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THE 'CUTTY SARK'

Report to the London County Council on
the proposal to recondition and
preserve the ship.

OCTOBER, 1950.



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THE 'CUTTY SARK'.Report to the London County Council on the
proposal to recondition and preserve the ship.1. Introduction and terms of reference.

In a letter to the Clerk of the Council, dated 27th March, 1950, from the Incorporated Thames Nautical Training College it was stated that, at a meeting of the Honorary Committee of Management of the College, consideration had been given to the future of the Clipper Ship 'Cutty Sark' now moored in the Thames off Greenwich. At this meeting it was unanimously agreed to offer the vessel to the Council as it was felt that greater facilities would be offered to the public for visiting her if she were moored in London and that the London County Council would be better able to preserve this historic ship than is possible under her present ownership.

The Chairman of the General Purposes Committee on 21st April, 1950, on the understanding that his action would not commit the Council, authorised the Chief Engineer to invite the co-operation of a few experts to form with officers of the Council an exploratory Committee under his chairmanship charged with the task of a full investigation of the problem of the preservation of the 'Cutty Sark' with particular reference to the following aspects:-

(a) The present condition of the ship and the cost involved in (i) any necessary reconditioning for her preservation, and (ii) maintaining her.

(b) The most suitable place where she might be berthed with details of the cost involved.

(c) The use to which she might be put and the possible income from such use.

2. Membership of Committee.

The Chief Engineer invited the following to serve on the Committee:-

Mr. P.G.G. Carr	Director, The National Maritime Museum
Commander Coleman, O.B.E.	River Superintendent and Chief Harbourmaster, Port of London Authority
Capt. M. Bruce Glasier, C.B.E.	Marine Superintendent, Blue Funnel Line
Mr. A.T. Lemmon	Chief Constructor, Dockyard Dept., Admiralty
Mr. C.K. Maddox	Shipyard Manager, R. & H. Green and Silloy Weir, Ltd.
Mr. J.M. Robertson	Special Surveyor of Yachts, Lloyds' Register of Shipping
Capt. Steele, V.C.	Captain Superintendent, the 'Worcester'.

Mr. R.G. Harris of the Chief Engineer's Department acted as secretary to the Committee.

3. Meetings held.

The Committee held five meetings and paid a visit of inspection to the ship at her moorings at Greenwich.



4. History of the ship.

The 'Cutty Sark' was completed in 1870 by Dennys of Dumbarton and is the only survivor of the famous clipper ships which were built for the tea trade with the East.

After her service in the tea trade and later in the wool trade she was sold in 1895 to a Lisbon firm and renamed the FERRERIA. In 1916 she was partially dismasted and rerigged as a barquentine instead of a full ship. Five years later she was purchased from the Portuguese by the late Captain Dowman who brought her from Lisbon to Falmouth and, at his own expense, rerigged her as she was originally and again named her the 'Cutty Sark'. She was used as a training ship at Falmouth for some years and was presented to the Thames Nautical College in 1938 when she was towed to Greenhithe and has been lying in the Thames off Greenhithe since that date.

5. Description of the ship.

The 'Cutty Sark' is a three masted ship of 962.97 tons gross and is built on the composite system of construction with iron framing and wood planking. Her registered length, extreme breadth, and depth are 212.5 ft., 36.0 ft., and 22.5 ft., respectively. Her length from the end of the flying jib boom to the end of the spanker boom is 280 ft. The height of the main mast, deck to truck, is 146 ft. and the main yard 78 ft. long. At a draught of 20 ft. her displacement is 2,100 tons. In the light condition the 'Cutty Sark' is unstable and it has been found necessary to place about 400 tons of ballast in the hold.

The photograph which is from the National Maritime Museum Collection shows the 'Cutty Sark' in Falmouth Harbour as she was when Captain Dowman restored her.

