

the use of the high-frequency television bands, "ghost free" reception was possible for the first time in the history of television. "Ghosts" in television are similar to echoes in radio and appear as shadows on the television screen.

The manufacture of receiving and transmission equipment for color television is already in progress. The Gen-

eral Electric Company has taken the CBS receiver developments and will turn them into commercial products. The first are scheduled to be completed by the end of January, 1946. The studio equipment developed by CBS technicians is now being manufactured by the Westinghouse Electric Corporation.

Science News Letter, November 10, 1945

base exchange bed has become high enough, the magnesium is dislodged by passing through what is essentially concentrated sea water—a 15% solution of sodium chloride. Partial evaporation of this brings down the common salt in solid crystals; the magnesium chloride flows out, still in solution, and may then be finally evaporated down and the magnesium extracted electrolytically.

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Copper sulfate is used to dull or deepen the shade of dyed leather.

ELECTRONICS

Located Nazi Submarines

► THE STORY of the development of sono-radio buoys, that located Nazi submarines under the waters of the Atlantic and guided Allied destroyers to the spot for the kill, can now be told.

Visual and radar sighting served well as long as the enemy U-boats stayed on the surface but were of no value when the subs remained under water. The sono-radio buoy gave the airplane ears to hear, locate, and to follow a submerged U-boat.

The warned airplane could itself attack or call destroyers to the spot.

By relaying subsurface noises to the plane, the sono-radio buoy also made it possible to know the outcome of the attack. Sometimes the propeller beat of the U-boat as it fled the scene could be heard. Sometimes ominous break-up noises followed by silence testified to the death of the sub.

The sono-radio buoy, according to Dr. John T. Tate of the National Defense Research Committee, was a development of Division 6 of that committee, carried out under contract with Columbia University, Division of War Research, at the U. S. Navy Underwater Sound Laboratory at New London, Conn.

"The sono-radio buoy," Dr. Tate states, "was not a flash of genius springing from the brow of an inventor. Rather it was one of the results of purposefully bringing a group of trusted scientists and engineers into intimate and continuing contact with the progress and problems of U-boat warfare as it developed in the Atlantic."

The idea of the sono-radio buoy was not new, he said, but was taken from a heavy moored type of buoy, developed by the Naval Research Laboratory, for use in harbor protection where cable-connected hydrophones were not practical. But the adaptation to use a device of this sort from airplanes in U-boat warfare was new.

The problem was to develop a sono-

radio buoy light enough to be carried in quantities by airplanes, cheap enough to be expendable, and rugged enough to withstand the shock of water entry. In addition it had to have battery-power sufficient for several hours' life, and adequate acoustic and radio range.

The floating sono-radio buoy picks up the sounds of a submerged U-boat by hydrophones which change the sound waves in the water into small electrical voltages which are amplified and converted into radio waves in the transmitter part of the buoy. Airplanes carried receivers tuned to the same frequency of the buoy transmitters.

Operators easily learned to distinguish between natural underwater sounds and foreign underwater noises. After locating an underwater craft and flashing word back to the destroyer base, the plane hovered over the spot and, by dropping additional buoys, followed the U-boat along its course.

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CHEMISTRY

More Efficient Method For Extracting Magnesium

► MORE efficient, hence cheaper, extraction of magnesium from sea water is promised through a newly patented method developed by two chemists employed by the Dow Chemical Company at Midland, Mich., Dr. John J. Grebe and Dr. William C. Bauman. They have assigned to their employing corporation rights in their patent, No. 2,387,898.

Although the application is new, the principle involved has been used for a long time in water-softening systems, in which the undesired minerals are seized and held fast by what is known as a base exchange agent, such as sodium aluminum silicate. Such a base exchange agent is used in the Grebe-Bauman method for extracting the magnesium from the sea water. When the concentration in the

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