

TRANSFORMER OUTFITS FOR THAWING PIPES.

The manifest superiority of electricity as a thermal agent in thawing frozen pipes, and the field for this service that awaits development, has attracted a considerable amount of attention on the part of central station managers, many of whom have improvised outfits for this purpose. There has arisen a very general demand for thawing outfits that shall have a range in capacity to cover all ordinary requirements; shall be portable, easy to connect, and moderate in price, and to meet this demand the Westinghouse Electric and Manufacturing Company has designed the two transformers herein described.

The larger of the two outfits, which is shown in the illustration, weighs complete, with transformer, switchboard, and base, 750 pounds. It occupies a floor space 2 feet 4 inches by 1 foot 10 inches, and is 1 foot 7 inches in height. A link in the top of the transformer case affords a means of lifting the outfit, and if desired, truck wheels may be attached to the wooden base. It will be seen that it is of small size and is very light in weight, giving it a superior portability.

The transformer may be operated satisfactorily on circuits varying from 1,800 to 2,500 volts. The low tension is arranged to deliver approximately 500 amperes for several hours at an E. M. F. from 15 to 50 volts. By a simple change in connections, the windings may be arranged to deliver about 1,000 amperes at voltages from 8 to 16, for thawing large mains whose resistance is generally low. It is suitable for thawing anything from a one-half inch pipe to a one-foot main.

The transformer is generously designed, and will deliver large overloads for short periods of time. The windings are air-cooled. The insulation is not injured by rain, snow, or ordinary abrasion. There are no moving parts to get out of order, and the entire outfit is contained in a single unit.

A light but substantial switchboard is mounted upon the high-tension end of the transformer. The switches are of the inclosed-plug type, such as are used upon high-tension arc-light circuits, and permit a variation of the low-tension voltage and consequently the current supplied to the pipes. The switches are so arranged that it is impossible to make a wrong connection.

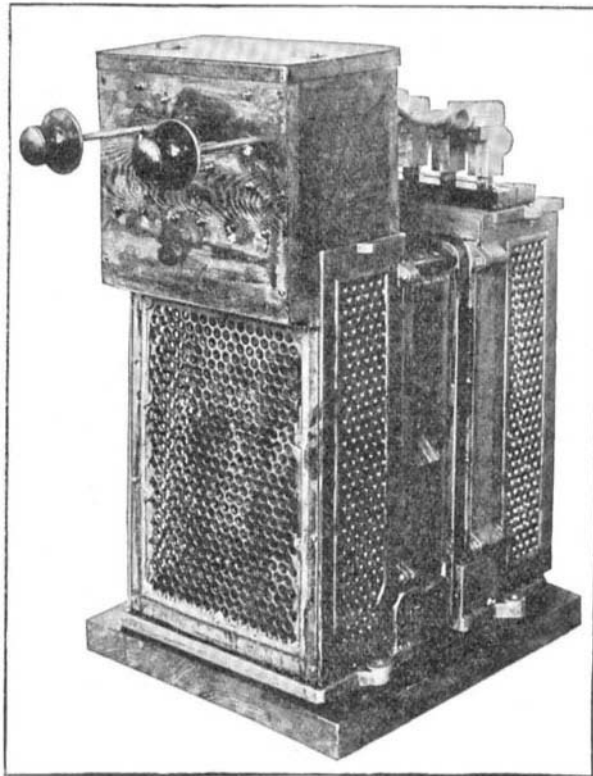
The smaller transformer outfit is particularly adapted for thawing service piping about dwelling houses. It is light, of such proportions as to make it easy to handle and is mounted in a wooden box provided with a handle and shoulder strap. It has a capacity of 200 amperes at potentials up to 25 volts for one hour. It is arranged for operation off a nominal 2,000-volt circuit, but can be supplied for any other primary voltage to as low as 200 volts. The voltage regulation and current control are obtained through plug switches in the high-tension circuit.

When desired, these outfits are furnished with a current-measuring device, so that the operator may know the amount of current that is being used.

A NEW TYPE OF LIFEBOAT.

The lifeboat "Uradd," which forms the subject of the accompanying illustrations, is of a type that certainly has strong claims to originality, and judging from her remarkable trip across the Atlantic, she may surely claim to be an extraordinarily safe craft. She left Alesund, Norway, on the seventh day of August last, bound for New York, and following a northern route she arrived at the Shetland Islands four days later. She left the Shetland Islands on the twentieth of August and arrived off Cape Spear, on the coast of Newfoundland, on November 16. Because of the stormy weather, however, she was unable to make

port; but being observed by a passing fishing boat, she was piloted into Petty Harbor for the night, and on the next day she made St. Johns. This novel craft was designed by Capt. O. Brude, of Norway, specially to compete for a prize offered by the French government for the construction of a type of lifeboat which would reduce the loss of life in marine accidents to a minimum; and it must certainly be admitted that the suc-



TRANSFORMER FOR THAWING OUT FROZEN WATER PIPES.

cessful test which she has undergone entitles her to a large measure of consideration.

