5392

# SERVANTS OF INDIA SOCIETY'S LIBRARY, POONA 4.

### FOR INTERNAL CIRCULATION

To be returned on or before the last date stamped below

11 4 FEB 196 <del>17 JUL 1854</del> 16 JUL 1965

### Dhananjayarao Gadgil Library

- GIPE-PUNE-005392



A COTTON PLANTATION

Photograph by Ewing Galloway, N.Y.

## THE ROMANCE

OF THE

## **COTTON INDUSTRY**

IN ENGLAND

BY

L. S. WOOD, M.A.

Author, with G. W. Morris, of The Golden Fleece and The English Speaking Nations

AND

A. WILMORE, D.Sc., F.R.G.S.

Author of The Groundwork of Modern Geography,

Great Britain and Ireland, The British Empire, etc.



OXFORD UNIVERSITY PRESS
LONDON HUMPHREY MILFORD

1927

X9(M71).3.M F7

### Oxford University Press

London Edinburgh Glasgow Copenhagen
New York Toronto Melbourne Cape Town
Bombay Calcutta Madras Shanghas
Humphrey Milford Publisher to the University

5392

PRINTED IN GREAT BRITAIN BY ROBERT MACLEHOSE AND CO LTD THE UNIVERSITY PRESS, GLASGOW

#### PREFACE.

EACH of the great industries has its own literature; but this, being for the most part expert or technical, is not designed for the ordinary reader. The present book, avoiding such technical detail, seeks to give to the general reader, as well as to those interested in England's industrial development and in the Cotton Industry itself, some idea of the part played by cotton in English history. It seeks to show how the Cotton Industry has thriven from the days when, like the Red Rose under whose auspices it flourishes, it was first grafted, weak and insignificant, on to the sturdiest industrial stem in England, the stem of the ancient Woollen Industry, to the days when, spanning the world from the western hemisphere, whence it drew its raw material, to the eastern, where it sold its finished produce, and, having concentrated within itself all the features of the Industrial Revolution in their most intense form, it provided England with the riches wherewith to pay for the second Hundred Years' War with France and to defeat Napoleon, even as its parent, the famous Woollen Industry, had provided her with the moneys to pay for the first; and then to show how, from about 1830 onwards, it displays, as it were in microcosm, the changes that have befallen industry in England under the stress of international competition, and how it has given England Free Trade. In short, the aim of the present book is to depict the Cotton Industry in its setting as part of the history of England, rather than to isolate it for minute and detailed study.

The story of a great industry is a romance, in which may be traced the hopes and fears, achievements and failures of successive generations. Could the history of the great businesses be written, we should find few that were not actuated by many motives beside the primary one of profit-making. This plainly appears when a stray breeze, set in motion by some cardinal occurrence, lifts for a moment a curtain, as in Lancashire during the American Civil War, and affords a glimpse behind. But for the most part these great businesses are shrouded in silence, because they were built up and are maintained by men whose tradition it is not to talk

It is this self-imposed silence that has consigned many a stirring deed to oblivion, and caused Industrial History, intimate as it is, to seem somewhat invertebrate in comparison with Political History, a thing of tendencies and statistics, lacking in striking personalities Whether this charge be in general just or not, it is not true of the history of the Cotton Industry, which can boast figures like those of Chetham, Arkwright, Peel, and even Lincoln himself to fill the niches of its temple-front this book such personal histories as rightly belong to the story of the Cotton Industry, and are suggested by its setting in Lancashire, have been introduced. Similarly it is hoped that the reader's ears may now and then catch the echo of a debate in the House of Commons or of the reply of a witness before a Royal Commission, or listen to the comment of some observer or man of letters when he first heard the news of an event or development now famous. For History, even when clad in sober economic garb, is a thing of flesh and blood old Proteus, though he may have put off a gay uniform for a fatigue dress, is no whit less vivacious now in Liverpool or Manchester than once in Rome or Antioch, and since it is by trade men live, that branch of history known as Industrial History should be second to none in inculcating the lesson of the essential brotherhood of man, and in giving men and women understanding of the ties that bind them in a common purpose. Whatever their industrial or political party, the study of it should help them to approach the vexed industrial and social questions of to-day in a frame of mind more humble, a temper more serene For the study of History not only enlightens us about the past it teaches inexorably that seldom in human affairs may not as much be said on one side as on the other, and that never is all the right on one side and all the wrong on the other. It is hardly too much to say that, in a democracy, widespread study of Industrial History is a matter of national importance We shall not solve our industrial difficulties till we understand clearly how they have come to be what they are, until we realise that they are matters of complexity and not of catchwords.

In the history of industry there are so many cross-currents, especially during the century of the Industrial Revolution, that, in writing it, it is difficult always to observe rigid chronological sequence. In each chapter those points have been dealt with which seemed properly to belong to the subject of the chapter: the authors have preferred the occasional repetition of a detail to absence of clearness

We take this opportunity of thanking Mr A. N. Wilmore for kindly undertaking the construction of the Index.

