

## CHAPTER XIX.

View of the National Industry from the Revolution of 1688 to the Accession of the House of Brunswick.—Population.—the South-Western Counties.—The Woollen Manufacture.—Clothing trade of the West.—Domestic Character of the Manufacture.—Foreign Trade.—Bristol.—Watering-places of the Coast.—Travelling for pleasure.—Inland Watering-places.—Bath.—Arsenal of Plymouth.—Iron Manufactures.—Forest of Dean.—South Wales.—Tin Mines of Cornwall.—Copper Mines.—Welsh Coal Field.—Varieties of Employment in the West of England.

WE are entering upon that period of our national progress in which England is very slowly developing itself into a manufacturing and commercial country. The great features of that progress, and its accompanying changes in the character of the population, must ever be borne in mind when we attempt to trace the political history of the eighteenth century. This gradual development of her resources is not a mere accident in England's career. It constitutes the most important feature of her advancing political condition. It requires to be thoroughly understood, if we would rightly understand the circumstances which have given us our present place amongst the nations. We propose to offer a picture, derived indeed from scattered and imperfect materials, but with some approximation to exactness, of the industry, and the consequent condition and character of the people, during the period from the Revolution of 1688 to the accession of the house of Brunswick. Some of our authorities extend through the reign of George I.\* But there were few changes of invention or discovery to mark a new epoch of industry as immediately following the close of the reign of Anne. It was the period before steam-engines and navigable canals—the period before the cotton trade—the period before scientific husbandry in its humblest form. It was the period when the infant industry of England was thought to be only secure under the system of Protection, carried to the utmost amount of actual prohibition of foreign manufactures, or of repression by high duties. It was a period of nearly stationary population. It was a period of old staple production that was thought all sufficing for national prosperity, and of timid experi-

\* Such as Defoe's "Tour," which was commenced in 1722.

ment in new fields of enterprise that were regarded as dangerous and delusive. Such notions went before the coming era of marvellous extension of productive power; and they long contended against the political philosophy and the scientific knowledge that determined that extension. Let us endeavour to trace what England was under its accustomed industrial habits,—patient, persevering, slow England—during the quarter of a century that succeeded the Revolution. To our minds this is a period of extreme interest. It is the period of transition from the plough to the loom; from the spinning-wheel to the factory; from the age of tools to the age of machinery. Employments are intermingled. The shuttle is plied in the valleys where the fleece is sheared; the iron is smelted on the hills where the timber is felled for charcoal. Ships of small burden carry the products of one locality to another, up the estuaries and tributary rivers; and when navigation is impeded by sands and rocks, packhorses bear the cargo into the interior. The people of one district know very little of another district. Each district has something to exchange with its neighbour could they be brought into communication; but impracticable roads and unnavigable streams keep them separate. Every county has its peculiar dialect, the traces of which philologists eagerly hunt after. The sports of the West are not the same as those of the South—the superstitions of the North have a different character from those of the East. Yet, with all these material causes of isolation, England has one heart. She is made compact by her Protestantism, by her general laws, by her system of local government, by historical memory. Her people, in their island home, intensely feel their nationality. But on this island home, which has a greater sea-board than any other European country, there is a constant incentive to an adventurous race to go forth to the most distant shores—to trade, to colonise, to make all the choice productions of the world their own by exchange—to be the sea-kings, as were their Saxon forefathers. To comprehend what England has done in a century and a half, we must carefully look back upon the point from which she started in this wondrous race.

One of the earliest proceedings of the first Parliament of William and Mary, was to grant an extraordinary Aid of £68,820 per month, for six months, payable in certain proportions by the several counties.\* Shortly following this grant was an enactment

\* 1 Gul. & Mar. c. 3.



