

HIGH-SPEED DESTROYERS FOR THE UNITED STATES NAVY.

There was a time when the contractors of the United States seemed to be unable to live up to the exacting requirements of the government for the construction of torpedo boats and destroyers. There is no class of naval construction that calls for such high-class work as the building and equipment of a destroyer of 30 knots speed or more; and when our first destroyers were built, most of the contractors failed to get the contract speed out of the boats.

These failures, however, belong to the past; and there is every reason to believe that the later destroyers built for our navy are fully up to, if they do not exceed, the standard of the best foreign work, not even excepting the British.

Evidence of this is afforded by the phenomenal speeds that have been realized in the recent trials of the "Flusser" and the "Reid," which made respectively 30.41 and 31.85 knots as the mean of a four-hour trial, the contract speed for which was only 28 knots, and made their fastest miles respectively at a speed of 33.67 and 34.55 knots.

The "Flusser" and "Reid" are two of the five destroyers, bids for which were opened in September, 1907, and which were awarded as follows: The "Flusser" and "Reid" to the Bath Iron Works, Ltd., Bath, Me.; the "Smith" and "Lamson" to the William Cramp & Sons Ship and Engine Building Company, Philadelphia, Pa.; and the "Preston" to the New York Shipbuilding Company of Camden, N. J.

The hulls of the "Flusser" and "Reid" were de-

containing 4,000 square feet of cooling surface, measured on the outside of the tubes. The tubes were curved and expanded into the tube sheets, no packing being used. The circulating water is provided by scoops into which the sea water rushes at great velocity when the vessel is under way, this method proving extremely satisfactory. Small circulating pumps, however, were provided for use when the vessel is still in the water, or in getting under way. There are the usual air pumps, feed pumps, fire and bilge pumps, and oil pumps, etc., and an evaporating distilling apparatus was also provided with these pumps. All lubrication is forced, two duplex oil pumps being provided, together with an oil cooler.

The boilers, four in number, of the Normand return-flame type, are placed in two water-tight compartments, there being a smokepipe for each of the four boilers. The total grate surface is 346.67, and the total heating surface is 16,177 square feet. Normand feed-water heaters were also provided for each fire-room, and proved very efficient. In each fireroom are two blowers, designed and built by the contractors and fitted with forced lubrication. These blowers give most excellent service, and have shown themselves capable of delivering air at 9 inches pressure in necessary volume. Further than this, each fan, with its engine complete, weighs less than 900 pounds.