A. W L. S. W.

### TABLE OF CONTENTS

#### LIST OF ILLUSTRATIONS AND MAPS

307.4 XII

24

#### I. ENGLAND'S HERITAGE AS A TEXTILE COUNTRY

The Cotton Industry grafted on to the old Woollen Industry —
The History and Prestige of the Latter — The Gilds Part of our
National Habit of Thought — The Rise of English Shipping —
Changes in Society wrought by the Black Death — Industrial
Advance in the Fifteenth Century — The Aulnagers Returns
— Contrasts in the Sixteenth Century — Early Capitalist
Employers in the Textile Industry — 'Merrie England' — St
Distaff's Day — Weavers and their Reputation for Music — Norwich and the Coming of the Aliens — New Trades, Newfangledness and New Fashions coming from the East.

#### II THE OBSCURE BEGINNINGS OF THE COTTON IN-DUSTRY IN ENGLAND . .

Uncertainty as to the Meaning of the Terms—The Cotton Manufacture of Moorish Spain and of the Spanish Colonies not initiated by Europe—Fustians in Barcelona, Venice, Milan, Augsburg and Antwerp—Cotton an Article of Import since the Fourteenth Century—Henry VII's Book of Rates—Cotton-russet—Elizabeth's Interest in New Trades—The Levant Company—Norwich welcomes Dutch Refugees—The 'New Draperies'—Cotton being used in them in 1605—Dutch Refugees settle in Manchester, Bolton, Saddleworth—London Merchants' Petition against Fustians, 1621—Evidence of Lewes Roberts, 1641—The Effect of the Civil War—The Thirty Years' War checks Competition from Abroad—Importation of Indian Calicoes—Acts of 1700 and 1721—Walpole grants the Fustian Manufacturers their Petition—The 'Manchester Act'

#### III. THE DOMESTIC SYSTEM .

The Position of the Worker under the Domestic System — Methods primitive — Labour of Children — Discontent — Defoe's Picture of England in 1725 — London, Norfolk, the West Riding, Taunton, Manchester, Bolton, Liverpool, Preston — The 'Forty-five — Manchester's East Indian Trade — Cotton

implanting itself on the older Woollen Industry — Reaches Stalybridge — Fxcessive Fetching and Carrying under Domestic System — Domestic Workers not Independent — Humphrey Chetham — Incentives to Greater Speed — Radcliffe's Account of Last Days of Domestic System at Mellor — Disappearance of Domestic Spinning in 1784 — The Final Scene.

#### IV. THE GREAT INVENTIONS.

72

Seventeenth and Early Eighteenth Century Lancashire — The Operations of Manufacture — Carding — Spinning — Weaving — Kay's Flying Shuttle — Early Carding Machines — Hargreaves constructs his Spinning Jenny — Retires to Nottingham — Arkwright's Water Frame — His Machine for Drawing, Roving and Spinning — Samuel Crompton settles at Hall-i'-the-Wood — Growing Demand for Muslins — The 'Hall-i'-the-Wood Wheel' — Crompton's Reward — Dr Edmund Cartwright and the Power Loom — The Hard Treatment of the Inventors possibly exaggerated — At all events avenged in the Person of Arkwright — His Character, Achievements and Triumphant Career.

#### V. THE IMPROVEMENT OF COMMUNICATIONS .

95

The Position in 1725 — The Improvement of Waterways — The Sankey Brook — The Romance of the Duke of Bridgewater and the widowed Duchess of Hamilton — James Brindley and the Worsley Canal — Its Extension to Runcorn — The Leeds and Liverpool Canal — The Rochdale Canal — And the Canals of Greater Manchester — The Manchester Ship Canal — The Packhorse Roads — The Lancashire Roads in 1719 — Bridges — Inns — Broad-immed Wheels — Arthur Young's Account of Lancashire Roads in 1770 — 'Blind Jack of Knaresborough' — The Advent of Mail Coaches — Telford and McAdam — The Stockport and Darlington Railway, 1825 — The Liverpool-Manchester Railway, 1830 — And Others which later comprised the 'Lancashire and Yorkshire Railway' — The Dawn of the Motor Era.

#### VI. THE INDUSTRIAL REVOLUTION

116

(a) Beginnings of the Change — Lack of Good Means of Communication kept Things stable — Wages no longer fixed by the J.P.'s — Social Changes brought about by Machinery — First Half of Eighteenth Century prosperous — The Point reached in 1759 — Successive Wars bring Constant Unrest — Bad Harvests — Manchester in 1771 — Advent of Machinery and Printing — The

Gaping Markets — Effect of the Wars in Breaking the Circle of Trade — The Agranan Revolution — Era of Water-power — Cotton at Norwich, Burton-on-Trent, Keighley, Burley-in-Wharfedale, Preston, Todmorden and Nottingham

(1) Arkwright's Factory at Cromford — The Entry of Cotton into Burnley — Machine versus Man — The Labourer less comfortable and less free — Hit by the System of Taxation — The Speenhamland Policy — Laisses faire — Migration to the North of England — The New Towns — The Steam Engine and the Expiration of Arkwright's Patents — Effect of Steam on the Factory — Employment of Children their Wretched Condition in the Early Factories

(m) After 1800 the Features of the Revolution became more the Government's Attention—Austerlitz—Half the cost of the War paid out of Direct Taxation—The Berlin Decrees and the Orders in Council—Cotton Criss of 1806-7—The Colonel Hanson Incident—The Struggle for a Minimum Wage Bill—The Luddites—Disorganisation of Trade after the War ended—The Corn Law of 1815—Sir Robert Peel's Committee—The Cotton Strikes of 1818—Peetfolo—Renewal of the Struggle for a Minimum Wage—Employers and Employed turn towards Political Reform—The Reform Bill disappointing—The Hungry Forties'—Movement towards Free Trade—Repeal of the Corn Laws, the End of Chartism and the Triumph of Manchester—The Two Steeds, Political Progress and Economic Advance.

