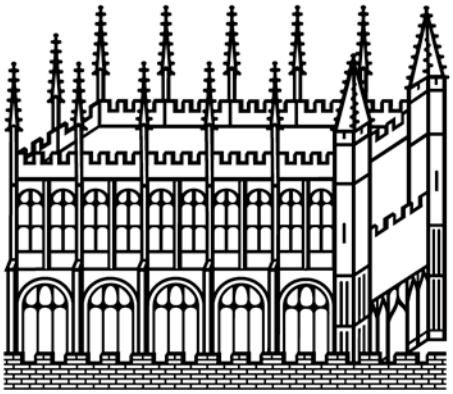

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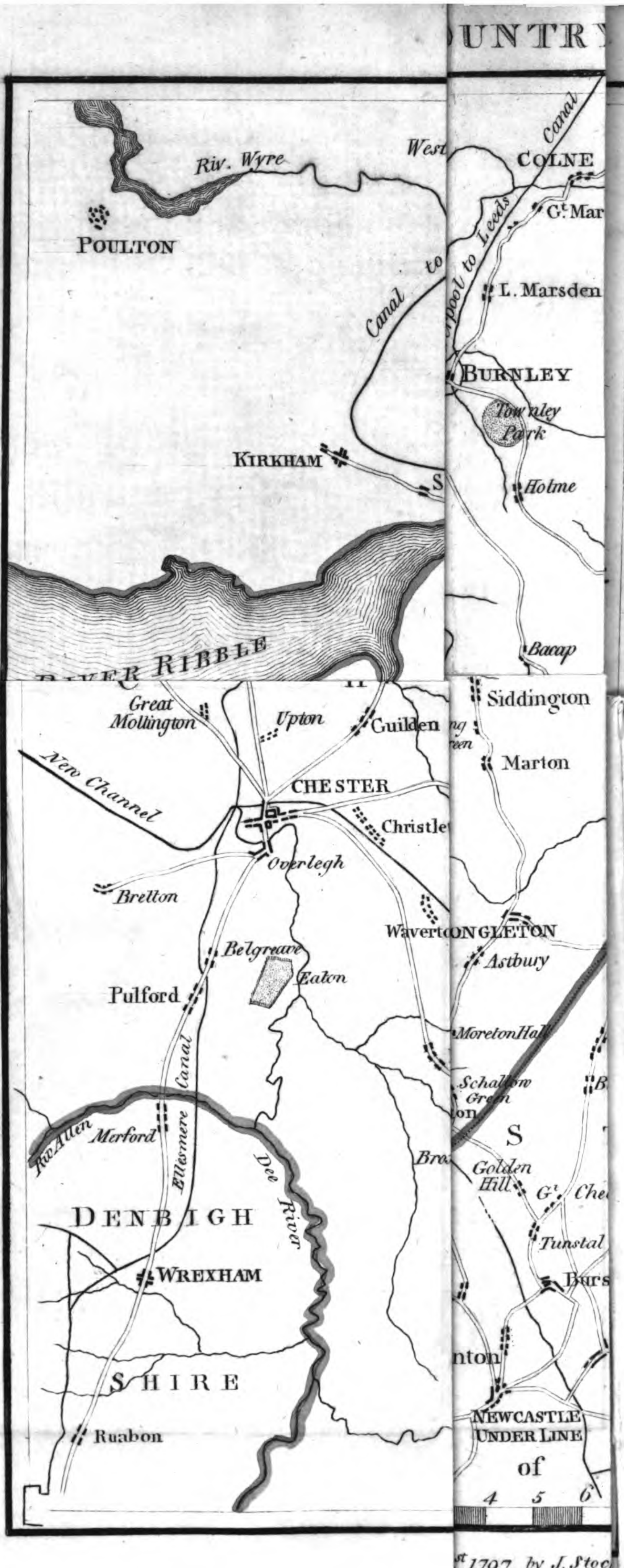

UNTRY
Riv. Wyre
West
Canal
COLNE
Gt. Mar
POULTON
Canal to
pool to Leeds
L. Marsden
BURNLEY
Townley Park
KIRKHAM
Holme
RIVER RIBBLE
Bacap
Siddington
Great Mollington
Upton
Guilden
Marton
New Channel
CHESTER
Christle
Overlegh
Brelton
Wavert
ONGLETON
Belgreave
Astbury
Eaton
Pulford
Moreton Hall
Canal
Schallow Green
Riv. Allen
Merford
Ellesmere
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Dee River
Golden Hill
Gt. Che
DENBIGH
Tunstal
WREXHAM
Burs
SHIRE
Ruabon
NEWCASTLE UNDER LINE
of
4 5 6
1797. by J. Stoc

A

SURVEY

OF THE

COUNTIES

OF

LANCASHIRE, CHESHIRE, DERBYSHIRE, WEST RIDING OF YORKSHIRE,

AND THE

NORTHERN PART OF STAFFORDSHIRE,

DESCRIBING THE

RIVERS, LAKES, SOIL, MANURE, CLIMATE, PRODUCTIONS, MINERALS, PROPERTY, AND CIVIL AND ECCLESIASTICAL DIVISIONS;

WITH A

GENERAL ACCOUNT

OF THE

RIVER AND CANAL NAVIGATIONS

WITHIN

Thoſe Diſtricts.

Illuſtrated with a Whole Sheet Map of the Counties deſcribed, a ſmall Map of the Environs of Mancheſter, and a Plan of the Road from London to Mancheſter.

LONDON:
Printed for JOHN STOCKDALE, Piccadilly,
and Sold by
Meſſrs. CLARKES, Mancheſter; J. GORE, Liverpool, and
J. REDDISH, Stockport.

1797.

[PRICE FOUR SHILLING AND SIXPENCE.]

[J. Whitaker's]

THE following Publication is extracted from the HISTORY of MANCHESTER and its ENVIRONS, to bring it within the purchaſe of thoſe who from circumſtances or inclination are not enabled to procure the original Work.—It may not be improper to mention, that ſeveral of the canals have been completed ſince the following pages were printed off.

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CAVERNS, OR SUBTERRANEOUS PASSAGES.

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RIVERS.

Mineral

NORTHERN PART OF STAFFORDSHIRE.

RIVERS.

RIVER AND CANAL NAVIGATIONS.

Lancaſter

A GENE-

A

GENERAL ACCOUNT

OF

LANCASHIRE.

LANCASHIRE is bounded on its whole ſouthern ſide by Cheſhire, the river Merſey marking the diviſion from the ſea as far as Stockport, and the Tame for the remainder. Its whole eaſtern ſide joins to Yorkſhire, by a very irregular boundary line, not naturally marked; but for the moſt part following a mountainous chain. To the north it is bounded by Weſtmoreland; and to the Weſt, by the Iriſh ſea, and by a ſmall part of Cumberland, which touches its north-weſtern extremity.

It is an extenſive tract of country, of very unequal dimenſions in its different parts. The ſouthern part, as far as the middle, and ſomewhat beyond, forms a quadrangular portion, keeping a pretty uniform breadth from the confines of Yorkſhire to the ſea. The county then narrows ſuddenly, by the encroachment of Yorkſhire, ſo that the remaining portion, as far as the limits of Weſtmoreland, has an inconſiderable breadth. A third portion is quite detached from the reſt by an arm of the ſea, and is a roundiſh tract, lying to the north-weſt of the whole main part of the country. A line drawn from the northern extremity of this detached part, to the Merſey, would meaſure full 70 miles; but the length of the county, excluſive of this part, is about 54. The medium breadth of its ſouthern portion is 40 miles. Mr. Yates, the author of the Lancaſhire map by ſurvey, gives the county the following dimenſions: greateſt length 74 miles, breadth 44½, circumference (croſſing the Ribble at its

its mouth) 342 miles; ſurface 1765 ſquare miles, or 1,129,600 ſtatute acres.

Face of the country.—The ſouthern part of Lancaſhire is a tract of nearly level land extending from the high country of Yorkſhire to the ſea. Through the eaſtern part of this tract various rivers and ſtreams take their winding courſe, finally terminating in the Merſey. A number of moſſes, or peat-bogs, are found in various parts, ſome of great extent. Theſe become more numerous on approaching the ſea-coaſt, which, throughout this county is univerſally low and flat. On advancing a little northerly, a ridge of hills, connected with the great Yorkſhire chain, makes a deep inroad, extending from eaſt to weſt as far as the center of the county, and appearing in detached eminences pretty far to the weſt. Behind this firſt ridge is an interval of level country; and then commences another hilly tract, running along the borders of Yorkſhire, and puſhing more or leſs into

Lancaſhire, but every where leaving a ſpace of flat land between it and the ſea. This ſpace is, however, more and more narrowed on proceeding northwards, till at the Weſtmoreland border it is reduced to a very ſmall breadth. On the whole, if a line were drawn from Lancaſter to Preſton, and thence through Manchester, to Aſhton-under-Line, it would leave the hilly country to the eaſt, and the level to the weſt.

As to the detached part or diſtrict of Furneſs, it is throughout an irregular and romantic mixture of hills, narrow vales, lakes, and ſtreams, the mountains being moſt wild and lofty on the Cumberland border. But its ſouthern extremity, which projects into the ſea, contains a conſiderable tract of level land, fronted by the ſingular bow-like iſle of Walney, which is of the ſame nature.

RIVERS.

The *Merſey* will be traced among the rivers of Cheſhire.

The

The *Irwell*.—This may be conſidered as the principal river of the ſouth-eaſtern part of the county, as it unites all the reſt, and is the only one navigable. The Irwell may be traced up to the moors near the Yorkſhire border about the parallel of Haſlingden. From an union of ſtreams in that quarter, a rivulet is formed, which runs through the manor of Tottingham to Bury, a little below which, receiving the Roch, it turns weſtward; but ſoon, meeting with a ſtream coming from Bolton, it is bent in an acute angle ſouth-eaſtwards, and takes its courſe to Mancheſter. Here, after receiving the Irk and the Medlock, its direction is again changed weſterly, and proceeding through Barton, where it is croſſed by the Duke of Bridgewater's canal, it mixes at length with the Merſey below Flixton. It is made navigable from Mancheſter to its junction with the Merſey, and thence to the ſea.

The *Roch*, riſing out of the bordering ridge of hills called Black-ſtone-edge, and uniting ſeveral ſtreams from both ſides as it flows, paſſes Rochdale, and joins the Irwell near Radcliff.

The ſtreams which compoſe the *Irk* come principally from Royton and Oldham. It takes a ſhort courſe to empty itſelf into the Irwell at Mancheſter.

The *Medlock* coming out of Yorkſhire has alſo a branch from Oldham, and terminates in the ſame manner as the former.

The *Douglas*, taking its riſe from the neighbourhood of Rivington Pike, runs firſt ſouthwards to Wigan, where, receiving other ſtreams from the ſouth, it is forced to a north-weſterly direction; and after being augmented by the Eller-brook from Ormſkirk, and the united Yarrow and Loſtock rivulets from Chorley and Cuerden, it empties itſelf into

into the broad eſtuary of the Ribble at Much-hool. It is made navigable from Wigan.

The *Darwent*, ſpringing from among the hills about Over Darwen and Roſendale, runs a little to the ſouth of Blackburn, receiving a ſtream from that town, and then winds away to the weſt, and mixes with the Ribble at Walton-le-dale.

The *Ribble*, the principal river of the middle of Lancaſhire, and which makes the ſeparation between its broader and narrower portion, riſes in the Weſt Riding of Yorkſhire, and flowing ſouthwards between the noted mountains Ingleborough and Penigent, paſſes Settle and Bolton, and reaches the confines of Lancaſhire above Clitheroe, becoming for a ſhort ſpace the boundary line. Then receiving from the north-weſt the Hodder, (a Yorkſhire ſtream, which alſo ſerves ſome way for a boundary) and the Calder, from the eaſt, it holds on a weſterly courſe, wind-

ing through a rich vale, by Ribcheſter, to Walton, near Preſton, where it is joined by the Darwent. Immediately below Penwortham it widens into a ſhallow and broad eſtuary, which makes a great gap in the ſea-coaſt line of the county, but is unfit for the navigation of veſſels of any burthen. The Ribble, at ſome periods a very inconſiderable ſtream, in time of floods brings down vaſt quantities of water, and with great impetuoſity.

The *Calder* riſes from the moors on the borders near Colne, and running weſterly, joins the Ribble near Whalley.

The *Wyer* unites the ſtreams of the country between the Ribble and Lune. It takes its riſe from the wild country of Wyerſdale, on the Yorkſhire border, and running ſouthweſt to Garſtang, receives many ſtreams from the eaſt and ſouth, which turn it due weſt; when paſſing near Poulton, it bends northerly,

northerly, expanding into a ſort of baſon called Wyer-water, and again contracting, enters the ſea by a narrow channel, which has depth of water enough to afford entrance and ſafe harbour to ſhips of burthen.

The *Loyne* or *Lune*, ſpringing from the fells of Weſtmoreland, holds a direct ſouthern courſe to Kirby-Lonſdale, below which town it arrives at the Lancaſhire border, and running ſouth-weſterly, receives the Greta and the Wenning out of Yorkſhire, and flowing through a delightfully romantic dale, reaches Lancaſter. Hence it becomes navigable for ſhips, though veſſels of conſiderable burthen cannot without difficulty come nearer the town than two miles. It expands below Lancaſter into a baſon, and enters the ſea at Sunderland Point.

The diſtrict of Furneſs is too ſmall to afford rivers of any conſequence. The *Winſter*, which makes its ſeparation from Weſtmore-

land

land on the eaſt, empties into the mouth of the Ken. The waters of the lake of Windermeer are diſcharged by the *Leven*, which, meeting with thoſe of Coniſton-meer, diſcharged by the *Crake*, forms with it Levenwater, a ſmall eſtuary fordable at low water. The *Duddon*, which ſeparates Furneſs from Cumberland, widens, below Broughton, into a ſimilar eſtuary, called Duddon-water.

LAKES.

Winander-meer, or *Winder-meer*, in Furneſs, is the moſt extenſive piece of water in England, being about ten miles in length, though no where one in breadth; its direction running north and ſouth. Its general depth in the middle is 90 feet, but oppoſite to Eccleſrig crag it is 222 feet, the bottom ſmooth horizontal ſlate rocks. Before ſtorms it has a current in the oppoſite direction from whence the wind comes. The diviſion of the counties of Weſtmoreland and Lancaſter paſſes through the northern part of this lake,

but

but the ſouthern is all in Lancaſhire. Its iſlands or holms, however, all belong to Weſtmoreland. Winder-meer is a capital object to thoſe who make a tour of the northern lakes, and affords many ſtriking points of proſpect.

Coniſton-water is about half the ſize of the former. It is ſituated in Furneſs, parallel to Winder-meer, and a few miles diſtance from it. Between the two lies another ſmall meer, called *Eaſthwaite-water*.

SOIL.

The ſoil of the country is very various, though the changes are not ſo rapid as in ſome other parts. The greateſt portion of the diſtrict between the Ribble and Merſey has at the ſurface a ſandy loam, well fitted for the production of moſt cultivated vegetables. The ſubſtratum is generally red rock or clay marl. There is alſo a black ſandy loam, ſomewhat different from the above,

above, the ſubſtratum of which is white ſand, under which is clay and then marl. There are likewiſe tracts of white ſand lands, and a few pebbly gravel lands. Some ſtiff land is met with, but no obdurate clay. The vales are generally fertile; but the ſoil becomes more barren on approaching the hills, which are moſtly compoſed of moor-land in a ſtate of nature, overrun with heath and wild plants.

Moſſes.—Lancaſhire abounds in thoſe bogs or moraſſes which bear the provincial name of *moſſes*. Some of theſe are large tracts of land, and by their brown and ſterile appearance greatly deform the face of the country. They conſiſt of a ſpungy ſoil, compoſed evidently of the roots of decayed vegetables intermixed with a rotten mould of the ſame origin. This matter is of a light colour and texture near the ſurface, but becomes darker and heavier on deſcending, and is converted into the ſubſtance called turf or

peat, which is uſed as a fuel, and ſometimes contains ſo much bituminous matter as to flame at a candle. This kind of ſoil is ſeveral feet in depth, and contains in many parts large trees buried, and preſerved from putrefaction by excluſion of the air. They are of different colours and very inflammable, but often ſo ſound as to be capable of being worked into furniture. On penetrating quite through the moſs-earth, ſand or clay, the common ſoil of the country, is met with. Hence there can be little reaſon to doubt that theſe tracts were once foreſt-land, which being neglected, and ſuffered to be inundated, at length became bogs. The trees that grew on them were overthrown, and then covered by the rank vegetation. As plants died, others ſucceeded, and thus an artificial ſoil was produced, which continually increaſed. Some of theſe moſſes now riſe ſeveral feet above the level of the ſurrounding country. They are covered with a variety of plants proper to them; as all the tribes of heath, bilberry,

bilberry, cranberry, crowberry, Andromeda polifolia, Lancaſhire aſphodel, ſun-dew, cotton graſs, and the fragrant Myrica Gale, or bog-myrtle. In dry weather, the upper cruſt of turf will bear the foot, but for a large ſpace round the ground ſhakes with the tread, and horſes or cattle cannot venture upon it. In wet ſeaſons the moſſes are impaſſable, and ſo ſwollen in their ſubſtance as ſometimes to conceal objects from the oppoſite ſides which are viſible in dry ſeaſons. Some of them are partially drained by deep ditches, which diſcharge a water deeply tinctured with brown, and unfit for uſe. Were it not for ſuch drains, they would probably ſometimes ſwell to burſting, as Solway-moſs in Cumberland ſome years ago did, and as Chat-moſs, one of the largeſt in Lancaſhire, is recorded to have done in the age preceding Camden, when it diſgorged into the Merſey, and by its black contents killed the fiſh for a large ſpace. Good land is continually gained from the edges of the Moſſes, after

the peat is cut away for fuel. By marling, the remaining boggy earth is made ſolid, and the land proves extremely fertile. It is ſcarcely to be doubted that the whole of them may in time be reclaimed by means of effectual draining; though at preſent the great depth of the looſe bog in their central parts offers a formidable obſtacle.

The quantity of waſte lands in Lancaſhire is great. Mr. Yates calculated that the moſs-lands amount to 26,500 acres, the moors, marſhes, and commons, to 482,000; making together 508,500 acres. Much of this is incapable of tillage, but might be improved by draining, planting, and various other modes.

MANURES.

The chief manure of the county is marl, which is found in moſt parts of it, and of various qualities, adapted to different ſoils. To the ſtiff clay lands, the blue or reddiſh

ſlate

ſlate marl, full of calcareous earth, is moſt effectual; but to the light ſand lands, the ſtrong clayey marl is beſt ſuited. By its means, ſome of the barren ſandy heaths have been rendered productive, but at a conſiderable expenſe, ſince it is neceſſary to lay on ſo much as to give a new ſtaple to the ſoil. Near the ſea, ſea-ſlutch is uſed for a manure, and in ſome places a ſand full of ſea-ſhells is found which anſwers inſtead of marl. Lime is occaſionally uſed; and the neighbourhood of towns is ſupplied with various articles of manure from the refuſe of manufactures.

CLIMATE.

It is commonly obſerved that the whole weſtern ſide of the kingdom is more ſubject to rain than the eaſtern, the evident cauſe of which is, that it firſt receives the clouds from the Atlantic ocean, by which this iſland is principally watered. The ſituation of Lancaſhire in a peculiar manner expoſes it to the

the operation of this general cauſe, as the hills which form its line of ſeparation from Yorkſhire arreſt the clouds in their progreſs, and cauſe them to depoſite their contents: hence, the quantity of rain that falls is augmented in proportion to the nearneſs of the hills. Thus at Townley it was found by obſervation, that 42 inches of rain fell annually at a medium, whereas at Mancheſter only 33 fell. This wetneſs of the climate is unfortunate to the growth of corn and the ripening of fruit, but it is ſerviceable to paſturage, and produces an almoſt perpetual verdure in the fields. The froſts, too, are leſs ſevere and laſting than on the eaſtern ſide of the hills, and cattle in common years can be kept abroad all the winter. On the whole, the climate though unpleaſant, is not unſalubrious, or unfavourable to the wants of man, eſpecially ſince the culture of potatoes has ſecured a quantity of food not much liable to injury from the weather. The healthineſs of the county is ſhewn in the

appearance of the inhabitants, who are in general, a tall, florid, and comely race. Scrofulous affections, indeed, are common among thoſe who inhabit the wetteſt parts, and live poorly; and conſumptions ariſing from this cauſe are very frequent.

PRODUCTIONS.

