check out the solar power generating system, the solar power proposal has the advantage of containing fuel resources and avoiding pollution. The system could eventually save many of our energy problems but present difficulties lay in satellite launch and maintenance, development of high density (energy) microwave beams, and the ability to work through the variety of atmospheric conditions without adverse effects on efficiency and environmental quality.

**Raytheon** is studying the possibility of using the sun's temperature gradients as a source of electric power. In many cases the necessity of the temperature difference in temperature between the warm surface and the cooler depths may be as much as 40°F, thus providing acceptable conditions to boil and condense thermal fluid in the warm surface and vapor state, the thermal fluid is at 400°F, thus providing acceptable conditions to practical plants. Other advantages include the absence of air pollution, no solid waste disposal, and less detrimental thermal pollution. The concept is already believed to be economically feasible, and the present objective is to confirm the engineering practicability. No mention was made of possible environmental effects of a large scale disruption of ocean temperature patterns that might result from excessive exploitation of the solar power.

**RCA** has independently going on the development of liquid crystal displays for use in watches, clocks, calculators, and other instruments. Viewed as the next step beyond LEDs (light emitting diodes), which have been increasingly replacing micro tubes, liquid crystals are flat, low-power devices which can display any desired information. Controlled and operated by solid-state integrated circuits, the display consists of a row or two grid plates, with conductive coatings, which are separated by a thin layer of liquid crystal material. RCA will initially concentrate on numerical displays for watches, clocks, and lab instruments. These are the most promising intermediate markets because of the low cost and power consumption of the displays. Liquid crystals may find future applications in everything from computers to autos, many of these uses requiring the alpha-numerical capability of the displays. The 1973 market for liquid crystal displays could be estimated at $6 million by the projected 1977 that number could exceed $100 million worldwide. Liquid crystals were first demonstrated by RCA in 1965.

GE has also unveiled a liquid crystal demonstrator which has two lines of 16 characters, each character being made up of 16 segments arranged in a asterisk pattern. The display is made by introducing a thin layer of transparent nematic liquid crystals between two plates of glass. The top plate is coated with conductive film, patterned to form two rows of 16 electrodes. The lower plate is coated directly beneath each electrode in the 16-segment asterisk pattern. As various combinations of the segments are activated by an electrical charge, a specific character is formed. The patterns can form a total vocabulary of 10 different characters in ASCII, the standard code for "written" computer communications. To activate a specific character, a frequency change in the led to that character causes a change - low frequency causes the liquid crystal fluid to become cloudy; while high frequency returns it to transparency. Transmission speed is from 10 to 30 characters per second. GE has used their display in a demonstrator unit that works like a push-button telephone and computer with computers. No plans exist presently for commercial production.

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