6. Reports of surveys of the 'Cutty Sark'.

(a) A survey of the vessel was carried out in 1937 by Mr. J.L. Scott, a surveyor who acted on behalf of the Shipwrights' Company. This examination was made in a dock at Falmouth and the longitudinal breakage on docking was very small (about one quarter of an inch sag). The bottom timbers were found to have deteriorated and in some places the planking had been eaten through to the deadwood, but the main keel was seen to be in excellent condition. The iron bolts which secured the main keel to the keel plate, however, were completely wasted away.

The survey indicated generally that the ship was not in bad condition, the principal defects being normal wastage of the ironwork.

An extract from the report of this survey may be found at Appendix A.

(b) The 'Cutty Sark' was superficially examined by Mr. J.M. Robertson, Ship Surveyor to Lloyds' Register of Shipping on 9th March, 1950.

This survey was made as the vessel lay afloat at her moorings at Greenhithe and was undertaken with a view to ascertaining the suitability of the ship for preservation in Dry Dock.

It was not possible for Mr. Robertson to make a thorough survey as the ship had not been prepared. Access to the structure underlying the hold ceiling was obtainable in one place only and here the structure was found to be considerably wasted. Apart from the poop deck, which requires renewal, the decks were in good condition and the masts and rigging, although neglected over a period of years, appeared to be sufficiently sound to permit of their being put in a suitable condition to enable the vessel to be fully rigged.



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not attached

The 'Cutty Sark' in Falmouth Harbour after restoration by
the late Captain Dowman.

Photograph from the National Maritime Museum Collection.
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Generally, the survey indicated that the ship is in fair condition.

A copy of Mr. Robertson's report may be found at Appendix B.

7. Conclusions at which the Committee have arrived.

(a) Necessity for preliminary survey in dry dock.

In view of the reports of the surveys mentioned above and the condition of the ship when they inspected it the Committee are unanimously agreed that the vessel must receive a thorough examination in dry dock before any indication can be given as to its future life and possible future use.

(b) Cost of preliminary survey.

A satisfactory examination of the vessel which would be similar to that carried out by Mr. J.L. Scott in 1937 can only be performed in a dry dock where adequate facilities are available. The Committee are advised that it would be possible to obtain the use of such a dry dock in the London area and if this is the case the cost of the operation is estimated to be as follows:-

(1) Towing, docking and insurance	£ 500
(2) Survey and any essential repairs resulting therefrom	3,000
Total	<u>3,500</u>

If it is decided to proceed with this examination the Committee consider that the necessary insurances, the cost of which is included in (1) above, should be taken out by the Thames Nautical Training College as an addition to their existing policy covering the vessel. In the Committee's opinion there is no likelihood of the vessel foundering while being towed to and from the dock or sinking while in the dock but in the event of such an untoward occurrence adequate insurance would absolve the Council from any liability.

(c) Most suitable type of berth for future preservation of the vessel.

From the limited inspection of the vessel which the Committee were able to make and from the information in their possession they are convinced that it will not be possible to preserve the 'Cutty Sark' afloat indefinitely. As has been stated already, considerable deterioration has taken place in the structure below the hold ceiling and to repair this would be so expensive an operation that the Committee have not attempted to prepare an estimate of the cost. The Committee have been further confirmed in this opinion by the fact that there is no floating berth above Tower Bridge which provides sufficient draft for the ship nor is there any suitable site between the Tower Bridge and the County Boundary at Woolwich where the ship could remain afloat. Furthermore, as compared with a permanent dry berth the maintenance costs of the ship afloat would be very much heavier.

With these factors in mind, therefore, the Committee reached the conclusion that, if the 'Cutty Sark' is to be preserved indefinitely, then it must be in a dry berth similar to that in which the 'Victory' is placed at Portsmouth.

(d) Location and cost of permanent berth.

The Committee were advised that a suitable site for a dry berth would be at a proposed riverside open space at Greenwich. Accordingly estimates of the cost of constructing the berth are

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prepared for three different positions as shown on the drawing (Appendix C). The most suitable is that at 'C' as it is at the river's edge and from a distance it would give the appearance that the vessel is afloat. The cost of constructing this dock, floating the ship in, closing it and pumping out the water and finally surrounding the lower part of the ship with concrete is estimated at £175,000. This does not include the cost of acquiring the site. Site 'C' is known as Dodd's Wharf, Greenwich, and the following extract from a letter from the Director of Housing and Valuer sets out the present position with regard to the acquisition of this site.