The grain principally cultivated is oats, which, when ground to meal, is the principal food of the labouring claſs, eſpecially in the northern and eaſtern parts of the county. A good deal of barley, and ſome wheat, is grown in Low Furneſs, the Filde, and in the ſouth-weſtern parts of the county; but, on the whole, it is ſuppoſed that Lancaſhire does not raiſe more than one quarter of the grain it conſumes. The lands near the great towns are chiefly employed in paſturage; and at a greater diſtance, a large portion of the ground is in paſturage and meadow. A great number of cows are kept near the towns for the purpoſe of ſupplying them with

with milk and butter. Conſiderable quantities of cheeſe are alſo made in ſome parts, of which the moſt in repute is that from the neighbourhood of Leigh and Newborough, which is mild and rich, and particularly valued for toaſting. Buttermilk is a great article of food among the poor in this county, either mixed with oatmeal or potatoes, or drank at meals with water.

That ineſtimable root, the potatoe, was long an article of common diet in Lancaſhire and Cheſhire, before it was known otherwiſe than as a garden vegetable in moſt other parts of the kingdom; and theſe counties are ſtill peculiarly celebrated for the fineſt and moſt productive kinds. The beſt in this county are ſuppoſed to grow in the light ſandy ſoil of ſome of the ſea-coaſt pariſhes, eſpecially the Meales near Ormſkirk. It is imagined that they were originally introduced into theſe parts from Ireland, where Sir Walter Raleigh, who brought them from America, had cultivated them; but at pre-

ſent large quantities are ſent from the Lancaſhire ports to Dublin.

With reſpect to woods, it is with difficulty that trees of any kind can be reared near the ſea on account of the violence of the weſtern winds. In Furneſs many acres of coppice wood are cut down in rotation every 15 years, and burned into charcoal for the uſe of the ſmelting furnaces. Towards the centre of the county are ſome thriving woods with good timber; a conſiderable quantity is alſo grown in hedge rows; but, on the whole, the growth of timber trees is on the decline, except in plantations about gentlemen's ſeats. Of late years, the alder has become an article of conſequence, both on account of the peculiar fitneſs of its food for making ſmooth poles for hanging cotton yarn to dry, as for its bark, which is uſed for dying, and ſells at nearly 1d. per pound. Alders are planted on the looſe grounds on the ſide of the Duke of Bridgewater's canal, by

way

way of ſecuring the banks, and have proved in other reſpects a valuable plantation. Oſiers are found to be a very valuable production on account of the demand for them in making hampers, &c.

Lancaſhire is poſſeſſed of a peculiar breed of horned cattle, which forms a variety of the Lincolnſhire, being of ſmaller ſize, with wide ſpreading horns and ſtraight backs. Their hair is finely curled, and the elegance and regularity of their ſhape render this the moſt beautiful race of cattle this kingdom produces. The tract adjacent to Garſtang is the principal ſeat of this breed.

But few ſheep are kept in the ſouthern part of the county, except thoſe purchaſed by butchers, or fed by gentlemen on their grounds. In the northern parts, ſheep are bred and kept upon the moors and mountains. There is alſo a breed called Warton or Silver-dale ſheep, which is much eſteemed

for the flavour of its fleſh, fineneſs of wool, and tendency to fatten.

A greater number of horſes has been bred of late years than formerly, owing to the increaſed demand; but much attention has not been paid to the breed. Strong horſes are moſt in uſe for ordinary purpoſes. The ſtock of ſwine is generally purchaſed from herds brought out of the neighbouring counties, or from Wales and Ireland.

That beautiful fiſh, the Charr, *(Umbla)* which is a native of the lakes of the northern and mountainous parts of Europe, is found alſo in Winder-meer and Coniſton-water. Mr. Pennant ſays, that the largeſt and moſt beautiful ſpecimens of this fiſh which he ever ſaw, were taken in Winder-meer, and ſent him under the names of caſe charr, gelt charr, and red charr. On the cloſeſt examination he could not diſcover any ſpecific differences between theſe, and therefore conſiders

ſiders them as a variety of the ſame ſpecies. There is, however, a remarkable difference in their time of ſpawning. The caſe charr ſpawns about Michaelmas, and chiefly in the river Brathy, which, uniting with another called the Rowthay, falls into the north end of the lake. The Brathy has a black rocky bottom; that of the Rowthay is bright ſand, and the charr are never obſerved to enter it. Some of them, however, ſpawn in the lake, but only in its ſtony parts. They are ſuppoſed to be in perfection about May, and continue ſo all the ſummer, yet are rarely caught after April. The red charr ſpawns from the beginning of January to the end of March. They are never known to aſcend the rivers, but lie in thoſe parts of the lake where the bottom is ſmooth and ſandy, and the water warmeſt. They are taken in the greateſt plenty from the end of September to the end of November, and are much more eſteemed for eating than the former. The Coniſton charr are reckoned very

fine, and are fiſhed later than thoſe of Winder-meer, and continue longer in the ſpring.

Salmon are found in all the Lancaſhire rivers. Smelts, called here ſparlings, come in great ſhoals up the Merſey to ſpawn in the ſpring, but not as long as there is any ſnow water in the river. They are remarkably large and fine there. The graining is a fiſh ſuppoſed peculiar to the Merſey; it much reſembles a dace, but is more ſlender, with a ſtraighter back.

MINERALS.

The moſt valuable mineral production of Lancaſhire is coal, the great plenty of which has been a conſiderable encouragement to the ſettlement of manufactures in the county. They abound moſt in the two ſouthern hundreds of Weſt Derby and Salford, and the adjacent eaſtern one of Blackburn. The tracts containing them run from the north-eaſt to

the

the ſouth-weſt. None are met with north of the Ribble; and all the ſea-coaſt parts northward are ſupplied by means of the river Douglas, which carries the coals from the neighbourhood of Wigan to the mouth of the Ribble. The kinds of coal are as various, as the quantity is abundant. The greater part are quick-burning, not caking or turning to cinders, but leaving a light white aſh; there are, however, coals of a different quality, excellent for the ſmith's uſe. One of the moſt noted ſpecies of coal is that termed cannel, or kennel, which looks almoſt like pure bitumen, is highly inflammable, ſplits with a fine poliſhed ſurface not ſoiling the fingers, and is occaſionally wrought into figures and toys. It burns rapidly when ſtirred, yielding a bright flame, and crackling; but if left to itſelf, it ſolders together, and keeps in a ſmothering fire for a long time. The Lancaſhire coals are chiefly uſed in the county and the adjacent parts of Cheſhire; but ſome are exported from Liverpool, and this quantity

tity is increaſed ſince the canal from that port to Wigan has afforded a more copious ſupply.

There are quarries of ſtone of different kinds in various parts of the county. Near Lancaſter is an extenſive quarry of free-ſtone which admits of a fine poliſh. The town is built of it. Flags and grey ſlates are dug at Holland near Wigan. The beſt ſcythe ſtones are got at Rainsford, and alſo fine pipe clay. Lime-ſtone is found in abundance in the northern and north-eaſtern diſtricts; but no calcareous earth, except in marl, is met with towards the ſouthern parts, a ſmall quantity of lime-ſtone pebbles upon the banks of the Merſey excepted. There are few other mineral productions, except in the detached diſtrict of Furneſs. This is properly a mineral tract. Its lower parts yield quantities of iron ſtone, which is partly ſmelted upon the ſpot, partly exported. In the hilly parts are mines of copper and lead; and there are quar-

ries

ries of fine blue ſlate, which is a conſiderable article of exportation. At Anglezark, a little to the eaſt of Chorley, is a lead mine at preſent worked, though to a ſmall extent. It is the only mine in England known to yield that curious mineral the Aerated Barytes, of which a particular account is given in a paper by Mr. James Watt, jun. printed in the 3d vol. of the *Mancheſter Tranſactions*.

PROPERTY.

Since the introduction of manufactures, property has become more minutely divided. But there remain proprietors who hold very extenſive poſſeſſions; and the remark of Camden, of the number of ancient families which bear the names of the places where they reſide, is ſtill applicable to this county. The yeomanry, formerly numerous and reſpectable, have greatly diminiſhed of late, many of them having entered into trade: but in their ſtead, a number of ſmall proprietors have been introduced, whoſe chief ſubſiſtence

ence depends upon manufactures, but who have purchaſed land round their houſes, which they cultivate by way of convenience and variety.

In moſt townſhips there is one farm, ſtill diſtinguiſhed by the name of the Old Hall, or manor-houſe (the former reſidence of the great proprietor of the diſtrict), which is of larger extent than any of the neighbouring farms; few of them, however, exceed 600 ſtatute acres; and many do not reach 200. The more general ſize of farms is from 50 acres down to 20, or even as much only as will keep a horſe or cow.

But few open or common fields are now remaining, the inconveniencies attending them having cauſed great exertions to effect a diviſion of property, ſo that each individual might have his grounds contiguous, and cultivate them after his own method. The encloſures are in general very ſmall, ſo as to occaſion

caſion much loſs of ground in hedges and fences, and in ſome meaſure to obſtruct the free action of the ſun and air. In the lands of large proprietors, however, this fault is amending. There can be no doubt that in this county, incloſure has increaſed population.

CIVIL AND ECCLESIASTICAL DIVISIONS.

The people of Lancaſhire were comprehended under the Roman denornination of *Brigantes*, which included the inhabitants of all the northern part of England. In like manner they comprized part of the Saxon kingdom of *Northumberland*. The diſtrict was named by the Saxons *Lonkaſi erſcyre*. It had its particular lords under the Norman government, and gave the title of earl to Edmund, younger ſon of Henry III.; a ſucceſſor of whom was created duke by Edward III. On his death without iſſue male, the ſame king created John of Gaunt, his

fourth

fourth ſon, (who had married the heireſs of the laſt poſſeſſor) Duke of Lancaſter, and advanced the county to the dignity of a *palatinate* in his favour. The patent for this purpoſe grants to the duke his court of chancery to be held within the county, his juſtices for holding the pleas of the crown and all other pleas relating to common law, and finally, "all other liberties and royalties relating to a *county palatine*, as freely and fully as the Earl of Cheſter is known to enjoy them within the county of Cheſter." John of Gaunt was ſucceeded in his dukedom by his ſon Henry of Bolingbroke, who afterwards aſcended the throne under the title of Henry IV. This king, by authority of parliament, ſecured to his heirs the poſſeſſion of this inheritance, with all its rights and liberties, in the ſame manner as he received it before he came to the crown. Henry V. annexed to this duchy the great eſtates which fell to him in right of his mother, daughter and coheireſs of Humphrey Bohun, Earl of Here-

ford. Since that time, the *duchy of Lancaſter*, comprehending, beſides the county of Lancaſter, great eſtates in various parts of the kingdom, has ſubſiſted, as a ſeparate poſſeſſion belonging to the kings of England, having its own chancellor, attorney, receivers, and other officers. The law offices for the county palatine are held at Preſton.

With reſpect to common judicial adminiſtration, Lancaſhire is a part of the northern circuit, and the aſſizes for the county are held twice a year at the county-town, Lancaſter.

Lancaſhire ſends 14 members to parliament, provides 800 men to the national militia, and pays only five parts out of the 513 of the land-tax of England.

The county is divided into ſix hundreds, viz. thoſe of Salford, Weſt Derby, Leyland; Blackburne, Amounderneſs, and Lonſdale; and they are ſubdivided into townſhips.

II.—*General*

II.—*General Account of* CHESHIRE.

CHESHIRE is bounded by Lancaſhire on the whole northern ſide, except a ſmall point to the north-eaſt where it touches Yorkſhire; by Derbyſhire and Staffordſhire on the eaſt; by Shropſhire and a detached part of Flintſhire on the ſouth; by Denbighſhire and the reſt of Flintſhire on the weſt; touching alſo upon the Iriſh ſea at its north-weſtern extremity.

The form of this county is diſtinguiſhed by two horns or projections running eaſt and weſt from its northern ſide; one of which is made by the hundred of Wirral lying between the eſtuaries of the Merſey and Dee, the other by a part of Macclesfield hundred, puſhing out between Derbyſhire and Yorkſhire. A line drawn from the extremities of theſe two projections, meaſures 58 miles;

but the extent of the country from eaſt to weſt acroſs its middle, does not exceed 40 miles. Its greateſt extent from north to ſouth is about 30 miles. It contains about 1040 ſquare miles, or 665,600 acres.

Face of the Country.—Cheſhire is for the moſt part a flat country, whence it has obtained the name of the *Vale Royal of England*, though this name properly refers to its central part, in which was ſituated the Abbey of Vale Royal, founded by Edward I. The principal hilly part is on the eaſtern border, where a chain of hills, ſome of them of conſiderable height, runs along its confines with Derbyſhire and north of Staffordſhire, and joins the mountainous diſtricts of thoſe counties. There is likewiſe a lower and narrower chain of eminences, which beginning at Helſby and Overton, near Frodſham, in bold promontories above the Merſey, runs ſouthward acroſs the foreſt of Delamere to Tarporley, ſtarts up in the inſulated rock of Beeſton, and again appearing in the wooded

Broxton hills, at length ſinks in the vale of the Dee on the borders of Denbighſhire. About a mile to the ſouth of Altringham riſes an elevated tract of ground called Bowden downs, which extends to a conſiderable diſtance from eaſt to weſt. Its weſtern extremity is covered with the wood of Dunham park. Bowden church is ſituated on the ſummit of this tract, from whence there is a moſt extenſive view of a large part of Cheſhire and the ſouthern part of Lancaſhire. In various other parts the ſurface is varied by riſings and depreſſions; but the general character is unanimated flatneſs. Four-fifths of the county are probably not elevated more than from 100 to 200 feet above the level of the ſea.

Many ſtreams wind through its levels, moſt of which take their courſe northwards to join the great bordering river, the *Merſey*. This we ſhall firſt trace.

RIVERS.

RIVERS.

The *Merſey* takes its origin from a conflux of ſmall ſtreams near the junction of Cheſhire with Derbyſhire and Yorkſhire, and firſt forms the eaſtern limit of the eaſtern horn of Cheſhire, under the name of the *Etherow* river. When arrived at the place where the Goyt meets it coming from the ſouth, they together, taking a middle direction, flow acroſs the root of the horn (as it may be termed) and reach Stockport. Here the *Tame*, which may be reckoned the other parent of the Merſey, and which forms the weſtern limit of the eaſtern horn, falls in. From this junction, the Merſey, under its proper name, forms the boundary between Lancaſhire and Cheſhire quite to the ſea. It takes a very winding courſe, receiving continual acceſſions, of which the principal are the river Irwell out of Lancaſhire, and the Bollin from Cheſhire, both which join it on its way to Warrington. Below this town it ſoon

widens, having a large ſhallow channel, full at tide time, but exhibiting little except bare ſand at low water. Oppoſite Runcorn it is ſuddenly contracted by a tongue of land from the Lancaſhire ſide, forming Runcorn Gap. It then ſpreads again, and ſoon receives the large addition of the Weaver from the heart of Cheſhire. With this it ſwells into a broad eſtuary, and taking a north-weſtern courſe, diſembogues into the Iriſh channel below Liverpool.

The *Goyt* riſes near the place where the road from Macclesfield to Buxton croſſes the limits of the county, and it forms the boundary between Cheſhire and Derbyſhire till it meets the Etherow river near Chadkirk, as before deſcribed. The united ſtreams keep the name of Goyt till they reach the Merſey at Stockport.

The *Bollin* riſes in the hilly moors to the ſouth of Macclesfield, and paſſing that town, takes

takes a north-weſt courſe through Preſtbury and Wilmſlow, and joins the Merſey below Warburton.

The *Dane* riſes near the junction of Derbyſhire and Staffordſhire with Cheſhire, and forming for ſome way the limit between the two laſt counties, flows weſterly by Congleton and Holms-chapel to Middlewich, where it receives the Wheelock from the ſouth. It then, turning northerly, paſſes Davenham in its courſe to Northwich, where it falls into the Weaver.

The *Wheelock*, riſing near Lawton on the borders of Staffordſhire, flows a little to the ſouth of Sandbach in its courſe to join the Dane at Middlewich.

The *Weaver*, the principal river of the middle of Cheſhire, riſes on the edge of Shropſhire, and holding a courſe almoſt directly north, paſſes Namptwich to Northwich,

where, receiving the Dane, it turns weſterly, and in a very winding courſe, flows to Frodſham-bridge, below which it mixes with the Merſey.

The *Dee*, coming from Denbighſhire, reaches the border of Cheſhire in the ſouth-weſt, and forming for ſome way the limit of the two counties, paſſes between Holt and Farndon, and runs directly north to Cheſter. From this city it turns weſtward; and after flowing ſome miles in an artificial channel formed by embankment, at length ſpreads into a broad eſtuary ſeparating Flintſhire from the hundred of Wirrall, and empties into the Iriſh ſea.

There are in various parts of Cheſhire ſmall lakes or meers, of which the principal are *Budworth-meer*, *Roſthern-meer*, *Meer-meer*, and *Tatton-meer*, all in Bucklow hundred, ſome meers on Delamere foreſt, *Comber-meer* in Namptwich hundred, and *Bar-*

meer,

meer, not far from Malpas. Several of theſe are of conſiderable depth, and well furniſhed with fiſh.

The proportion of cultivated to waſte land has been ſtated as follows:

	Acres.
Arable, meadow, paſture, &c. about -	615,000
Waſte lands, heaths, commons, greens, woods, - - - - -	30,000
Peat bogs and moſſes, - - -	20,000
Common fields, probably leſs than -	1,000
Sea ſands within the eſtuary of the Dee,	10,000
	676,000

SOIL.

There are a great variety of ſoils in Cheſhire; clay, ſand, black moor or peat; marl and gravel, in various intermixed proportions, abound in different parts of the county. The three firſt, however, form the moſt predominant parts in the generally prevailing

ſoils, and of theſe the largeſt proportion is a ſtrong retentive clay. The ſubſtratum is generally rammel or clay, marl, ſand, gravel, or red rock; but moſt commonly one of the two former, viz. clay or marl. The numerous moſſes, marſhy meadows, and peat bogs, which abound in different parts of the county, ſeem ſufficiently to prove, that either clay, marl, or ſome other unctuous earth, is very generally at no great depth below the ſurface.

STATE OF PROPERTY AND FARMS.

There are in Cheſhire many very conſiderable eſtates poſſeſſed by gentlemen who have reſidencies within the county; and, indeed, it has been obſerved, that no county in England has preſerved more of the race of its ancient gentry. The number of proprietors of land, poſſeſſing from 500*l.* to 1000*l.* per annum rent, are alſo many. But the race of yeomanry is ſuppoſed to be much diminiſhed; another ſpecies of freeholder, how-

ever, has increaſed in thoſe parts bordering on Lancaſhire and Yorkſhire, where a number of ſmall farms have been purchaſed by the manufacturers of cotton, &c. The tenure is almoſt univerſally freehold. There are ſome few copyholds, or what may be called cuſtomary freeholds, paying fines and rents certain, in Macclesfield, Halton, and one or two other manors. The land is occupied in farms of various extent; ſome may contain 500 acres and upwards; there are few, however, of more than 300 acres; though the practice (but too frequently a pernicious one) of laying farms together ſeems to be increaſing. On the whole, it is probable that there is at leaſt one farmer to every eighty ſtatute acres.

AGRICULTURE AND PRODUCTS.

About three-fourths of the county is paſtured or mown; the other fourth is ploughed. The land is generally ploughed in rotation. The uſual courſe for ſtiff clayey land is to plough

plough four years; firſt, oats; ſecond, fallow for wheat; third, wheat; fourth, oats; and then laid down with clover or graſs ſeeds, or both, and paſtured five or ſix years before it is again broken into tillage. Sandy land is ploughed only three years, and frequently bears a crop every year.

The *Manures* are, marl, lime, farm-yard dung, and various kinds of compoſt. On the eaſtern part of the country, lime is chiefly uſed; and on the weſt and ſouth, marl is the moſt general manure, of which there are various ſorts, viz. the clay marl, the blue ſlate marl, the red ſlate marl, ſtone marls, &c. The clay marl is ſuppoſed to prevail moſt. The quantity of marl uſed, varies according to its quality, and the quality and nature of the ſoil on which it is laid. The quantity is from one to two roods, each rood being ſeventy-two ſolid yards and upwards, on an acre; the expenſe of it filled into the cart is about two-pence a yard. Marl is generally

laid

laid upon the turf, and after the froſt has had its effect upon it, it is ſometimes harrowed before the field is broken up. When lime is uſed, it is commonly mixed with gutter clods, ſcouring of ditches, or ſoil; and laid on the land for barley. Farm-yard dung is frequently mixed with the ſoil off the ſides of lanes, with furrows drawn from between the butts of paſture land, with gutter clods, ditchings, &c. and to theſe, marl or lime are ſometimes added. Sand is frequently uſed as manure on ſtiff lands with great ſucceſs.

Foul or dirtied ſalt is a moſt excellent manure, either for paſture land or fallows, when properly incorporated with ſoil, or other ſubſtances; and it is much to be regretted, that ſo large a quantity as 7 or 800 tons annually, in Cheſhire alone, ſhould be loſt to the community. The heavy duty laid upon refuſe, or dirtied ſalt, almoſt totally preyents its uſe for manure.

The

The markets for the overplus grain grown in Cheſhire are chiefly Mancheſter, Stockport, and Macclesfield. The oats are generally firſt ground into meal, which is made into bread or cakes, and conſumed in the N. E. of Cheſhire and ſouth of Lancaſhire.

