science news

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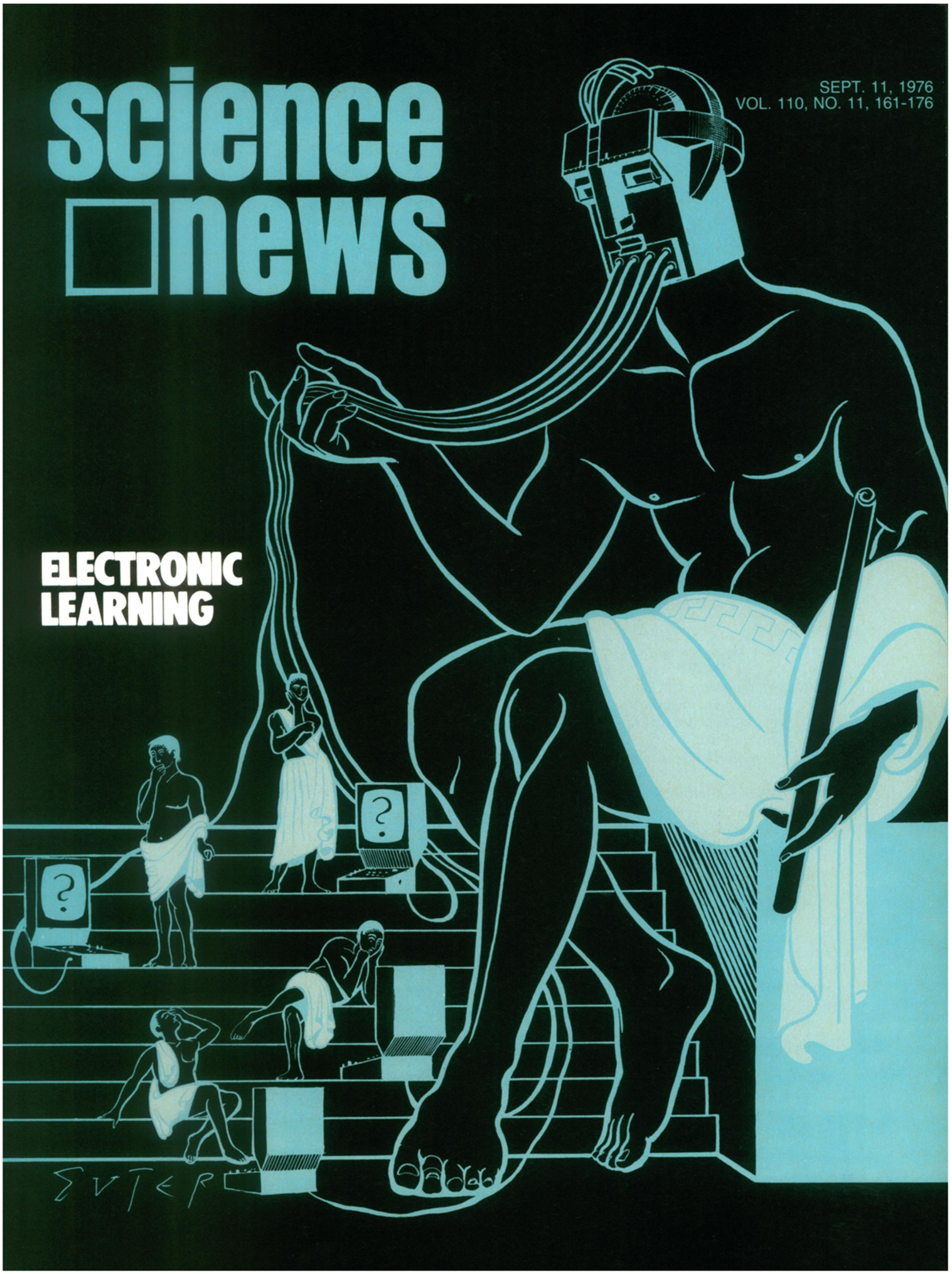
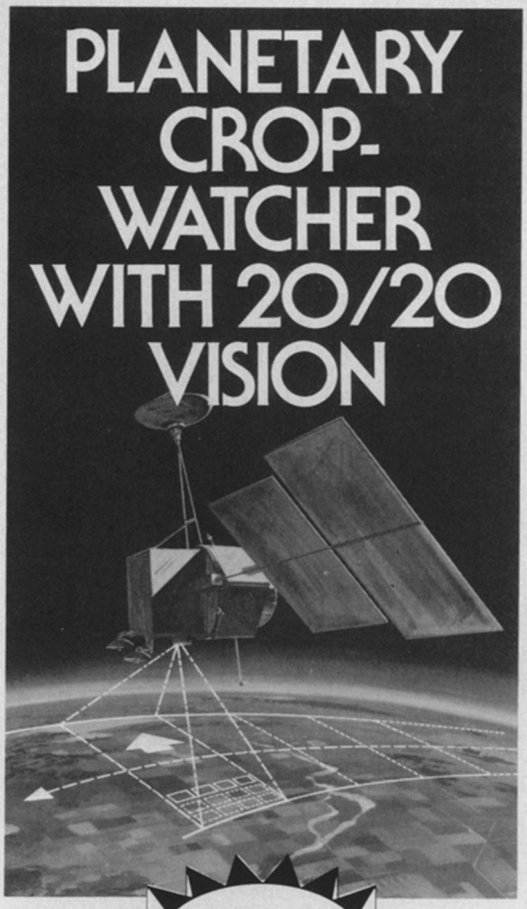
ELECTRONIC LEARNING