## VII THE GEOGRAPHICAL SETTING OF THE COTTON INDUSTRY

(i) In Lancashire

Its Location in South-east Lancashire—The Need of Mechanical Power—The Mid-Pennine Region—Its Geographical Features—Sheltering Hills and Steady Rainfall—Geological Features—The Water Mill Era—The Steam Era withdraws the Industry from the Valleys and helps to locate it near the Coalfields—Coal and Canals—Summary of Geographical Factors resulting in the Localisation of the Cotton Industry.

. 176

Mercerised Cotton in Cheshire — Nottingham and the Lace Industry — Leicester and Knitted Goods — The Glasgow 'Province' — Paisley.

(m) THE GROWTH OF SPECIALISATION AND LOCALISATION

The Separation of Spinning and Weaving — Their Geographical Localisation — Spinning Centres round Manchester — Specialisation within the Spinning Branch — Coarse and Fine Counts — Oldham and Bolton — Weaving Beit North of the Rossendale Fells — Specialisation within the Weaving Branch — Statistics — The Waste Trade — Hashingden — Rochdale — Textile Chemistry Industries — Marketing Liverpool and Manchester — The Story of a Bale of Cotton

VIII. THE COTTON MILL .

. . . 183

Magnitude of the Cotton Industry — Its Main Operations — The Arrival of the Bale — Cleaning the Raw Cotton — Carding — Drawing and Roving — Slubbing — Spinning. Ring frames; Mule Frames — Doubling of Yarn — Gassing of Yarn — Mercerising of Yarn — Bleaching of Yarn — Dyening — Beam Warping — Sizing — Weaving, Shedding, Picking and Beating-up — How Variety is achieved — The Jacquard Loom — Some of the Chief Varieties of Cotton Fabrics — The Weaver — Two Kinds of Cotton Mills — Calico-printing — Some Great Names — Finishing

IX. THE LANCASHIRE COTTON FAMINE

211

Improvement in Wages after Repeal of Corn Laws --- Interest of Kinglake's Pasha in English Printed Calicoes typical of their Reputation on the Continent - The Industry none the less top-75% depending on American Crop - Efforts of the Cotton Supply Association - Slavery - English Opinion against it - Clarkson and Wilberforce - After War of Independence seemed declining in America -- Invention of Cotton-gin turned scale, and it became an Industrial System - The Missouri Compromise - The American Civil War - Abraham Lincoln -Prosperous State of the Industry at its Outbreak - Absence of Alarm - Short Time - Blackburn - Preston - Wigan -Glossop - Ashton-under-Lyne - H.M. Commissioner's Report - the 'Lancashire Lad' - The Mansion House Fund - What was done in the Country - Thomas Evans and the Education Test - Blockade-running - The Clyde Steamers - Efforts to obtain Cotton from other Parts of the World - India - 'Surat'

Cotton — The Cotton Mills of Bombay — Bankruptcies and Empty Houses at Home — Rumours of Peace — The End of the War — Restoration of Normal Conditions — The Moral

#### X. THE SUPPLY OF RAW COTTON

242

259

- The Cotton Plant Its Requirements of Latitude and Climate
   Its Early History Demand for it rises from Date of the
  'Manchester Act'—Coming of American Cotton Rise of
  Liverpool The West Indies Egypt The Indian Central
  Cotton Committee The Outlook of Supplies from other Sources
   Experiments in Queensland—The Sudan, and the Senaar Dam
   Nyasaland Uganda Nigeria Iraq The Boll-weevil
   The Empire Cotton Growing Committee The Need of
  Government Support'
- XI. THE ERA OF INTERNATIONAL COMPETITION . . .

The Lancashire Cotton Industry at first a Monopoly - Successful Smuggling - The Dawn of Competition after 1830 - The Exhibition of 1851 - Removal of the Worst Evils of the Factory System - The Victorian Age - Lord Shaftesbury - The Ten Hours' Bill - Break-up of Laissez faire - Macaulay - Dickens - Ruskin - Senior - Trade Unions - The Brooklands Agreement - Improvement of Housing and Sanitation - Effects of International Competition - Concentration - Specialisation in Machine-making - Isaac Dobson of Patterdale - Howard and Bullough - Chemical and other Allied Trades - Artificial Silk - Bigger Machines - Need for Constant Vigilance - Changes in Transport and Communication - In Marketing - Cosmopolitan Character of Manchester -- 'Futures' -- The Cotton Industry during the War -- the Cotton Control Board -- The Levies - The New Type of Worker - Possible Effect of an Electricity Scheme on the Cotton District

