CAMBRIDGE LIBRARY COLLECTION

Books of enduring scholarly value

Technology

The focus of this series is engineering, broadly construed. It covers technological innovation from a range of periods and cultures, but centres on the technological achievements of the industrial era in the West, particularly in the nineteenth century, as understood by their contemporaries. Infrastructure is one major focus, covering the building of railways and canals, bridges and tunnels, land drainage, the laying of submarine cables, and the construction of docks and lighthouses. Other key topics include developments in industrial and manufacturing fields such as mining technology, the production of iron and steel, the use of steam power, and chemical processes such as photography and textile dyes.

Reports of the Late John Smeaton

Celebrated for his construction of the Eddystone Lighthouse near Plymouth, John Smeaton (1724–92) established himself as Britain's foremost civil engineer in the eighteenth century. A founder member of the Society of Civil Engineers, he was instrumental in promoting the growth of the profession. After his death his papers were acquired by the president of the Royal Society, Sir Joseph Banks, Smeaton's friend and patron. Using these materials, a special committee decided to publish 'every paper of any consequence' written by Smeaton, as a 'fund of practical instruction' for current and future engineers. These were published in four illustrated volumes between 1812 and 1814. Volume 2 contains Smeaton's reports on engineering works for bridges, including a proposal for the widening and improvement of London Bridge, as well as many plans for the creation or improvement of canals, mills and waterwheels.

Cambridge University Press has long been a pioneer in the reissuing of out-of-print titles from its own backlist, producing digital reprints of books that are still sought after by scholars and students but could not be reprinted economically using traditional technology. The Cambridge Library Collection extends this activity to a wider range of books which are still of importance to researchers and professionals, either for the source material they contain, or as landmarks in the history of their academic discipline.

Drawing from the world-renowned collections in the Cambridge University Library and other partner libraries, and guided by the advice of experts in each subject area, Cambridge University Press is using state-of-the-art scanning machines in its own Printing House to capture the content of each book selected for inclusion. The files are processed to give a consistently clear, crisp image, and the books finished to the high quality standard for which the Press is recognised around the world. The latest print-on-demand technology ensures that the books will remain available indefinitely, and that orders for single or multiple copies can quickly be supplied.

The Cambridge Library Collection brings back to life books of enduring scholarly value (including out-of-copyright works originally issued by other publishers) across a wide range of disciplines in the humanities and social sciences and in science and technology.

Reports of the Late John Smeaton

Made on Various Occasions, in the Course of his Employment as a Civil Engineer

Volume 2

John Smeaton





University Printing House, Cambridge, CB2 8BS, United Kingdom

Cambridge University Press is part of the University of Cambridge. It furthers the University's mission by disseminating knowledge in the pursuit of education, learning and research at the highest international levels of excellence.

> www.cambridge.org Information on this title: www.cambridge.org/9781108069786

© in this compilation Cambridge University Press 2014

This edition first published 1812 This digitally printed version 2014

ISBN 978-1-108-06978-6 Paperback

This book reproduces the text of the original edition. The content and language reflect the beliefs, practices and terminology of their time, and have not been updated.

Cambridge University Press wishes to make clear that the book, unless originally published by Cambridge, is not being republished by, in association or collaboration with, or with the endorsement or approval of, the original publisher or its successors in title.

REPORTS

OF THE LATE

JOHN SMEATON, F.R.S.

VOL. II.

REPORTS

OF THE LATE

JOHN SMEATON, F.R.S.

MADE ON

VARIOUS OCCASIONS,

IN THE COURSE OF HIS EMPLOYMENT

AS

A CIVIL ENGINEER.

IN THREE VOLUMES.

VOL. II.

LONDON:

PRINTED FOR LONGMAN, HURST, REES, ORME, AND BROWN, PATERNOSTER-ROW.

1812.

CONTENTS.

LONDON BRIDGE.

Page.
I agre
1
18
22
27
29,

FORTH AND CLYDE.

Report of John Smeaton, engineer, and F. R. S. penfe of joining the rivers Forth and Clyde by a	-	-	-		
the east fea and the west,	-	-	-	-	31
Comparative estimate between a canal from Forth	to Clyde fo	r veffels of	forty tons	, and	·
for those proposed in the contracted scheme,	-	-	-	-	54
Queries proposed by the Right Honorable Lord C	athcart,	-	-	-	56
Anfwer to the faid Queries by J. Smeaton,	-	-	-	-	58
Minutes concerning the Forth and Clyde,	-	-	-	-	66
Estimate of the probable expense of executing a c	anal from	Carron she	ore to Ba	rns of	
Clyde for veffels drawing eight feet water,	-	-		-	70
Instructions to Mr. Mackell, relative to the propofe	d canal fro	m Forth t	o Clyde,	-	71
Second report of J. Smeaton, engineer, &c. on the			•	canal	•
from the Forth to the Clyde, for veffels of a grea	ter burther	n and drai	ft of wate	r than	
thole which formed the fubject of the first report	, -	-	•	-	73
Eftimates,	-	-	-	-	90
Review of feveral matters relative to the Forth and on the Reports of Meffrs. Brindley, Yeoman, a	•	-			2
gineer, &c		•	-	-	98
				Comp	