"This wharf is included in the proposal for the Greenwich Riverside Open Space which the Council approved on 29th July, 1947. At the same time, the Council appreciated that the full open-space proposal would take some years to achieve and that there was little prospect of the Council's being able to acquire Dodd's Wharf within the immediate future.

Dodd's Wharf is extensively used for general wharfing purposes, including such merchandise as wheat, plywood, plaster products, furniture and paper. The river bank and foreshore are, at this part of the river, greatly used for the barge building and repairing, and marine engineering industry, as the strip of foreshore along this reach affords the only length of "hard" for working purposes for several miles along the river. Mr. Dodd himself carries on this engineering business in adjacent premises under the name of Coneybeare & Co. It will, therefore, be appreciated that, if it were possible to exercise compulsory powers of purchase against Mr. Dodd and he were deprived of the wharf and access to the river, a very substantial claim for compensation might well lie against the Council.

On the other hand, I am in close touch with Mr. Dodd, who is advancing in years, and he is well aware of the Council's open-space proposal. He fully understands that, if he should wish to give up business, or any other favourable opportunity occurs, the Council would probably be in the market to buy the property. In my opinion, therefore, the matter of the acquisition of this wharf should be left on this basis for the present, as there is little chance of the Treasury or other Government department concerned agreeing to a compulsory purchase order in the present circumstances."

In view of the high cost of this scheme the Committee considered alternative methods of constructing the dock such as the use of a section of the 'Mulberry' harbour or a disused floating dock which could be sunk in the same position 'C' and the ship floated into it afterwards. From enquiries which have been made, however, it does not appear that either of these are available and the estimate given above must be regarded as the lowest possible for the work.

(c) Cost of reconditioning vessel.

Those members of the Committee who assisted in the earlier investigation into the 'Implacable' were impressed by the better condition and state of preservation of the 'Cutty Sark'. Much work will require to be done, however, to render her suitable for exhibition purposes. Mr. Robertson's report (Appendix B) refers to the necessity of renewing the poop deck, and the cleaning off and repainting of all outside woodwork and ironwork. The cabins require considerable reconditioning and

refurnishing. The masts, yards and rigging have been badly neglected for years and need thorough overhaul and considerable replacement and repair. The Committee estimate that the cost of this work would amount to £75,000 but wish to point out that they have arrived at this figure without making a detailed survey and have accordingly assessed it sufficiently high to cover all eventualities.

(f) Future use of vessel and cost of maintenance.

The Committee consider that if the vessel is placed in a permanent berth as described at Greenwich, which has many maritime associations, it would of itself attract quite a number of visitors. The 'Cutty Sark' was formerly registered at London. She is one of the most famous sailing ships which now remain and is a most important historic monument of the Merchant Navy. It is thought that many people would be interested to see the actual conditions in which the crew of this and similar vessels used to sail. It was also suggested that the space between decks could be used to exhibit models of ships and possibly for the showing at intervals of cinematograph films dealing with life aboard sailing ships. Other uses would no doubt present themselves in due course.

In order to carry out day to day maintenance of the structure of the vessel, the masts and the rigging and to carry out periodical repairs to prevent further deterioration it would be necessary, in the Committee's opinion, for a party of men to be continuously employed. With the provision of the materials required it is estimated that the cost of maintenance of the vessel would be £7,000 per annum. This figure does not include the wages of any staff employed for collecting admission fees, supervising the display of models or any other purpose connected with the exhibition.

(g) Possible income.

It is difficult to forecast the extent of the appeal which the ship and exhibitions would make to members of the public but the Committee consider that, if a small charge were made for admission, or if, as in the case of the 'Victory', boxes were displayed on board to attract voluntary contributions, the resulting income would be appreciable.

(h) Programme of works.

The Committee have visualised the programme of carrying out the works which would probably be followed if the project is proceeded with.

