Lectures on The Industrial Revolution in England: Excerpts by Arnold Toynbee (1884)

II. England in 1760: Population

Previously to 1760 the old industrial system obtained in England; none of the great mechanical inventions had been introduced; the agrarian changes were still in the future. It is this industrial England which we have to contrast with the industrial England of to-day. For determining the population of the time we have no accurate materials. There are no official returns before 1801. A census had been proposed in 1753, but rejected as 'subversive of the last remains of English liberty.' In this absence of trustworthy data all sorts of wild estimates were formed. During the American War a great controversy raged on this subject. Dr Price, an advocate of the Sinking Fund, maintained that population had in the interval between 1690 and 1777 declined from 6,596,075 to 4,763,670. On the other hand, Mr Howlett, Vicar of Dunmow, in Essex, estimated the population in 1780 at 8,691,000, and Arthur Young, in 1770, at 8,500,000 on the lowest estimate. These, however, are the extremes in either direction. The computations now most generally accepted are those made by Mr Finlaison (Actuary to the National Debt Office), and published in the Preface to the Census Returns of 1831. These are based on an examination of the registers of baptisms and burials of the eighteenth century. But the data are deficient in three respects: because the number of people existing at the date when the computation begins is a matter of conjecture; because in some parishes there were no registers; and because the registration, being voluntary, was incomplete. Mr Finlaison, however, is stated to have subjected his materials to 'every test suggested by the present comparatively advanced state of physical and statistical science.'

Now according to Mr Finlaison, the population of England and Wales was, in 1700, 5,134,516, in 1750, 6,039,684, an increase of not quite a million, or between 17 and 18 per cent. In the first half of the century. in 1801 the population of England and Wales was 9,187,176, showing an increase of three millions, or more than 52 per cent. In the second half.8 The difference in the rate of increase is significant of the great contrast presented by the two periods. In the former, England, though rapidly increasing in wealth owing to her extended commercial relations, yet retained her old industrial organisation; the latter is the age of transition to the modern industrial system, and to improved methods of agriculture.

The next point to consider is the distribution of population. A great difference will be found here between the state of things at the beginning of the eighteenth century, or in Adam Smith's time, and that prevailing now. Every one remembers Macaulay's famous description in the beginning of his history of the desolate condition of the northern counties. His picture is borne out by Defoe, who, in his Tour through the Whole Island (1725), remarks: 'The country south of Trent is by far the largest, as well as the richest and most populous,' though the great cities were rivalled by those of the north. if we consider as the counties north of Trent Northumberland, Durham, Yorkshire, Cumberland, Westmoreland, Lancashire, Cheshire, Derbyshire, Nottinghamshire, and Staffordshire (about one-third of the total area of England), we shall find on examination that in 1700 they contained about one-fourth of the population,10 and in 1750 less than one-third, while in 1881, they contained more than two-fifths; or, taking only the six northern counties, we find that in 1700 their population was under one-fifth of that of all England, in 1750 it was about one-fifth, in 1881 it was all but one-third.

In 1700 the most thickly peopled counties (excluding the metropolitan counties of Middlesex and Surrey) were Gloucestershire, Somerset, and Wilts, the manufacturing districts of the west; Worcestershire and Northamptonshire, the seats of the Midland manufactures; and the agriculture counties of Herts and Bucks - all of them being south of the Trent. Between 1700 and 1750 the greatest increase of population took place in the following counties: Lancashire increased from 166,200 to 297,400, or 78 per cent. Warwickshire increased from 96,000 to 140,000, or 45 per cent. The West Riding increased from 236,700 to 361,500, or 52 per cent. of Yorkshire Durham increased from 95,000 to 135,000, or 41 per cent. Staffordshire increased from 117,200 to 160,000, or 36 per cent. Gloucestershire increased from 155,200 to 207,800, or 34 per cent. Cornwall, Kent, Berks, Herts, Worcestershire, Salop, Cheshire, Northumberland, Cumberland, and

Westmoreland each increased upwards of 20 per cent.

The change in the distribution of population between the beginning of the eighteenth century and Adam Smith's time, and again between his time and our own, may be further illustrated by the following table. The twelve most densely populated counties and their density to the square mile were:

1700	1750	1881
Middlesex 2221	Middlesex 2283	Middlesex 10,387
Surrey 207	Surrey 276	Surrey 1,919
Gloucester 123	Warwick 159	Lancashire 1,813
Northampton 121	Gloucester 157	Durham 891
Somerset 119	Lancashire 156	Stafford 862
Worcester 119	Worcester 148	Warwick 825
Herts 115	Herts 141	West Riding 815
Wilts 113	Stafford 140	Kent 600
Bucks 110	Durham 138	Cheshire 582
Rutland 110	Somerset 137	Worcester 515
Warwick 109	West Riding 135	Nottingham 475
Oxford 107	Berks 131	Gloucester 455

The most suggestive fact in the period between 1700 and 1750 is the great increase in the Lancashire and the West Riding, the seats of the cotton and coarse woollen manufactures. Staffordshire and Warwickshire, with their potteries and hardware, had also largely grown. So had the two northern counties of Durham and Northumberland, with their coalfields. The West of England woollen districts of Somerset, and Wilts, on the other hand, though they had grown also, showed nothing like so great an increase. The population of the eastern counties Norfolk, Suffolk, and Essex, had increased very little; though Norwich was still a large manufacturing town, and there were many smaller towns engaged in the woollen trade scattered throughout Norfolk and Suffolk. Among the few agricultural counties which showed a decided increase during this period was Kent, the best farmed county in England at that time.

If we turn to the principal towns we shall find in many of them an extraordinary growth between the end of the seventeenth century and the time of Adam Smith. While the population of Norwich had only increased, according to the best authority, by about one-third, and that of Worcester by one-half, the population of Sheffield had increased seven-fold, that of Liverpool ten-fold, of Manchester five-fold, of Birmingham seven-fold, of Bristol more than three-fold. The latter was still the second city in the kingdom. Newcastle (including Gateshead and North and South Shields) numbered 40,000 people.

The following are the estimates of population for 1685, 1760, and 1881 in twelve great provincial towns:

1685a	c. 1760	1881g
Liverpool 4,000	40,000c	
	30-35,000d	552,425
	34,000e	
Manchester 6,000	30,000c	393,676
	40-45,000d	
Birmingham 4,000	28,000b	400,757
	30,000d	
Leeds 2,000	---	309,126
Sheffield 4,000	30,000c	284,410
	20,000d	
Bristol 29,000	100,000d	206,503
Nottingham 8,000	17,000f	111,631

Norwich	28,000	40,000c 60,000d	87,845
Hull	---	20,000c 24,000d	161,519
York	10,000	---	59,596
Exeter	10,000	---	47,098
Worcester	8,000	11-12,000c	40,422

a. Macaulay's History of England c. 3.
b. Defoe's Tour (1725)
c. Arthur Young (1769)
d. Macpherson's Annals of Commerce (1769)
e. Levi's History of British Commerce
f. Eden's State of the Poor (1797)
g. The Returns for 1881 are those of the parliamentary district.

Another point to be considered is the relation of rural to urban population. According to Gregory King, writing in 1696, London contained 530,000 inhabitants, other cities and market-towns, 870,000, while villages and hamlets numbered 4,100,000. Arthur Young, seventy years later, calculated that London contained one-sixth of the whole population, and remarked that, 'in flourishing countries,' as England, 'the half of a nation is found in towns.' Both estimates are very unreliable, apart from the fact that both, and especially that of Arthur Young, overestimate the total number of the population, but the contrast between them justly indicates the tendency of towns even then to grow out of proportion to the rural districts. That disproportion has, of course, become even more marked since Arthur Young's day. In 1881 the total urban population was 17,285,026, or 66.6 per cent, while the rural was 8,683,026, or 33.3 per cent.

The only estimates of occupations with which I am acquainted are again those of Gregory King in 1696, and Arthur Young in 1769. They are too vague, and too inconsistent with one another, to be relied on, but I give them for what they are worth. According to the former, freeholders and their families numbered 940,000, farmers and their families, 750,000, labouring people and out servants, 1,275,000, cottagers and paupers, 1,300,000; making a total agricultural population of 4,265,000, against only 240,000 artisans and handicraftsmen. Arthur Young estimates the number of different classes as follows:

Farmers (whether freeholders or leaseholders), their servants and labourers.....	2,800,000
Manufacturers of all kinds.....	3,000,000
Landlords and their dependents, fishermen and miners.....	800,000
Persons engaged in commerce.....	200,000
Non-industrious poor.....	500,000
Clergy and lawyers.....	200,000
Civil servants, army and navy.....	500,000
Total.....	8,500,000

But the number set down to manufactures here is probably as much too high. In proportion to the total population, as the total itself is in excess of the fact. . . .

IV England in 1760: Manufactures and Trade

Among the manufactures of the time the woollen business was by far the most important. 'All our measures,' wrote Bishop Berkeley in 1737, 'should tend towards the immediate encouragement of our woollen manufactures, which must be looked upon as the basis of our wealth.' In 1701 our woollen exports were worth £2,000,000, or 'above a fourth part of the whole export trade.' In 1770 they were worth £4,000,000, or between a third and a fourth of the whole. The territorial distribution of the manufacture was much the same as now. This industry had probably existed in England from an early date. It is mentioned in a law of 1224. In 1331 John Kennedy brought the art of weaving woollen cloth from Flanders into England, and received the protection of the king, who at the same time invited over fullers and dyers. There is extant a petition of the worsted weavers and merchants of Norwich to Edward III in 1348. The coarse cloths of Kendal and the fine cloths of Somerset, Dorset, Bristol, and Gloucester are mentioned in the statutes of the same century. In 1391 we hear of Guildford cloths, and in 1467 of the woollen manufacture in Devonshire-at-Lifton, Tavistock, and Rowburgh. In 1402 the manufacture was settled to a great extent in and near London, but it gradually shifted, owing to the high price of labour and provisions, to Surrey, Kent, Essex, Berkshire, and Oxfordshire, and afterwards still further, into the counties of Dorset, Wilts, Somerset, Gloucester, and Worcester, and even as far as Yorkshire.