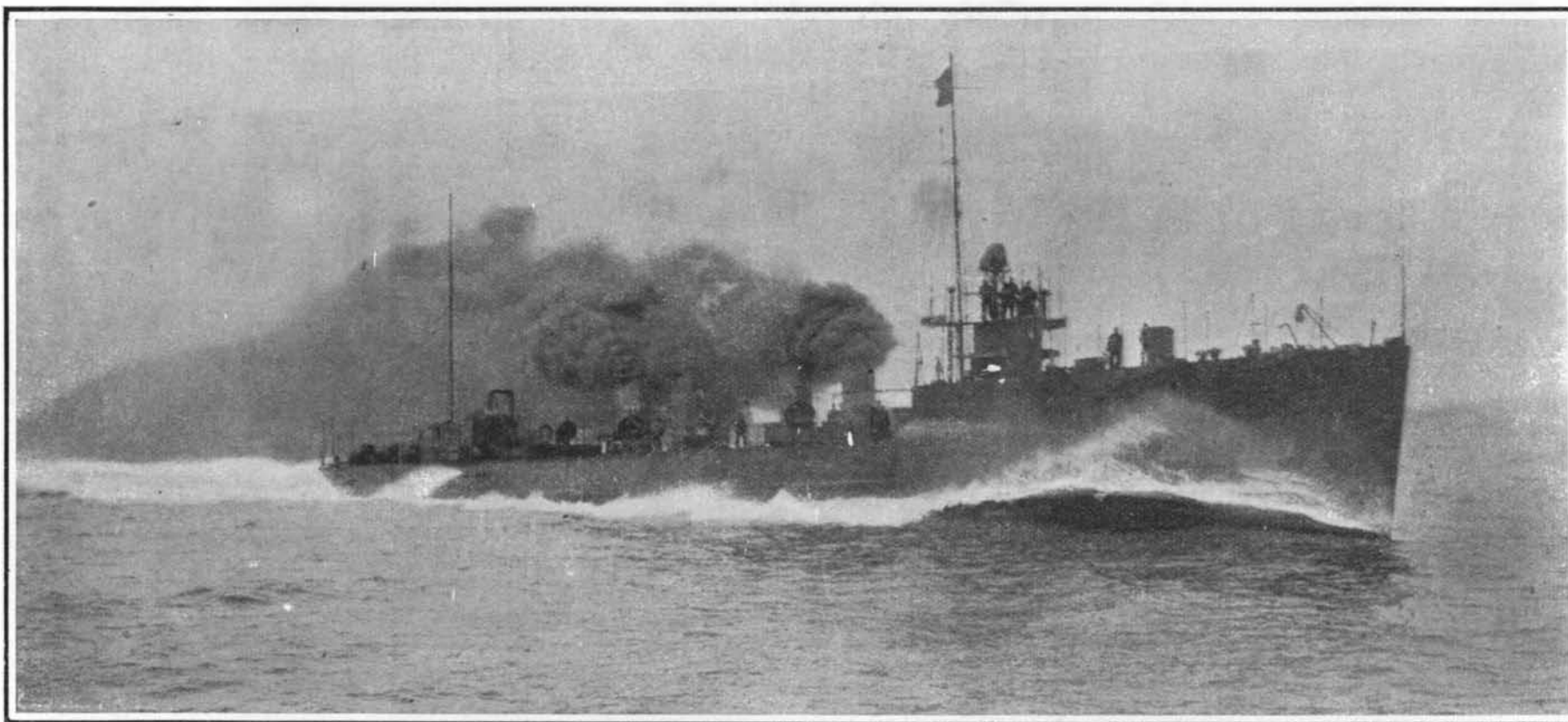
The contract specified that the vessels should be given standardization trials of not less than twenty runs over the mile, a four-hour full-speed trial, on which the speed shown should average not less than 28 knots per hour; a twelve-hour trial at 24 knots and

Both the "Flusser" and the "Reid" are equipped with Parsons vacuum augmenters, built by the Bath Iron Works, which performed very satisfactorily, as vacuums were maintained on both vessels, at all speeds, of between 28½ and 29.9 inches.

The horse-power developed (maximum) per ton of machinery is the highest we know of, namely, 68 on the "Reid" and 64.7 on the "Flusser." It should be noted the weight of machinery (228 tons) includes every part coming under cognizance of the United States Bureau of Steam Engineering, namely, the machinery complete, with tools, water in boilers, condensers, filter tank and piping, floors, gratings, ladders, handrails, steam heat, non-conducting corking and lagging, and evaporators and distillers.

The November Number of American Homes and Gardens.

The current issue of American Homes and Gardens contains many interesting features. Mr. Barr Ferree continues his series on notable homes and describes Villa al Mare, the country home of George Lee, Esq., at Beverly Farms, Mass. John A. Gade contributes a very interesting article on the beauty and economy of stucco in the construction of the country house, or in the transformation of the old house. This article is illustrated by photographs showing the transformation of an old farm house into a habitable dwelling. One of the most interesting subjects in the issue is that prepared by Francis D. Nichols on a group of modern houses costing from \$1,000 to \$5,000. This article is profusely illustrated with photographs and



Copyright 1909 by N. L. Stebbins.

