

## GENERAL SCIENCE

# Beginning a Science Project

"... The technique of science education involves the student getting his hands dirty and his mind disturbed."—Dr. Watson Davis, quoted in the Congressional Record.

By FORREST L. SNAKENBERG

➤ A MILLION STUDENTS are busy reactivating their science clubs, getting launched in new science courses, and will be observing October as National Science Youth Month in a very real way. Science fair committees and teachers are reminding students that they should be selecting their science projects and beginning their work if they intend to enter the science fair next spring. Old hands probably have their projects well underway, but to the inexperienced the big question at this time is likely to be, "What project shall I do?"

## Begin With a Problem

Dr. John R. Dunning, dean of Columbia University's School of Engineering and Applied Sciences, offers the following advice to young scientists:

"Begin with a problem. Your problem may be an unexplained phenomenon—a natural system whose workings are obscure. Or your problem may be the creation of a new system. A very good class of problems to deal with just now and the years ahead are those problems that exist at the borders between the traditional disciplines—biomechanical and biochemical problems; psychophysiological problems; real physical and astrophysical problems, and the problems in the mathematical modeling of physical events.

"Once you have tackled your problem, give your curiosity and theorizing impulses full scope. Do not be too severely practical. Be prepared to turn sharply and pursue the unexpected. But do not become too theoretical. The creation and manipulation of symbol-systems is great fun—but it can be sterile, if it is an end in itself. If it is to be fruitful, it must remain in contact with the real world."

## Review Prize-Winning Exhibits

You might go over project titles of recent prize-winning exhibits for suggestions, or look around your world and determine just which problems need most to be attacked. Cancer is still with us, as is the need for economical conversion of salt water to fresh. Many are the unsolved problems of outer space. An old slogan of 4-H Clubs might properly be the personal motto of every student working on a science project: "Make the Best Better."

Not every science project makes startling discoveries or contributions, however. There always must be a modest beginning. Your project must be planned with considerations

given to your background knowledge, prior experience with projects, your capabilities, the time available for such pursuits, and availability of information and materials with which to work. It is better to do a modest project well than to make a poor attempt on a project of grandiose scale.

Some science clubs hold brainstorming sessions that are often very productive of possible topics for science projects. Others show color slides of winning projects from the previous year at both the local and international events. A discussion of each slide develops that includes constructive criticism as to development and planning of the project as well as possible improvements in the display techniques. Before they realize it, even new members are making comments concerning project possibilities, and noting methods for easy transport, set-up and dismantling of the projects.

Interesting ideas for projects also develop through reading newspapers, magazines, scientific journals and books. Suggestions for outstanding science projects are everywhere. But the final decision is yours alone.

Many science clubs require their members to give reports of their progress at each

meeting. The knowledge that they will be asked for such a report is often the necessary impetus to continue working. The knowledge that project efforts might lead to financial assistance for college often helps maintain interest in the project and lead to improvement of methods and research.

There is nothing wrong with seeking advice and information, for none of us could survive very long without the aid of others. It is wrong, however, to expect someone to do your project for you, or especially to present the work of others as your own.

## Asking for Information

Professional, scientific, educational and industrial organizations all stand ready to provide specific information and advice, as does your librarian. However, do not abuse their generosity. Every organization, unfortunately, has received letters and telephone calls which say, "I am doing a science project on \_\_\_\_\_. Please send me everything you have and send samples. Thank you."

While most scientists are even anxious to help the serious student, such haphazard pleas are not likely to be well received. In your requests for advice and information, as in your science project itself, the point is to be specific. This cannot be over-emphasized.



**TRANSPORT PLANNING IMPORTANT**—It is important to plan the display of your project in such a manner that it can be easily transported, assembled and dismantled. Shown here at the 1965 International Science Fair are Sister Florentia and her student Julia Holden of Baton Rouge, La., and Felice Tillman of Metairie, La., with her teacher-sponsor, Mrs. James Stewart.

There is a list of 55 national groups that cooperate to help you develop your science interest in every conceivable scientific field prepared especially for "October—National Science Youth Month."

Most of these groups have local branches or chapters which should be utilized, but the headquarters' addresses are listed for your use if there should be no local affiliate in your area. Single copies are available free from Science Service, Washington, D. C., which also has two books which might prove helpful.