Conversation Pieces

PLANETARY CROP-WATCHER WITH 20/20 VISION



Thematic Mapper scheduled to fly in 1980 aboard Landsat-D spacecraft will be in sun-synchronous orbit at 705 km altitude, scanning a swath 185 km wide and covering all inhabited areas of the earth.

Forecasting crop yields is still more of an art than a science. No electronic system, however sophisticated, can yet match a farmer's feel for how his crops are doing. But individual assessments like "pretty good" or "we'll have a bumper crop if the weather holds" can't be used effectively for worldwide or even regional forecasts. They don't fit into a computer, and they take too long to compile and analyze.

What's needed is millions of precise, numerical estimates of crop status flowing steadily into the computer on an acre-by-acre basis. This calls for a satellite-borne system which provides a truly synoptic view of the earth's arable areas. NASA's Landsat, in orbit since 1972, has been providing this kind of data. NASA is now preparing to provide a much improved capability to the world's users of Landsat data.

This next generation Landsat sensor system, called Thematic Mapper, is now in the study phase. This new system will provide improved spatial and spectral resolution over the present system. It will be able to discriminate more effectively between different crops, stages of growth, and sick and healthy vegetation. Besides crop watching, it will be able to survey forest resources, detect changes in land use, monitor rangelands for better livestock management, and help in watershed and water use management.

Some additional growth capabilities will be built into the Thematic mapper design under study by TRW Systems and Perkin-Elmer. Because of its unique rotary scanning system, the scan is unidirectional and the sensor output is inherently linear. This means simplified data processing on the ground, faster status reporting, and thus an overall reduction in system operating costs.

Simplified ground data processing is particularly important. It means that low-cost ground stations can be set up around the world. They'll be able to take data on local crop conditions directly from the satellite as it passes overhead; no need to go through a central receiving station. Such reports will become even more valuable when they can be coordinated with long-range weather forecasts.

The Thematic Mapper is one of many ways that TRW is working to improve space technology as a tool to give us a better understanding of our earth and man's impact on it.

TRW is a worldwide leader in electronics, defense, & energy systems and in computer-related technology for information management & systems control.