Cambridge University Press 978-1-108-06978-6 - Reports of the Late: John Smeaton: Made on Various Occasions, in the Course of his Employment as a Civil Engineer: Volume 2 John Smeaton Frontmatter More information

vì

CONTENTS.

	Page.
Comparative view of the expenses upon the work of the Forth and Clyde canal, as per	
general account, down to Christmas 1771, with the original estimate,	120
A plan or model for carrying on the mechanical part of the works of the canal from	
Forth to Clyde, by J. Smeaton,	122

CALDER AND AIRE.

Report of J. Smeaton, engineer, concerning the state of the Calder navigation, from a	
view thereof taken the 25th and 26th of November, 1767,	125
Report of J. Smeaton, upon the means of improving the navigation of the rivers Aire	
and Calder from the free and open tide's way to the towns of Leeds and Wakefield	
respectively,	131
Report of J. Smeaton, upon a view of the Calder navigation the 25th and 26th February,	-
1779, in company with Messirs. Royde, &c	141
Report of J. Smeaton, upon the drainage of certain lands lying on the river Aire,	146
	•

RIVER AIRE CANAL.

Report of J. Smeaton, upon the plan and projection of a canal on the north fide of	of the	
river Aire from Haddlesey to Brier Lane end, as laid down by Mr. Jessop,	-	151

LEA NAVIGATION.

Refolution of the Truftees of the river	Lea navigat	tion, 16th J	uly, 1766,	-	I54
Report of J. Smeaton upon the new m	naking and	completing	the navigat	ion of the river	
Lea, from the Thames to Hertford,	-	-	-	-	155

NEW RIVER WORKS.

Report of J. Smeaton, upon the improvem	ents n	naking by the	New Riv	er Compan	y near	
Ware in the county of Hertford,	-	-	-	-	-	164
Letter to the Trustees of the River Lea,		-	-	-	-	168

RIVER URE NAVIGATION, &c.

Report of J. Smeaton, upon	a view of t	he works ı	ipon the ri	iver Ure, :	27th April,	1770,	172
Report of J. Smeaton, concer	rning the re	pairs of th	e navigatio	on dam at '	Westwick V	Nath,	
upon the river Ure,	-	-	-	-	-	-	176
View of the works of the nav	igation of a	the river U	re, May 14	4th, 1771,	by J. Smea	aton,	179
Report of J. Smeaton, upon	the state of	the naviga	tion of the	e river Ur	e from Rip	on to	-
Boroughbridge lock.		-	-	-	-	-	182
						He	wick

Cambridge University Press
78-1-108-06978-6 - Reports of the Late: John Smeaton: Made on Various Occasions, in the Course of his Employment
s a Civil Engineer: Volume 2
ohn Smeaton
Frontmatter
Aore information

CONTENTS.	vii
HEWICK BRIDGE. Report of J. Smeaton and John Gott, engineers, respecting Hewick bridge,	Page. 185
BIRMINGHAM NAVIGATION.	
Queries by Mr. Colemore, with Mr. Smeaton's anfwers, concerning the Birmingham canal, Report of J. Smeaton, upon feveral matters referred to his infpection and opinion by the committee of the Birmingham canal,	189 194
BUDE HAVEN CANAL.	
Report of J. Smeaton, upon the practicability of a canal proposed from Bude harbour to the river Tamar, at Calstock, in the county of Cornwall,	213
KINGSTON AND EWELL CANAL.	
Report of J. Smeaton, concerning the effect which the execution of a canal from the River Thames, at or near Kingfton to Ewell, in the county of Surry, will have upon the feveral mills upon the contiguous ftream,	230
RIVER TYNE CANAL.	
Report of J. Smeaton, on the practicability and probable expense of extending the naviga- tion of the river Tyne by a canal on the fouth fide of the river from Stella, by Ryton, towards the grounds opposite Wylam,	238
KANQUARRY CANAL.	
Report of J. Smeaton, upon the practicability and utility of making a navigable canal from Kanquarry to or near the New Bridge over the river Plym, in the county of Devon,	240
KNOITINGLY NAVIGATION.	
Report of J. Smeaton, upon the fituation proper to be adopted for a new lock at Knot- tingly,	242
So	WERBY

Cambridge University Press
978-1-108-06978-6 - Reports of the Late: John Smeaton: Made on Various Occasions, in the Course of his Employment
as a Civil Engineer: Volume 2
John Smeaton
Frontmatter
More information

viii

CONTENTS.