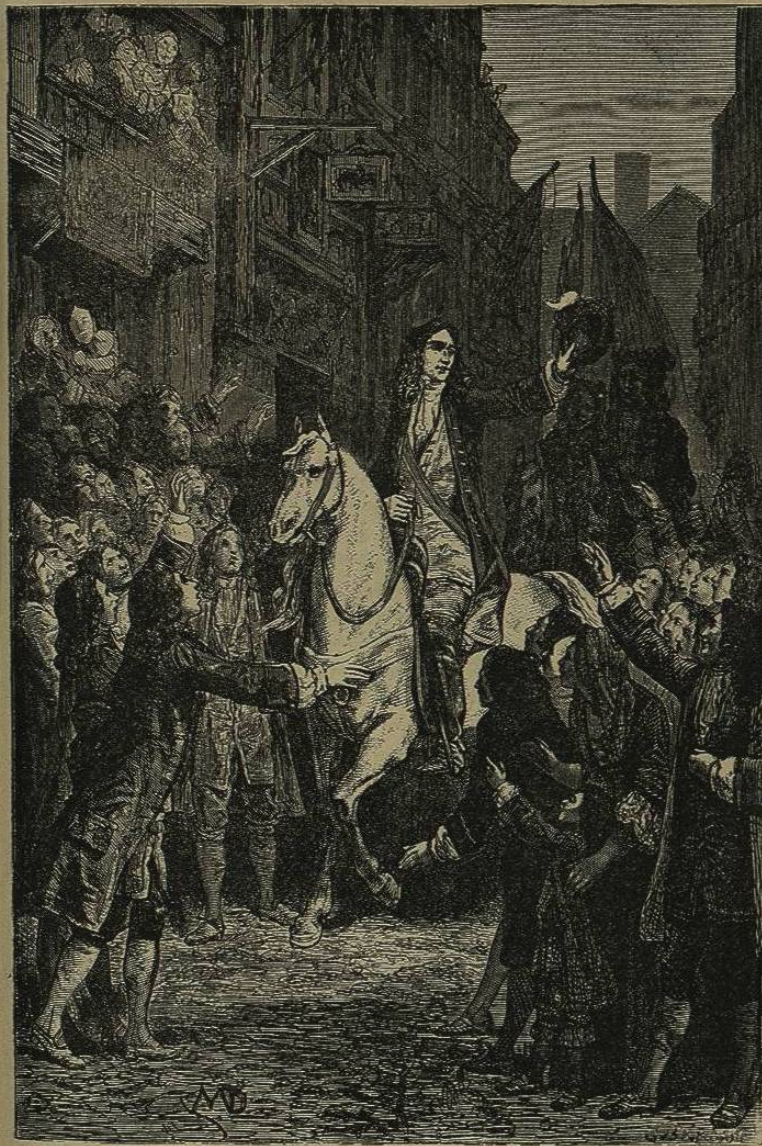
“for the taking away the revenue arising from Hearth-money.” This tax is described as “not only a great oppression to the poorer sort, but a badge of slavery upon the whole people, exposing every man’s house to be entered into and searched at pleasure.” \* But this tax of Hearth-money was in one respect a national advantage. It formed the basis of all reasonable calculations of the amount of the population of England and Wales, towards the close of the seventeenth century, and for many years afterwards. Gregory King took the number of houses returned by the hearth-money collectors as determining his estimate that the population was about five millions and a half; a calculation very nearly borne out by statistical researches in our own days. Other accounts take the population of this period at a higher rate. From a table printed in 1693 it appeared that there were 1,175,951 houses. † Upon the authority of this table, allowing six persons to each house, the population was subsequently calculated at 7,055,706. ‡ In the “Magna Britannia,” which commenced to be published in 1720, the number of houses in each county is given; and, in many cases, the equivalent number of the population is also given, though upon a varying scale. § The result is not very materially different from the estimates of Gregory King; and if the houses, in number about 1,200,000, were averaged to give five persons for each house, they would show a population of six millions, at the period to which our present inquiry extends. The use we propose to make of these returns of houses, and of the assessment for Aid, || is to endeavour to form some estimate of the comparative population, industry, and wealth of each of the great divisions of the country; with occasional glances at the striking contrasts in our own times presented by some large industrial districts.

At the beginning of the eighteenth century the west of England was the seat of the greatest commercial and manufacturing industry of the kingdom. The five South-Western Counties of Wilts, Dorset, Devon, Cornwall, Somerset, then contained the largest number of houses and consequently the largest population, as compared with any other of our present eleven Registration Divisions. This district was also assessed in 1689 at a higher rate than any other.

\* 1 Gul. & Mar. c. 10. † “Parliamentary History,” vol. v. Appendix No. 10. ‡ Chamberlayne’s Present State, 1748.

§ The principle of assigning five persons to a house is sometimes observed; sometimes, six persons; and sometimes a medium between the two.

|| The Assessment was doubled in 1693, but the proportions were the same.



ENTRANCE OF WILLIAM III. INTO LONDON. — Vol. iv. 373.



It was to pay £10,850 per month in aid, whilst the North-Western District of Cheshire and Lancashire was only to pay £1753. It contained 175,403 houses whilst Cheshire and Lancashire only contained 64,256. The population of the South-Western Counties was (at the rate of 5 persons for a house) 877,015, whilst the North-Western District was 321,280. At the census of 1801, the South-Western District contained a population only increased by about one fourth during a hundred years; whilst the North-Western was three times as numerous as at the beginning of the century. The contrast will be more striking if we look at the fact that, in 1851, the population of Cheshire and Lancashire nearly doubled that of the five South-Western Counties, which counties, a century and a half earlier, contained three times as many inhabitants as the North-Western. If we add Gloucestershire to the other five counties, we shall find that these six chief counties of the West at the beginning of the eighteenth century contained 202,167 houses and therefore above a million ten thousand inhabitants. At the same period, Cheshire, Lancashire, Yorkshire, Durham, and Northumberland, only contained 209,132 houses, and therefore these great Northern counties only exceeded the West in population by about thirty-five thousand souls. In 1851 these five Northern Counties contained five millions of inhabitants, being an excess above the six Western Counties of two million seven hundred thousand.

