

## FOR THE HIGH SCHOOL SCIENCE TEACHER

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### SCIENCE FAIRS IN TENNESSEE DEWEY E. LARGE

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Aware of the great need for more and better trained scientists for classroom, research, and production, many organizations have entered the crusade for the advancement of science. Any tool that facilitates and creates interest in science is worthy of consideration. The science fair is an educational tool that is being put to very effective use in Tennessee. Public, private, and parochial schools throughout the state are encouraged to help their students and community members have rich experiences in science education through the medium of a science fair.

A science fair is a competitive exhibition of scientific work developed and displayed by pre-college students under the direction of teachers and other interested people. It provides an opportunity for students with imagination and initiative to display and share their ideas, research, and handiwork in science and mathematics. The science fair makes possible an occasion for all students from grade one through grade twelve to experience the joy of accomplishment in a real scientific activity. Essentially, a science fair is a collection of exhibits designed to show a scientific principle, a laboratory procedure, or an industrial development.

Everybody ought to learn what science means, what its thought processes are, and what its social effects are likely to be. Science fairs give concrete assistance to such learning.

The aim of the science fair is to encourage interest in understanding of and appreciation for science and mathematics. The purpose is fourfold:

1. To encourage students to take a more active interest in science and mathematics, and thus enlarge the number of scientifically and technically trained people.

2. To afford opportunities for teachers and students to exchange ideas.
3. To arouse public interest in the abilities of students and teachers.
4. To provide science education for the community.

The science fair should never be thought of as an end within itself. As a part of classwork, science fair activity makes for beginning and continuing research. By being designed to discover and develop scientific ability, science fairs incorporate tangible and intangible values. The person who obtains the greatest value from a science fair is the exhibitor. In addition to having the opportunity to compete for valuable awards and recognition, any student can find a place in a science fair activity regardless of his capacities and abilities. The so-called "slow", "average", and "gifted" students all can experience the thrill of demonstrating what they can accomplish and share in the delight of jobs well done.

Research for the science fair and project development increase the student's confidence in himself and broaden his appreciation and understanding of scientific investigation and application. Exhibits which come from student project work should be considered culminations, but not terminations, of good science and mathematics instruction. These learning activities will not be contained within the limitations of any classroom, but will spread even beyond community boundaries.

There are at least four classifications according to scope of science fairs: local science fairs held for one school or school system; district or regional fairs made up of exhibits representing several schools or school systems; state fairs composed of exhibits from several systems or districts throughout the state; the National Science Fair organized and administered by Science Service, Washington, D. C. All these fairs have their places and degrees of value.

Tennessee secondary and elementary school teachers and students participate in local and regional science fairs and the National Science Fair. This activity is encouraged by professional, educational, and scientific organizations, the state department of education, institutions of higher learning, industry, and the communication media. Many local science fairs are held throughout the state. In the spring of 1955, five regional science fairs were executed; from each of these, two finalists attended the Sixth National Science Fair in Cleveland, Ohio, May 12th-14th, 1955. Two of these regional fairs were organized in the school year 1954-55; the other three were in their third year.

Memphis-Shelby County Science Fair, held April 20th-23rd, 1955, directed by Dr. Clinton L. Baker at Mallory Memorial Gymnasium, Southwestern College, Memphis, came into being as a result of a meeting of several educators and scientists in the Shelby County Court Room, August 13th, 1954. This fair was made up of individual and group exhibits from grade one through grade twelve of the public, private, and parochial schools of that area. Four local fairs were held at high school buildings prior to the regional fair. The regional fair was sponsored by the Memphis Civitan Club and assisted by the *Memphis Press-Scimitar*. Three hundred and seventy-nine exhibits were entered. Five top winners were selected in 24 divisions; in addition to these, there were 120 Certificate of Merit winners.

Finalists who attended the Sixth National Science Fair were Kate Martin, Miss Hutchinson's School, with her exhibit of mitotic models, "This Is Your Life", and Kent Demuth, Mabel C. Williams High School, with his telescope exhibit "My First Year in Astronomy". Memphis adults who accompanied the finalists to the National Science Fair were Dr. Clinton L. Baker, Mr. George T. Sanida, and Miss Lillian Foscue.

The Middle Tennessee Science Fair, directed by Dr. Guy Forman, was held in the Old Gymnasium, Vanderbilt University, Nashville, April 21st-23rd, 1955. This was the third Middle Tennessee Science Fair. One hundred and ninety-five entries were reported in four major divisions: Biological Sciences, Physical Sciences, Engineering, and Public Welfare. These divisions were sub-divided into 10 categories. Exhibitors were from grades eight through twelve representing public, private, and parochial schools of Middle Tennessee. The fair was sponsored by Vanderbilt University and *The Nashville Banner*. Ten first prizes of \$10.00 each were given; these were followed by 10 second prizes of \$5.00 each, and 27 places of honorable mention. Winston Marshall of Issac Litton High School took his exhibit, "Paper Chromatography Applied to Alkaloidal Identification and Separation" to the Sixth National Science Fair, along with Charles Schwartz of West End High School, exhibiting "Design and Construction of a 3 1/4 Inch Refracting Equatorial Telescope". Dr. Robert T. Lageman accompanied the Middle Tennessee finalists. Both young men made good showings; Winston won a prize.