There were three chief districts in which the woollen trade was carried on about 1760. One of these owed its manufacture to the wars in the Netherlands. In consequence of Alva's persecutions (1567-8) many Flemings settled in Norwich (which had been desolate since Ket's rebellion in 1549), Colchester. Sandwich, Canterbury, Maidstone, and Southampton, The two former towns seem to have benefited most from the skill of these settlers so far as the woollen manufacture was concerned. It was at this time, according to Macpherson, that Norwich 'learned the making of those fine and slight stuffs which have ever since gone by its name,' such as crapes, bombayines, and camblets; while the baiye-makers settled at Colchester and its neighbourhood. The stuffs thus introduced into England were known as the 'new drapery', and included baiye, serges, and other slight woollen goods as distinguished from the 'old drapery,' a term applied to broad cloth, kersies, etc.

The chief seats of the West of England manufacture were Bradford in Wilts, the centre of the manufacture of super-fine cloth; Devizes, famous for its serges; Warminster and Frome, with their fine cloth; Trowbridge; Stroud, the centre of the dyed-cloth manufactures; and Taunton, which in Defoe's time possessed 1100 looms. The district reached from Cirencester in the north to Sherborne in the south, and from Witney in the east to Bristol in the west, being about fifty miles in length where longest, and twenty in breadth where narrowest - 'a rich enclosed country,' as Defoe says, 'full of rivers and towns, and infinitely populous, insomuch that some of the market towns are equal to cities in bigness, and superior to many of them in numbers of people.' It was a 'prodigy of a trade,' and the 'fine Spanish medley cloths' which this district produced were worn by 'all the persons of fashion in England.' It was no doubt the presence of streams and the Cotswold wool which formed the attractions of the district. A branch of the industry extended into Devon, where the merchants of Exeter bought in a rough state the serges made in the country round, to dye and finish them for home consumption or export.

The third chief seat of the manufacture was the West Riding of Yorkshire, where the worsted trade centred round Halifax, which, according to Camden, began to manufacture about 1537; and where Leeds and its neighbourhood manufactured a coarse cloth of English wool. In 1574 the manufacturers of the West Riding made 56,000 pieces of broad cloth and 72,000 of narrow. It will be seen from this short survey that, however greatly the production of these different districts may have changed in proportion since 1760, the several branches of the trade are even now distributed very much as they were then, the West Riding being the headquarters of the worsted and coarse cloth trade, while Norwich still keeps the crape industry, and the West manufactures fine cloth.

The increased demand for English wool consequent upon the extension of this industry led to large enclosures of land, especially in Northamptonshire, Rutlandshire, Leicestershire, and Warwickshire, which counties supplied most of the combing wools used for worsted stuffs and stockings; but parts of Huntingdon, Bedford, Bucks, Cambridgeshire, Romney Marsh, and Norfolk competed with them, and by 1739 most counties produced the fine combing wool. Defoe mentions the sale of wool from Lincolnshire, 'where the longest staple is found, the sheep of those parts being of the largest breed". and in Arthur Young's time Lincolnshire and Leicestershire wools were still used at Norwich. The Cotswold and Isle of Wight sheep yielded clothing or short wools, 'but they were inferior to

the best Spanish wools,' and could not 'enter into the composition without spoiling and degrading in some degree the fabric of the cloth.' Consequently in the West of England, occupied as it was with the production of the finest cloths, Spanish wool was largely used, though shortly before Young's time it was discovered that 'Norfolk sheep yielded a wool about their necks equal to the best from Spain.'

Next in importance was the iron trade, which was largely carried on, though by this time a decaying industry, in the Weald of Sussex, where in 1740 there were ten furnaces, producing annually 1400 tons. The trade had reached its chief extent in the seventeenth century, but in 1724 was still the principal manufacturing interest of the county. The balustrades which surround St. Paul's were cast at Lamberhurst, and their weight, including the seven gates, is above 200 tons. They cost £11,000. Gloucestershire, Shropshire, and Yorkshire had each six furnaces. In the latter county, which boasted an annual produce of 1400 tons, the most famous works were at Rotherham. There were also great ironworks at Newcastle.

In 1755 an ironmaster named Anthony Bacon had got a lease for ninety-nine years of a district eight miles in length, by five in breadth, at Merthyr-Tydvil, upon which he erected iron and coal works. In 1709 the Coalbrookdale works in Shropshire were founded, and in 1760 Carron iron was first manufactured in Scotland. Altogether, there were about 1737 fifty-nine furnaces in eighteen different counties, producing 17,350 tons annually. It has been computed that we imported 20,000 tons. In 1881 we exported 3,820,315 tons of iron and steel, valued at £27,590,908, and imported to the value of £3,705,332.

The cotton trade was still so insignificant as to be mentioned only once, and that incidentally by Adam Smith. It was confined to Lancashire, where its headquarters were Manchester and Bolton. In 1760 not more than 40,000 persons were engaged in it, and the annual value of the manufactures was estimated at £600,000. The exports, however, were steadily growing; in 1701 they amounted to £23,253, in 1751 to £45,986, in 1764 to £200,354. Burke about this time spoke of 'that infinite variety of admirable manufactures that grow and extend every year among the spirited, inventive, and enterprising traders of Manchester.' But even in 1764 our exports of cotton were still only one-twentieth of the value of the wool exports.

The hardware trade then as now was located chiefly in Sheffield and Birmingham, the latter town employing over 50,000 people in that industry. The business, however, was not so much concentrated as now, and there were small workshops scattered about the kingdom. 'Polished steel,' for instance, was manufactured at Woodstock, locks in South Staffordshire, pins at Warrington, Bristol, and Gloucester, where they were 'the staple of the city.' The hosiery trade, too, was as yet only in process of concentration. By 1800 the manufacture of silk hosiery had centred in Derby, that of woollen hosiery in Leicester, though Nottingham had not yet absorbed the cotton hosiery. But at the beginning of the century there were still many looms round London, and in other parts of the South of England. In 1750 London had 1000 frames, Surrey 350, Nottingham 1500, Leicester 1000, Derby 200, other places in the Midlands, 7300; other English and Scotch towns, 1850; Ireland, 800; Total, 14,000. Most of the silk was woven in Spitalfields, but first spun in the North at Stockport, Knutsford, Congleton, and Derby. In 1770 there was a silk-mill at Sheffield on the model of Derby, and a manufactory of waste silk at Kendal. Coventry had already, in Defoe's time, attracted the ribbon business. In 1721 the silk manufacture was said to be worth £700,000 a yew more than at the Revolution.

Linen was an ancient manufacture in England, and had been introduced into Dundee at the beginning of the seventeenth century. In 1746 the British Linen Company was incorporated to supply Africa and the American plantations with linen made at home, and Adam Smith considered it a growing manufacture. It was, of course, the chief manufacture of Ireland, where it had been further developed by French Protestants, who settled there at the end of the seventeenth century.

The mechanical arts were still in a very backward state. In spite of the fact that the woollen trade was the staple industry of the country, the division of labour in it was in Adam Smith's time 'nearly the same as it was a century before, and the machinery employed not very different.' According to the same author there had been only three inventions of importance since Edward IV's reign: the exchange of the rock and spindle for the spinning-wheel; the use of machines for facilitating the proper arrangement of the warp and woof before being put into the loom; and the employment of fulling mills for thickening cloth instead of treading it in water. In this enumeration, however, he forgot to mention the fly-shuttle, invented in 1738 by Kay, a native of Bury, in Lancashire, the first of the great inventions which revolutionised the woollen industry. Its utility consisted in its enabling a weaver to do his work in half the time, and making it possible for one man instead of two to weave the widest cloth.

'The machines used in the cotton manufacture,' says Baines, 'were, up to the year 1760, nearly as simple as those of India; though the loom was more strongly and perfectly constructed, and cards for combing the cotton had been adapted from the woollen manufacture. None but the strong cottons, such as fustians and dimities, were as yet made in England, and for these the demand must always have been limited.' In 1758 John Wyatt invented spinning by rollers, but the discovery never proved profitable. In 1760 the manufacturers of Lancashire began to use the fly-shuttle. Calico printing was already largely developed.

The reason why division of labour was carried out to so small an extent, an invention so rare and so little regarded, is given by Adam Smith himself. Division of labour, as he points out, is limited by the extent of the market, and, owing chiefly to bad means of communication, the market for English manufactures was still a very narrow one. Yet England, however slow the development o£ her manufactures, advanced nevertheless more rapidly in this respect than other nations. One great secret of her progress lay in the facilities for water-carriage afforded by her rivers, for all communication by land was still in the most neglected condition. A second cause was the absence of internal customs barriers, such as existed in France, and in Prussia until Stein's time. The home trade of England was absolutely free.

Arthur Young gives abundant evidence of the execrable state of the roads. It took a week or more for a coach to go from London to Edinburgh. On 'that infernal' road between Preston and Wigan the ruts were four feet deep, and he saw three carts break down in a mile of road. At Warrington the turnpike was 'most infamously bad,' and apparently 'made with a view to immediate destruction.' 'Very shabby,' 'execrable,' 'vile,' 'most execrably vile,' are Young's ordinary comments on the highways. But the water routes for traffic largely made up for the deficiencies of the land routes.

Attempts to improve water communication began with deepening the river beds. In 16S5 there was a project for rendering the Avon navigable from its junction with the Severn at Tewkesbury through Gloucestershire, Worcestershire, and Warwickshire, but it was abandoned owing to the civil war. From 1660 to 1755 various Acts were passed for deepening the beds of rivers. In 1720 there was an Act for making the Mersey and Irwell navigable between Liverpool and Manchester. About the same time the navigation of the Aire and Calder was opened out. In 1755 the first canal was made, eleven miles in length, near Liverpool. Three years later the Duke of Bridgewater had another constructed £rom his coal mines at Worsley to Manchester, seven miles distant. Between 1761 and 1766 a still longer one of twenty-nine miles was completed from Manchester through Chester to the Mersey above Liverpool. From this time onwards the canal system spread with great rapidity.

