rapidly vaporized from the flour in a few seconds. During this time there is no change in the flour.

The flour is dried in a stainless steel structure shaped like a mammoth ice cream cone. Air, heated to a controlled temperature, is passed through a fan opening diagonally into the top of the cone, which is six feet in diameter. Just as the air reaches the opening to the cone, flour is mixed with it.

The mixture is then whirled around the inside of the cone. In two to ten seconds, the flour drops through a hole at the bottom, having lost from 50% to 90% of its former moisture.

The air can be heated as high as 300 degrees Fahrenheit for this drying. The flour particles, however, reach no more than half that temperature. Evaporating water keeps the particles relatively cool in the few seconds that they revolve through the cone.

Science News Letter, December 17, 1949

ENGINEERING

# Ship Corrosion Prevented

➤ CITING possible savings of up to $75,000,000, the United States Maritime Commission will ask Congress next year to authorize installation of a new method of preventing the hulls of the nation's 2,200 merchant ships in reserve from rusting away. Experiments just about completed have shown the Commission that corrosion of the outside metal plates below the water line can be halted merely by hanging small magnesium metal plates all around each ship.

Maritime Commission officials figure the system would cost $25,000,000 over a 20-year period. Heretofore the only way to save a ship from permanent damage through corrosion was to haul it into a drydock periodically and sandblast and paint its bottom. Cost of this method of saving the merchant vessels would run up to $100,000,000, commission officials say. If the magnesium plates were used, there would be no need to drydock ships until they were needed for service.

The magnesium plates halt corrosion by acting as anodes to the cathodes of the steel in the ship's bottom. The water acts as an electrolyte. Thus a primary cell is formed and an electric current flows from the magnesium to the ship. The current causes slight decomposition of the film of water in contact with the ship's hull, thus arresting corrosion.

Maritime officials estimate that it would take only 39 men, each working one year, to install the magnesium anodes around each ship and that maintenance would be simple and inexpensive. The plates would be changed every three years.

This method doesn't prevent barnacles from gathering on ship bottoms but Commission experts point out that the ships would have to go into drydock before being put back into service anyway and the bottoms could be scraped clean then.

The Navy at present prefers the more expensive method of hauling ships out of water periodically, scraping their bottoms and applying anti-corrosion and anti-barnacle paint. The Department points out it is trying to keep the fighting vessels in such a state of readiness that it should not be necessary to send them to drydocks before putting them back into service.

At present, magnesium producing facilities in this country far exceed demand. Several plants built by the government during the war—magnesium is used in planes and incendiary bombs—are now idle. The Dow Chemical Company, Midland, Mich., is the largest producer of magnesium and is generally credited with developing this method of combatting corrosion.

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## ● RADIO

*Saturday, December 24, 1949, 3:15 p. m., EST*

**"Adventures in Science" with Watson Davis, director of Science Service, over Columbia Broadcasting System.**

**Dr. Howard A. Meyerhoff, administrative secretary for the American Association for the Advancement of Science, will talk on "Preview of National Science Meetings".**

# Question Box



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## SCIENCE NEWS LETTER

VOL. 56 DECEMBER 17, 1949 No. 25

48,800 copies of this issue printed

**The Weekly Summary of Current Science, published every Saturday by SCIENCE SERVICE, Inc., 1719 N St., N. W., Washington 6, D. C., NOrth 2255. Edited by WATSON DAVIS.**

**Subscription rates:** 1 yr., $5.50; 2 yrs., $10.00; 3 yrs., $14.50; single copy, 15 cents, more than six months old, 25 cents. No charge for foreign postage.

**Change of address:** Three weeks notice is required. When ordering a change, please state exactly how magazine is now addressed. Your new address should include postal zone number if you have one.





Printed in U. S. A. Entered as second class matter at the post office at Washington, D. C. under the act of March 3, 1879. Established in mimeographed form March 18, 1922. Title registered as trademark, U. S. and Canadian Patent Offices. Indexed in Readers' Guide to periodical Literature, Abridged Guide, and the Engineering Index.

Member Audit Bureau of Circulation. Advertising Representatives: Howland and Howland, Inc., 393 7th Ave., N.Y.C., PEnnsylvania 6-5566 and 360 N. Michigan Ave., Chicago. STAte 4439.