

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.

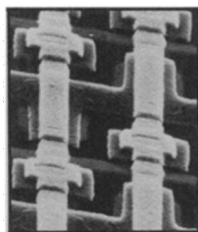


Good use of photography makes the most of a good project—even if you have to make your own camera.

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.

TECHNOLOGY

High density memory



Scientists at IBM's Thomas J. Watson Research Center announced development of a new integrated circuit "memory chip" for computers—with 10 times greater storage density than conventional units. The experimental 8-kilobit chip has a storage density of five million binary digits per square inch and an access time of 90 nanoseconds.

The new memory chip uses field effect transistors (SN: 9/6/75, p. 154), which are usually considered rather slow. But by making the dimensions of the elements much smaller, access time is sharply reduced. Design of the component memory circuits has also been improved so that only one transistor is required per "bit" of memory.

Two sophisticated technologies had to be joined in order to make the new chip possible: electron-beam lithography and ion implantation (SN: 9/13/75, p. 170). An electron beam, rather than light, was used to delineate areas of a semiconductor substrate to be etched. Ion beams then etched the surface and changed the electrical properties of the remaining material to form circuit elements—rather than conventional acid etching and material diffusion. The resulting resolution is as small as one micrometer.

Peppering SALT

Even as another respected journal was questioning the technical and legal competence of American negotiators in the current Strategic Arms Limitation Talks (SALT) (SN: 12/6/75, p. 359), BUSINESS WEEK declared the negotiations "as good as dead" because of new military technology, particularly the cruise missile. The likely result, according to the editors (Nov. 24), is "a speedup in the arms race and in defense spending when the SALT-1 agreement expires in October 1977."

The cruise missile is designed to fly at very low altitudes to elude radar and defensive fire—guided through valleys and around mountains by computers that compare the surrounding terrain with programmed topographical maps. The Navy expects to choose a production contractor next spring; but already Soviet negotiators are insisting that the U.S. refrain from producing and deploying the missiles, which are planned to have a 2,000-mile range. That now seems to be politically impossible.

Foam houses for refugees

Thousands of Turkish villagers whose homes were destroyed by last spring's devastating earthquake are still without shelter as winter approaches. The Nov. 27 NEW SCIENTIST describes the dilemma of a private company, Oxfam, that is trying to help the refugees before the windy, sub-zero weather arrives.

For only about \$120 each, Oxfam can construct 70-square-foot shelters in time for perhaps 5,000 villagers, using polyurethane foam sprayed inside an aluminum mold. The problem is that if the peasants ignore warnings not to build fires inside their temporary shelters, they may be caught in an inferno. A safer alternative, polystyrene, requires much more expensive equipment. Flame retardants work only up to a point—giving off even more toxic fumes when they do finally ignite. There is also a problem with constructing the houses; the foam should only be sprayed by workers equipped with masks and suits (the constituents are irritating and carcinogenic), but local workers, sometimes ignore these precautions.

The issue points up several deficiencies of current emergency relief systems and the inherent dilemma of charity that may cause further harm.