When we turn to investigate the industrial organisation of the time, we &nd that the class of capitalist employers was as yet but in its infancy. A large part of our goods were still produced on the domestic system. Manufactures were little concentrated in towns, and only partially separated from agriculture. The 'manufacturer, was, literally, the man who worked with his own hands in his own cottage. Nearly the whole cloth trade of the West Riding, for instance, was organised on this system at the beginning of the century.

An important feature in the industrial organisation of the time was the existence of a number of small master-manufacturers, who were entirely independent, having capital and land of their own, for they combined the culture of small freehold pasture-farms with their handicraft. Defoe has left an interesting picture of their life. The land near Halifax, he says, was 'divided into small Enclosures from two Acres to six or seven each, seldom more, every three or four Pieces of Land had an House belonging to them;... hardly an House standing out of a Speaking distance from another;... we could see at every House a Tenter, and on almost every Tenter a piece of Cloth or Kersie or Shaloon.... Every clothier keeps one horse, at least, to carry his Manufactures to the Market; and every one, generally, keeps a Cow or two or more for his Family. By this means the small Pieces of enclosed Land about each house are occupied, for they scarce sow Corn enough to feed their Poultry.... The houses are full of lusty Fellows, some at the Dye-vat, some at the looms, others dressing the Cloths; the women and children carding or spinning; being all employed from the youngest to the oldest.... Not a Beggar to be seen nor an idle person.'

This system, however, was no longer universal in Arthur Young's time. That writer found at Sheffield a silk-mill employing 152 hands, including women and children; at Darlington 'one master-manufacturer employed above fifty looms'; at Boyton there were 150 hands in one factory. So, too, in the West of England cloth-trade the germs of the capitalist system were visible. The rich merchant gave out work to labourers in the surrounding villages, who were his employes, and were not independent. In the Nottingham hosiery trade there were, in 1750, fifty manufacturers,

known as 'putters out,' who employed 1200 frames; in Leicestershire 1800 frames were so employed. In the hand-made nail business of Staffordshire and Worcestershire, the merchant had warehouses in different parts of the district, and give out nail-rod iron to the nail-master, sufficient for a week's work for him and his family. In Lancashire we can trace, step by step, the growth of the capitalist employer. At first we see, as in Yorkshire, the weaver furnishing himself with warp and weft, which he worked up in his own house and brought himself to market. By degrees he found it difficult to get yarn from the spinners; so the merchants at Manchester gave him out linen warp and raw cotton, and the weaver became dependent on them. Finally, the merchant would get together thirty or forty looms in a town. This was the nearest approach to the capitalist system before the great mechanical inventions.

Coming to the system of exchange, we find it based on several different principles, which existed side by side, but which were all, as we should think, very simple and primitive. Each trade had its centre in a provincial town. Leeds, for instance, had its market twice a week, first on the bridge over the Aire, afterwards in the High Street, where, at a later time, two halls were built. Every clothier had his stall, to which he would bring his cloth (seldom more than one piece at a time, owing to the frequency of the markets). At six or seven o'clock a bell rang, and the market began; the merchants and factors came in and made their bargains with the clothiers, and in little more than an hour the whole business was over. By nine the benches were cleared and the hall empty. There was a similar hall at Halifax for the worsted trade. But a large portion of the inland traffic was carried on at fairs, which were still almost as important as in the Middle Ages. The most famous of all was the great fair of Sturbridge, which lasted from the middle of August to the middle of September. Hither came representatives of all the great trades. The merchants of Lancashire brought their goods on a thousand pack-horses; the Eastern counties sent their worsteds, and Birmingham its hardware. An immense quantity of wool was sold, orders being taken by the wholesale dealers of London. In fact, a large part of the home trade found its way to this market. There were also the four great annual fairs, which retained the ancient title of 'marts,' at Lynn, Boston, Gainsborough, and Beverley.

The link between these fairs and the chief industrial centres was furnished by travelling merchants. Some would go from Leeds with droves of pack-horses to all the fairs and market-towns throughout England. In the market-towns they sold to the shops; elsewhere they would deal directly with the consumer, like the Manchester merchants, who sent their pack-horses the round of the farmhouses, buying wool or other commodities in exchange for their finished goods. Sometimes the London merchants would come to the manufacturers, paying their guineas down at once, and taking away the purchases themselves. So too in the Birmingham lock trade, chapmen would go round with pack-horses to buy from manufacturers; in the brass trade likewise the manufacturer stayed at home, and the merchant came round with cash in his saddle-bags, and put the brasswork which he purchased into them, though in some cases he would order it to be sent by carrier.

Ready cash was essential, for banking was very little developed. The Bank of England existed, but before 1759 issued no notes of less value than £20. By a law of 1709 no other bank of more than six partners was allowed; and in 1750, according to Burke, there were not more than 'twelve bankers' shops out of London.' The Clearing-House was not established till 1775.

Hampered as the inland trade was by imperfect communications, extraordinary efforts were made to promote exchange. It is striking to find waste silk from London made into silk-yarn at Kendal and sent back again, or cattle brought from Scotland to Norfolk to be fed. Many districts, however, still remained completely excluded, so that foreign products never reached them at all. Even at the beginning of this century the Yorkshire yeoman, as described by Southey was ignorant of sugar, potatoes, and cotton; the Cumberland dalesman, as he appears in Wordsworth's Guide to the Lakes, lived entirely on the produce of his farm. It was this domestic system which the great socialist writers Sismondi and Lassalle had in their minds when they inveighed against the modern organisation of industry. Those who lived under it, they pointed out, though poor, were on the whole prosperous; over-production was absolutely impossible. Yet at the time of which I am speaking, many of the evils which modern Socialists lament were already visible, especially in those industries which produced for the foreign market. Already there were complaints of the competition of men who pushed themselves into the market to take advantage of high prices; already we hear of fluctuations of trade and irregularity of employment. The old simple conditions of production and exchange were on the eve of disappearance before the all-corroding force of foreign trade.

The home trade was still indeed much greater in proportion than now; but the exports had

grown from about £7,000,000 at the beginning of the century to £14,500,000 in 1760. During that interval great changes had taken place in the channels of foreign commerce. In 1700 Holland was our great market, taking more than one-third of all our exports, but in 1760 the proportion was reduced to about one-seventh. Portugal, which in 1703 took one-seventh, now took only about one-twelfth. The trade with France was quite insignificant. On the other hand, the Colonies were now our chief markets, and a third of our exports went there. In 1770 America took three-fourths of all the manufactures of Manchester. In 1767 the exports to Jamaica were nearly as great as they had been to all the English plantations together in 1704. The shipping trade had doubled, and the ships themselves were larger. In 1732 ships 750 tons were considered remarkable; in 1770 there were many in Liverpool of 900 tons; but in this as in other branches of business progress was still slow, partial, local, thus presenting a striking contrast to the rapid and general advance of the next half-century. . . .

VIII. The Chief Features of the Revolution

The essence of the industrial Revolution is the substitution of competition for the medieval regulations which had previously controlled the production and distribution of wealth. On this account it. IS not only one of the most important facts of English history, but Europe owes to it the growth of two great systems of thought - Economic Science, and its antithesis, Socialism. The development of Economic Science in England has four chief landmarks, each connected with the name of one of the four great English economists. The first is the publication of Adam Smith's Wealth of Nations in 1776, in which he investigated the causes of wealth and aimed at the substitution of industrial freedom for a system of restriction. The production of wealth, not the welfare of man, was what Adam Smith had primarily before his mind's eye; in his own words, 'the great object of the Political Economy of every country is to increase the riches and power of that country.' His great book appeared on the eve of the industrial Revolution. A second stage in the growth of the science is marked by Malthus's Essay on Population, published in 1798, which may be considered the product of that revolution, then already in full swing. Adam Smith had concentrated all his attention on a large production; Malthus directed his inquiries, not to the causes of wealth but to the causes of poverty, and found them in his theory of population. A third stage is marked by Ricardo's Principles of Political Economy and Taxation, which appeared in 1817, and in which Ricardo sought to ascertain the laws of the distribution of wealth. Adam Smith had shown how wealth could be produced under a system of industrial freedom, Ricardo showed how wealth is distributed under such a system, a problem which could not have occurred to any one before his time. The fourth stage is marked by John Stuart Mill's Principles of Political Economy, published in 1848. Mill himself asserted that 'the chief merit of his treatise' was the distinction drawn between the laws of production and those of distribution, and the problem he tried to solve was, how wealth ought to be distributed. A great advance was made by Mill's attempt to show what was and what was not inevitable under a system of free competition. In it we see the influence which the rival system of Socialism was already beginning to exercise upon the economists. The whole spirit of Mill's book is quite different from that of any economic works which had up to his time been written in England. Though a re-statement of Ricardo's system, it contained the admission that the distribution of wealth is the result of 'particular social arrangements,' and it recognised that competition alone is not a satisfactory basis of society.

Competition, heralded by Adam Smith, and taken for granted by Ricardo and Mill, is still the dominant idea of our time; though since the publication of the Origin of Species, we hear more of it under the name of the 'struggle for existence.' I wish here to notice the fallacies involved in the current arguments on this subject. In the first place it is assumed that all competition is a competition for existence. This is not true. There is a great difference between a struggle for mere existence and a struggle for a particular kind of existence. For instance, twelve men are struggling for employment in a trade where there is only room for eight; four are driven out of that trade, but they are not trampled out of existence. A good deal of competition merely decides what kind of work a man is to do; though of course when a man can only do one kind of work, it may easily become a struggle for bare life. It is next assumed that this struggle for existence is a law of nature, and that therefore all human interference with it is wrong. To that I answer that the whole meaning of civilisation is interference with this brute struggle.

We intend to modify the violence of the fight, and to prevent the weak being trampled under foot.

