

**Account of the qualities and uses of coal tar and coal varnish. With certificates from shipmasters and others / [Anon].**

**Contributors**

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Wellcome Collection  
183 Euston Road  
London NW1 2BE UK  
T +44 (0)20 7611 8722  
E [library@wellcomecollection.org](mailto:library@wellcomecollection.org)  
<https://wellcomecollection.org>

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[P.]

A C C O U N T

OF THE

QUALITIES AND USES

OF

C O A L T A R

A N D

C O A L V A R N I S H.

WITH CERTIFICATES

From SHIP-MASTERS and others.

COCHRANE, A. 9th Earl Dundonald

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L O N D O N :

Printed for T. and G. WILKIE, in St. Paul's Church-Yard,

MDCCLXXXV.

*Bitumen est ferventissimum et violentissimum gluten, cu-  
jus haec est virtus, ut ligna quae eo lita fuerint, nec vermibus  
exedi, nec solis ardore, nec ventorum flatibus, nec aquarum  
possint violentia dissolvi, nempe incorrupta est vis bitumini,  
aquisque contumax; ideoque ligna conservat, ne combibant  
humorem noxiam, neque patitur aërem penetrare, et tineas  
teredinem aliaque a lignis vitia prohibet, propter quae diutur-  
nitatem operibus maxime praestat.*

BERNARDUS CAESIUS De Mineralibus,

85365



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## A C C O U N T, &c.

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**T**HE EARL of DUNDONALD, in 1780, discovered a new and easy method of extracting tar from coal; for which a patent was obtained for the term of fourteen years.

Many trials for extracting tar from coal had been made by the late Marquis of Rockingham, near Sheffield, and by various persons at Colebrook-dale, and at Newcastle, under the direction of a German, calling himself Baron Van Haak.

The quantity made by these different attempts was trifling, and the expence of the process so great, that the tar could not be sold to profit by the manufacturers, under twenty-eight shillings *per* barrel. The following description of the uses and qualities, and manner of making use of coal tar, together

ther with a variety of very ample certificates, will, it is hoped, prove satisfactory to the Public, who may be supplied from Lord Dundonald's manufacture with tar and varnish, at reasonable rates; an equal quantity of coal tar covers one-third superficies more than foreign tar.

Coal tar is of a blacker colour than common tar, and entirely free from water; of which there is a considerable quantity in the latter. It needs no mixture of lamp-black for doing the mast-heads, yards, timber-heads, and blacking strokes of ships. It lays on smoother, with a finer skin, and better gloss than common tar; vessels bottoms payed with it, keep a long time clean.

Tar, when intended for a vessel's bottom, should be boiled to a proper consistence. It is known by dipping a stone, chip of wood, or any thing else, into the tar; which, when cooled, shews the consistence of the stuff. Coal tar has this advantage over common tar, that it is not apt to boil over; consequently requires less attendance, is less liable to accidents, and may, in the boiling down, have a quicker and stronger fire applied to it. It is recommended not to boil the stuff too  
much

much for a vessel's bottom. It should be of a tough, waxy consistence; but not boiled so as to be brittle.

*Directions for preparing Vessels Bottoms, so as to defend them from the Worm.*

WORMS will not penetrate into wood that has been properly impregnated and payed with coal tar; for this purpose, if the vessel's bottom be of fir, nothing more is requisite than to bream or fire her well; and while the plank is yet hot, to lay on raw, or unprepared coal tar, which will sink into the then open pores of the wood, and penetrate to a considerable depth; and, after the seams are caulked, lay on a coat of half stuff, or prepared coal tar. Oak not being of so open a texture as to imbibe a sufficient quantity of tar, or take it to any depth, the method above described may not, for any length of time, be a sufficient preservative against worms in oak-bottomed ships. It will be further necessary, that they be sheathed with white wood fir, soaked or impregnated with coal tar. Sheathing thus prepared, will not need to be filled with nails as in the common way, to prevent the entrance of the worm;

no more nails being necessary than to hold on the sheathing. A coat of half stuff over all is necessary, as was formerly mentioned. The sheathing nails should be coated or lacquered over with coal tar; which is done by heating the nails in a wire basket, over a stove, or blacksmith's fire, and dipping them quickly, while hot, into coal tar; as the nails cool, the tar dries on their surface. Nails, thus prepared, are not subject to rust, or to render the wood what is called iron-sick; consequently the sheathing will not need so frequently to be ripped off and renewed.

Coal tar is recommended as the best covering for guns, shot, chain-plates, bolts, and all other iron-work, it being found to be an effectual preservative of cast and hammered iron from rust; for which purpose common vegetable tar will not answer, as it contains an acid that corrodes iron.

It is particularly recommended for doing over shot, and the inside of iron guns that are laid up in the navy and ordnance wharfs; it prevents them from scaling. At present, the windage of the guns is constantly on the increase; and, by the mutual exfoliation of guns and shot, the guns, in a few years, become unserviceable.

Coal

Coal varnish is made of rosin, dissolved in essential oil of coal: This varnish is preferable to turpentine varnish, in as much as the oil that it is made of is lighter and more penetrating than oil of turpentine.

The effect that coal varnish has, when laid on wood, is to close its pores, by filling them with the rosin that is contained in it, rendering, by this artificial impregnation, white, or sap-wood, equal in quality to red wood.

Coal varnish is recommended for mixing with colours to make varnish paints; as it nourishes and preserves wood better than paint prepared with lint-feed oil; which last makes but a superficial coating, or covering, and doth not penetrate the wood.

Coal oil, when rectified, may be used to advantage in painting, to dilute, or thin down lint-feed oil: For the above use it goes one-third farther than oil of turpentine.

Besides the tar, pitch, essential oil, and varnish, already spoken of, there are other articles made, either immediately from coal, or produced in processes that are connected with Lord Dundonald's discovery; such as,

Cinders,

Lamp-black,

Volatile alkali, (vulgarly called Spirit of Harshorn)

Sal



Sal ammoniac,  
 Glauber's salt,  
 And fossile alkali (or barilla).