TRW

DEFENSE AND SPACE SYSTEMS GROUP

Attention: Marketing Communications, E2/9043, One Space Park, Redondo Beach, California 90278

science and mathematics teachers

encourage your students to enter the

WESTINGHOUSE SCIENCE TALENT SEARCH

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CHEMISTRY
BIOLOGY
MATHEMATICS
ASTRONOMY
GEOLOGY
HUMAN ENGINEERING
PSYCHOLOGY
ANTHROPOLOGY
METEOROLOGY
ZOOLOGY
SOCIOLOGY
ARCHITECTURE
BIOCHEMISTRY
GEOMETRY
SOCIAL PSYCHOLOGY
ELECTRICAL ENGINEERING
MOLECULAR BIOLOGY
ECOLOGY
PERCEPTION
CALCULUS
ARCHAEOLOGY
CIVIL ENGINEERING
SOCIAL ANTHROPOLOGY
MOLECULAR GENETICS
GEOCHEMISTRY
SOLID STATE PHYSICS
OPTICS
TRANSPORTATION
LIMNOLOGY
EDUCATIONAL PSYCHOLOGY
ABSTRACT ALGEBRA
CELLULAR BIOLOGY
BOTANY
THERMODYNAMICS
AERONAUTICAL ENGINEERING
BACTERIOLOGY
PHYSICAL ANTHROPOLOGY
OCEANOGRAPHY
ENVIRONMENTAL SCIENCE
PLANT PHYSIOLOGY

- **40 Winners will share $67,500 in Westinghouse Science Scholarships and Awards.**
- **300 Honorable Mentions will be brought to the attention of all colleges, universities and technical schools in the U.S.A.**
- **Hundreds of students automatically will receive recommendations and other assistance toward a college education in schools within states holding State Science Talent Searches.**
- **For all students, a sense of accomplishment and a measure of self-evaluation that comes from finishing a hard assignment.**

ABOUT THE SCIENCE TALENT SEARCH

More than 10,500 students have been members of the Winners and Honors Groups in the past 35 years. Because of their standing in this oldest and most prestigious competition of its kind, they have been offered scholarships from institutions seeking quality students with proven ability in science and engineering. Many winners in the Science Talent Search are offered summer employment in scientific laboratories and other tokens of early acceptance into the world of science and engineering. Such benefits also come frequently to members of the Honors Group and to those who place in State Science Talent Searches.

ANSWERING YOUR QUESTIONS

Who May Compete? Any boy or girl who is in his last year of secondary school (public, private, parochial) in the United States and Puerto Rico, who is expected by the certifying school official to complete college entrance qualifications before October 1, 1977 and who has not competed in any previous Science Talent Search is eligible to enter this competition.

How Can Students Compete? Teachers or other school officials must request entry materials for the outstanding science and mathematics students of the school.

What Is A Completed Entry? A project report of about 1,000 words which presents evidence of research ability in science or engineering; a Personal Data Blank filled in by student, teachers and principal; national test scores and high school transcript.

How Are Entries Judged? Judging is based primarily on the student's report on an independent research project in the physical sciences, engineering, mathematics, biological sciences (excluding live vertebrate experimentation), or behavioral sciences.

What Is The Deadline? Entries must reach Science Service by Midnight, December 15, 1976

Get your students to start working on projects NOW

RURAL SOCIOLOGY
PARISITOLOGY
PALEONTOLOGY
MINERALOGY
COMPUTERS
SOIL MECHANICS
BIOCHEMICAL ENGINEERING
CULTURAL ANTHROPOLOGY
MATHEMATICAL BIOLOGY
ASTROPHYSICS
GENETICS
GEOPHYSICS
NUMBER THEORY
MECHANICAL ENGINEERING
BIOMEDICAL ELECTRONICS
AERODYNAMICS
URBAN SOCIOLOGY
PROTOZOOLOGY
ETHOLOGY
TOPOLOGY
QUANTUM MECHANICS
METALLURGY
INDUSTRIAL PSYCHOLOGY
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CELLULAR CHEMISTRY
CELL PHYSIOLOGY
BIOPHYSICAL CHEMISTRY
BIOENERGETICS
INVERTEBRATE NEUROPHYSIOLOGY
CHEMICAL ENGINEERING
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