## LIST OF ILLUSTRATIONS

	PAGE
A Cotton Plantation Photograph by Ewing Galloway, NY Frontis	prece
The Bayeux Tapestry The Coronation of Harold	3
A parliament of Edward I, showing the woolsacks. Society of	
Antiquaries	5
The Clothiers' Gild Hall, Lavenham, Suffolk	7
A Walled Town An early plan of Hull	7
Seal of Hastings The ship is flying the banners of the Cinque Ports	
and of England British Museum	9
Rural Life	12
Stokesay Castle	14
The South Porch, Gloucester Cathedral Photograph by Mr.	
G C Mills	15
Northleach Church Photograph by Mr. G C. Mills .	15
The Cloth Hall, Ypres Photograph by Mansell .	17
A Weaver 16th Century. From Schopper	22
The Hills around Granada	25
An old engraving giving a perspective view of Venice and her waterways	27
A Cloth Shearer. A panel in the 'cloth-workers' window at Samur,	
14th century	31
Dyers 15th century Royal MS 15 E, III	31
Philip II of Spain	33
Market Hall with stalls 15th century From Willemin, Monuments	
Français Paris, 1839	37
The seventh Earl of Derby and his wife Charlotte de la Tremouille	-
From a portrait by Van Dyck	41
Gustavus Adolphus From a print by Paul Pontius after a picture	
by Van Dyck	45
An advertisement from Houghton's A Collection for the Improvement	
of Trade and Agriculture, 1693	46
Sir William Gilbert	49
An Upright Loom of the 11th century The woman holds a distaff	
From Rabanus Maurus, De Originibus	51
Loom and Spinning Wheel. 15th century. From a MS. of Boc-	-
caccio's Des Clercs et Nobles Femmes, reproduced by per-	
mission from Illustrations of One Hundred MSS of Yates	
Thompson, vol v, 28	51
Manchester in 1740	55
Liverpool in 1690	57

LIST OF ILLUSTRATIONS	xiii
	PAGE
The Arms of Rochdale	63
Humphrey Chetham. From an engraving of 1831	65
Turton Tower From an engraving of 1836	67
Women spinning, carding and weaving 15th century From	
Royal MS. 16 G v	75
John Kay	77
Hargreaves' Jenny From Baines, History of the Cotton Manufacture	• •
in Great Britain, 1835	79
Richard Arkwright From an engraving of 1835	81
Samuel Crompton From the portrait in the Hall-i'-th'-Wood	٠.
	٥.
Museum	83
Hall-i'-th'-Wood. Photograph by Mr A Harper	85
Crompton's Mule, now in the Chadwick Museum, Bolton	87
Crompton's Room at Hoppering Bank .	87
The Arms of Arkwright	94
The Duke of Bridgewater's Aqueduct over the Irwell From The	
Gentlemen's Magazine, January, 1766	99
The Manchester Ship Canal, No. 9 Dock .	103
The Pack-horse Bridge, Linton, Yorkshire (W R)	105
A String of Pack-horses	105
Warrington Market Place From an engraving of 1834	107
Coach Advertisements from The Liverpool Mercury of August 23,	•
1816, and May 23, 1817	III
The Sankey Viaduct From an engraving of 1831	115
Arkwright's Machine	123
"A, the Cogg Wheel and Shaft, which receive their motion from a horse B, the	123
"A, the Cogg Wheel and Shaft, which receive their motion from a horse B, the Druin or Wheel which turns C, a belf of leather, and grew motion to the whole machine. D, a lead weight, which keeps F, the small druin, steady to E, the forcing Wheel G, the shaft of wood which gives motion to the Wheel H, and continues it to I, four pairs of Rollers, which act by tooth and pairon made of brass and steel caus for it in two arou plates K. That pair of the roller which the cotton runs through the pair of the roller which the cotton runs through lets the Cotton, etc through it, by one pair of Rollers moving quietee than the other, draws it fines for the titting, which is performed by the spindles T K, the two ron plates described above L, four large Bobbus with cotton rovings on, conducted between Rollers at the back M, the four threads carried to the Bobbus and Spindles by four small were fait across the frame in the slip of wood V N, iron leaves with each other O, a cross pace of wood to which the leavers are fixed P, II be Bobbins and Spindles Q, Flyers made of wood, with small wires on the side, which lead the thread to the bobbins, R, small worsted bands put about the whird of the bobbins, the screwing of which tight or easy causes the bobbins to wind up the thread faster or slower S, the four whind of the spindles W, it wood in frame of the whole machine." From Arkwright's own description of his machine Quete from Baines, po set	
Rivalry in Breeding A newspaper cutting of the seventeen nineties	127
Sir Robert Peel From Baines, op cit .	129
Medals struck in advance by Napoleon to commemorate the invasion	
of England	147