The uses of these articles, in different manufactures, are too well known to require any description here. The Editor shall only point out to the Public the uses for which he apprehends that coal tar and varnish are principally adapted.

*Uses of Coal Tar.*

	{	Ships bottoms and sides.
	{	Do. bends and blacking strokes.
	{	Do. timber heads and rails.
	{	Do. mast heads and tops.
	{	Do. yards and boltsprits.
	{	Do. buoys and water casks.
	{	Floodgates.
	{	Jettys.
Wood Work.	{	Piles.
	{	Palifades.
	{	Pale and rail.
	{	Cart and waggon wheels.
	{	Shingle roofs, particularly in the West-Indies.
	{	Espaliers for fruit-trees, and all sorts of wood-work exposed to the air or water.

Ships

Iron Work.	{	Ships rudder bands,
		Do. chain plates,
		Do. bolts.
		Do. anchors.
		Guns.
		Shot.
		Shells.
		Mooring chains.
		Iron rails in streets.
		Fire-engine cylinders, and working irons.
		Do. cast-iron pumps, bolts, and nutts.
		Do. buckets and clacks.
		Sheathing, slate, and other nails.
	Spades, shovels, mattocks, hoes, and all other iron-work, made for home use or exportation.	

*Uses of Coal Oils, Varnish, and Varnish Paints.*

Ships sides,  
Decks.  
Masts.  
Paintstroke.  
Sterns and figure heads.  
Gun carriages.  
Powder barrels.

Boats.

Coach, house, and sign painting.

There are other purposes for which it is believed that coal tar and coal pitch may be used to advantage; such as, a cement for docks, sluices, cisterns, and the piers of bridges; and, as raw coal tar penetrates stone to a considerable depth, it may be used for doing over houses that are built of a porous stone, apt to transmit the rain or moisture through the walls of the house. If the colour of the tar should be an objection, the house may be harled, or cast with small gravel and lime, and afterwards white-washed. Lime takes better band, or hold, on stone payed with coal tar, than on raw stone. Coal tar may be used for doing over tiles, to prevent them from imbibing moisture, or wasting by the weather.

## C O A L T A R

## C E R T I F I C A T E S.

*Copy of a Letter addressed to EDWARD PARK, Agent  
to the British Tar Company at Culross, by Mr.  
JOHN HALL, Captain of the Swan Tender, in  
the Service of Government.*

S I R,

I AM favoured with your letter, respecting the coal tar bought of you in October last. You will please to acquaint the Company, that, from the experience I have had of it, it certainly claims the preference to Norway, Swedish, Russian, or Plantation tar for a ship's bottom.

I cannot yet say any thing of it for ropes; but without the addition of pitch, it is good stuff by an hour's boiling. Persons conversant with carpenter work, will easily conceive the advantage derived from its being so readily prepared for a ship's bottom, without the addition of pitch.

The Swan's bottom has not been payed above three months; if, in some months hence, I discover any peculiar advantage respecting worms, or its duration, I shall not fail to communicate it, though I should imagine the experiment tried at

Sheerness with it against the worms, would have been sufficient to establish its reputation.

I am, &c.

SWAN Tender, }  
Leith Roads, }  
Jan. 23, 1783. }

(Signed)

JOHN HALL.

*Copy of a Letter, Mr. Thomas Knox, Merchant,  
Law-Valleyfield, Fifeshire, Scotland, to the Agent  
for the British Tar Company.*

S I R,

February 22, 1783.

I RECEIVED your's, desiring to be informed, If the coal tar bought of you in October last, had been used and approved of? In answer to which, I have to inform you, that, soon after I got it, I caused to be payed with it the sloop Margaret, viz. her bottom, sides, timber-heads and rails. The vessel has, since then, been five months abroad at Riga, and met with much bad weather on her return home; notwithstanding of which, the tar upon both bottom and sides is nearly as clean, fresh, and good, as when laid on. From the above trial, I am clearly of opinion, that your tar is preferable, for vessels bottoms and sides, to common tar. You will please to communicate the contents of this letter to the gentlemen concerned, who have my best wishes for the success of so useful an undertaking.

I am, &c.

(Signed)

THOMAS KNOX.

*Copy*

*Copy of a Letter, Mr. Charles Hutton, Mariner,  
Culross, to the Agent for the British Tar Company.*

S I R,

25th Feb. 1783.

I N April 1782, I caused one side of the sloop Peggy, below the bends, to be payed with coal tar, the other with common tar; the bends, sides, timber-heads and rails with coal tar. Soon after the vessel was payed, I sailed for Gottenburgh. On my return, was unluckily captured by an American privateer. The vessel was in my possession after she was payed about three months. The coal stuff on the bottom adhered or stuck on as well as any stuff could possibly do, and was quite clean. I examined her bottom very carefully, when at Gottenburgh, and the coal tar with which the sides were done, looked as well as the day it was put on. Upon the whole, I have no difficulty in declaring, that I reckon coal tar preferable, for vessels bottoms and sides, to foreign tar; and likewise that the clear varnish, prepared by the Company, of which I have made several trials, is equally good as turpentine varnish for vessels sides, or painting of wood work. I am, &c.

(Signed) CHARLES HUTTON.

*Copy of a Letter signed by Messrs. Marshall and Gray,  
of Kincardine, Ship-builders in the Firth of Forth.*

Kincardine, March 11, 1783.

MR. MARSHALL, ship-builder, and Mr. Peacock, ship-owner, having payed over the new brig called the Elizabeth, of this place,  
with

with coal tar, desire to set forth and vindicate, That the coal tar is far preferable to the foreign tar, for the reasons as follow, viz.

1st, One barrel of coal tar will go as far as one and one half of foreign ditto.

2dly, It sinks into, and sticks considerably closer to the wood, than the foreign tar does.

