

THE SOCIAL SIGNIFICANCE OF  
THE INDUSTRIAL REVOLUTION

HAROLD LEROY WHITE

UNIVERSITY  
ARCHIVES

THE SOCIAL SIGNIFICANCE OF THE INDUSTRIAL REVOLUTION

By

HAROLD LEROY WHITE



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## INTRODUCTORY

The environment of man has been profoundly changed in the recent past. Two centuries ago the world was much different from the one which we see today. The modern urban centers were not known, and social relationships were very simple in nature. "During the Middle Ages the land was worked primarily for the support of the immediate group that lived upon it. The typical community of the Middle Ages was the self-sufficient village." <sup>1</sup> August Jessup, an English essayist, gives us a picture of the living conditions during the thirteenth century. About the same conditions existed up to the time of the Industrial Revolution.

"The laborer's dwelling had no windows; the hole in the roof which let out the smoke rendered windows unnecessary and even in the houses of the well-to-do glass windows were rare. In many cases oiled linen cloth served to admit a feeble semblance of light and to keep out the rain. The laborer's fire was in the middle of his house; he and his wife and children huddled around it sometimes grovelling in the ashes; and going to bed meant flinging themselves down upon the straw which served them as mattress and feather bed exactly as it does the present-day gypsy in our byways. The laborer's only light was the smoldering fire. Why should he burn a rushlight when there was nothing to look at? And reading was an accomplishment which few laboring men were masters of.

<sup>1</sup> W. E. Lunt, History of England, p. 356.

As to the food, it was of the coarsest. The absence of vegetable food for the greater part, the personal dirt of the people, the sleeping at night in the clothes worn in the day, and other causes made skin diseases frightfully common. At the outskirts of every town in England of any size there were crawling about emaciated creatures covered with loathsome sores, living heaven knows how. They were called by the common name of lepers and probably the leprosy so called was awfully common. But the children must have swarmed with vermin; and the itch and the scurvy and ringworm with other hideous eruptions must have played fearful havoc with the weak and sickly.

As for the dress of the working classes, it was hardly dress at all. I doubt whether the great mass of the laborers in Norfolk had more than a single garment--a kind of tunic leaving the arms and legs bare with a girdle of rope or leather round the waist, in which a man's knife was struck to use sometimes for hacking his bread, sometimes for stabbing an enemy in a quarrel. As for any cotton goods, such as are familiar to you all, they had never been dreamt of, and I suspect that no more people in Norfolk wore linen habitually than now wear silk." <sup>1</sup>

Even in the sixteenth century many individuals would have good reason to hold a grudge against life.

"Compared with the comfort of the farmer today, the poverty of sixteenth-century peasants must have been inexpressibly distressful. How keenly the cold pierced the dark huts of the poorest, is hard for us to imagine. The winter diet of salt meat, the lack of vegetables, the chronic filth and squalor, and the sorry ignorance of all laws of health opened the way to disease and contagion. And if the crops failed, famine was added to plague." <sup>2</sup>

Prior to the eighteenth century the social milieu was as it had been for hundreds of years. The old world was made of god, peasants, villages, agriculture, feudalism, handicrafts, clericalism, monarchy, fear, nationalism, simplicity, and was distinctively characterized by isolation and provincialism.

<sup>1</sup> Charles A. Beard, Toward Civilization, p. 140-141.

<sup>2</sup> Carlton J. H. Hayes, A Political and Social History of Modern Europe, p. 35.

"That which makes a man a man, as distinguished from all other beings and phenomena we know of, is what has been called ethos since the days of the ancient Greeks." <sup>1</sup> Man is not only a political animal, but he is also a religious creature. Herbert Spencer has asserted that prior to the industrial age supernaturalism was the dominant power. During the medieval period of history the sense of certainty, the vindication of life, the feeling of cosmic support were found in divine revelations. Men were convinced of the truth of the Divine Drama. <sup>2</sup>

"We have some trouble in picturing the state of mind of a man of olden times who firmly believed that the earth was the center of the world and that all the stars turned round it. He felt under his feet the souls of the damned writhing in flames, and perhaps he had seen with his own eyes and smelled with his own nostrils the sulphurous fumes of Hell escaping from some fissures in the rocks. Lifting his head he contemplated the twelve spheres, that of the elements, containing the air and fire, then the spheres of the Moon, of Mercury, of Venus, which Dante visited on Good Friday of the year 1300, then those of the Sun, of Mars, of Jupiter, and of Saturn, then the incorruptible firmament from which the stars were hung like lamps. Beyond, his mind's eye discerned the Ninth Heaven to which saints were rapt, the Primum Mobile or Crystalline, and finally the Empyrean, abode of the blessed, toward which, he firmly hoped, after his death two angels robed in white would bear away, as it were a little child, his soul washed in baptism and perfumed with the oil of the last sacraments. In those days God had no other children than men, and all his creation was ordered in a fashion at once child-like and poetic, like an immense cathedral. Thus imagined, the

<sup>1</sup> Count Hermann Keyserling, The Recovery of Truth, p. 512.

<sup>2</sup> George Santayana, has very appropriately and beautifully, called the medieval philosophy of history, the Christian Epic.

universe was so simple that it was represented in its entirety with its true shape and motions in certain great painted clocks run by machinery." <sup>1</sup>

The words "catholicism" and "protestantism" cover much of the experience of man. From the inception of Christianity, the Reformation, the establishment of the State Church by Henry the VIII, to the eighteenth century-- religion was an extremely important factor in the determination of human behavior. It is a striking truth that America has a religious background.

"The earliest traces of what might be called a social conscience in America were intimately associated with religion. This was due to the fact that American colonization at first took on, for the most part, the form of religious communities. The Puritan commonwealth of New England, the Scotch-Irish of Pennsylvania and the South, the Baptists of Rhode Island, the Quakers of Philadelphia, not to mention less important groups, were the nuclei from which social and national consciousness slowly developed." <sup>2</sup>

A. M. Low affirms that "The Puritan is the heart of American civilization." It is nearly impossible to over-estimate the importance of religion on the life of man. Down to the eighteenth century it was believed that the earth was solid and firm, and that a heaven filled with angelic beings was directly above. The Bishop Bossuet, supported absolutism on supernatural grounds, and considered history as the manifestation of Divine Providence.

<sup>1</sup> Anatole France, The Garden of Epicurus

<sup>2</sup> John M. Mecklin, An Introduction to Social Ethics, p. 23. Ibid., p. 24.



Before the Industrial Revolution agriculture was the primary industry. W. E. Lunt says of Great Britain:

"In 1696, when the total population was approximately five and one-half millions, about four millions lived in the country and were dependent primarily on rural pursuits. In the technique of agriculture the seventeenth century witnessed no widespread improvements, and in the opening years of the eighteenth century the wasteful and extravagant methods of cultivation inherited from the Middle Ages still obtained generally." <sup>1</sup>

During the existence of domestic industry the home was the center of activity. In the cottage system women made clothes and the spinning wheel was a familiar object in every home. The term "spinster," even today reminds us of the time when the woman was engaged in spinning throughout all her life. Simplicity was the characteristic feature under this method of production. Fluctuation of price, panics, overproduction and speculation were not known. The German economist, Sombart, has made this significant affirmation.

"Economic activities in the pre-capitalist period were regulated solely in accordance with the principle of a sufficiency for existence; the peasant and craftsman looked to their economic activities to provide them with their livelihood and nothing more." <sup>2</sup>

In this simple economic world men spent most of their time and energy in trying to make a living. But during the eighteenth century a revolution took place which ushered in the new and present civilization. The

<sup>1</sup> History of England, p. 530.

<sup>2</sup> J. Salwyn Schapiro, Modern and Contemporary European History, p. 23.

new world is made of machines, education, cities, industry, capitalism, serial production, humanism, democracy, science, internationalism, complexity, and is distinctively characterized by mass-society and cosmopolitanism. The Industrial Revolution has created a new epoch in the history of man, and has brought into existence the modern age which is bewildered about religion, obsessed with sex, intoxicated with wealth, ignorance of art, skeptical of philosophy, and overawed by science.

"While the American Revolution was taking place, England was in the midst of economic changes so fundamental and extensive that they revolutionized the life of the English people. By the closing years of the century agricultural methods had been transformed, the essential characteristics of the modern industrial organization had been established, and such a change of the social order as had never before been known was well under way. So profound were the consequences of this silent revolution that only with great difficulty can we who live among them today visualize the manner of lives men lived before Coal became king. Forms of government, laws, social conventions, living conditions, in short, our whole civilization is intimately associated with the changes wrought by the economic revolution which began in England in the eighteenth century.

The agricultural methods generally followed in the early years of the eighteenth century differed little from those of the Middle Ages. The open-field system still prevailed, agricultural technique had improved only slightly, and the lack of easy communication tended to prevent the spread to one part of the country of the improvements discovered in another. At the same time the way was being prepared for the general transformation which took place in the last four decades of the century." <sup>1</sup>

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<sup>1</sup> W. E. Lunt, History of England, p. 613.

CHAPTER I  
ORIGIN NATURE AND DEVELOPMENT

In its most fundamental aspect the word "revolution" means change. The Latin phrase is Novae res (new things). The term as applied to industry was first employed by Blanqui in 1837. This French socialist used the word to indicate a complete transition in the economic world. He considered the Industrial Revolution and the French Revolution as the two greatest events of modern times; one ushering in the new economic civilization, and the other our present political structure. The term "revolution" was popularized by Arnold Toynbee.

This word, like most significant words, has a variety of interpretations. W. G. Sumner<sup>1</sup> employs the term when referring to the complete reconstruction of the social organization. Ross,<sup>2</sup> Martin,<sup>3</sup> Bodin,<sup>4</sup>

<sup>1</sup> W. G. Sumner, Folkways.

<sup>2</sup> E. A. Ross, Principles of Sociology

<sup>3</sup> Everett Dean Martin, The Behavior of Crowds

<sup>4</sup> Jean Bodin, The Six Books of the Commonwealth

Webster,<sup>1</sup> Small,<sup>2</sup> Dewe,<sup>3</sup> Adams,<sup>4</sup> Spargo,<sup>5</sup> and Sorokin,<sup>6</sup> confine the meaning of the word to political phenomena. According to LeBon<sup>7</sup> and Ellwood<sup>8</sup> "revolution" means a sudden change in the social structure.

"Almost any observer would say, at the present time, that the problems of our human world are problems of unity and change, and he would probably add that the changes that we are forced to deal with in practical human affairs are of two types, gradual changes which may be called "growth" and abrupt, violent changes, which might be called "revolution." 9

Some people have unequivocally affirmed that the use of the word "revolution" is not warranted. It is an important fact that geological phenomena have not been produced by cataclysms and catastrophes.

<sup>1</sup> Nesta Webster, World Revolution and the French Revolution  
<sup>2</sup> A. W. Small, General Sociology  
<sup>3</sup> J. A. Dewe, The Psychology of Politics and History  
<sup>4</sup> Brooks Adams, The Theory of Social Revolutions  
<sup>5</sup> John Spargo, The Psychology of Bolshevism  
<sup>6</sup> P. A. Sorokin, The Sociology of Revolution  
<sup>7</sup> Gustave LeVon, The Psychology of Revolutions  
<sup>8</sup> C. A. Ellwood, Sociology in its Psychological Aspects.  
<sup>9</sup> C. A. Ellwood, The Psychology of Human Society,  
 p. 20-21.