Competition, no doubt, has its uses. Without competition no progress would be possible, for progress comes chiefly from without; it is external pressure which forces men to exert themselves. Socialists, however, maintain that this advantage is gained at the expense of an enormous waste of human life and labour, which might be avoided by regulation. But here we must distinguish between competition in production and competition in distribution, a difference recognised in modern legislation, which has widened the sphere of contract in the one direction, while it has narrowed it in the other. For the struggle of men to outvie one another in production is beneficial to the community; their struggle over the division of the joint produce is not. The stronger side will dictate its own terms; and as a matter of fact, in the early days of competition the capitalists used all their power to oppress the labourers, and drove down wages to starvation point. This kind of competition has to be checked; there is no historical instance of its having lasted long without being modified either by combination or legislation, or both. In England both remedies are in operation, the former through Trades Unions, the latter through factory legislation. In the past other remedies were applied. It is this desire to prevent the evils of competition that affords the true explanation of the fixing of wages by Justices of the Peace, which seemed to Ricardo a remnant of the old system of tyranny in the interests of the strong. Competition, we have now learnt, is neither good nor evil in itself; it is a force which has to be studied and controlled; it may be compared to a stream whose strength and direction have to be observed, that embankments may be thrown up within which it may do its work harmlessly and beneficially. But at the period we are considering it came to be believed in as a gospel, and, the idea of necessity being superadded, economic laws deduced from the assumption of universal unrestricted competition were converted into practical precepts, from which it was regarded as little short of immoral to depart.

Coming to the facts of the Industrial Revolution, the first thing that strikes us is the far greater rapidity which marks the growth of population. Before 1751 the largest decennial increase, so far as we can calculate from our imperfect materials, was 3 per cent. For each of the next three decennial periods the increase was 6 per cent.; then between 1781 and 1791 it was 9 per cent.; between 1791 and 1801, 11 per cent.; between 1801 and 1811, 14 per cent.; between 1811 and 182l, 18 per cent. This is the highest figure ever reached in England, for since 1815 a vast emigration has been always tending to moderate it; between 1815 and 1880 over eight millions (including Irish) have left our shores. But for this our normal rate of increase would be 16 or 18 instead of 12 per cent. In every decade.

Next we notice the relative and positive decline in the agricultural population. In 1811 it constituted 35 per cent. of the whole population of Great Britain; in 1821, 33 per cent.; in 1831, 28 per cent. And at the same time its actual numbers have decreased. In 1831 there were 1,243,057 adult males employed in agriculture in Great Britain; in 1841 there were 1,207,989. In 1851 the whole number of persons engaged in agriculture in England was 2,084,153; in 1861 it was 2,010,454, and in 1871 it was 1,657,138. Contemporaneously with this change, the centre of density of population has shifted from the Midlands to the North; there are at the present day 458 persons to the square mile in the counties north of the Trent, as against 312 south of the Trent. And we have lastly to remark the change in the relative population of England and Ireland. Of the total population of the three kingdoms, Ireland had in 1821 32 per cent., in 1881 only 14.6 per cent.

An agrarian revolution plays as large part in the great industrial change of the end of the eighteenth century as does the revolution in manufacturing industries, to which attention is more usually directed. Our next inquiry must therefore be: What were the agricultural changes which led to this noticeable decrease in the rural population? The three most effective causes were: the destruction of the common-field system of cultivation; the enclosure, on a large scale, of common and waste lands; and the consolidation of small 'farms into large. We have already seen that while between 1710 and 1760 some 300,000 acres were enclosed, between 1760 and 1843 nearly 7,000,000 underwent the same process. Closely connected with the enclosure system was the substitution of large for small farms. In the first half of the century Laurence, though approving of consolidation from an economic point of view, had thought that the odium attaching to an evicting landlord would operate as a strong check upon it. But these scruples had now disappeared. Eden in 1795 notices how constantly the change was effected, often accompanied by the conversion of arable to pasture; and relates how in a certain Dorsetshire village he found two farms where twenty years ago there had been thirty. The process went on uninterruptedly into the present century. Cobbett, writing in 1826, says: 'In the parish of Burghclere one single farmer holds, under Lord

Carnarvon, as one farm, the lands that those now living remember to have formed fourteen farms, bringing up in a respectable way fourteen families.' The consolidation of farms reduced the number of farmers, while the enclosures drove the labourers off the land, as it became impossible for them to exist without their rights of pasturage for sheep and geese on common lands.

Severely, however, as these changes bore upon the rural population, they wrought, without doubt, distinct improvement from an agricultural point of view. They meant the substitution of scientific for unscientific culture. 'It has been found,' says Laurence, 'by long experience, that common or open fields are great hindrances to the public good, and to the honest improvement which every one might make of his own.' Enclosures brought an extension of arable cultivation and the tillage of inferior soils; and in small farms of 40 to 100 acres, where the land was exhausted by repeated corn crops, the farm buildings of clay and mud walls and three-fourths of the estate often saturated with water, consolidation into farms of 100 to 500 acres meant rotation of crops, leases of nineteen years, and good farm buildings. The period was one of great agricultural advance; the breed of cattle was improved, rotation of crops was generally introduced, the steam-plough was invented, agricultural societies were instituted. In one respect alone the change was injurious. In consequence of the high prices of corn which prevailed during the French war, some of the finest permanent pastures were broken up. Still, in spite of this, it was said in 1813 that during the previous ten years agricultural produce had increased by one-fourth, and this was an increase upon a great increase in the preceding generation.

Passing to manufactures, we find here the all-prominent fact to be the substitution of the factory for the domestic system, the consequence of the mechanical discoveries of the time. Four great inventions altered the character of the cotton manufacture; the spinning-jenny, patented by Hargreaves in 1770; the waterframe, invented by Arkwright the year before; Crompton's mule introduced in 1779, and the self-acting mule, first invented by Kelly in 1792, but not brought into use till Roberts improved it in 1825. None of these by themselves would have revolutionised the industry. But in 1769-the year in which Napoleon and Wellington were born-James Watt took out his patent for the steam-engine. Sixteen years later it was applied to the cotton manufacture. In 1785 Boulton and Watt made an engine for a cotton-mill at Papplewick in Notts, and in the same year Arkwright's patent expired. These two facts taken together mark the introduction of the factory system. But the most famous invention of all, and the most fatal to domestic industry, the power-loom, though also patented by Cartwright in 1785, did not come into use for several years, and till the power-loom was introduced the workman was hardly injured. At first, in fact, machinery raised the wages of spinners and weavers owing to the great prosperity it brought to the trade. In fifteen years the cotton trade trebled itself; from 1788 to 1803 has been called its 'golden age". for, before the power-loom but after the introduction of the mule and other mechanical improvements by which for the first time yarn sufficiently fine for muslin and a variety of other fabrics was spun, the demand became such that 'old barns, cart-houses, out-buildings of all descriptions were repaired, windows broke through the old blank walls, and all fitted up for loom-shops; new weavers' cottages with loom-shops arose in every direction, every family bringing home weekly from 40 to 12O shillings per week.' At a later date, the condition of the workman was very different. Meanwhile, the iron industry had been equally revolutionised by the invention of smelting by pit-coal brought into use between 1740 and 1750, and by the application in 1788 of the steam-engine to blast furnaces. In the eight years which followed this later date, the amount of iron manufactured nearly doubled itself.

A further growth of the factory system took place independent of machinery, and owed its origin to the expansion of trade, an expansion which was itself due to the great advance made at this time in the means of communication. The canal system was being rapidly developed throughout the country. In 1777 the Grand Trunk canal, 96 miles in length, connecting the Trent and Mersey, was finished; Hull and Liverpool were connected by one canal while another connected them both with Bristol; and in 1792, the Grand Junction canal, 90 miles in length, made a water-way from London through Oxford to the chief midland towns. Some years afterwards, the roads were greatly improved under Telford and Macadam; between 1818 and 1829 more than a thousand additional miles of turnpike road were constructed; and the next year, 1830, saw the opening of the first railroad. These improved means of communication caused an extraordinary increase in commerce, and to secure a sufficient supply of goods it became the interest of the merchants to collect weavers around them in great numbers, to get looms together in a workshop, and to give out the warp themselves to the workpeople. To these latter this system meant a change from independence to dependence; at the beginning of

the century the report of a committee asserts that the essential difference between the domestic and the factory system is, that in the latter the work is done 'by persons who have no property in the goods they manufacture.' Another direct consequence of this expansion of trade was the regular recurrence of periods of over-production and of depression, a phenomenon quite unknown under the old system, and due to this new form of production on a large scale for a distant market.

These altered conditions in the production of wealth necessarily involved an equal revolution in its distribution. In agriculture the prominent fact is an enormous rise in rents. Up to 1795, though they had risen in some places, in others they had been stationary since the Revolution. But between 1790 and 1833, according to Porter, they at least doubled. In Scotland, the rental of land, which in 1795 had amounted to £2,000,000, had risen in 1815 to £5,27 8,685. A farm in Essex, which before 1793 had been rented at 10s. an acre, was let in 1812 at 50s., though, six years after, this had fallen again to 35s. In Berks and Wilts, farms which in 1790 were let at 14s., were let in 1810 at 70s., and in 1820 at 50s. Much of this rise, doubtless, was due to money invested in improvements-the first Lord Leicester is said to have expended £400,000 on his property-but it was far more largely the effect of the enclosure system, of the consolidation of farms, and of the high price of corn during the French war. Whatever may have been its causes, however, it represented a great social revolution, a change in the balance of political power and in the relative position of classes. The farmers shared in the prosperity of the landlords; for many of them held their farms under beneficial leases, and made large profits by them. In consequence, their character completely changed; they ceased to work and live with their labourers, and became a distinct class. The high prices of the war time thoroughly demoralised them, for their wealth then increased so fast, that they were at a loss what to do with it. Cobbett has described the change in their habits, the new food and furniture, the luxury and drinking, which were the consequences of more money coming into their hands than they knew how to spend. Meanwhile, the effect of all these agrarian changes upon the condition of the labourer was an exactly opposite and most disastrous one. He felt all the burden of high prices, while his wages were steadily falling, and he had lost his common-rights. It is from this period, viz., the beginning of the present century, that the alienation between farmer and labourer may be dated.

Exactly analogous phenomena appeared in the manufacturing world. The new class of great capitalist employers made enormous fortunes, they took little or no part personally in the work of their factories, their hundreds of workmen were individually unknown to them; and as a consequence, the old relations between masters and men disappeared, and a 'cash nexus' was substituted for the human tie. The workmen on their side resorted to combination, and Trades-Unions began a fight which looked as if it were between mortal enemies rather than joint producers.