Also, That the coal varnish is far preferable to any boiled oil and rosin whatever, for ships sides, not only for its sticking on, but for its gloss and durableness.

Mr. Gray, ship-builder, has tried the coal tar on two vessels, and desires to set forth the same approbation as above.

(Signed) JOHN MARSHALL.  
JAMES GRAY.

I have boiled the said tar into pitch; and after being boiled, I could not scrape it off, on account of its being so tough, and penetrating into the plank.

(Signed) DAVID PEACOCK.

*Copy of a Letter, Mr. John Grieve, of Grange Coal-works, to the Earl of Dundonald.*

MY LORD,

*Grange, 12th April.*

A FEW days ago, I accidentally met PATRICK MILLAR, Esq; banker in Edinburgh, at North Ferry; and your coal tar becoming the subject of conversation, I told him, that, from some experiments I had made, I was of opinion, that it would preserve iron as well as wood, a great while, from canker. Mr. Millar being desirous

firous that I should make further trials of it, I shall be obliged to your Lordship to order for me a barrel by the bearer. I am, my Lord,

Your Lordship's

Most obedient humble servant,

(Signed) JOHN GRIEVE.

*Copy of a Letter from Mr. John Marshall, Ship-builder in Kincardine, to the Agent for the British Tar Company.*

S I R,

20th April, 1783.

CAPT. HELMSLEY failed from this place before your letter came to hand. His brig is all done with the coal tar. He has a very great opinion of it, and thinks it is very good in quality for the purpose of ships bottoms, and blacking yards, booms, &c. I am, &c.

(Signed) JOHN MARSHALL.

*N. B.* Captain Helmsley's ship's name is the Jane of Bridlington, of 400 tons burthen.

*Copy of a Letter from Captain Robert Mudie, of the Resolution Private Ship of War of Leith, to the Earl of Dundonald.*

MY LORD,

Leith, May 3, 1783.

A SUDDEN call to Montrose prevented me answering your Lordship's letter, which I had the honour to receive; but I was not inattentive to the business it related to. Immediately on the arrival of your sloop, (the Coal Varnish,) I went to all the brewers in Leith, and used my influence with them to take part of the cinders; and,



and, previous to my setting off northward, got two ships then docking to use your tar for their bottoms, &c. Likewise, in my tour north, I omitted no opportunity that occurred, with my brethren of the sea, at Perth, Dundee, Arbroath, and Montrose, to enforce the superior quality of your coal tar; which I did, from a consciousness of its having the qualities I enforced.

Captain Hall, of the Swan tender, is here at present; after having had the trial of your tar and pitch, for seven months, on his ship's bottom, is determined not to use any other, where your's can be got.

Captain Hall is a man of superior knowledge in his profession to many; therefore his opinion carries more weight than others. He has been assiduous with me, in going round to the English ship-masters, at present in the port, to establish the character of the coal tar; and any of them who may load up the Frith, will certainly call at the works and supply themselves. Your Lordship may rely on every exertion in my power for the good of so useful a manufacture; and permit me to be, with the most perfect respect,

Your Lordship's

Most obedient humble servant,

(Signed) ROBERT MUDIE.

*Copy of a Certificate, Alex. Morrison, Ship-master,  
Aberdeen.*

*May 20, 1783.*

I ALEXANDER MORRISON, ship-master and owner of the Peggy of the port of Aberdeen, do hereby certify, that I have made use of, for my sloop's

sloop's bottom, sides, and deck, during these two years past, the coal tar made by Lord Dundonald, at Culrofs, which I find preferable to any sort of foreign tar, for the following reasons :

That it sticks on better, hardens wood more, and goes greatly further in paying, than any stuff I know of. Vessels bottoms payed with it, keep a very long time clean. Nine gallons, wine measure, payed my sloop's bottom, 36 tons burthen. She was payed near two years ago, and her bottom is still in good condition. Further, I do certify from my experience of it, that coal tar is an effectual preservative of bolts and iron-work from rust.

(Signed) ALEXANDER MORRISON.

### T A R sent to N O R W A Y.

*Order for Tar by Mr. Thomas Meldrup, Danish Consul.*

*Leith, May 21, 1783.*

**T**HE EARL of DUNDONALD will be so good as to order five barrels of his coal tar to be sent down to Thomas Meldrup, Danish Consul, Leith, any time this, or the ensuing week; as the vessel he means to send it by to Norway, sails about that time. Likewise will please to send a few gallons of clear varnish.

(Signed) THOMAS MELDRUP.

*Copy of a Letter, John Mitchell, Engine-keeper to  
LORD DUNDONALD.*

MY LORD,

*Culross, 21st May 1783.*

AS your Lordship desired me, about six months ago, to pay over the iron-works of the buckets and clacks belonging to the pile of pumps in the engine pit at Culross, with coal tar, in order to try if it would prevent them from being corroded or wasted by the engine-water; I have now to inform your Lordship, that I have obeyed your orders, and find that coal tar defends iron-work from rust. I chanced not to have occasion to change the clack that I put in, sooner than at the end of four months; at which time the iron-work was as found as when put in, and entirely free from rust. Had the coal tar not been made use of, I know from experience, that the iron would have been considerably wasted in the above time.

I am your Lordship's humble servant,

(Signed) JOHN MITCHELL.

*Inquiries by Mr. John Burrell, Land Steward to his  
Grace the Duke of Hamilton, concerning Coal Tar,  
and its Uses.*

*Hamilton, 4th May 1783.*

JOHN BURRELL wishes to be informed,  
If Lord Dundonald thinks his fossil tar will  
answer in place of white lead and oil, for pre-  
serving

erving of wooden pallisades, pales, and rails? What prompts John Burrell to make inquiries into this matter is, his own conjecture, that, if it be good for the preserving of ships hulls, it must certainly be good for the purpose he wants it: He likewise wishes, that Lord Dundonald would be pleased to let him know, What he thinks the paying over a square yard will cost. If it answers the purpose intended, and can be done at a reasonable rate, John Burrell will soon have occasion for a large quantity.