James Hutton and Charles Lyell have demonstrated that the present condition of the earth's surface has been engendered not by supernatural causation, but by the slow and constant operation of laws which are now in force. The avowed adherents of naturalistic uniformitarianism believe that "revolution" when applied to physical or social phenomena is a misnomer. If we consider the Industrial Revolution in detail we will discover that it is an evolutionary process. It is not yet completed and it is doubtful if it ever will be.<sup>1</sup> But from one point of view there is justifica-

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<sup>1</sup>Some writers claim that there has been two Industrial Revolutions. One beginning in England during the last part of the 18th century, and characterized by steam and individual research. The other beginning in Germany during the last part of the 19th century, and receiving its stimulation from chemical discoveries. The distinguishing characteristics of the second Industrial Revolution are electricity and systematic social research. Perhaps there is no justification for a great distinction here. The Industrial Revolution began in England and has continued until the present day.

tion for the term "revolution". If the Industrial Transition is considered in detail it is evolution, but if it be considered in its entirety it is truly a revolution.<sup>1</sup>

The history of mechanical inventions reveals a progressive continuity of human experience. From historical evidence we must infer that no man has ever brought into existence one invention. Every mechanical invention shows a social process of gradual development. Empirical inventions have been engendered by collective rather than individual

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<sup>1</sup> A social revolution has been the result of the Industrial Revolution. This fact is an indictment against the intelligence of mankind. If institutions contained sufficient elasticity or flexibility, revolutions would be unnecessary and impossible. The dominant feature of our world is impermanence. Social institutions must be adjusted to the condition of perpetual change. Human progress can be attained much better by evolution than by revolution. In the latter method of procedure the good things of society are lost as well as the bad, reason cannot function as it should, and there generally follows a period of undesirable reaction. The French Revolution is an evidence of the first; the Reign of Terror, the second; and the Congress of Vienna, the third.

behavior, and there is therefore expressed a social and cooperative process. Every innovation has been slight in nature, but has added to the establishment of composite relationships.

However, the social nature of inventions has been confined to a comparatively small number of individuals. Man is an imitator rather than an innovator. The innovator has his eyes toward the future and is radical and creative;<sup>1</sup> the social perpetrator looks toward the past and is conservative and imitative.<sup>2</sup> All progress in the world has been engendered by a few men who have revolted against traditional concepts of behavior. This fact applies to the social as well as the mechanical inventions.<sup>3</sup> "It is the classes who produce variations; it is the masses who carry forward the traditional mores."<sup>4</sup>

<sup>1</sup> The radical has been defined as a man who desires that nothing will be done that has ever been done before.

<sup>2</sup> The conservative desires that nothing will be done for the first time.

<sup>3</sup> As man becomes more advanced intellectually there is a more intimate relationship between social and mechanical inventions. In the current age they are inter-related to the extent that there is produced a striking uniformity of affects upon society.

<sup>4</sup> W. G. Sumner, Folkways, p. 47.

Great men are the "salt of the earth" as they preserve the heritage of the ages, and by their creative activities increase the sum of human culture. "History demonstrates that it is to this small elite that we owe all the progress so far accomplished. The inventors of genius hasten the march of civilization."<sup>1</sup> Novel behavior patterns are born of existing social conditions, but the individual innovator is not only the child of his age, as he is also the father of the future. The fact that inventions are social to some extent does not in any way disparage the importance of individual genius. The individual is the creator and the ultimate standard of values. Social and mechanical inventors represent the best gifts of the earth, and they have all acquired a place in the lonely heights of genius. "Great men are like the floods of Egypt that come and go and leave the country happier and richer and more fertile in noble ideals for their temporary presence."<sup>2</sup> These

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<sup>1</sup> A. J. Todd, Theories of Social Progress, p. 382

<sup>2</sup> Hendrik Van Loon, America, p. 126.



men have played an important part in the direction of affairs, and humanity will always be in debt to them. There is divinity embodied in human reason and genius, and he who would deny this is the only atheist in the world. <sup>1</sup>

Inventions are social in that they are the result of the co-operative endeavor of inventors. They are also influenced by the "spirit of the times." The phenomenon of simultaneity does not seem compatible with McDougall's theory of an "instinct of contrivance," or Veblen's theory of the "instinct of workmanship." Inventions are, to a large extent, the results of the prevailing Zeitgeist. Adams and Leverrier discovered the planet Neptune at about the same time. The concept of evolution, having originated from Empedocles and Aristotle, found concrete expression in the works of Buffon, Erasmus Darwin, Lamarck; and Goethe, Wallace, and Herbert Spencer expressed conceptions now found in The Origin of Species.

<sup>1</sup> The idea of the divine right of kings has been discarded since the French Revolution. If men should rule by divine right it should be philosophers. Universal welfare, even including mass mediocrity, would result if sovereignty could be embodied in the intellectual aristocracy. Nietzsche says: "There is no sorer misfortune in all human destiny, than when the mighty of the earth are not also the first men." Cf. Zarathustra. Marcus Aurelius nearly fulfilled the dream of Plato.

Swan, Edison, and many others were developing the incandescent lamp in 1880. Bell, Reis, and Gray all endeavored to send voices over the wire at about the same time. Television has been developed in the recent past by Baird, Mihaly, Jenkins, by groups of inventors in the Bell Telephone laboratories of New York, the General Electric Company of Schenectady, and the Telefunken Company of Germany. In the same year Joule and Helmholtz were working on the principles which professor Rankine later termed "conservation of energy." William Ogburn names one hundred and forty-eight major examples of simultaneous inventions.<sup>1</sup> In 1857 the spinning machinery alone represented about eight hundred inventions, and most of these inventions were based upon adaptations.<sup>2</sup> Mr H. G. Wells has made the significant affirmation that social indebtedness might become a moral factor in the establishment of the brotherhood of man.

Profound dissertations have been written concerning the distinction between discovery and invention.

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<sup>1</sup> Social Change, 1922

<sup>2</sup> Charles A. Beard, The Industrial Revolution, p. 38

According to Professor Usher, "discovery consists in the perception of relations existing in nature that were not previously recognized." And invention, on the other hand, "established relationships that did not previously exist."<sup>1</sup> The Industrial Revolution, according to this particular definition, is concerned with invention, or the establishment of novel relationships in the external world. Inventions are species of conceptual thinking and cognitive consciousness. They are produced by a novel combination of energy, material and processes, and for a desired result and specific purpose.

The Industrial Revolution began in England during the last quarter of the eighteenth century. There are some valid reasons why it began at this time in this country. Commerce was greatly stimulated by the crusades of the 11th, 12th, and 13th centuries. Ideas and goods were exchanged and the Europeans

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<sup>1</sup> A. History of Mechanical Inventions, p. 10-11.

developed a taste for oriental luxuries. The discovery of America opened up great mines of gold and silver. World commerce began when the Atlantic and Pacific Oceans took the place of the Mediterranean sea. The agrarian revolution of the 16th century and the Commercial Revolution of the 17th century had important consequences upon the origin of the Industrial Revolution. During the ages past the staple product of England has been wool. This industry was greatly stimulated by the Black Death which killed so many people that a scarcity of labor was produced on the manors.<sup>1</sup> The pandemic of 1348 originated in the East, and from here it followed the trade routes to Italy, France, and the British Isles, and finally extended its ravages to Scotland and Ireland. The death rate has been estimated to be from one-third to one-half of the population.<sup>2</sup> The raising of sheep emphaized

<sup>1</sup> From 1750 to 1810 not less than 2921 acts of enclosure bills were passed. J. Salwyn Schapiro, Modern and Contemporary European History, p. 18. 3000 enclosure acts were passed during the reign of George III. Benjamin Terry, A History of England, p. 918.

<sup>2</sup> W. E. Lunt, History of England, p. 263. E. M. Hulme, Renaissance and Reformation, p. 242.

the necessity of land rather than labor. The manors were therefore converted into sheep ranches. This condition made possible the existence of the domestic system of industry. The work was confined within the home, and the small villages were for the primary purpose of defense.

In England serfdom was abolished two centuries prior to its disappearance on the continent. By the sixteenth century practically all of the serfs in England had become tenants, hired laborers, or metayers. In some districts of France serfdom existed, accompanied by all of its pristine vigor, until the French Revolution.<sup>1</sup> By the end of the sixteenth century serfdom no longer existed in England. The guild system to a great extent controlled industry on the continent, whereas in England its power of monopoly was practically destroyed by the seventeenth century. The religious and political conditions were more favorable in England than in Germany or France.

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<sup>1</sup> The centralization of authority in France had practically destroyed individual initiative.

Toward the end of the sixteenth century many protestants migrated to England from the Netherlands, as a result of the intolerance of Phillip II, and because of the more favorable conditions under which they could live.

At the time of the establishment of the Bank of England (1694) there was an assurance of a comparatively higher return for capital invested. There had accumulated a large amount of capital derived from foreign trade.<sup>1</sup> During the seventeenth century the Dutch constituted the most serious rival of England for the trade in Europe, America, Asia and Africa. By the end of the century the commercial supremacy of England was fully established. England has realized that her very existence is dependent upon a large navy.

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<sup>1</sup> Russia could not have an Industrial Revolution until the latter part of the nineteenth century. Even after the liberation of slaves in 1861, something else was required. Russia was enabled to become an industrial power by the importations of capital from Germany and France.

A large merchant marine could carry British goods to all parts of the world. By the application of the principle of mercantilism the greatest of all colonial powers could develop prestige and economic power.

The international status of England was proclaimed in no uncertain way during the Tudor period. The Peace of Utrecht (1713) marked the decline of France, and the rise of English power upon the sea. The Invincible Armada (1588) was the mark of the decline of Spain. The surplus of capital in England was the result of the trade which has been wrested from Spain, Holland, and the Hanseatic League. There was a general stagnation of politics, a mistrust of state supervision, and an aristocracy deeply interested in commerce. The European wars of the seventeenth and eighteenth centuries were not so harmful to England as on the Continent. Not only was there a world-wide demand for English goods, but there existed an abundance of labor which was caused by the Enclosure Acts.

The insular position of England, the termination of guild restrictions, good roads and canals, a humid atmosphere which facilitated textile manufacturing, the development of the scientific spirit accompanied by the disassociation of medieval traditions, metal working refinements, a stable monetary system based upon gold, and the development of scientific measurement, all had very important influences upon the inception of the Industrial Revolution.

Capital, labor and natural resources are necessary for industrial development. In the consideration of the origin of the Industrial Revolution it is impossible to overestimate the importance of the deposits of coal and iron in the northern part of England. The military supremacy of Germany was engendered by her supply of coal and iron. It is been said that those nations possessing coal and iron rule the world.<sup>1</sup> Bertrand Russell has affirmed that the basis of national power rests upon coal, iron and oil.<sup>2</sup> "Coal and

<sup>1</sup> Tower, The Coal Question, "Foreign Affairs," Sept., 15, 1923.

<sup>2</sup> Icarus, or the Future of Science, p. 19.



iron are the new builders of this modern world-- coal and iron--and the ability of man, chimpanzee-like, to join them in new, inventive forms." <sup>1</sup>

Brooks Adams informs us that the industrial supremacy of America is marked by the opening of the Pennsylvania coal-fields in 1897. He has also recognized the cause of the transfer of industrial leadership from England to Germany after the capture of Alsace-Lorraine in 1871.<sup>2</sup> Deplorable results to Greece came about from the exhaustion of the silver mines of Laurium, and the same condition has existed for Rome as a result of the depletion of her silver mines in Spain. Someone has remarked that when it is necessary to bring coal to Newcastle--England will have no future. In a civilized world coal is truly King.

Not only did England have coal and iron, but there was an abundance of water-power. Water was

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<sup>1</sup> Baker Brownell, The New Universe, p. 193.