In the first year of the new dynasty an Act was passed "for the better preventing the exportation of Wool, and encouraging the Woollen Manufacture of this kingdom."\* The great object of commercial legislation for two centuries was to encourage the Woollen Manufacture. The one mode of accomplishing this was to prevent the exportation of Wool, and to prohibit the importation of textile articles for every other country, not excepting Scotland and Ireland. Wool was justly held to be "eminently the foundation of England's riches." † To let wool go away unwrought, or even in the shape of yarn, was to lessen or destroy this source of wealth. But the richer Dutch, especially, could give a better price for the wool than the English clothiers; and, said the first political economist of that time, "they that can give the best price for a commodity shall never fail to have it, by one means or other, notwithstanding the opposition of any laws by sea or land; of such force, subtilty, and violence is the general course of trade." ‡ Under the Statute of the first year of William and Mary, Commis-

\* 1 Gul. and Mar. c. 32.

† Sir Josiah Child.

‡ *Ibid.*



sioners were appointed to prevent by forcible means the exportation of Wool. They employed a sloop and boats for the search of vessels. They had army of riding-officers and superiors in the wool-growing counties and adjacent ports. The contests between these riding-officers and the carriers of the wool were frequent and sometimes deadly; and the aggregate number of packs rescued from the officers were greater than the number seized. The service was most inefficient and dangerous in the North.\* The landed interest and the manufacturing interest were for years at issue upon the question of the exportation of wool. The manufacturers desired a monopoly. The landlords and cultivators advocated a perfectly open trade, and proclaimed the most liberal principles of commercial freedom. Such is the varying course of opinion which follows the varying interests of industrial operations. The economical writers of the end of the seventeenth century, who estimated the whole annual income of England at forty-three millions, and the rental at ten millions, reckoned the annual value of the wool at two millions, and the annual value of the woollen manufacture at eight millions. That manufacture was chiefly in the Western Counties, as it had been from the time of Edward VI. In that reign, though Coventry and Worcester produced "White Cloths" and "Coloured Cloths;" though the "Coloured Long Cloths" of Suffolk, Norfolk, and Essex were worthy of mention, as well as "Northern Cloths" and "Welsh Friezes;" Wiltshire, Gloucestershire, Somersetshire, Devonshire, were especially famous for their "Whites" and "Reds," their "Azures" and "Blues." "Devonshire Kerseys," and "Broadcloths called Tauntons and Bridgewaters," were the objects of minute regulation. "Manchester, Lancashire, and Cheshire Cottons"—(a fabric so called in which cotton is held to have had no place)—and "Manchester Rugs and Friezes" form a small object of that legislative vigilance which was to insure "the true making of cloth within this realm," and to prevent the "many subtil sleights and untruths," which were imputed to greedy clothiers.† A hundred and fifty years later the West was still the great Cloth-making district; and to this cause may be chiefly attributed its comparative superiority in wealth and population.

In the days before steam-power, and the application of chemical science to manufactures, natural advantages wholly determined the localisation of trades. The same principle must always prevail to

\* Returns given in Smith's "Memoirs of Wool," vol. ii. p. 166.

† 5 & 6 Edward VI. c. 6.

a great extent in the most advanced stage of manufacturing industry. The clothing trade of the West was created by the adaptation of the district to sheep pasturage. On the grassy downs and wide plains of Wiltshire, innumerable flocks of sheep had yielded the fleece before the time when Stonehenge and Abury were mysterious ruins. The fleeces of the long-woolled sheep of the Cotswold Hills were famous in the fifteenth century; and Camden describes the substantial cotes with which this hill-district was covered, to shelter the flocks from the winter storm or the keen winds of the lambing season. The Mendip Hills supported a short-woolled breed, whose wool was as fine as that of Spain, which entered so largely into our woollen manufacture. The supply of wool was thus at hand for the clothiers who dwelt in the valley of the Lower Avon. The waters of that river, with its many branches, were especially fitted for fulling and dressing and dyeing cloth. The finest cloths were here fabricated. Frome, Bradford, Trowbridge, Devizes, with many adjacent towns then of great importance, were the seats of this "prodigy of a trade."\* Frome had added ten thousand to its population in thirty years, and was considered to have more inhabitants than Bath or Salisbury.† The clothing towns were surrounded with their tributary villages and hamlets, in which the work of spinning was performed by women and children. To the cottages where the hum of the wheel was ceaselessly heard, the clothiers of the towns sent their pack-horses laden with wool, and brought back the spun yarn, ready for the weaver's loom. The operative weaver was also in many cases a domestic worker. In the fulling and dyeing processes was combined labour alone necessary. The forgotten poem of John Dyer, "The Fleece"—which Johnson disdained on account of "the meanness naturally adhering and the irreverence habitually annexed to trade and manufactures"—gives us many accurate as well as pleasing pictures of the weaving labours of the valleys of the Avon, the Air, and the Stroud. The young man, entering upon his career of industry, sets up his own loom; he stores his soft yarn; he strains the warp along his garden walk, or by the highway side; he drives the thready shuttle from morn to eve; he takes the web to the fulling mill near some clear-sliding river, where tumbling waters turn enormous wheels and hammers; the wet web is often steeped, and often dragged by sinewy arms to the river's grassy bank; it is hung on rugged tenters to brighten in

\* Defoe's "Tour," vol. ii. p. 35, ed. 1738.