Green crops, as winter food for cattle, are very little cultivated: there are, however, very conſiderable quantities of potatoes and carrots grown on the north ſide of the county, which are chiefly intended for the ſupply of the Lancaſhire markets.

Potatoes are cultivated in the pariſh of Frodſham, with as much ſucceſs, and probably to as great an extent, as in any other pariſh in the kingdom. It is eſtimated, that not leſs than 100,000 buſhels of 90lb. weight, have annually, for ſome years paſt, been grown in this pariſh; and a ready ſale has generally been found for them, owing to the great demand for this root in Lancaſhire,

and

and to an eaſy and cheap communication with Liverpool, by means of the river Merſey, and with Mancheſter, by the Duke of Bridgewater's canal. In years of plenty, when the market is overſtocked with potatoes, and the price is ſo low as one ſhilling per buſhel, conſiderable quantities have been given to different kind of ſtock, viz. to feeding cattle, milch cows, horſes and hogs.

Dairies and cattle.—The moſt noted part for the production of cheeſe is ſaid to lie in the neighbourhood of the Wiches, eſpecially Namptwich, where the ſoil is more clayey than in other parts; but there is more or leſs made in every part of the county. The beſt Cheſhire cheeſes run from 60 to 140 pounds weight. Their excellence depends partly on the ſize, and partly on various nice and minute circumſtances in the making, only to be learned by experience, and which conſtitute the art of the very able and careful dairy-women of this county. The cheeſe is generally made with two meals milk, and

that

that in dairies where two cheeſes are made in a day. In the beginning and end of a ſeaſon, three, four, and even five or ſix meals are kept for the ſame cheeſe. The proportion of cream withheld from the milk before it is put together, varies; but the general cuſtom in the beſt daries is to take out about a pint of cream when two meal cheeſes are made, from the night's milk of twenty cows. The principal late improvement in cheeſe-making has been the mode of preparing the *ſteep* or *rennet*, by infuſing all the maw-ſkins at once, and ſaturating the ſtrained liquor with ſalt. The colouring of cheeſe is Spaniſh arnotta. On the dairy farms one woman ſervant is generally kept to every ten cows, who is employed in winter in ſpinning and other houſehold buſineſs, but in milking is aſſiſted by all the other ſervants of the farm. The cheeſe is chiefly ſold in London, being exported from Cheſter, Frodſham-bridge, and Warrington. The Liverpool merchants buy ſome. A good deal is diſpoſed of to country dealers

dealers in Yorkſhire and Lancaſhire, and ſome goes into Scotland. The cattle in Cheſhire are probably kept to a greater age than in moſt other counties; for as the chief object with the farmers is their milk, when they meet with a good milker, they generally keep it till very old. The proper ſeaſon for calving is reckoned to be from the beginning of March to the beginning of May; and during theſe months more veal is probably fed in Cheſhire than in any other county, though generally killed young in order to ſpare the milk. As cows are kept chiefly for milking, and very few are fed, the farmers are leſs attentive to the beauty of their cattle than in many other counties, though they begin to be more curious in their breeds than formerly.

Horſes, ſheep, ſwine.—The horſes employed in huſbandry are generally of the ſtrong black kind, the beſt of which are purchaſed in Derbyſhire. The breed of the county is nothing

nothing remarkable, but has been improved by mixtures with the Leiceſterſhire kinds. Few ſheep are kept on the farms; what are kept, the farmers chiefly purchaſe in the neighbouring counties. Each common or waſte maintains a few; but on Delamere foreſt great numbers are kept, which are ſmall, and of a fine-wooled kind. This breed has been lately improved by croſſes with the Herefordſhire. The breed of hogs uſually kept is a mixture between the long and ſhort-eared.

Woods and timber.—Cheſhire is in general a very woody county. It is probably owing to this circumſtance, and to the large ſupply of hides from the manufacturing towns of Lancaſhire, that great numbers of tanners are ſettled in it, particularly in the middle and north parts. Beſides the hides of cattle ſlaughtered at home, they have a large ſupply from Ireland. The oak bark, in order to prepare it for uſe, was formerly univerſally,

and

and is now by many tanners, ground down by a heavy ſtone wheel turned by a horſe. Inſtead of this, ſeveral now uſe caſt-iron cylinders, between which the bark is paſſed, and is thus more completely ground with leſs labour. Some experiments were lately made by an ingenious tanner in Aſhley with the twigs and ends of the boughs of oak, as a ſubſtitute for the bark. His ſucceſs has been ſuch as to convince him that leather may be tanned with them almoſt equally well as with the bark. The leather prepared in Cheſhire is principally conſumed in the circumjacent parts, and very little of it is exported. Beſides the common uſe of it in ſhoes, boots, ſaddlery, &c. a very conſiderable quantity is employed in the machinery of the cotton manufactory, for ſtraps, coverings for the rollers, &c.

Some of the largeſt oaks in the kingdom grow in Lord Stamford's park at Dunham: there are ſingle trees elſewhere larger than

any here, but no where ſo many large trees together. At Morley, near Wilmſlow, a remarkable oak was felled in the ſpring of 1793. The principal trunk roſe above ſix yards from the ground, and there gave off four large branches at nearly equal diſtances, each itſelf being a large tree. All together containing 470 feet of timber. The trunk immediately above the ground was 41 feet in circumference; at four yards height, 32 feet. It was hollow, and its cavity would eaſily admit ſix or eight people.

MINERALS.

The mineral product for which Cheſhire is moſt remarkable, is its ſalt, with which it is ſtored in inexhauſtible quantities. The particulars reſpecting this article will hereafter be mentioned more minutely: it is enough here to obſerve, that it is found in the two ſtates of ſolid rock, and brine ſprings. The firſt is obtained only at Northwich, where large quantities are raiſed, part

of

of which is refined on the ſpot, and part exported in its rough ſtate. Brine ſprings are met with in ſeveral places of the county, and the ſalt is procured from them by boiling. The average quantity of ſalt made annually in Cheſhire is upwards of 74,000 tons, of which, as well as of the unrefined rock ſalt, a great proportion is exported abroad, forming a very beneficial article of commerce. That conſumed at home pays a large ſum to the public revenue.

Coals are procured in conſiderable quantity in the north-eaſtern part of the county near Poynton. They are ſmall and of a ſoldering quality. Some are alſo got in the hundred of Wirrall.

Quarries of ſtone of various kinds are wrought in different parts. Slate and flags are got at Kerridge on the hills near Macclesfield. Stone for building is procured from the eaſtern hills, alſo at Millington near

Bucklow-hill, at Hill-cliff near Warrington, at Heſswell near Park-gate, and in many other places. It has been remarked, that almoſt every village on the north ſide of Cheſhire is ſituated upon a bed of red rock, which in many parts lies bare. Mill-ſtones are got on Mole-cop, which are ſent to various parts of the country.

At Newbold Aſtbury, about three miles from Congleton, at the edge of Mole-cop, large quantities of lime-ſtone are dug. It is burned upon the ſpot, the coal for the purpoſe being procured from Staffordſhire, at the diſtance of about three miles. This lime-ſtone is heavier than that of Buxton, and when burnt has more of a grey aſh colour. It has lately come into very general uſe as a manure, and many farmers upon compariſon prefer it to the Buxton lime. It is longer in breaking down, but ſwells more, and is thought to be more durable in effect. Its price is about 5½d. per buſhel.

About

About five miles to the north-weſt of Macclesfield is an elevated track of ground called Alderley-edge. Some ſtone uſed for building and other purpoſes is got here; and both copper and lead ore have been found, the former in pretty conſiderable quantity. The ore lies near to the ſurface, but is of too poor a quality to pay the expenſe of getting and ſmelting. It was attempted to be worked many years ago, and the attempt was not long ſince renewed, but without ſucceſs.

CIVIL AND ECCLESIASTICAL STATE.

This county is one of thoſe which in the time of the Romans was inhabited by the people named *Cornavii*. By the Saxons it was termed *Ceſtreſcyre*; and its modern appellation is the *County Palatine* of Cheſter. The reaſon of the title *Palatine* was, that the Earls of Cheſter enjoyed palatine juriſdiction; that is, the inhabitants were tenants in chief to them alone, and they to the

King. The courts of law were held in their name; and they had a ſort of miniature parliament at which their great tenants or barons, and their vaſſals, attended. The ſucceſſion of earls becoming extinct in the reign of Henry III. the king made his eldeſt ſon Earl of Cheſter, which title has ever ſince been attached to the eldeſt ſons of the crown.

The juriſdiction of the county palatine extends as well over the county of the city of Cheſter, as over the county of Cheſter. The Chief Juſtice of Cheſter has the ſame juriſdiction over the courts of the city, as the Chief Juſtice of the King's Bench has over the different courts of the kingdom at large; and iſſues writs of latitat and certiorari into the city, the latter of which writs removes indictments and plaints into the county palatine court before the Chief Juſtice. His determinations have the ſame weight and effect as thoſe of the Chief Juſtice of the King's Bench,

Bench, and are impeachable only in the ſame way. The exchequer court of the county palatine is a court of equity; and the decrees of the chamberlain or his vice-chamberlain are only ſubject to reviſion and appeal in the Houſe of Lords. In this court is alſo a Baron, anſwering to the Remembrancer in the Court of Exchequer above; alſo a Seal-keeper, Filazer, Examiner, Cryer, &c. Its ſittings, which were till lately held twice a year, are now only held once.

Cheſhire is divided into ſeven hundreds, excluſive of the city of Cheſter, which is a county of itſelf. It contains one city and 11 market towns; ſends four members to parliament; pays ſeven parts out of 513 of the Engliſh land-tax, and furniſhes 560 men to the national militia. Each hundred has two ſubdiviſions, for each of which there are two high conſtables.

III.—DERBYSHIRE *in General.**

DERBYSHIRE is bounded to the north by Yorkſhire and part of Cheſhire, the river Etherow being its ſeparation from the latter; to the weſt by Cheſhire and Staffordſhire, its limits almoſt all the way being the Goyt, and the Dove and Trent; to the ſouth and ſouth-eaſt by Leiceſterſhire; and to the eaſt by Nottinghamſhire. It is ſituated nearly in the middle of the iſland, at an equal diſtance from the eaſt and weſt ſeas. Its principal extent is almoſt directly from north to ſouth, in which direction it meaſures about 55 miles. Its greateſt breadth is at the northern extremity, where it meaſures about 33 miles, from which it contracts,

* For the general and particular accounts of Derbyſhire we are much indebted to the Rev. Mr. Pilkington's accurate and valuable hiſtory of that county.

though

though irregularly, on advancing towards the ſouthern, where it is very narrow. A portion of this extremity is inſulated by Leiceſterſhire. The county is eſtimated to contain 720,640 acres.

Face of the Country.—A conſiderable part of the county is diſtinguiſhed from the reſt by being a mountainous tract, and one of the moſt celebrated of the kind in England. From nearly the middle of Derbyſhire that chain of hills ariſes, which ſtretching northwards, is continued in a greater or leſs breadth quite to the borders of Scotland, and forms a natural boundary between the eaſt and weſt ſides of the northern part of the kingdom. Its courſe in this county is inclining a little to the weſt. It ſpreads as it advances northerly, and at length fills up the whole of the north-weſt angle, alſo overflowing a little, as it were, towards the eaſtern parts. The hills are at firſt of ſmall elevation; but being in their progreſs piled upon one another, they form

form very elevated ground in the tract called the *High Peak*, though without any eminences which can rank among the loftieſt mountains even of this iſland. The two moſt diſtinguiſhed heights in the Peak are Ax-edge on the limits of the county near Buxton, and Kinder-ſcout, in the centre of the north-weſt angle. The former was calculated by Mr. Whitehurſt to be about 2100 feet higher than the town of Derby, and 1000 feet above the valley in which Buxton-hall ſtands. Kinder-ſcout has not been meaſured; but as it overlooks all the ſurrounding eminences, it is ſuppoſed to have a ſtill greater elevation. The ſuperior height of theſe two points is further confirmed by the obſervation that clouds reſt on them when they paſs over the intermediate high grounds.

The High Peak is a region of bleak barren heights and long-extended moors, interſperſed with deep narrow vallies, through which the ſmall ſtreams take their courſe.

Some

Some of theſe offer agreeable proſpects of fertility; but on the whole, the tract is one of the leaſt pleaſing, being deſtitute of moſt of the romantic beauties of other mountainous countries. It contains ſeveral natural curioſities, ſuch as deep caverns and apertures in the ground, which have had their full ſhare of admiration under the name of the *Wonders of the Peak*: they will hereafter be more particularly mentioned. The tract called the *Low Peak*, lying near the centre of the county, likewiſe contains hills of various height and extent, affording large proſpects into the neighbouring counties. The eaſt ſide of the county has alſo a high ridge extending from Hardwick in a northern direction to the Yorkſhire border. The ſouthern part of Derbyſhire is for the moſt part a pleaſant and fertile country, not diſtinguiſhed in its appearance from the other midland counties. The banks of the Trent are a range of low meadows, ſubject to inundations.

RIVERS.

RIVERS.

The principal river of this county is the *Derwent*. It riſes from the junction of various rills out of the High Peak, which appear in one ſtream near Hatherſage. Taking a ſouthern courſe a little inclining to the eaſt, it paſſes through Chatſworth park, below which it receives the *Wye* coming down from Buxton and Bakewell. It flows through the romantic dale of Matlock, and at length reaches Derby, having ſo far divided the county into an eaſtern and weſtern part nearly equal in dimenſions. From Derby it ſuddenly turns more to the eaſt, and mixes with the Trent on the Leiceſterſhire border near Wilne. It is made navigable from Derby to the Trent. The current of the Derwent is rapid, and the temperature of its waters has been obſerved to be warmer than that of rivers in general, which may be aſcribed to the mixture of warm ſprings. It frequently

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in the ſummer raiſes the thermometer to 66 degrees.

The *Dove*, riſing a little to the ſouth of Buxton, on the Staffordſhire limit, holds a courſe nearly parallel to the Derwent, ſerving for the boundary of the two counties all the way to its junction with the Trent, a little below Burton. In its tract it paſſes through the very romantic Dove dale. It is augmented by many little ſtreams on the ſouth-weſtern ſide of Derbyſhire.

The *Trent* itſelf holds but a ſhort part of its courſe through this county. Coming out of Staffordſhire, it reaches the border of Derbyſhire at its ſouth-weſtern point. After making the boundary for ſome miles, at its junction with the Dove it enters the county, and paſſing from weſt to eaſt acroſs its narroweſt part, it reaches the Leiceſterſhire border. It there becomes again the boundary,

till

till it enters Nottinghamſhire. It is navigable during all this courſe.

The *Errewaſh*, riſing about the middle of the eaſtern border, runs ſouthward, forming the boundary between Derbyſhire and Nottinghamſhire till its junction with the Trent.

The *Rother*, taking its riſe to the ſouth of Cheſterfield, paſſes that town, and holds a north-eaſtern courſe till it enters Yorkſhire.

CLIMATE.

The mountainous part of Derbyſhire is diſtinguiſhed from the reſt by the greater quantity of rain which falls in it. At Chatſworth, which is by no means the higheſt part, about 33 inches of rain have been found to fall annually at a medium. The High Peak is peculiarly liable to very violent ſtorms, in which the rain deſcends in torrents, ſo as frequently to occaſion great ravages in the lands: it is alſo ſubject to very

high winds. Theſe cauſes, together with the elevation of the country, render it cold; ſo that vegetation is backward and unkindly. Some kinds of grain will not grow at all in the Peak, and others ſeldom ripen till very late in the year. The atmoſphere is, however, pure and healthful, and the higher ſituations are generally free from epidemic diſeaſes, though agues and fevers ſometimes prevail in the vallies. One diſeaſe is, however, endemic in theſe parts, and even as far ſouth as Derby, which is the bronchocele, or Derby-neck: it is an enlargement of the glands of the throat, and is a degree of the ſame diſeaſe that is known in the Alps, and in ſome other mountainous tracts.

SOIL.

The moſt common ſoil in Derbyſhire is a reddiſh clay or marl. The ſouthern part of this county is in general compoſed of it, with little or no ſtone beneath the ſurface. This ſoil alſo appears on the north-weſt ſide

of

of the county. Its quality is very various in different ſituations, in ſome containing much calcareous earth, in others not at all effervеſcing with acids. Its colouring principle is iron. That large tract of country which produces coal, is covered with a clay of various colours, black, grey, brown, and yellow; eſpecially the laſt. It is in ſome places mixed with a large portion of ſand. This kind of ſoil is alſo found in ſome parts where grit-ſtone is met with; but there it is frequently of a black colour and bituminous quality. On the eaſt moor, and in the northern extremity of the county, are large tracts of land conſiſting of this ſoil. That in the lime-ſtone country on the north-eaſt ſide is of a brown colour and looſer texture. Small tracts of gravel or ſand are interſperſed through the marl diſtrict. In the north part of the county are peat bogs, ſome upon the higheſt mountains, in which trees have been found nearly perfect. The ſoil in the vallies near the banks of the larger rivers is very

different

different from that of the adjacent parts, and has been evidently altered by the depoſitions from inundations.

PRODUCE.

The ſouthern parts of this country are nearly equally divided between paſture and tillage. The banks of the Dove are chiefly occupied by dairy farms. On the eaſtern ſide of the county, tillage chiefly prevails. The midland tracts have a mixture of paſture and arable according to the ſoil and ſituation, and large improvements are carrying on upon the moors of this diſtrict. In the High Peak the ground is chiefly devoted to the raiſing and feeding of cattle, very little corn beſides black oats being grown. On the whole, Derbyſhire is more of a grazing and dairying than a corn country. The grain principally cultivated is barley, of which much is grown for the ſupply of the breweries at Burton. Of the whole produce, calculated at 5000 quarters annually, about

half is ſuppoſed to be exported to the neighbouring counties, ſome in the ſtate of malt. The produce of wheat is ſcarcely equal to the conſumption; that of beans and oats about anſwers the home demand. Of cheeſe, nearly 2000 tons are thought to be annually exported to London and ſeveral ſea-ports on the eaſt coaſt. Its quality is mild, and its taſte reſembles the Glouceſterſhire.

An uncommon ſpecies of culture, in which about 200 acres of this county are employed, is that of *camomile*. A loamy ſoil is choſen for the purpoſe, in which, after proper preparation, ſlips from the roots of an old plantation are ſet about the end of March. The collection of the flowers begins in September, and continues in ſucceſſion till ſtopt by the froſts. The plants uſually ſtand three years, of which the firſt affords the ſmalleſt, the ſecond the beſt and largeſt produce. A dry year is moſt favourable to them. When the flowers are gathered, they are carefully

dried

dried in a kiln or on a heated floor, packed in bags, and ſold to perſons in the neighbourhood, who ſend moſt of them to the druggiſts in London. The produce and price are ſubject to great variation; but on an average the former may be reckoned at four cwt. an acre, the latter at four pounds per cwt.

The horſes of Derbyſhire are of very different breeds in the ſouthern and northern parts. In the former they are of the ſtrong and heavy kind; but in the latter, light and ſlender. They are much employed in the Peak for carrying lime-ſtone on their backs, and ſhow great agility in aſcending and deſcending the ſteep mountains.

The neat cattle are almoſt univerſally horned, and rather large and handſome. The cows are diſtinguiſhed for their beautiful ſhapes, and have the property of becoming fat in a ſhort time. Their yield of milk is but moderate. Notwithſtanding the num-

bers bred here, many are brought every year from Yorkſhire and Lancaſhire, and ſold to the Derbyſhire graziers.

The ſheep on the Leiceſterſhire border reſemble thoſe of that county in weight and ſize. They diminiſh on proceeding northwards; and in the High Peak weigh from 14 to 17 pounds per quarter, thoſe on grit-ſtone land being three pounds lighter than thoſe on lime-ſtone. But the difference in their fleeces is more remarkable, thoſe of the grit-ſtone ſheep being much lighter and thinner than of the others. There are now few or no goats kept in Derbyſhire, though once they were common. Other animals, tame and wild, offer nothing remarkable.

SUBTERRANEOUS GEOGRAPHY.

This may in general be conſidered as dividing the county into three diſtinctions of lime-ſtone, coal, and grit-ſtone land.

Lime-ſtone.—The moſt extenſive tract of this land is ſituated on the north-weſt ſide of the county. Its northern extremity is at Caſtleton: its weſtern line runs along the weſt ſide of Peak Foreſt to Buxton, thence, keeping along the eaſt ſide of Ax-edge, it proceeds to the head of the Dove, and follows the boundary of the county about 12 miles, and croſſing the river, extends a few miles into Staffordſhire. The moſt ſouthern point in which it appears in Derbyſhire is about two miles north of Aſhborne. Hence, its limit runs eaſtward in a line by Wirkſworth as far as Matlock: its courſe then points northward, extending on the eaſt ſide of Winſter, Bakewell, Stony-Middleton, and Bradwell, to its termination in the valley of Edale. Beſides this large tract of lime-ſtone, there is a ſmall one on the eaſt ſide of the county, forming the ridge already mentioned from near Hardwick, through Bolſover and Barlborough to the border of the county. This lime-ſtone tract ſpreads eaſtwards into

Nottinghamſhire, and northwards, quite through Yorkſhire, with little interruption, as far as Tinmouth-caſtle in Northumberland. There are likewiſe ſeveral detached beds of lime-ſtone in other parts of Derbyſhire, but none exceeding two miles in length or breadth.