<sup>2</sup> Cf. The Law of Civilization and Decay

better than horse-power in running the spinning machinery, but even water had the great disadvantage of not being constant. In some places there were sometimes too much water, sometimes not enough, and other times no water at all. But man's subjugation of water marks one of the great stages in his upward movement. As man before Kircher, Leeuwenhoek and Pasteur did not know of the microscopic life in water, so before the Industrial Revolution man was unaware of the tremendous power and energy which has always been hidden in this ordinary phenomenon.

There are many reasons why the Renaissance began in Italy, why the Reformation began in Germany, and why the French Revolution began in France. We have considered some of the reasons why the Industrial Revolution had its origin in England. When we consider the problem we must conclude that it could have started in no other place. It seems that all the forces of the universe worked toward the origin of the Industrial Revolution in Great Britain. Only one thing more was necessary--the transforming touch of inventors.

I would impute to the French mind the attributes of urbanity of behavior, and lucidity of expression; to the German mind profundity of thought, and obscurity of utterance; to the English mind slowness of thought, and practical in conduct. The English love sport and fair play, and sometimes even remind one of Aristotle's Golden Mean. Consider the opening words of the Annual Register for 1801: "The riots which have taken place in many parts of England and Scotland on account of the high price of provisions, were neither so violent nor so obstinate as they would have been in countries where there is less moderation of character in the people and less confidence in means of constitutional relief." In government France did in ten years more than England could do in over one hundred years. The progress of the English nation has been dictated by reason; her achievements have been slow, but they have been built upon a firm foundation. In England there occurred a momentous change in all human life, which was not characterized, as the French Revolution, by famous battles, eloquent

speeches, or notable conventions. But there were leaders in the Industrial Revolution as there were leaders in the French Revolution.

The practical mind of England was one of the immediate causes of the Industrial Revolution. However, it is a mistake to assume that England did nothing in the field of pure science. The names of Dalton, Davy, Wollaston, Faraday, Smith, Herschel, Kater and Cavendish, represent sufficient evidence to refute this assumption. Yet England seems to have excelled in applied science. The following galaxy of practical inventors is a conclusive declaration of this fact. Hargreaves, Arkwright, Crompton, Cartwright, Kay, Radcliffe, Horrocks, Newcomen, Watt, Bolton, Telford, Murdock, Trevethick, Cort, Tennant, Ronalds, Stanhope, Bramah, Nasmyth, Miller, Symington, Watson, Rennie, Mylne, Jessop, Chapman, Rumford, Huddort, Brunel, and Maudslay. It is small wonder that the reign of George III has been called the Augustan Age of Modern History!

In 1733 Kay invented his flying shuttle, in 1767 Hargreaves invented the spinning jenny, in 1768 Arkwright's water frame came into existence, in 1775 Crompton perfected the machine called the mule, and in 1784 Cartwright invented the power loom. Kay's shuttle did for the weaver what the jenny did for the spinner. The machine process was gradually applied to the woolen industry, and later to all of the other industries. Thus the origin of the Industrial Revolution is to be found in the textile industry.<sup>1</sup> Hargreaves, Compton, Arkwright and Cartwright were the greatest textile inventors. The following is a brief account of Hargreaves' invention of the spinning jenny.

"Hargreaves is said to have received the original idea of his machine from seeing a one-thread wheel overturned upon the floor, when both the wheel and spindle continued to revolve. The spindle was thus thrown from a horizontal into an upright position; and the thought seems to have struck him that if a number of spindles were placed upright, and side by side, several threads might be spun at once. He contrived a frame, in one part of which he placed eight rovings in a row, and in another part a row of eight spindles. The rovings, when extended to the spindles, passed between two horizontal bars of wood, forming a clasp, which opened and shut somewhat like a parallel ruler; when pressed together this clasp held the threads fast. A certain portion of roving

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<sup>1</sup> Thru the introduction of machines the word "manufacturing" has lost its etymological significance of "making by hand" (manu, facere.) And it has even become a stigma to own or wear "home-made" things.

being extended from the spindles to the wooden clasp, the clasp was closed and was then drawn along the horizontal frame to a considerable distance from the spindles, by which the threads were lengthened out and reduced to the proper tenuity. This was done with the spinner's left hand, and his right hand at the same time turned a wheel which caused the spindles to revolve rapidly, and thus the roving was spun into yarn. By returning the clasp to its first situation, and letting down a presser wire, the yarn was wound upon the spindle."<sup>1</sup>

John Kennedy, a personal friend of Samuel Crompton of Bolton, says concerning the improvement of the spinning jenny.

"When about sixteen years old he learnt to spin upon a jenny (of Hargreaves's make) and had occasionally woven the yarn which he had spun. This, being but indifferent work, led him to reflect how it might be improved ... He was only twenty-one years of age when he commenced this undertaking, which took him five years to effect-- at least before he could bring his improvements to maturity. As he was not a regular mechanic, and possessed only such tools as he purchased with his little earnings acquired by labor at the loom or jenny and as he had also to learn the use of those simple tools, we may be justly surprised that even in five years he succeeded so far as to make his machine practically useful."<sup>2</sup>

The number of spindles in the jenny was at first eight; when Hargreaves obtained his patent

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<sup>1</sup> Robinson and Beard, Readings in Modern European History, Vol. 11, p. 46.

<sup>2</sup> Memoirs of the Literary and Philosophical Society of Manchester, p. 318

there were sixteen; and later over one hundred were used. The Clergyman, Cartwright, unlike many of his fellow-inventors possessed education and some literary ability. He says of his invention of the power loom.

"Happening to be at Matlock in the summer of 1784, I fell in company with some gentlemen of Manchester, when the conversation turned on Arkwright's spinning machinery. One of the company observed, that as soon as Arkwright's patent expired so many mills would be erected, and so much cotton spun, that hands never could be found to weave it. To this observation I replied that Arkwright must then set his wits to work to invent a weaving mill. This brought on a conversation on the subject, in which the Manchester gentlemen unanimously agreed that the thing was impracticable; and, in defense of their opinion, they adduced arguments which I certainly was incompetent to answer, or even to comprehend, being totally ignorant of the subject, having never at that time seen a person weave. I controverted, however, the impracticability of the thing by remarking that there had lately been exhibited in London an automaton figure which played at chess. Now you will not assert, gentlemen, said I, that it is more difficult to construct a machine that shall weave than one which shall make all the variety of moves which are required in that complicated game.

"Some little time afterwards, a particular circumstance recalling this conversation to my mind, it struck me that, as in plain weaving, according to the conception I then had of the business, there could only be three movements

which were to follow each other in succession, there would be little difficulty in producing and repeating them. Full of these ideas, I immediately employed a carpenter and smith to carry them into effect. As soon as the machine was finished I got a weaver to put in the warp, which was of such material as sailcloth is usually made of. To my great delight, a piece of cloth, such as it was, was the product. As I had never before turned my thoughts to anything mechanical, either in theory or practice, nor had ever seen a loom at work, or known anything of its construction, you will readily suppose that my first loom was a most crude piece of machinery. The warp was placed perpendicularly, the reed fell with the weight of at least half a hundreweight, and the springs which threw the shuttle were strong enough to have thrown a Congreve rocket. In short, it required the strength of two powerful men to work the machine at a slow rate, and only for a short time. Conceiving, in my great simplicity, that I have accomplished all that was required, I then secured what I thought a most valuable property by a patent, 4th of April, 1785.

"This being done, I then condescended to see how other people wove; and you will guess my astonishment when I compared their easy modes of operation with mine. Availing myself, however, of what I then saw, I made a loom, in its general principles nearly as they are now made. But it was not till the year 1787 that I completed my invention, when I took out my last weaving patent, August 1st of that year..."<sup>1</sup>

The advent of the machine into the Western world provides a glorious theme for an "Illyiad" or

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<sup>1</sup> Baines, History of Cotton Manufacture in Great Britain, p. 229.



an "Odyssey." For many centuries man has used the same kind of instruments and tools as were used by the Egyptians and Babylonians. "The machinery of production showed no radical difference from that familiar in ages long past. The Saxon farmer of the eighth century enjoyed most of the comforts known to Saxon farmers of the eighteenth."<sup>1</sup> For two thousand years man has endeavored to make a home on the earth with the same loom, spindle and plough.

The inventions were first applied to the cotton industry, which was greatly stimulated by the invention of the cotton gin, and the development of the cotton industry in the United States. Perhaps the principal reason why the inventions were first applied to cotton, rather than to the old woolen industry, is embodied in the idea of freedom. The new industry did not have the potent force of tradition behind it, and consequently there was a greater

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<sup>1</sup> Henry Adams, History of the United States, Vol. 1, p. 16.

possibility for the toleration of innovations. But freedom did not exist even here as there was much opposition to the new machine process. "At a time when Cartwright had just received an order from a Manchester firm for four hundred of his power looms, his factory was burned, probably the work of incendiaries, and a bill was actually presented in Parliament, which forbade the use of his wool-combing machine under severe penalties."<sup>1</sup> In 1779 sabotage was practised in Lancashire. Hargreaves was compelled to move from Lancashire to Nottingham in order to run his spinning-jenny in safety.

In spite of much opposition the machine came into the world to remain. It has made a continual advance. Until about the close of the eighteenth century the greater part of industrial machinery was made of wood. Then the wooden frames with their irregular surfaces gave way to the more

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<sup>1</sup> Benjamin Terry, A History of England, p. 913

precise surface made possible by iron and steel, and the modern machine made its first appearance. Now that the machine was constructed: power was necessary to run it. The Industrial Revolution, was to a great extent, made possible by the steam engine.

Hero of Alexandria, who lived 285 B. C.?<sup>1</sup> produced what we may term the first steam engine. His "Aeolipyle" was much different from the modern engine, but it may be considered a a prototype. Hero describes what he calls five simple machines, "by which a given weight may be moved by a given force:" the lever, pulley, endless screw, wedge, wheel and axle. He understood the power of steam and the uses of "cylinder and piston, three-way cock, slide valves and valve clacks." This marvelous man employed the power of steam for magical purposes, such as pouring out libations without obvious human engency, and opening temple doors. His book was rediscovered at the time of the Renaissance, and there was produced eight editions in various languages.

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<sup>1</sup> It is not certain when he lived. Cf Professor Usher, A History of Mechanical Inventions, p. 46.

The following are a few of the outstanding men who have helped to perfect the steam engine: Watt, Savery, Newcomen, Sickles, Allen, Gifford, Corliss, Beighton, and Smeaton. The first recorded patent for the application of steam power was received by Thomas Savery in 1698. The first engines were very extravagant in the use of fuel. In 1769, James Watt made a very important improvement by adding a separate condenser. The most essential improvements of the steam engine, which made their use comparatively economical, was effected by Watt in 1769, 1776, and 1782. The most popular machine, embodied the work of Newcomen and Savery, combined the piston and cylinder of Papin, and was installed in 1711. The magic power of steam was first employed, in modern times, in the drainage of the mines at Devonshire and Cornwall.

It was no longer necessary to establish the "mill" near a waterfall, regardless of the distance from raw material and population. By one great

invention man emancipated himself from the tyranny of wind, geography, tide and climate. It is impossible to overestimate the importance of steam-power. It has helped in the creation of the New World. The champion of vitalism and the greatest philosopher of France affirms:

"A Century has elapsed since the invention of the steam engine and we are only just beginning to feel the depths of the shock it gave us. But the revolution it has effected in industry has nevertheless upset human relations altogether. New ideas are arising, new feelings are on the way to flower. In thousands of years, when, seen from the distance, only broad lines of the present age will be visible, our wars and our revolutions will count for little, but the steam engine and the procession of inventions which accompanied it, will perhaps be spoken of as we speak of the bronze or chipped stone of pre-historic times; it will serve to define an age."<sup>1</sup>

The Industrial Revolution began in Germany and the United States with the railroad. However, England, because of her canals, good roads, and small territory, was enabled to become the center of industrialism, prior to the coming of the railroad. There was a world-wide demand for British

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<sup>1</sup> Quoted by Hazen, Europe Since 1815, p. 70.

goods, and the many canals provided means for transportation. During the reign of King George III nearly three thousand miles of canals were constructed.<sup>1</sup> And during the first fourteen years of this King's reign, parliament passed four hundred and fifty-two separate acts for repairing roads.<sup>2</sup>

However, it was not long until the invention of the locomotive made possible the application of steam power to land transportation. Stephenson's "Rocket" won the prize of five hundred pounds offered by the London and Manchester Railway, and is generally considered the father of the locomotive. In 1825 the first English railroad was opened for traffic.