† *Ibid.*, p. 34.



the fervid sun; the clothier's shears and the burler's thistle skim the surface; and lastly, the snowy web is steeped in boiling vats, where woad or fustic, logwood or cochineal, give their hues to the purple of the prince, the scarlet of the warrior, and the black of the priest.\* There can be no greater contrast than that of the Woollen trade of the West, a century and a half ago, with a Cloth factory of the North in our own times; where, with the gigantic aid of steam, wool from every quarter of the habitable globe is carded, spun, woven by the power-loom, fullled, sheared, and dyed, in buildings one of which would turn out more cloth than a dozen old clothing-towns, with their tributary villages. The contrast between the semi-pastoral state of the great staple of England, and its factory perfection, is equally remarkable as regards the moral condition of the people. The old loom is passing away: and so is the weaver of Kidderminster, who had his book before him as he threw the shuttle, and had "time enough to read or talk of holy things."†

The Gloucestershire clothiers of Stroud and the neighbourhood were especially famous for their fine cloths of scarlet and other gaudy hues, to which the purity of their streams was held as much to contribute as the skill of the dyer. It was the fineness and brilliancy of the English broad-cloths which gave them a value beyond their own silks and brocades to the Persian and the Turk, "even for their habits of ceremony." It was their intrinsic goodness—to preserve which so many statutory regulations had been prescribed for centuries—which recommended them to Spaniards and Portuguese, to Venetians and Italians, to the Greeks of the Levant and even to the Moors of Africa.‡ But this foreign trade was greatly straitened by circumstances and opinions. At the beginning of the eighteenth century the trade with France was gone. In 1674 a jealousy of that trade was the paramount idea of the commercial legislator; for England sent France only about eighty thousand pounds' worth of woollen manufactures, and imported ten times that value of linen and silk manufactures, besides wine, brandy, paper, and many toys and luxuries. The difference, in the economical language of that day, was called the "Balance gained by the French from us yearly."§ When, after the accession of William and Mary, the nation was at war with Louis XIV.,

\* See Dyer's "Fleece," book iii.

† "Atlas Maritimus," 1727.

‡ "Parliamentary History," vol. iv. Appendix, No. xi.

† See *ante*, vol. iv. p. 44.

all trade and commerce with France was prohibited; and it was declared that it had been found by long experience that the importation of the commodities of France "hath much exhausted the treasure of this nation, lessened the value of the native commodities and manufactures thereof, and greatly impoverished the English artificers and handicrafts."\* The same proposition was repeated in the same terms in 1704.† To compensate for the loss of the French trade, the North American colonies and the West Indies had become important customers for our woollen manufactures. The ports of Bristol and of North Devon thus continued to prosper; Liverpool was growing into importance; but many of the smaller ports of the channel were ruined. The towns of Weymouth and Lyme, that drove a flourishing trade with France before the Revolution of 1688, fell into decay. Lyme once sent large cargoes of woollen goods to Brittany,‡ and its "Cobb" was busy with little vessels laden with imports of French wines and linens. In 1709, the cobb-dues were under fourteen pounds, and the houses were fast falling into decay. Ships were employed in foreign trade of a larger tonnage than was fitted for small ports. Great towns alone became the seats of external commerce.§

Such a port was Bristol at the commencement of the eighteenth century—the famous port of the West—the only port that could pretend to enter into competition with London, and to trade with an entire independence of the capital.|| The Bristol shopkeepers were also merchants—"Wholesale men"—and they conducted an inland trade through all the Western counties by means of carriers, and extended their traffic through the midland districts, even to the Trent. Roger North had observed that at Bristol all the dealers were engaged in adventures by sea;—"a poor shopkeeper that sells candles will have a bale of stockings, or a piece of stuff, for Nevis or Virginia."¶ There was too much truth in his notice of one portion of the Bristol commerce—"rather than fail, they trade in men." The planters with whom the Bristol traders corresponded wanted labour, and in exchange for rum, and sugar, and tobacco, men were sent—wretched outcasts who had been kidnapped, or "small rogues" who were threatened by the justices with the extreme penalties of the law, and were instructed to pray for transportation "before any indictment was found

\* 1 Gul. & Mar. c. 33.

† "British Merchant," 1713.

‡ Defoe's "Tour," vol. ii. p. 249.

§ Roberts' "Southern Counties," p. 540.

¶ "Life of Lord Guilford," vol. i. p. 25.