The misery which came upon large sections of the working people at this epoch was often, though not always, due to a fall in wages, for, as I said above, in some industries they rose. But they suffered likewise from the conditions of labour under the factory system, from the rise of prices, especially from the high price of bread before the repeal of the corn-laws, and from those sudden fluctuations of trade, which, ever since production has been on a large scale, have exposed them to recurrent periods of bitter distress. The effects of the industrial Revolution prove that free competition may produce wealth without producing well-being. We all know the horrors that ensued in England before it was restrained by legislation and combination. . . .

Leeds Woollen Workers Petition, 1786

This petition by workers in Leeds (a major center of wool manufacture in Yorkshire) appeared in a local newspapers in 1786. They are complaining about the effects of machines on the previously well-paid skilled workers.

To the Merchants, Clothiers and all such as wish well to the Staple Manufactory of this Nation.

The Humble ADDRESS and PETITION of Thousands, who labour in the Cloth Manufactory.

SHEWETH, That the Scribbling-Machines have thrown thousands of your petitioners out of employ, whereby they are brought into great distress, and are not able to procure a maintenance for their families, and deprived them of the opportunity of bringing up their children to labour: We have therefore to request, that prejudice and self-interest may be laid aside, and that you may pay that attention to the following facts, which the nature of the case requires.

The number of Scribbling-Machines extending about seventeen miles south-west of LEEDS, exceed all belief, being no less than *one hundred and seventy!* and as each machine will do as much work in twelve hours, as ten men can in that time do by hand, (speaking within bounds) and they working night-and day, one machine will do as much work in one day as would otherwise employ twenty men.

As we do not mean to assert any thing but what we can prove to be true, we allow four men to be employed at each machine twelve hours, working night and day, will take eight men in twenty-four hours; so ~ that, upon a moderate computation twelve men are thrown out of employ for every single machine used in scribbling; and as it may be sup', posed the number of machines in all the other quarters together, t nearly equal those in the South-West, full four thousand men are left l-; to shift for a living how they can, and must of course fall to the Parish, if not timely relieved. Allowing one boy to be bound apprentice from each family out of work, eight thousand hands are deprived of the opportunity of getting a livelihood.

We therefore hope, that the feelings of humanity will lead those who l, have it in their power to prevent the use of those machines, to give every discouragement they can to what has a tendency so prejudicial to their fellow-creatures.

This is not all; the injury to the Cloth is great, in so much that in Frizing, instead of leaving a nap upon the cloth, the wool is drawn out and the Cloth is left thread-bare.

Many more evils we could enumerate, but we would hope, that the sensible part of mankind, who are not biased by interest, must see the dreadful tendancy of their continuance; a depopulation must be the consequence; trade being then lost, the landed interest will have no other satisfaction but that of being *last devoured.*

We wish to propose a few queries to those who would plead for the further continuance of these machines:

Men of common sense must know, that so many machines in use, take the work from the hands employed in Scribbling, - and who did that business before machines were invented.

How are those men, thus thrown out of employ to provide for their families; - and what are they to put their children apprentice to, that the rising generation may have something to keep them at work, in order that they may not be like vagabonds strolling about in idleness? Some say, Begin and learn some other business. - Suppose we do; who will maintain our families, whilst we undertake the arduous task; and when we have learned it, how do we know we shall be any better for all our pains; for by the time we have served our second apprenticeship, another machine may arise, which may take away that business also; so that our families, being half pined whilst we are learning how to provide them with bread, will be wholly so during the period of our third apprenticeship.

But what are our children to do; are they to be brought up in idleness? Indeed as things are, it is no wonder to hear of so many executions; for our parts, though we may be thought illiterate men, our conceptions are, that bringing children up to industry, and keeping them employed, is the way to keep them from falling into those crimes, which an idle habit naturally leads to.

These things impartially considered will we hope, be strong advocates in our favour; and we conceive that men of sense, religion and humanity,

will be satisfied of the reasonableness, as well as necessity of this address, and that their own feelings will urge them to espouse the cause of us and our families -

Signed, in behalf of THOUSANDS, by

Joseph Hepworth Thomas Lobley

Robert Wood Thos. Blackburn

From J. F. C. Harrison, *Society and Politics in England, 1780-1960* (New York: Harper & Row, 1965), pp. 71-72. Introduction © Paul Halsall, Internet Modern History Sourcebook.

Letter from Leeds Cloth Merchants, 1791

This statement by the Cloth Merchants of Leeds (a major center of wool manufacture in Yorkshire) defended the use of machines. It appeared in 1791.

At a time when the People, engaged in every other Manufacture in the Kingdom, are exerting themselves to bring their Work to Market at reduced Prices, which can alone be effected by the Aid of Machinery, it certainly is not necessary that the Cloth Merchants of Leeds, who depend chiefly on a Foreign Demand, where they have for Competitors the Manufacturers of other Nations, whose Taxes are few, and whose manual Labour is only Half the Price it bears here, should have Occasion to defend a Conduct, which has for its Aim the Advantage of the Kingdom in general, and of the Cloth Trade in particular; yet anxious to prevent Misrepresentations, which have usually attended the Introduction of the most useful Machines, they wish to remind the Inhabitants of this Town, of the Advantages derived to every flourishing Manufacture from the Application of Machinery; they instance that of Cotton in particular, which in its internal and foreign Demand is nearly alike to our own, and has in a few Years by the Means of Machinery advanced to its present Importance, and is still increasing.

If then by the Use of Machines, the Manufacture of Cotton, an Article which we import, and are supplied with from other Countries, and which can every where be procured on equal Terms, has met with such amazing Success, may not greater Advantages be reasonably expected from cultivating to the utmost the Manufacture of Wool, the Produce of our own Island, an Article in Demand in all Countries, almost the universal Clothing of Mankind?

In the Manufacture of Woollens, the Scribbling Mill, the Spinning Frame, and the Fly Shuttle, have reduced manual Labour nearly One third, and each of them at its-first Introduction carried an Alarm to the Work People, yet each has contributed to advance the Wages and to increase the Trade, so that if an Attempt was now made to deprive us of the Use of them, there is no Doubt, but every Person engaged in the Business, would exert himself to defend them.

From these Premises, we the undersigned Merchants, think it a Duty we owe to ourselves, to the Town of Leeds, and to the Nation at large, to declare that we will protect and support the free Use of the proposed Improvements in Cloth-Dressing, by every legal Means in our Power; and if after all, contrary to our Expectations, the Introduction of Machinery should for a Time occasion a Scarcity of Work in the Cloth Dressing Trade, we have unanimously agreed to give a Preference to such Workmen as are now settled Inhabitants of this Parish, and who give no Opposition to the present Scheme.

Appleby & Sawyer

Bernard Bischoff & Sons

[and 59 other names]

From J. F. C. Harrison, *Society and Politics in England, 1780-1960* (New York: Harper & Row,

1965), pp. 72-74. Introduction © Paul Halsall, Internet Modern History Sourcebook.

Friederich Engels:
Industrial Manchester, 1844

Manchester, in South-east Lancashire rapidly rose from obscurity to become the premier center of cotton manufacture in England. This was largely due to geography. Its famously damp climate was better for cotton manufacture than the drier climate of the older eastern English cloth manufacture centers. It was close to the Atlantic port of Liverpool (and was eventually connect by one of the earliest rail tracks, as well as an Ocean ship capable canal - although thirty miles inland, it was long a major port). It was also close to power sources - first the water power of the Pennine mountain chain, and later the coal mines of central Lancashire. As a result, Manchester became perhaps the first modern industrial city.

Friedrich Engels' father was a German manufacturer and Engels worked as his agent in his father's Manchester factory. As a result he combined both real experience of the city, with a strong social conscience. The result was his The Condition of the Working-Class in England in 1844.

Manchester lies at the foot of the southern slope of a range of hills, which stretch hither from Oldham, their last peak, Kersall moor, being at once the racecourse and the Mons Sacer of Manchester. Manchester proper lies on the left bank of the Irwell, between that stream and the two smaller ones, the Irk and the Medlock, which here empty into the Irwell. On the left bank of the Irwell, bounded by a sharp curve of the river, lies Salford, and farther westward Pendleton; northward from the Irwell lie Upper and Lower Broughton; northward of the Irk, Cheetham Hill; south of the Medlock lies Hulme; farther east Chorlton on Medlock; still farther, pretty well to the east of Manchester, Ardwick. The whole assemblage of buildings is commonly called Manchester, and contains about four hundred thousand inhabitants, rather more than less. The town itself is peculiarly built, so that a person may live in it for years, and go in and out daily without coming into contact with a working-people's quarter or even with workers, that is, so long as he confines himself to his business or to pleasure walks. This arises chiefly from the fact, that by unconscious tacit agreement, as well as with outspoken conscious determination, the working-people's quarters are sharply separated from the sections of the city reserved for the middle-class; . . .

I may mention just here that the mills almost all adjoin the rivers or the different canals that ramify throughout the city, before I proceed at once to describe the labouring quarters. First of all, there is the old town of Manchester, which lies between the northern boundary of the commercial district and the Irk. Here the streets, even the better ones, are narrow and winding, as Todd Street, Long Millgate, Withy Grove, and Shude Hill, the houses dirty, old, and tumble-down, and the construction of the side streets utterly horrible. Going from the Old Church to Long Millgate, the stroller has at once a row of old-fashioned houses at the right, of which not one has kept its original level; these are remnants of the old pre-manufacturing Manchester, whose former inhabitants have removed with their descendants into better built districts, and have left the houses, which were not good enough for them, to a population strongly mixed with Irish blood. Here one is in an almost undisguised working-men's quarter, for even the shops and beer houses hardly take the trouble to exhibit a trifling degree of cleanliness. But all this is nothing in comparison with the courts and lanes which lie behind, to which access can be gained only through covered passages, in which no two human beings can pass at the same time. Of the irregular cramming together of dwellings in ways which defy all rational plan, of the tangle in which they are crowded literally one upon the other, it is impossible to convey an idea. And it is not the buildings surviving from the old times of Manchester which are to blame for this; the confusion has only recently reached its height when every scrap of space left by the old way of building has been filled up and patched over until not a foot of land is left to be further occupied.

