"We do not take possession of our ideas, but are possessed by them.
They master us and force us into the arena,
Where, like gladiators, we must fight for them."
—HEINE.

THE ARENA

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GREAT MOVEMENTS OF THE NINETEENTH CENTURY.

I. THE SWEEP OF THE CENTURY AND ITS MEANING.

THE mariner must know the currents of the sea he sails and watch the winds that press upon his ship, or the vessel may be driven through the mists upon some dangerous shore, while he, absorbed in daily routine, reckless pleasure, or unthinking toil, is quite unconscious of the peril, which proper care and watchfulness might easily have averted. So we who sail life's sea must know the movements of our time to save ourselves and the ship of state from wreck, and guide the vessel toward her port through smooth, safe waters unshaken by the tempest.

Some of the currents in the sea of life to-day are so powerful and so obvious that even the most careless voyager can scarcely fail to note them, though he may not understand them. The increase of wealth and power through invention and discovery, steam and electricity, manufactures, commerce, railroads, telegraphs and machinery; the growth of knowledge and its wide dissemination; the development of liberty and democracy; the trend toward union, coöperation, and organization; and the spread of civilization round the globe by colonization, commerce, and conquest—these are patent to all, as

is also the progressive aggregation of enormous wealth in the hands of a few individuals, resulting from processes of industrial organization dominated by the ideal of commercial conquest, and intended to secure the mastery of the many by the few instead of the union of all for the benefit of all.

The meaning of these great movements is not as obvious as their existence; yet it is not difficult to decipher. The last named movement means *aristocracy, mastery, despotism, power for the few,* industrial limitation and restriction for the rest; the other movements mean *the liberation and enrichment of life for all the people*—the concentration of wealth entails the sure subjection and impoverishment of the masses: while the growth of knowledge, wealth and power, union and civilization, linked with liberty, democracy, education and coöperation, must make all the people rich and free.

These movements of the nineteenth century, therefore, fall into two opposing groups—one lifting the whole world into freedom and plenty, the other capturing the world for the profit and pleasure of the few; one tending to elevate a little body of monopolists and submerge the rest, the other tending to elevate all. Another influence more important than any other, perhaps, but not yet named, because it could not be put in the list of obvious movements, is the deepening and broadening of sympathy and the rising power of its best ideals. This influence joins the group that tends to enrich and liberate all human life, and would of itself in time, if left unchecked, conquer the concentration of wealth from the inside and abolish the despotism of capital by abdication.

Let us examine, first, the united currents carrying all toward a richer and freer life, which together make the grandest movement of the age; the gulf stream of the century just passed; a compound movement toward the mastery of Nature and the emancipation of humanity; the subjection of material forces and the liberation of life—the transfer of servitude from man to matter.

How much the century has done to free mankind from the limitations of ignorance and poverty and the arbitrary control

of his fellow-man, no language yet invented can adequately express. A hundred years ago man was the slave of Nature and of man. He lived like one imprisoned in the midst of paradise—confined in a land filled with treasures and magic sources of delight, but with no instruments or knowledge to unlock the doors or move aside the heavy curtains of his cage, or open the treasure-houses fastened with Nature's secret combinations. But one great century has changed all this. To her favorite epoch Nature has revealed her cunning fastenings, so that curtain after curtain has been drawn, and many all-important doors and avenues, with teeming harvests, blossoming orchards, healing fountains, picture galleries, power plants, and treasure vaults are open to our use.

It is difficult even to imagine the difference of conditions now and in the early years of the century. Only an actual and sudden transfer in full maturity of faculty from one life to the other could give a really vivid sense of the change —a transition worthy the pen of a brilliant novelist, but far beyond the reach of common English. A Stevenson, a Howells, a Doyle, a Twain, or a Bellamy might do justice to the theme, but no mild scientific or historic sketch can give more than a faint conception of the marvelous transformation wrought by the intellectual and material development of the nineteenth century. Perhaps the nearest approach to a realization of the change without the novelist's aid may be attained by taking a list of all the inventions and discoveries—scientific, educational, moral, political, industrial, and social achievements—of the century, and then devote a month or two to picturing in our thought with due intensity the condition of things if all these discoveries and achievements were swept into oblivion. Think what life would be without the railroad—only the stage-coach to carry our letters and ourselves across the country! Think of pulling oranges from Florida or California to Boston stores by team! Think of a city without a street-car or a bicycle, a cooking stove or a furnace, a gas jet or electric light, or even a kerosene lamp! Think of a land without photographs or photogravures,

Christmas cards or color prints! Think of striking a flint and steel, whenever you want a light, till a robust spark may condescend to touch the tinder and ignite it! A match that fails to light at the first or second stroke is a cause of profanity now—of what stern stuff was morality made in those old days of flint! No wonder Washington could not tell a lie, living in an age of stone, with little or nothing to lie about, and no sensational papers to corrupt his veracity and provoke the habit of deception by the daily impact of untruth!

