

to gunwale. Launching draft, with all machinery on board, (average) 8 feet 5 ins. Displacement, 450 tons—stem, 6 by 2 ins.—stern post, 6 by 4 ins. H.

For the Journal of the Franklin Institute.

*Particulars of the Steam Propeller Candia.*

Hull built by J. C. Mase & Co., Machinery by G. Rennie & Co. Intended service, Southampton to Alexandria.

**HULL.**—

Length on deck from fore part of stem to after part of stern post above spar deck,	281 feet.
Breadth of beam at midship section above the main wales— <i>molded</i> ,	40 "
Depth of hold,	29 " 6½ inches.
Draft of water below pressure and revolutions (mean)	18 " 7 "
Tonnage,	2200. Eng.
Displacement of Hull,	2520 tons.

**ENGINES.**—Two—Geared Trunk.—

Diameter of cylinder, mean	70½ inches.
Length of stroke,	4 feet.
Maximum pressure of steam in pounds,	21.
" revolutions per minute,	36½.
" speed,	12.
Horse power nominal,	450.
Indicated "	1356.

**BOILERS.**—

Description of coal,	Bituminous.
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*Remarks.*—This vessel is considered to give the best result, all things considered, of any English steam propeller yet built. H.

For the Journal of the Franklin Institute.

*Particulars of the Steamer Ericsson.\**

DEAR SIR.—Having, in compliance with your request, embarked on board the *Steamer Ericsson* on the 28th inst. for the purpose of witnessing the performance of her machinery, and having received authority from you to control the operations of it in such a manner as I saw fit for the purpose of advising myself of the consumption of fuel in her furnaces, speed of vessel, &c., I have now to submit to you the following report of my observations, and for the purpose of ready comparison and estimate of the value of the elements submitted, I give the following particulars of hull and machinery.

**HULL.**—Length on deck, 250 feet; breadth of beam, 40 feet; depth of hold, 27 feet.

*Draft of Water.*—Forward, 17 feet 2 inches; aft, 16 feet 10 inches; (mean 17 feet.) Coal and water on board, 550 tons; area of immersed midship section at this draft, 546 square feet.

**MACHINERY.**—Two inclined engines of direct action.

**CYLINDERS.**—62 inches in diameter by 7 feet 8 inches stroke of piston.

\* Originally communicated to the New York Tribune.

**WATER WHEELS.**—32 feet in diameter by 10 feet in width.

**BOILERS.**—Two vertical tubular—supplied by fresh water from the external condensation of the steam. Natural draft to furnaces.

**Cut-off.**—Drop valve, with adjustable arrangement, set in this experiment at  $\frac{4\frac{5}{10}}{10}$ ths of stroke of piston.

**Dip of Water Wheel Blades.**—4 feet 6 inches.

**COAL.**—Anthracite, Pittston.—Bituminous, Cumberland.

### *Results of Experiments.*

1. *Anthracite.*—At sea, May 28th, 1·45 P. M. to 2·16 A. M. 29th, 12 hours and 30 minutes—consumed 26,400 lbs.=2112 lbs. per hour, or ·94 of a ton (of 2240 lbs.) per hour.

2. *Bituminous.*—At sea, May 29th, 2·15 to 11·30 A. M., 9 hours and 15 minutes—consumed 15,390 lbs.=1664 lbs. per hour, or ·74 of a ton per hour.

3. *Anthracite.*—At sea May 29th, 11·30 A. M. to 1·45 P. M., 2 hours and 15 minutes—consumed 4320 lbs.=1920 lbs. per hour, or ·85 of a ton per hour.

### *Recapitulation.*

1st.	12 hours	30 minutes	×	2112 lbs.	=	26,400 lbs.
2d.	9 "	15 "	×	1664 "	=	15,392 "
3d.	2 "	15 "	×	1920 "	=	4,320 "
	24	00				46,112 lbs.

the total consumption for 24 hours = 20·58 tons.

The average pressure of the steam was 22 $\frac{5}{8}$ ths lbs. per square inch; the vacuum 27 $\frac{1}{2}$  inches; and the average revolutions of the engines, 13 $\frac{3}{4}$ ths per minute.

The speed of the vessel as measured by a chip log with 25 fathoms of stray line, was 11 knots, large, = 12·83 statute miles per hour.

The fresh water condensers, maintained an uniform vacuum of 27 $\frac{1}{2}$  inches of a mercurial column, and, by aid of an auxiliary distilling vessel, more water was readily obtained than was required to meet the loss by vents and leaks from the boilers, pipes, &c., &c.

With a view to test the evaporative qualities of the boilers and at the same time to verify the extraordinary results here given in economy of combustion, the water of condensation therefrom, was at six different periods, measured in a vessel, and the supply was found to reach the unexampled quantity of 9·96 lbs. per pound of anthracite coal consumed, and notwithstanding this unprecedented attainment in a marine engine, it could have been very materially increased with better firing of the furnaces.

In conclusion, it may not be amiss for me to add, that all the elements of means and results here given, were noted by myself, so far as it was practicable for me to do so, and such as I had to transfer to the observations of others, were alone confided to my two assistants, who accompanied me on this occasion for such service.

I am, respectfully, yours, &c.,

CHAS. H. HASWELL.

JOHN B. KITCHING, Esq., New York.