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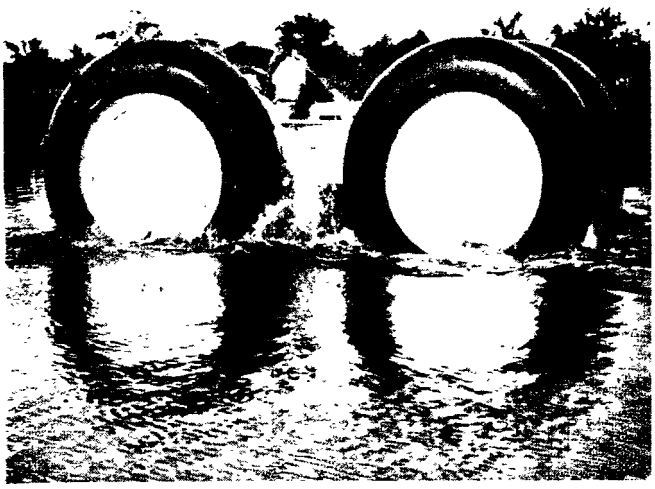


Traveling on the water at five miles an hour

to each wheel, which enables the buggy boat to attain a speed of five knots in deep water.

The center of gravity and the center of buoyancy have been calculated on this conveyance just as on other marine vessels. The buggy boat is so stable in deep water that it is practically impossible to tip it over, even though it were in a howling gale.

The Ford V-8 transmission is connected with a McCormick Deering transmission, and this arrangement gives ten speeds forward and six in reverse. To attain the tenth speed forward, both transmissions are thrown into reverse. The gear ratio varies from 33.76 to 1, with both transmissions in low gear, to 276.6 to 1, with both in high gear. Both in reverse give a gear ratio of 333 to 1.

There is no rudder on this sea-going craft, but it can be steered by means of the wheels, which operate with a differential action between either side. Each side can be braked separately. If the pilot wishes to turn to port while in deep water, he allows the starboard wheels to spin and brakes the port wheels. There are separate foot pedals for the brakes of each side, and so it may be said that the boat is steered with the feet, although the front wheels are also turned by the steering wheel in the desired direction.

The conveyance is 22 feet 6 inches long, 11 feet 8 inches wide, and weighs 7500 pounds without load. The wheelbase is 12 feet 6 inches and the tread is 8 feet 6 inches. The buggy is designed to carry 1000 pounds, which includes driver, crew, and instruments. Much saving in weight was accomplished by the use of aluminum and stainless steel alloys. Of the 7500 pounds total weight, about 3000 pounds is aluminum.

The buggy boat uses a compass exclusively when on location. There are no landmarks in the swamps. Everything is shifting, nothing is stable. Where there is solid ground today there may be a small lake tomorrow, and a lake which boasted a depth of 10 feet, may be overgrown with bulrushes in a few weeks. Should a compass break down, by any chance, it is always possible to find one's way home, for the tire tracks serve as infallible guides—provided there are not too many of them! The buggy is also equipped with both sending and receiving short wave radio sets so that it can keep in communication with its station at all times.

The original idea for the vehicle was that of A. A. Lane, mechanical engineer of the Gulf Research and Development Company, subsidiary of the Gulf Oil Corporation. The detailed design work was done jointly by Lane and E. W. Jacobson, assistant engineer, under the general supervision of R. J. S. Pigott, staff engineer. The tires were designed and built by the Goodyear Tire & Rubber Company, while the traction links were built by Goodyear according to Gulf design. The wheels were fabricated by the Goodyear Zeppelin Corporation, while the buggy was assembled in the Gulf Research Laboratory shops at Harmarville, Pa.