How times have changed! Science and invention have harnessed steam and electricity to do the world's work and developed hundreds of utilities and comforts to deepen and broaden modern life. (George Washington never rode in a trolley-car or even a horse-car, or talked through a telephone, or ate rolled oats, or saw a locomotive, or a steamboat, or an elevator, or an arc light, or a department store, or a pile driver, or an asphalt road, or a phonograph, or a moving picture, or even an inactive photograph. Ben Franklin, one of the wisest men of the olden time, wrote his letters with a quill and blew on the ink to dry it. He did not know enough to use a blotter, and never dreamed of a fountain pen or a typewriter, or even a pen of steel. He never rode a bicycle, or wore a pair of rubbers, or had his trousers made on a sewing-machine, or lit his candle with a match. He never heard of a bath-room or furnace or electric launch, or liquid air, or a barbed-wire fence, or smelled chloroform or listerine, or had a rebellious tooth pulled without pain by the aid of laughing gas or cocaine. Even Napoleon could not send a telegram or ship his troops by rail, or secure breech-loaders or smokeless powder or submarine ships, or take kodak views of his battles, or get a chromo for his greatest victory, or quell an insurrection in his appendix by having it cut out without danger from the nervous shock or from blood poisoning. Hundreds of thousands of lives could have been saved in Napoleon's wars if the use of anesthetics and antiseptics had been known—yes, millions if the anesthetics had been used at the proper time and in sufficient quantity on Bonaparte himself!)

The development of industrial power and time and labor saving machinery is one of the principal facts of the century. In raising wheat, from breaking the ground to sacking the grain, one hour with modern machinery will accomplish as much as twenty-two hours with the old-time plow, sickles, flails, etc. Four men with the aid of machinery can plant, raise, harvest, mill, and carry to market wheat enough to supply with bread one thousand people for a year. To shell 60 bushels of corn by hand takes 95 hours of labor time; with machinery 1 hour is enough. To make a plow by hand took 118 hours, with a labor cost of $5.34; with machinery now a plow is made in 3¾ hours, at a labor cost of 79 cents. To build a standard platform road-wagon with two movable seats and a leather dashboard takes 53½ hours of labor time with machinery, against 204¼ hours with the old hand tools, and the labor cost with machinery is $8.48 against $43.07 with hand work.

In sawing lumber by machinery, the saving of labor time is 375 to 1 and the saving of muscular exertion much greater still. One man with a double-surface planer will smooth as many boards in a day as 40 carpenters with hand planes. To make 2 hardwood bedsteads now takes 41 hours and 6¼ minutes, against 571 hours by hand, or 14 to 1 in favor of machinery. The labor cost by hand was $141.90 and by machinery $6.06. One woman with a sewing-machine can do as much as 12 to 20 women with needle and thread. The sewing of 100 yards of Wilton carpet takes 1¼ hours by machinery and 27 hours by hand. The making of 100 lbs. of 6-oz. carpet tacks requires 8 hours to-day, against 810 with the old hand tools—100 to 1 in favor of modern methods. In the making of hammers a man can do as much in a day with machinery as in 14 days without it. By machinery now one man can make as many 4-penny steel cut nails in a day as 130 men could make in 1813 (23,000 nails in 2 hours, against 260 hours to make that many nails in the olden time).

The making of a bar of soap in the early years of the century took twenty-fold the labor time that is required to-day. The labor cost of making 25,000 lbs. of laundry soap is $3.25 now, against $43.20 in former years. A McKay machine enables one workman to sole 300 to 600 pairs of shoes a day, while he could handle but five or six pairs in a day by former methods. The ruling of 100 reams of single-cap writing paper with faint lines on both sides required 4,800 hours with ruler and quill in 1819, while with the modern ruling machine the work is more accurately and uniformly done in 2½ hours with full allowance for foreman's time, etc.—a ratio of 1,920 to 1 in favor of the modern method.