The south bank of the Irk is here very steep and between fifteen and thirty feet high. On this declivitous hillside there are planted three rows of houses, of which the lowest rise directly out of the river, while the front walls of the highest stand on the crest of the hill in Long Millgate. Among them are mills on the river, in short, the method of construction is as crowded and disorderly here as in the lower part of Long Millgate. Right and left a multitude of covered passages lead from the main street into numerous courts, and he who turns in thither gets into a filth and disgusting grime, the equal of which is not to be found - especially in the courts which lead down to the Irk, and which contain unqualifiedly the most horrible dwellings

which I have yet beheld. In one of these courts there stands directly at the entrance, at the end of the covered passage, a privy without a door, so dirty that the inhabitants can pass into and out of the court only by passing through foul pools of stagnant urine and excrement. This is the first court on the Irk above Ducie Bridge - in case any one should care to look into it. Below it on the river there are several tanneries which fill the whole neighbourhood with the stench of animal putrefaction. Below Ducie Bridge the only entrance to most of the houses is by means of narrow, dirty stairs and over heaps of refuse and filth. The first court below Ducie Bridge, known as Allen's Court, was in such a state at the time of the cholera that the sanitary police ordered it evacuated, swept, and disinfected with chloride of lime. Dr. Kay gives a terrible description of the state of this court at that time. Since then, it seems to have been partially torn away and rebuilt; at least looking down from Ducie Bridge, the passer-by sees several ruined walls and heaps of debris with some newer houses. The view from this bridge, mercifully concealed from mortals of small stature by a parapet as high as a man, is characteristic for the whole district. At the bottom flows, or rather stagnates, the Irk, a narrow, coal-black, foul-smelling stream, full of debris and refuse, which it deposits on the shallower right bank.

In dry weather, a long string of the most disgusting, blackish-green, slime pools are left standing on this bank, from the depths of which bubbles of miasmatic gas constantly arise and give forth a stench unendurable even on the bridge forty or fifty feet above the surface of the stream. But besides this, the stream itself is checked every few paces by high weirs, behind which slime and refuse accumulate and rot in thick masses. Above the bridge are tanneries, bone mills, and gasworks, from which all drains and refuse find their way into the Irk, which receives further the contents of all the neighbouring sewers and privies. It may be easily imagined, therefore, what sort of residue the stream deposits. Below the bridge you look upon the piles of debris, the refuse, filth, and offal from the courts on the steep left bank; here each house is packed close behind its neighbour and a piece of each is visible, all black, smoky, crumbling, ancient, with broken panes and window frames. The background is furnished by old barrack-like factory buildings. On the lower right bank stands a long row of houses and mills; the second house being a ruin without a roof, piled with debris; the third stands so low that the lowest floor is uninhabitable, and therefore without windows or doors. Here the background embraces the pauper burial-ground, the station of the Liverpool and Leeds railway, and, in the rear of this, the Workhouse, the "Poor-Law Bastille" of Manchester, which, like a citadel, looks threateningly down from behind its high walls and parapets on the hilltop, upon the working-people's quarter below.

Above Ducie Bridge, the left bank grows more flat and the right bank steeper, but the condition of the dwellings on both banks grows worse rather than better. He who turns to the left here from the main street, Long Millgate, is lost; he wanders from one court to another, turns countless corners, passes nothing but narrow, filthy nooks and alleys, until after a few minutes he has lost all clue, and knows not whither to turn. Everywhere half or wholly ruined buildings, some of them actually uninhabited, which means a great deal here; rarely a wooden or stone floor to be seen in the houses, almost uniformly broken, ill-fitting windows and doors, and a state of filth! Everywhere heaps of debris, refuse, and offal; standing pools for gutters, and a stench which alone would make it impossible for a human being in any degree civilised to live in such a district. The newly-built extension of the Leeds railway, which crosses the Irk here, has swept away some of these courts and lanes, laying others completely open to view. Immediately under the railway bridge there stands a court, the filth and horrors of which surpass all the others by far, just because it was hitherto so shut off, so secluded that the way to it could not be found without a good deal of trouble. I should never have discovered it myself, without the breaks made by the railway, though I thought I knew this whole region thoroughly. Passing along a rough bank, among stakes and washing-lines, one penetrates into this chaos of small one-storied, one-roomed huts, in most of which there is no artificial floor; kitchen, living and sleeping-room all in one. In such a hole, scarcely five feet long by six broad, I found two beds - and such bedsteads and beds! - which, with a staircase and chimney-place, exactly filled the room. In several others I found absolutely nothing, while the door stood open, and the inhabitants leaned against it. Everywhere before the doors refuse and offal; that any sort of pavement lay underneath could not be seen but only felt, here and there, with the feet. This whole collection of cattle-sheds for human beings was surrounded on two sides by houses and a factory, and on the third by the river, and besides the narrow stair up the bank, a narrow doorway alone led out into another almost equally ill-built, ill-kept labyrinth of dwellings....

If we leave the Irk and penetrate once more on the opposite side from Long Millgate into the midst of the working-men's dwellings, we shall come into a somewhat newer quarter, which stretches from St. Michael's Church to Withy Grove and Shude Hill. Here there is somewhat better order. In place of the chaos of buildings, we find at least long straight lanes and alleys or courts, built according to a plan and usually square. But if, in the former case, every house was built according to caprice, here each lane and court is so built, without reference to the situation of the adjoining ones....

. . . Here, as in most of the working-men's quarters of Manchester, the pork-raisers rent the courts and build pig-pens in them. In almost every court one or even several such pens may be found, into which the inhabitants of the court throw all refuse and offal, whence the swine grow fat; and the atmosphere, confined on all four sides, is utterly corrupted by putrefying animal and vegetable substances....

Such is the Old Town of Manchester, and on re-reading my description, I am forced to admit that instead of being exaggerated, it is far from black enough to convey a true impression of the filth, ruin, and uninhabitableness, the defiance of all considerations of cleanliness, ventilation, and health which characterise the construction of this single district, containing at least twenty to thirty thousand inhabitants. And such a district exists in the heart of the second city of England, the first manufacturing city of the world. If any one wishes to see in how little space a human being can move, how little air - and *such* air! - he can breathe, how little of civilisation he may share and yet live, it is only necessary to travel hither. True, this is the *Old* Town, and the people of Manchester emphasise the fact whenever any one mentions to them the frightful condition of this Hell upon Earth; but what does that prove? Everything which here arouses horror and indignation is of recent origin, belongs to the *industrial epoch.*

From Friedrich Engels, *The Condition of the Working-Class in England in 1844* (London: Swan Sonnenschein & Co., 1892), pp. 45, 48-53.

J585
Emily Dickinson

I like to see it lap the miles,
And lick the valleys up,
And stop to feed itself at tanks;
And then, prodigious, step

Around a pile of mountains,
And, supercilious, peer
In shanties by the sides of roads;
And then a quarry pare

To fit its sides, and crawl between,
Complaining all the while
In horrid, hooting stanza;
Then chase itself down hill

And neigh like Boanerges;
Then, punctual as a star,
Stop—docile and omnipotent—
At its own stable door.

The Tartarus Of Maids (1855)
by Herman Melville (1819-1891)

It lies not far from Woedolor Mountain in New England. Turning to the east, right out from among bright farms and sunny meadows, nodding in early June with odorous grasses, you enter ascendingly among bleak hills. These gradually close in upon a dusky pass, which, from the violent Gulf Stream of air unceasing- ly driving between its cloven walls of haggard rock, as well as from the tradition of a crazy spinster's hut having long ago stood somewhere hereabouts, is called the Mad Maid's Bellows'-pipe.

Winding along at the bottom of the gorge is a dangerously narrow wheel-road, occupying the bed of a former torrent. Following this road to its highest point, you stand as within a Dantean gateway. From the steepness of the walls here, their strangely ebon hue, and the sudden contraction of the gorge, this particular point is called the Black Notch. The ravine now expandingly descends into a great, purple, hopper-shaped hollow, far sunk among many Plutonian, shaggy-wooded mountains. By the country people this hollow is called the Devil's Dungeon. Sounds of torrents fall on all sides upon the ear. These rapid waters unite at last in one turbid brick-colored stream, boiling through a flume among enormous boulders. They call this strange-colored torrent Blood River. Gaining a dark precipice it wheels suddenly to the west, and makes one maniac spring of sixty feet into the arms of a stunted wood of gray haired pines, between which it thence eddies on its further way down to the invisible lowlands.

Conspicuously crowning a rocky bluff high to one side, at the cataract's verge, is the ruin of an old saw-mill, built in those primitive times when vast pines and hemlocks superabounded throughout the neighboring region. The black-mossed bulk of those immense, rough-hewn, and spike-knotted logs, here and there tumbled all together, in long abandonment and decay, or left in solitary, perilous projection over the cataract's gloomy brink, impart to this rude wooden ruin not only much of the aspect of one of rough-quarried stone, but also a sort of feudal, Rhineland, and Thurmberg look, derived from the pinnacled wildness of the neighboring scenery.

Not far from the bottom of the Dungeon stands a large white-washed building, relieved, like some great whited sepulcher, against the sullen background of mountain-side firs, and other hardy evergreens, inaccessibly rising in grim terraces for some two thousand feet.

The building is a paper-mill.

Having embarked on a large scale in the seedsman's business (so extensively and broadcast, indeed, that at length my seeds were distributed through all the Eastern and Northern States and even fell into the far soil of Missouri and the Carolinas), the demand for paper at my place became so great, that the expenditure soon amounted to a most important item in the general account. It need hardly be hinted how paper comes into use with seedsmen, as envelopes. These are mostly made of yellowish paper, folded square; and when filled, are all but flat, and being stamped, and superscribed with the nature of the seeds contained, assume not a little the appearance of business-letters ready for the mail. Of these small envelopes I used an incredible quantity — several hundreds of thousands in a year. For a time I had purchased my paper from the wholesale dealers in a neighboring town. For economy's sake, and partly for the adventure of the trip, I now resolved to cross the mountains, some sixty miles, and order my future paper at the Devil's Dungeon paper-mill.

The sleighing being uncommonly fine toward the end of January, and promising to hold so for no small period, in spite of the bitter cold I started one gray Friday noon in

my pung, well fitted with buffalo and wolf robes; and, spending one night on the road, next noon came in sight of Woedolor Mountain.

