

175

SOME RESULTS,  
ECONOMIC,  
SOCIAL,  
AND  
POLITICAL,  
OF THE  
INDUSTRIAL REVOLUTION  
IN  
ENGLAND

by

J. E. Cooper

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 Department<sup>v</sup> of History  
 by  
 Joseph E. Cooper, B. A.

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A.	Introduction.	7 - 10
B.	The Revolution in Transport.	11 - 16
C.	The Destruction of Peasant Villages.	17 - 21
D.	The Destruction of Custom in Industry.	22 - 25
E.	Results of Some Important Inventions.	26 - 29
F.	Some Economic and Social Results.	30 - 35
G.	Some Political Results.	36 - 42
H.	Conclusion, Recapitulation.	43 - 44

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6

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A. INTRODUCTION.

Owing to her geographical position, England became the centre of the new enlarged world following the discovery of America in 1492, ~~by Columbus~~. Her island position early developed the characteristics of adventure in her people, so that they soon became both enterprising and resourceful. Her seamen were not afraid of the seas. Her business men were also resourceful and enterprising-  
~~a legacy of the Crusades.~~

The desire to enjoy the products of the East ~~chal-~~<sup>lenged</sup> the best minds of the day to find a nearer passage to India and the East, than the way round the Cape of Good Hope. Then as now trade was carried on ~~in~~<sup>between</sup> the various parts of the world by an exchange of goods.

English shipping depended on English merchants. English subjects to carry on trade in various and distant parts of the world must have goods which appealed to the desires of the people of these parts. Thus as the English merchant shipping developed, parallel and along with it, was the development of the various industries in England to produce the desired goods.

Not only was the new physical world discovered as a result of the new thought started through the influence of the Crusades, and developed on and through the renaissance, but new industries were developed and new modes of life were adopted which were necessitated by the ever changing conditions that accompanied them.

Just as ~~the~~ battle of Agincourt in 1415 gave a new importance and value to ~~the~~ serf, and thus changed the current of history, ~~so~~ the influence of the industrial revolution gave an added value to the ordinary man and also changed the current of activity grouping men together in towns and cities, and making them more and more dependent on the work of each other.

When Rome exercised her power, the produce, goods and luxuries taken to the imperial city, were tribute sent by conquered races. Thus the Romans apparently had no ~~fur-~~ther inventive genius. The new conditions of the old world and the desires of the people of the new world especially the colonists of America, challenged the inventive genius of the English race. Goods were exchanged for raw material and the produce coming to England was not tribute from conquered races, but bought goods.

An important factor which helped in bringing about the industrial revolution was the fact that toward the end of the eighteenth century commerce developed a new character; it carried popular congoes--Commerce now began to provide for the many--thus the importance of the Spice Islands lessened at the growth of the importance of India. (1)

(2) Commerce during the eighteenth century began to provide for the wants and desires of the peasant and the work-

(1) Botsford. English Society in the Eighteenth Century, P. 76.

*Handwritten notes:*  
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man while at the same time catering to the necessities and the foibles of the nobles and the professional classes.

New products and new resources were sought and thus new habits were developed. Greater revenue and more profits were to be obtained by clothing the great masses of the world's population and by attempting to meet their demands than by merely catering to the rich. To meet the even changing conditions finance gained a greater importance. For trade and commerce to bring the raw material to a country and to change it to a finished article desirable by the inhabitants of that and other countries they must have finance. Capital thus became necessary, and capitalist commerce attempted on a scale larger to meet the wants of great masses of peoples.

Thus to meet the new situation capital was supplied to produce goods on a larger scale than heretofore. The development of capitalist manufacture came at an opportune time and made the "industrial revolution" so sweeping in its character and achievements. (1) The industrial revolution <sup>was</sup> effected and was affected by trade and commerce. ~~All three acted and reacted on each other to mutual benefit.~~ Trade and commerce broadened in corresponding ratio to the development of the industrial system. As a result of the new development we find that commerce and finance while important factors ~~are no~~

G. P. 2

(1) Hammond. The Rise of Modern Industry. P. 23.

longer the main basis of society, but industrialism. (1)  
The English people were the first to develop this system, to  
enjoy its wealth, to suffer its sins, to struggle with its  
problems and to build on this foundation an imposing place  
and power in the world.

(1) Hammond. The Rise of the Modern Industry. P. 23.

(11)

## B. The Revolution in Transport.

Today goods to meet the necessities and requirements of modern towns and villages come from practically every corner of the world. This not only involves <sup>the</sup> use of many varied machines but the employment of a vast system of commercial exchange.