- Stage 1. Removal of the vessel to dry dock, preliminary survey, and return to Greenhithe.
- Stage 2. If survey is satisfactory and the Council decides to take over the vessel, removal to temporary berth.
- Stage 3. Construction of permanent berth and placing 'Cutty Sark' therein.

With regard to the time which would elapse between Stages 1 and 2 it is understood that, if the project is to be proceeded with, the Thames Nautical Training College would not be willing for the 'Cutty Sark' to remain at Greenhithe for an indefinite period. The College would be willing to assist the Council, however, by allowing the ship to remain there for a limited period of, say, six months. With reference to this possibility, however it must be borne in mind that the Port Authority have informed the Thames Nautical Training College that the existing moorings have not been overhauled since 1944 and should receive attention. The Committee consider that it may not be possible to proceed with Stage 3 for some years and during this period it would be necessary therefore to find, as a temporary measure, a floating berth elsewhere.



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Without committing the Council in any way they have enquired of the Port of London Authority whether a suitable berth exists in their docks which could be used for this purpose if the survey in dry dock is satisfactory and the Council agrees to accept responsibility for the vessel.

The following is an extract from a letter from the General Manager of the Port of London Authority in response to the Committee's enquiry:-

"I think it would be possible to provide a lying-up berth for a period of five to ten years on the south side of the East India Import Dock, and if the Council decide to proceed in this matter, I should be prepared to recommend for the consideration of the Authority that entry dues be waived and that the rent charge be a nominal one of £2 per week, which, incidentally, is about 15% of the tariff rent charge for a vessel of the tonnage of the 'Cutty Sark'. This concessional rate would, of course, be contingent on the Authority being suitably indemnified against all possible expense which might arise by way of damage, fouling or sinking of the vessel."

The Committee feel that mention must be made of the difficulty which would arise if the berth occupied by the 'Cutty Sark' were required for use in an emergency, as at the present time there appears to be no alternative site to which she could be removed in the London area.

8. Summary of conclusions.

(i) Before any indication can be given as to the suitability of the ship for exhibition purposes a thorough survey in dock must be made.

Estimated cost £3,500
(ii) If the survey is satisfactory the 'Cutty Sark' can be transferred to a specially constructed concrete berth.

Estimated cost £175,000
(iii) If decided to proceed with the proposal the ship must be placed in a suitable temporary floating berth.

Estimated annual cost .. £750
(This figure includes dock charges and the cost of watchmen.)

(iv) The ship will require considerable reconditioning for exhibition purposes.

Estimated cost £75,000
(v) Ultimately a maintenance party will be required to carry out day to day repairs.

Estimated annual cost .. £7,000
(vi) An appreciable income would result from contributions by visitors to the ship but it is not possible at this stage to estimate what this would be.

9. Finance.

The Committee have not discussed how the funds for promoting this project should be raised as it is not within their terms of reference.

10. Acknowledgments.

The Committee wish to express their thanks to all who collaborated in the investigation and all those who have rendered it possible for members of their staffs to attend the meetings of the Committee.

(Signed) J. RAWLINSON.
FRANK G.G. CARR.
A.M. COLEMAN.
H.B. GLASER.
A.T. LEMON.
C.R. MADDOX.
J.M. ROBERTSON.
G.C. STRADA.

R.G. HARRIS.
16th October, 1950.



APPENDIX A.

Extract from Report of Survey of 'CUTTY SARK'
in 1937 carried out by Mr. J.L. Scott.

Completed 1870 by Dennys of Dumbarton.
Built on the composite system of construction with iron framing and wood planking.* 16 A 1.
Went into tea trade, then the wool trade and in 1895 was sold to a firm in Lisbon and renamed 'FERRERIA'.
1916 she was partially dismantled and was riggered as a barquentine instead of a full ship.
Dry docked in December, 1921, in Union Dock, Limehouse, and the hull was in good condition.
1921, the late Captain Dowman purchased her from the Portuguese, brought her from Lisbon to Falmouth and at his own expense had her riggered as she was originally and renamed her 'CUTTY SARK'.
She was used as a training ship for some years.
Her normal complement was twenty-four, comprising Captain, Mate, Second Mate, Boatswain, Carpenter, Sailmaker, eight Apprentices, eight A.B.'s, Cook and Steward.