### Helpful Books

"Science Projects Handbook" includes reports of award winning projects together with suggestions on planning projects and exhibits, new ideas for research and sources of information and equipment. "Wonderful World of Science" is a guide to free and low cost samples, films, photos, kits, books, plans and apparatus. These books are 55 cents each, or 10 for \$5, postage included. A listing of award winning project titles, "Thousands of Science Projects," is also available at 25¢ each or 10 for \$1.00.

Numerous awards are presented at local, regional, state science fairs, and the International Science Fair, ranging from certificates suitable for framing through cash awards, scholarships, summer jobs, tours and trips, and the opportunity of representing the U.S. at the Japan Student Science Awards and Science Fair, held in Tokyo each October.

High school seniors may enter reports of their projects in the Science Talent Search for the Westinghouse Science Scholarships and Awards, which in most states automatically places them also in consideration for scholarship aid through state science talent searches. Many students use the same project for science fairs and the STS.

### Million Students Participate

Each year, well over a million students in the United States alone enter science projects in fairs which are linked to the International Science Fair. Some of these will not become scientists. Most of these students will not win awards. Yet some non winners of the past have later become great achievers. Not winning goaded them on with determination to show the world what it had seemingly overlooked.

The experience of conducting a science project, or participation in science fairs is so enriching as to be beneficial to all participants regardless of the future course of events.

We have attempted to answer the "how?" and "when?" of science projects. Any former science fair entrant can answer the "why?"

\* \* \*

For information on National Science Youth Month, Science Talent Search, science fairs, or for valuable teaching aids through free affiliation with Science Clubs of America, write to Science Service, 1719 N Street, N.W., Washington, D. C. 20036.

• Science News Letter, 88:218 October 2, 1965

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## Thousands Attend First Guatemalan Science Fair

►THE FIRST Guatemalan National Science Fair for secondary school students attracted thousands to view the projects displayed during a week of exhibition in the Industrial Park, close by the Atoms in Action Exhibition of the Atomic Energy Commission of the United States.

Projects from 29 secondary public and private schools in all parts of the Republic were displayed.

Physics projects were most numerous with 106 displayed. Biology ranked next with 66; then chemistry with 19; mathematics with 14; and psychology with 7.

The National Science Fair was organized by a Committee of the Ministry of Education with the support of the Minister of Education, Colonel Rolando Chinchilla Aguilar. The chairman of the organizing commission was Prof. Victor Manuel Gonzalez, and other members were Lic. Roberto Perez; Licda. Graciela Cabrera de Cordon; Prof. Alcira Diaz Cerna; and Prof. Jose Luis Diaz.

Plans are being made for continuing the Science Fair in 1966 and there is also interest in the possibility of Guatemala's being represented at the International Science Fair to be held in Dallas next May.

Several of the projects judged most interesting were shown in the Atoms in Action Exhibition held during September.

• Science News Letter, 88:219 October 2, 1965

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## Costa Rica Prepares National Science Fair

►COSTA RICA will have its first National Science Fair in March as a result of plans formulated in San Jose by the Minister of Education, Lic. Ismael Antonio Vargas, who has accepted the cooperation of SCIENCE SERVICE on behalf of the U.S. Atomic Energy Commission.

A committee under the direction of the supervisor of science of the Costa Rican secondary schools, Prof. Carmen Luthmer, is developing the plans for the fair. It is expected that secondary schools throughout the Republic will present projects and exhibits.

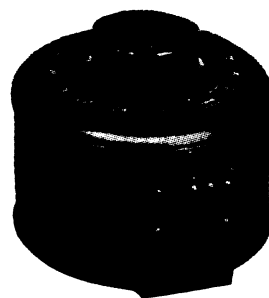
The Bi-National Centers in various parts of the country will cooperate with the schools in developing projects and give assistance to the students and teachers.

The Costa Rican National Science Fair will be a preliminary to the Atoms in Action Exhibition to be shown in San Jose beginning March 8. The most outstanding exhibits from the Science Fair will be shown in this elaborate exhibit as a demonstration of Costa Rican youth in science and technology.

In the United States each year, about a million boys and girls create science projects and show them first in their schools, then in their regions, and finally in the International Science Fair, which in 1966 will be held in Dallas, May 11-14.

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