against them."\* Bristol had this dishonour in the days of Charles II., as it was the last to cling to the dishonour of the slave trade in the days of George III. The Bristol traders, moreover, at the beginning of the eighteenth century, had to bear a reproach, which even the noble charities of one of their great merchants, and their old reputation for hospitality, which earned them the title of "the courteous Bristolians," † could not outweigh. Defoe, in general no illiberal judge, complained of the inconveniences of Bristol—its narrow streets, its narrow river, and "also another narrow—that is, the minds of the generality of its people." He recommends them to travel to London—"from the second great trading town to the first; and they will see examples worth their imitating, as well for princely spirit as for upright and generous dealings." ‡ At that period Bristol was cursed with a very exclusive prosperity; and its uneducated freemen, amongst whom strangers were jealously forbidden to settle, indulged, when their adventures were prosperous, in that vulgar display which is the general accompaniment of sudden riches. § It was also cursed with an exclusive municipal government. From this great port of the Severn, Sebastian Cabot, "a Bristol man born," went forth in 1497 to set his foot upon Newfoundland. Two centuries later Bristol was the great emporium for American produce, and Dampier, with other bold buccaneers, sailed from Avon to come back rich with Spanish prizes. A century and a half later, the "Great Western" steamed down between the narrow rocks of St. Vincent, on her first voyage to New York, caring little for tides and adverse winds, for she had a self-contained power which took away the uncertainty of maritime communication, and made time and space of small amount in commercial calculations. The difference between the Bristol of Cabot and the Bristol of Dampier, is not greater than the difference between the Bristol of William III., whose statue was worthily raised in Queen Square by her citizens, and the Bristol of Queen Victoria. The Avon is now far too narrow for the mighty vessels, crowded amongst the diminutive, that steam to her quays from South Wales and Ireland, from Africa and America. But the old commerce of wool and woollen manufactures, of which

\* "Life of Lord Guilford," vol. i. p. 250, and vol. ii. p. 24.

† Fuller's "Worthies."

‡ "Tour," vol. ii. p. 250.

§ Defoe perhaps wrote under the influence of some personal slight. He sought a refuge in Bristol when under pecuniary difficulties; and was there pointed at as "the Sunday gentleman."

Bristol was the seat, is gone. The North has carried away the woollen manufacture from the West, to a very considerable extent. South Wales has far more productive industry than the making of flannels. The hearth-money returns of Bristol show little above five thousand houses, which would give a population not much exceeding twenty-five thousand. Defoe says, "Bristol is supposed to have a hundred thousand inhabitants within the city, and within three miles of its circumference." This is a material increase in less than forty years. A later writer observes that "Bristol, the second city in England, next to London has made the largest improvements since the Revolution, of any place in the kingdom, unless Manchester shall be thought an exception to this."\*

The great woollen manufacture extended itself in the eighteenth century still further west. At Taunton Defoe found eleven hundred looms at work for the weaving of common stuffs; and he was told that there was not a child in the town of above five years old who could not earn its own bread. At Honiton he first saw the serge manufacture of Devonshire, which occupied the whole county. At Exeter, a city then full of trade and manufacture, he looked with admiration upon the serge market, where the people assured him that serges to the value of a hundred thousand pounds were sometimes sold in one week. The port of Topsham was then one of the most considerable amongst the smaller ports of England; and the woollen manufactures of Devonshire were thence largely exported to Holland, to Portugal and Spain, to Italy. The commerce of the Exe is now comparatively small. Devonshire has still its scattered woollen manufactures, which give employ to fifteen hundred males and two thousand five hundred females; and five hundred males, and eight thousand five hundred females are now connected with the production of gloves and lace. But new populations have been created by circumstances of which the Devonians of a century and a half ago had no conception. It was for modern times to behold all the bays of the south-western coast where the myrtle is unharmed by the winter gales, transformed into flourishing towns, where a few fishermen once earned a precarious livelihood. The rush to the coast for sea-bathing and sea-air was a fashion unknown in the middle of the last century. Still less was it the fashion to locate the invalid under the shelter of hills and promontories, where the south-west breeze might give its soft but invigorating freshness to those who were held to have been per-

\* Smith's "Memoirs of Wool," 1747. Vol. i. p. 263.



ishing in the crowded city. Torquay was then a name for a few huts. Even more rare was the fashion of travelling for pleasure through scenes which we now call beautiful, but which our forefathers held to be horrible wastes. In the days of almost impassible roads, and when wheel conveyances were not common, the hills of Devonshire and Derbyshire, the mountains of Wales and Westmoreland, were left to their primitive occupants, unsought by the tourist, and hated by the business traveller. No one sailed down the Wye and the Dart for pleasure; the Dove and the Wharf were known in their inaccessible beauties only to the solitary angler. When the companion of Charles Cotton rides with him near Ashbourn, the Essex man exclaims, "Bless me, what mountains are here!" and when told that the hills bred and fed good beef and mutton, ejaculates, "They had need of all those commodities to make amends for the ill landscape."\* To the eyes of Defoe, Westmoreland was a country eminent only for being the wildest, most barren, and frightful of any that he had passed over in England, or even in Wales itself. He talks of the terrible aspect of the hills, and laments that all the pleasant part of England was at an end.† Gray was the first who looked at Windermere and Borrowdale, at Skiddaw and Saddleback, with the eye of the poet. Whateley was the first who described the Wye; and Gray, who followed him, is in raptures with its "succession of nameless wonders."‡ Such a change in the taste of the present and the past century may be accounted for without imputing to our predecessors an indifference to the beauties of nature. Travelling was to them weary work. The most populous districts, with the least execrable roads, were to them the most attractive. The only inns were in the great thoroughfares. The chance hospitality of a cottage on a mountain side was not to their tastes. Long after the middle of the eighteenth century good roads were the exception. Turnpikes had done something to amend the evil. But up to 1770, when Arthur Young wrote, the roads of the North, and especially of Lancashire, were mostly execrable; so that, speaking of the turnpike road from Preston to Wigan, this shrewd observer says, "Let me most seriously caution all travellers who may accidentally purpose to travel this terrible country, to avoid it, as they would the devil."§ The love of the picturesque was not sufficient to bear the ordinary tourist through such difficulties.