Coal.—The principal coal country begins a little north-eaſt of Derby, at Stanton, Dale, and Morley. It runs on the weſt ſide of Morley and Belper, and appears again at Lea, Aſhover pariſh, Dronfield pariſh, and ſo to the Yorkſhire border. This tract of coal is ſaid to extend, under the name of the *great northern rake*, quite to the border of Scotland, being only interrupted by a lime-ſtone bed of three miles in breadth near Ferrybridge in Yorkſhire. Coal has alſo been found at Chinley hills near Chapel-le-Frith, in the neighbourhood of Buxton, and at various places in the ſouthern extremity of the county.

Grit.

Grit-ſtone.—This occupies a much greater extent than the two former diviſions, particularly the north and north-weſt extremity of the county, and the tract lying between the principal beds of coal and lime-ſtone, of which diſtrict the eaſt moor forms the moſt conſiderable part. This laſt extends, with various breadth, almoſt as far ſouth as Derby. Small beds of grit-ſtone appear alſo in a few other parts.

Gypſum or *Plaſter-ſtone.*—This ſubſtance, which is found in nearly a ſtraight line acroſs the kingdom, appears in Derbyſhire in ſeveral places, particularly at Chellaſton, Aſton, and Elvaſton, three contiguous pariſhes, about five miles ſouth-eaſt of Derby. It lies about eight yards beneath the ſurface, and is found, not in regular layers, but in large lumps or blocks indented together, but which may be eaſily ſeparated. The thickneſs of the beds is from two to four yards.

It has been already obſerved, that a conſiderable tract in the ſouthern part contains no beds of ſtone of whatever kind near the ſurface. If a line be drawn from Aſhborne through Derby to the Nottinghamſhire border, it will have ſuch a tract to the ſouth, with the exception of a few places mentioned above.

CAVERNS AND SUBTERRANEOUS PASSAGES.

The ſtrata of different kinds of ſtone, or *meaſures* as they are here termed, differ in reſpect to arrangement, thickneſs, and inclination, in the ſeveral parts of the mountainous tracts of Derbyſhire. It often happens that theſe meaſures are broken, in conſequence of which clefts and chaſms are formed in the earth. Theſe are extremely various in figure and ſize, and are more frequent in ſome parts than in others. The moſt remarkable which has been diſcovered in the clefts of the lime-ſtone, is ſituated at Caſtleton, and known by the name of

Peak's

Peak's-hole.—It is ſituated in a deep and narrow receſs of the valley in which the town ſtands. On each ſide and near the end of this receſs, two large faces of rock are ſeen riſing to a great height. At the foot of the rock the mouth of the cavern opens: it is about 14 yards high and 40 wide; the arch at the entrance is regularly formed, and extends nearly 300 feet in a direct line: this part is tolerably light, and is inhabited by a number of poor people who manufacture packthread. They have built ſmall dwellings in this ſpacious vault, where they are ſheltered from the extremes both of heat and cold. Beyond the firſt turning the ground gently declines, and the path is made wet by droppings from the roof. At the diſtance of 130 yards from the entrance, all further progreſs was formerly ſtopped by a projection of the rock, but a paſſage is now opened through it. The cavern, which has been gradually contracting, appears about 20 yards from hence to be entirely incloſed; but

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on a nearer approach, a low paſſage under the rock, almoſt full of water, is diſcovered. The opening juſt admits a ſmall boat, but the paſſenger muſt lie almoſt flat while it is puſhed under the rock. On landing he finds himſelf in a cavern more ſpacious than the former, ſaid to be 70 yards wide, and 40 high, but totally dark. A path on its right ſide leads up a ſteep aſcent to the top of a rock; another declines and leads to a much lower and narrower part. The whole length of the ſubterranean paſſage is ſaid to be 750 yards, and attempts have been made by blaſting the rock to extend it further, in order to communicate with another cavern, but without ſucceſs. A ſtream of water runs through the whole length, which muſt be croſſed ſeveral times, and after heavy rains is ſo much ſwelled as to cut off acceſs to the further parts.

Poole's-hole is a cavern formed in the limeſtone, and ſituated a ſhort diſtance from Buxton.

Buxton. Its entrance is low and narrow, requiring a perſon to ſtoop conſiderably. After proceeding 20 or 30 yards in this poſture you open into a ſpacious and lofty cavern, the roof and ſides of which are covered with ſtalactitical incruſtations, called here *water-icle*. Large piles and maſſes of the ſame ſubſtance appear on the floor, which are continually receiving increaſe from the droppings of water loaded with calcareous matter, and put on various ſingular figures. The cavern after contracting at a large water-icle called the flitch of bacon, enlarges again, and continues of the ſame dimenſions till you come to Mary queen of Scots' pillar, which is a large column of ſtalactite. It is not eaſy to go farther. The path has hitherto lain along the ſide and ſome height from the bottom of the cavern. On deſcending to examine the interior extremity, the bottom is at firſt tolerably even, but after 20 yards it riſes with a perpendicular aſcent to the height of 80 yards. On returning by the bottom

bottom you paſs under the queen of Scots' pillar, and view various other incruſtations, ſome of extraordinary ſize and form. The whole length of the cavity is ſaid to be 560 yards.

Elden-hole, ſituated in Peak-foreſt, is alſo a cleft in a lime-ſtone meaſure. Its entrance is perpendicular. It is a deep chaſm extending lengthwiſe in the direction of north-weſt and ſouth-eaſt. Near the ſurface it is about 10 yards wide and 30 long; but it gradually contracts, and at the depth of 90 feet is very much confined. At this place is a projection of the rock, and behind it a ſmall cave admitting the light. Miners and other perſons have deſcended much below this, and found various other chinks and caverns lined with ſtalactite. At a vaſt depth water has been found, and there is ſome reaſon to believe that this is part of a ſubterraneous river which appears in the mouth of the cavern at Caſtleton. All the ground between Perry-

ſoot and Caſtleton abounds in clefts and caverns, a ſeries of which reaches from the neighbourhood of Peak's-hole nearly to Elden-hole. Theſe have been diſcovered by miners in ſinking their ſhafts, and purſued under ground to a great extent.

There are other ſubterraneous caverns and paſſages near Eyam, particularly Charleſworth and Bamforth-hole. The latter is a ſeries of ſtalactitical caverns of conſiderable extent.

MINES AND MINERALS.

Lead.—Lead mines in Derbyſhire are of great antiquity, undoubted proof exiſting that they were worked in the time of the Romans. They may be traced from the Saxon and Norman æras down through ſucceſſive periods to the preſent time. The extent to which the buſineſs has been carried on at different periods cannot with certainty be determined; but the produce of the mines during

during the laſt century has undoubtedly been very conſiderable. At preſent, lead ore is found in various parts of the county. Indeed, it has been diſcovered in different quantity throughout all the tract of lime-ſtone land; but it is met with in the greateſt abundance about ten miles to the north and ſouth of the river Wye.

Veins of lead ore, on account of their poſition in the earth, are diſtinguiſhed by the different names of *pipe*, *rake*, and *flat* works. A pipe-work lies between two meaſures of lime-ſtone regularly extending above and below. It conſiſts of ſeveral lines or branches running nearly parallel to each other, which have a general communication by means of ſlender threads, or leadings, as they are called by the miners. The rock is ſometimes pierced through by theſe leadings, which it is thought right to follow, as they often conduct to a freſh range; ſhould no ore be found on ſuch a purſuit, the breadth of the work

work is aſcertained; its length is indeterminate, depending much on the dipping of the meaſures. If this be great it begins to decline, or cannot be purſued further on account of water. The rake-vein is found in the chaſms or clefts of the lime-ſtone, and conſequently breaks through the meaſures and ſinks into the earth. It ſometimes penetrates 150 or 200 yards, generally in a ſlanting direction; and it has been followed to the diſtance of four miles from the place where it was firſt diſcovered. The flat-work reſembles the pipe, but has no leader or ſtem like that. It ſpreads wider, and ſeldom extends above 100 yards. It is alſo found near the ſurface and in the ſolid rock, and is very weak and poor, being ſeldom thicker than a man's finger.

The veins of lead ore are generally encloſed in a yellow, red, or black ſoil, and are firmly connected with cauk, ſpar, or ſome other mineral. Their direction is not uniform.

form. The pipes never penetrating the meaſures, follow the dip of the country in which they are found. The rakes run ſtill more variouſly; in the High Peak, generally pointing eaſt and weſt; in the wapentake of Wirkſworth, north and ſouth. Sometimes two veins cut each other at right angles: ſometimes the pipe and rake unite and run together a ſhort way, becoming ſtronger and richer. It is difficult to determine which of theſe two veins is moſt common, or moſt productive; the pipe, however, ſeem moſt generally valuable.

Veins are diſcovered various ways; ſometimes by attention to the nature of the ground, which leads the experienced miner to make a ſearch by boring; often by accidents laying open ſome branch which riſes to-day. The more the branches which accompany a vein, the richer it is, and when they begin to diminiſh, it becomes poorer. Alſo, for the moſt part, a vein is impoveriſhed when it

runs

runs in ſuch a direction as to receive over it a greater number of meaſures. In working mines, a principal point is to free them from water; the moſt common and effectual method of doing which is to drive a ſough or level from the bottom of ſome neighbouring valley as far as the works; where this cannot be done, pumps muſt be employed, which are either worked by a water wheel, or by a fire engine. Mines are freed from bad air by the introduction of a pipe down the ſhaft to the work, whence it is extended along the roof of the gallery. The circulation this occaſions proves an effectual remedy.

There are numerous and various regulations reſpecting the rights of miners, and the dues payable for the ore, in different parts of the mining country. The principal tract containing lead is called the *King's-field*. Under this denomination nearly the whole wapentake of Wirkſworth is comprized, as well as part of the High Peak. The mine-

ral duties of the King's-field have been from time immemorial let on leaſe. The preſent farmer of thoſe on the High Peak is the Duke of Devonſhire; and of thoſe in the wapentake of Wirkſworth is Mrs. Rolles. They have each a ſteward and bar-maſters in the diſtricts they hold of the crown. The ſteward preſides as judge in the Barmote courts, and with twenty-four jurymen determines all diſputes reſpecting the working of mines. The courts are held twice a year; thoſe of the High Peak at Money-aſh, and thoſe of the wapentake at Wirkſworth. The principal office of the bar-maſter is putting miners in poſſeſſion of the veins they have diſcovered, and collecting the proportion of ore due to the leſſee. When a miner has found a new vein of ore in the King's-field, provided it be not in an orchard, garden, or high-road, he may obtain an excluſive title to it on application to the bar-maſter. The method of giving poſſeſſion is, in the preſence of two jurymen, marking out in a pipe or rake work

two *meares* of ground, each containing 29 yards; and in a flat work 14 yards ſquare. But if a miner neglect to avail himſelf of his diſcovery beyond a limited time, he may be deprived of the vein of which he has received poſſeſſion, and the bar-maſter may diſpoſe of it to another adventurer. As to the other part of the bar-maſter's office, that of ſuperintending the meaſurement of the ore, and taking the dues of the leſſee or lord of the manor, it is attended with ſome difficulty from the variety of the claims, which differ greatly in different places. In general a thirteenth of the ore is the due in the King's-field, but a twenty-fifth only is taken. Beſides this, there is a due for tithe. In mines that are private property, ſuch tolls are paid as the parties agree upon.

The miner having ſatisfied the ſeveral claims, proceeds to diſpoſe of his ore to the merchant or ſmelter. There are four denominations of ore; the largeſt and beſt ſort is

called *Bing*; the next in ſize and alm equal in quality is named *Peſſey*; the third is *Smitham*, which paſſes through the ſieve in waſhing; the fourth, which is caught by a very ſlow ſtream of water, and is as fine as flour, is ſtiled *Belland*; it is inferior to all the reſt on account of the admixture of foreign particles. All the ore as it comes from the mine is beaten into pieces and waſhed before it is ſold. This buſineſs is performed by women, who can earn about 6d. per day.

Smelting furnaces are of two kinds, the hearth and cupola. The hearth conſiſts of large rough ſtones placed ſo as to form an oblong cavity about two feet wide and deep, and 14 long, into which fuel and ore are put in alternate layers; the heat is raiſed by means of a large pair of bellows worked by a water wheel. The fuel is wood and coal. The lead procured this way is very ſoft, pure, and ductile, but a conſiderable quantity of metal remains in the ſlags. Theſe are, there-

therefore, ſmelted over again with a more intenſe fire of coke; but the metal produced is inferior in quality to the former. At preſent, a ſmall proportion of ore is ſmelted this way, only two hearth furnaces remaining in Derbyſhire. The cupola, introduced about fifty years ſince, is of an oblong form, reſembling a long, but not very deep, cheſt, the top and bottom of which are a little concave. The fire being placed at one end, and a chimney at the other, the flame is drawn over the ore placed at the bottom, and by its reverberation ſmelts it without any contact of the fuel.

The lead when ſmelted is poured into moulds of various ſizes, according to the different markets for which it is intended, Hull, Bawtry, or London. Two of the blocks make a pig. Some of it, however, is firſt rolled into ſheets at works erected for the purpoſe near the furnaces. A conſiderable quantity is alſo converted into red lead. This proceſs is per-

formed in a kind of oven, the floor of which is divided into three parts. The middle of theſe contains the metal, and the two others, the fire. The flame being reverberated on the metal, converts it into a calx or powder; which, on being a ſecond time expoſed to the action of the fire, acquires a red colour.

Attempts were made ſome years ago to extract ſilver from the lead; but no ſuch work now exiſts in Derbyſhire. The ſulphur driven off from the ore in ſmelting is collected at two furnaces.

The annual produce of lead from the Derbyſhire mines is not exactly aſcertained, but may be eſtimated at an average of between 5 and 6000 tons. It is generally thought to be on the decline, ſome of the richeſt mines being either exhauſted, or become more difficult to work; but on the other hand, from the improvements in the art of ſmelting, and the more effectual methods employed to clear the

mines of water by new levels and improved fire engines, advantages have been gained that may, perhaps, ſupply the deficiency.

Iron.—The ore of this metal occurs throughout all that tract in which coal has been diſcovered, Chinley-hills excepted. The depth at which it lies from the ſurface is extremely various. Frequently, from the great dipping of the meaſures, it baſſits out to-day. In this caſe, a hole is made like the ſhaft of a coal-pit. This is gradually enlarged on growing deeper, ſo as to aſſume the form of a bell. It is ſeldom ſunk lower than 18 yards; after which freſh ground is broken and a new pit ſunk: by this means the lower beds are mixed with the ſoil near the ſurface, ſo as to injure the land greatly; whence it is not thought worth while to dig for iron ore unleſs the beds are very valuable. Their thickneſs varies from 2 to 12 inches. The moſt valuable beds which have yet been diſcovered are in Morley-park near Heage, at

Wingerworth, Cheſterfield, and Stavely. At all theſe places furnaces are built; theſe are of a circular or conical form, having the fire with a blaſt at the bottom. When the furnace is prepared and duly ſeaſoned, the proceſs of ſmelting begins. Fuel, ore, and flux, in alternate layers, are continually put in day and night, and the fire is not ſuffered to go out till the furnace wants repair, which is frequently a period of ſome years. The fuel is generally coke, though charcoal has been uſed. Lime-ſtone is the univerſal flux. The ore undergoes the previous preparation of being burned in the open air in beds, firſt with coke, then with coal ſlack; it is then broken into ſmall pieces and ſcreened. The proceſs of ſmelting takes different times according to the ſize of the furnace and other circumſtances. Different ſorts of iron are produced by varying the proportions of ore, flux, and fuel. The metal firſt obtained is brittle and void of due malleability. To give it this property it is carried to the forge,

and

and wrought into bars. The quantity of iron produced in this county amounts to about 5600 tons annually.

Calamine.—The value of this mineral, which is an ore of zinc, has but lately been attended to in this county. The chief places in which it is diſcovered, are Caſtleton, Cromford, Bonſall, and Wirkſworth. It occurs at various depths, but is generally found near a vein of lead ore. The two minerals are ſometimes mixed, or run a conſiderable way by the ſide of each other; but more commonly, one ceaſes where the other begins, and a good vein of both is never found in the ſame place. Calamine generally lies in a bed of yellow or reddiſh brown clay. The beds reſemble pipe works, and conſiſt of lumps of various ſizes and ſhapes: their direction is the ſame as the dip of the meaſures.

The

The calamine is firſt waſhed in a current, and then again in ſieves in a veſſel of water, and all the foreign matters, as ſpar, cauk, and lead ore are picked out from it. It is next calcined in a reverberatory furnace, after which it is again picked, ground to a fine powder, and waſhed. The quantity of calamine at preſent annually produced in Derbyſhire is about 500 tons. Its value in its crude ſtate is from 35 to 40 ſhillings per ton; in its prepared ſtate, five or ſix guineas. It is inferior in value to the calamine of Mendip in Somerſetſhire. Blend or black jet, alſo got in Derbyſhire, is another ore of zinc, leſs valuable than calamine.

Copper.—This metal has hitherto been found only in ſmall quantity in Derbyſhire. Conſiderable pieces detached from any vein are frequently met with at Matlock and Bonſall. A ſlender vein of ore was diſcovered ſome years ſince at Great Roch Dale, between Tideſwell and Buxton; and another lately

lately near Chapel-le-Frith; but neither is worked.

Coal Mines.—The tract of country producing coal has already been mentioned. It is got in abundance in Derbyſhire. Coal is met with at various depths, and in ſome places ſeveral beds are paſſed by one ſhaft, but the upper ones are thin and ſoft, and ſeldom worked. Beſides the home conſumption of coal, which is very great, a conſiderable quantity is conveyed by the Errewaſh canal into Leiceſterſhire, and by the Cheſterfield, into Nottinghamſhire and Lincolnſhire. Large quantities go to Sheffield from Dronfield pariſh.

Plaſter-ſtone—The moſt valuable kind of this ſubſtance was got at Elvaſton, but the pits are now cloſed. That of Chellaſton, though neither of a fine colour nor texture, is equally uſeful for common purpoſes. About 800 tons are got annually from theſe pits, of which

which 500 are ſent by the canal into Staffordſhire to the potteries, where it is uſed for the formation of moulds. A conſiderable quantity is alſo uſed for laying floors in buildings. For both theſe purpoſes a previous calcination is neceſſary, after which the addition of water makes it ſet firm and ſolid. In its native ſtate, this ſubſtance is called gypſum and alabaſter, and when wrought, takes a high poliſh, and is uſed for ornamental works. The calcinated gypſum is uſed for all the purpoſes of plaſter of Paris, and is ſometimes mixed with lime in making the finer kinds of mortar.

Lime-ſtone.—The extent of country which yields this ſtone has been already mentioned. Its qualities are various. At Buxton, Peak-foreſt, and Stony-Middleton, it is of a light grey, and when burned is much uſed in agriculture. For this purpoſe much is diſpoſed of in the northern part of the county, and alſo in Cheſhire and Lancaſhire. At Crich are

ſeveral

ſeveral kilns, which burn a lime remarkably white, and much valued for ceilings and other ornamental purpoſes. This lime-ſtone is free from metallic particles, and forms a manure for cold lands, which is reckoned to bring the crops a fortnight forwarder than that which is darker-coloured. At Ticknal and Kniveton the lime-ſtone is very dark, and ſets very ſtrongly. That of the latter place is thought nearly equal to the lime of Barrow in Leiceſterſhire. At Hopton is a kind of a light colour, hard, and abounding with ſmall fragments of entrochi. It is much uſed for hearths, chimney-pieces, floors, and ſtair-caſes. On Braſſington moor a ſpecies of a ſimilar nature, but ſuperior quality, has been diſcovered.

Marble is found in various parts of the High and Low Peak: it is either black or mottled grey. The black abounds chiefly at Aſhford; it may be had in large blocks, and is in general very black, cloſe, ſolid, and

capable of a high poliſh. The mottled grey is found in many places, but particularly near Money-aſh. It has a great diverſity of ſhades, but may be diſtinguiſhed into two kinds; that with a lightiſh grey ground, and that with a light blueiſh ground. The latter is rendered very beautiful by the purple veins that ſpread over its ſurface. But the chief ornament of the grey marble is the vaſt quantity of entrochi that it contains, the tranſverſe and longitudinal ſections producing an incredible variety of forms. In general, the more ſuperficial the beds of marble, the lighter its colour, and the more abundant the entrochi.