The far summit fairly smoked with frost; white vapors curled up from its white-wooded top, as from a chimney. The intense congelation made the whole country look like one petrifaction. The steel shoes of my pung crunched and gritted over the vitreous, chippy snow, as if it had been broken glass. The forests here and there skirting the route, feeling the same all-stiffening influence, their inmost fibers penetrated with the cold, strangely groaned — not in the swaying branches merely, but like- wise in the vertical trunk — as the fitful gusts remorselessly swept through them. Brittle with excessive frost, many colossal tough-grained maples, snapped in twain like pipe-stems, cum- bered the unfeeling earth.

Flaked all over with frozen sweat, white as a milky ram, his nostrils at each breath sending forth two horn-shaped shoots of heated respiration, Black, my good horse, but six years old, started at a sudden turn, where, right across the track — not ten minutes fallen — an old distorted hemlock lay, darkly undulatory as an anaconda. Gaining the Bellows'-pipe, the violent blast, dead from behind, all but shoved my high-backed pung up-hill. The gust shrieked through the shivered pass, as if laden with lost spirits bound to the unhappy world. Ere gaining the summit, Black, my horse, as if exasperated by the cutting wind, slung out with his strong hind legs, tore the light pung straight up-hill, and sweeping grazingly through the narrow notch, sped downward madly past the ruined saw-mill. Into the Devil's Dungeon horse and cataract rushed together. With might and main, quitting my seat and robes, and standing backward, with one foot braced against the dash-board, I rasped and churned the bit, and stopped him just in time to avoid collision, at a turn, with the bleak nozzle of a rock, couchant like a lion in the way — a road-side rock.

At first I could not discover the paper-mill. The whole hollow gleamed with the white, except, here and there, where a pinnacle of granite showed one wind-swept angle bare. The mountains stood pinned in shrouds — a pass of Alpine corpses. Where stands the mill? Suddenly a whirling, humming sound broke upon my ear. I looked, and there, like an arrested avalanche, lay the large whitewashed factory. It was subordinately surrounded by a cluster of other and smaller buildings, some of which, from their cheap, blank air, great length, gregarious windows, and comfortless expression, no doubt were boarding-houses of the operatives. A snow-white hamlet amidst the snows. Various rude, irregular squares and courts resulted from the somewhat picturesque clusterings of these buildings, owing to the broken, rocky nature of the ground, which forbade all method in their relative arrangement. Several narrow lanes and alleys, too, partly blocked with snow fallen from the roof, cut up the hamlet in all directions.

When, turning from the traveled highway, jingling with bells of numerous farmers — who availing themselves of the fine sleighing, were dragging their wood to market — and frequently diversified with swift cutters dashing from inn to inn of the scattered villages — when, I say, turning from that bustling main-road, I by degrees wound into the Mad Maid's Bellows'-pipe, and saw the grim Black Notch beyond, then something latent, as well as something obvious in the time and scene, strangely brought back to my mind my first sight of dark and grimy Temple-Bar. And when Black, my horse, went darting through the Notch, perilously grazing its rocky wall, I remembered being in a runaway London omnibus, which in much the same sort of style, though by no means at

an equal rate, dashed through the ancient arch of Wren. Though the two objects did by no means completely correspond, yet this partial inadequacy but served to tinge the similitude not less with the vividness than the disorder of a dream. So that, when upon reining up at the protruding rock I at last caught sight of the quaint groupings of the factory-buildings, and with the traveled highway and the Notch behind, found myself all alone, silently and privily stealing through deep-cloven passages into this sequestered spot, and saw the long, high-gabled main factory edifice, with a rude tower — for hoisting heavy boxes — at one end, standing among its crowded outbuildings and boarding-houses, as the Temple Church amidst the surrounding offices and dormitories, and when the marvelous retirement of this mysterious mountain nook fastened its whole spell upon me, then, what memory lacked, all tributary imagination furnished, and I said to my- self, "This is the very counterpart of the Paradise of Bachelors, but snowed upon, and frost-painted to a sepulcher." Dismounting, and warily picking my way down the dangerous declivity — horse and man both sliding now and then upon the icy ledges — at length I drove, or the blast drove me, into the largest square, before one side of the main edifice. Piercingly and shrilly the shotted blast blew by the corner; and redly and demoniacally boiled Blood River at one side. A long wood- pile, of many scores of cords, all glittering in mail of crusted ice, stood crosswise in the square. A row of horse-posts, their north sides plastered with adhesive snow, flanked the factory wall. The bleak frost packed and paved the square as with some ringing metal.

The inverted similitude recurred — "The sweet tranquil Temple garden, with the Thames bordering its green beds," strangely meditated I. But where are the gay bachelors?

Then, as I and my horse stood shivering in the wind-spray, a girl ran from a neighboring dormitory door, and throwing her thin apron over her bare head, made for the opposite building.

"One moment, my girl; is there no shed hereabouts which I may drive into?"

Pausing, she turned upon me a face pale with work, and blue with cold; an eye supernatural with unrelated misery.

''Nay," faltered I, "I mistook you. Go on; I want nothing."

Leading my horse close to the door from which she had come, I knocked. Another pale, blue girl appeared, shivering in the doorway as, to prevent the blast, she jealously held the door ajar.

"Nay, I mistake again. In God's name shut the door. But hold, is there no man about?"

That moment a dark-complexioned well-wrapped personage passed, making for the factory door, and spying him coming, the girl rapidly closed the other one.

"Is there no horse-shed here, Sir?"

"Yonder, to the wood-shed," he replied, and disappeared inside the factory.

With much ado I managed to wedge in horse and pung between the scattered piles of wood all sawn and split. Then, blanketing my horse, and piling my buffalo on the blanket's top, and tucking in its edges well around the breast-band and breeching, so that the wind might not strip him bare, I tied him fast, and ran lamely for the factory door, stiff with frost, and cumbered with my driver's dread-naught.

Immediately I found myself standing in a spacious, intolerably lighted by long rows of windows, focusing inward the snowy scene without.

At rows of blank-looking counters sat rows of blank-looking girls, with blank, white folders in their blank hands, all blankly folding blank paper. In one corner stood some huge frame of ponderous iron, with a vertical thing like a piston periodically rising and falling upon a heavy wooden block. Before it — its tame minister — stood a tall girl, feeding the iron animal with half-quires of rose-hued note paper, which, at every downward dab of the piston-like machine, received in the corner the impress of a wreath of roses. I looked from the rosy paper to the pallid cheek, but said nothing.

Seated before a long apparatus, strung with long, slender strings like any harp, another girl was feeding it with foolscap sheets, which, so soon as they curiously traveled from her on the cords, were withdrawn at the opposite end of the machine by a second girl. They came to the first girl blank; they went to the second girl ruled.

I looked upon the first girl's brow, and saw it was young and fair; I looked upon the second girl's brow, and saw it was ruled and wrinkled. Then, as I still looked, the two — for some small variety to the monotony — changed places; and where had stood the young, fair brow, now stood the ruled and wrinkled one.

Perched high upon a narrow platform, and still higher upon a high stool crowning it, sat another figure serving some other iron animal; while below the platform sat her mate in some sort of reciprocal attendance.

Not a syllable was breathed. Nothing was heard but the low, steady, overruling hum of the iron animals. The human voice was banished from the spot. Machinery — that vaunted slave of humanity — here stood menially served by human beings, who served mutely and cringingly as the slave serves the Sultan. The girls did not so much seem accessory wheels to the general machinery as mere cogs to the wheels.

All this scene around me was instantaneously taken in at one sweeping glance — even before I had proceeded to unwind the heavy fur tippet from around my neck. But as soon as this fell from me the dark-complexioned man, standing close by, raised a sudden cry, and seizing my arm, dragged me out into the open air, and without pausing for word instantly caught up some congealed snow and began rubbing both my cheeks.

"Two white spots like the whites of your eyes," he said; "man, your cheeks are frozen."

"That may well be," muttered I; "'tis some wonder the frost of the Devil's Dungeon strikes in no deeper. Rub away."

Soon a horrible, tearing pain caught at my reviving cheeks. Two gaunt blood-hounds, one on each side, seemed mumbling them. I seemed Actæon.

Presently, when all was over, I re-entered the factory, made known my business, concluded it satisfactorily, and then begged to be conducted throughout the place to view it.

"Cupid is the boy for that," said the dark-complexioned man. "Cupid!" and by this odd fancy-name calling a dimpled, red-cheeked, spirited-looking, forward little fellow, who was rather impudently, I thought, gliding about among the passive-looking girls — like a gold fish through hueless waves — yet doing nothing in particular that I could see, the man bade him lead the stranger through the edifice.

"Come first and see the water-wheel," said this lively lad, with the air of boyishly-brisk importance.

Quitting the folding-room, we crossed some damp, cold boards, and stood beneath a area wet shed, incessantly showering with foam, like the green barnacled bow of some

East Indiaman in a gale. Round and round here went the enormous revolutions of the dark colossal water-wheel, grim with its one immutable purpose.

"This sets our whole machinery a-going, Sir in every part of all these buildings; where the girls work and all."

I looked, and saw that the turbid waters of Blood River had not changed their hue by coming under the use of man.

"You make only blank paper; no printing of any sort, I suppose? All blank paper, don't you?"

"Certainly; what else should a paper-factory make?"

The lad here looked at me as if suspicious of my common-sense.

"Oh, to be sure!" said I, confused and stammering; "it only struck me as so strange that red waters should turn out pale chee — paper, I mean."

He took me up a wet and rickety stair to a great light room, furnished with no visible thing but rude, manger-like receptacles running all round its sides; and up to these mangers, like so many mares haltered to the rack, stood rows of girls. Before each was vertically thrust up a long, glittering scythe, immovably fixed at bottom to the manger-edge. The curve of the scythe, and its having no snath to it, made it look exactly like a sword. To and fro, across the sharp edge, the girls forever dragged long strips of rags, washed white, picked from baskets at one side; thus ripping asunder every seam, and converting the tatters almost into lint. The air swam with the fine, poisonous particles, which from all sides darted, subtlety, as motes in sun- beams, into the lungs.

"This is the rag-room," coughed the boy.