The complicated economic life of today may be contrasted with the conditions of life as it existed in countries a generation after the steam engine had turned the English into an industrial people. The German people were medieval in their habits at this particular period. "Trade was medieval in its simplicity. Peasant and townsmen everywhere dealt with each other in the markets. No intermediary came, as a rule, between the working craftsmen and the consumer. The man who wanted a new town-house himself bought the materials and directed the workmen. In the country the peasant often built for himself with the aid of his neighbours. Local supplies of food for the most part satisfied all local needs. Even in Berlin the bulk of flour consumed was ground at the neighbouring mills. Outside the greatest towns ~~and~~ the pure shop <sup>keeping</sup> class hardly existed. Pedlars and travelling dealers took its place from whom both small townsmen and peasants bought many implements, utensils, articles of clothing or luxuries, that would not be made on the spot. (1)

Thus it is clear that a group of people, living as in inland Germany was living a century ago cannot turn itself into a town like Sheffield or Leicester until and unless

(1) S. Chapman in Cambridge. Modern History. P. 758.

with (capital to finance it.) Again machine production involves large scale production and this in turn involves wide markets. To have wide markets involves good and quick communications ; also for men to invest capital there must be political stability. Before a peasant society can become an industrial society many conditions must be realized. There must be taste and scope for invention, wide markets, vast funds of capital, good transport, organizing ability, political stability, and in the eighteenth century a number of these conditions had been partly realized in England. The English people had political stability and an elastic constitution which allowed more personal freedom than any of the other great contemporary powers. Colonies in other parts of the world had been founded. Overseas trade was developed, distant markets were sought, capital was accumulated from the profits of the woollen trade. Credit was organized through a system of banking.

However the internal trade of England was carried on by local fairs in the various districts. London was the only town in connection with all the parts of the country. Merchants used to travel with goods on pack horses and mules to the various districts.

Aikin gives an account of the Manchester chapmen, as these travellers were called: When the Manchester trade, began to extend the chapmen used to keep gangs of pack horses and accompany them to the principal towns with goods in packs, which they opened and sold to store-keepers, lodgings what was unsold and small stores at the inns. The pack horses brought back sheep's

wool, which was brought on the journey and sold to the makers of worsted yarn at Manchester, or to the clothiers of Rochdale, Saddleworth and the West-Riding of Yorkshire. (1)

Business in the country districts was done by pedlars. The general requirements and necessities <sup>were mostly</sup> supplied by the local community. The roads were not only used by merchants and business men but various kinds of livestock were driven over them to the market at London.

Thus internal business needed good roads. As a matter of fact the roads were in as bad a state as they could be. No systematic mending of the roads had been carried on since the Romans had left fourteen centuries ago. The road was practically a trail where only one animal could walk. Thus the coal used in the Midlands had to be carried in bags across the backs of horses. In 1700 it took a week to get to York from London and a Yorkshire man who had to go to London made his will and bade a solemn farewell to his friends. (2)

English roads were left to be looked after by the unpaid officers of the Parish. An act of Parliament passed in the sixteenth century made it the duty of the J. P.'s to see that the surveyors did their work. The surveyors would call on fellow-parishioners to work on the roads for six days in the year. However they made a holiday of it and the roads got worse as industry expanded.

(1) Quoted Daniels Early English Cotton Industry. P. 61.

(2) Webb, English Local Government, Statutory Authorities P. 203  
Stocks, Industrial State P. 152.

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Parliament established Turnpike Trusts. These were private companies that could build a road and charge tolls for use of same. Parliament was really a licensing rather than a legislative body. (1) The new turnpikes were no better and rioting took place in several places. Destruction of turnpike gates became a capital offence in 1734. (2)

There was considerable complaint of the conditions of roads by the users. Turnpike Trusts would oppose the making of new roads even when great necessity was apparent. However England produced three great road makers in the persons of Jack Metcalfe (1717-1810), Thomas Telford (1757-1834) and J. L. Macadam. Metcalfe although blind made many principal roads in Yorkshire, Lancashire and Cheshire. Telford built roads in Shropshire and was particularly clever at building bridges. Macadam placed angular granite fragments into the road bed which naturally made a concrete surface. Thus the roads underwent considerable repair; and eventually a coach could leave Manchester and arrive in London within twenty-four hours.

Internal business was transformed by these improvements in roads. No longer did the merchant go forth with his goods but he went forth seeking orders taking only patterns with him. As a result of the improved condition of the roads a wagon service was established.

(1) Hammond The Rise of Modern Industry. P. 23.  
 (2) Fletcher <sup>ex. cit.</sup> P. 48. Webb <sup>ex. cit.</sup> Pp. 171 & 174.

Tradesmen in Leeds could send goods to London by one of these wagons in thirty-six hours. (1)

England also experienced a revolution in the use of waterways before the railway was introduced. <sup>Barges</sup> ~~Barges~~ with coal were drawn by men. Merchants desired the ~~constructions~~ of a horse towing path from <sup>W</sup>Beadley to Worcester but the opposition of local landowners and ironmongers postponed this reform till the beginning of the nineteenth century. (2)