	PAGE
A Weaver's Wages A cutting from The Liverpool Mercury of Decem-	
ber 27, 1816 .  The Corn Laws, by Allen Davenport. From a broadside, lent by Sir	151
Charles Firth	153
The Great Chartist gathering to present the monster petition	
From The Illustrated London News	159
A Public Cotton Warehouse in America Bales awaiting transporta-	
tion Photograph by Ewing Galloway, N Y	185
Bale Breaking By the courtesy of Messrs Horrockses, Crewdson	
& Co , Ltd , Preston	187
Scutching Machines By the courtesy of Messrs Horrockses,	
Crewdson & Co , Ltd , Preston	187
Slubbing Machines By the courtesy of Messrs Horrockses, Crewd-	
son & Co., Ltd , Preston	180
A Spinning Mule	191
John Mercer By the courtesy of Messrs Longmans, Green & Co.	193
Sizing Machines By the courtesy of Messrs Horrockses, Crewdson	. 9.
& Co., Ltd., Preston .	7.04
An Early Weaving Shed, From Baines, op cit	196
	199
A Modern Weaving Shed By the courtesy of Messrs. Horrockses,	
Crewdson & Co, Ltd	201
The Jacquard Loom	20
Calico Printing From Baines, op cat	207
Bubbles or Fortunes made by steam From a saturcal print	21
George Fox From the portrait by Sir Peter Lely at Swarthmore	
College, Pennsylvania	21
William Wilberforce From the unfinished portrait by Sir Thomas	
Laurence, P R A, in the National Portrait Gallery	219
Liberation of slaves Cartoon by J Doyle	221
The Engagement between the Merrimac and the Monitor From The	
Illustrated London News, April 12, 1862	22
Messrs Swainson and Birley's Mills From an engraving of 1834.	229
Blockade Runners loading Cotton at Nassau From The Illustrated	
London News, April 30, 1864	235
Sewn Cotton Depot, Bombay By the courtesy of The Times of India	239
Cotton $A$ , flower $B$ , boll $C$ , open boll $D$ , seed with cotton	٠.
attached	243
Cotton Ginning	243
Indians Weaving From Baines, op cit	24
Cotton Plantation in the Callide Valley District, Queensland By	
permission of the Agent General of Queensland	25
Carrying the Crop. By permission of the Agent General of Queensland	253
carrying the crop. by permission of the rights denerated Queensand	٠

LIST OF ILLUSTRATIONS	<b>xv</b>
	PAGE
A Section of the New Makwar Dam By permission of Messrs	
S Pearson & Son	255
The Boll Weevil Photograph by Ewing Galloway, NY	257
The Great Exhibition, 1851	261
Manchester in 1834. From an engraving of that year	271
Crank Mill, Morley, Yorkshire. Built in 1790, this mill was driven	
by steam, and was the first to be erected in the neighbourhood	273
Northrop Looms By permission of Messrs. Horrockses, Crewdson &	
Co, Ltd., Preston	277
Richard Cobden From The Illustrated London News, Oct. 18, 1851	279
MAPS AND DIAGRAMS	
1 The Structure of the Cotton Province of South-East Lancashire	162
2 The Location of the Cotton Industry in the South-East Lanca-	
shire Province	163
3. The Cotton Region showing the relations to the uplands by	5
super-imposing the two preceding maps	165
4. Diagram of a piece of roughly trimmed Millstone Grit or of Coal	,
Measures Sandstone. Natural size. Face view	167
5 Diagrammatic section across a moorland region in the Western	,
Pennines or the Rossendale Fells	167
6. A diagram map showing the position of the old mills which were	,
run by water, on the small rivers of a part of north-east	
Lancashire	169
7. Diagram map of the Distribution of the Cotton Industry in the	
Manchester Province	179
8 Section of a Carding Engine	186
o Diagram of a Plain Weave, known also as a Calico Weave or	
Tabby Weave	197
10. Diagram of a Twill Weave on what is called in the industry design	
paper or point paper	200
11. The Cotton Growing Regions of the World. Map drawn on	
Lambert's Equal Area Projection With the help of Mr	
J S M Ward, Chief of the Textiles Department of the Federa-	
tion of British Industries	251

#### INDEX

Africa, 252 sqq Agricultural Societies, 121 Agricultural Societies, 121
Airedale, 168, 173
Alfred (King), 2
America first cottons from, 28, 1 aw cotton from (see cotton); strained relations with, 121, 125
American Civil War, 220 sqq, 173, 177, 180, 276, 'Lump 178, Printers, 178, 202 Bury, 56, 101, 110, 113, 275 Byrom, John, 59 248 Calcier & Fieldle Navigation, 100 calendering, 181, 209 calcoes, 24, 44 3qq, 82 3qq, 128, 168, 176, 246, calco-printing, 63, 124, 168, 172, 181, 206. Ancient Custom, 6 Antwerp, 28
Apprentices' Act (1802), 141
—, statute of, 49 apprenticeship, system of, 49, cambrics, 204 Î17, 140 Arbitration Act, 149 Arkwright, Richard, 80 sqq , 123, Lating, development of, 95 sqq, 177, 170 Canterbury, 22, 36 Capitalist system, 144 Carding (and carding machines), 62, 69, 73-4, 77 sqq, 176, 180, 186 Arkwright, Richard, 60 344, 1-3, 130, 164, 176, 189, 272 artificial silk, 276 Artisans' Pageant (Norwich), 23 Ashton-under-Lyne, 101, 110, 176 230 aulnager, 18, 36 Australia, 252, 123
Cary's New Historary of Great
Roads, 110
Charles, Bonnie Prince, 59, 60
Chartist movement, 158 Bacup, 112, 177, 275 Barchent (cloth), 28 Barnoldswick, 100, 170, 173 Barton aqueduct, 98 Chat Moss, 113 Bayeux tapestry, 2, 3 beams (beaming), 195, 200. Bedford Cords, 202 Chaucer, 10, 12 chemical (textile) industries, 181 Berlin Decree, 147 Bertholiet, 124 children, employment of, 139
sqq 265, Ten Hours' Bili,
142, 264 sqq
Chipping Camden, 20, church, Beverley, 18, 32 Blackburn, 78, 100, 110, 170, 177-8, 228, and Civil Wars, Chorley, 100, 177 Black Death. The, 11 bleaching, 124, 172, 181, 194 boll (cotton), 242 sqq boll weevil, 256 Church (the town of), 100 Cinque Ports, 9 Civil Wars, 24 40 Clarkson, Thomas, 219 Bolton, 1, 23 36 56, 72, 82, 101, 113, 176-8, 227, 274, 276, and Civil Wars, 40