*Answer to the above Queries by LORD DUN-*  
DONALD.

**T**HAT, from the experience he has had of it these three years by-past, he finds it to be a much more effectual preservative of wood, than any species of paint. Coal tar penetrates to a considerable depth into wood, hardens it, and shuts up its pores, rendering it impervious to air, water, or insects. Fir-wood payed with it acquires a hardness on its surface equal to oak. One gallon wine-measure, cost of which is eight-pence, pays with one coat twenty-six superficial yards of fir-wood. One gallon and five pints, cost of which is thirteen-pence, pays with two coats, twenty-six superficial yards of fir; so that the superficial yard, when done with two coats, just costs one halfpenny, exclusive of the expence of laying it on.

*Copy of Part of a Letter from Captain John Helmsley  
of the Jane of Bridlington, to Mr. Renton, Wharf-  
inger, Leith.*

*St. Petersburg, 15th June 1783.*

THE ship has been exceeding tight ever since she was caulked and payed at Kincardine. I may very safely say, that we have drunk more water than she has made; which is a very great happiness. I approve very much of the coal tar for the purpose I got it for. I think it will answer exceeding well for ships bottoms, as the water seems to make little or no impression on it; and, for any kind of blacking, nothing can equal it. I am, Sir,

Your esteemed friend,

J. HELMSLEY.

*Copy of a Letter, Mr. John Syme, Ship-builder, Leith,  
to LORD DUNDONALD.*

MY LORD, *Leith, 18th July, 1783.*

I HAVE the pleasure to inform you, that your coal tar is now very much in request here. I have used it to above twenty ships this season; and, although it was difficult to prevail on many of them, I have no doubt but that they will always use it again, and prevail on others to get the better of their prejudices.

I am, respectfully,

Your Lordship's most obedient servant,

(Signed) JOHN SYME.

*Copy*

*Copy of a Letter from John Marshall, Ship-builder,  
Kincardine, to LORD DUNDONALD.*

MY LORD,

27th July 1781.

I WAS duly favoured with your's, desiring to be informed, How many vessels I had payed with coal tar this season? In compliance to your Lordship's request, I have to inform you, that all the vessels, both old and new, that I have graved since December last, have been done with coal tar. I cannot, at present, remember the precise number; but the names of such as I do recollect, are the subjoined list. The coal tar continues to be approved of here as much as ever. I am, your Lordship's

Most obedient humble servant,  
(Signed) JOHN MARSHALL.

*List of Ships payed by John Marshall with Coal  
Tar.*

<i>Names.</i>	<i>Masters.</i>	<i>Whence.</i>	<i>Burthen: Tons.</i>
Elizabeth	Peacock	Kincardine	300 New.
W <sup>m</sup> & James	Sands	ditto	100 ditto
The Jane	Helmfley	Bridlington	400 Old.
Jannet & Jane	Higgins	Kincardine	55 ditto
John & Thomas	Stein	ditto	130 ditto
	Millar	ditto	60 ditto
	Sime	ditto	70 ditto
	Burnet	Newcastle	100 ditto
Petroleum	Turkan	Culross	30 ditto
	Scotland	Kincardine	60 ditto

<i>Names.</i>	<i>Masters.</i>	<i>Whence.</i>	<i>Burthen.</i> Tons.
	Murray	ditto	50 ditto
	Millar	ditto	55 ditto
The Peggy	Hutton	Culrofs	70 ditto
New Peggy	Hutton	ditto	75 ditto
	Thompson	Kincardine	150 New.
	Thompson	ditto	35 Old.

*Certificate, James Gray, Ship-builder, Kincardine.*

28th July 1783.

THESE do certify, that I cannot particularly name the quantity of coal tar used, nor the number of vessels graved with it under my direction; but, upon the whole, I am of opinion, that there has been between fifty and sixty vessels payed with it by me and my neighbour Mr. Marshall. No other tar but coal tar is now used in this corner for vessels bottoms. It has given satisfaction to all who have used it.

Witness my subscription,

(Signed) JAMES GRAY.

*Copy of a Letter from Mr. Charles Renton, Wharfinger, Leith, to William Copland, Esq; of Collieston.*

August 1, 1783.

THERE are some of the ships now arrived from St. Petersburg, whose bottoms were payed with Lord Dundonald's coal tar, boiled into stuff for the purpose, before they left this port,

port, to proceed upon said voyage. They are as clean and tight as when they sailed; neither have weeds of any kind grown on them, nor any thing else adhered to them. This was not the case with them formerly when done with vegetable tar, or any other stuff; they being always grown over with a kind of grass of a considerable length, with a quantity of earthy stuff, and with a kind of shell-fish sticking to them, which obliged them to be cleaned before they went to sea again. This was not only expensive, but likewise detained them from proceeding to sea so soon as they otherwise would have done.

I have no manner of doubt, and it is now the opinion of some of the most sensible of our seafaring people, that this tar will answer the purpose of coppering, as it stands the water so well, and is undoubtedly destructive to both vegetable and animal life. I trust and hope, that it will turn out very beneficial both to the country and to the nobleman who has spent so much time and money in bringing it to the perfection he has done. I am, Sir,

Your most humble servant,

(Signed) CHARLES RENTON.

*Copy of a Certificate, Mr. John Syme, Ship-builder,  
Leith.*

*11th September 1783.*

**T**HESSE are to certify, that I have used the coal tar made at Culrofs by the Right Honourable the Earl of Dundonald, and have payed the bottoms of about twenty vessels with it since  
the



the month of November 1782, and it has given general satisfaction to all the ship-masters. Some of the ships have been at St. Petersburg and Portugal, and the bottoms of the vessels were as clean as when new laid on, when they arrived here.

(Signed) JOHN SYME.

*Copy of a Certificate, Mr. George Unthank.*

24th October 1783.