The rivers Trent, Derwent, Aire, Calder were deepened in places so that barges could be used and coal carried to important centres. As the use of coal became important large landowners were anxious to develop their property. To accomplish this purpose good cheap transportation was necessary. The Duke of Bridge-water employed Jas. Brindley to construct a canal from <sup>W</sup>Worsley to Manchester. The adventure proved so great a success that the Duke employed Brindley to construct a canal connecting Manchester with Liverpool. These achievements with their wonderful results made canal making. Thus ~~these~~ canals made it possible for heavy things to be easily and cheaply transported inland. Coal mining and iron production received <sup>a</sup> great stimulus from the making of canals, the first dock at Cardiff was made in 1839. (3)

The first phase of the Industrial Revolution saw the building of roads and canals. These played their part in producing the textile revolution. By 1830 the cotton industry was a factory industry ; hand-spinning had ceased ; all the processes

- (1) Fletcher <sup>of cit</sup> P. 50.
- (2) Ashton. Iron and Steel in the Industrial Revolution. P.243
- (3) Jevons The British Coal Trade. Pp. 100&107.

previous to weaving were carried on by complicated machinery in factories while weaving was partly done in factories ; by power-looms worked by girls and partly by hand-looms weavers in their own homes. In 1829 there were nearly 50,000 power-looms in England. Cotton wool imported in 1764 was less than 4,000,000 pounds in 1833 it was over 300,000,000 pounds. The declared value of cotton wool in 1830 was over £18,000,000 and the number of persons employed in 1831 was over 800,000. Changes in woollen and worsted industries came more gradually and the woollen hand-loom weaver survived longer than the cotton hand-loom weaver, but by 1830 spinning in both industries had passed into the factory and in other processes machinery was displacing hand labour.

With the growth of the Factory System another important <sup>change</sup> operation had taken place. The population of the country had been <sup>ributed</sup> distributed to other parts of the country. Liverpool had become more important than Bristol ; the iron industry had gone from Sussex to the coal fields of the Midlands ; the worsted industry had grown greater in the West-Riding of Yorkshire than in Norfolk ; the woollen industry faster in the West-Riding than in the South West ; the great new textile industry of cotton was concentrated in Lancashire and Cheshire. Thus the peasant village of England had been dissolved and a new type of town established before the introduction of railways.

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handlooms

C. The Destruction of the Peasant Village.

The organized community that came out of the chaos of the Dark Ages was the unit known as the Manor. Men and women ~~was~~ <sup>were</sup> grouped around one person known as the lord of the Manor. Some of the cultivators were freeholders who ~~would~~ <sup>owed</sup> certain military services and paid certain fixed dues ; others <sup>the serfagers</sup> were freeholders who owed peasant labour and payment in money or in kind ; others the majority , were villeins who had to do the roughest and heavy work for the Lord of the Manor. (1)

The life of the community had to some degree a settled government which provided a kind of security against violence and want. Life was hard ; both man and beast often shared the same building. The horizon was darkened by anxieties unknown to the modern world. Rain and draught were followed by famine, and disease <sup>to the porches of fearful warfare</sup> made death a constant image to the mind. Fear was primitive in its simplicity and power ; <sup>man's</sup> sense of dependence was strong and impressive.

~~The most significant thing about the Industrial Revolution in English life was the fact that it gave to capital a much wider control of the life of men, and thus altered the function of the State Initiative was checked by custom, enterprise was limited by the system of commonfields and manorial courts. Agriculture was carried out on a co-operative basis for local needs and while such conditions existed capital could not be freely used. However through the agrarian revolution capital gained this freedom and the result was the general dis-integration of the peasant village.~~

(1) ~~English Constitutional History P. 276.~~

Taswell Longmans Langmead

*This is a paraphrase of general knowledge and does not need a reference to authority.*

Many important changes had come over the English before the sixteenth century. ~~(II)~~

The Great Plague of 1348<sup>(1)</sup> reduced the numbers of hired labourers and practically doubled the value of their labour as the growth of the cloth industry in the town had reduced the servile character of the villeinage. A villein could gain his freedom by flight to a distant country or a town. (2)

A money economy as opposed to the medieval barter in kind was established in England at a much earlier period and far more extensively than in the great inland countries of the European <sup>continent</sup> country. (3) Thus new needs of the landlords were supplied

by the money obtained from the various groups in lieu of personal service. This <sup>tended</sup> to personal freedom of the lower classes of society. By the time of Elizabeth the English villein, whose forefathers had been liable to be sold, had come to be a man holding so much land and making a fixed money payment. (4)

The English landlord also began to lease his lands with implements and cattle ; thus the land-lord became a contributory partner to the community life. However the peasant character of the village was not greatly changed, \_\_\_\_\_

- (1) Taswell\*Langmead, P. 280. The English Constitutional History
- (2) ~~op. cit. P. 279.~~ <sup>Taswell + Langmead op. cit. p. 279</sup> The English Constitutional History.
- (3) ~~The Constitutional History. P. 279.~~ <sup>Taswell - Langmead, op. cit. p. 279</sup>
- (4) Tawney, The Agrarian Problem in the Sixteenth Century, P. 43  
Cf. Johnson, Disappearance of ~~the~~ Small Landowner, P. 30.

the manorial courts still <sup>functioned</sup> ~~foreclosed~~ ; and custom was a restraining and a preserving power.