A good compositor will set 6 or 8 thousand ems in a ten-hour day by hand, while with a linotype he will set 50,000 to 70,000 ems in the same time. A modern printing-press with the help of 5 men will do the work of 3,000 to 4,000 persons. Franklin printed his paper on a little press with a big lever pulled down by hand for each impression, and making 60 or 70 impressions an hour. What would he think if he could see one of our giant steam cylinder presses printing, folding, cutting, pasting, and counting 70,000 or 80,000 papers an hour? Two persons with modern machinery print, fold, and gather the sheets for 1,000 pamphlets of 32 pages each in 7.6 minutes, while with a hand-press and bone folder 25 hours were needed—197 to 1 in favor of modern machinery. The total time consumed in making and printing the pamphlets was 21 times as great by former methods as at present. The labor cost of printing and binding 1,000 32-page pamphlets with the aid of modern machinery is 14 cents, against $7.10 by former methods.

To make 12 dozen pairs of trousers with machinery takes 148½ hours of labor time, against 1,440 hours by hand, with labor costs of $24 and $72 respectively. For a dozen pairs of seamless half-hose, cotton, the labor cost is 9 cents with modern machinery, against $1.30 by former methods—with labor time 80 to 1 in favor of modern machinery. With the old spinning-wheel, one man could spin 5 hanks of No. 32 twist in a week; now 55,098 hanks are made in the same time—or 11,000 times as much for one man with the aid of two small boys. A girl in a cotton mill can turn out calico enough in a year to clothe 1,200 persons, more or less, depending somewhat on the size of the persons and the number of changes of cotton they have.

The railway, motor-car, bicycle, and automobile are fast relieving the horse of his ancient burdens and transforming him into a leisured aristocrat. A first-class locomotive will pull as much as 1,800 horses or 10,000 men, and a day of labor with the railway (*i.e.*, ten hours of labor for one man in connection with the railway service) will move as many tons of freight ten miles as 200 days with a two-horse wagon and driver. We cross the ocean in 5 days instead of 25 or 30, and go from Boston to San Francisco in less time than it took our great-great-grandfathers to go from Boston to Philadelphia. We travel a mile a minute in place of ten miles an hour, as in Franklin's day. The news from South Africa, China, and Europe is flashed round the world every day, so that our papers each morning print yesterday's news for the globe. When Washington died the fact was not known in Boston for two weeks after the event. In 1870, if A in New York wished to hold a conversation with B in Chicago, he must travel 800 miles to do it; now he can go to his telephone or round the corner to a public station and talk to B by electricity, which is able to fly many thousands of miles a second.

Illustrations of the enormous increase of power and saving of time and labor achieved in "The Wonderful Century" might be indefinitely extended. Further facts from the data accu-

mulated by Carroll D. Wright, as Labor Commissioner for the United States, will be given in a later article on "Industrial Development." The total mechanical and horse power of the country is equal to the labor power of half a billion willing slaves, or an average of 20 to each human worker. Before the twentieth century ends we may have the equivalent of 50 or 60 slaves per man, or more than 100, perhaps, for every family. A family with 100 tireless slaves, or even the 30 or so we have on the average now, need not labor very hard, and if the benefits of power and mechanical development were fairly distributed among the people a few hours' easy work every day on the part of each able adult would enable all to live in comfort. If the principles of equality that have entered so strongly into political life in the nineteenth century, changing absolutism into constitutional government based on universal suffrage, should enter with equal strength into industrial life in the years to come, the result would be a far nobler civilization based on universal comfort—the principle of equality or copartnership, in unison with vast industrial power, labor-saving machinery, and thorough organization, would make this world a paradise in comparison with which old Eden would fade into insignificance. There were not people enough in Eden to make it interesting for any great length of time, and there were too many wild beasts in the immediate neighborhood. No chance to have a fine house filled with beautiful pictures and handsome furniture, or to take a Pullman to Niagara or Yosemite, or to see Julia Marlowe, or Joe Jefferson, or Irving, or Sherlock Holmes. No chance to hear Sousa's band, or the Symphony Orchestra. No telegrams, telephones, phonographs, or biographs; no libraries or schools; not a single book or newspaper, nor even a chance to cook a decent meal of victuals; nothing but gooseberries, plums, and crab-apples that made the eater thereof desire to leave the premises. I would rather live in America now with all its imperfections than with Eve in the ancient garden; the means of life are greater, infinitely greater, and only their fair diffusion is needed to fill the world with happiness.