Abolition of Slavery, 215 sqq Accrington, 110, 177-8, 208, 274 Acton Burnell, statute of, 6

Civil Wars, 40
bombazunes, 32 sey
Boulton and Watt (steam
engines), 82, 93, 138
Bourn, Dannel, 76
Bradbury, John, 247.
Bradlord, 128, 173, church,
14, cotton market, 100
Bradshaw Brook, 187
Bridgewater
10, 117; —, Duke of,
6, 117
Bridgewater
10, 117; —, Duke of,
17, 117, 118, 150
Brindley, James, 97, 117
Brindley, James, 97, 117 Brindley, James, 97, 117
British Cotton Growing As-50ciation, 241, 249 — Empir Exhibition, 252, 274

Brooklands Agreement, 268 Bruges, 16, 28 building-stones, importance of, 170 Burleigh, Lord, 116

Burnley, 100, 110, 112, 131, 170, 173, 177, 180, 276, 'Lumps,'

Calder, R (Lancs), 166, 177 Calder & Hebble Navigation, 100

canals, development of, 95 sqq,

Cartwright, Dr Edmund, 80.

\$99 . 275 Chetham (family), 39, 64 \$99

climate, a cotton manufactur-ing factor, 170 Clitheroe, 177, 208 cloth halfs, 17, 130, 169 clothing industry, 276

Clyde steamers, 235-6 coaches, mail and stage, 110 sqc coal, 95, 97, 163; coal measures,

165, 171 Cobden, Richard, 152, 160, 231, 279
Colchester, 23, 36, 54.
Colne, 42, 200, 210, 112, 130-1, 169, 173, 177-8, — Water, 166

combing (machine) 188 co-operative movement, 267 Corn Laws, 152, 156, repeal of, 148, 210,

Cortez, 28 cotton 'American raw, 93, 177, staple, 244, 248, location of industry, 162 soy, manufacture, in Cheshire, 172, in Derbyshire, 173, in Dorsel, 47, in Indua, 218 y in Ireland, 175, in Leicestershire, 174, in Notts, 274, in Scoldand, 174, in Vorkshire, 172, untils (45e mills), processed (45e separate pr 176 sqq, 184 sqq, spread in Lancs., 131, see warp and weft, West Indian raw, 122,

weft, 214, 247 Cotton Arbitration Act. 149 - Control Board, 282

- Famine, 210 sqq - Growing Association, British, 241, 249 Growing Committee, Em-

— Growing Committee, Empire, 241, 258.

— Supply Association, 215, 236 cotton mills, first erected, 92, 130; modern, 133 sqq cottons, early cloths, 24 244. cotton-wool, 29, 38, 40, 44, 47, 56, 60, 242

Coventry, 8, 18, 32 Craft Guilds, 8 Craven Gap, 100, 164, 173 Cromford (Derbyshire), 82, 176 Crompton, Samuel, 80, 82 849, 189

Crompton's 'mule,' 86 Crusades, 6 Culiompton (church), 13 customs (duty), 28, 133

Defoe, 19, 46, 53 399, 64, 117, 135, 139, 216, 227 de Montfort, Simon, 11. Derby (a cotton centre), 174 dhooties, 178 dimities, 28, 40 Dissolution of the Monasteries,

18, 32 dobbies, 202

port.

a cotton

Earby, 173. East India Company, 24, 84. Eastland Merchants, 20 Ecroyd (family), 131 Edward L., 5, 9, 111, 9 sqq Egerton, Francis, see Bridgewater Egyptian cotton, see cotton electricity, possibilities of, 285 Ehzabeth, Queen, 23, 30, 33, 49, Empire cotton, 252 sqq Empire Cotton Growing Committee, 241, 258
Empire Exhibition, 252, 274
Exhibition, the Great (1851), 260 factories, and canals, 100 Factory Act (1819), 152 factory system, 19, 119, 138, 267 Fairford (church), 13 felt-making 275 fenthing, 172, 206, and see finishing, 172, 206, and see separate processes. Flanders (and Fleinings), 2 sqt, 11, 32 544, 171, 246 flannelettes, 178, 209. fly(ing)-shuttle, 69, 72, 76, 122 food riots, 121. Fox, George, 216
Free Trade, 156 sqq, 210
Fugger (family), 28
fustians, 13, 26, 28, 30, 38 sqq, 60. 122 gaberdines, 178, 204 gassing, 192 Genoa (traders of), 26 Germany (cotton industry), 28, eig machines, 19, 50 Gilbert, Sir Wm , 49 gilds, 20; Craft, 8, early forms of, 6; disappearance of, 49, 116, and taxation, 16; Halls, 7, 8, 35, Merchant, 8, ginning, 246 Gladstone, 160

Glossop, 230, 238 Gloucester (cathedral), 13, 15

Gossvþium, 242 sqq

Goyt, R , 181.

Dobson, Isaac, (Dobson and Bar-

low), 274.