Water-icle or *Stalactite* is very common in the Peak, and of a great variety of colours. They are poliſhed and uſed for making ornaments of various figures; as are likewiſe the *tranſparent calcareous ſpars*, of the rhombic kind.

Porce-

Porcelain Clay, of a delicate white and very fine texture, has been got from a lead mine near Braſſington. What is now dug, is ſent to the Staffordſhire potteries. *Pipe-clay* is got at Bolſover, where pipes are made with it, and both it and potter's clay are found in various other parts. *Rotten-ſtone* is met with near Bakewell, and is much uſed by the lapidaries of Derby.

Slate of a grey colour is got in Chinley-hills, and at Hayfield, and is much uſed for covering houſes in that neighbourhood.

Chert is found in ſtrata, and may be ſeen running through the rocks in the Peak. A large quantity of it is carried from the neighbourhood of Bakewell into Staffordſhire and Yorkſhire, where it is uſed in the manufacture of earthen ware. Some kinds of it are made into mill-ſtones.

Moor-ſtone is found in the north-weſt part of the county, and the eaſt moor. Mill-ſtones are made of it on Kinder-ſcout, and in the pariſh of Eyam. *Free-ſtone* is found in various places, and ſome of the fineſt houſes in Derbyſhire have been built with it.

A ſpecies of *pyrites* got near Dronfield is uſed for the production of copperas, but in no great quantity.

Black-wad.—This earth, which on analyſis is found to be chiefly compoſed of iron and manganeſe, is met with principally at Elton near Winſter. After calcination it is uſed as an oil colour in houſe and ſhip painting. It is chiefly employed for the latter purpoſe, and there is a conſiderable demand for it in the royal navy.

Medicinal Waters.—Derbyſhire abounds beyond moſt counties with mineral and medicinal waters; they are of various kinds,

warm,

warm, cold, ſaline, calcareous, ſulphureous, and chalybeate. Some of the moſt noted, which come within the limits of this work, will be particularized hereafter.

CIVIL AND ECCLESIASTICAL DIVISION.

In the Roman times, Derbyſhire formed part of the country of the Coritani; in the Saxon, part of the kingdom of Mercia. It is divided into ſix hundreds; the names of which are,

High Peak hundred, in the north-weſt.
Scarſdale hundred, in the north-eaſt.
Wirkſworth wapentake, in the weſt.
Appletree hundred, in the weſt.
Morleſton hundred, in the eaſt.
Repington hundred, in the ſouth.

Theſe are ſaid to contain 11 market towns, and about 440 hamlets.

The number of inhabitants in the year 1788, from the moſt accurate inquiry that could be made, was 124,465; of houſes, 25,642. An eſtimate made in the late reign reckons the inhabitants at 126,900, but there are good grounds for ſuſpecting its accuracy, as population ſeems in moſt parts to have been increaſing. Derbyſhire pays ſix parts of the land-tax, and provides 560 men to the national militia.

Some remains of the ancient civil policy of the county ſtill appear, the court of the duchy of Lancaſter, and the Peverel court, being of this kind. The honor of Tutbury and the hundred of Appletree belong to the former; and courts are regularly held, called three weeks courts, for the honor, at Tutbury, and for the hundred, at Sudbury. The Peverel courts are held at Basford near Nottingham. A conſiderable number of townſhips belong to each of theſe. The courts of High Peak and the wapentake of

Wirkſworth have already been mentioned, as regulating the mineral concerns of thoſe parts. With reſpect to its common judicature, Derbyſhire is included in the midland circuit.

Derby, the capital, is the only parliamentary borough in the county. It ſends two members to parliament, and the county two more.

In its eccleſiaſtical concerns, it forms a part of the dioceſe of Litchfield and Coventry, and is divided into one archdeaconry, and five deanries, which are the following:

ARCHDEACONRY OF DERBY.

Deanry of Aſhborne.
——— *of Caſtillar.*
——— *of Cheſterfield.*
——— *of Derby.*
——— *of Repington.*

Its parochial churches, from the beſt inquiry, amount to 116; its chapels, of which two are extra-parochial, to 71. There are 39 meeting-houſes of different denominations of diſſenters.

IV.---*General*

IV.—*General Account of the* WEST-RIDING OF YORKSHIRE.

THE great county of York is divided into three diſtricts called *Ridings*, the Eaſt, Weſt, and North, of which the two latter have each the magnitude of a large county. A conſiderable part of the Weſt-Riding coming within the limits of the preſent undertaking, it has been thought proper to prefix to the account of the particular places, a general deſcription of the diſtrict itſelf.

The *Weſt-Riding of Yorkſhire* is bounded to the north by the North-Riding, the river Ure making part of the diviſion; to the eaſt, by the Ainſty Liberty, and by the Eaſt-Riding, the rivers Wharf and Ouſe being the limits, and alſo by the counties of Lincoln and Nottingham; to the ſouth, by Derbyſhire and Cheſhire; to the weſt, by Lanca-

ſhire and Weſtmoreland. Its length, if meaſured from north-weſt to ſouth-eaſt, exceeds 90 miles, upon an average breadth of about 40. It is computed to contain 2450 ſquare miles, or 1,568,000 ſtatute acres.

RIVERS.

A number of rivers take their courſe through it, the principal of which terminate in the Ouſe.

The *Nidd*, riſing in Nidderdale or Netherdale foreſt, paſſes Paitley-bridge, Ripley, and Knareſborough, and joins the Ouſe a few miles above York.

The *Wharf* takes its riſe in Langſterdale chace, and paſſing by Otley, Harewood, Wetherby, and Tadcaſter, empties into the Ouſe near Cawood.

The *Aire* deriving its ſources from about Malham moor, flows near Skipton and Keighley;

Keighley; thence to Leeds, below which it is joined by the *Calder*, and they paſs on together by Ferry-bridge and Snaith, to the Ouſe near Howden.

The *Calder* riſes in the hills on the Lancaſhire border, weſt of Halifax, and after receiving the *Coln* from Huddersfield, flows by Wakefield to its junction with the *Aire*.

The *Don* or *Dun* riſes near the Cheſhire border weſt of Peniſton, which place it paſſes, and being augmented by many ſmall ſtreams from the Derbyſhire border, flows to Sheffield, where it receives the *Sheaf*. Theſe together run by Rotherham and Doncaſter to meet the Ouſe a little above its opening into the Humber.

The *Ribble* coming down by Settle, and joined by the *Hodder* from Bolland foreſt, takes its courſe weſtward into Lancaſhire.

Theſe numerous rivers beſtow beauty and fertility on the vales through which they flow, and afford, along with the navigable canals, the advantage of water carriage to the buſy manufacturing towns on their banks.

FACE OF THE COUNTRY.

The face of the country is in many parts ſtrongly irregular. In the weſtern and northern diviſions a conſiderable portion is hilly and mountainous, but interſected with numerous vales rich in the fineſt graſs.

The hills of *Ingleborough*, *Whernſide*, and *Penigent*, to the north and north-weſt of Settle, rank among the higheſt mountains of South-Britain. In their neighbourhood are various caverns and other natural curioſities belonging to a mountainous country. One of the moſt noted of theſe is *Malham-cove*, a kind of amphitheatre of ſmooth perpendicular lime-ſtone, 288 feet high in the centre from its ſummit to its baſe. On the top of

the moor on which the cove is ſituated is an elevated lake called *Malham-tarn*, of clear and very cold water, abounding in trout. It diſcharges itſelf by a ſubterraneous paſſage into the river Aire, of which it forms the head. *Gordal-ſcar* in its neighbourhood forms a deep and romantic bed for the river, through which it rolls in a grand caſcade, over-hung by rugged rocks above 100 feet high, projecting above their baſes till they almoſt meet at top. Near *Chapel-in-the-dale*, on the north ſide of Ingleborough, are other remarkable pits or caverns, containing within them pools of water and caſcades, giving birth to ſubterraneous ſtreams which at length burſt out to day. The river Ribble near its origin in theſe parts tumbles into a deep cavern, and is loſt in the bowels of the mountains for three miles, when it emerges and makes its way to Settle. Many other romantic ſcenes are met with in this part of the diſtrict, which is a favourite ſpot for botaniſts

taniſts on account of the number of rare and curious plants it contains.

The greater part of the Riding, however, is a flat country, with no other elevations than ſuch as ſerve to vary the proſpect. Towards the border of Lincolnſhire, and the lower part of the Ouſe, are large tracts of marſh, which have been drained by canals and dykes, firſt made in the reign of Charles I. Hatfield moor or chace, and Thorne waſte, contain the principal part of theſe lands.

The whole cultivated part of the Riding is almoſt completely encloſed with ſtone dykes and hedges, kept in excellent order; and there are few open fields, except where the land is common or waſte.

SOIL.

The nature of the ſoil in this extenſive tract differs greatly. There are all kinds, from

from deep ſtrong clay, and rich fertile loam, to the pooreſt peat earth, and it is not aſcertained which ſort prevails moſt. Much ground, originally barren, has been rendered productive by vicinity to great towns, and ſuperior culture. In general, it may be ſaid that a large proportion is of a quality favourable to the purpoſes of huſbandry. By a calculation made, it, however, appears, that the waſte lands in this Riding amount to 405,272 acres, of which it is computed that 265,000 are capable of cultivation, or of being turned into paſture, while the reſt are incapable of improvement, except by planting.

CLIMATE.

The climate is, in general, moderate. The mountainous parts in the weſt are colder and more ſubject to rain than the others. The moſt eaſtern parts are ſomewhat damp and ſubject to fogs from their low ſituation near the great rivers, and they are leſs healthy.

AGRI-

AGRICULTURE.

The huſbandry of the Weſt-Riding is very different in different parts; in general, it may be diſtributed into the following ſyſtems: 1ſt. The paſture lands, where graſs is the chief object, and cultivation by the plough is only a ſecondary concern. The parts of the Riding in which this ſyſtem prevails are, at leaſt, one third of the whole. From Ripley to the weſtern extremity almoſt all the good land is in graſs, and corn is raiſed only upon the inferior ſoils, and in ſo ſmall a quantity, that a ſtack of corn is a rare object. Upon the higher grounds in theſe parts are immenſe tracts of waſte, which are generally common among the adjacent poſſeſſors, and are paſtured by them with cattle and ſheep. Some of them are ſtinted paſtures, but the greater part are under no limitation, and in conſequence, the ground is exhauſted and the ſtock poor.

2dly.

2dly. The lands adjoining the manufacturing towns. The greateſt part of theſe are occupied by perſons who do not follow farming as a buſineſs, but regard it only as a matter of convenience. The manufacturer has his incloſures, in which he keeps milch cows for the ſupport of his family, and horſes for the conveyance of his goods. Much ground under theſe circumſtances is not kept under the plough, yet more corn comparatively is raiſed than in the diviſion before deſcribed.

3dly. The parts in which tillage is principally attended to, and graſs is conſidered only in connection with the beſt corn huſbandry. If a line be run from Ripley ſouthward by Leeds, Wakefield, and Barnſley, to Rotheram, the greateſt part eaſtward of it, to the banks of the Ouſe, is employed in raiſing corn. About Boroughbridge, Wetherby, and Selby, one half of the fields is under the plough; further ſouth, about

Ponte-

Pontefract, Barnſley, and Rotheram, two-thirds: and to the eaſtward of Doncaſter, to Thorn and Snaith, three-fourths. There is not much waſte in this diviſion, and what there is appears capable of great improvement.

4thly. The common fields. Theſe are ſcattered over the whole of the laſt diviſion, but are moſt numerous in the country to the eaſtward of the great north road, from Doncaſter to Boroughbridge. In all theſe there is room for much ſubſtantial improvement by better modes of culture.

5thly. The moors. Theſe, beſides the large tracts in the firſt diviſion, moſtly lie in the ſouth-weſt parts of the Riding, above Peniſton and Sheffield. Upon them ſheep are chiefly bred, which are ſold to the graziers in the lower parts. A great part of them is common.

STATE

STATE OF PROPERTY.

A conſiderable part of the landed property of the Weſt-Riding is in the hands of ſmall freeholders and copyholders; but there are likewiſe a great number of extenſive proprietors. Few of the latter reſide upon their eſtates, at leaſt for a conſiderable part of the year, and the management of them is chiefly committed to ſtewards and factors. The greater part of the farms are comparatively ſmall; many on the arable lands under 50 acres, and none above 300; and they are ſtill ſmaller in the graſs diviſion. Moſt of the land is ſet without leaſe, or the occupiers are removeable at ſix months warning—a practice very diſcouraging to improvements in agriculture. Some of the proprietors who are ſenſible of this, grant leaſes from three to twenty-one years.

MANURES.

MANURES.

Beſides thoſe in common uſe in other parts, the farmers employ ground bones, horn ſhavings, and rape duſt.

PRODUCTS.

The corn raiſed is of all kinds according to the ſoil; but the whole quantity grown in the Weſt-Riding is much ſhort of the conſumption. Towards the banks of the Ouſe a good deal of flax is grown. The turnip huſbandry prevails over a great part of the Riding, but the mode of cultivation would admit of improvement. The artificial graſſes are laid down with red and white clover, ſain-foin, and hay ſeeds. Winter tares are ſown in many parts. Pontefract has long been famous for the culture of liquorice. A great deal of oak and aſh wood is grown in the Riding, which meets with a ready ſale at the towns.

Not

Not many horſes are bred except in the eaſtern parts. Thoſe in the weſtern are generally ſmall, but hardy, and capable of undergoing great fatigue. Of neat cattle there are four different breeds. 1. The ſhort-horned kind, which principally prevail on the eaſt ſide of the Riding, and are diſtinguiſhed by the name of the Durham, Holderneſs, or Dutch breed. 2. The long-horned or Craven breed, either bred and fed in the weſtern parts, or brought from the neighbouring part of Lancaſhire. Theſe are a hardy kind, and fit to endure the viciſſitudes of a wet climate. 3. A croſs between the two former breeds, which makes the beſt kind of all. A great number of milch cows of this kind are kept about Nidderdale, and are both uſeful and handſome. 4. Scotch cattle, which are brought in great numbers into the county to be fed, and produce the beſt beef in the markets. The graziers in Craven are very large dealers in this branch of buſineſs.

Of ſheep there are a great many kinds both bred and fed; but that which appears to have been the native breed is met with upon the moors in the weſtern part of the Riding, and is uſually called the Peniſton breed, from the name of the market town where they are ſold. They are horned, light in the fore-quarter, and well adapted for ſeeking their living in a hilly country. When fat, they weigh from 14lb. to 15lb. per quarter. They are a hardy kind of ſheep, and when brought down to the lower paſtures fatten kindly, and prove excellent mutton. Wool of all ſorts meets with a ready ſale in conſequence of the manufactures of the county.

MINERALS.

Coals are cheap and plentiful throughout moſt parts of the Riding, an advantage ineſtimable to a manufacturing diſtrict. Stone for building and various other purpoſes is every where at hand in the hilly parts.

There are ſeveral *mineral waters* in this Riding, of which the moſt noted is the ſulphureous water of Harrowgate, much reſorted to in cutaneous and cachectical complaints, and uſed both for drinking and bathing. There is alſo a chalybeate ſpring at the ſame place, and another at Thorpe Arch in conſiderable repute. At Knareſborough is a noted petrifying ſpring called the dropping well; and near Settle is one of the moſt remarkable ebbing and flowing wells in the kingdom.

CIVIL AND ECCLESIASTICAL DIVISION.

The Weſt-Riding of Yorkſhire is for the moſt part divided into Wapentakes, but alſo contains ſome detached diſtricts. The names of the diviſions are as follows:

Agbrigg Wapentake,
Barkſton Aſh ditto,
Claro ditto,
Ewcroſs ditto,

Morley Wapentake,
Oſgoldneſs ditto,
Skyrack ditto,
Staincliffe ditto,
Staincroſs ditto,
Strafforth and Tickhill ditto,
Liberty of Cawood, Wiſtow, and Ottley,
Liberty of Ripon,
Doncaſter Soke,
Leeds Borough.

Within theſe limits are contained twenty-nine market towns, and five parliamentary boroughs.

Eccleſiaſtically, this Riding is within the province and dioceſe of York, and forms an archdeaconry, called the

ARCHDEACONRY OF YORK,
OR WEST-RIDING,
divided into the following deanries:

Craven

Craven,
Doncaſter,
Pontefract,
City of York and Ainſty, (not in this Riding.)

Rippon, within the Archdeaconry of Cleveland, is a peculiar juriſdiction.

V.—*General Account of the* NORTHERN PART *of* STAFFORDSHIRE.

THE northern portion of the county of Stafford forms a broad angle, of which the eaſtern ſide joins to Derbyſhire, and the weſtern to Cheſhire. The greater part of it conſiſts of a tract called the *Moor-lands*, a region in general hilly, ſteril, and open, compoſing the ſouthern extremity of the mountainous ridge which divides the north of England. Its height is ſhewn by the number of ſtreams which take their riſe in it, moſt of which flow ſouthwards.

RIVERS.

The *Trent*, generally accounted the third river in England for length of courſe and quantity of water, riſes near Biddulph towards the Cheſhire border, out of Newpool, and two ſprings flowing from Molecop,

cop, many more little ſprings ſoon contributing to form it into a rivulet. It paſſes not far from Newcaſtle, and viſits Trentham, where it diſtinguiſhes itſelf by its proper name. Its further courſe paſſes out of our circuit, through a great part of Staffordſhire, the ſouthern end of Derbyſhire, almoſt the whole of Nottinghamſhire, and terminates in the Humber.

The *Churnet*, formed by a conflux of two principal branches near Leek, themſelves compoſed of many moorland ſtreams, takes a ſouth-eaſtern courſe to join the Dove, a little to the north of Utoxeter.

Further to the north-eaſt, the two mountain rivulets, *Hamps* and *Manifold*, come down to the neighbourhood of Wetton, where, on an extenſive and romantic common, they both ſink into the earth, and riſe again conjoined, three miles below, in Ilam gardens, and ſoon empty themſelves into the Dove.

This ſubterraneous tranſit is deſcribed by that celebrated poet Dr. Darwin, in a paſſage glowing with images of nature and fancy, from which we ſhall copy only the *natural* part:

Where *Hamps* and *Manifold*, their cliffs among,
Each in his flinty channel winds along;
With lucid lines the duſky moor divides,
Hurrying to intermix their ſiſter tides.
* * * * * * * *
* * * * * * * *
Three thouſand ſteps in ſparry clefts they ſtray,
Or ſeek thro' ſullen mines their gloomy way;
On beds of Lava ſleep in coral cells,
Or ſigh o'er jaſper fiſh and agate ſhells.
Till where fam'd *Ilam* leads his boiling floods
Thro' flowery meadows and impending woods,
Pleas'd, with light ſpring they leave the dreary night,
And 'mid circumfluent ſurges riſe to light;
Shake their bright locks, the widening vale purſue,
Their ſea-green mantles fring'd with pearly dew;
In playful groups by towering *Thorp* they move,
Bound o'er the foaming wears, and ruſh into the *Dove*.

Botan. Gard. Part II.

The *Dove* riſes near the northernmoſt point of the county, in the very bordering line

line of Derbyſhire, and flowing ſouth-eaſtwards, makes the limit of the two counties as far as its junction with the Trent below Burton. The channel of the Dove has a great declivity, and in many places tumbles over the rocks in caſcades. Its water has a greyiſh caſt, owing to the particles of lime-ſtone it brings down with it, whereby, in its flood, it imparts great fertility to the meadows on its banks, ſo as to have given riſe to the old proverb,

> In April, Dove's flood
> Is worth a king's good.

After it has received the Churnet, this colour is almoſt waſhed away, and the meadows below are leſs diſtinguiſhed for fertility.

All the above-mentioned rivers ſpring out of the Moorlands; but one, which has its ſource within our circuit, riſes weſt of the Trent, near the Cheſhire border: this is the

Sow,

Sow, the head of which is near Great Madeley, between Betley and Newcaſtle. It runs acroſs the county by Stafford, and mixes with the Trent above Burton.

FACE OF COUNTRY AND SOIL.

The northern part of Staffordſhire exhibits a variety of country, but it is chiefly characterized as a hilly tract, with interjacent vales, and bleak extenſive moors. Its general elevation above the ſouthern parts of the county may be eſtimated at from 100 to 200 yards; but it has ſome diſtinguiſhed eminences of much more conſiderable height. The hill called *Bunſter*, near Ilam, is calculated to riſe 1200 feet above the level of the Trent; and the *Wever* hills, and ſome of the other Moorland peaks, 1500 feet. A pretty extenſive part of the Moorlands is upon a lime ſtone bottom. This portion reaches in length from the Wever hills to Longnor, and in breadth from the Dove to the parallel of Morredge. In this, the quantity of lime-ſtone is inexhauſtible,

lying

lying in many places in ſtrata of immenſe thickneſs. The *Wever* hills are vaſt heaps of this ſtone, and are covered with a rich calcareous, loamy earth, which bears a fine turf. They are encloſed in large tracts by ſtone walls, which are almoſt the only boundaries in this part of the county. The fall even from the foot of theſe hills to the Dove and Churnet is very great, and thoſe rivers are very rapid. The hill of *Bunſter* is alſo a calcareous rock, and vaſt precipices from it overhang the Dove. The ridge of this mountain terminates in ſome places in conical ſugar-loaf peaks of bare lime-ſtone *Milldale*, near Alſtonfield on the Dove, is a long narrow glen of great depth, the ſides of which conſiſt of perpendicular lime-ſtone precipices, which nearly equal in height the breadth of the dale. The vale in which the Manifold runs is extremely romantic, and contains a curious excavation in the ſide of a precipice called *Thyrſis's Cavern*.