This curious little craft, which may be roughly described as egg-shaped, is 18 feet in length over all and measures 8 feet on the keel. She is built entirely of steel, the frames being steel angles, and the skin being thin steel plating. She has been designed to accommodate as large a number of people as possible, and it is claimed that twenty persons can be made fairly comfortable, and that she is capable of carrying safely, in an emergency, as many as twenty-five. She is of four tons burden. On her trip she carried a crew of three men besides the captain, and they arrived after their long voyage in the best of health and spirits.

It will be seen from our engravings that the vessel carries a lug sail which can be operated from below decks, the halyards and sheets being led in through holes in the plating and coiled conveniently inside, as shown by letter *F* in the engraving. A couple of lifelines run fore and aft on the deck, and an anchor is secured forward near the stepping of the mast. Forward on either beam is a large porthole, and aft is a conning tower pierced with four water-tight portholes, through which a lookout may be kept in stormy weather. The interior of the craft is shown in the accompanying views. Down through the center extends a table *A*, and along the sides are seats, *B*, which may be used as sleeping berths, the seats being upholstered in morocco leather. Back of the seats against the side of the vessel are cork pads, *C*, for protection of the crew when the vessel is being tossed violently in heavy

weather. The tiller, *D*, may be used either from the inside or outside of the vessel. The steersman stands with his head in the conning tower, *G*, and his hand on the tiller, and the sheets and halyards are led to convenient positions within the cabin. There is a water-tight hatchway, *H*. The vessel is provided with a kerosene cooking stove, and that she is possessed of an abundant storeroom is shown by her lengthy trip across the Atlantic Ocean.

Tree Planting on the Pennsylvania Railroad.

At the recent convention of the American Forestry Association, in Washington, D. C., Mr. Joseph T. Richards, chief engineer of maintenance of way of the Pennsylvania Railroad, gave an address on timber cultivation to supply railroads with ties, and the following statements are taken from press reports of that address. Seedlings, two or three years old, cost by the time they are planted, including labor, 8 cents each. They were planted 10 feet apart, averaging about 400 to the acre, although 54,871 trees planted recently were placed 6 feet apart and 88,127 were set 8 feet apart. The total number planted by the railroad company is as follows: Newton Hamilton, 13,610; Conewago, 68,460; Pomeroy, 20,280; west of Atglen, 16,537; Atglen, 8,108; Juniata Bridge, 20,730; Newport, 29,505; Vintage, 50,300; and along the Atglen and Susquehanna Branch, 53,000; a total of 280,530 trees. The land, except a tract of 14 acres at Newton Hamilton, is owned by the railroad company. To supply the increasing needs of Pennsylvania alone Mr. Richards estimates that it will be necessary to plant 1,300,000 trees each year for a period of thirty years, the time required for a tree to mature.

A New French Submarine.

The new French submarine "Korrigan" has recently made a remarkable performance. It remained submerged for twelve hours continuously from 6 A. M. to 6 P. M. without coming to the surface for an instant. During all this time the men did not suffer, and the apparatus on board worked very well. The "Korrigan" belongs to the submarine station of the Tunis naval division. It is coupled with the "Farfadet." Both these boats are of the "Lutin" type. The boats of this class have a displacement of 2.04 tons with a length of 41 meters (133 feet) and a width of 2.90 meters (9.7 feet). Motive power is supplied by a set of storage cells. One screw is used. The speed of these boats is 12.2 knots at the surface and 7 knots under water. Their radius of action at the surface is 80 miles at 12 knots, and 140 miles at 7 knots. Four torpedo-launching apparatus form the armament. The "Korrigan" was put in service in 1902, and made some interesting performances at La Rochelle, where it was stationed, under the command of Lieut. Delpuch. Later on, the minister of the marine sent it to Tunis with the "Farfadet" to form the nucleus of the submarine station there. When the two boats made the voyage to the African coast they were taken in tow by a larger vessel, but the trip furnished some useful data as to this class of boats. The "Korrigan" is one of the best submarines of the fleet, and is handled with great ease. A few months ago, when piloted by Lieut. Delpuch, it sank in the Mediterranean at some distance off Bizerta, and then navigating with the periscope it entered the port of Bizerta and sent a torpedo against the cruiser "Tempete," which lay at anchor. The plunge of 12 hours which the "Korrigan" has just made is the longest which has been as yet obtained in Europe, and shows the progress of construction which has now been reached.



A, table; *B*, seats or berths; *C*, cork pads for protection; *D*, tiller; *E*, frames (steel angles); *F*, main sheet led through deck; *H*, watertight hatchway.

Length, 18 feet; Tonnage, 4 tons.

NAVIGABLE LIFEBOAT "URADD" WHICH CROSSED THE ATLANTIC IN THREE MONTHS.