Domestic System, 48 sqq, 116, 168, beginnings of, 19, described by Wm. Radcliffe,

dyers, 19, 31, dyeing, 172, 181,

69, m Lancs., 72. doubling, 172, 192 Douglas, R., 95, 100

drawing-frame, 188 Drayton (poet), 20 drop-box (for shuttles), 77 Dyer, John (poet), 61, 64, 74,

¥37

104

Hakluyt, Richard, 32 Hahfax, 14, 20, 24, 54, 110, 173, 177 Hall-1'-th'-Wood House, 82 Hargreaves, James, 78, 123 Hanse League, 16, 246 Hasimgden, 110, 181 healds, 197 Henry I, 4, 8, II, 4, 8, V VI, z6; VII, z8, 29; 16, 26 16, 26
Heywood, 100, 176
Holmshed's Chronesle, 1
Horrocks, John, 128, 176
Horrockses, Crewdson & Co, 190
Howard & Bullough, 24, 174
Huddersheld, 173, 177
Huguenot, immigration, 22, 171
Hull, 7
Hundred Years' War, 9, 16
Hyndburn, R, 181 India, raw cotton and manufacture, see cotton.
Industrial Revolution, 76, 116 sqq inventions, 74 sqq Iraq, 252 sqq Irk, R , 181 Irwell, R., 95, 166, 182 jaconettes, 178. jacquards (looms), 127, 178, 202 Johnson, Dr., 125, 217 Kay, John, 76-7 Kay, Robert, 77 Kay-Shuttleworth, Sir James, Kay-Sautus-234, 269 Keighley, 100, 128, 173 Kempe, John, 11 Kendal Green (cloth), 11, 13 labour movement, modern, 156 labour movement, modern, 130

Laisses Fasse, 134, 265 sqa

Lancashire and Civil Wars, 40

sqq, and Stuart Rising, 58

sqq, cotton established in, squ , cotton established ; great growth in population, 135 Lancashire and Yorkshire Railway, 114, 173 Lathon House, r, 42 Lavenham (Suffolk), 7, r4 Lee, Wm (stocking machine), r9 Leeds 20, 54 Leeds and Liverpool Canal, 100 eigh, 176 Lespagnols-sur Mer, Battle of, 10 Levant Company, 32. Lightfoot, 208 Lancoln, Abraham, 223, 226 linen Industry, 1, 20, 23, 175 Littleborough, 100 Liverpool, 56-8, 95, 173, 145, 247; and canals, 100 297, and realways, 123 297, and realway

looms `early, hand, 50, 73 sqq; development of power, 89 sqq, 119, 124, 150, 168, modern, 198 Lynn, 29, church, 14 Luddite Riots, 150 machinery, early discouraged, 19, 50, coming and develop-ment of, 76 sqq, 118, 122, 132, 211 sqq, 274, 278; location of making, 274. Magna Charta, 4 Maidstone, 23 mail coaches, 110 mail coaches, 110
Manchester, 39, 54, 72, 95, 98,
121, 145, 150, 270, 276; Act
(1736), 48, 66, 91, and Civil
Wars, 40, canal centre,
100-1, Cathedral, 14, cotton province, 176 sqr, docks,
102, Exchange, 60, (Royal),
182, Free Trade Hall, 160,
Huruenoshe, 23, 36, port, Huguenoja, 23, 36, port 102-3, railways, 113 sqq roada, 104 sqq, Ship Canal manorial system, 11 McAdam, John L , 112 Mellor (Derbyshire), 69 Mercer, John, 192, 208 mercerising, 181, 192 Merchant Adventurers, 14, 20. Merchant Gilds, 8 Merchant Taylors' Company, 66 Mersey, R, 97, 181.

Mersey and Irwell Navigation Mersey Act, 95 Metcaife, John ('Blind Jack of Knaresborough'), 110 Middleton, 100 Milan Decree, 14 Millatone Grit, 165
Minimum Wage Bill, 148
Mosley, Sir Oswald, 60
motor transport, coming of, 114
'mule' spinning, 80, 86, and see spinning muslins, 24, 246, first British, 84 Napoleoniu Wars, 121, 146 National Debt, 120, 146. National Scietty, 150. 'navigators,' 145. Nesson, 131, 156, 170, 173, 177-8 Newton, Sir Issac, 49 Northleach (church), 14-5 Norwich, 11, 32, 127-8; and Uguents, 23, 33; and Q Elizabeth, 23, 33; Artisans' Pageant, 23 Pageant, 23 Nottingham, 8, centre, 174 Oldham, 36, 121, 176-8, 228, 270 a Oldknow, Samuel, 84. Owen, Robert, 84, 125, 274 Coyt, R, 181.
Granada, 23
Custavus Adolphus (of Sweden).
Liverpool Philosophical Society, Paul, Lewis, 78

Peace of Amiens, 145 of Paris, 125 Peasants' Revolt, 12 Peel, Robert (the elder), 63, 78, 128, 141 Peei, Sir Robert, 152, 156, 158, 208 Peel's Bill (1802) 142 Pendle Range, 181, - Water, 166 Penn. Wm . 216 Pennines, 164, 181 Peterloo, 154 Philip II (of Spain), 32 picks, 180, 197, 202 piece halls, see cloth halls piece halls, see cloth halls
Piers Plowman, 11-2
Pitt, William, 143, 146, 218
Playtari, Lord, 208
Poor Rehef, 116, 133, 228 seq
Porplins, 178, 204
Ported J. London (customs
Preston, 128, 175-8, 228, and
Civil Wars, 41, railways, 113
mentine. see calico printing, see calico protectionist policy (15th century), 16