The

The country weſt of the lime-ſtone is generally ſandy or gravelly clay, or grit-ſtone rock, and is the worſt part of the Moorlands. Its ſurface is uneven, and large tracts of waſte land, though on elevated ſituations, are mere peat bogs or moſſes. Large quantities of peat are cut upon *Morredge* and *Axedge*, which is ſpongy and retentive of moiſture. The *Cloud Heath*, *High Foreſt*, *Leek Frith*, and *Mole-cop*, are ſimilar pieces of ground. But the ſummits of ſome of the hills are rocky cliffs, particularly thoſe called *Leek rocks* or *roches*, and *Ipſtone cliffs*, which are compoſed of huge piles of rugged rocks, heaped upon each other in a tremendous manner. Leek rocks conſiſt of a courſe ſandy grit; thoſe of Ipſtones are gravel or ſand, and ſmall pebbles cemented together. Many of the cliffs overhang ſteep precipices; and large maſſes detached from them are ſcattered on the moors around. To the ſouth of theſe, between Oak-moor and Cheadle, are commons or waſtes, conſiſting of an immenſe number

number of rude heaps of gravel upon an under-ſtratum of ſoft ſandy rock, thrown confuſedly together into all ſorts of fantaſtical forms.

Between Mole-cop and Newcaſtle the country does not merit the name of Moorlands, but is various in appearance, divided by quickſet hedges and trees, and reſembling other cultivated tracts. The ſoil is generally cold and ſtiff. Towards Betley the ſoil is a mixed gravelly loam, with an under-ſtratum of ſand, gravel, marl, or grit. It produces fine timber trees, and is equally fit for paſture and arable. Between Betley and Newcaſtle is a good deal of light land. To the ſouth of the road towards Eccleſhall is a ſtronger ſoil of friable clayey or marly loam, intermixed with peat and poor land on the eminences.

CLIMATE.

CLIMATE.

The *climate* of the north of Staffordſhire is cold and wet, like that of the adjacent parts of Derbyſhire and Cheſhire; ſnow lies long in the Moorlands, and the weſt wind ſeldom fails to bring rain.

AGRICULTURE AND PRODUCTS.

The *Agriculture* of this diſtrict is not entitled to particular obſervation. The Moorlands are chiefly devoted to the feeding of ſheep and cattle; the arable being a ſmall proportion, and the grain produced, almoſt ſolely oats and barley. The principal manure uſed is lime. The ſheep are of two kinds: thoſe on the eaſt Moorlands are white-faced and polled, with long or combing wool; upon the lime-ſtone bottom they are ſtrong and heavy, and are thought to be the moſt valuable breed on waſte land in the county. Thoſe upon the waſtes in the weſt part of the Moorlands, and on the grit and

gravel

gravel bottom, are a much inferior ſort, and ſeem to have originated from the ancient Moorland breed, continued without attention. They have ſome white, ſome grey or dark faces, with legs generally of the ſame colour; ſome are with, and ſome without horns; and their fleeces are too coarſe for clothing, and too ſhort for combing wool. The cattle of the long-horned kind are of a good ſize and form, and thrive better on the ſhort graſs of the lime-ſtone hills than might be ſuppoſed. They are ſuperior to the breeds in the ſouthern part of the county. Thoſe fed on the Dove and the other rivers are in high eſteem. On the weſtern ſide a mixture of arable and paſture prevails, and the products are the uſual ones of that part of the kingdom.

MINERALS.

The *mineral* productions of this tract are various and important. The hill of Molecop, of which part is in Cheſhire, and part in

in this county, has been already noticed as yielding ſtone of ſeveral kinds, particularly excellent mill-ſtones. Lime-ſtone is common in the Moorlands, and alſo on the weſtern ſide, near Madeley. Great quantities of lime are burned upon Caldon Low, and in the neighbourhood of the Wever hills. Clays of various ſpecies and colours, ſome tenacious, ſome friable, are found in great quantity near Newcaſtle, and have given riſe to the potteries of that diſtrict, which are of ancient ſtanding. Coals abound in moſt parts, of which a ſingular kind, called *peacock coal*, from the priſmatic colours appearing on its ſurface, is dug at Handley-green. This diſtrict poſſeſſes the ores of iron, copper, and lead. Iron-ſtone is met with plentifully to the weſt of Newcaſtle: it is ſmelted at the Madeley furnaces, and yields a cold-ſhort metal. Lead ore is got not far from thence, which is uſed at the potteries. A copper mine is wrought at Mixon, near Leek; but the principal in theſe parts is that at Ecton-

hill, in the pariſh of Wetton, belonging to the Duke of Devonſhire. The hill in which the mine is ſituated is conical, and riſes 700 feet above the river Dove which flows at its foot. Its diameter is about half a mile. The mine was worked in the laſt century, but after ſome years was neglected as unprofitable. About thirty-five years ago it was reopened by a Corniſh miner, and ſome adventurers at Aſhborne took a leaſe of it, and expended 13,000*l.* in ſearching for ore without ſucceſs. At length, after making a ſhaft 200 yards deep, they came to vaſt beds of the ore, which repaid their coſt. The leaſe has ſince fallen to the Duke, and it is ſaid to have cleared annually from 8000 to 10,000*l.*; but to be now leſs productive than formerly. More than 300 perſons, men, women, and children, are employed in the works; the men in digging, the women and children in breaking and picking the ore. On the oppoſite ſide of the hill a lead mine has been diſcovered, which promiſes to be valuable.

Staffordſhire was part of the country inhabited by the Roman *Cornavii*. Under the heptarchy it belonged to the *Mercian* kingdom. It is now, as to its civil juriſdiction compriſed within the Oxford circuit; and with reſpect to its eccleſiaſtical, within the dioceſe of *Litchfield* and *Coventry*. It is divided into five hundreds, of which about half of that of *Totmanſlow* in the north-eaſt, and a ſmaller portion of that of *Pyrehill* in the north-weſt, are included within the limits of this work.

VI.—*Account*

VI.—*Account of* RIVER *and* CANAL NAVIGATIONS.

IRWELL AND MERSEY NAVIGATION.

IN the year 1720 an act of Parliament was obtained, empowering certain perſons in each town (but moſt of them reſident in Mancheſter) to make navigable the rivers Irwell and Merſey from Liverpool to Mancheſter—ſo the words of the act run; but as it is mentioned in the act, that the Merſey is already navigable from Liverpool to Bankkey near Warrington, and as all the ſtipulated demand for tonnage is confined to the navigation between that place and Mancheſter, it appears that the undertakers meant only to employ themſelves in the improvement of the upper part of the river. This has been effected by the uſual contrivances of wears,

locks, &c. and the very winding courſe of the river has in ſeveral places been corrected by cuts acroſs the necks of the principal bends. The want of water in droughts, and its too great abundance in floods, are circumſtances under which this, as well as moſt other river-navigations, has laboured. It has been an expenſive concern, and has, at times, been more burthenſome to its proprietors than uſeful to the public. At preſent it is managed in a ſpirited and intelligent manner, and proves an uſeful addition in water-carriage to the river canal-navigation.

WEAVER NAVIGATION.

In the ſame year, 1720, an important acceſſion was obtained to the internal communications of the port of Liverpool, by an act for making navigable the river Weaver, from Frodſham-bridge, which is near its conflux with the Merſey, up to Winsford-bridge beyond Northwich.

This

This act appointed certain perſons to be undertakers and truſtees of the propoſed navigation, with power to borrow a ſum of money to be advanced by other perſons named, at five per cent. intereſt, and one per cent. for the riſk, payable out of the firſt rates and duties accruing from the tonnage. If this ſum ſhould prove inſufficient, the undertakers were empowered to borrow more, ſecured in the like manner. After all the borrowed money, and all coſts and charges ſhould be fully repaid, the clear produce of the rates and duties was directed to be applied towards amending and repairing the public bridges in the county of Cheſter, and ſuch other public charges as the juſtices in quarter ſeſſions ſhould appoint; as alſo to the repair of highways leading from the ſalt-works to the river, and of other highways in the county. The ſum at firſt thought ſufficient to complete this work was 9000*l.*; but in an act to explain and amend the former, paſſed in 1759, it appears that a debt of 20,000*l.*

had been contracted, the greateſt part at five per cent. and the reſt at four and a half, ſecured by mortgages on the rates and duties of the navigation. This debt has now for ſome years been paid off, and a large annual balance is produced in favour of the undertaking. The annual income of the navigation is about 8000*l.* In the year ending April 1794, the amount of caſual profits and wharfage was 286*l.* 5*s.* 7*d.*; of tonnage, 8736*l.* 9*s.* 8½*d.*; and notwithſtanding a large ſum expended in new improvements, beſides the uſual repairs, there was paid to the County Treaſurer for public purpoſes 3000*l.* The length of this navigation is twenty miles. It has a fall of 45 feet 10 inches, divided between ten locks. The rate of tonnage limited by the act is not more than one ſhilling per ton for all goods whatſoever, and this is the charge now made for moſt goods. There are about 120 veſſels conſtantly employed on the navigation, from 50 to 100 tons burthen. The kind of goods carried are principally

white

white and rock ſalt downwards; and coals and ſome merchants goods (but the latter to no conſiderable amount) upwards. The rock ſalt comes from the pits at Northwich; and its cheap conveyance to Liverpool has proved of material benefit to that port, by furniſhing a profitable article for loading or ballaſt to outward-bound ſhips. The coal is brought from Lancaſhire, and ſupplies a large tract of the internal parts of Cheſhire.

DOUGLAS NAVIGATION.

While the Merſey and its communicating rivers were thus objects of commercial ſpeculation, another ſtream had its ſhare of attention. The neighbourhood of Wigan is particularly rich in coal, and the little river Douglas flows from that town to the eſtuary of the Ribble. A year before the above-mentioned acts were obtained, viz. in 1719, an act paſſed for making the river Douglas, alias Aſland, navigable from the river Ribble to Wigan. By means of this undertaking

(which was not effected till 1727) the northern parts of Lancaſhire, and even Weſtmoreland, which produce no coal of their own, were ſupplied coaſt-wiſe with this neceſſary article; and the lime-ſtone and ſlate of thoſe parts were brought back in return.

The Douglas navigation has ſince been purchaſed by the proprietors of the Leeds and Liverpool canal, who have in part ſubſtituted an artificial cut to the natural channel of the river.

AIRE, CALDER, AND DUN NAVIGATIONS.

Conſiderably before this period, the clothing country of Yorkſhire had applied its rivers to the purpoſes of water-carriage. An act for making navigable the rivers Aire and Calder to Leeds and Wakefield, paſſed in the year 1699, and various extenſions and improvements in this navigation have been ſucceſſively

ceſſively made: and in 1725, another river in the Weſt-Riding, the Dun, was made navigable from Doncaſter to the diſtance of two miles from Sheffield.

Various other projects of river navigations were ſet on foot during the firſt half of this century in Lancaſhire and Cheſhire, ſome of which, however, were never carried into execution. One of theſe abortive ſchemes was that of making navigable Worſley brook, to its junction with the Irwell, for which an act was obtained in 1737. It is worth mentioning only as the parent in deſign of the Duke of Bridgewater's firſt canal.

SANKEY CANAL.

But an undertaking particularly deſerving of notice took place in the year 1755, which, under the general powers of an act for making navigable a river, in reality gave riſe to the firſt canal-navigation made in England. In that year an act paſſed, by which certain under-

undertakers were authoriſed to make Sankey brook or river navigable from the Merſey, which it joins about two miles below Warrington, up its three branches; viz. to Boardman's ſtone bridge near St. Helen's, on the ſouth branch; to Gerrard's bridge on the middle branch; and to Penny bridge on the north branch. From Sankey bridges to the ſtone bridge next above the mouth of Holme-mill-brook, was to be a new canal not communicating with Sankey brook. The owners of Sankey quays upon the old natural navigation of the brook from the Merſey were not to be prejudiced by the erection of quays or warehouſes interfering with them. The new navigation was to be entirely free and open upon the payment of ten-pence per ton tonnage to the undertakers. They were empowered to extend the navigation 800 yards from the three bridges before-mentioned, as they found it convenient.

In

In a ſubſequent act granted in the year 1761, it is ſpecified in the preamble, that the navigat on is completed from the loweſt lock on Sankey brook to Gerrard's bridge and Penny's bridge; but that in neap tides the navigation is rendered impracticable for want of water in the brook. The undertakers are therefore empowered to make a canal to be begun within 250 yards from the loweſt lock, and carried to the Merſey at a place called Fiddler's ferry. This new part is about one mile and three quarters in length; and in conſideration of it the undertakers are empowered to levy two-pence per ton more tonnage. The diſtance above the three bridges to which they are allowed to extend the navigation, is enlarged to 2000 yards.

The preſent ſtate of the canal is as follows:—It runs entirely ſeparate from Sankey brook, except croſſing and mixing with it in one place about two miles from Sankey bridges. Its length from Fiddler's ferry

to

to the place where it ſeparates into three branches is 9¼ miles. From thence it is carried to Penny bridge and Gerrard's bridge without going further; but from Boardman's bridge it runs nearly to the limits of 2000 yards, making the whole diſtance from the Merſey 11¾ miles. There are eight ſingle and two double locks upon the canal, and the fall of water is about 60 feet. The chief article carried upon it is coal, of which, in the year 1771, by an account given in to Parliament, there were taken to Liverpool 45,568 tons, and to Warrington, Northwich, and other places, 44,152 tons. There are, beſides, ſlate brought down, and corn, deal balk, paving and lime-ſtone carried up.

This navigation is never obſtructed by floods, and ſeldom for any length of time by froſt; upon an average perhaps about a week every winter. The higheſt ſpring tides riſe within a foot of the level of the canal at the loweſt lock. Loaded veſſels are generally neaped

neaped about three days, but unloaded, can paſs to or from the river at every tide.

The old lock by which it at firſt communicated with Sankey brook ſtill remains, but is ſeldom uſed, unleſs when a number of veſſels are about entering from the Merſey at once, in which caſe ſome of the hindmoſt ſometimes ſail for Sankey brook in order to get before the others.

This canal has proved very beneficial both to the public and the undertakers. Some of the firſt collieries upon its banks are worked out, but others have been opened. Its buſineſs has been increaſed by the large copper-works belonging to the Angleſea company, erected on one of its branches, and by the plate-glaſs manufactory and other works founded near it, in the neighbourhood of the populous town of St. Helen's. Its original ſurveyor was Mr. John Eyes.

DUKE OF BRIDGEWATER'S CANALS.

Thoſe magnificent plans which have rendered the name of the *Duke of Bridgewater* ſo celebrated in the hiſtory of canal-navigation, commenced in the years 1758 and 1759, when acts were paſſed enabling him, firſt, to carry a canal from Worſley to Salford, and alſo to Hollin ferry on the Irwell; and ſecondly, to deviate from that courſe, and carry his canal from Worſley acroſs the river Irwell to Mancheſter, through the townſhip of Stretford. Poſſeſſing an extenſive property at and near Worſley, rich in coals, which could not by land carriage be conveyed to Mancheſter ſo advantageouſly as thoſe from the pits on the other ſide of that town, the Duke was naturally led to conſider of a better mode of conveyance. The formerly projected, but unexecuted, ſcheme of making navigable Worſley brook to the Irwell, evidently ſuggeſted the deſign; but the

original

original and commanding abilities of his engineer, that wonderful ſelf-inſtructed genius! *James Brindley*, pointed out a much more eligible mode of effecting his purpoſe, than by means of the waters of a winding brook, ſubject to the extremes of overflow and drought.

This firſt undertaking was marked with the features of greatneſs. At its upper extremity in Worſley it buries itſelf in a hill, which it enters by an arched paſſage, partly bricked, and partly formed by the ſolid rock, wide enough for the admiſſion of long flat-bottomed boats, which are towed by means of hand-rails on each ſide. This paſſage penetrates near three quarters of a mile before it reaches the firſt coal-works. It there divides into two channels, one of which goes 500 yards to the right, and the other as far to the left, and may be continued at pleaſure. In the paſſage at certain diſtances air funnels are cut through the rock, iſſuing perpendicularly at the top of the hill. The arch at

the entrance is about ſix feet wide and about five in height from the ſurface of the water. It widens within, ſo that in ſome places the boats may paſs each other. To this ſubterraneous canal the coals are brought from the pits within the bowels of the hill in low waggons holding about a ton each, which, as the work is on the deſcent, are eaſily puſhed or pulled by a man along a railed way to a ſtage over the canal, whence they are ſhot into one of the boats. Theſe boats hold ſeven or eight tons, and ſeveral of them being linked together, are eaſily drawn out by the help of the rail to the mouth of the ſubterraneous paſſage, where a large baſon is made, ſerving as a dock. From hence they are ſent along the canal to Mancheſter, in ſtrings drawn by a horſe or two mules.

It was the principle of this, as it has been that of all Mr. Brindley's canals, to keep on the level as much as poſſible; whence it has been neceſſary to carry them over the roads

or ſtreams upon arches after the manner of an aqueduct, and to fill up vallies by artificial mounds for their conveyance, as well as to cut down or bore through hills. The moſt ſtriking of all the aqueduct works is in this firſt canal, where it paſſes over the navigable river Irwell at Barton bridge. The aqueduct begins upwards of 200 yards from the river, which runs in a valley. Over the river itſelf it is conveyed by a ſtone bridge of great ſtrength and thickneſs, conſiſting of three arches, the centre one ſixty-three feet wide and thirty-eight feet above the ſurface of the water, admitting the largeſt barges navigating the Irwell, to go through it with maſts and ſails ſtanding. The ſpectator was, therefore, here gratified with the extraordinary ſight, never before beheld in this country, of one veſſel ſailing over the top of another; and thoſe who had at firſt ridiculed the attempt as equivalent to building a caſtle in the air, were obliged to join in admiration of the wonderful abilities of the engineer, from whoſe creative

genius there was ſcarcely any thing within the reach of poſſibility which might not be expected. This work is not the proper place for details of thoſe admirable contrivances, in which every department in the making of his canals have abounded. They have introduced numerous improvements into the practice of ſimilar works, and have received many additions from other ingenious perſons, among whom the Duke of Bridgewater's ſteward, Mr. Gilbert, merits a diſtinguiſhed place.

This canal, after paſſing Barton bridge, was conveyed on the level, with great labour and expenſe, in a circuitous tract of nine miles, to Caſtlefield, adjacent to Mancheſter. The moſt remarkable part of its courſe is that where it croſſes the low grounds near Stretford upon a vaſt mound of earth, of great length, the conſtruction of which exerciſed all the inventive powers of the conductor. At its termination it is fed by the river Med-

lock,

lock, and in order to keep up the water to a proper height, and prevent a ſuperabundance of it in time of floods, a large circular wear is conſtructed, having in its centre an aperture, or ſwallow, which conveys the ſuperfluous water by a ſubterranean paſſage into the brook below. Another wear of a ſimilar kind is formed at Corn-brook, three miles further. By the act for making this canal, the Duke was limited to a rate of tonnage not exceeding two and ſix-pence per ton, and was bound to ſell his coals at Mancheſter and Salford for no more than four-pence per hundred. On the execution of the undertaking, the poor of thoſe towns were benefited by a reduction in the price of coals of one half of what they before paid, and vaſt quantities were taken away by them from the wharf in Caſtlefield, in wheel-barrows, at three-pence halfpenny per hundred.

But before this firſt deſign was completed, a much greater and more important plan had

had opened itſelf to the Duke: which was an extenſion of his canal by a branch which, running through Cheſhire parallel to the river Merſey, ſhould at length terminate in that river below the limits of its artificial navigation, and thus afford a new and rival water-carriage from Mancheſter and its vicinity to Liverpool. The execution of this bold idea was authoriſed by an act of parliament obtained in 1761, which enabled the Duke of Bridgewater to make a canal from Longford-bridge, in the townſhip of Stretford, to the river Merſey, at a place called the Hempſtones, in the townſhip of Halton. It was oppoſed, but ineffectually, by the proprietors of the old river-navigation, on which its operation could not but be highly injurious, however beneficial it might be to the public. This canal, which is more than twenty-nine miles in length to its termination at Runcorn-gap, (which place was preferred to the Hempſtones on account of the ſuperior advantage it offered in entering the mouth of the canal

at neap tides) was finiſhed in five years. It is carried acroſs the Merſey by an aqueduct-bridge ſimilar to that over the Irwell at Barton, but lower, as the Merſey is not navigable in that part. Further on, it alſo croſſes the ſmall river Bollin, which, running in a tract of low meadows, has made a mound in that part neceſſary for the conveyance of the canal, of a height, breadth, and length, that forms a ſpectacle truly ſtupendous. The principle of keeping the level has been rigorouſly purſued, in defiance of expenſe and difficulty, for the whole length of the canal, till it is brought in full view of the Merſey at Runcorn. There it is precipitately lowered ninety-five feet in a chain of locks, of admirable conſtruction, furniſhed at different heights with capacious reſervoirs of water, in order to ſupply the waſte incurred by the paſſage of veſſels.