\* "Complete Angler," Part ii.

† "Works," vol. iv. 1836.

‡ "Six months' Tour in the North of England," vol. iv. p. 580.

§ "Tour," vol. iii. p. 18.

In the West was the most celebrated watering-place of England. From the earliest times the hot springs of Bath had been the resort of the invalid. The city at the beginning of the eighteenth century was a small cluster of narrow streets, where the houses, although built of stone, were mean and ill-furnished. Yet it had long been the resort of the rich health-seekers and the rich pleasure-seekers. It was proverbial also for its beggars. Fuller, noticing the proverb, says that many repair to Bath from all parts of the land, "the poor for alms, the pained for ease." The beggars came, like fowl to the barn-door, where there was "the general confluence of gentry." Wood, the architect, changed Bath from a crowded nest of dirty lodgings into a city of palaces. But after these improvements were begun, Defoe compared "the close city of Bath" to a foul prison; and laments that physicians, by not giving equal praise to the hot springs of Matlock and Buxton, had not encouraged the building there of "noble and convenient bathing places, and instead of a house or two, a city raised for the entertainment of company."\* The passion for drinking mineral waters, and for bathing in medicinal springs, sent the fashionable world, in the beginning of the eighteenth century, to a similar round of idleness and dissipation, of card-playing and dancing, at the crowded cottages of Tunbridge Wells, and the fishing hovels of Scarborough. The virtues of the "Spa-waters" of the great sea-bathing place of the North were known in the days of Elizabeth. Those who walked from the town over the sands, to the mineral spring which issued from the cliff, never thought of a swim in the sea. There was then no gathering on the coast, east or west, north or south, to inhale the breeze or to float in the brine. The sea was as much dreaded by inland dwellers, as the mountains were hateful to the inhabitants of the plains.

When the Prince of Orange landed at Brixham, the probability was that the governor of Plymouth would have opposed the descent of a Dutch army upon the Western coast. The island of St. Nicholas had been fortified in the time of Elizabeth. The citadel had been built by Charles II. But at the end of the seventeenth century Plymouth was not a great naval station. No fleets of men-of-war anchored in the Hamoaze; no docks and victualling yards gave employment to two thousand five hundred workmen. William III. imparted the first impulse to the creation of the great arsenal which was to rival Portsmouth, by building two docks, which were

\* "Tour," vol. iii. p. 43.



begun in 1691. But Plymouth, the noble estuary of the Tamar and the Plym, had long been the most considerable port for merchandise of South Devon, as Bideford on the Torridge, and Barnstaple on the T. had chiefly absorbed the commerce of North Devon. The Plymouth of the end of the seventeenth century, and the Plymouth of the middle of the nineteenth century, are as essentially different as the war ships of each period. The perils of the Eddystone rock, "whereon many a good ship hath been split,"\* were not averted by the warning light which has securely burnt there since the days of Smeaton. A lighthouse was commenced to be built on the Eddystone in 1696. In three years it was finished, and the dangers of the approach to the Sound were greatly lessened. The mighty storm of 1703, almost unequalled in its destructive violence, swept the first lighthouse away. There had been signals for help from the doomed fabric when the tempest began on the 24th of November. On the morning of the 26th, the people of Plymouth looked out upon the stormy sea with their perspective glasses, and behold, the lighthouse was gone. Its engineer, Winstanley, perished with it. Another lighthouse, formed like the first, of wood upon a stone foundation, was commenced in 1706. It was destroyed by fire in 1755. The force of the South Western gales always made the anchorage of Plymouth harbour somewhat unsafe, till Telford's breakwater, one of the triumphs of modern engineering, rendered the port as eminent for its safety as it is unequalled for picturesque beauty.

The ship-building of Plymouth Dock, of Portsmouth, and of the other naval stations, leads us to look at one of the most extraordinary contrasts between the end of the seventeenth century and the middle of the nineteenth. What mighty efforts of invention and energy between England depending upon foreign countries for iron, and England supplying the whole world with iron; England without iron to hold together its "wooden walls," and England building iron ships; using iron as the great material of the grandest as well as of the humblest purposes of constructive art; covering the whole island with iron roads for vehicles drawn by iron engines; connecting opposite hills by iron viaducts, and carrying iron bridges over the narrowest river and the broadest estuary—the England of every tool and every machine produced from iron, and the England with scarcely iron enough to make its ploughshares. In such considerations of the grandeur of Art

\* Teonge's "Diary," p. 25.

there is the poetical element, as deep if not so vivid, as in the contemplation of the grandeur of Nature. To connect poetry with manufacture, according to Dr. Johnson, "is to couple the serpent with the fowl." Whateley, in a celebrated passage, described the smoky cloud of an iron forge on the Wye as adding to the grandeur of the scene at the New Weir. This was simply the picturesque of poetry. But what images of the past, the present, and the future are connected with an incident of the iron manufacture on the same river. The first mass was performed in "the Cistercian house of the blessed Mary of Tintern," in 1287. Now, five hundred and seventy years afterwards, the majestic ruins of the conventual church are the admiration of every visitor. To our minds the impressiveness of this noble monument of the piety of the days of Edward I. is enhanced by the solemn thought of the vast social changes of six centuries—changes never more strikingly manifested than in the fact that, within a few hundred yards of the Abbey, the best wire was manufactured for the Atlantic Telegraph.

