

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 be-

havior 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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MEDICINE

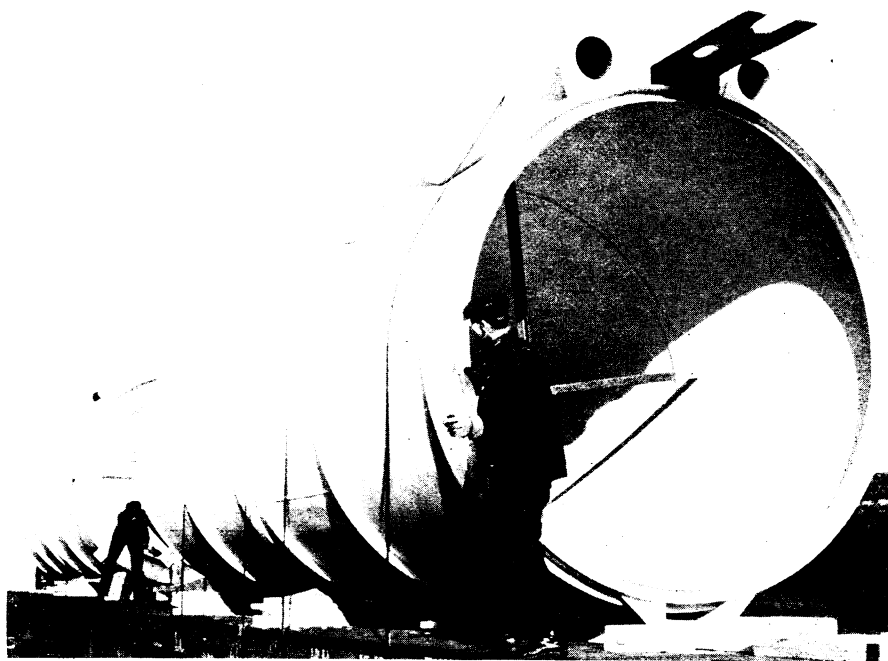
New Operation for Repairing Torn Nerves

► 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



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.

this operation were able as a result to move their toes again three to four months after loss of about an inch of a large nerve in the leg.

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MEDICINE

Empyema Remedy Found In Disinfectant and Detergent

► EXCELLENT CLINICAL results in the treatment of empyema (a serious chest infection) have been achieved by a combination of the disinfectant azo-chloramid, and the synthetic wetting agent, sodium tetradecyl sulfate, Dr. Orville Wyss, of Wallace and Tiernan Products, reported at the meeting of the New York Bacteriologists' War Research Projects Group.

Synthetic wetting agents or detergents are generally known to the layman as soap substitutes. Their effectiveness against bacteria, or germs, is due to their property of concentrating around the bacterial cells and bringing about a disturbance of the electric charge distribution on the cell wall. This disastrously upsets the vital chemical processes of the germs.

The wetting, penetrating and pus-dispersing properties of these soap substitutes or synthetic detergents can be used in the treatment of infected wounds by combining them with antiseptics, Dr. Wyss stated. Many other practical applications of such combinations, he added, suggest themselves in other fields besides medicine.

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INVENTION

Safety Hand Truck Invented For Moving Explosives

► A SAFETY hand truck for moving explosives about in arsenals and factories is the subject of patent 2,309,145, granted to J. E. Turnock of Riverton, N. J., and J. E. Kirk of Philadelphia. It mounts an easily and cheaply replaceable wooden box body on a low-slung metal frame, rolling on rubber tires. Except for the shielded steel axle, all metal parts are of brass or other metal that will not strike sparks. Even the hub caps are carefully made of brass. Rights to manufacture and use, without royalty, are ceded to the government.

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Mate (pronounced mah-tay) brewed from the leaves of the mate tree is used by 12,000,000 South Americans instead of Chinese or India tea.

AGRICULTURE

Wallace Visits Institute

Inter-American research program expected to improve production of rubber, cinchona, tropical fruits and other crops. Vice President sees increase in natural rubber.

► RUBBER, cinchona, tropical fruits and many other crops of importance to America in both war and peace are expected to benefit by research at the new Inter-American Institute of Agricultural Sciences at Turrialba, Costa Rica, which was dedicated on the occasion of Vice President Henry A. Wallace's visit there.

As Secretary of Agriculture, Mr. Wallace was greatly interested in the promotion of agriculture in the American tropics, as a means for providing the countries to the south with products which would supplement, rather than compete with North American agriculture, and thus afford a substantial basis for the "good neighbor" program.

At Turrialba, the Costa Rican government has provided 1200 acres of the finest upland soil to be found in the American tropics. Formal title was transferred to the Institute late last month, although initial phases of actual field work had already been in progress for some time. This locality, at 2,000 feet above sea level, was chosen because less than two hours' ride by car or train can carry the investigator through an almost complete cross section of tropical American conditions.

Scientific work at the Institute is to be entirely research on the post-graduate level; no undergraduate courses are contemplated. Facilities of research stations in other Latin-American countries have already been made available. Until the war is over, only temporary buildings will be erected; however, plans for the permanent plant are already drawn up, and construction can go forward rapidly once materials and manpower are released.

Research is already in progress at the Institute on rubber, cinchona, foodstuffs and tropical hardwoods. Work will begin soon on plants providing oil, fibers and insecticides.

At a press conference immediately before taking off, Vice President Wallace expressed the liveliest interest in the plant breeding program to be carried on there, especially in the breeding of rubber trees of higher productivity and greater resistance to disease. He expressed the opinion that "Plant breeders have

been making, and can and will make, as rapid progress in increasing production of natural rubber as chemists can make in the production of synthetic."

Director of the new Institute is Dr. Earl N. Bressman, formerly with the Coordinator of Inter-American Affairs. Secretary is José L. Colom, of the Pan American Union.

From Costa Rica the Vice President and his party will proceed to Panama, thence southward for visits in Chile, Bolivia, Peru, Ecuador and Colombia, returning to Washington late in April.

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INVENTION

Dornier Seaplane Design Has No Wing Floats

► A SEAPLANE that dispenses with wing floats, source of much trouble, is the subject of newly issued U. S. patent 2,311,161, granted to Claude Dornier of Friedrichshafen, Germany, one of the boldest and most prolific of airplane designers.

Wing floats of present types, Herr Dornier explains in his preamble, are nuisances in the air because of the extra drag which they occasion, and create difficulties on the water by causing disagreeable and sometimes dangerous rocking. He gets rid of them entirely by creating a sharp "elbow" in each wing, and causing the plane to rest on these when it is down, like a huge aquatic bat.

The wings' roots spring from high up on the hull, so that technically the craft is a high-wing monoplane. However, they immediately arch sharply downward, so that at a point about one-third of their length they are practically at a level with the bottom. Here they bend upward again, creating the aforementioned "elbows" which serve as floats. Landing wheels can also be pivoted at this point, folding upward into the wing-roots when the plane is in flight.

Herr Dornier's patent, which was applied for in 1938, is vested in the Alien Property Custodian for the duration.

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