I GEORGE UNTHANK, master of the Lord Cornwallis of the port of Gainsborough, do certify, that I purchased a half barrel of coal tar at Whitby, about three months ago, with which I payed my sloop's bottom. The tar is excellent stuff for a vessel's bottom, as it both sticks well on, and keeps long clean.

(Signed) GEO. UNTHANK.

*Copy of a Certificate, Captain John Helmsley.*

Hull, November 3d, 1783.

THESE are to certify, that I John Helmsley, master and owner of the ship Jane, belonging to Burlington, Yorkshire, have made use of the coal tar lately made and promoted by the Earl of Dundonald, in North Britain, bordering on the Frith of Edinburgh; have experienced it, and found it to be of the greatest utility for preserving and keeping ships bottoms clean from grass, &c. and would recommend it to all people belonging to, or occupying the sea, to be of infinite

finite service, both for keeping clean and preserving ships bottoms, and likewise for the best of blacking, such as yards, masts, staunchions, timber-heads, harpoons, &c.

(Signed) J. HELMSLEY.

N. B. At the time of granting the above certificate, the Jane had made two voyages over seas, the one to St. Petersburg, the other to Memel.

*Copy of a Certificate, James Cunningham and David M'Ritchie, Tacksmen of the North Queen's-Ferry Boats.*

THESE are to certify, that, in March last, we caused pay the bottom of the George new ferry boat, the one half with coal tar, made by the Earl of Dundonald at Culross, the other half with common Norway tar.—By inspection, of this date, we find, that wherever the coal tar has been laid on, the plank is fully filled and coated with it, clean, and free from weeds, &c. But that, wherever the common tar was laid on, the plank is either bare of stuff, and water soaked, or foul, and covered with grass.

Nov. 15. } (Signed) JA. CUNNINGHAM.  
1783. } DAV. M'RITCHIE.

*Copy of a Certificate, David Wishart, and Owners of the Brig Betsy and Brothers, of Leith.*

December 20th, 1783.

THIS is to certify, that I David Wishart, master of the brig Betsy and Brothers, of this place, had said ship payed with coal tar,  
D made

made by the Earl of Dundonald at Culrofs, in March last, since which time she has made two voyages to St. Petersburg, and is now mostly in the same state as when she went out the first voyage. Whereas, when formerly payed with other stuff, I found her to be very foul after performing one voyage; on which account, I think it the best stuff that can be laid on a vessel's bottom, and would recommend the use of it to every ship-master in Great Britain.

(Signed) DAVID WISHART.

WE Peter and Francis Forrester and Co. merchants here, owners of said ship, are also convinced of the utility of the Earl of Dundonald's coal tar, and confirm Captain Wishart's attestation in every respect.

(Signed) P. & F. FORRESTER & Co.

*Copy of a Certificate, Robert Nicholson, Ship-carpenter of the Jane of Bridlington.*

*Leith, 24th December 1783.*

**I** Robert Nicholson, ship-carpenter in Leith, failed from Leith-roads on the 3d of May last, as carpenter on board the Jane of Bridlington, Captain John Helmsley master; we proceeded to St. Petersburg, and from thence to London, as our first voyage; from London we failed again to Memel, and from that to Hull, where we unloaded our second carriage, from thence we failed to Shields, and loaded coals, and from that to London, where I left the ship. The Jane had her

seams and bottom payed at Kincardine in April, before she sailed on her voyage to St. Petersburg, with the coal tar made at Culross, by the Right Honourable the Earl of Dundonald, and, notwithstanding her having performed said voyages, when I left her at London, her bottom and seams were as tight and clean, free of weeds, grass, or barnacles, as when she left the Frith of Forth. I would, therefore, recommend it to all ship-masters, as by far the best stuff for preserving and keeping clean ships bottoms that ever I yet saw or heard of. I also payed the water-ways and cover-boards of said ship, and found that it penetrated so much into the wood, that I was obliged to give it three coats before it would stay on the surface, on which account it must be an excellent preservative for wood, and would recommend it as such to every person that may have occasion for it.

(Signed) ROBERT NICHOLSON.

*Copy of a Certificate, Mr. George Ritchie.*

*Leith, January 7, 1784.*

**T**HIS is to certify, that I graved the ship Friendship, of Leith, under my command, in June last, with the coal tar from the works at Culross, belonging to the Right Honourable the Earl of Dundonald. Since then, the ship has made three voyages to London, and I find that no grass nor vermin has grown on the ship's bottom; and that two barrels of the said tar will go as far in graving a ship's bottom, as three barrels of any other tar that I have used.

Therefore would recommend it to any other ship-master, that, upon trial, they would find it much to their interest graving their ships bottoms with said tar.

(Signed) GEO. RITCHIE.

*Copy of a Certificate, Walter Goalin Ship-builder.*

*North Leith, January 8, 1784.*

**T**HIS is to certify, that I have payed several vessels bottoms with coal tar; and some of them having made voyages through the northern islands, and others to Spain, I found, at their return home, their bottoms were clean, and no barnacles, nor vermin of any kind, on any of them.

WALTER GOALIN.

*Copy of a Letter from John Ferguson, Copper-smith,  
to LORD DUNDONALD.*

MY LORD, *Edinburgh, Jan. 23d, 1784.*

**I** HAVE been in business upwards of 20 years, I have often used different kinds of japan for black iron coal buckets, scuttels, fire pans, dust pans, &c. with a number of other things in the plate-iron way; and having tried your coal tar, I found it to be by far the best of any thing ever invented for that purpose, which I am willing to show to the Public; and would recommend your tar as the best preservative for plate-iron that has ever been yet tried. I am,

Your Lordship's most obedient,

And very humble servant,

JOHN FERGUSON.

*Copy*

*Copy of a Letter from Thomas Syme, Kincardine, to  
Mr. Edward Park, Agent to the Tar Company.*

S I R,                      *Kincardine, March 25, 1784.*

I Would wish to give you my opinion of your coal tar. I lately got my sloop's bottom payed with it, and think you should lose no time in extending your works, because it certainly will be used for the purposes set forth by the carpenters, and others, in every port, both in Britain and abroad, when its qualities are perfectly known; which I shall be proud of acquainting any person who may enquire.