However a change was taking place in the sixteenth century and became more aggressive and influential during the eighteenth and nineteenth centuries. Owing to the great development of the cloth industry during the sixteenth century the enclosure movement began ; great landlords enclosed land <sup>driving</sup> ~~during~~ the tenants off their farms, and fenced in their land for their sheep. The business caused considerable disturbance but as the new interests were led by men <sup>like</sup> Warwick they were too powerful to be stopped. ~~However~~ for a time the enclosure movement was tardy but in the eighteenth century it became more general and more vigorous. The great landlords were more powerful than they ever had been. The men who had been successful in trade and commerce and who had supported Henry viii in his confiscation of Church lands were rewarded by this monarch, who ~~gave~~ <sup>gave to</sup> ~~with~~ them large tracts of the confiscated land. Neither the Crown nor the State had been strengthened by such action. After the second rebellion these new men allied themselves with the Whig party ~~and~~ and thus helped this party to say that they (the Whig party ~~and~~) should control Parliament and ~~not~~ the Crown.

Agriculture now needed revision. There had been much stagnation. Tull (1674-1740) and Bakewell (1725-1795) blazed the trail in agricultural reform. The former grew turnips that could be wintered and this stock could be kept through the winter; the latter through selective breeding improved the quality of horses, cattle and sheep. These improvements made great impression on the minds of some of the leading landlords. Lord Townshend,

*a manorial in itself as does not belong to you myself. It is more like better to manage very badly the remainder of the appointed period. Revolt to relate this truth to the present population.*

Coke of Norfolk and the Duke of Bedford were among the more progressive landlords.

Through enclosure the peasant ~~economy~~<sup>economy</sup> of the medieval village was destroyed. Sometimes the enclosure proceeded by agreement but generally by Act of Parliament. A private Bill would be introduced in Parliament and after examination by a committee it would become law. Commissioners appointed by the Act would enquire into local rights and make the enclosure award. The rich landlords had no difficulty at getting what he wanted and the owner of ~~rights~~<sup>rights</sup> was protected, but the poor peasant, who could neither read nor write and who could not employ a lawyer to represent him lost what few rights he had. Thus it followed that when the medieval village disappeared soon afterwards the peasant disappeared also.

The new type of landlord believed that more and better work could be done by labourers who depended solely on their wages and had nothing to ~~distract~~<sup>distract</sup> them from their duty to their employers. The new towns were growing in population and more food was necessary ~~to meet the demands,~~ new methods of agriculture were necessary. ~~to meet the demands,~~ During the Napoleonic war grain was very necessary and its ~~growth~~<sup>growing</sup> was not only necessary for the State but very profitable to the landlord. Thus the capitalist farmer organized the farms into large business concerns and began to eliminate certain useless and wasteful methods of production. He made better use of labour and produced more grain at a lower cost than previously.

However the transformation of the peasant brought new problems. The peasant had been replaced by the labourer who no longer produced for himself but who depended on the farmer for his wages and the shops for his food. The new conditions of the large towns

made the cost of living in the country higher because milk, corn, beef and other things were sent to the tradesmen in the towns. The labourer found that his wages did not meet the cost of living on account of the failure of two or three harvests.

Several methods of meeting the harsh situation were suggested in Parliament but none seemed to be practicable. The magistrates of Berkshire met in Speenhamland in May 1795 and there came to a decision to supplement the labourers wage by relief granted from the rates. However while this system spread practically through the whole country it tended to degrade rather than uplift the labourers. This system together with the Roundsman system produced universal pauperism. If a man was not destitute he could not get help from the rates and unless he got help from the rates he could not get employment. The settlement laws also checked free movement of labourers from village to village.

In 1830 several riots broke out. For a few weeks the labourers were paid a decent wage and then after the movement was crushed, some of the rioters were punished with great brutality. Many men and boys were transported to Australia.

The labourers' lot became worse and the government passed game laws, vagrancy laws, and settlement laws which restricted his liberty and even his life. Although England could boast of defeating Napoleon, its treatment of the agricultural labourer was not much better off in the conditions on which freedom and self-respect depended than the villein of the Manor days. *such that the labourer was*

D. The Destruction of Custom in Industry.

Custom in industry was also gradually destroyed. In the productive part of the business world there had grown up the guild. The guild was at first a cooperative of producers including the masters, journeymen and apprentices. At first their cooperation was for mutual benefit and production in the business world. (1) As time passed the interests of the guilds fell into the hands of a minority and the struggles through which they passed changed their character. There were commercial and industrial guilds. The great struggle was between the small master and the commercial capitalists. This latter group often evaded the rules and regulations of the guilds by building their establishments just outside the towns where it was difficult for the guilds to enforce their rules and regulations. (2) Some however captured the machinery of the guilds and thus controlled them for their own special interests.