The sail-boat gave way to a more modern means of transportation. In America William Henry, John Fitch, James Rumsey, Robert Livingston, and John

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<sup>1</sup> Benjamin Terry, A History of England, p. 915

<sup>2</sup> Ibid., p. 914.

Stevens were perfecting the steam engine; while in England this was being done by Trevithick, Blenkinson, Ericsson and many others. In 1819 the first steamboat crossed the Atlantic ocean. During this same year the sailing packet "Savannah" crossed from Savannah to Liverpool in twenty-five days, during eighteen of which, steam power was used. Steam had been applied to water transportation in 1807 by Robert Fulton. The "Clermont" was undoubtedly the pioneer of the modern steamboat.

Because of the Industrial Revolution Great Britain was to become the mightiest industrial center of the world. England--the little speck of dirt peeping out of the ocean--became the workshop of the world. Napoleon realized the importance of industry when he established the Continental System. Julius Klein has said: "The factory chimneys of Manchester were indeed the guns that won the battle at Waterloo." <sup>1</sup> It is deeply significant that English-

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<sup>1</sup> Edited by Charles A. Beard, Whither Mankind, p. 93.

men can claim the distinction of being the first to dominate the physical world. They have won for man the first real victories over the forces of nature. "The strength of England lies not in armaments and invasions; it lies in the omnipotence of her industry, and in the vivifying energies of her high civilization."<sup>1</sup> A generation later, the mighty Carlyle who believed in great men, had this to say:

"It now turns out that this favoured England was not only to have her Shakespeares, Bacons, Sidneys, but to have her Watts, Arkwrights, Brindleys! We will honour greatness in all kinds. Prospero evoked the singing of Ariel: the same Prospero can send his Fire-Demons panting across all oceans, shooting with the speed of meteors on cunning highways, from end to end of kingdoms, and make Iron its missionary, preaching its evangel to the brute Primeval Powers, which listen and obey: neither is this small. Manchester, with its cotton-fuzz, its smoke and dust, its tumult and contentious squalor, is hideous to thee? Think not so: a precious substance, beautiful as magic dreams, and yet no dream but a reality, lies hidden in that noisome wrappage...ten thousand times ten thousand spools and spindles all set

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<sup>1</sup> Walter Savage Landor, Lascy and Merino



spinning there--it is, perhaps, if thou knew it well, sublime as a Niagara, or more so."<sup>1</sup>

The Industrial Revolution has not only emancipated man, but it has caused some very undesirable conditions. "With every increase of opportunity and efficiency for good there is a corresponding opportunity for evil."<sup>2</sup> One of the immediate effects was the migration of population. This change in living was made necessary by the location of the natural resources. There was a migration from country to town, and from the south and east, to the north and west. The North had heretofore been sparsely settled, and was to a great extent pastoral in character. This section of England had never been as progressive as the South. Its slow acceptance of the Reformation is shown by the Pilgrimage of Grace in 1536. Some of the once thriving towns of Southern and central England reminds one of a civilization which has killed itself. The market

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<sup>1</sup> Thomas Carlyle, Chartism, p. 82.

<sup>2</sup> Dewey and Tufts, Ethics, p. 171

places are empty; grass and weeds grow in the streets; the inhabitants are asleep. During the eighteenth century the textile industry centered in the counties of Yorkshire, Wiltshire, Dorsetshire, Somersetshire, Wiltshire, and Gloucestershire. Civilization moved to the North West Midlands, and to Yorkshire and Lancashire. The movement from rural districts to urban centers took place throughout England. The most populous cities became Sheffield, Leeds, Liverpool, Manchester, and Glasgow. In twenty years Manchester increased from 94,000 to 160,000; Bolton from 29,000 to 50,000; Leeds more than doubled its population between 1801 and 1831; from 1801 to 1821 Lancashire grew from 672,000 to 1,052,000; and in the next twenty years it grew to 1,701,000.<sup>1</sup> The shifting of population resulted in the Rotten Borough System.<sup>2</sup>

<sup>1</sup> Ness Edwards, Industrial Revolution in South Wales, p. 29-30

<sup>2</sup> At the time of the Reform Bill of 1832, many of the boroughs contained few or no voters, and yet they received representation in Parliament.

The undesirable conditions increased after the migration of the population. Richard Cobden and John Bright, the Free Trade protagonists, and the Manchester School--all internationalists--believed that industry would create a new world of universal peace. Their dream did not come true. The Industrial Revolution has not been as good as believed by the French economist, J. B. Say. The demand for goods is not always the supply of goods. And labor became a commodity--something which could be bought and sold, and which had demand and supply! It is perhaps true as G. K. Chesterton says: The word "master" ceased to signify a man who was master of his craft, but came to mean a man who was master over others. Women and children went into factories to work. The cruelty of employers and the working conditions after 1750 stands as a blood-stain upon the pages of human history.

Spencer Walpole has said that "in most of the mineral districts, children began work at seven, and that in many districts they were frequently employed at six, five, or even four years of age.

Girls, as well as boys, women, as well as men, worked underground. The mines were usually ill-drained and ill-ventilated. The children had consequently often to work in the wet; they were kept at work in any atmosphere in which a candle would not burn. The smallest children were employed as trappers, or in opening the traps in the seams through which the coal-laden carts passed. But women, boys, and girls were also engaged as hurriers, or in walking backwards and forwards pushing the carts themselves through the seams. Many of these seams were only 22 to 28 inches high, so that none but small children could pass through them. In some cases the child was made to push the car; in other cases children, and even women, were made to draw it by the girdle and chain. The girdle was a band placed round the waist of the hurrier. The chain passed between the drawer's legs, and chafed the wretched creature's thighs as he or she drew the load. Little children of seven worked for twelve hours a day, harnessed like beasts by the girdle and chain; but, unlike the happier beasts of burden, subjected to the task before their growth was complete and their strength mature. Mothers worked at the same toil. They resumed their labours before their strength was restored, leaving their babies--if by some chance they were born alive--to die.

The things which were done in the pit were horrible. No constable dared to trust himself underground in the company of the miners; and even criminals flying from justice, who had not offended against the public opinion of the workmen, were occasionally received in the mine, and thus sheltered securely from the officers of the law. In such circumstances the lot of women working underground with men, the lot of children at the mercy of their masters or of the butties, hardly needs description. Boys and girls were kicked and beaten till the blood flew from them, or till their ribs were broken or their eyes knocked out. No

horse in an overloaded coach, no donkey in a costermonger's barrow, few slaves the property of a West Indian planter, experienced the treatment which was the lot of many children--hurriers in mines." <sup>1</sup>

Macaulay, in a speech delivered May 1846, truthfully affirmed:

"Rely on it that intense labour, beginning too early in life, continued too long every day, stunting the growth of the mind, leaving no time for healthful exercise, no time for intellectual culture, must impair all those high qualities which have made our country great. Your overworked boys will become a feeble and ignoble race of men, the parents of a more feeble progeny; nor will it be long before the deterioration of the labourer will injuriously affect those very interests to which his physical and moral energies have been sacrificed...Never will I believe that what makes a population stronger and healthier, wiser and better, can ultimately make it poorer. If ever we are forced to yield the foremost place among commercial nations, we shall yield it to some people pre-eminently vigorous in body and mind." <sup>2</sup>

Children were taken from poor-houses and placed in factories.

"The local authorities of London thought it a wise measure to relieve themselves of a redundant population by sending waggon-loads of miserable children into Lancashire. It was nothing to them

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<sup>1</sup> History of England, Vol. 1V, p. 372-373

<sup>2</sup> George Herbert Ferris, Industrial History of Modern England, p. 199

that the best feelings of the human race were violated by the forced separation of these infants from their parents...It was true that if the child had the misfortune to fall into the hands of a bad master it was doomed to a life of suffering, if a boy; to a life of shame and suffering, if a girl. What had local authorities, whose business it was to reduce the poor-rates, to do with the future lot of the children whom they got rid of? What had they to do with the feelings of their miserable parents? The London pauper was usually depraved: could anything be either wiser or better than to remove his child from the influence of his example?... The parent who would endeavour to realise the life of a factory child of 1832 should try to imagine his own little boy or his own little girl--eight or nine years old--working in a factory. He should try to recollect that it would be his duty to rouse the child on a cold winter's morning at five, in order that it might be at its work at six; that, day after day, week after week, month after month, it would be forced to rise at the same hour; that, with two short intervals of half-an-hour each, it would be kept to its dull, monotonous employment for thirteen hours every day; that, during the whole of that time, it would be breathing a dusty, unwholesome atmosphere, rarely able to relieve its tired limbs by sitting down. Such, upon evidence which it is impossible to dispute, was the life of every factory child before 1833. There were tens of thousands of such unfortunates in England alone. And yet there were men, and good men, living who were capable of defending this monstrous system."<sup>1</sup>

Concerning these terrible conditions, Hendrik Van Loon says:

"The hours in the factory were limited only by the physical strength of the workers. As long

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<sup>1</sup> Spencer Walpole, History of England, Vol. III, p. 415,416,417.

as a woman could sit before her loom, without fainting from fatigue, she was supposed to work. Children of five and six were taken to the cotton mills, to save them from the dangers of the street and a life of idleness. A law had been passed which forced the children of paupers to go to work or be punished by being chained to their machines. In return for their services they got enough bad food to keep them alive and a sort of pigsty in which they could rest at night. Often they were so tired that they fell asleep at their job. To keep them awake a foreman with a whip made the rounds and beat them on the knuckles when it was necessary to bring them back to their duties. Of course, under these circumstances thousands of little children died."<sup>1</sup>

Slavery really existed in England until 1833!

"The introduction of machinery into the weaving industries in the latter part of the eighteenth century and the beginning of the nineteenth had made the use of hand looms unprofitable, and the weavers who had worked in their own cottages were compelled to move with their families to the large manufacturing towns. The hand looms had required the strength of a man, but power looms could be attended by children, and as the wages of a child were so much lower than of an adult the large manufactories began to employ children in large numbers. To supply the sudden demand for apprentices, wagon-loads of the children of the poor in London were sent into the provinces, where they were compelled to work from twelve to fourteen hours a day in the factories. As this was before the days

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<sup>1</sup> The Story of Mankind, p. 420-421.

of railways and telegraphy, the children were almost as completely lost to their parents as if they had been sold as slaves into a distant land."<sup>1</sup>

In June, 1815, Peel called attention to the need of a protective law.

"The practice of apprenticing parish children in distant factories was as repugnant to humanity as any which had ever been suffered to exist by the negligence of the legislature; and it was all the worse because of the enormous abuses which existed in it. It had been known that a gang of these children had been put up to sale along with a bankrupt's effects, and transferred as part of the property. A case had come to his knowledge where an agreement was made between a London parish and a Lancashire manufacturer that for every twenty sound children one idiot should be taken."<sup>2</sup>

A student of Aristotle once collected all the causes of the misery and destruction of human life, and then proved that man has suffered more from man than from nature. The immediate affects of the Industrial Revolution would have further confirmed his contention. After considering this period of history, we can understand the Greek Sophists and Nietzsche when they say that power is the ruler of the earth; that in the battle of life, the strong murder the weak that they might live. Perhaps it

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<sup>1</sup> George Emory Fellows, Recent European History, p. 200-201.

