.W., Washington, D.C. 20036.

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# Science Club News

## Busy With Fairs

► THE BIGGEST science club news now is concerned with science fairs. Most science club members are entering projects, and many clubs are hosting the event in their school, while a Waycross, Ga., club is hosting the regional science fair.

Science projects are considered so important by the St. Johns High School Science Club in St. Johns, Ariz., that new members must have a project underway after one semester, or their club membership is canceled. This is related to the purpose of the Bethany Science Club, Bethany Jr.-Sr. H.S., Bethany, Okla., which considers its function to be "showing younger students that science is an area of learning that is interesting and rewarding." This is carried to the community at large by the St. Aloysius Academy Science Club, New Lexington, Ohio, which has conducted a study of the process and effect of strip mining in their area. The Pembroke Central Science Club, Pembroke Jr.-Sr. H.S., Corfu, N.Y., presents a display of scientific value which is changed bi-weekly.

Interest in science is heightened through competition also in the form of "Science Bowl," patterned after College Bowl, in which members of the Aretus Saunders Science Club, at Bridgeport (Conn.) Central H.S. answer scientific questions. The Mathletes of Bishop (Calif.) Union H.S. have a monthly competition with other schools.

Trips to scientific establishments and cities with varied science activity are conducted by the Alpha Beta Gamma Math and Science Club of Auburn (Nebr.) H.S., with visits to Washington, Chicago and Denver, and by the Chemocrats of Southern Colorado State College, Pueblo, who have traveled by bus to 21 states, Canada and Mexico, and are planning a trip to Cape Kennedy this summer. They have seen many different scientific institutions and activities along the way.

The Loreto Science Club of Loreto Convent, Limuru, Kenya, has concentrated on the construction of scientific equipment such as kaleidoscopes, and telegraph sets, from scrap materials.

Junior Science Club in Phoenix, Ariz., is sponsored by that city's Sunrise Optimist Club, which is very interested in promoting science interest among young scientists. All science

(Continued on p. 231)



GETTING READY—The satisfaction and unpredictable hazards of setting up a science project are lived through by a two-time finalist at last year's International Science Fair while his sponsor offers moral support.