The small master journeyman and apprentice in time began to find it difficult to keep their status, many kinds of methods were used, raising fees, new conditions, and new methods of control were used to influence the members of the guilds. The small craftsmen found it difficult to maintain his credit, and everything was done to undermine his independence and to destroy his power. (3) The guilds eventually disappeared into various bodies which became incorporated. These companies were governed

- (1) Unwin. Industrial Organization. <sup>in the sixteenth and seventeenth</sup> ~~P. 48.~~ <sup>Class Centuries n. 48</sup>
- (2) R. H. Gretton. The English Middle ~~in the sixteenth and~~ <sup>Class</sup> ~~seventeenth centuries.~~ <sup>n. 100.</sup> P. 100.
- (3) Tawney, Introduction to Wilson's . Discourse on Usury P. 27.

by a select body called the Court of Assistants. A person reached this office by a long series of <sup>promotions</sup> ~~promotions~~, involving great delay and expense, so that all but the wealthiest members were permanently excluded from office. (1) Thus the history of the English guild is the history of the defeat and loss of the working classes in a social struggle. (2)

As industry and ~~convenience~~ <sup>commerce</sup> changed, the character of the guilds changed. At first the guilds supplied local needs but as commerce expanded and trade increased ~~there handling~~ <sup>merchandising</sup> became more elaborate and complex and the guilds could not meet the new conditions. Production became specialized in various branches and thus the functions of the guild became distributed.

As the guilds lost their efficiency and power, their place was taken in part by the national government. In England various Statutes were passed. Various companies were given control of certain industries in certain areas for grants made to the government. From this position these companies became privileged bodies enjoying certain rights and even monopolies. During the Stuart regime there was an attempt at state control of industries but the new commercial class resented this and joined with the Whig group in reversing the Stuart policy.

In industry as in Agriculture there is a similarity of development. At first the various groups joined together for ~~material~~ <sup>mutual</sup> benefit. In the agricultural field the obstacle to development was

- (1) Unwin, op. cit. P. 42.
- (2) Gretton, op. cit. P. 65.

the system of common farming. This was early removed by private Acts of Parliament because the great landlords controlled Parliament and Parliament made laws. In industry although the guilds gradually disappeared there were some Statutes which controlled industries. Some of these Statutes of course restrained the liberty of the workman, (1) but others restrained the liberty of the employer, and capitalists set to work to get rid of those Acts, just as the landlord set to work to get rid of the system of common rights over the Manor, The masters were for unchecked enterprise; the employe were for restoring or putting into practice the regulations that had been imposed first by the guilds and then by the State.

The Luddite Riots of 1811-1812 were the result of the failure of Parliament to protect the workers. The masters refused to pay wages though Parliament had passed strong measures. In 1809 the masters gained the day because Parliament repealed all the Acts Protecting the worker.

The breaking of machinery in Nottinghamshire-not justified <sup>able</sup> - was an attempt on the part of the worker to maintain his impoverished standard of living. In Lancashire the distress came from another source. The wages of the hand-loom weaver declined and their <sup>ir</sup> standard of living was made harder by the great influx of Irish immigrants. The workman tried to have a system of wage regulation enforced similia~~t~~ to the one in the silk industry at Spitalfield in 1793. The masters would not consider the propos<sup>al</sup> and although Parliament passed <sup>an</sup> Arbitration Act in 1800 the masters still refused. Parliament gave way to the great industrial captains.

793

(1). The Worsled Acts.

The workman and the peasant alike were robbed of their freedom and the right to live decently by Acts of Parliament. (1)

(1) Hammond, The Village Labourer, P. 59

E. Results of Some Important Inventions.

The invention and improvement of the Steam engine had considerable influence in the period marked by the industrial revolution. The motive power of steam was not a new idea. The Marquis of Worcester (1601-67) invented a water commanding engine for raising water by steam. A French Huguenote Doctor Dionysius Papin had exper<sup>imented</sup> and demonstrated some effects of steam. The first steam engine to be used in industry was the one invented by Thomas Savery. This engine did good work in small wells and shallow mines, and was eventually superceded by Newcomen's engine. This engine (~~Newcomen~~) consumed a great amount of fuel and was expensive to run. It worked on the principle of steam condensing in a vacuum.

Watt happily struck on the idea of keeping the cylinder hot and at the same time having a vacuum in which the<sup>steam</sup> could work. Watt was anxious to learn to make mathematical instruments. He could not secure a proper place in Glasgow and on the advice of a Glasgow professor he went to London. In London he eventually succeeded in securing a place and under great difficulties he learnt his business. On returning to Glasgow he was refused permission to set up in business through pressure exercised by the guilds. Fortunately Glasgow University came to his aid and he was able to carry on his business and exper<sup>iment</sup>ed with his various steam apparatus.

One Sunday afternoon in the spring of 1765 the great idea of the hot cylinder and driving the piston with steam came to him.

He patented his engine. He was assisted financially by a man named

*James Watt's introduction.*

*Dr Black, Roebuck became a bankrupt and Watt was in a*

Roebuck and also <sup>in a free</sup> ~~in a free~~ <sup>vacuum</sup> ~~vacuum~~ condition when Boulton a hardware manufacturer of Birmingham came to his help.