In the seventeenth century the forest of Dean was the principal seat of the iron manufacture. It had been an iron-making district from the time of the Romans. The cinders from the old Roman furnaces still lie like pebbles on the sea-shore on the left bank of the Wye, and deep cavities from which the iron-stone has been dug attest the labours of the industrious race whose coins are found in the same pits.\* The work of smelting iron, which the Romans only half performed with imperfect mechanical aids, was carried through, though still imperfectly, by the miners of fourteen hundred years later. The woods of the forest of Dean were burnt for charcoal, in a country of pit-coal, and the best "sow-iron" was made from the half-smelted Roman cinders. This sow-iron was sent by the Severn into Worcestershire, Shropshire, Staffordshire, Warwickshire, and Cheshire, and there made into bar-iron. The forges of Stourbridge, Dudley, Wolverhampton, Walsall, and Birmingham were chiefly kept at work by the fine iron from this Western country. "The forest of Dean," says Yaranton, "is, as to the iron, to be compared to the sheep's back, as to the woollen; nothing being of more advantage to England than these two are."† Nevertheless, there were a few iron works in Staffordshire and Warwickshire, in Worcestershire and Shropshire, where iron of inferior quality, a "a short soft iron, commonly

\* *Ante*, vol. i. p. 48.

† "England's Improvement," p. 58.



called "cold-shore iron," was produced: it was chiefly used in the nail manufacture.\* An Act of 1668 recites, that the wood and timber of the Crown in the forest of Dean had become totally destroyed.† The manufacture of iron was unpopular. Many said, "it were well if there were no iron works in England, and it was better when no iron was made in England: the iron works destroy all the woods, and foreign iron from Spain will do better and last longer. ‡ Drayton makes the trees of the Weald of Sussex utter their lament for "these iron times." Iron works had been nearly driven from Kent and Surrey by statutes of Elizabeth and James I. The iron railings round St. Paul's Churchyard were almost the last produce of southern iron-works. Plant woods to burn for charcoal, was the advice of those who believed that home-made iron was a necessity. A man wiser than others in his generation, Edward lord Dudley, obtained in 1619 a patent for smelting iron-ore by pit coal. He would probably have bestowed immense riches upon his country had not his iron-works been destroyed in an outbreak of that popular ignorance which had too often interrupted the course of scientific improvement. The notion of smelting the iron ore by coal was not fairly tried till after 1740, at which time the annual produce of iron in the whole country was only about seventeen thousand tons. What a contrast is the conveyance of iron from the mouth of the Wye in those days, and from the mouth of the Taff in our day. The furnaces of South Wales produce as much pig-iron in one week, as all the furnaces of England produced in the whole year of 1740. The seventeen thousand tons, smelted by charcoal in that year, are only the hundred and fortieth part of all the iron produced in the United Kingdom in 1851, and only the two-hundredth part of the produce of 1857. The iron of 1851, compared with the population, was estimated at a hundred and sixty-eight pounds (1½ cwt.) per head. The iron of 1740 gave less than seven pounds per head. The iron workers of Merthyr-Tydvil are greater now in number than the whole population of Glamorgan-shire at the beginning of the eighteenth century.

The western extremity of England was the most ancient seat of her mining riches. The Romans worked the tin-mines of Cornwall, as they worked the lead-mines of Derbyshire. The sea-coast is full of the traces of the earliest mining industry. At a comparatively modern period, the reign of John, the Jews were the chief workers of the tin-mines. In the middle of the eighteenth

\* "England's Improvements," p. 58.

† 19 & 20 Car. II. c. 8.

‡ "England's Improvement," p. 56.