<sup>2</sup> Hansard Debates, V. XXX. 624



is true that "Might is right, and justice merely the interest of the stronger?"

England did not have a good system of local government at the time of the Industrial Revolution. At one time about one seventh of the population received relief under the poor law or dole.<sup>1</sup> After the origin of the Industrial Revolution England was indeed in a deplorable condition. Adam Smith believed that the remedy of the situation could be found in free-trade.<sup>2</sup> England became the free-trade nation of the world, and the "economic freedom" or laissez faire of Turgot, caused much of the suffering of women and children in factories. Malthus thought that the evils were caused by over-

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<sup>1</sup> Benjamin Terry, A History of England, p. 918

<sup>2</sup> A good summary of the laissez faire principle can be found in the Wealth of Nations, Book 4, Chapter 9. The "Classical economists" who were the avowed disciples of Adam Smith, believed that if the individual could be left free to exercise his powers, he would look out for his own interest. Thus if all people were permitted to do this there would result a universality of interests. Human institutions have a natural origin, and they are therefore subject to natural, not "human" laws. The law of supply and demand fixes the price of wages, and determines the cost of commodities. The "Manchester School" opposed all monopolies,

population;<sup>1</sup> Ricardo uttered his famous Theory of Wages;<sup>2</sup> and later, in view of the Industrial Revolution, Karl Marx proclaimed his economic interpretation of human history.<sup>3</sup>

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labor unions, tariffs and navigation laws. It was not difficult for the manufacturers--whose only concern was to "get rich quick"--to become friends with these theories. The principle of free competition, was perhaps justified during this period of pioneer development; but due to the changing conditions, it cannot find rational support in what should be the co-operative society of today.

1 Cf. Essay on the Principle of Population. Malthus avers that it "is the constant tendency in all animated life to increase beyond the nourishment prepared for it." The food supply increases arithmetically; population multiplies geometrically. Plato, Montesquieu and Hume were aware of this condition. But Malthus considered it in detail, and endeavored in a most cogent manner to demonstrate its truth. The science of agronomy was not developed at the time of Malthus. One of the causes of our current economic depression is over-production. Only recently has the conception been somewhat abandoned thru the works of Louis I. Dublin, Robert R. Kuczynski, and Warren S. Thompson.

2 This theory is founded upon Malthus's conception of population. Ricardo declared that "The natural price of labor is the price which is necessary to enable the laborers, one with another, to subsist and to perpetuate their race, without either increase or diminution." Thus the "iron law of wages" can only result in the constant opposition between capital and labor.

3 Cf. Das Kapital which is the Bible of Marxian socialism. Marx was too close to the origin of the Industrial Revolution to see it in its proper and total perspective, and he has therefore over-emphasized its economic aspects. However, his conceptions when considered in connection with this event, are of profound import and seem to have a rational foundation. "In every historic epoch the prevailing mode of economic production and exchange, and the social organization necessarily following

It was in strict accordance with the Tory creed that it was the duty of the government to regulate industries. Herbert Spencer and Macaulay, Cobden and Gladstone, accepted the theories of the classical economists; and the doctrine of laissez faire existed in all its power for over a century. Bright, who was a Whig, fought for the principle of non-interference with trade. However, Anthony Ashley Cooper,

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from it, form the basis upon which is built up, and from which alone can be explained, the political and intellectual history of that epoch." Marx and Engels, Communist Manifesto, Preface. Thus history is determined by the changing methods of the production and distribution of goods. And all revolutions are the results of the conflicts between new and old forms of production. It is now impossible to proclaim strict adherence to this economic interpretation of history. Economics exerts a powerful influence in the determination of human behavior, but there are many other factors which require consideration.

later Lord Shaftesbury, became a friend of the downtrodden. Through his instrumentality a Bill was passed in 1833, which lowered the hours of child labor. Later the Mines and Collieries Bill--which terminated the employment of girls and women in underground service--was passed.<sup>1</sup>

Charles Dickens revolted against the spirit of his age, and did much toward the establishment of a national consciousness, which would be sensitive to social evils. Conditions of the work-houses are revealed in "Oliver Twist," and the squalor of London slums can be seen in "Bleak House." The prophet, Carlyle, announced a message for the world in his Gospel of Work; and the artist, Ruskin, denounced the manufacturers for making the country wretched and ugly. There arose at this time the Pre-Raphaelite Movement, which was composed of sensitive souls who were outraged and repelled, by the evils and ugliness of the Industrial Revolution.

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<sup>1</sup> The liberalism which prevailed was to a great extent due to the men who fought for intellectual freedom. Adam Smith was a follower of Hume. Freedom was changed from intellectual to economic significance.

The Industrial Revolution has invaded nearly the whole world. It has made this famous statement true: "Two centuries ago not one person in a thousand wore stockings; one century ago not one person in five hundred wore them; now not one person in a thousand is without them." <sup>1</sup> Carlyle has said of our world that "It is the Age of Machinery, in every outward and inward sense of that word." <sup>2</sup>

The English nation endeavored to retain a monopoly of world-trade. But slowly the secret of invention migrated to other countries. The Industrial Revolution first invaded France, but it did not actually get started until after the close of the French Revolution. The fact that in the year 1791 the guilds were in a moribund condition, prepared the way for the introduction of industrialism. The first cotton mill was established in France in 1785, but most of the textile manufacturing before 1825 was confined to the handicraft system.

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<sup>1</sup> The Results of Machinery, p. 161. Excerpt taken from the publication by the Society for the Diffusion of Useful Knowledge.

<sup>2</sup> Signs of the Times

About two decades later (1845-1850) the Industrial Revolution made its way into Germany. This great nation holds rather a unique status in this regard. John Herman Randall says:

"In countries like Germany, where much of the spirit of mediaeval social organization and benevolent and wise direction lingered on into the machine age, there was far less of a break, and far easier an adaptation of older habits, than in the more commercialized and individualized states like England and France and America. It is remarkable how easily and on the whole how successfully bureaucratic Germany assimilated industrialism." <sup>1</sup>

In a measure the same is true of France, Italy, and other Western nations which have not worked out their industrial system in an independent manner. In Japan a feudal society has been changed into an industrial system in one generation.

Since the Civil War the Industrial Revolution has advanced rapidly in the United States. The first factories, as was the case in England, were cotton factories. The first American factory was

<sup>1</sup> Our Changing Civilization, p. 208. Cf. Thorstein Veblen, Imperial Germany and the Industrial Revolution, p. 82-83.

established at Beverly, Massachusetts, in 1787. However, Samuel Slater is probably the "father of American manufacturing," as he established the first successful factory in Pawtucket, Rhode Island in 1790.

CHAPTER 11  
MECHANISM AND PESSIMISM

During the hunting stage men worshiped animals, in the agricultural age the god of vegetation was propitiated by human sacrifice, and in the modern industrial world there exists the worship of machinery. Bertrand Russell has averred that the relationship of the machine "to man is exactly that which the world had to God in the Calvinist theology; perhaps that is why industrialism was invented by Protestants, and by Nonconformists rather than Anglicans."<sup>1</sup> During the existence of agricultural society it was not difficult to believe in the conceptions of an anthropomorphic deity and cosmic teleology. During this period of time it was believed that soil fertility and famine were engendered by divine intervention. In the old agricultural life man was chained to the soil, and the major factor in his existence was concerned with the planting, of what seemed to him, miraculous seeds. He was aware of his dependence upon the external forces of the world, and he even perceived the existence of "mother nature."

<sup>1</sup> Sceptical Essays, p. 208.



In an age of machinery men have come to think in mechanistic terms. It was Democritus and Lucretius, Galileo and Newton, Descartes and Spinoza, who prepared the minds of thinking men for mechanical explanations in the realm of causality. But these men exerted only an aristocratic influence as compared to the democratic effects of the Industrial Revolution.<sup>1</sup> The common conception of mechanism today is the offspring of the Industrial Revolution. Life for the factory worker has become centered about wheels and pulleys and belts, and for the first time in all history the mind of the common man has dared to think in terms of mechanical causation.

Unlike the agricultural environment, there is nothing mysterious here, as every effect has its particular cause. In the past causation was not only supernatural, but it was anthropomorphical. All causal relations implied will, intelligence, purpose. In the new industrial age the common man has come to see not only the consequences, but the source and cause of observed phenomena. Antecedent

<sup>1</sup> The democratic significance of the Industrial Revolution is the primary cause of its profound importance. It has everywhere exerted a practical as opposed to theoretical influence. Condorcet, Mary Wollstonecroft, George Sand, Robert Owen, and John Stuart Mill have had a theoretical influence upon the emancipation of women. But it is the practical results of the Industrial Revolution that has made possible the success of Feminism. The Renaissance and Reformation helped to disrupt the medieval synthesis of experience. But the Industrial Revolution has completed this disruption as a result of its democratic tendencies.

physical reality and a priori moral codes have given way to conceptions which are consistent with observation and experimentation. The Industrial Revolution has brought the traditional concept of supernatural causality, saturated with sanctity, down to earth to be controlled and explained by man, in terms of the perceived relationships of motion and direction, space and extension, and matter and energy. Only in the recent past has a microcosm demonstrated superiority to its macrocosm.

Our material environment has changed faster than our native urges. The powerful organic drives are now in conflict with the acquired intellectual attitudes. The inherited urges are important in the determination of mass-behavior, but they are becoming devoid of their potency in proportion to the conscious reconstruction of individual experience. Now the dominant factor in determining human conduct is not organic drives but environmental stimuli. The old instinctive basis of life is gradually decreasing in control, while the external and environmental pressures are increasing. The chaos of the present age is to a large extent the result of these conditions.

Theological attitudes have been destroyed as mechanical causation has been applied to religious phenomena. Mechanical causality has taken the place of supernatural causality.

Bertrand Russell has given us a rational interpretation of the new world.

"That man is the product of causes which had no prevision of the end they were achieving; that his origin, his growth, his hopes and fears, his loves and his beliefs, are but the outcome of accidental collocations of atoms; that no fire, no heroism, no intensity of thought and feeling, can preserve an individual life beyond the grave; that all the labours of the ages, all the devotion, all the inspiration, all the noonday brightness of human genius, are destined to extinction in the vast death of the solar system, and that the whole temple of man's achievement must inevitably be buried beneath the debris of a universe in ruins--all these things, if not quite beyond dispute, are yet so nearly certain, that no philosophy which rejects them can hope to stand. Only within the scaffolding of these truths, only on the firm foundation of unyielding despair, can the soul's habitation henceforth be safely built." <sup>1</sup>

Due to the astronomical activities of Pythagoras and Aristarchus, Copernicus and Tycho Brahe, Galileo and Kepler, the earth has been lost. The Copernican or heliocentric theory of astronomy has supplanted the Ptolemaic or geocentric theory. The gods have receded into the background behind the telescope, and the once beautiful heaven has become a mere sky filled with luminous points. Nicolaus Casanus and Leonardo da Vinci affirmed that our earth is but a small star among a multitude of other suns. Human life in our little ball of mud is insignificant. The human race could be blotted out of existence, and nothing would be aware of its going, as nothing was aware of its coming.

<sup>1</sup> Mysticism and Logic, p. 47-48.