Boulton was a clever manager. He and Watt became partners in a new firm established in Birmingham. Watt unfortunately could not manage men but Boulton could. Financial difficulties also came along. However Watt invented "a reciprocating expansion engine." In 1784 he had a method for applying the steam engine to tilt hammers in iron and steel forges and for "parallel motion". The governor, a device for regulating the speed of engines automatically was another of his inventions to improve existing machinery.

Watt thus made it possible to set up mills anywhere. The application of steam to the textile industries considerably increased and helped the expansion of these businesses. The second phase of the revolution of transport depended on Watt's invention ~~of transport~~, also the third great revolution that of making machines to make machines depends on <sup>Watt's</sup> ~~Watt's~~ invention:

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Thus Watt might be considered the Father of modern civilization.

The discovery of coal as a fuel in iron production led to the great revolution in the iron trade. The use of coal made the production of iron greater and cheaper. Other trades which used iron were developed accordingly.

The diminishing forests were now no longer a cause of alarm. Also the question of moving the works to where forests were had no longer to be considered. Iron works became established around those <sup>towns</sup> ~~towns~~ where the metal trade flourished such as Sheffield and Birmingham.

The changes which the iron production experienced were due to the inventions brought <sup>about</sup> ~~about~~ by Abraham Darby, <sup>Henry</sup> ~~Henry~~ Cort,

and James Watt.

Abraham Darby discovered how to use coal in the smelting of iron ore in the year 1709. This discovery was made at Coalbrookdale Works. He also used sand for moulds instead of clay and thus developed the cast-iron system. This Coalbrookdale Works Company made the first cast-iron bridge that was made. It crossed the Severn in 1779. Cast-iron water pipes and later gas-pipes came to be used.

Henry Cort discovered how to use coal in forges. He also introduced the system of puddling and rolling iron. When the iron was taken from the blast furnace it was put into a reverberating furnace heated by common coal. In the door of this furnace there were holes through which the workman could see and also thrust bars to stir up the molten liquid. When the iron had gathered together in clotted lumps it was taken out reheated and beaten by hammers into ductile slabs. Cort instead of hammering <sup>the iron</sup> it passed it between heavy rollers which squeezed out the earthy particles. Thus the iron industry underwent a great change.

John Wilkinson bored out a cylinder in which <sup>no</sup> ~~was~~ steam could escape and thus Watt was enabled to make better steam engines. Wilkinson in 1776 applied one of Watt's engines to blow the blast furnaces. This again made a great change in the iron industry as no longer was it dependent on water power. The new system of blast furnaces made it possible to use coke instead of charcoal. Various kinds of cast-iron parts and machinery were produced that could be used in other industries.

Benjamin Huntsman in 1740 discovered a new way of making blister steel. The new steel, while <sup>not</sup> liked by the master cutlers of Sheffield, forced its way on to the market and eventually the master cutlers of Sheffield used it to their great advantage.

As the iron industry expanded new processes were developed. The great furnaces were concentrated near the supply of coal and iron ore. New towns were built and new districts, such as Yorkshire, Derbyshire and <sup>South</sup> Wales, were developed and became new centres around which the people settled.

The iron trade grew and the iron-masters-cooperated in <sup>buying</sup> bringing goods and in trying to control <sup>prices</sup> prices. Local interests were <sup>fixed</sup> fused and their organization became stronger and more compact.

(1) These organization began to have great influence in *politics*

Watt/s, Darby, Cort, Wilkinson and Huntsman, by their inventions were the great pioneers who blazed the trail and made the Industrial Revolution ~~also-Affected-~~ possible.

(1) Ashton, op. cit. p100

F. Some Economic and Social Results.

English daring and enterprise in the near seas made England the chief sea power in and from the ~~eighteenth~~ <sup>seventeenth</sup> century. English ships carried African slaves to the new world to supply the cheap labour required to develop the mines and plantations. In the early days Venice and Genoa carried on the slave trade, a little later the Portuguese traders swept down the coast of Africa and took by force the people and sold them as slaves. When England gained sea supremacy some of ~~the~~ <sup>her</sup> sailors and merchants carried on this ~~vill~~ <sup>vill</sup>farious trade. During the last twenty years of the seventeenth century English ships carried 300,000 slaves from Africa to America. By the Treaty of ~~Utrecht~~ <sup>Utrecht</sup> of 1713 England became the principal slave-trading nation of the world.

The splendid victories of Marlborough at RaBillies, Malplaquet and Btenheim were used to secure the Assiento treaty, and thus English subjects gained for a period of thirty years the monopoly enjoyed first by the Dutch and then since 1701 by the French in the supply of slaves to the Spanish colonies. (1)

Rome paid for her slavery by destroying her own springs of life. Her peasants became mean white people. England never paid like Rome for her slave dealings. A slave when

(1) Hayes, Political and Social History of Modern Europe. Volume 1. P. 312.

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once he set his foot on English soil ~~he~~ <sup>man</sup> became a freeman.