Length, 293 feet 10½ inches; beam, 26 feet 4½ inches; draft, 8 feet; displacement, 700 tons; horse-power, 15,140. The motive power consists of five Parsons turbines driving three propellers. The "Flusser" (sister boat) on her trials reached a maximum speed for one mile of 33.67 knots.

THE "REID," FASTEST OF OUR DESTROYERS, MAKING 34.55 KNOTS ON HER TRIAL TRIP.

signed by the Bureau of Construction and Repair and are of the following dimensions:

Length between perpendiculars...	289 feet
Length over all.....	293 feet 10½ inches
Breadth molded at trial waterline.	25 feet 1¼ inches
Breadth molded, extreme.....	26 feet 4½ inches
Breadth extreme over guards.....	27 feet
Trial displacement	700 tons
Trial draft at this displacement..	8 feet ½ inch

The contract allowance for machinery is 255 tons, a penalty being assessed if this weight is exceeded. The machinery, however, with water and spares carried on board, weighed 228 tons; so that the trial displacement was reduced by this saving of 27 tons, less a hull overweight of 4 tons, or a net weight saved of 23 tons. The trial displacement therefore was fixed at 677 tons, but on all of the trials of these vessels they were slightly deeper than this.

The machinery was designed by the Bath Iron Works and consists of five Parsons marine steam turbines on three shafts; the main high-pressure being on the center shaft; the starboard low-pressure and I. P. cruising turbines, together with the starboard backing turbine, being on the starboard shaft; and the port low-pressure and backing turbine and the high-pressure cruising turbine being on the port shaft. The steam piping was so arranged that any of these turbines would run as the initial turbine. All of these turbines are in one compartment.

The two condensers were built up of plate, each

a twenty-four trial at 16 knots; and that the water consumption per shaft horse-power should not exceed 25.2 pounds on the 16-knot trial; 16.5 pounds on the 24-knot trial; and 15.5 pounds on the full-speed trial; all of these guarantees being met with a comfortable margin.

The following table gives the results of these trials:

	"Flusser."	"Reid."
Speed, fastest mile.....	33.67 knots	34.55 knots
Mean speed five high runs..	32.67 knots	33.75 knots
Maximum shaft horse-power developed	14,400	15,140
Mean speed four hours.....	30.41	31.85
Speed best 15 minutes four-hour run	30.85	32.25
Revolutions necessary for 28 knots	706	700
Revolutions maintained four hours	801	846
Shaft horse-power four-hour trial average	11,541	12,564
I. P. C. auxiliaries four-hour trial average	301	310
Total horse-power four-hour trial average	11,842	12,874

No limit was placed upon air pressure on the standardization trials. The contract provided, however, that an average of 5 inches could not be exceeded on the four-hour trials, and the 5-inch average was maintained but not exceeded on both vessels.

plans, and is particularly interesting to the man of modest means who wishes to build a home of modern style at small cost. Ralph C. Davison writes on concrete ornaments for the garden and how to make them. Kate Greenleaf Locke's article descriptive of four California bungalows is interesting, while Fritz Morris tells about the American Shetland pony. S. Leonard Bastin presents an article on a farming experiment by women. Louise Shelton describes the garden of Hamilton House, and Robert Thompson tells of the beauties of "Pine Haven," the summer home of Thomas B. Van Buren, Esq., at Kennebunkport, Maine. Alice M. Kellogg solves some problems in home furnishings, and Charles Downing Lay tells about garden work around the home.

Prize for a Safety Automobile Crank.

A French association for the prevention of accidents in industrial work has offered \$300 in prizes for a crank or safety device for hoists, cranes, and all forms of lifting apparatus, and also for explosion motors which shall, in the first case, automatically stop the descent of the load, or in the second case, throw out of gear the driving action when not required. The invention remains the property of the competitor, who must himself be responsible for its due protection by patents. Drawings of competitive devices should be sent to the office of the Association des Industriels de France contre les Accidents du Travail, 4 Boulevard Saint-André, Paris, France.