"Man, so far as natural science by itself is able to teach, is no longer the final cause of the universe, the Heaven-descended heir of all the ages. His very existence is an accident, his story a brief and transitory episode in the life of the meanest of the planets. Of the combination of causes which first converted a dead organic compound into the living progenitors of humanity, science, indeed, as yet knows nothing. It is enough that from such beginnings famine, disease, and mutual slaughter, fit nurses of the future lords of creation, have gradually evolved, after infinite travail, a race with conscience enough to feel that it is vile, and intelligence enough to know that it is insignificant. We survey the past, and see that its history is of blood and tears, of helpless blundering, of wild revolt, of stupid acquiescence, of empty aspirations. We sound the future, and learn that after a period, long compared with the divisions of time open to our investigation, the energies of our system will decay, the glory of the sun will be dimmed, and the earth, tideless and inert, will no longer tolerate the race which for a moment has disturbed its solitude. Man will go down into the pit, and all his thoughts will perish. The uneasy consciousness, which in this obscure corner has for a brief space broken the contented silence of the universe, will be at rest. Matter will know itself no longer. "Imperishable monuments" and "immortal deeds," death itself, and love stronger than death, will be as though they had never been." <sup>1</sup>

Our religious beliefs have been inherited from a Semitic and pastoral people. These tenets have exhausted their function during fifteen hundred years of agricultural life, and have become irrational in method and inadequate in content in the current industrial civilization. Beliefs should not be respected merely because they are of ancient origin. There is no rational justification for men asserting that certain conceptions come from divine sources. Animals do not justify their behavior, or make the claim to

<sup>1</sup> Arthur Balfour, Foundations of Belief.

immunity from criticism, on the ground of sanctity. Some habits which have happened to have been acquired are considered sacred. It is an indication of weakness on the part of man, that his ideas should require transcendental support. The divine vindication of experience is not worthy of intelligent men. One of the most derogatory things about man from the point of view of dignity, is that he has, curiously enough, ascribed divine authority to his own opinions. In the past man has seldom considered the authenticity of his profound beliefs and cherished convictions. To the rational mind even the most venerable beliefs of all the ages must submit to critical analysis. If we are to be human beings who stand erect, we cannot permit the theological wiseacres of the past, to interpret present phenomena. It is only the peasant who has not been able to exhume himself from the soil, who would have man declare adherence to the irrational and so-called religious conceptions of bygone ages.

The free man has come to question the gods which he worships, as a slave who revolts against his master. Men have heretofore prostrated themselves before gods without considering the fact if they are worthy of his adoration. The rational child which nature has brought forth is still subjected to his mother. It is enough that

man is under the tyranny of external forces; he can never be free while prostrating himself before non-human powers. The Industrial Revolution has to some extent emancipated man from the tyranny of two worlds. It has thru technological means, enabled man to conquer and control the world of immediate experience; and it has thru the concept of mechanical causation, freed him from supernatural domination. To be free during the few moments that he crawls upon the earth, man can be under the tyranny of neither the objective world nor supernatural forces.

The fact that man has been left alone in the world results in a cosmic chill which finds expression in pessimism. There inevitably comes into existence a certain feeling of loneliness. When human beings look within themselves, and do not see their familiar faiths and beliefs--a feeling of nostalgia occurs; and there is a manifestation of cynicism in which death is the only boon and the only remedy. Throughout all the ages man has had to have the support of illusions--his little fairy tales--in order to live. It is not certain at the present time that man can live without meaning and god. Men must not only have a passion for truth but they must have courage if they forego the emotional satisfactions which

come from proclaiming adherence to traditional conceptions. We see all about us those tortured creatures who have been caught in the period of transition. The ebb of faith is truly the Ice Age of the human soul.

At the very time when men could reasonably expect life to be more worth while than ever before, they have found it empty, insignificant and ridiculous, meaningless and even mean. Today men should, with the means of living an abundant life, be more happy than their forefathers. But they are not. Like Strindberg they have searched for god and have found only the devil. Because of the present mechanical interpretation of causality, the existing maladjustments, confusion and uncertainty, many people have failed to find or to even create value, meaning, purpose, aims or goals in human life. The primitive infatuation for life is gone. Some would believe that the only redeeming feature of human existence is its shortness. Our age has been called the Great Sadness. Even youth, who seldom hold a grudge against life, have in this day, become afflicted with melancholy. There is no greater tragedy in all history than that youth should become world-weary. But where is the sensitive human soul or the mature human mind which has not found this world unsatisfying?

Many people are now inclined to sympathize with the pessimistic utterances of Schopenhauer, Hartmann, Spengler, Chesterton, Belloc; and with the anti-machine assertions of Austin Freeman, Samuel Butler, E. M. Forster, Count Keyserling and Muller Freiefels. Life has become "a tale told by an idiot; full of sound and fury, signifying nothing." Individuals shake their heads and sadly ask what the world is coming to. Sometimes we feel like Petrarch, that we would rather have lived at any other time, or like Wordsworth who preferred the company of nature to that of man, or like Rousseau and Chateaubriand who became sick of civilization..

Who knows, perchance it is better and more in accordance with dignity to die like men rather than live like animals? In this age of groping conjectures we have seen the Stoic deification of suicide, the proposed end of evil and futile misery by the annihilation of the human race, and have heard a series of Jeremiads which makes peasant-like and unsophisticated individuals tremble with fear. Some people realize that it takes a lot of trouble in order to live, and they interrogate all of the powers of heaven, hell and earth for the purpose of finding justification for the perpetuation of their own existence.



It is not known whether our transitional period will find its culmination in a great catastrophe or a great civilization. According to history it will be the former. But perhaps we can make the statement a lie that history repeats itself. The alternatives of disaster and triumph are greater in strength and power than ever before. Few individuals have returned to the faith in patristic theology, but a new age of faith may dawn upon the human race.<sup>1</sup> If human life is to be progressive, if it is to have some little dignity, if it is not to be a vile spectacle, it must be a perpetual revolt. But these are perhaps only consoling myths.

The last great illusions of the human spirit are traditional religion, democracy, progress, service and efficiency. Atheism and agnosticism, individualism and anarchism, have become tasteless, and skepticism and even the spirit of revolt has become uninteresting.

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<sup>1</sup> It is said that "humanism" may bring another Renaissance. This new movement is exerting significant influences thru the works of Irving Babbitt, Paul Elmer More, Norman Foerster, Stuart P. Sherman, W. C. Brownell, F. J. Mather, Jr., P. H. Frye, W. F. Giese, Robert Shafer, Percy H. Houston, and Bronson Cass.

Because of the insufficiency of orthodoxy, the existence of another Socrates or Christ, Rabelais or Renan; another Rousseau or Voltaire, or Nietzsche or Dostoevski, is becoming more and more impossible.

"The Orient is asleep in the ashes of her gods. The star of Ormuzd has burned out in the skies. On the banks of her sacred seas, Greece, hushed for evermore, rests on the divine limbs of her white immortals. In the sepulchre of the pale Nazarene, humanity guards its last divinity. Every promise is unfulfilled. There is no light save perchance in death. One torture more, one more throb of the heart, and after it nothing. The grave opens, a little flesh falls in, and the weeds of forgetfulness which soon hide the tomb grow eternally above its vanities. And still the voice of the living, of the just and of the unjust, of kings, of felons and of beasts, will be raised unsilenced, until humanity, unsatisfied as before and yet impatient for the peace which life has disturbed, is tossed at last, with its shattered globe and forgotten gods, to fertilize the furrows of space where worlds ferment.

On this vista the curtain may be drawn. Neither poet nor seer can look beyond. Nature, who is unconscious in her immorality, entrancing in her beauty, savage in her cruelty, imperial in her prodigality, and appalling in her convulsions, is not only deaf, but dumb. There is no answer to any appeal. The best we can do, the best that has ever been done, is to recognize the implacability of the laws that rule the universe, and contemplate as

calmly as we can the nothingness from which we are come and into which we shall all disappear. The one consolation that we hold, though it is one which may be illusory too, consists in the belief that when death comes, fear and hope are at an end. Then wonder ceases; the insoluble no longer perplexes; space is lost; the infinite is blank; the farce is done." <sup>1</sup>

We have perchance come to the time, which, in Huxley's words we would "welcome a kindly comet to sweep the whole affair away." Life is a going concern and "a long headache in a noisy street," but it should make us happy that it does not last long. However, a modern philosopher has proclaimed an attitude which seems to embody not a little meaning.

"Pure science--the understanding of natural processes, and the discovery of how the universe is constructed--seems to me the most godlike thing that men do. When I am tempted (as I often am) to wish the human race wiped out by some passing comet, I think of scientific knowledge and of art; these two things seem to make our existence not wholly futile." <sup>2</sup>

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<sup>1</sup> Edgar Saltus, The Anatomy of Negation, p. 217-218.

<sup>2</sup> Bertrand Russell, Prospects of Industrial Civilization, p. 188.

CHAPTER 111  
MATERIALISM AND ART

The Industrial Revolution has created the wealth of the modern world. This event has therefore produced the problem concerning the place of wealth in the scheme of human life. This is one of the greatest problems in the world today. The destiny of our civilization may be determined by the way in which this problem is considered. The Industrial Revolution embodies both a benign and sinister aspect.

Heretofore man has exerted most of his energy in the acquisition of means by which he could satisfy his wants. The Industrial Transition has abolished that scarcity of necessities which has so long characterized the world. It is true, as Bertrand Russell has affirmed, that if the world has suffered from poverty since the Industrial Revolution it is because of ignorance and selfishness. The Age of Plenty has been ushered in, and the curse of Adam has been reversed. It is now possible to achieve the maximum production with the least amount of human effort.

The Industrial Revolution has provided comforts and a material basis for life which are greater than ever before. America is the most industrialized and wealthiest nation in the world. But as might be expected from a young and immature country, wealth has to a great extent been considered as an end in itself. The very word "Americanism" has become another name for sordid materialism. Many European critics consider the current machine civilization as an American plague. There is a vast difference between the "intellectual climate" of Europe and America. The former possesses a spirit and culture which cannot be found in the latter. The Industrial Revolution has directed man's attention toward things as opposed to values.

Henrick Van Loon has affirmed that America lies prostrate at the feet of the God of the Golden Pouch. Notwithstanding the fact that Count Herman Keyserling looks to this country for the regeneration of the world, he says "that America is as yet a colony, and that a really native civilization has up to now not been developed." <sup>1</sup> We still think in pioneer terms. Americans are primarily interested in the mechanical things of life. In this respect they remind one of children playing with toys.

<sup>1</sup> America Set Free, p. 15.

"The American nation thinks chiefly in terms of quantity because to it that is the symbol of quality; it is not yet developed enough as a whole, to distinguish quality as such, except in a few specific lines." <sup>1</sup> Carlyle once "said scornfully that America meant only roast turkey every day for everybody." Americans are like babies who think of nothing but milk. Americans, Aztecs, Merovingians, Romans, represent only the means or form of civilization--as compared to the Europeans, Mayas, Carolingians, Greeks. One is body, the other mind; one is the child, the other the man; one is civilization, the other culture.

Since the Industrial Revolution the passion for the production of goods has swept the world, as the spirit of culpability and the desire for piety swept the monachal age. Today man reveals his patriotism in his capacity to consume. "No matter how much the consumer who can afford to may resist, he must be made to eat more, to wear out more clothes, to take more drugs, to blow out more tires. He must consume, consume, consume, so that our industries may produce, produce, produce." <sup>2</sup> Man has become intoxicated with materialism as Spinoza and Wordsworth were drunk with God and nature. "To consume more and more progressively--to

<sup>1</sup> Count Hermann Keyserling, America Set Free, p. 169.