The first annual Cumberland Plateau Regional Science Fair, directed by Dr. Gordon B. Pennebaker, was held April 16th, 1955, in the Gymnasium at Tennessee Polytechnic Institute, Cookeville, sponsored by Tennessee Polytechnic Institute, Cookeville, Cookeville Rotary Club, the First National Bank of Cookeville, and the Cookeville Citizens Bank. Seventy-five entries were made in the general divisions of Biology, Chemistry, Physics, and

Mathematics, the academic grade levels were: primary (grades 1-3), intermediate (grades 4-6), junior (grades 7-9), and senior (grades 10-12). The quality of all the exhibits, both group and individual, was high. The young lady finalist who went to the National Science Fair was Miss June Peters of Cookeville Central High School, exhibiting "Problematical Graphic Equations". Finalist Fred A. Breeding of Cookeville Central High School accompanied her, exhibiting "Remote Control Panel." Dr. G. B. Pennebaker and Mrs. A. B. Peters completed the delegation from Cookeville to the National Science Fair. Much interest is being shown in the Plateau area and many local science fairs are expected to precede the next regional fair.

The Third Chattanooga Science Fair, a junior and senior high school student contest directed by Dr. Earl M. Tapley, sponsored by *The Chattanooga Times* and the University of Chattanooga, was held at the University of Chattanooga, April 14th-15th, 1955. Many exhibits were entered in six subject areas: Botanical Sciences, Zoological Sciences, Chemistry, Physics, Mathematics and Engineering, and Physiographical Sciences. From the many excellent exhibitors, Miss Judith Davenport, Chattanooga High School, showing her "Classified Shell Collection of Atlantic and Pacific Coasts", and Richard Palmer, Chattanooga High School, showing his "Basic Points in the Classification of Minerals" were selected as finalists for the National Science Fair where each of them won an award. Miss Jane Wells and Mrs. Paul Lewis completed the Chattanooga contingent to the National Science Fair.

The Southern Appalachian Regional Science Fair, designed for 32 upper East Tennessee counties, seven counties in Kentucky, three counties in Virginia, and one North Carolina county, was held at the University of Tennessee, April 16th, 1955. This fair, in its third year, was directed by Dr. C. A. Buehler, and sponsored by *The Knoxville News-Sentinel* and the University of Tennessee, endorsed by Fulton-Sylphon Company, Carbide and Carbon Chemicals Company, Rhom and Haas Company, American Chemical Society, American Society of Mechanical Engineers, Knoxville Torch Club, and American Society of Chemical Engineers. There were 110 entries totalled in the two divisions: junior—grades 7, 8, and 9, and senior—grades 10, 11, and 12. The subject divisions were biological Sciences and Physical Sciences. Recognition of achievement was given the participants. Awards in the Senior Division were Grand Champion boy, \$250 scholarship and an all-expense trip to the National Science Fair; Grand Champion girl, \$250 scholarship and an all-expense trip to the National Science Fair; two Reserve Champions, \$25 each; third place winner, \$22; fourth place winner, \$18; fifth place winner, 15; sixth place winner, \$10. Prizes in the Junior Division were: first place boy, \$20; first

place girl, \$25; second place, \$20; third place, \$17.50; fourth place, \$15; fifth place, \$12.50. Each exhibitor received a Certificate of Participation. Certificates of Excellence and Certificates of Honorable Mention were awarded to 35 entrants. Douglass Saunders, Oak Ridge High School, with his exhibit, "Geotropism," and Lydia Shipe, Knoxville Central High School, with her exhibit, "Relation of Animals to Habitat" were finalists from the Southern Appalachian Regional Science Fair to the National. Both of them won very commendable prizes. Miss Lula Shipe, Mrs. Sara Conroy, and Miss Weigel completed the official party. Members of the executive committee of this fair expect more local East Tennessee science fairs this year that will result in an enlargement of the regional fair.

All of the participants in the science fairs give their teachers, parents, and scientists in their communities much credit for encouraging and advising them concerning science fair work. The influence of science fair activity cannot be completely evaluated objectively and quantitatively at any specific time; it will be noticed many years in the future.

There are many Tennessee scientists, but more are needed. Tennessee has thousands of talented youngsters who should choose careers in science. Perhaps a science fair is all that is needed to cause them "to find themselves" and to make the right choice of vocation. More science fairs should be held. The initiative for the organization of more fairs will come, perhaps, from teachers and students.

Many problems are encountered in organizing and executing science fairs. Assistance with such problems can be obtained free by addressing a request to: Educational Section, American Museum of Atomic Energy, P. O. Box 117, Oak Ridge, Tennessee.

Remember that in these times much emphasis must be placed upon the improvement of science education. Science fairs constitute one of the best media for stimulating young people to work and select careers in the pure and applied sciences. The science fair is an educational tool with great possibilities; it is the duty of responsible people to see that this tool is put to the best and greatest possible use.

#### NATIONAL SCIENCE FAIR EXHIBITS BY TENNESSEE STUDENTS

The following two articles are brief descriptions of exhibits by Tennessee students who were finalists in regional science fairs in Tennessee and who participated in the National Science Fair at Cleveland, Ohio, in May, 1955. Descriptions of exhibits of five other finalists appeared in the July, 1955, number of the