When the Duke of Bridgewater undertook this great deſign, the price of carriage on the

river-navigation was twelve ſhillings the ton from Mancheſter to Liverpool, while that of land-carriage was forty ſhillings the ton. The Duke's charge on his canal was limited to ſix ſhillings, and together with this vaſt ſuperiority in cheapneſs, it had all the ſpeed and regularity of land-carriage. The articles conveyed by it were likewiſe much more numerous than thoſe by the river-navigation: beſides manufactured goods and their raw materials, coals from the Duke's own pits were depoſited in yards at various parts of the canal, for the ſupply of Cheſhire; lime, manure, and building materials were carried from place to place; and the markets of Mancheſter obtained a ſupply of proviſions from diſtricts too remote for the ordinary land conveyances. A branch of uſeful and profitable carriage hitherto ſcarcely known in England, was alſo undertaken, which was that of paſſengers. Boats on the model of the Dutch treckſchuyts, but more agreeable and capacious, were ſet up, which, at very

reaſon-

reaſonable rates and with great convenience, carried numbers of perſons daily between Mancheſter and the principal extent of the canal. All theſe objects of traffic on the new canal became more and more conſiderable with the increaſing trade of Lancaſhire; but other circumſtances alſo greatly operated in its favour.

TRENT AND MERSEY COMMUNICATION.

As early as the year 1755, the corporation of Liverpool, (which, perhaps, has diſtinguiſhed itſelf beyond any other ſimilar body in the kingdom for a liberal and ſpirited attention to commercial improvement) employed two perſons, Mr. Taylor of Mancheſter, and Mr. Eyes of Liverpool, to take ſurveys, with a view of determining the practibility of joining the river Trent with the Weaver or Merſey, and thus opening an inland communication between the great ſeaports of Liverpool and Hull. It was pro-

poſed that this navigation ſhould go through the counties of Nottingham, Derby, Stafford, and Cheſter; and on an accurate ſurvey the deſign was reported to be practicable. The late Mr. Hardman, an intelligent merchant of Liverpool, and one of its repreſentatives in parliament, was the chief promoter of this ſurvey. Another ſurvey, under the patronage of the preſent Marquis of Stafford, and the late Lord Anſon, was made in 1758 by Mr. Brindley, and afterwards reviſed by him and Mr. Smeaton jointly; and their opinions were equally in favour of the projected undertaking. An union with the river Severn and port of Briſtol alſo became part of the deſign, which thus embraced the vaſt idea of connecting almoſt all the midland counties of England with each other, and with the different ſeas, by a chain of water communication. In the two plans offered to the public for effecting this purpoſe, one of the principal differences conſiſted in the manner of communicating with the Merſey. One propoſed

doing

doing this by terminating the canal in the navigable river Weaver at Winsford-bridge; the other, by terminating it in the Duke of Bridgewater's canal at Preſton-brook. The latter, which was Mr. Brindley's plan, was preferred, apparently on reaſonable grounds, as it afforded a direct communication with Mancheſter without the intervention of a ſingle lock. In December 1765, a numerous meeting of land-owners and perſons concerned in trade held at Wolſeley-bridge in Staffordſhire, agreed upon an application to parliament for leave to bring in a bill for making a navigable canal from the river Trent, near Wilden-ferry in Derbyſhire, to the river Merſey, near Runcorn-gap; and the bill was accordingly brought in and paſſed in 1766.

GRAND TRUNK CANAL.

This canal which, by its planner, was ingeniouſly termed the *grand trunk*, (in alluſion to the main artery of the body from

whence branches are ſent off for the nouriſhment of the diſtant parts) and which is commonly known by the name of the *Staffordſhire* canal, takes its courſe from north-weſt to ſouth-eaſt, acroſs the county of Cheſter, and thence acroſs Staffordſhire beyond its middle, when, turning ſhort in a north-eaſtern direction parallel to the Trent, it accompanies that river into Derbyſhire, and enters it near the place where the high road from Derby to Leiceſter croſſes the Trent over a bridge, ſubſtituted to the former Wilden-ferry. In length it is ninety-three miles. Its fall of water from its greateſt elevation at Harecaſtle-hill, is 326 feet on the northern ſide, and 316 on the ſouthern; the former effected by thirty-five locks, the latter by forty. Six of the moſt ſouthern locks are fourteen feet wide, adapted to the navigation of large barges, and one of the northern is of the ſame width. The common dimenſions of the canal are twenty-nine feet breadth at the top, ſixteen at the bottom, and the

depth

depth four feet and a half; but in the part from Wilden to Burton, and from Middlewich to Preſton-on-the-hill, it is thirty-one feet broad at the top, eighteen at the bottom, and five and half deep. The canal is carried over the Dove in an aqueduct of twenty-three arches, the ground being raiſed to a conſiderable height for the ſpace of a mile and two furlongs. Over the Trent it is carried by an aqueduct of ſix arches of twenty-one feet ſpan each; and over the Dane, on three arches of 20 feet ſpan. There are beſides near 160 leſſer aqueducts and culverts for the conveyance of brooks and ſmall ſtreams. The cart bridges erected over it are 109; the foot bridges eleven.

For the ſake of preſerving a level as much as poſſible, the hills and elevated grounds in the courſe of the canal have been pierced by five tunnels. Of theſe, that through the mountain at *Harecaſtle* is the principal, and has proved a work of vaſt labour and expenſe,

penſe, in conſequence of unforeſeen difficulties. Its length is 2880 yards, with a width of nine feet, and a height of twelve, lined and arched with brick; and it runs more than ſeventy yards below the ſurface of the earth. The other tunnels are at *Hermitage*, 130 yards; at *Barnton*, in Great Budworth pariſh, 560 yards; at *Saltonford*, in the ſame pariſh, 350 yards; and at *Preſton-on-the-hill*, 1241 yards. Each of theſe is ſeventeen feet four inches high, and thirteen feet ſix inches wide. The boats employed upon the canal carry about twenty-five tons, and are drawn by one horſe. The tonnage paid to the proprietors for the liberty of navigating is three-halfpence per mile. This great work was begun on July 17th, 1766. It was carried on with great ſpirit by Mr. Brindley while he lived, and was finiſhed by his brother-in law, Mr. Henſhall, who put the laſt hand to it in May 1777.

Soon

Soon after this canal was undertaken, Mr. Brindley planned and executed a canal from the Grand Trunk at Haywood, to the river Severn near Bewdley; thus completing the communication between the three principal ports of the kingdom, (after London) thoſe of Briſtol, Liverpool, and Hull, and all the inland country lying between them.

The ſyſtem of communication has ſince been rendered more complete by the junction of a branch paſſing from the great trunk to Coventry, with another proceeding from Oxford directly northwards through Oxfordſhire and Warwickſhire. Thus the firſt of our rivers, the Thames, and the firſt of our ports, that of the metropolis, have been added to the comprehenſive chain of canal-navigation; and it cannot be doubted that ſuch an acceſſion muſt be felt through every part of it. We ſhall now return to the limits of our own circle, to mark all the undertakings of this kind within its boundaries which ſucceeded

thoſe

thoſe of the Duke of Bridgewater and of the Staffordſhire company.

LEEDS AND LIVERPOOL CANAL.

A navigation between the eaſtern and weſtern ſeas by means of the rivers Aire and Ribble, had for many years been thought of as a practicable and uſeful work, and ſome endeavours had been uſed to draw the public attention to it, but ineffectually. At length, the ſucceſs of the Duke of Bridgewater's canals excited Mr. Longbotham in 1767 to conceive the deſign of making a communication between Leeds and the port of Liverpool by ſimilar means; and having made a ſurvey of the interjacent country, with plans and eſtimates of the propoſed work, he produced them before various public meetings in Yorkſhire and Lancaſhire, at which they were approved. Mr. Brindley was called in to determine on the ſcheme; and after ſurveying all the tract pointed out by Mr. Longbotham, he made his report in its favour at

two

two numerous meetings held at Bradford and Liverpool in December 1768. The plan was there adopted, and an act for carrying it into execution was obtained in the beginning of 1770, and the work was begun in the latter end of the ſame year.

This deſign was the greateſt and moſt adventurous that had then, or has ſince, been undertaken. The great direct diſtance between the two extremities, much augmented by the very winding courſe which the nature of the country demanded; together with the high elevation of the tract on the borders of the two counties, which the moſt circuitous courſe could only in part avoid; rendered the work ſo difficult and expenſive, that nothing but the extraordinary zeal with which ſchemes of this kind now began to be purſued, could have ſtimulated the perſons concerned to put it into execution. The whole length of the courſe from Leeds to Liverpool is 107 miles and three quarters: the fall

from the central level is on the Lancaſhire ſide 525 feet; on the Yorkſhire, 446 feet. Its courſe is ſeen on the map. It may in general be remarked, that on the Liverpool ſide, after making a large circuit round Ormſkirk, it croſſes the river Douglas, and proceeding north-eaſterly, runs for ſome miles parallel and near to the Ribble, then follows the courſe of the Lancaſhire Calder, which it croſſes and re-croſſes, till it arrives at its head in the great baſon of Fouridge, near Pendle-hill and the town of Colne. Thence, declining on the Leeds ſide, it runs north-eaſtward to the banks of the Aire near Gargrave, which river it croſſes, and afterwards cloſely accompanies in its whole courſe to Leeds, paſſing the towns of Skipton and Bingley. Of the two ſide branches, that to Wigan is upwards of ſeven miles and a half, with a fall of thirty-ſix feet; that to Bradford is a little more than three miles, with a fall of eighty-ſeven feet ſix inches.

That

That part of the canal which goes from Liverpool to the Douglas, and thence, by a collateral branch (ſubſtituted to the old Douglas navigation) to Wigan, was finiſhed with great celerity, and has proved of great advantage to the proprietors, and to the town of Liverpool, by the new and plentiful ſupply of coals it has brought, which have cauſed a conſiderable exportation of that commodity from thence. The part adjacent to Leeds was likewiſe ſoon finiſhed to the extent of ſeveral miles. By another act paſſed in 1783, liberty was obtained by the proprietors to purchaſe the Douglas river-navigation; and by a third in 1790, a power was given to raiſe an additional ſum of money, and alſo to make a variation in the courſe of the canal.

A further and much more conſiderable variation in the courſe the canal, projected in conſequence of the interference of the new Lancaſter canal, was permitted by an act paſſed in May 1794. By this a deviation

begins from Barrowford in the townſhip of Whalley, and taking a more ſouthern line than the former, paſſes through Burnley, Accrington, Blackburn, Chorley, Adlington, Blackrod, Weſt Houghton, Ince, and ſo to Wigan. This line will form a longer and more circuitous courſe, but will go through the centre of a country full of manufactures, and abounding in coal.

CHESTERFIELD CANAL.

In 1769 Mr. Brindley ſurveyed the courſe of an intended canal from the town of Cheſterfield to the river Trent; and in 1770 an act was obtained for putting his plan into execution. The tract of the canal is by Stavely forge and coal-works, to Harthill, which it penetrates by a tunnel, thence to Workſop, to Retford, where it croſſes the Idle, and at length to the Trent, which it enters at Stockwith, a little below Gainſborough. Its whole length is forty-ſix miles: its riſe from Cheſterfield to Norwood is forty-five feet,

and

and its fall from thence to the Trent 335 feet, for which it has ſixty-five locks. The tunnel at Norwood through Harthill is 2850 yards; and that at Drake-hole 153 yards. The canal was completed ſo as to be navigated in 1776; but the expenſe of the work, amounting to 60,000*l.* was ſo much beyond the eſtimate, that ſhares fell to a very depreciated value; and though they have lately recovered themſelves conſiderably, they are ſtill below par. The principal trade on the canal is the conveyance of coal, got near Cheſterfield and ſent to Workſop and Retford, and by the Trent to Gainſborough and Lincoln. Lead is the next valuable article, of which a large quantity, the produce of the Derbyſhire mines, is exported by its means. Wrought iron, pottery, and a few manufactured goods are alſo carried downwards upon it. The carriage upwards conſiſts in large quantities of corn, lime, timber, groceries, &c.

CHESTER CANAL.

The ancient port of Cheſter had long ſeen her younger rival, Liverpool, opening new ſources to her extenſive traffic, without any exertion to obtain a ſhare in ſimilar benefits. But in the years 1767, 1769, and 1770, the courſe of a canal from thence to the midland parts of the county was ſurveyed by different engineers, and after an unſucceſsful attempt in 1769, an act was obtained in 1772 for making a navigable canal from Cheſter to the towns of Namptwich and Middlewich, but with the reſtriction, that it ſhould not at the latter town join the Grand Trunk canal, which flows by it. Such a reſtriction, the fruit of a monopolizing ſpirit, though a manifeſt diſadvantage to the ſcheme, did not prevent the execution of a great part of it. The canal to Namptwich was completed at the unforeſeen expenſe of 80,000*l.* Its length is eighteen miles; its riſe from Cheſter 170 feet ten inches. For want of money the branch

branch to Middlewich was never cut; and thus the principal objects of the undertaking, the carriage of ſalt from that place to Cheſter, and the communication (though not by abſolute junction) with the Grand Trunk, being never effected, the ſcheme has proved more totally abortive than any other in the kingdom. Its employment, at preſent, is not ſufficient to keep it in repair, and ſhares have been ſold at one per cent. of the original coſt. There is now, however, ſome proſpect of connecting it with the eaſtern line of the newly undertaken Shrewſbury canal, which may give an extenſion to its buſineſs.

HUDDERSFIELD CANAL TO THE CALDER.

The manufacturing town of Huddersfield has obtained the advantage of a communication by canal with the river Calder. In 1774 an act paſſed enabling Sir John Ramſden, Bart. (proprietor of the town of Huddersfield) to make a canal from the Calder at

Cooper's-bridge, where the river Colne falls into it, to King's-mill, near the town of Huddersfield. This has been executed, and is eight miles in length, with a fall of fifty-ſix feet ten inches divided into nine locks. It opens a communication with Hull and all its aſſociated rivers and canals, and its benefits are manifeſt.

LANGLEY-BRIDGE, OR ERREWASH CANAL.

Another Derbyſhire canal, which it is proper to mention for the ſake of connection, though out of the limits of our work, is that called Langley-bridge or Errewaſh canal. In 1777, the owners of the extenſive coal-mines lying in the ſouth-eaſtern part of the county, obtained an act for making a navigable canal from Langley-bridge to the Trent oppoſite to the entrance of the Soar, near Sawley-ferry. It begins in the pariſh of Heanor, and runs very near and parallel to the little boundary river Errewaſh in the

the greateſt part of its courſe, paſſing through the above-mentioned collieries. Its length is eleven miles and a quarter; its fall, 108 feet eight inches, by means of fourteen locks. It furniſhes an additional ſupply of coals to the diſtricts bordering the Trent.

MANCHESTER, BOLTON, AND BURY CANAL.

The vaſt extenſion of the Mancheſter manufactures after the peace of 1783, gave riſe to various new ſchemes of water communication between the centre of that traffic and its principal ſtations in the ſurrounding country. The firſt of theſe was a canal from Mancheſter to Bolton with a branch to Bury, for which an act was obtained in 1791. It begins on the weſtern ſide of Mancheſter from the river Irwell, to which it runs nearly parallel in a northerly courſe, croſſing it at Clifton, and again near Little Lever, where its two branches, to Bolton and to Bury, ſeparate. Its total length is fifteen miles one

furlong, with a riſe of 187 feet. The country with which this canal opens a communication, abounds in coals, together with other mineral products, which will by its means obtain a cheap and eaſy conveyance to the town and neighbourhood of Mancheſter. Mercantile goods, raw and manufactured, may alſo be expected to afford much carriage in this populous tract of country.

MANCHESTER, ASHTON-UNDER-LYNE, AND OLDHAM.

In 1792 an act was granted for making a canal from Mancheſter to Aſhton-under-Lyne, and to the neighbourhood of Oldham. This commences from the eaſt ſide of Mancheſter, croſſes the Medlock, paſſes Fairfield, and terminates in Aſhton-under-Lyne. At Fairfield a branch goes off to the New Mill near Oldham; from this there is a cut to Park Colliery. The whole length of the canal is eleven miles, and its riſe is 152 feet. Coal, lime, lime-ſtone, and other minerals,

and

and manure, are its principal objects of carriage. The two above-mentioned undertakings are nearly completed. A branch is intended to go from this canal to Stockport, a town which has hitherto been ſomewhat unaccountably fruſtrated of the benefits of water communication, though an extenſion to it was included in the powers firſt granted to the Duke of Bridgewater.

A connection between Mancheſter and Rochdale by canals has been a matter of much diſcuſſion, and different plans have been propoſed, and met with their abettors and opponents. One of theſe was an extenſion of the Bury canal, the diſtance from which town to Rochdale is not conſiderable: but this plan was given up for a deſign of much greater magnitude, which, in effect, is another junction of the eaſt and weſt ſeas.

ROCH-

ROCHDALE CANAL.

An act paſſed in April 1794 authoriſes the opening of a navigation with the Duke of Bridgewater's canal at Mancheſter, to the Calder navigation at Sowerby-bridge near Halifax. Beginning from the ſouth-weſt ſide of Mancheſter, it leaves that town at the north-eaſt corner, and takes its courſe nearly parallel to the Oldham road as far as Failſworth. Here it turns directly north, and proceeds through the tract of coal country about Fox-denton, Chaderton, Middleton, and Hop-wood, to a ſmall diſtance to the eaſt of Rochdale, whence it ſends off a ſhort branch to that town. Having paſſed Littleborough it gains its head level about Deanhead. It was originally intended to enter the hill at this place by a tunnel, but this is now avoided. Hence it proceeds to Todmorden, where it turns north-eaſt to Hebdenbridge, and then bends ſomewhat to the ſouth-eaſt, till it reaches the Calder navigation

at

at Sowerby-bridge, having during the latter part of its courſe cloſely accompanied the river Calder. Its whole length from one extremity to the other is thirty-one miles and a half; that of two ſhort collateral branches, about a mile and a quarter. From its head level it falls 275 feet on the Halifax ſide; 438 feet ſeven inches on the Mancheſter ſide. In order fully to obviate an objection which was the cauſe of a ſtrong oppoſition to it—the danger of cutting off thoſe ſtreams which feed the river Irk, by which the ſchool-mills at Mancheſter are worked, as well as thoſe which feed the mills on the Roach and Calder—great reſervoirs have been made in the hilly country near different parts of its courſe, abundantly ſufficient to ſupply all the waſte of locks or leakage, without borrowing from any of the above-mentioned ſtreams. The advantages ſtated to be expected from this deſign, are thoſe of a complete canal navigation from ſea to ſea, a communication of import and export be-

tween

tween the ports of Liverpool, Briſtol, and Hull, and the populous and manufacturing towns of Rochdale, Halifax, Oldham, and their vicinities, and a general mutual communication between theſe diſtricts and all the other great manufacturing places viſited by the canals with which this is mediately or immediately connected. The work is at this time carrying on with celerity and ſucceſs.

HUDDERSFIELD CANAL TO ASHTON.

So active was now become the ſpirit of adventure, that another communication between the two ſeas, paſſing through a line of country ſomewhat to the ſouth of the former, was undertaken. This is the Huddersfield canal, the act for which paſſed in April 1794. Its two extremities are the Aſhton-under-Lyne canal on the weſtern ſide, and Sir John Ramſden's canal to the Calder on the eaſtern. Its general direction is north-eaſt. From Aſhton it takes its courſe parallel to the Tame,

Tame, often croſſing its windings, by Stayley-bridge, and enters Yorkſhire in the manufacturing townſhip of Saddleworth. Arriving at its head level, it penetrates the high grounds by a tunnel of three miles in length, paſſing beneath Pule Moſs, and coming out near Marſden: thence it proceeds by Slaighthwaite to Huddersfield, cloſely accompanying, and often croſſing, the Coln. Its extreme length is nineteen miles and near three quarters; its fall from the head level is 436 feet on the Huddersfield ſide, and 334 feet eight inches on the Aſhton ſide. Several of the little brooks in the hills are widened into reſervoirs for its ſupply of water. This navigation claims ſimilar advantages with the Rochdale canal with reſpect to general communication; and as it paſſes through one of the moſt populous tracts of the clothing country, it may expect a proportionate ſhare of employment in the export and import of raw materials, manufactured goods, and other articles. The ſupply of

lime to the lands in its courſe is alſo likely to be very beneficial in promoting agricultural improvements.