<sup>2</sup> Ralph Borsodi, The Distribution Age, p. 44.

be able to say in the evening: 'I have consumed more today than I consumed yesterday'--this now is a duty the individual owes to industrial society." <sup>1</sup> Carlyle has informed us that industrialism has made our world a "swines trough." If we continue our present materialistic tendencies, America will become wealth-weary, the canaille will take the place of the intelligentsia, and the extinction of a race will be the reiteration of history. The many vicarious satisfactions will terminate in ennui, and the newly acquired wealth will lose its novelty. Man will have to cease philandering with material gods.

It should not be thought that wealth is unnecessary. The economic life for the vast majority of people determines the conditions under which and by which social values are attained. Industry embodies the potential conditions for the existence of the good, rich and abundant life. The Art of Living can be made possible now that we have a material basis as security. Material prosperity has always been the foundation of the edifices which man has aspired to erect. The epitome of medieval idealism, which found expression in Gothic architecture, was made possible by the craftsmen, who were the harbingers of the present business world. Wealth is very necessary. Our educational

<sup>1</sup> Garet Garrett, Ouroboros, p. 32.

system of today would be impossible without the means of production which were engendered by the Industrial Revolution. The Universities of Oxford and Cambridge would perhaps not exist today if it were not for the endowments made by liberal men during many generations. Professor Ashley has said that the great increase of wealth in the fifteenth and sixteenth centuries was followed by the building of the most famous town churches.<sup>1</sup> Business not only deals with material circumstances, but it provides a basis for the progress of humanity.

Epistemology and metaphysics, ethics and even aesthetics, can only become realities in this world if related to economics. The acquisition of food, shelter and clothing are pre-requisite to enjoyment and to the pursuit of the good life. The existence of material goods is axiomatically a sine quo non to aesthetic, intellectual and spiritual development. But however great the importance of wealth,

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<sup>1</sup> Economic History and Theory, Vol., 1. p. 51.



it should not be considered as the goal of civilization. It is really the foundation of all culture. Money should be thought of as a means rather than as an end in itself.

"Money is only a means; it presupposes a man to use it. The rich can go where he pleases, but perhaps please himself nowhere. He can buy a library or visit the whole world, but perhaps he has neither patience to read nor intelligence to see. The table may be loaded and the appetite wanting; the purse may be full and the heart empty. He may have gained the world and lost himself; and with all his wealth around him, in a great house and spacious and beautiful demesne, he may live as blank a life as any tattered ditcher. Without an appetite, without an aspiration, void of appreciation, bankrupt of desire and hope, there, in his great house, let him sit and look upon his fingers. It is perhaps a more fortunate destiny to have a taste for collecting shells than to be born a millionaire. Although neither is to be despised it is always better policy to learn an interest than to make a thousand pounds; for the money will soon be spent, or perhaps you may feel no joy in spending it; but the interest remains imperishable and ever new. To become a botanist, a geologist, a social philosopher, an antiquary, or an artist, is to enlarge one's possessions in the universe by an incalculably higher degree, and by a far surer sort of property, than to purchase a farm of many acres. You had perhaps two thousand a year before the transaction; perhaps you have two thousand five hundred after it. That represents your gain in the one case. But in the other, you have thrown down a barrier which concealed significance and beauty. The blind man has learned to see...To be,

not to possess--that is the problem of life. To be wealthy, a rich nature is the first requisite and money but the second." <sup>1</sup>

If society is to be more than an aggregation of individuals, and if individuals want to be more than a totality of characteristics, there must be a conscious projection of meaning into the external world, accompanied by emphasis upon the non-material aspects of experience.<sup>2</sup> Economics in this age must not only be the science of wealth, but must become the social science of human welfare. The word "wealth" in its original meaning indicated a condition of well-being. Culture is concerned with the development of the whole man--industry has to do with only a part of him.

The criterion of culture can be discovered in the discernment of those things which humanity values to the greatest extent. All of the attainments of mankind are but expressions of the hero of the Drama of Life. The various departments of

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<sup>1</sup> Robert Louis Stevenson, "Lay Sermons," Collected Works, Vol. XV, p. 453.

<sup>2</sup> The medieval period of history is called the Dark Ages because men did not produce a culture but only existed. This is perhaps the greatest indictment that can be made against humanity.

knowledge, reflect the nature of their creator, who is the measure of all things within the realm of perception. Intelligence and stupidity, veracity and mendacity, beauty and ugliness, speak in many languages, and reveal themselves in multifarious forms.

Man's true greatness is affirmed in his liberation from the material aspects of existence. True life, that way of living which is worthy of man, does not consist in the mere clothing of the body and the filling of the stomach; it consists in the appreciation of beauty, the projection of value in phenomena, and in the scientific understanding of the world. Men should do something more than exist and propagate their kind. The animals do that! Only by the development of aesthetic, intellectual and spiritual powers, can man discover value and dignity, in his brief and strange experience, in this sublunary existence. Without something more than material acquisitions, human life is relegated to the category of animal behavior; our living becomes a hideous dream whose characteristic features are pain and pleasure, and

ideas and ideals become a bagatelle of transitory experience. It is possible for man to acquire and control the whole world and yet ignore the value of his own personality. Extreme materialism has the tendency of crushing artistic impulses, and of suppressing the development of the finer sensibilities.

Human beings in our industrial society have brought themselves under the Curse of Midas! The coryphaeus of crass materialism proclaims a world which is necessarily devoid of those very qualities which make life worth enduring. Wealth is not the goal, but the foundation of human culture. It is to the good life as sex is to marriage. Christ, Buddha, Socrates, Confucious, and every great teacher has fought for the emancipation of mankind. Shelley, Bryon, Scott, all rebelled against the industrial spirit. In this industrial age human beings see life passing away with the tragic realization that they have not lived. We must agree with Rousseau that men are in chains everywhere. John Ruskin has averred that there is no wealth in the world but life.

The machine is the greatest external agency determining behavior in modern times. Man has now become accustomed to the use of mechanical power, but he has not yet discovered the implications of the new social conditions. It is true that machines have made possible our present civilization. But may they not also destroy what they have created?

"Reflect upon the extraordinary advance which machines have made during the last few hundred years, and note how slowly the animal and vegetable kingdoms are advancing. The more highly organized machines are creatures not so much of yesterday, as of the last five minutes, so to speak, in comparison with past time. Assume for the sake of argument that conscious beings have existed for some twenty million years: see what strides machines have made in the last thousand! May not the world last twenty million years longer? If so, what will they not in the end become? Is it not safer to nip the mischief in the bud and to forbid them further progress?"<sup>1</sup>

Roger Bacon and Descartes built anthropomorphic automatons which could open doors and play musical instruments. Is it possible that these creatures are going to dominate the world?

"Even now the machines will only serve on condition of being served, and that too upon their own terms; the moment their terms are not complied with, they jib, and either smash both themselves and all whom they can reach, or turn churlish and refuse to work at all. How many men at this hour are living in a state of bondage to the machines? How many spend their whole lives, from the cradle to the grave, in tending them by night and day? Is it not plain that the machines are gaining ground upon us, when we reflect on the increasing

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<sup>1</sup> Samuel Butler, Erewhon, Chap. XIV, p. 186.

(The Modern Library, N. Y. 1927.)

number of those who are bound down to them as slaves, and of those who devote their whole souls to the advancement of the mechanical kingdom?"<sup>1</sup>

The machine, at least in America, is being exalted above human personality. It is not impossible that this materialistic tendency will result in the extinction of our whole civilization.

"It is the machines which act upon man and make him man, as much as man who has acted upon and made the machines; but we must choose between the alternative of undergoing much present suffering, or seeing ourselves gradually superseded by our own creatures, till we rank no higher in comparison with them, than the beasts of the field with ourselves."<sup>2</sup>

Man is but a parasite dependent upon the machines for his continued existence. The machines have about them a certain majestic power, inhuman accuracy, and a cold indifference, before which human beings tremble. Confronted by these strange beasts, the human spirit, at first reluctantly, and later reverently, yields. Even now man is secretly afraid of the machine; but the artist's chisel does

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<sup>1</sup> Ibid., Chap., XXIV, p. 235.

<sup>2</sup> Ibid., Chap., XXV, p. 253ff.

not engender such fear. Why? Because it is being realized that the machine is exerting a power which is beyond human control! The machine has become the Frankenstein monster of modern civilization. The world is becoming filled with Robots!<sup>1</sup> In India Mohondas Karamchand Gandhi is not enthusiastic about the machine. He says in a moment of delight concerning domestic spinning, that "Slowly but surely the music of perhaps the most ancient machine of India is once more permeating society."<sup>2</sup> Gandhi, the modern Christ, is undoubtedly influenced by the fact that the enemy of India is an industrial nation; but his negative attitude toward the introduction of Western machinery, may to some extent be engendered by sincere

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<sup>1</sup> This term which comes from the Czech word "robit" means "work," and is quite modern in its usage. It has been popularized by the Czechoslovakian writer, Karel Capek, in the play Rossum's Universal Robots. There is here a description of men as mechanical workers, which after being worn out are replaced by new Robots. Society is dependent upon these men for its existence. The Robots develop power and intelligence and destroy their creators.

<sup>2</sup> The Wheel of Fortune, p. 53.

skepticism. He not only refuses to emulate England, but he also has a certain distrust for the machine. Who knows, perchance instinctive wisdom is embodied in this puny man?

Modern man has been truly chloroformed by the machines. Our civilization is now "at the cross roads." We should not forget that in the past civilization has been a merry-go-round affair. A youth of Greek mythology once saw the fate which we may see. Icarus was taught to fly by his father Daedalus, but was destroyed by his own rashness. Man is in the position of the child in a bathtub who has turned on the water and cannot turn it off. The present society is afflicted with social astigmatism. If Socrates were here today he would refuse to identify himself with the vulgar herd. Rather than participate in the mad lust for wealth and power he would probably ask: Where is your machine civilization going? J. A. Hobson has given us a true picture of modern man: "A naked Polynesian parading in a top hat and spats."

The immolation of art at the mechanistic shrine is one of the tragic results of the Industrial Revolution. In certain periods of the past every industry has been a beautiful art. It is obvious that every art in the world today has become an ugly industry. Just at that time when life should embody the most beauty it has become ugly.



It is now possible for man to be more creative than ever before because he is no longer bound down by animism and magic. Forces and powers need not be personified, and supernatural elements need not confine the mind to a beaten path of artistic construction. Current facilities of existence could extend and deepened life, and hence, there is formed the basis for an unprecedented epoch of expressiveness. However, the machine has become the very enemy of creative activity, beauty and variety. Quantity has been substituted for quality, and ugliness has taken the place of beauty.

"Production in the old-fashioned home and workshop was a laborious and time consuming process. But the things produced were durable. And they had charm and infinite variety, which the growing army of antiquarians engaged in collecting them now recognize. Both because of intrinsic quality and expressive charm, they endured. High quality, with slow depreciation, was an inevitable corollary of individual production, just as poor quality, with rapid depreciation, is an inevitable corollary of serial production. With individual production, the quality had to be good. The busy men and women of those days could not afford the luxury of shoddy materials and inferior workmanship because they could not spare the time to replace things frequently. With serial production, however, man has ventured into a topsy-turvy world in which goods that wear out rapidly or that go out

of style before they have a chance to be worn out seem more desirable than goods which are durable and enduring. Goods now have to be consumed quickly or discarded quickly so that the buying of goods to take their place will keep the factory busy." <sup>1</sup>

At present there is a desire to maximize production because of the greater advantages resulting from the improved industrial methods. The principle aim in the production of goods is not use but profit. The law of supply and demand has become inverted. The aim of domestic production was to supply consumers with commodities, whereas the present avowed function is to supply commodities with consumers. Thus the machine produces goods, and by advertising they are sold, regardless of the needs of man. <sup>2</sup>

"Back in the gay nineties new inventions and discoveries were transforming our industrial system, but when a manufacturer produced a machine that worked he stopped. It never occurred to him to go on and make his device pleasant to look at as well as efficient. It must have been the per-

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<sup>1</sup> Ralph Borsodi, This Ugly Civilization, p. 64-65.

