

## ELECTRONICS

# Plastic-Embedded Radios

Warborn plastic protects radios and electronic equipment potted in it. NBS casting resin was used to house printed wire circuits.

➤ "POTTED" radios and electronic equipment, embedded in a plastic for protection against rough handling and atmospheric conditions, will open new fields for electronic devices in industry and the home, scientists at the National Bureau of Standards predicted.

The forecast was made with the disclosure of a secret warborn plastic, developed for "potting" electronic circuits. One use of the plastic was to house the flat, printed wire electronic circuits of the radio proximity fuze.

The clear, transparent plastic is called NBS casting resin. It meets the special mechanical and electrical requirements of a material for shielding delicate tubes and circuits without interfering with the operation of the electronic equipment.

Six different chemical compounds are used in making the plastic which may one day hold your own pocket radio or hand-sized radio sending and receiving set.

In casting, or "potting," a radio or electronic circuit, the liquid casting resin is poured over the circuit in a container. Curing in an oven converts the liquid plastic into a smooth, clear solid.

When glass tubes are to be embedded in the plastic, the tubes are protected by rubber jackets or other covering before being cast.

NBS casting resin was developed by chemists P. J. Franklin and M. Weinberg of the Bureau of Standards.

Protected by the casting resin, now-fragile electronic devices can find many more uses. As well as rigidly embedding the circuits, the plastic provides excellent electrical insulation.

In addition to small radios, which could be protected by the plastic and tuned by a pin or screw, other applications predicted for the casting resin include hearing aids and subminiature electronic control devices. In heavy industry, the transparent material can be used to shelter high-impedance control devices. NBS casting resin shields the circuits from vibraton, acid fumes, high humidity, salt spray and other conditions which are encountered in some

industries.

The casting resin is nearly one-third 2,5-dichlorostyrene by weight, with slightly more than 20% each of poly 2,5-dichlorostyrene and styrene monomer. Hydrogenated terphenyl and polystyrene each form more than 10% of the plastic's weight, with one-half of one percent of a solution containing 60% divinylbenzene.

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## BIOCHEMISTRY

## Thyroid-Slowing Drug Grows Longer Feathers

➤ CHICKENS can be made to grow sickle and saddle feathers two or three times as long as usual by feeding them a small quantity of the thyroid-slowing drug, thiouracil. These exceedingly long feathers are very narrow. Often the feather is twisted so that parts of both the front and back can be seen at the same time.

To discover how the so-called "Japanese long-tailed" fowl was induced to grow such extraordinarily long feathers, Prof. Mary Juhn and Prof. M. A. Jull, department of poultry husbandry of the University of Maryland, experimented with the diet of several hybrid fowl. The greatest increase in length occurred in the long, curved sickle feathers and near-by back feathers known as saddle feathers.

When one of the roosters was six months old, they pulled out several typical feathers for later comparison, then placed the fowl on a thiouracil diet. As little as one-half per cent of the drug by weight was added to the regular mash on which the bird had been fed. Within nine months the two main sickle feathers, normally about 14 inches long, each measured 25.5 inches. And more important yet, they were still growing. Several months later one of the feathers had been lost, but the other had obtained its full growth of 33.5 inches.

Experiments with another cock showed that the saddle feathers produced by a bird that had been treated with thiouracil for a long time tended



**DRUG-GROWN**—Short feather is a mature sickle feather produced by a hybrid cock. The long sickle feather, measuring 33.5 inches, was produced by the same fowl during the time he was fed the drug.

to become longer than those grown when the rooster was newly placed on the diet.

Oriental birds, famous for their long feathers, receive special care and are closely caged, the scientists state in a report to the *Journal of Heredity*. They are fed with great care, being given unhusked rice, cabbage and other vegetables.

Although these birds have undoubtedly been bred to produce long feathers, some item in their diet, possibly cabbage, may have an effect similar to the drug and be important in achieving the feather lengths. Systematic pulling on the feathers probably would not increase the length, they suggest.

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## INDUSTRY

## Shipping Clams

➤ CLAMS can be shipped all the way from Alaska to the Pacific Northwest and arrive in edible condition, when treated by a process described by Prof. Cecil G. Dunn of the Massachusetts Institute of Technology. The shucked clams are first dipped into a mixture of brine and sodium benzoate, then packed in crushed ice. In this condition they keep their flavor and are free of spoilage for two weeks.

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