Englishmen were not pushed by the labour of the slaves as the Romans were. However England did not escape paying the penalty. The slave business had considered those unfortunate creatures as mere cargoes and just so much blood and muscle to be disposed of by public auction. This moral atmosphere affected England. In Delos the slave was one who had been captured in battle, an enemy whose life had been spared, but the slave taken ~~across~~ <sup>across</sup> the Atlantic was just a piece of merchandise, he had no human rights at all. (1)

The age which could think of the African negroes not as a person, but as a power to be used by a master or a system, came naturally to think of the poor at home in the same way. We saw in the guild system that the workman was regarded as a person with some kind of property or status. In the early nineteenth century the workers, as a class, were looked upon as so much labour power to be used at the discretion of, and under conditions imposed by, their masters; not as men and women who are entitled to some voice in the arrangements of their life and work.

Locke suggested that the children of the poor should begin work at three; Defoe was glad to find that in many places in Yorkshire children of four years of age were working.

(1) De Quincey works. Volume 9. P. 176 (Edition of 1897)  
Chapters from Baxter's Christian Directory  
edited by J. Tawney. P. 28.

The new cotton mills placed on rivers in solitary districts required cheap labour. The new inventions made it possible to use child labour. When a London Parish gave relief to a family, it claimed the right to dispose of all the children of the person receiving relief. In this way London workmen <sup>handed over</sup> ~~sent~~ the Lancashire cotton mills with children. <sup>Harner</sup> ~~Mr. Harner~~ M. P. told the House of Commons of a contract between a London Parish and a Lancashire manufacturer in which the manufacturer undertook to receive one idiot child with every twenty sound children. Sir. Samuel Romilly tells very graphically what their fate was. (1)

At the beginning of the nineteenth century steam power had changed the problem. People in the towns were driven through poverty to send their children to the mills. The hand-loom weaver could no longer maintain himself and his family. If an adult had children he got work on condition that the children too would be sent to the mill. Children had to work long hours and had little time for lunch and none for recreation. The system of free labour

(1) The Life of Sir Samuel Romilly--by Himself. (edition 1842) Volume 2. P. 188.

whereby the masters could get children very early in life fastened itself on English life with a very strong grip.

In 1802 the Reformers were able to get an Act passed limiting the hours of an apprentice to twelve hours per day. But the Act was never enforced. A second Act passed in 1819 applying to children in cotton mills also was ineffective. The first measure to become operative was an Act of 1833 which provided for State inspection of factories and cotton mills. Of course this Act was evaded in many respects, but through the struggle carried on by reformers, an act was passed in 1847 limiting the number of hours per day to be worked in factories to ten.

The apologies used for the working of children were the same as the apologies used for the slave trade. It was stated that England's commercial supremacy depended on cheap labour. One reformer stated that the opponents of the Ten Hours Bill had discovered that England's commercial supremacy-and thus the greatness, depended on the work of 30,000 little girls. The champions of the slave trade pointed to the £70,000,000 invested in the sugar plantation, and to the importance of Liverpool as a shipping town developed through such commerce. Liverpool shipped the cotton goods of Lancashire to Africa, slaves were taken to the West Indies by the same ship and sugar was brought back. Thus the importance of Liverpool was connected with the slave business and many interests were connected with the black human cargo.

The same cycle of arguments was used in connection with

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plete control of their workmen. The Combination Act of 1799 forbade any workman to co-operate with other workmen <sup>either to</sup> ~~or to~~ improve his conditions of labour or to get more pay. A workman trying to improve his lot could be summoned before a magistrate, possibly his own employer and sentenced to prison for three months. Under cover of this Act many masters would threaten their men with imprisonment or service in the fleet in order to compel them to accept the wages they were offering. Francis Place and Hume got the Combination Laws repealed in 1824. However the workman was considered as bound to serve the new mechanism. The workman was refused education political rights and any voice in the conditions of his employment.

However reform came slowly and Britian began to check the ~~east~~ worst abuses that had grown up with the new power.

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G. Some Political Results.

The influence of the French revolution made itself felt in England. In the early days the Church had practically controlled the life of the people. Later on the Guilds had used considerable power in supervising men's actions. Neither the Church nor the Guilds had done anything during the Industrial Revolution to protect the workmen. As a result of the new thought men began to strive for personal freedom. They began to strive for power. They wanted to have a voice in determining both the conditions and the laws under which they had to work and live.

As mass production became the order of the day the masters found it very convenient to organize. Various ~~more~~ industries, particularly the iron and coal trade became more or less interlocked. The director~~s~~<sup>ships</sup> of one company were often *interested in the management of another company*. There was thus the tendency to combine for both trade and politics. The early cotton industry had ~~been~~<sup>on</sup> and individualistic development. The iron and coal industries, requiring large amounts of capital found it a great advantage to cooperate for mutual benefit. The great ironmasters soon began to *play* politics. They opposed Pitt's Irish Commercial Propositions in 1785. Later on in 1796 they again successfully opposed his excise duty on iron. In 1810 when the government tried to make the great ironmasters pay more towards the expense of the <sup>Napoleonic</sup> Napoleonic War, they were able to defeat the government in their enterprise.