PEAK-FOREST CANAL.

Another newly projected canal, called the Peak-foreſt, the act for which paſſed in March 1794, will augment the communications of the preceding navigation, as well as of the general ſyſtem. It proceeds from Milton near Chapel-le-Frith in the Peak of Derbyſhire, and entering Cheſhire near Whalley-bridge (to which a branch is carried) croſſes its eaſtern horn by Diſley, Marple, Mellor, and Chadkirk, and joins the Aſhton-under-Lyne canal near Dukinfield-bridge. The great object of this undertaking is to convey at a cheap rate the lime with which that part of the peak is ſtored, to all the country of Cheſhire, Yorkſhire, and Lancaſhire, with which that canal communicates.

CROM-

CROMFORD CANAL.

A new canal, which commences within the limits of our circle in Derbyſhire, begins at Cromford, and running ſome way parallel to the Derwent, paſſes Critch Frithley, Todmoor, Heage, and Heynor, and joins the Errewaſh canal at Langley-bridge. Its total length is about fourteen miles, of which the firſt eleven are level; the latter three have a fall of about eighty feet. There is a collateral cut to ſome coal-works upon the level, about three miles in length. Beſides ſeveral ſmall tunnels, there is one on this canal of about 3000 yards. By this navigation a water communication is eſtabliſhed between the centre of Derbyſhire and the Trent; and the reciprocal conveyance of coal and other mineral productions, as well as merchant-goods, to the ſeveral connected parts, cannot fail of being highly beneficial to the whole tract. Some of the moſt important articles to be expected, are raw materials to, and manufactured

factured goods from, the very extenſive cotton works of Mr. Arkwright at Cromford, near Matlock, and Holme near Bakewell; Mr. Strutt's large cotton factory at Belper; and another at Wirkſworth; the carriage of pigs of lead from different works; and the buſineſs of the iron-forge at Critchchaſe on the Derwent.

While theſe additional communications between the eaſt and weſt ſeas, and different parts of the interjacent country, were projecting, a new and ſingular deſign was ſet on foot of carrying a canal from Weſtmorland to the centre of Lancaſhire in a line parallel to the ſea-coaſt.

LANCASTER CANAL.

The Lancaſter canal, for which an act was obtained in 1792, commences at Kendal, having a feeder from a rivulet about a mile beyond the town. It proceeds directly ſouthwards, and enters Lancaſhire near Burton,

ton, having paſſed under ground for about half a mile, near Midway. At Borwick, a little ſouth of Burton, it ſinks to its mid-level, which it preſerves for more than forty-two miles, making for this purpoſe a very winding courſe, in ſome places approaching almoſt cloſe to the ſea-beach. It croſſes the Loyne a little above Lancaſter in a magnificent aqueduct, and paſſes by the eaſt and ſouth of that town. At Garſtang it croſſes the Wyre, and having made a bend weſtward, by which it is brought within two miles of Kirkham, it next paſſes the weſtern ſide of Preſton, and croſſes the Ribble. Aſcending then through a ſeries of locks, it croſſes the Leeds and Liverpool Canal, and reaches its higheſt level, on which it proceeds a little to the eaſtward of Chorley, acroſs the Douglas, through Haigh (noted for its cannel pits), and bending to the eaſt of Wigan, arrives at its termination at Weſt Houghton. The whole of this courſe is ſeventy-five miles and upwards of five

furlongs. The fall from Kendal to the mid-level is ſixty-five feet; and the riſe from thence on the ſouthern ſide, 222 feet. A collateral cut in the neighbourhood of Chorley is near three miles in length; and another near Borwick is near two miles and a half.

The principal objects of this canal are to make an interchange of product between the coal and lime-ſtone countries, and to form a communication between the port of Lancaſter and the interior parts to the north and ſouth. All the country north of Chorley is deſtitute of coal, with which it has hitherto been ſupplied either by a burdenſome land-carriage, or by a coaſt-wiſe navigation, by means of the Douglas Canal, to the mouth of the Ribble. The preſent canal, in its tract from Chorley to Weſt Houghton, paſſes through a country replete with inexhauſtible ſtores of coal of various ſpecies. On the other hand, the country for ſixteen

miles

miles to the ſouth of Kendal is full of lime-ſtone, of which all the northern part of Lancaſhire is deſtitute. The port of Lancaſter, having a large importation of cotton as well as other foreign merchandize, will be enabled to convey its commodities on eaſy terms to various populous and manufacturing places in the courſe of this canal. A conſiderable part of this deſign is completed.

ELLESMERE CANAL.

We have only one other principal navigation to mention, the termination of which is within our boundaries. It forms a direct junction between the Severn, and the Dee and Merſey, and is commonly called the Elleſmere Canal. The act for it paſſed in April 1793. Taking its riſe at Shrewſbury, it firſt bends to the north-weſt, paſſing near Elleſmere and Chirk, to the river Dee, which it croſſes; and then turning north-eaſt, it goes by Ruabon and Wrexham, to

the city of Cheſter, which it paſſes on the weſt ſide, communicating with the navigable channel of the Dee. Hence it takes its courſe acroſs the neck of the peninſula of Wirral, to the eſtuary of the Merſey. The whole length of this intended canal is fifty-five miles and a half; viz. from the Severn to the Dee at Cheſter, forty-ſeven miles; from the Dee to the Merſey, about eight miles and a half. Several collateral branches are projected, viz. to Llanymynech, ten miles; to Whitchurch, ſixteen miles ſix furlongs; to Brumbo collieries, three miles; to Holt, three miles and a quarter. It will communicate with many extenſive collieries, lime-ſtone, blue ſlate, and other quarries, iron-works, and lead-mines. It will connect three conſiderable rivers; the town of Shrewſbury with the ports of Cheſter and Liverpool, and theſe with each other; and will provide a large tract of intermediate country, with all the uſual advantages of

an inland navigation, of which it is at preſent deſtitute.

BARNSLEY CANAL.

In 1793 an act paſſed for a canal to proceed from the Calder below Wakefield, and paſſing Crofton, Felkirk, and Royſton, to arrive at Barnſley, whence it is to make a bend to Barnby-bridge, near Cawthorn, where it is to join another new canal, called the *Dearne and Dove Canal*, which goes from Barnſley to the river Dun. The length of the Barnſley Canal is about fourteen miles; its fall from the junction with the Dearne and Dove Canal, to the Calder, is 120 feet. There are ſeveral rail ways for the conveyance of coal to the canal from Barnſley, and others from Barnby-bridge. It is now cutting.

HASLINGDEN CANAL.

An act in 1793 authoriſes the cutting of a canal from the Bury and Bolton Canal on

the weſt ſide of Bury, through Walmſley, Tottington, Haſlingden, and Accrington, till it joins the Leeds and Liverpool Canal at Church, after a courſe of thirteen miles. The undertakers are forbid to make any locks or ſimilar works, and in their ſtead are to employ the machinery of rollers, racks, or inclined planes: but if it be hereafter found expedient to conſtruct locks, they may do it, on conſent obtained from three-fourths of the owners of the mills on certain ſtreams.

LANCASTER CANAL EXTENSION.

By an act paſſed in 1793 the proprietors of the Lancaſter Canal are enabled to make a cut from the dock at Glaſſon, at the mouth of the Loyne, to communicate with the Lancaſter Canal at Galgate, which is about ſix miles to the ſouth of Lancaſter. This cut will be about four miles in length, and will eſtabliſh an immediate communication between that canal and the ſea.

MAN-

MANCHESTER AND OLDHAM CANAL EXTENSION.

Under the head of the Oldham and Aſhton Canal from Mancheſter, it is mentioned that a deſign was entertained of cutting a branch to Stockport. Powers for this purpoſe were given by an act paſſed in 1793, enabling the proprietors to make a canal from the Mancheſter and Oldham Canal at Clayton demeſne, in the pariſh of Mancheſter, to Heaton Norris, near Mancheſter, which diſtance is about ſix miles, and parallel to the turnpike road; alſo, to continue this canal eaſtward to Denton, a diſtance of about three miles; likewiſe to make a cut from the Oldham branch, to Stake-Leach in Hollingwood, a diſtance of about two miles.

DUKE OF BRIDGEWATER's CANAL FROM WORSLEY TO LEIGH.

An act paſſed in 1795, authoriſes the duke to cut a branch from his canal at Worſley, to the townſhip of Pennington near Leigh. The tonnage of goods of all kinds carried on this canal is not to exceed 2*s*. 6*d*. per ton.

CONCLUDING OBSERVATIONS.

Of the vaſt and multifarious deſigns above deſcribed, which a few late years have ſpread over this tract of country, all may be ſaid to be in a ſtate either of completion or of progreſs, though in different degrees. Of ſome, the immediate benefits are ſo apparent, that they have ſtimulated the undertakers to the moſt vigorous exertions. Others, which have great difficulties to encounter, and the objects and advantages of which have, perhaps, not been ſo deciſively conſidered, will probably require

many

many years for their complete execution; nor is it unlikely that various deviations from the original plans may be made during the progreſs of the works. Competitions and interferences have ariſen between the different undertakings, in proportion as the number of them has increaſed, by which the proſpects of advantage which at firſt offered themſelves to the projectors have materially altered. In particular, the moſt extenſive of all the deſigns, the Leeds and Liverpool Canal, ſince its commencement, has felt the rivalry of two nearer communications between the eaſt and weſt ſeas, and of a readier conveyance of coal from the middle to the northern parts of Lancaſhire; on which account a conſiderable variation of its courſe has been propoſed, as already mentioned.

Meantime, the prodigious additions made within a few years to the ſyſtem of inland navigation, now extended to almoſt every

corner

corner of the kingdom, cannot but impreſs the mind with magnificent ideas of the opulence, the ſpirit, and the enlarged views which characterize the commercial intereſt of this country. Nothing ſeems too bold for it to undertake, too difficult for it to atchieve: and ſhould no external changes produce a durable check to the national proſperity, its future progreſs is beyond the reach of calculation. Yet experience may teach us, that the ſpirit of project and ſpeculation is not always the ſource of ſolid advantage, and poſſibly the unbounded extenſion of canal navigation may in part have its ſource in the paſſion for bold and precarious adventure, which ſcorns to be limited by reaſonable calculations of profit. Nothing but highly flouriſhing manufactures can repay the vaſt expenſe of theſe deſigns. The town of Mancheſter, when the plans now under execution are finiſhed, will probably enjoy more various water-communications than the moſt commercial town of

the

the Low Countries has ever done. And inſtead of cutting them through level tracts, ſo as only to make a wider ditch, its canals are carried over mountainous diſtricts, where the ſole method of avoiding the difficulties of ſteep aſcent and deſcent, has been to bore through the very heart of hills, and navigate for miles within the bowels of the earth. At the beginning of this century it was thought a moſt arduous taſk to make a *high road* practicable for carriages over the hills and moors which ſeparate Yorkſhire from Lancaſhire; and now they are pierced through by *three navigable canals!* Long may it remain the centre of a trade capable of maintaining theſe mighty works!

ACCOUNT

ACCOUNT

OF

MR. BRINDLEY.

JAMES BRINDLEY was born at Tunſted in the pariſh of Wormhill, Derbyſhire, in 1716. His father was a ſmall freeholder, who diſſipated his property in company and field-amuſements, and neglected his family. In conſequence, young Brindley was left deſtitute of even the common rudiments of education, and till the age of ſeventeen was caſually employed in ruſtic labours. At that period he bound himſelf apprentice to one Bennet, a mill-wright, at Macclesfield, in Cheſhire, where his mechanical genius preſently developed itſelf. The maſter being frequently abſent, the apprentice was often left for weeks together to finiſh pieces of work concerning which he had received no inſtruction; and Bennet, on his return,

was

was often greatly aſtoniſhed to ſee improvements in various parts of mechaniſm of which he had no previous conception. It was not long before the millers diſcovered Brindley's merits, and preferred him in the execution of their orders to the maſter or any other workman. At the expiration of his ſervitude, Bennet being grown into years, he took the management of the buſineſs upon himſelf; and by his ſkill and induſtry contributed to ſupport his old maſter and his family in a comfortable manner.

In proceſs of time, Brindley ſet up as a mill-wright on his own account, and by a number of new and ingenious contrivances greatly improved that branch of mechanics, and acquired a high reputation in the neighbourhood. His fame extending to a wider circle, he was employed in 1752 to erect a water-engine at Clifton, in Lancaſhire, for the purpoſe of draining ſome coal-mines. Here he gave an eſſay of his abilities in a kind

kind of work for which he was afterwards ſo much diſtinguiſhed, driving a tunnel under ground through a rock nearly 600 yards in length, by which water was brought out of the Irwell for the purpoſe of turning a wheel fixed thirty feet below the ſurface of the earth. In 1755 he was employed to execute the larger wheels for a ſilk mill at Congleton; and another perſon, who was engaged to make other parts of the machinery, and to ſuperintend the whole, proving incapable of completing the work, the buſineſs was entirely committed to Brindley; who not only executed the original plan in a maſterly manner, but made the addition of many curious and valuable improvements, as well in the conſtruction of the engine itſelf, as in the method of making the wheels and pinions belonging to it. About this time, too, the mills for grinding flints in the Staffordſhire potteries received various uſeful improvements from his ingenuity.

In

In the year 1756 he undertook to erect a ſteam-engine upon a new plan at Newcaſtle-under-Line; and he was for a time very intent upon a variety of contrivances for improving this uſeful piece of mechaniſm. But from theſe deſigns he was, happily for the public, called away to take the lead in what the event has proved to be a national concern of capital importance—the projecting the ſyſtem of *canal navigation*.—The duke of Bridgewater who had formed his deſign of carrying a canal from his coal-works at Worſley to Mancheſter, was induced by the reputation of Mr. Brindley to conſult him on the execution of it; and having the ſagacity to perceive, and ſtrength of mind to confide in, the original and commanding abilities of this ſelf-taught genius, he committed to him the management of the arduous undertaking. The nature and progreſs of this enterpriſe have already been deſcribed; it is enough here to mention, that Mr. Brindley, from the very firſt,

adopted

adopted thoſe leading principles in the projecting of theſe works, which he ever afterwards adhered to, and in which he has been imitated by all ſucceeding artiſts. To preſerve as much as poſſible the level of his canals, and to avoid the mixture and interference of all natural ſtreams, were objects at which he conſtantly aimed. To accompliſh theſe, no labour and expenſe was ſpared; and his genius ſeemed to delight in overcoming all obſtacles to them by the diſcovery of new and extraordinary contrivances.

The moſt experienced engineers upon former ſyſtems were amazed and confounded at his projects of aqueduct bridges over navigable rivers, mounds acroſs deep vallies, and ſubterraneous tunnels; nor could they believe in the practicability of ſome of theſe ſchemes till they ſaw them effected. In the execution, the ideas he followed were all his own; and the minuteſt, as well as the greateſt,

of

of the expedients he employed, bore the ſtamp of originality. Every man of genius is an enthuſiaſt. Mr. Brindley was an enthuſiaſt in favour of the ſuperiority of canal navigations above thoſe of rivers; and this triumph of art over nature led him to view with a ſort of contempt the winding ſtream, in which the lover of rural beauty ſo much delights. This ſentiment he is ſaid to have expreſſed in a ſtriking manner at an examination before a committee of the Houſe of Commons, when on being aſked, after he had made ſome contemptuous remarks relative to rivers, what he conceived they were created for:—he anſwered, "To feed navigable canals."—A direct rivalry with the navigation of the Irwell and Merſey, was the bold enterpriſe of his firſt great canal; and ſince the ſucceſs of that deſign, it has become common all over the kingdom to ſee canals accompanying with inſulting paralled the courſe of navigable rivers.

After the ſucceſsful execution of the duke of Bridgewater's canal to the Merſey, Mr. Brindley was employed in the revived deſign of carrying a canal from that river to the Trent, through the counties of Cheſter and Staffond. This undertaking commenced in the year 1766; and from the great ideas it opened to the mind of its conductor, of a ſcheme of inland navigation which ſhould connect all the internal parts of England with each other, and with the principal ſea-ports, by means of *branches* from this main ſtem, he gave it the emphatical name of the *Grand Trunk*. In executing this, he was called upon to employ all the reſources of his invention, on account of the inequality and various nature of the ground to be cut through: in particular, the hill of Harecaſtle, which was only to be paſſed by a tunnel of great length, bored through ſtrata of different conſiſtency, and ſome of them mere quickſand, proved to be a moſt difficult as well as expenſive ob-

 ſtacle,

ſtacle, which, however, he completely ſurmounted. While this was carrying on, a branch from the Grand Trunk to join the Severn near Bewdley was committed to his management, and was finiſhed in 1772. He alſo executed a canal from Droitwich to the Severn; and he planned the Coventry Canal, and for ſome time ſuperintended its execution, but on account of ſome difference in opinion, he reſigned that office. The Cheſterfield Canal was the laſt undertaking of the kind which he conducted, but he only lived to finiſh ſome miles of it. There was, however, ſcarcely any deſign of canal-navigation ſet on foot in the kingdom during the latter years of his life in which he was not conſulted, and the plan of which he did not either entirely form, or reviſe and improve. All theſe it is needleſs to enumerate; but as an inſtance of the vaſtneſs of his ideas, it may be mentioned, that on planning a canal from Liverpool to join that of the duke of Bridgewater at Runcorn, it was

part of his intention to carry it by an aqueduct bridge acroſs the Merſey, at Runcorn-gap, a place where a tide ſometimes riſing fourteen feet ruſhes with great rapidity through a ſudden contraction of the channel. As a mechanic and engineer he was likewiſe conſulted on other occaſions; as with reſpect to the draining of the low lands in different parts of Lincolnſhire and the Iſle of Ely, and to the cleanſing of the docks of Liverpool from mud. He pointed out a method which has been ſucceſsfully practiſed, of building ſea-walls without mortar; and he was the author of a very ingenious improvement of the machine for drawing water out of mines by the contrivance of a loſing and a gaining bucket.

The intenſity of application which all his various and complicated employments required, probably ſhortened his days; as the number of his undertakings, in ſome degree, impaired his uſefulneſs. He fell into a kind

of

of chronic fever, which, after continuing ſome years with little intermiſſion, at length wore out his frame, and put a period to his life on September 27th, 1772, in the 56th year of his age. He died at Turnhurſt, in Staffordſhire, and was buried at New Chapel in the ſame county.

In appearance and manners, as well as in acquirements, Mr. Brindley was a mere peaſant. Unlettered and rude of ſpeech, it was eaſier for him to deviſe means for executing a deſign, than to communicate his ideas concerning it to others. Formed by nature for the profeſſion he aſſumed, it was there alone that he was in his proper element; and ſo occupied was his mind with his buſineſs, that he was incapable of relaxing in any of the common amuſements of life. As he had not the ideas of other men to aſſiſt him, whenever a point of difficulty in contrivance occurred, it was his cuſtom to retire to his bed, where in perfect

ſolitude he would lie for one, two, or three days, pondering the matter in his mind, till the requiſite expedient had preſented itſelf. This is that true *inſpiration*, which poets have almoſt excluſively arrogated to themſelves, but which men of original genius in every walk are actuated by, when from the operation of the mind acting upon itſelf, without the intruſion of foreign notions, they create and invent. A remarkably retentive memory was one of the eſſential qualities which Mr. Brindley brought to his mental operations. This enabled him to execute all the parts of the moſt complex machine in due order, without any help of models or drawings, provided he had once accurately ſettled the whole plan in his mind. In his calculations of the powers of machines, he followed a plan peculiar to himſelf; but, indeed, the only one he could follow without inſtruction in the rules of art. He would work the queſtion ſome time in his head, and then ſet down the

reſult

reſult in figures. Then taking it up in this ſtage, he would again proceed by a mental operation to another reſult; and thus he would go on by ſtages till the whole was finiſhed, only making uſe of figures to mark the ſeveral reſults of his operations. But though, by the wonderful powers of native genius, he was thus enabled to get over his want of artificial method to a certain degree, yet there is no doubt, that when his concerns became extremely complicated, with accounts of various kinds to keep, and calculations of all ſorts to form, he could not avoid that perplexity and embarraſſment which a readineſs in the proceſſes carried on by pen and paper can alone obviate. His eſtimates of expenſe have generally proved wide of reality; and he ſeems to have been better qualified to be the contriver, than the manager, of a great deſign. His moral qualities were, however, highly reſpectable. He was far above envy and jealouſy, and freely communicated his improvements to perſons

perſons capable of receiving and executing them: taking a liberal ſatisfaction in forming a new generation of engineers able to proceed with the great plans in the ſucceſs of which he was ſo deeply intereſted. His integrity and regard to the advantage of his employers were unimpeachable. In fine, the name of *Brindley* will ever keep a place among that ſmall number of mankind, who form *eras* in the art or ſcience to which they devote themſelves, by a large and durable extenſion of their limits.

FINIS.


Distance From London to Manchester