I am, Sir, yours, &c.

THOMAS SYME.

*Copy of a Letter from John Stobie, Japanner, Mill's  
Close, Cannongate, Edinburgh, to Mr. Park.*

S I R,                      *Edinburgh, March 30th, 1784.*

I RECEIVED the sample of asphaltum you sent, and am greatly obliged to you for it. I would have wrote you sooner, but it takes some time to prove it by polishing, &c. The hard black you sent, answers my japan exceeding well; I had a little of the liquid black from Mr. Renton at Leith for a trial, but it does not answer so well. Sir, if you have any of the hard black prepared, please send a cask of it to Leith to Mr. Renton, with a direction for me; and a bill of parcels, and I will pay him, as he is your correspondent. Likewise  
send

send one gallon and a half of the oil you make. I use no leads in japan, so I intend to make a trial of it also; if it answers, I will be your constant customer. As I use a great quantity of oil for japan, please send the price of the oil along with the asphaltum: send as soon as possible, as I am in want of both, and in so doing you will much oblige,

Your humble servant,

JOHN STOBIE.

*Copy of a Certificate, George Primrose, Kincardine.*

*Kincardine, April 2d, 1784.*

**T**HIS is to certify, That I George Primrose, ship-master at Kincardine, have for these eighteen months past, for myself and various other ship-masters at this place, often made use of the Right Honourable the Earl of Dundonald's coal tar, made at his Lordship's works at Culros; and my opinion is, that it is better for a ship's bottom than foreign tar, or any mixture of rosin and sulphur, &c; and I would recommend it to all ship-masters for their ships bottoms, and for blacking their mast-heads, booms, &c.

I have also often used the coal varnish, and find it nourishes wood very much, and recommend it for ships sides, masts, blocks, &c.

GEORGE PRIMROSE.

*Copy*

*Copy of a Letter from Mr. George Scotland, Kincardine, to Mr. Park.*

S I R, *Kincardine, 2d April 1784.*

I HAVE had my sloop, the Eagle, payed with the Culrofs coal tar, and find that it answers the purpose as well as any foreign tar whatever; it seems to stand upon the bottom far better than foreign tar. The sloop has been payed over this twelvemonth upon the bottom, and still has a good body. I am, Sir,

Your very humble servant,

GEORGE SCOTLAND.

*Copy of a Letter from Mr. Alexander Primrose, Kincardine, to Mr. Park.*

S I R, *Kincardine, April 2d, 1784.*

HAVING got my sloop, the Nelly, of this port, payed with coal tar, on Tuesday last, I take the liberty of informing you, that from the appearance it makes, and the toughness of the stuff when properly boiled, it will soon, in my opinion, be used in all the docks and yards in England for ships bottoms, and all kind of wood-work exposed to wind and water, as its quality is evident not only from my own sloop above-mentioned, but from others who have returned to this port from East-country voyages.

I am, Sir, &c.

Yours, &c.

ALEX. PRIMROSE.

*Copy*



*Copy of a Certificate, Mr. William Sorley, Kin-  
cardine.*

*Kincardine, April 2d, 1784.*

**I** WILLIAM SORLEY, master and owner of the sloop the *Lovely Jannet*, of this port, do affirm, that I approve of, and always shall make use of, for my ship's bottom, bends, &c. the coal tar made by the Earl of Dundonald's servants at Culrofs; because, on the 1st of March 1783, I caused my sloop to be payed with it, and find she has no occasion of having any thing done to her at present.

WILLIAM SORLEY.

*Copy of a Certificate, Mr. Gilbert Millar, Kin-  
cardine.*

*Kincardine, April 2d, 1784.*

**I** GILBERT MILLAR, ship-master at Kincardine, master of the sloop *Thomas and Mary*, of this place, approve of the tar made of coals at Culrofs, at the Right Honourable the Earl of Dundonald's works there, because I find it answers well for ships bottoms; my sloop having been payed above twelve months past, and been abroad several voyages, and from all circumstances, I aver, that I have no exceptions to using it always in future myself, and would advise all sea-faring men to use it.

GILBERT MILLAR.

*Copy*

*Copy of a Letter from Mr. M'Naughton Ramsay,  
Leith, to LORD DUNDONALD.*

MY LORD,

*Leith, May 1, 1784.*

**I**N September last, the brig Prince William, of Leith, of which I am master, was raised by Walter Guillon, carpenter here; I caused him pay all the seams of her bottom, sides, and deck, with pitch made of your Lordship's coal tar; also her bottom was payed with stuff made of the same tar. Immediately after she was done, I sailed to Cadiz in Spain; the vessel lay upwards of two months in that bay, and, after being better than four months away, I returned to this port: upon examination, I found her perfectly clean, free from barnacles, grass, &c.; and the seams standing as tight as ever. I believe my vessel was among the first in this port who had their seams done with this sort of pitch, owing to a notion that it burned and destroyed the oakum; and this, I can say from experience, is mere prejudice, as I see plainly from my vessel, that it has no such effect. I had just arrived from Cadiz, when the brig was put into the carpenter's hands to get the foresaid repair, and then upon examining her bottom we found it exceeding foul, barnacles upon her, and grass at least three inches long. I therefore am convinced, that your Lordship's tar is the best thing for preserving and keeping a ship's bottom clean that ever has yet been found out; and if encouraged as it ought, must turn out a very great benefit to this country.

I hope your Lordship will excuse this freedom in one that has not the honour of your acquaint-

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ance,

ance, as I could not deny myself the satisfaction of communicating my opinion of the utility of an article, which your Lordship has taken so much pains and trouble to render useful to your country. I am, my Lord,

Your Lordship's most obedient,  
And most humble servant,

M'NAUGHTON RAMSAY.