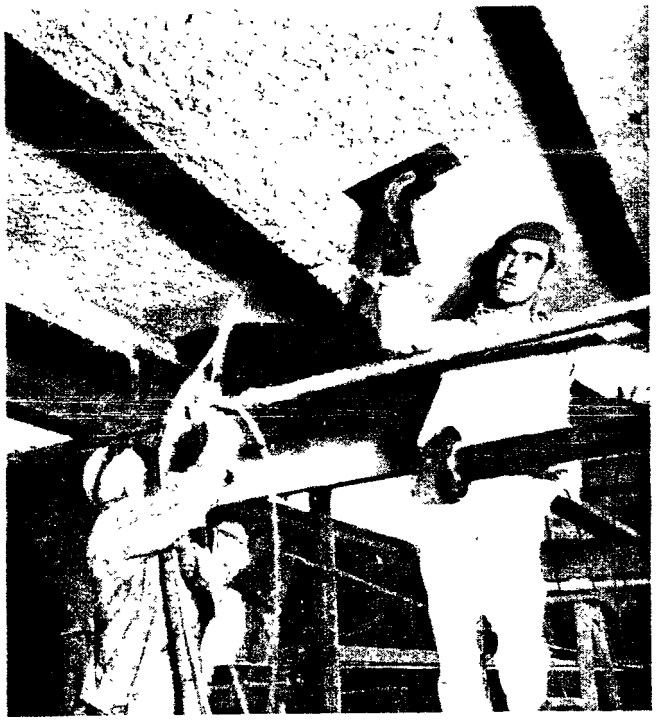
Insulation Sprayed on Like Paint

Insulating to conserve heat and cold has become a science. Once familiar chiefly as a covering for steam pipes, insulation has broadened its field of usefulness so rapidly in recent years that it occupies a highly important place in modern shipbuilding.

The newest development in this field is a method of applying asbestos coating to practically any type of surface, large or small. Presented to the insulation trade by Keasbey & Mattison Company, this product is known as K & M Limpet Sprayed Asbestos.

Application is easy, with simple equipment. Any good mechanic, painting or plaster craftsman can learn the method of application in a few hours at the Spray School of Keasbey & Mattison Company, Ambler, Pa. A training course, covering all phases of the work can be completed in a week's time.

Sealed asbestos insulation providing 100 percent coverage at any required thickness on any normal surface—metal, wood, cement, brick or plaster—is readily applied. There is no cutting, fitting, or support of loose or blanket insulation materials. There are no joints, and regardless of shape, the surface is completely sealed. Even coverage is assured on angles, I beams and projecting surfaces. Pebbled or smooth surface finishes are possible, either natural or colored, as well as surfaces designed



Spraying K & M Limpet as a deck insulation

for sound absorption or acoustical treatment. Hard surfaces are provided to withstand abnormal conditions, reinforced if necessary, in addition to waterproof surfaces to weather exposure. By virtue of the asbestos content, fire-resisting qualities are high. K & M Limpet Sprayed Asbestos is vermin-proof, and can be so surfaced that all danger of pocketing or trapping noxious gases is eliminated. The material is odorless in the presence of moisture.

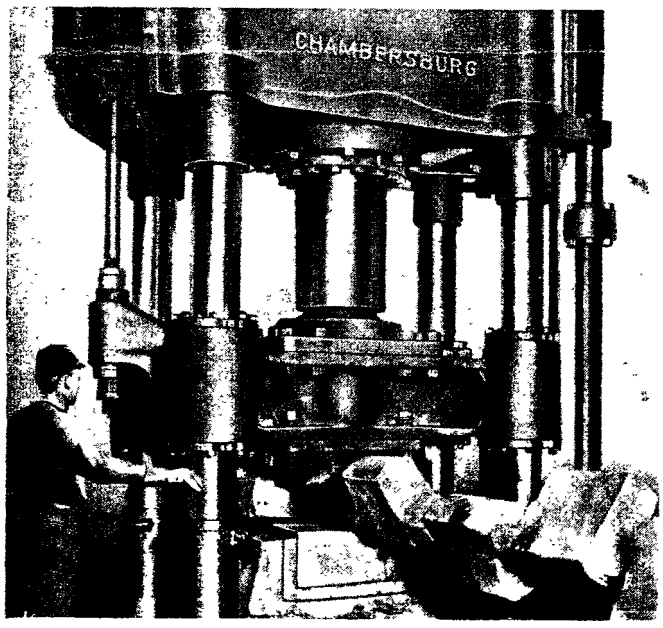
One of the first shipbuilding companies to use this method of insulating and condensation connection was the Sun Shipbuilding and Dry Dock Company, Chester, Pa. Already the Gulf Refining Company tankers,—*Gulf Belle* and *Gulf Dawn*, have had the underdecks and bulkheads insulated in this simple, highly efficient way. The Virginia Ferry Company's streamlined ferryboat, *Princess Anne*, has the entire stack uptake and stack house thus insulated to add to the comfort of passengers in adjoining compartments.