century the produce of these mines was about sixteen hundred tons; and no great increase was observable for another half century. That quantity is about a seventh of the present annual produce. The tin that was used to make the pewter dishes of the rich in the sixteenth and seventeenth centuries, is now chiefly employed to produce the tinned iron plates that form the cooking utensils of the mansion and the cottage, and the tea-pots of Britannia-metal and queen's-metal that are the luxuries of the mechanic's household. The first tin-plate manufactory was established in Monmouthshire in 1730. We now export tin-plates to the value, annually, of a million and a half sterling. The mines of Cornwall created the Stannary towns, of which Truro was the chief, for the stamping of tin, and the assessment of its "coinage," as the revenue of the dukes of Cornwall. But the county, in the time of William III., was full of decayed boroughs, which successive governments have reckoned amongst the best foundations of public security. Of the five hundred and thirteen representatives of England and Wales, Cornwall, with a population of a hundred and twenty-six thousand, sent forty-four members to parliament. It contained about a fiftieth part of the whole population, and it had a voice in the legislature as potent as if it contained a twelfth of all the inhabitants of the kingdom. This inequality did not contribute to the prosperity of the district. It was poor, and it was venal. The adventurers from Bristol who, at the beginning of the eighteenth century, thought that copper ore might be found in Cornwall; and Newcomen, the engineer, who, in 1713, employed the first steam-engine to drain a tin-mine near Helstone; conferred more substantial benefits upon Cornwall than all the privileges that kings and ministers had ever bestowed upon the Duchy. The Bristol traders set up mills in their city for the production of brass-ware, and to this use was the first copper ore applied. Sixty years afterwards, the copper produced from the ore of Cornwall was only about three thousand tons. In another century it had quadrupled in amount and value. The copper mines have brought about a commercial marriage between Cornwall and South Wales. The ore of the country which has no coal is conveyed across the Bristol Channel to the country which has coal in abundance. The works for smelting copper upon the Neath and the Tawe are as remarkable as the iron-works of the Taff. They are the more remarkable from the fact that the copper-ore of the Cornish mines now forms only a portion of the quantity smelted. The ship that has borne



the copper of Australia ten thousand miles, now enters the port of Swansea in company with the small vessel that has only dared the roll of the Atlantic, as she sailed beneath the bold cliffs from the Land's End to Hartland Point.

One great element of the mineral wealth of South Wales, whose existence is assumed in this brief notice of her iron-works and her copper-works, is to be found in her coal-fields. The other coal districts of the West, those of Bristol and the Mendip hills, are small in comparison with the vast range that extends from the mouth of the Severn through the whole coast of Wales bordering on the Bristol Channel. The South Welsh coal-field covers a workable area of six hundred thousand acres. At the beginning of the eighteenth century this vast mineral wealth was scarcely worked. There was an export trade of coal from Swansea to Somersetshire, Devonshire, Cornwall, and Ireland; and there was the same trade from Neath.\* But no adequate machinery was employed in the mines, and the works were carried on very little below the surface, in pits which could be easily drained by hand-labour. The demands of London for the "sea-coal fire" very early made the Newcastle trade of importance. But Wales had no share of this large supply; and the peculiar value of its coal was not felt till the age of steam-engines had arrived.

At the beginning of the eighteenth century the industry of the West of England probably exhibited a greater variety of employments than any other district. The people were miners, fishers, cultivators, orchardists, shepherds, weavers, sailors. The Cornish finners had been engaged in the same unvarying occupation, from times that make other branches of the manufacturing industry of England look as the mere growth of modern necessities. Their peculiar language has died out; but there is the remnant of an old system of co-operative industry in the "tributer" system of their mining labour, which assigns each man a reward different from the ordinary system of wages.† Such arrangements especially belong to an early age of society, before capital had organised industry by its all-controlling power. The Cornish fisheries are conducted upon the same principle, which has probably prevailed from very remote times, when the shoals of pilchards came into the Western bays, and have never ceased to come, although Fuller

\* Defoe's "Tour," vol. ii. p. 283.

† See Babbage's "Economy of Machinery," &c. p. 177.

thought they were "varying more westward, to Ireland."\* The same system of co-operation prevailed in one of the industries of Somersetshire—the cheese-making of Cheddar—for which Fuller has the characteristic name of "Join-dairies." In this village under the ridge of the Mendip, the whole population were cow-keepers. They all united in manuring the common upon which their cows fed. Every cow-keeper brought his milk daily to a common-room, where the quantity was measured and recorded. The making of a great cheese went duly forward; and when the milk of a poor man who kept but one cow was sufficient for one cheese, he received his cheese. The rich owner of many cows had his return earlier, but the poor man was sure of his just share.† In the rural economy of the West there was nothing peculiar but the apple-growth. It was especially the "Cider-land."‡ The Christmas festivities were not complete, unless the old sacrifices to Pomona were kept up in sprinkling cider upon the apple-trees.§ The superstition is gone; but the apple-orchards of the West have increased in fruitfulness as they have increased in number. The payment by the farmer of a portion of his labourers' wages in cider is perhaps also a relic of an ancient system, which appears in our day to have become an evil.|| Other distinguishing characteristics of this district have passed away. "The Western English"—the dialect of which the genuine characteristics are to be found in Robert of Gloucester's Chronicle ¶—has left no very marked traces. The Somersetshire school-boy would no longer translate, as Defoe heard, the words of the Canticles, "I have put off my coat; how shall I put it on?" into "Chow a doff'd my coot; how shall I donn 't?"\*\* The old tourist found the "jouring" dialect prevail when he had come "that length from London." Rapid and easy communication have nearly swept away all such peculiarities, and have made the Southern English absorb the Western, the Mercian, the Anglian, and the Northumbrian.

\* "Worthies," vol. i. p. 206. † Defoe's "Tour," vol. ii. p. 30.

‡ J. Philips's "Cider," book ii.

§ "For more or less fruits they will bring

As you do give them wassailing."—Herrick, "Hesperides."

|| "Journal of the Bath and West of England Society," vol. vi. p. 136.

¶ "Quarterly Review," vol. lv. p. 386. \*\* "Tour," vol. i. p. 319.