*Copy of a Letter from Mr. John Mackie, Dunfermline, to LORD DUNDONALD.*

MY LORD, *Dunfermline, Aug. 6, 1784.*

FIFTEEN months ago I gave my vessel, the Nancy, of Inverkeithing, a clean bottom with your coal tar; just after I went with her to Riga, and after I returned I was employed in the coasting trade till the month of May last, when I went a second voyage to Riga, and am just now returned.

I am happy to acquaint your Lordship, that her bottom is perfectly clean, the plank and seams fully coated, free of barnacles and weeds; on which account coal tar is preferable to Norway or Plantation tar for a ship's bottom; for if my vessel had been payed with either, she would have needed a clean bottom by this time; but, to all appearance, she will not need it for a twelve-month to come. I am, with great respect,

My Lord,

Your Lordship's

Most humble servant,

JOHN MACKIE.

*Copy*

*Copy of a Letter from Mr. John Robertson, Rothesay,  
to Mr. Hugh Crawford, Greenock.*

S I R, Rothesay, Sept. 1, 1784.

YOU will please send me two barrels of the coal tar *per* return of the packet, as I think it preferable to every other kind of stuff for graving vessels, old or new. According to promise, I inspected the sloop's bottom, and have the satisfaction of informing you, that notwithstanding she has been four complete months from this port, at the very worst time of the year for vessels being kept clean, she is nearly as free from all kinds of foulness as the day she sailed. She was nearly a month in harbour in England, and above six weeks on the coast of Ireland in different harbours, where she would have gathered filth of every kind, that commonly sticks to vessels; and with these disadvantages, there is hardly any thing worth mentioning. One side lay against a muddy beach, which made the plank appear as if dirty; but on rubbing it with a broom, it washed clean off. There were a few small limpets on one side, but they all fell off and left a white spot as smooth as glass, about the size of a herring scale; which, in my opinion, is a plain and positive proof, that coal tar will not nourish any kind of animal or vegetable substance. I am, Sir,

Your most obedient servant,

(Signed) JOHN ROBERTSON.

*Copy of a Letter from Mr. Hugh Crawford, Greenock,*  
to LORD DUNDONALD.

MY LORD, *Greenock, Jan. 7th, 1785.*

I DID myself the pleasure of writing your Lordship some time ago, with all the information I had been able to obtain respecting the coal tar. Should any thing occur in consequence of what I suggested, it will be agreeable to be advised. The vessel that had her bottom completely payed, and was at Madeira and Jamaica, has been on our bank.

The master, at my earnest solicitation, examined his vessel, and though he prefers the coal tar, yet he told me, there were shells sticking on, and that a very thin coat of stuff, if any, remained. The character here exhibited, led me to decline taking a certificate from him; the more so, as the tar, in other instances, has had quite different effects. Much is certainly owing to the manner of preparing it; the proper mode of which is, in my opinion, seldom or never attended to; that is, to keep by your Lordship's directions in the Pamphlet. One man mixes with his coal tar a quantity of grease; another must have a proportion of red oker; and in that every person almost has his particular way; which cannot be prevented till experience fully evinces the error. At different times I have been present when it was made use of. As often have I remonstrated against their proceedings; but my advice was, in most instances, looked on as arising from interested motives. The carpenters

penters in general use nothing but foreign tar, though sensible it does not answer *their* purpose so well. What reasons they gave, which indeed were perfectly frivolous, I formerly mentioned to your Lordship; and if you think proper to persevere in getting the coal tar introduced here, my utmost exertions, however trifling the sale may be, shall be wanting at no period. Lately a ship's bottom was fully done over, and as she goes to the West Indies, it will get a fair trial. The little quantity under my charge was mostly used for ships wales, yards, &c. I shall always attend to procuring the opinions of such as may use it. Annexed is a copy of a letter from Mr. Robertson in Rothesay, and inclosed is a letter from the same gentleman. He has had a few barrels, and communicated his sentiments more candidly than any person I sold to. I waited on Captain Gelly, with whom I am acquainted; I read to him Mr. R.'s letter. He agreed to his story in every respect, but did not incline to give any testimony himself, till further trial. The commanders of the other Revenue vessels will *now*, I doubt not, apply to me. I remain, with the greatest respect and esteem,

My Lord,

Your Lordship's most obedient,

And most humble servant,

H. CRAWFURD.

*Copy*

*Copy of a Letter from Captain John Hall to LORD  
DUNDONALD.*

MY LORD,

Nov. 15, 1784.

I N addition to the observations I had the honour to communicate to your Lordship by your agent at Culross, respecting the coal tar, I can assure you, that after being *on the bottom* three years, it apparently is now in good order. During this interval (since laying it on the bottom at Dundee, and which bottom had not been stuffed for two years preceding), the ship has been twice at Shetland, twice at Plymouth, twice up the Baltic, and laid in the rivers Thames and Medway, when not employed. The Swan (formerly employed as a tender) is the vessel I allude to, now laying at the *Lower Scotch Wharf*, Hermitage, and will leave it on Thursday morning for Scotland.

If your Lordship inclines to see the present state of the tar, after a *three* years trial, perhaps this is the only ship where credit has been done in a fair trial of the British tar. I am,

My Lord,

Your Lordship's most humble servant,

JOHN HALL.

*Copy of a Letter from Mr. Hugh Crawford, Greenock,  
to Mr. Edward Park.*

S I R,

Greenock, Jan. 17, 1785.