The lightness in weight of this material, 6 to 8 ounces per square foot 1 inch thick, compares favorably with that of conventional methods of insulation. In figuring the cost of application, it is necessary to count only the weight of material, since no special preparation or supports are required.

High-Speed Forging Press

It is claimed that heavy forgings may be forged quickly and economically to a close degree of accuracy by the high-speed steam-hydraulic forging presses recently added to the line of the Chambersburg Engineering Company, Chambersburg, Pa. These presses are manufactured and sold by the Chambersburg company, by arrangement with the United Engineering & Foundry Company, Pittsburgh, Pa., and under Davy Bros. Ltd. patents.

The Chambersburg "United" steam-hydraulic forging press is built in two general styles; the single-frame and the four-column models. Both embody the same principles and application, the difference being only in capacity and physical features. The essential elements are the press, the steam intensifier and the water reservoir or prefiller tank.



Steam-hydraulic forge press by Chambersburg

Close control of the intensifier or forging stroke is attained by a controlling gear attached to the intensifier, which operates to close the steam valve at a point of the intensifier stroke corresponding to the position of the hand lever. Thus a slow movement of the hand lever results in a correspondingly slow squeeze of the press, and stopping the movement arrests the action of the press. This gives the operator complete control of the action of the machine, a particularly valuable feature when cutting off or when a bending operation is being performed.

The single-frame press is built in 150-ton and 500-ton sizes. The four-column model is built as a single-cylinder press up to the 1500-ton size, and as a duplex ram press from 2000-ton capacity upwards.

These presses embody a patented steam saving device, utilizing exhausting steam for useful work at the beginning of the following lifting or pressing stroke; which produces a saving in steam consumption averaging 25 percent of the consumption of any other make of steam intensifier. Another valuable feature claimed for this system is a marked increase in speed of operation.

Commission Outlines Construction Loan Procedure

The Maritime Commission on December 7, for the information of ship owners and operators, outlined the necessary procedure to be followed in applying for financial assistance from the Commission for the construction or reconditioning of ships. The preliminary application asks for the following information: Citizenship of the applicants; latest profit and loss statement and balance sheet; general characteristics of the vessel or vessels proposed and any alternative designs which may have been drawn up; if reconditioning of an existing vessel is proposed, the type of vessel, extent of modification, classification rating, etc., is required to be described on the application, plus full description concerning trade routes and trade conditions.

The action taken to approve such an application will be along the lines of the following: After receipt of the above data, the Navy Department is to be consulted as to the usefulness of the proposed vessel in a time of national emergency; receipt of the application will be followed by a public notice and any statements pertinent to the question from the public will be received; after the opinion of the Navy has been made, the Commission will decide whether the preliminary application merits further consideration and if favorably inclined, will request the applicant to file a formal application for a construction loan.

The formal application will contain all the information previously given. A public hearing will be held and if favorable action is taken, the Commission will proceed to secure bids and enter into a contract for the construction of the vessel or vessels.

Pulpwood Revives Maine Shipping

The increased cutting of timber for pulpwood purposes on many thousands of acres of forest land on the mainland and islands of the state of Maine has served to revive a branch of the shipping industry which has been suffering from curtailed operations and severe competition for some years. This branch, although quite small, is that of the picturesque "Down-east" coasting schooners which once operated in great numbers along the coast of New England.