ENGINEERING

Film Protects Radio

Immersion in vapor provides invisible armor to protect radio insulators against moisture. Nine times as effective as customary waxing. Numerous uses proposed.

➤ ACHILLES was made impenetrable to hostile weapons because he had been dunked in the River Styx. An even more impressive (and useful) kind of invulnerability has been produced in the General Electric research laboratories, in which wetness is the hostile weapon and immersion in a mere vapor provides the invisible but impenetrable armor.

One of the toughest problems faced by radio engineers working for our armed forces has been water getting into the porcelain insulators. When that happens, they don't insulate any more, and the set weakens—even stops working altogether. Usual practice has been to treat the insulators with wax; but that is rather impermanent.

Dr. Winton I. Patnode, research chemist, has developed a new treatment for these insulators that is said to be about nine times more effective than waxing them, and with permanent results that defy heat, chemical solvents like gasoline, naphtha and carbon tetrachloride, and long exposure to ordinary weather.

Objects treated with it simply won't let water wet them. If moisture precipitates on them, it remains rounded up as small droplets, and the wide dry spaces between continue to defy the electricity to pass.

The process is quite simple, but as yet not at all well understood. The objects to be made water-repellent are simply placed in a closed cabinet, and the vapors of one of a group of substances known chemically as the methyl chlor silanes are flooded on them. An after-treatment with ammonia vapor is sometimes desirable, to neutralize corrosive acids that may collect during the moisture-proofing.

Dr. Patnode has been unable to demonstrate the presence of a tangible film on his treated insulators, either with chemical reagents or examination with a high-power microscope. Yet their behavior shows that they are wearing "invisible raincoats."

Numerous other uses are proposed for the new wet-refusing films, most of which must remain undisclosed for the present.

One such use, however, promises to make life in the laboratory a lot happier. Everybody has noticed how water rises in a slight curve where the edges of its surface come into contact with the tube or vessel containing it. This curve, called the meniscus, makes it hard to read gauges, glass measuring flasks and other laboratory vessels that require highest possible accuracy. If the inside of the glass is given this water-repelling film, the meniscus does not form and the surface is perfectly flat, making readings far easier to take.

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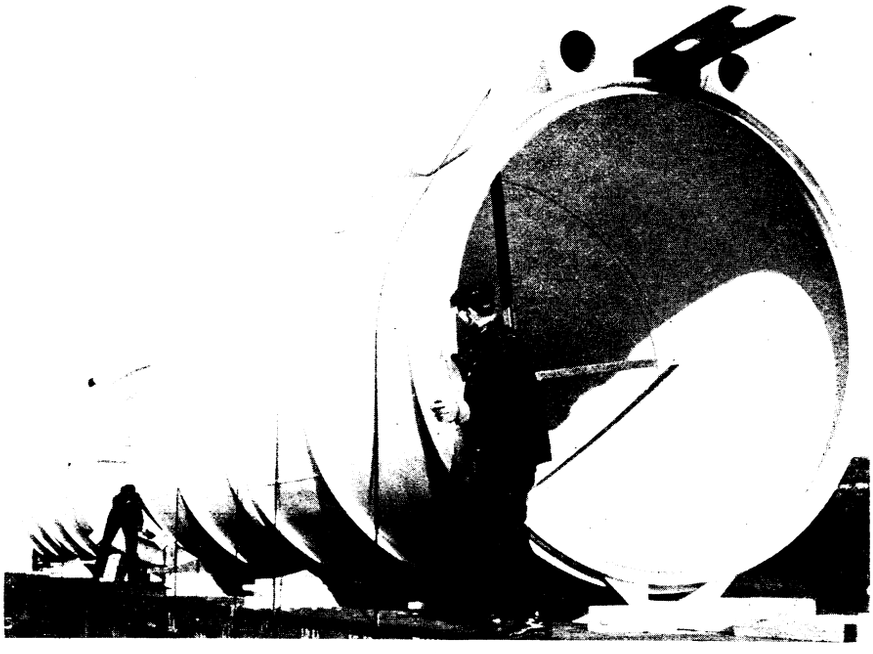

TOUGHENERS—In these seven-ton furnaces built by Westinghouse Electric and Manufacturing Co., gun barrels will be hardened and tempered. These shells will later be lined with brick and equipped with chrome-nickel alloy heating elements to produce 1650-degree temperatures.

MEDICINE

New Operation for Repairing Torn Nerves

➤ A NEW operation for repairing injured nerves is reported by Dr. David Bodian, of the Poliomyelitis Laboratory, Johns Hopkins University (*Journal, American Medical Association,* Feb. 27).

The operation was designed for cases in which there is a large gap between the ends of a nerve that has been cut by accident or other injury. Such gaps are too large for the nerve itself to close by putting forth new nerve tissue and surgeons have heretofore used other methods in attempting to fill the gap. Transplanting a piece of nerve has been one such method.

Dr. Bodian has devised a "sliding sleeve extension" for closing such gaps in torn nerves which has advantages over other methods of nerve repair. The sleeve is made by freeing the nerve sheath and underlying outer bundles of nerve fibers from one stump of the cut nerve. This sleeve is then drawn up to meet the other stump of the cut nerve and attached to it by surgical stitches. New nerve fibers growing from both ends of the cut nerve are protected by this sleeve of nerve sheath from injury by other tissues that might encroach on them and have a favorable environment in which to grow and unite.

The operation should be performed early if possible in injuries to large nerves, Dr. Bodian states. So far he has only used it on monkeys but the early results suggest that functional recovery will follow about as rapidly as with nerve grafts. Several animals who had