I WROTE you a few days ago, since I was informed by Messrs. Morrison and Co. of this place, that they would want, in a very short time,

time, 50 barrels coal tar to send to Halifax, Nova Scotia. They had a barrel and two half barrels from me, that went there with particular directions to the Commissioner of his Majesty's dock-yard. We may conclude it has answered well. Should Lord Dundonald approve of this, you will forward it, and what you may think advisable in consequence of my letters, without loss of time. I remain, Sir,

Your most obedient servant,

H. CRAWFURD.

*Copy of a Letter from Mr. Robertson, of Rothesay,  
to LORD DUNDONALD.*

MY LORD, *Rothesay, Feb. 8, 1785.*

BEING desired by Mr. Hugh Crawford, of Greenock, to give your Lordship what observations I made here, respecting the utility of coal tar; with pleasure I take the liberty of informing you, that there have been repeated experiments made, by graving vessels with it, and there is not the least doubt, of its keeping vessels more clean, tight, and slippy, for the purpose of making them sail faster, than any other stuff commonly used. To confirm which, your Lordship will please to know, that early last spring, the Grizzle sloop, of Rothesay, James Stewart master, being in need of a new pitch bottom, I had, by desire of Mr. Crawford (above-mentioned), purchased some of your Lordship's coal tar, and insisted it should be used on the sloop, which  
was



was accordingly done; she sailed to Liverpool, and other ports of the channel; afterwards to the West coast of Ireland; had occasion, in the course of her voyages along the coast, to continue weeks at a time in harbours full of mud, sometimes at anchor from ten to fourteen days at a time, all in the summer, and first months of harvest, when foulness of every kind gather on vessels bottoms, whether at sea or in harbours; yet the Grizzle came home *clean and tight* at the expiry of five months from her leaving this port. About the 25th of September she was fitted out as a bus to the herring fishing, without any cost or trouble, continued three months some odd days, lay in the harbour, and at Greenock, for a month longer, and has now gone to Dublin in quite as good order as the day she got the coal tar bottom, in March last.

The Christie sloop, John Sharp master, got a coal tar bottom at the same time, was chartered for St. John's, Newfoundland, and to load at Greenock. She went to Greenock; and continued in this muddy harbour above three weeks; sailed for St. John's, where she arrived after a stormy passage of ten weeks; was nearly three weeks there; came home with a gale of continued fair wind, in eleven days to Cork; was a month coming from Cork to Greenock, being beat back by contrary winds and severe weather, remained about a week in Greenock harbour, and two weeks in this harbour, before examination of her bottom, which, when examined, was found sound, clean, and tight, as the day she sailed from this port, with her new  
I
bottom

bottom. Some time in harvest last, the Prince of Wales Revenue Cutter (commanded by Capt. Lewis Gelly), got a clean bottom, for the purpose of sailing fast, on account of the frequent opportunities of chasing smuggling cutters. One side of the Prince of Wales was payed over with coal tar, and for the sake of an experiment, Captain Gelly ordered the other side to be payed with vegetable tar. At the end of the cruize, which continued above three months, the cutter was brought into the harbour of Rothesay, for the purpose of cleaning as usual; but to the surprize of all on board, the coal tar side was *absolutely as clean* as the day it was laid on the cutter's bottom; while, at the same time, the other side was quite foul, as expected. It is unnecessary to say, there was no hesitation about giving a new bottom of coal tar to that side, as the other had turned out far beyond the most sanguine expectations of Captain Gelly and his officers. The above information I had *pointedly* given me, by John Stewart, boatswain of the cutter, who is an experienced sailor, and a judicious man; he added, that Captain Gelly was fully determined, not to use any stuff for the cutter's bottom but coal tar.

I have further to inform your Lordship, that I am concerned in a vessel, quite new, and only launched about six weeks ago; before launching, she got her bottom payed with coal tar, which, after being about ten days done, had penetrated very much into the plank (all English and Dantzick oak); upon observing, that it had not such a body outwardly as could be wished, the plank was chipped with an adze, and, within the

F surface,

surface, we found the tar had made its way to a considerable depth inwards, and impregnated the plank to a great degree, by which, we apprehend, it will be a preventative of worms hurting the bottom. We resolve to give the vessel another coat before sailing, which (it is thought) will be sufficient to defend her from every kind of foulness, as well as prevent her being hurt by worms to any degree worth notice. The bottoms of the sloops before-mentioned, have a lustre like japan, and are quite smooth as glass; the dead-eyes, chain-plates, rails, and tops of the new vessel, also look like varnish, and have a strong body of the tar. Upon the whole, I can assure your Lordship, that, from what I have seen, I would prefer the coal tar to any stuff whatever. What this contains may be depended on.

I have the honour of being, My Lord,  
Your Lordship's

Most obedient humble servant,

JOHN ROBERTSON.

*Copy of a Letter from Mr. H. Crawford, Greenock,  
to LORD DUNDONALD.*

MY LORD, *Greenock, Feb. 17, 1785.*

I DID myself the pleasure of writing, in return to your Lordship's last letters; since when, I have not heard from you, nor have I heard from Mr. Park, in regard to the coal tar for Halifax, wanted by some people of that place. I em-

brace the very first opportunity to forward Mr. Robertson of Rothsay's letter to your Lordship, which is here annexed; and I apprehend that it contains a very important piece of information, *viz.* The account given by that gentleman of the penetrating quality of the coal tar. I sincerely wish they would all think of giving two coats on new vessels, and this will remove the ill-grounded objection of its not admitting of a proper coat. I shall make the proper use of this information, that, if possible, they may be induced to pay attention to it. I expect either to see your Lordship, or receive your sentiments on the further use of coal tar. And have the honour of remaining, with all respect,

My Lord,  
Your Lordship's  
Faithful humble servant,

HUGH CRAWFURD,



I enclose you this opportunity to see  
 the report on the subject of the  
 which is here annexed, and I enclose  
 containing a very important piece of information  
 on the account given by that gentleman of  
 the testimony given at the court, I in-  
 close with them a full and complete  
 copy of the new report, and this will remove the  
 in general of action of its not admitting of a  
 proper case, I shall make the proper use of  
 this information, that if possible, they may be  
 induced to pay attention to it. I expect either  
 to see you I should be to receive your sentiments  
 on the subject of the court, and have the  
 honor of writing, with all respect,

My Dear Sir,  
 Your Obedient Servant

HUGH CLAWFORD

4/17  
 1794