Knowledge has marvelously increased and has been diffused among all classes to a degree unknown in former times. Geology, biology, psychology, sociology, and many other sciences are developments of recent years; almost the whole body of modern science, except pure mathematics and the rudiments of astronomy, physics, and chemistry, is the creation of the nineteenth century. The spectroscope has analyzed the stars. The Roentgen rays have lighted up the innermost recesses of the human body and made it easy to see through even the least transparent man. The camera has registered more than the eye can see, and the phonograph more than the ear can hear. With the telegraph, telephone and phonograph, color photography, the vitascope, and kinetophone, we can bring the world to our doors. The molecular theory of gases and definite proportions in chemical union, the wave theory and the measurement of light vibrations, the mechanical equivalent of heat, the conservation of energy and the correlation of forces, the glacial epoch, the meteoric amendment to the Nebular Hypothesis, electrical and magnetic developments, the new surgery and the germ theory of disease, the results of hypnotism and psychic research, the localization of the functions in the brain, the scientific interpretation of history, the antiquity of man, embryology and organic evolution, have given us totally new conceptions of the universe and man. To hold the records of phenomena that science has studied and the laws that have been deciphered requires a library a thousand times as big as the library of science a hundred years ago. A high-school boy to-day knows more about the *laws* of Nature, life, mind, history, and society than the greatest savant of the eighteenth century.

A hundred years ago ignorance held the chief domain. The area in the light was but a speck to the long stretches in the dark. Schools were few and poorly equipped. Even the universities stopped with Horace and Aristotle, and gave their chief attention to Virgil and Homer. Greek and Latin were the warp and woof of a college education, weaving a brilliant tissue of ancient myth and poesy in the brain and bring-

ing men to a high degree of unfitness for modern life. Free public schools existed only in America, and were quite rudimentary. Libraries were luxuries unknown to most communities. Newspapers and magazines were curiosities to the majority of people. The literature in common use was limited to the Bible and "Pilgrim's Progress," other books being rare outside the homes of the well-to-do. With the masses lack of information was compound and exhaustive, and even the best informed did not possess a thousandth part of the knowledge easily available to-day.

Sympathy, too, has grown, and with it justice and the moral elevation of the people. Kindness to animals, laws against pugilism and gambling, the growth of temperance and tolerance, reform of penal codes and prison discipline, improved conditions of labor, amelioration of war, the Red Cross Society, the Czar's manifesto, the growing strength of the Peace Association, the rising demand for the realization of brotherhood, and a hundred other indications point to the moral development of the century and the evolution of a new ideal.

The development of political liberty surpasses anything in political history before our time, and governments have become democratic to an extent that makes the nineteenth century the century of democracy. Since the closing years of the eighteenth century, almost every nation in Europe has passed from absolutism to constitutional government, with the final power in the masses of the people. The same is true of South America. In North America and Australasia also the rule of the people is established. Slavery and serfdom have been abolished throughout the civilized world. Three continents are free, and important parts of two others are also in the light.

In 1800, only 1 country, with less than one-hundredth of the population of the globe, and less than one-fiftieth of its land area, enjoyed the blessings of popular government free of despotic control. Throughout the rest of the world, with varying forms of government, the actual rule, internal or external, was despotic. In 1900, nearly 50