Parliament was composed mostly of men who possessed land. The new great industrial class bought land and in this way some of their members got into Parliament.

*They also bought rotten boroughs. Very important*





the conditions imposed by the capitalist. The peasants had tried to make their grievances known. Both the great landowner and capitalist had been successful in resisting taxation. Over a thousand articles were on the customs tariff in 1842. (1) Wages at this time were falling rapidly, (2) yet rents were being raised. Pitt placed fresh taxes on articles of trade, commerce and home consumption. In 1816 the industrial depression was so great that there were many riots, - In Kent among the agricultural labourers, in the Midlands the miners, and in Nottingham the artisans broke machines. These riots were put down with brutal cruelty as the Peterloo incident of 1819 shows. The Six Acts (3) passed by Parliament, for a time limited the activities of the reformers. However the Reform Act of 1832, The Chartist Movement, and The Repeal of the Corn Laws were some ~~of~~ the political results of the Industrial Revolution.

It is ~~time~~ <sup>true</sup> that the Industrial Revolution made the lot of the working classes very miserable, but in the end it gave them much of the political power that they enjoy today. The assembling of large numbers of people in towns where the new industries were developed, eventually brought forward the question of representation in Parliament. There was a natural jealousy between the great landed proprietors and the ~~new~~ industrial ~~magistrates~~ <sup>magnates</sup>. This is seen by the attitude of the members of the House of Lords to the First Reform Act of 1832. It was, of course, absurd for them to refuse to transfer the franchise of "Old Sarum" to the great manufacturing town of Manchester.

- (1) Levi History of British Commerce P. 269.
- (2) Levi. op. cit. Pp. 145 & 146.
- (2) Rogers, Six Centuries P. 505.
- (2) Hammond The Town Labourer, The Village Labourer, The

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(3) Toynbee Industrial Revolution P. 207.

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The Reform Bill was eventually passed and the great manufacturing towns sent representatives to Parliament. The Reform Act of 1832 may thus be considered as the first visible step on the way of political freedom of the working class.

<sup>after</sup> After the Reform Act there were Factory Acts passed and also the Repeal of the Corn Laws. It appears strange reading to note that the men who were anxious to have humane factory laws were the great landed proprietors. The millowners opposed such legislation. John Bright opposed the Ten Hour's Bill and in a speech made in the House of Commons on February 10-1847 characterised the Bill as "one of the worst measures ever passed in the shape of an Act of the legislature. (1) That great student of political economy, Arnold Toynbee, suggests that before these Factory Acts saved England from shame and degradation.

A little later the manufacturing class brought about the Repeal of the Corn Laws against the wishes of the landed proprietors.

(1) This extraordinary utterance may be seen in the records of Hansard, Third Series, Volume LXXXLIX P.1148.

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Repeal of the Corn Laws 1846  
Bright's speech on the Factory Act 1847.



The First Reform Act of 1832 ; the Municipal Corporations Act of 1835 ; the Repeal of the Corn Laws in 1846 ; and the interest in general education are some of the important political results of the Industrial Revolution.

H. Conclusion - Recapitulation.

Our survey of this particular period has necessarily been very brief. We have seen how England's island position made her the centre of the world. Her great resources helped her in winning the chief commercial and industrial <sup>usurial</sup> position in the world. In evolving her roads and canals she became a pioneer in the art of making means of quick communications. In destroying the peasant villages and custom in industry she made possible the building of modern towns. Her inventors made it possible for her to gain the premier position in the markets of the world. The establishment of the "Factory System", while it made the life of the workman miserable, produced some of the great reformers namely, Oastler, Habhouse, J. Sadler, M. T. Ashley Cooper, and others. The pioneers of reform such as Lords Grey, and Russell, improved the Parliamentary system. Thus through all the processes, covering a fair length of time, there has been a slow improvement in the conditions of the lot of the working man. This movement may be likened to the forward and backward movement of the sea. Some things and conditions through time have been washed away and humanity has been landed on new shores that have come to view as a result of natures' custom of unexpected upheavels. On On this new land life has taken on new forms and new desires.

Shelley, Byron, Wordsworth, Scott, and Tennyson, each  
and all protested against the callous tendency of the new sys-  
tem, and yet they had faith in the ultimate purpose of the world.

"Till at the last arose the man ;

Who throve and branch's from clime to clime  
The herald of a higher race,  
And of himself in higher place  
If so he type this work of time

Within himself, from more to more :  
Or, crown's with attributes of woe  
Like glories, move his course, and show  
That life is not as idle ore,

But iron dug from central gloom,  
~~And~~ heated hot with burning fears,  
And dipt in baths of hissing tears,  
And batter'd with the shocks of doom

To shape and use. Arise and fly  
The reeling Faun, the sensual feast :  
Move upward, working out the beast,  
And let the ape and tiger die.

(Tennyson).