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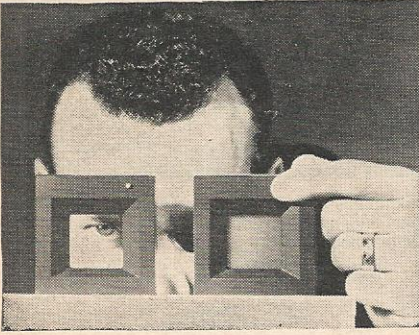
How to Get Started
in 2-Way Radio

see page 32



NEWS BRIEFS

LIQUID CRYSTAL DISPLAYS

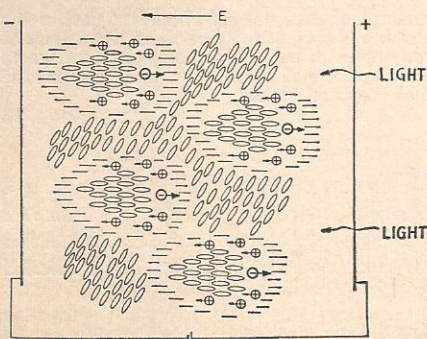


Clear and frosted. The only difference between the two windows is that an electric field has been applied to the one on the right, causing the liquid crystals to become opaque.

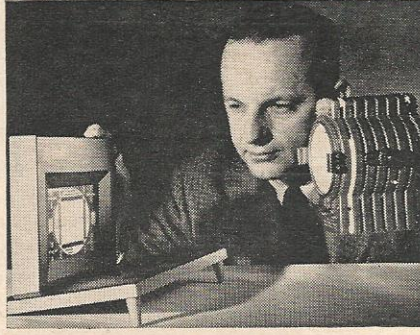
A major step toward flat TV screens and similar display devices has been made by RCA with their announcement of flat, low-power low-cost displays using a newly discovered electro-optical effect of liquid crystals. Displays shown recently by RCA can reproduce any graphic data electronically and can be addressed and driven by integrated circuits.

Liquid crystals are organic compounds having the mechanical properties of a liquid—they can be poured—and the regular molecular arrangements of a solid crystal. RCA Laboratories, Princeton, N.J., determined that certain transparent liquid crystals turned milky white when exposed to electric fields. When the field was removed they reverted to their transparent state.

What actually happens to the liquid crystal is shown in the diagram. When an electric field is set up it creates ions that travel through the crystal material. These traveling ions then produce a turbulence that causes a scattering of light which gives the liquid crystal its milky appearance.



Ions in transit cause disruptions in liquid crystal that result in turbulence that turns liquid white. The ions are created when an electric field is applied to the liquid crystals.



Images are seen by reflection and grow stronger when light shining on the display is increased. The contrasts with most displays, such as CRT's which "wash out" under bright light.

To build a display a film of liquid crystal only 0.001" thick is placed between two sheets of thin glass. The inner face of each glass sheet is coated with an electrode and at least one of these electrodes is transparent. In effect, the display is a parallel-plate capacitor in which the liquid crystal acts as a dielectric. Displays have been built as large as 3 x 4" and there seems to be no reason to prohibit making substantially larger versions.

Little power is needed to operate the display. The gray scale varies with the intensity of the applied voltage, which can range from 6 to 60 volts. Power is 1 mw per square inch, either dc or pulsed. Pulsed power is used when motion is required, the pulses being addressed to individual minute areas of the display in proper sequence.

RADAR "COLANDER"

For draining spaghetti it's not. This radar antenna complete with 16,000 holes is the receiving array for a scaled-down prototype of a new phased array radar system called ADAR (Advanced Design Array Radar) being built by Hughes Aircraft for the Air Force. "Colander Girl" Joyce Molkey is holding two of the 16,000 energy feeds that will extend from the holes.



FCC GETS SUPREME COURT OK TO REGULATE CATV SYSTEMS

In a 7 to 0 decision the Supreme Court has upheld the authority of the FCC to regulate CATV (Community Antenna Television) systems. The Court's statement said that Congress had given the FCC "broad responsibilities" to control the orderly development of local TV broadcasting. It went on to say the FCC was right in taking the stand that "successful performance of these duties demands prompt and efficient regulation" of cable transmission systems.

This decision reversed an earlier ruling by the Court of Appeals and immediately affects cable companies in Los Angeles and San Diego. However, the ruling is likely to affect other cable operations throughout the U.S.

ELECTRIC MINI-BUS

Capable of speeds to 35 mph, this 12-passenger electric bus is powered by two 84-volt Exide industrial-type



lead-acid cells. The vehicle, made by Batronic Truck Corp., Boyertown, Pa., uses SCR controls to provide fast starts, smooth operation and maximum range. Truck versions of this vehicle are also available.

MORE SPECTRUM AVAILABLE

The Federal Government has just announced it is turning back half of the frequency space between 890 and 942 MHz. This space will be reassigned to nongovernment users by the FCC. According to *Television Digest*, TV engineers and broadcasters want to assign this space to mobile radio. The exact frequencies to be made available are still to be determined.

WM. LYON McLAUGHLIN 1900-1968

As our Technical Illustration Director he was primarily responsible for the thousands of circuit diagrams and other illustrations that have graced our pages for the past 24 years. As a friend and artist he will always be fondly remembered.

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