Radcliffe (family), 37 Radcliffe, Wm (description of Domestic System), 68 sqq Domestic System), 68 sgr railways development, 101, 113 sgq, 117, Bolton, Legis, 113, East Lancashre, 114, Kenyon, Legis, 113, Lanca-shure and Yorkshire, 114, 152, Liverpool, Manchester, 113, Manchester, Bolton, Bury, 113, Manchester, Bury, Ros-sendale, 114, Manchester, Lecks, 113, Stockton, Dar-berton, 23 lington, 113 ramfall, of cotton region, 164, Rawtenstail, 275 reeds, 76 reeds, 76
Reformation, The, 18
Reform Bill, 156
Ribblesdale, 168, 173, 177
roads. bad state of, 63, m
provement of, 103 sqq,
Cary's Itinerary, 110,
Young's description, 109,
'New' 178 New, 112 Rochdale, 62, 72, 176, 275, canal, 100, 173, 'Pioneers,'

267 Roche, R , 181 'Rocket,' The, 113 Rossendale Fells, 110, 164, 177,

roving, 188 Runcorn, 98

Saddleworth, 23, 36, 121 Salford, 121, 232, 270 Salisbury (cathedral), 14

sandstones, 165 Sandwich, 22, 28. Sankey Brook, 96 sateens, 178, 204 schreinering, 181, 209. Scottish cotton industry, 174 scutching, 185 Seven Years' War, 120-2, 146 Shaftesbury, Lord, 232, 263 agg shales, 166, 171 shearing (of cloth), 30. Ship Canal (Manchester), 101 Saip canal (anachester), for shipping, development of English 9, 14, steam, 114 shirtings, 178 s sizing, 181, 196 Skipton, 100, 110, 173, church, slavery, and abolition of, 215 sqq shpper-making, 275 slubbing, 188
Smith, Adam, 120, 134, 217, 263
Society of Arts (London), 122.
Sowerby Bridge, 100 Sowerby Bridge, 100
Spanish cotton, 26
Spandles, numbers of, 176-8
Spinners, women, 21, 50, 61, 73
Spinning frame (Arkwright's),
81, 138, 188 sqq ', 'Jenny,
79, 123 , location of, 176-8,
machines, 71, 78, mule, 80,
86, 188 sqq , wheel, 50, 69, 73-4 Spitalfields, 23 springs, water, 166 stage coaches, 110 stq Stalybridge, 215, 239, 272, 274 n, 278. 278.
Stamp Act, 122, 125
Standedge Tunnel, 101.
Statute of Acton Burnell, 6, of Apprentices, 49, of Westminster, 6, of Winchester, 6 steam-engines, 82, 92, 119, 138,

168

Stephen (King), 5 Stephenson, George, 113 Stockport, 176-7, 229 Stockton-Darlington Railway,

Stokesay Castle, 14 Strutt, Jedediah, 82 Sudan, 252 sqq Surat cotton, 237, 249

'tacklers,' 108
Tame, R, 106, 181
Lassels, 19, (thistle), 74
Telford, Thomas, 112.
Ten Hours Bill, 142, 204, 199
Lextile industries quarter Huguenots and, 21., spreading, 20,
268 4190 cotton, woollen, linen.
Thirty Years' War, 43
Todmorden, 100, 130, 172, 177
Tyreas, 100, 130, 172, 177
Tyreas, 100, 141
Tyreas, 100, 130, 172, 177
Tyreas, 100, 141
Tyreas, 14

Towneley, Colonel, 59 towns growth walled, 6 Toynbee, Arnold (on Industrial Revolution), 119 Trade Unions, 8, 117, 144, 268, Trafalgar, Battle of, 146 transport early difficulties, transport early difficulties, 63, development of, 95 sqq, see railways, roads, canals, shipping, motor 'Truck,' System of, 118 Tumpike Acts, 103, — Roads, 109 sqq Turton Tower, 66-7-Ulm, 28, 44, 146 ulnage returns, 144 Unions, see trade. Venice (trade of), 26-8 wages, and fixing of, 49, 116,

149, 150 sqq., 210, 263 Wakefield, 20 Wales, 4. 'walled towns,' 6

warp, cotton, 73, 82 sqq, 195, 276, innen, 1, 28, 73, see woollen industry, etc. woodlen mdustry, etc.
Warnington, 106-9, 145, 132, canal, 96, and Civil Wars, 41
Wars of the Roses, 16
waste, dealers, 180; development of trade, 236
water-power, 164, 809 177, 181.
Watt, James, 96, 177, 181.
Graft Gild, 8
weaving handloom, 74; locaweaving handloom, 74; loca-

weaving handloom, 74; loca-tion of, 177 app , process of,

tion 0, 177 agg , process 01, 196 agg weeval (boll), 256. weeft, 195, 276, cotton, 28, 73, 82 agg , 276, different coloured, 77 Westminster, Statute of, 6. Wharfedale, 168, 173 Whitney, Ell, 246

Wigan, 100, 176, 230, 276, and Civil Wars, 41, coal, 95 Winchester, 8; Statute of, 6 woollen industry, 1, 11, 16 sqq woolsek, 5 Worsley (Bridgester) canal,97. warsteds 18, 23, 32, 122, 131 Wyast, John, 78 Wycoller, 167 Wymondham (church), 14