"You find it rather stifling here," coughed I, in answer; " but the girls don't cough."

"Oh, they are used to it."

"Where do you get such hosts of rags?" picking up a handful from a basket.

"Some from the country round about; some from far over sea — Leghorn and London."

"'Tis not unlikely, then," murmured I, "that among these heaps of rags there may be some old shirts, gathered from the dormitories of the Paradise of Bachelors. But the buttons are all dropped off. Pray, my lad, do you ever find any bachelor's buttons hereabouts?"

"None grow in this part of the country. The Devil's Dungeon is no place for flowers."

"Oh! you mean the *flowers* so called — the Bachelor's Buttons?"

"And was not that what you asked about? Or did you mean the gold bosom-buttons of our boss, Old Bach, as our whispering girls all call him?"

"The man, then, I saw below is a bachelor, is he?"

"Oh, yes, he's a Bach."

"The edges of those swords, they are turned outward from the girls, if I see right; but their rags and fingers fly so, I can not distinctly see."

"Turned outward." Yes, murmured I to myself; I see it now; turned outward, and each erected sword is so borne, edge-outward, before each girl. If my reading fails me not, just so, of old, condemned state-prisoners went from the hall of judgment to their doom: an officer before, bearing a sword, its edge turned outward, in significance of their

fatal sentence. So, through consumptive pallors of this blank, raggy life, go these white girls to death.

"Those scythes look very sharp," again turning toward the boy.

"Yes; they have to keep them so. Look!"

That moment two of the girls, dropping their rags, plied each a whet-stone up and down the sword-blade. My unaccustomed blood curdled at the sharp shriek of the tormented steel.

Their own executioners; themselves whetting the very swords that slay them; meditated I.

"What makes those girls so sheet-white, my lad?"

"Why" — with a roguish twinkle, pure ignorant drollery, not knowing heartlessness — "I suppose the handling of such white bits of sheets all the time makes them so sheety."

"Let us leave the rag-room now, my lad."

More tragical and more inscrutably mysterious than any mystic sight, human or machine, throughout the factory, was the strange innocence of cruel-heartedness in this usage-hardened boy.

"And now," said he, cheerily, "I suppose you want to see our great machine, which cost us twelve thousand dollars only last autumn. That's the machine that makes the paper, too. This way, Sir."

Following him, I crossed a large, bespattered place, with two great round vats in it, full of a white, wet, woolly-looking stuff, not unlike the albuminous part of an egg, soft-boiled.

"There," said Cupid, tapping the vats carelessly, "these are the first beginnings of the paper; this white pulp you see. Look how it swims bubbling round and round, moved by the paddle here. From hence it pours from both vats into that one common channel yonder; and so goes, mixed up and leisurely, to the great machine. And now for that."

He led me into a room, stifling with a strange, blood-like, abdominal heat, as if here, true enough, were being finally developed the germinous particles lately seen. Before me, rolled out like some long Eastern manuscript, lay stretched one continuous length of iron frame-work — multitudinous and mystical, with all sorts of rollers, wheels, and cylinders, in slowly-measured and unceasing motion.

"Here first comes the pulp now," said Cupid, pointing to the nighest end of the machine. "See; first it pours out and spreads itself upon this wide, sloping board; and then — look — slides, thin and quivering, beneath the first roller there. Follow on now, and see it as it slides from under that to the next cylinder. There; see how it has become just a very little less pulpy now. One step more, and it grows still more to some slight consistence. Still another cylinder, and it is so knitted — though as yet mere dragon-fly wing — that it forms an air-bridge here, like a suspended cobweb, between two more separated rollers; and flowing over the last one, and under again, and doubling about there out of sight for a minute among all those mixed cylinders you indistinctly see, it reappears here, looking now at last a little less like pulp and more like paper, but still quite delicate and defective yet awhile. But — a little further onward, Sir, if you please — here now, at this further point, it puts on something of a real look, as if it might turn out to be something you might possibly handle in the end. But it's not yet done, Sir. Good way to travel yet, and plenty more of cylinders must roll it."

"Bless my soul!" said I, amazed at the elongation, interminable convolutions, and deliberate slowness of the machine; "it must take a long time for the pulp to pass from end to end, and come out paper."

"Oh! not so long," smiled the precocious lad, with a superior and patronizing air; "only nine minutes. But look; you may try it for yourself. Have you a bit of paper? Ah! here's a bit on the floor. Now mark that with any word you please, and let me dab it on here, and we'll see how long before it comes out at the other end."

"Well, let me see," said I, taking out my pencil; "come, I'll mark it with your name."

Bidding me take out my watch, Cupid adroitly dropped the inscribed slip on an exposed part of the incipient mass.

Instantly my eye marked the second-hand on my dial-plate.

Slowly I followed the slip, inch by inch; sometimes pausing for full half a minute as it disappeared beneath inscrutable groups of the lower cylinders, but only gradually to emerge again; and so, on, and on, and on — inch by inch; now in open sight, sliding along like a freckle on the quivering sheet, and then again wholly vanished; and so, on, and on, and on — inch by inch; all the time the main sheet growing more and more to final firmness — when, suddenly, I saw a sort of paper-fall, not wholly unlike a water-fall; a scissory sound smote my ear, as of some cord being snapped, and down dropped an unfolded sheet of perfect foolscap, with my "Cupid" half faded out of it, and still moist and warm.

My travels were at an end, for here was the end of the machine. "Well, how long was it ?" said Cupid.

"Nine minutes to a second," replied I, watch in hand.

"I told you so."

For a moment a curious emotion filled me, not wholly unlike that which one might experience at the fulfillment of some mysterious prophecy. But how absurd, thought I again; the thing is a mere machine, the essence of which is unvarying punctuality and precision. Previously absorbed by the wheels and cylinders, my attention was now directed to a sad-looking woman standing by.

"That is rather an elderly person so silently tending the machine-end here. She would not seem wholly used to it either."

"Oh," knowingly whispered Cupid, through the din, "she only came last week. She was a nurse formerly. But the business is poor in these parts, and she's left it. But look at the paper she is piling there."

"Ay, foolscap," handling the piles of moist, warm sheets, which continually were being delivered into the woman's waiting hands. "Don't you turn out any thing but foolscap at this machine?"

"Oh, sometimes, but not often, we turn out finer work — cream-laid and royal sheets, we call them. But foolscap being in chief demand, we turn out foolscap most." It was very curious. Looking at that blank paper continually dropping, dropping, dropping, my mind ran on in wonderings of those strange uses to which those thousand sheets eventually would be put. All sorts of writings would be writ on those now vacant things — sermons, lawyers' briefs, physicians' prescriptions, love-letters, marriage certificates, bills of divorce, registers of births, death-warrants, and so on, without end. Then, recurring back to them as they here lay all blank, I could not but bethink me of that

celebrated comparison of John Locke, who, in demonstration of his theory that man had no innate ideas, compared the human mind at birth to a sheet of blank paper; something destined to be scribbled on, but what sort of characters no soul might tell.

Pacing slowly to and fro along the involved machine, still humming with its play, I was struck as well by the inevitability as the evolvement-power in all its motions.

"Does that thin cobweb there," said I, pointing to the sheet in its more imperfect stage, "does that never tear or break? It is marvelous fragile, and yet this machine it passes through is so mighty."

"It never is known to tear a hair's point."

"Does it never stop — get clogged?"

"No. It *must* go. The machinery makes it go just *so*; just that very way, and at that very pace you there plainly *see* it go. The pulp can't help going." Something of awe now stole over me, as I gazed upon this inflexible iron animal. Always, more or less, machinery of this ponderous, elaborate sort strikes, in some moods, strange dread into the human heart, as some living, panting Behemoth might. But what made the thing I saw so specially terrible to me was the metallic necessity, the unbudging fatality which governed it. Though, here and there, I could not follow the thin, gauzy veil of pulp in the course of its more mysterious or entirely invisible advance, yet it was indubitable that, at those points where it eluded me, it still marched on in unvarying docility to the autocratic cunning of the machine. A fascination fastened on me. I stood spell-bound and wandering in my soul. Before my eyes — there, passing in slow procession along the wheeling cylinders, I seemed to see, glued to the pallid incipience of the pulp, the yet more pallid faces of all the pallid girls I had eyed that heavy day. Slowly, mournfully, beseechingly, yet unresistingly, they gleamed along, their agony dimly outlined on the imperfect paper, like the print of the tormented face on the handkerchief of Saint Veronica.

"Halloa! the heat of the room is too much for you," cried Cupid, staring at me.

"No — I am rather chill, if any thing."

"Come out, Sir — out — out," and, with the protecting air of a careful father, the precocious lad hurried me outside.

In a few moments, feeling revived a little, I went into the folding-room — the first room I had entered, and where the desk for transacting business stood, surrounded by the blank counters and blank girls engaged at them.

"Cupid here has led me a strange tour," said I to the dark-complexioned man before mentioned, whom I had ere this discovered not only to be an old bachelor, but also the principal proprietor. "Yours is a most wonderful factory. Your great machine is a miracle of inscrutable intricacy."

"Yes, all our visitors think it so. But we don't have many. We are in a very out-of-the-way corner here. Few inhabitants, too. Most of our girls come from far-off villages."

"The girls," echoed I, glancing round at their silent forms. "Why is it, Sir, that in most factories, female operatives, of whatever age, are indiscriminately called girls, never women?"

"Oh! as to that — why, I suppose, the fact of their being generally unmarried — that's the reason, I should think. But it never struck me before. For our factory here, we will not have married women; they are apt to be off-and-on too much. We want none but steady workers: twelve hours to the day, day after day, through the three hundred and

sixty-five days, excepting Sundays, Thanksgiving, and Fast-days. That's our rule. And so, having no married women, what females we have are rightly enough called girls."

"Then these are all maids," said I, while some pained homage to their pale virginity made me involuntarily bow.

"All maids."

Again the strange emotion filled me.

"Your cheeks look whitish yet, Sir," said the man, gazing at me narrowly. "You must be careful going home. Do they pain you at all now? It's a bad sign, if they do."

"No doubt, Sir," answered I, "when once I have got out of the Devil's Dungeon, I shall feel them mending."