Registered length	212.5 ft.
Length of keel	203.6 "
Breadth moulded	35.0 "
Breadth extreme	36.0 "
Depth of hold	21.0 "
Depth moulded	22.5 "
Under deck tonnage	892.00 tons
Gross tonnage	962.97 "
Nett tonnage (originally 921.39)	938.39 "

She apparently ran a large number of voyages at a draught of 20 ft., and the following hydrostatic particulars refer to that draught.

Displacement	2100 tons
Tons per inch immersion	13.23 "
Block coefficient	.481 "
Area of immersed midship section	552.89 sq. ft.
Midship area coefficient	.767 " "
Prismatic coefficient	.627 " "
Waterplane area coefficient	.740 " "
Centre of buoyancy above bottom of keel	12.57 ft.
Transverse metacentre above centre of buoyancy	6.08 "

Her displacement in the light condition was derived from the condition in which she was floating after this survey at Falmouth, and was found to be about 965 tons, so that her deadweight capacity on a draught of 20 ft. would be about 1135 tons.



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In the light condition 'CUTTY SARK' would be unstable and she had in 1937 about 430 tons of sand ballast in the hold. Length of the mainmast, deck to truck 146 feet. Main yard 78 ft. Length from outer end of the flying jib boom to the end of the spanker boom 280 ft. The 1937 survey was carried out in a dock at Falmouth and the longitudinal breakage on decking was very small (about one quarter of an inch sag). In some places the metal sheathing had been torn away from the bottom and here the timber was damaged and partially eaten by mussels or other marine organisms. In some cases the planking had been completely eaten through to the deadwood. The main keel was in excellent condition. Three wood worms of the Terebro type were found in the ship's keel. The iron bolts which secured the main keel to the keel plate were completely wasted away. The survey generally indicated that the ship was not in bad condition, the principal difficulties being normal wastage of the ironwork. Sundry small items, such as ventilator coamings and cowls, sidelights, etc., would require renewal periodically. In 1938 'CUTTY SARK' was presented to the Incorporated Thames Nautical Training College and she has been lying in the Thames since then.



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'CUTTY SARK'.

Report by Mr. J.M. Robertson, Ship Surveyor to
Lloyd's Register of Shipping on a preliminary
examination undertaken at Greenhithe on
Thursday, March 9th, 1950.

In accordance with instructions and in company with Captain M.B. Glasier, C.B.E., this vessel was superficially examined by the undersigned as she lay afloat in the Thames at Greenhithe, on Thursday, March 9th, 1950, with a view to ascertaining her suitability for preservation in Dry Dock.

Sand ballast (stated to be 400 tons) had not been shifted, the vessel had not been in any way prepared for survey and structure underlying hold ceiling was accessible only in one place at the forward end of the hold. Spars, sails, rigging and equipment were not examined at this time, caulking was not tested and no fastenings were drawn.

Captain Glasier, after personal examination, states that, although the masts, yards and standing rigging had clearly been badly neglected for many years, they nevertheless appeared in general in such a condition that with a thorough overhaul and reconditioning they could be placed in suitable condition to enable the vessel to be fully rigged for the purposes in mind at the present time.

The topsides were examined as far as practicable from a small boat and appeared to be generally in fair if somewhat neglected condition. Minor damage was noted on the face of the stem and wind and water sheathing appeared to be somewhat wasted and/or damaged. Small portions of ragged sheathing, removed at this time, were found to be wasted and brittle.

The softwood poop deck was found to be considerably wasted and unsatisfactorily patched and should be renewed. Other decks appeared to be sound and efficient subject to sundry minor repairs.

Bulwarks (steel) were found to be thinned and perforated in places.

Tween deck structure was examined as far as practicable and found generally satisfactory.

Hold structure above bilge stringer was examined and many fastenings hammer tested with satisfactory results.



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