Sowerby Bridge Canal.	Dece
Opinion of J. Smeaton, refpecting the beft way of fupplying the Sowerby bridge cut with water from Holling's mill,	Page. 244
DUBLIN GRAND CANAL.	
Queries from the Company of Undertakers of the Grand Canal, ordered to be laid before J. Smeaton, Efq. engineer, and F. R. S. Report of J. Smeaton, upon his view of the country through which the Grand Canal in Ireland is proposed to pass, and in answer to several matters contained in the queries of the Company of Undertakers of the Grand Canal, as agreed upon August 3d, 1773,	247 252
Further report on the preceding matters,	262
TYRONE CANAL.	9
Opinion of J. Smeaton on Mr. Jessop's report on the Tyrone canal,	278
North Level Fens.	
Report of J. Smeaton, concerning the drainage of the North level of the fens, and the out-fall of the Wifbeach river,	280
HATFIELD CHASE LEVEL.	
Report of J. Sincaton, upon the means of improving the drainage of the level of Hat- field Chafe,	299
KNIGHTSBRIDGE DRAIN.	
Report of J. Smeaton, on the expediency of carrying the outlet of the drain from Knights- bridge to Chelfea, into the Brook at the Chefhire Cheefe, Chelfea,	316
CARLISLE QUERIES.	
Carlifle queries, with the answers,	319
THANKS EMBANKMENT.	
The report of J. Smeaton, engineer, upon the practicability and expense of embanking a track of mud lying in the bay before the house of the Honorable Captain Graves, at Thanks, on the river Tamar, in Cornwall,	323

Thanks, on the river Tamar, in Cornwall, --COQUETT

ambridge University Press	
78-1-108-06978-6 - Reports of the Late: John Smeaton: Made on Various Occasions, in the Course of his Employmen	nt
s a Civil Engineer: Volume 2	
ohn Smeaton	
rontmatter	
Iore information	

	CONTEN	TS.				ix
COQUETT DAM. Explanation of the defign for a dam for the iron works, upon the river Coquett,						
	LUMLEY C	CASTLE.				
Fishing dam at Lumley Castle,	-	-	-	-		3 3 3
:	Kinnaird I	Engine.				
The report of J. Smeaton, engineer, Kinnaird, &c	upon the powe	rs and imp -	rovement o -	of the eng -	jine at -	334
York	WATER-WO	rks Eng	GINE.			
Directions for working the engine at Letter to the proprietors of the York		r-works,	-	-	-	342 343
LUM	LEY COLLIE	ry Engi	[NE.			
Dimensions proper for a fire engine the Little Lumley Colliery, &c.	for raifing wate -	r at the No -	ew Winnin -	g of Gre	at and -	346
Сн	ASE WATER	Engine				
Calculation of the effects to be expect the former two engines upon the fa Additional remarks on particular part	me mine,	-	-	omparifor - -	n with - -	347 350
(CRONSTADT	Engine.				
Directions to be observed in adjusting	the engine for (Cronftadt t	o its work,	,	-	36 0
Gat	eshead Pai	rk Engi	NE.			
Defcription of the method of fupplyin	ng the boilers o	of a Fire I	Engi ne witl	n foft wate	er,	362
RA	VENSBURN	ENGINE	•			
Explanation of the plan and elevation	for the Ravení	burn engin	ie,	-	-	367
					Sea	CROFT

Cambridge University Press 978-1-108-06978-6 - Reports of the Late: John Smeaton: Made on Various Occasions, in the Course of his Employment as a Civil Engineer: Volume 2 John Smeaton Frontmatter More information

