

High Schoolers:

Enter your science fair and you may win the opportunity for a fascinating career.

You're smart enough. Else you wouldn't be reading this magazine.

Write us soon. We help you get noticed. Ask Eastman Kodak Company, Dept. 841, Rochester, N.Y. 14650, to send you the free package of photographic hints for science fair contestants.



Good use of photography makes the most of a good project—even if you have to make your own camera.

Elizabeth Davis, junior at Commerce (Texas) High School, daughter of musicians, did just that. Her project impressed the regional judges enough to send her to the 1975 International Science and Engineering Fair, where we laid further honors and a little cash on her for her photography, to say nothing of her science. She extracted Eocene pollens from an open-pit quarry, and her beautiful side-by-side color photomicrographs compared them with pollens she collected from living plants. No difference in pollens.

Circle No. 122 on Reader Service Card

ENERGY

U.S.-Soviet MHD test . . .

American and Soviet scientists, working in Moscow, have successfully completed a test of magnetohydrodynamics (MHD) equipment, which an official announcement calls "a significant step in demonstrating the feasibility of a key component of this electrical power generating system."

Still in the experimental stage, MHD is a highly efficient method of transforming combustion energy directly to electricity without such wasteful intermediate steps as turbines and dynamos. Burning gases at temperatures up to 4,500 degrees F. are passed through a nozzle into a magnetic field where electrodes collect charged particles. Conversion may reach 50 percent efficiency, with minimal environmental pollution.

The recent test involved performance of the electrodes, which must be able to withstand great stress during operation. They lasted 127 hours. The joint project involved an American-built piece of apparatus and a Soviet test facility. Several private American companies were involved, under sponsorship of the Energy Research and Development Administration (ERDA). The United States plans to use coal as the principal fuel for MHD, the Russians, natural gas.

. . . and one for fluidized-bed

Another efficient, environmentally attractive method for burning coal is fluidized-bed combustion, in which ground-up coal is mixed with rocks and suspended by a stream of air. The Environmental Protection Agency has announced the successful completion of a shakedown period for its "Miniplant" fluidized-bed combustor.

Built for EPA by Exxon, in Linden, N.J., the Miniplant is a prototype operation designed to test the fluidized-bed concept and develop whatever additional environmental controls may be needed, over a projected four-year period. It includes the largest existing fluidized-bed coal combustor capable of operating over a full range of conditions. By mixing the coal with noncombustible granules—in this case, limestone—efficient burning is promoted, sulfur dioxide is removed by reaction with the limestone, and emission of nitrogen oxides is reduced. The 100-hour test was described by EPA as "smooth and stable."

Natural gas curtailments

The Office of Technology Assessment has issued an analysis of impacts of projected natural gas curtailments for this winter. The conclusions: More than 10 percent of the nation's real requirements for natural gas will not be met, which raises "the serious possibility that there will be insufficient natural gas to fuel the nation's economy this winter and that these shortages could extend into the residential sector for the first time." The probable result will be "severe dislocations" in vulnerable areas (Mid and South Atlantic states and the East North Central area), and the situation is "potentially very critical." Unemployment in hard-hit areas may reach 100,000, and substitute fuels may not always be available.

When is a greenhouse not?

The "greenhouse effect" is often used to explain how the atmosphere retains heat from the sun—by admitting the incoming light and trapping that reflected from the ground. So far so good. But now National Oceanic and Atmospheric Administration physicist Ronald L. Schwiesow writes in a letter to OPTICAL SPECTRA that such "radiative trapping" adds little heat to real greenhouses. Their main function, it seems, is merely to reduce heat loss from convection.