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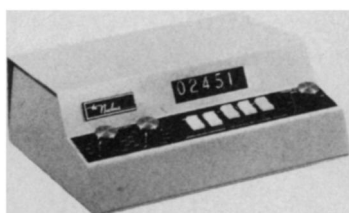
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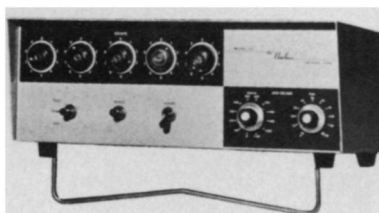
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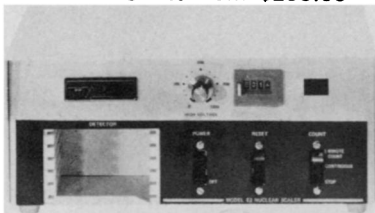
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# Conversation Pieces

Technically intriguing items  
from TRW, guaranteed to add luster to your  
conversation and amaze your friends.

**O**b Say Can You See Discussions about whether or not we should "go into space" often overlook a fundamental point—namely, that we are in space already. Each of us is an astronaut on a spacecraft called earth traveling around the sun at 18,000 miles per hour. The biological community that lives on the spacecraft has a fragile life support system—the thin film of soil, air and water in which we dwell. During the past century, the number of passengers aboard the spacecraft has increased tremendously; so also has their ability to consume its finite supplies. We see some of the results in the pollution of our environment and the decay of our resources.

As astronauts we need to take care of our spacecraft—to check on its status, to monitor its resources, and to see that we are not doing irreparable damage to its vital life support system. With this in mind, NASA has undertaken several programs which will bring the technology of space to bear on some very down-to-earth problems. One of these programs involves the development of advanced sensors. From the vantage point of a satellite orbiting the earth, these sensors will someday be able to monitor air quality, determine the condition of crops, or help locate mineral resources.

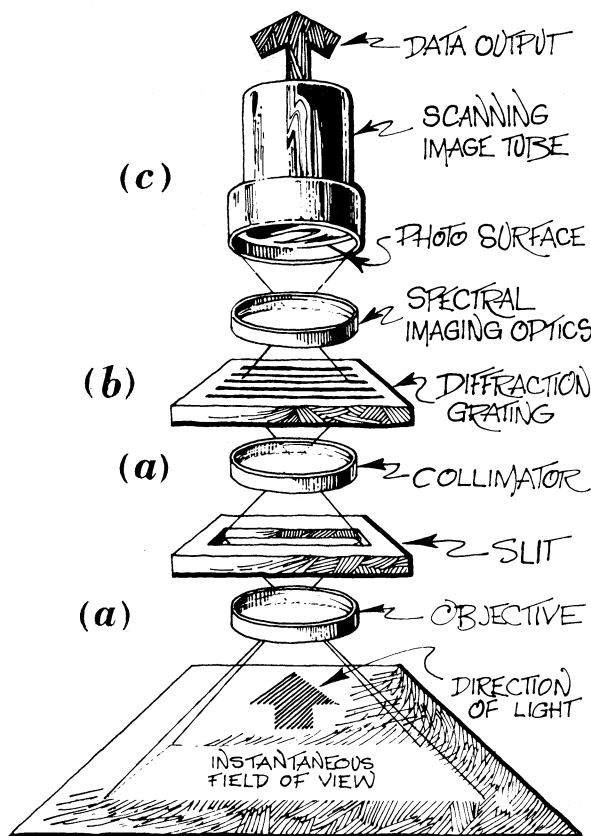
Currently, TRW is developing such a sensor for NASA. It is called MOCS, an acronym for Multichannel Ocean Color Sensor. MOCS is based on the principal that each object on earth reflects light in a unique manner. The light reflected from oil, for example, is quite different from that reflected from water. Thus the two objects can be distinguished on the basis of their spectral response or "signature." MOCS senses the radiation reflected from objects in its field of view and diffracts this radiation (see illustration) into its spectral components. It has better spectral resolution than any other available scanner.

MOCS weighs less than 20 lbs., has no moving parts, and uses only 7½ watts of power. Yet it has produced some fascinating information about the spacecraft on which we live. Recently, for example, we tested MOCS by flying it in an aircraft at 37,000 feet over Clear Lake in California. MOCS showed that the lake teemed with sediments, algae growth, and foreign matter. In fact, the only thing clear about the lake was its ironic name.

We're happy to be associated with the excellent work NASA is doing in remote sensing. We hope that MOCS and other NASA sensors will help make spacecraft earth a habitable home for us all.

## The Multichannel Ocean Color Sensor

Lenses (a) focus light through a slit onto a diffraction grating (b) which separates the light into its spectral components. These are focused on a dissector tube (c) which shows spatial variations of light across the field of view in one direction and spectral variations in the other. The raster scan then gives an electronic signal proportional to the spectral radiance of each spectral band in each element across the field of view.



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