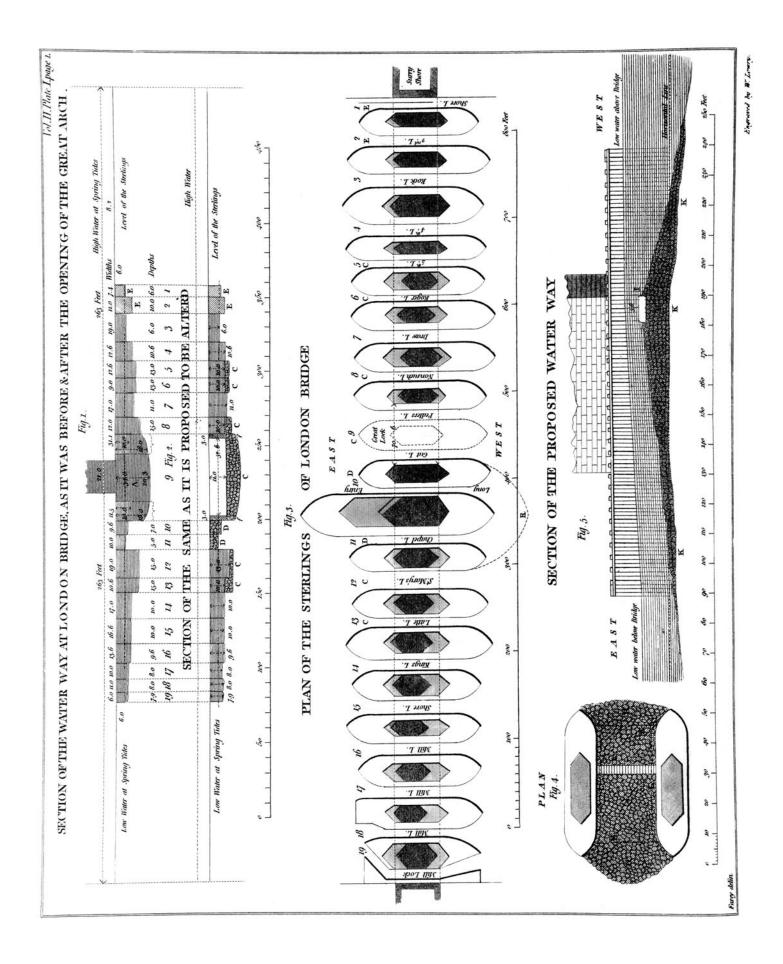
х

CONTENTS.

SEACROFT COKE FURNACE.	Daga
The Report of John Smeaton, engineer, concerning the powers necessary for working a coke furnace at Seacroft,	Page. a - 373
COAL ENGINE	
Comparative estimate of drawing coals by horses, or by a coal engine worked by wate supplied by a fire engine,	r - 375,
MR. WESTGARTH'S ENGINE.	
The reprefentation of John Smeaton, engineer, concerning the Hydraulic Engine, in vented by Mr. William Weftgarth, of Coal Cleugh, in the county of Northumberland	,
for raifing water by water,	- 376
CORN MILL.	
Corn mill, to be worked by a fire engine,	- 378
GOSPORT WATER-WORKS, &C.	
The Report of John Smeaton, engineer, upon the flate and diffribution of the waters a the brewery at Weevill, near Gosport,	- 381
General defcription of the horfe engine, propofed to be erected upon the new well, at His Majefty's brewery works at Weevill, near Gofport,	- 386
Description of the design for a stone beer vat for His Majesty's brewhouse at Weevill,	392
CHIMNEY WINDMILL.	
Explanation of the defigns for Chimney Windmill,	396
OIL MILL, AT HULL.	
Explanation of the defign for an oil mill, for Mr. Mayfon Wright, to be worked by water raifed by a fire engine, at Hull, by J. Smeaton,	. 398
LEAD HILLS WORKS.	
The Report of John Smeaton, engineer, upon the flate of the powers employed, and capable of being employed at the Sufannah Vien, at Lead Hills, for unwatering the low	
workings thereof,	- 402 Maria

Cambridge University Press
78-1-108-06978-6 - Reports of the Late: John Smeaton: Made on Various Occasions, in the Course of his Employment
s a Civil Engineer: Volume 2
ohn Smeaton
rontmatter
Iore information

MILL FOR GRINDSTONES.	
	age. 412
BOCKING FULLING MILL.	
Directions for converting the larger water wheel of Mr. Nottidge's fulling mill at Bocking, fo as to drive two ftocks by geer,	f13
FLINT MILL AT LEEDS.	
Directions for weathering the fails of the Flint Mill at Leeds, 4	15
PUDDING MILL.	
The report of John Smeaton, engineer, upon the powers of the Pudding Mill, in the parish of St. George, in Surry, near Blackfriars Bridge, for raising water for the service	.16
DALRY MILLS.	
Report of John Smeaton, engineer, upon the memorandum of Mr. John Ruffell, of the 16th July, 1771, concerning his mills, called the Dalry Mills, near to and weft of Edinburgh,	.19
KILNHURST FORGE.	
Kilnhurst forge hammer mill, 4	.2.4
THORNTON WATER WHEEL.	
	26
	28
Sir L. Pilkington's Flour Mill,	30
LORD IRWIN'S WATER ENGINE.	
Explanation of the defigns for a water engine erected for Lord Irwin, at Temple News-	
Tana Devenue Frances	31
	435 439



www.cambridge.org