<sup>2</sup> Cf. Austin Freeman, Social Decay and Regeneration, p. 103-130.

sistent influence of the Puritan tradition that made manufacturers so suspicious of beauty and gave them such pathetic faith in mere ugliness. Beauty somehow seemed antagonistic to integrity.

Art was something for museums. Manufacturers endowed museums out of the money they made, and some of them even accumulated private collections. Those with a weakness for beauty were tempted to conceal it, lest they be suspected of unfitness to have a place in the practical, hard-headed, efficient world."<sup>1</sup>

One of the richest men of the world, Henry Ford, has not only said that "history is bunk," but has asserted that he would not give five cents for all the art in the world.<sup>2</sup> "The material advance is immeasurable in comparison with the Old World, but from the point of view of individual refinement and art, the sacrifice is real indeed. Even the humblest European sees in art an aristocratic symbol of his own personality, and modern America has no national art and does not even feel the need of one."<sup>3</sup>

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<sup>1</sup> Earnest Elmo Calkins, "Beauty the New Business Tool," Atlantic Monthly, August 1927.

<sup>2</sup> Ibid. Cf. Stuart Chase, Men and Machines, p. 250.

<sup>3</sup> Andre Siegfried, America Comes of Age, p. 350.

If money could be made in aesthetics, America would probably lead the world in culture. It is not impossible that this can be done, as there is even a slight tendency in such a direction now. It is undoubtedly true that the machine is creating a new world of architecture. This "frozen music" has Goethe called it, is the direct reflection of human life. Perhaps the giant ocean liners, automobiles, sky-scrapers, are not quite ugly, but they at least do not seem human to us yet. When the noise, the dust, and the smoke are gone we may be able to see some beauty in our architectural ideal of "bigness" which is so reminiscent of the sculpture of Michelangelo.

But apparently the most pure and abstract art, music, does not have a brilliant future. Music appeals directly to the imagination, and therefore is not obstructed by a signal system of words or language. It is an emotional art which has been called a universal language because the feelings that are communicated are translated into all forms

of expression. This universal communciation, which has contributed so much to human happiness, may become extinct as a result of the machine. A machine has no soul and it cannot love, it has no personality and is devoid of feelings. And yet "canned" music has invaded all civilization. Even if commercialized and mechanical music is capable of communciating sublime feelings--some-one must make or produce this music originally. In various lines of activity today many people buy and few people produce.

"Art cannot become a language, hence an experience, unless it is practiced. To the man who plays, a mechanical reproduction of music may mean much, since he already has the experience to assimilate it. But where reproduction becomes the norm, the few music-makers will grow more isolate and sterile, and the ability to experience music will disappear."<sup>1</sup> The American Federation of

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<sup>1</sup> Waldo Frank, "Dance and Sport," The New Republic, March 14, 1928, p. 193.

Musicians have resented the advent of mechanical music, and have formed "The Music Defense League." If the capacity to appreciate music is lost, there will even be more sorrow in the world than now. Nietzsche has truly declared that life would be a mistake without music. According to Schopenhauer the world is "embodied music," or the very naked will itself.

The origin of art is to be found in emotion, its province is beauty, and its goal is pleasure. Art is not a mere transcript of life, but is a translation of life. It is a re-presentation of existence. Art confirms the averment of Matthew Arnold that man begins where nature ends. The artist employs nature as his material, and he brings about a transformation which is nothing less than creation.

"He speaks to our capacity for delight and wonder, to the sense of mystery surrounding our lives; to our sense of pity, and beauty, and pain; to the latent feeling of fellowship with all creation--and to the subtle but invincible conviction of solidarity that knits together the loneliness of innumerable hearts, to the solid-

arity in dreams, in joy, in sorrow, in aspirations, in illusions, in hope, in fear, which binds men to each other, which binds together all humanity--the dead to the living and the living to the unborn." <sup>1</sup>

Schiller calls serenity of art--that power which puts man beyond good and evil, joy and sorrow, and life's little irritations. It is, as Croce has affirmed, creative intuition. Thru art we can adjust ourselves to the changing nature of the world--we can create novel experience. Beauty transcends truth, is greater than good and evil, and is beyond time. Art is creative and synthetic, luminous and interpretive, the stimuli of life, embodiment and enhancement of value, and the affirmation of universal experience. Arnold, "the apostle of culture," and Ruskin, "the apostle of beauty," recognized that art is the highest form of truth. "Art is the child of nature." <sup>2</sup>

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<sup>1</sup> Joseph Conrad, The Nigger of the Narcissus, (Preface)

<sup>2</sup> Henry Wadsworth Longfellow, Keramos.

Santayana has averred that art "is the plastic instinct conscious of its aim."<sup>1</sup> It cannot be demonstrated that instincts are conscious; and art, perhaps, should have no aim except in so far as it gives pleasure. In the philosophy of Plato ethics and aesthetics are combined; but Aristotle in a most characteristic manner, engendered their separation and proclaimed the modern view.<sup>2</sup> Art cannot be right or wrong. It expresses the highest reality in the world because it is only subject to the laws which emanate from its own nature. According to Schopenhauer art exists for its own sake, and is not concerned with preservation of existence. By art we are lifted out of the atmosphere of necessity.

Making a living has always been a primary problem for man. He has in the past spent most of his time and energy in trying to find means by which

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<sup>1</sup> George Santayana, Reason in Art, p. 4.

<sup>2</sup> Ethics is not only negative, but provides a very narrow approach to reality, as compared with the positive nature of aesthetics. Tolstoi has followed Plato in combining them. Cf. What Is Art? However, all critics today, except those in America "have ceased to test literature by the standard of ethics." Cf. Edwin Berry Burgum, The New Criticism, p. 19.



his physical needs could be satisfied. The methods employed for the acquisition of physical necessities, have determined to a large extent, man's intellectual, aesthetic and moral development. The Industrial Revolution has, however, given leisure to all people. Before this period leisure time was a privilege enjoyed only by the few. Man can now more nearly be the captain of his own soul. Herbert Spencer uttered the prophecy that the improved methods of production would make possible a greater amount of leisure time. In More's Utopia the maximum time devoted to manual labor is six hours a day.<sup>1</sup> An ideal society would be one wherein all men were artists, engaging in creative activity and play,<sup>2</sup> not for some external end but for their own sake. Activity would then be the expression of true personality as it would be in strict accordance with inherent propensity.

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<sup>1</sup> For a long time past men have dreamed of a world unlike the present. Perhaps if they did not do this they would be animals. Witness Plato's Republic, Campanella's City of the Sun, and Bacon's New Atlantis.

<sup>2</sup> Schiller affirms that the play impulse is the foundation of artistic creation and appreciation.

In this mechanized age America seems to manifest an insane haste which other nations are unable to understand. Perhaps the reason is to be found in the fact that industrialism is here expressed to the greatest extent. An older civilization which embodies a distinctive culture will not be guilty of this. Havelock Ellis says that "in the dance of life, the achievement of a civilization in beauty seems to be inversely to the rapidity of its pace."<sup>1</sup> It is a fact of human experience that leisure time is one of the primary requisites of culture. "If excellence is to survive, we must become more leisurely, more just, less utilitarian, and less "progressive."<sup>2</sup> After a nation has acquired a solid material foundation, "progress" and "efficiency" may constitute the outstanding misfortunes. A certain amount of idleness is good

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<sup>1</sup> The Dance of Life, (Preface)

<sup>2</sup> Bertrand Russell, Prospects of Industrial Civilization, p. 188.

for man. This was recognized by Wordsworth when when he declared "that we can feed this mind of ours in a wise passiveness," and the same truth is expressed in Thoreau's demand for a "broad margin of life." Santayana says somewhere:

"What would you gain, ye seekers,  
with your striving,  
Or what vast Babel raise you on  
your shoulders?  
You multiply distresses, and your  
children  
Surely will curse you."

A Spanish writer has said:

"So we go to Africa and open it up and out, bringing our civilization into the benighted continent. Fools, hypocrites, or both. For, in actual fact, what we do bring is our own incurable restlessness. Turning round and round, ever faster and faster, ever farther and farther from the centre of our soul, in which we dare not dwell, we are impelled by our centrifugal force to disturb with our ever-growing orbit wider and wider areas of the world, driving out quietness and leisure to the far-off interstellar spaces where God lurks, hidden from eyes too blind to see that which does not move." <sup>1</sup>

We should not impute puerility and irrationality to attitudes merely because we do not understand them. There are some people today who some-

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<sup>1</sup> Dalvador De Madariaga, "Our Muddling World," p. 758, Forum, November 1928.

times feel that they would like to work but they refrain. Capacity for the enjoyment of leisure is an evidence of culture. The race which can attain leisure without traveling along the difficult, miserable and circuitous road of physical activity, is to be highly commended. However, in the Western world men believe that a material foundation is necessary. In the world today it is perhaps true that the beautiful life can be attained more fully under such conditions. But to go to one extreme is as undesirable as going to the other extreme. The history of a race can be expressed in the words: Work--leisure--beauty. Work is the means, leisure is the necessity, and beauty is the end of human existence.<sup>1</sup> By the aid of the machine America is passing into the stage of leisure.

It is doubtful if sensitive individuals who have leisure time could endure our world without art. It has been affirmed that art is "the quickest

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<sup>1</sup> For a consideration of the relationship between means and ends: Cf. Alfred N. Whitehead, Process and Reality, p. 53.

way out of Manchester." The pursuit of art not only gives opportunity for creative expression, but it also provides a method whereby the monotony of existence can be avoided. Einstein once affirmed to Moszkowshi:

"I agree with Schopenhauer that one of the most powerful motives that attract people to science and art is the longing to escape from everyday life, with its painful coarse-ness and unconsoling barrenness, and to break the fetters of their own ever-changing desires. Man seeks to form a simplified synoptical view of the world conformable to his own nature, to overcome the world by replacing it with his picture. The painter, the poet, the philosopher, the scientist, each does this in his own way."

Human beings eat, sleep, drink, so they can do the same thing again. Some artists and critics have averred that they find romance in just such repetition. I think, however, that such a miracle cannot be performed by the most of us. Daily life can be robbed of its stupefying monotony only by artistic endeavor. The ideal of beauty is expressed in all higher activities. In every

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<sup>1</sup> Havelock Ellis, The Dance of Life, p. 321.

philosophers' work "The construction of a complete system of conceptions is not carried out simply in the interests of knowledge. Its underlying motive is aesthetic. It is the work of a creative artist."<sup>1</sup> We must confess with Emerson that the philosopher and poet are one.

In all history nations and individuals have acquired a passion for beauty as they have reached the apogee of civilization. But as we have seen, nations have fallen at the time of the merging of beauty or value and being or existence. However, their unhappy fate was caused not by such mature perceptions and synthetic processes, but by the fact that they renounced existence and ceased to follow the highest value in the world--the only thing in life really worth while. "Beauty is merely the Spiritual making itself known sensuously."<sup>2</sup> Beauty is the summum bonum of human existence. "To see the World as Beauty is the whole End of Living."<sup>3</sup>

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<sup>1</sup> J. B. Baillie, Studies in Human Nature, p. 221.

<sup>2</sup> Hegel, Philosophy of Religion, Vol., 11. p. 8.

<sup>3</sup> Havelock Ellis, Impressions and Comments, Vol., 11. p. 139.

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