countries, with more than a quarter (30 hundredths) of the total population of the globe, and over two-fifths of its land area, possessed constitutional governments, with the fundamental powers of legislation and taxation in the hands of the people: a fifty-fold growth of popular government as to countries, thirty-fold as to population ratios, and a twenty-fold growth as to area. A hundred years ago less than 2 thousandths of the land and people of the globe were controlled by free governments and clear of the taint of slavery or serfdom (one 650th of the people, to be exact, and one 830th of the land); now more than half ($^{11}/_{20}$) of the people in the world, with nearly two-thirds ($^{11}/_{17}$) of its land area, and almost the whole water surface of the globe are included in or controlled by countries having constitutional governments and laws prohibiting slavery and serfdom. The dominance of free institutions has grown 540-fold in respect to land controlled (or from 1.2 thousandths of the world in 1800 to about 650 thousandths in 1900), and 350-fold in respect to population (or from 1.54 thousandths to 550 thousandths)—a gain 140 times as great as the growth of the world's population.* It must not be understood, however, that an ideal freedom has been reached in half the world or indeed in any part of it. Great as has been the advance of liberty and democracy in the nineteenth century, there is plenty of room for improvement in the twentieth, not only in respect to the extension of free institutions but in respect to their quality. As we shall see hereafter no country has yet perfected the substance and machinery of free government. Nevertheless, although much still remains to be done for liberty and self-government, the progress toward free institutions in the nineteenth century was of unexampled strength and breadth, and the world to-day is white as an angel's wing with freedom's holy light compared with the darkness of the eighteenth century.

* The facts upon which these generalizations are based will be stated in a special article on "The Political Movement of the Nineteenth Century."

Free thought and free speech have evolved with political freedom. In religious thought and expression the change is specially marked. A little more than a hundred years ago intolerance was a profession, an organized cult, an established institution;—creed and dogma reigned supreme. New ideas were regarded in much the same light as microbes are to-day. Intellectual activity touching religion was a dangerous disease. The Inquisition was still alive in Europe, and men could be cooked for their beliefs. Even in America, men that held unfashionable opinions on religious matters, and mentioned the fact, were treated as social pests. Doubt was a deadly sin and tolerance was a crime. To question the teachings of the Church was to incur the penalties of perdition, and, being infectious, the salvation of others was imperiled. Such iniquity could not be tolerated. The pestilence of unbelief must be stamped out. Unquestioning faith was one of the conditions of existence. A man could hardly hope to retain his employment if he were so perverse as not to believe as his employer did in respect to the creation, the stopping of the sun, Jonah and the whale, Noah and the ark, and other essential elements of the spiritual life of those good old days. And no respectable person would associate with a man sufficiently wicked to doubt eternal damnation or total depravity, or any other of the comforting doctrines from which our gentle ancestors derived religious consolation. Investigation was outlawed. Thought was in chains, and religion was buried in petrified theology.

Now tolerance is a virtue recognized in large degree even by the clergy, and practised by the rest of the community to an extent that makes our time the age of tolerance as compared with any period of the past. A man may hold his judgment in suspense about the hot hereafter, and question the whale episode or the stoppage of the sun, without losing his job or discovering a premature perdition in his social environment. We do not discharge men for their religious opinions, but only for their political opinions, or for believing too much in labor organization; and we do not expel a man from good

society on account of his thinking or the cut of his theology, but only on account of bad conduct, disagreeable disposition, loss of fortune, or the cut of his clothes. Religious tolerance has grown so great that it is beginning to be safe for a man to tell the truth, expressing his honest doubts and conclusions, whatever they may be, and finding, except in fossil communities here and there, a respectful hearing for his thought. The light has touched even the pulpit, and preachers forget to proclaim the iniquity of entertaining ideas different from those adopted by their own denomination. Sometimes they go so far as to speak in a church of another creed, and we have heard a Beecher and a Phillips Brooks declare that religion is a *life,* not a creed. Best of all, the men who preach theological doctrines least and the Golden Rule and noble living most are the men the people love and the Church delights to honor. Thus, while liberal thought has banished some of the errors that clung to religion, the real heart of Christianity as taught by Jesus himself has gained a stronger and stronger hold upon life, and may at no distant day make the Christian ideal of brotherhood a controlling power even in government and industry.

Injustice prevailed one hundred years ago in many forms that are extinct to-day. The slave trade was a lawful industry. Feudal serfdom bound the peasants of Europe like cattle to the land, and chattel slavery blackened even the Constitution of the United States. Pirates infested the ocean and open robbery prospered in many lands. In Europe a man might be arrested and locked up without warrant or legal process and held without trial. In England man-catching was systematically practised in the sea-board towns. Press-gangs seized men at night, dragged them on board a man-of-war, and held them for duty in the navy without redress. No effort was made at the reformation of criminals. Prisons were slaughter-pens, chambers of torture, and nurseries of vice. Capital punishment might be inflicted for any one of 160 offenses. Stealing an apple or a plum from a rich man's orchard was as grave a crime as murder. Imprisonment for debt was still permitted,

and a man might languish in jail a life-time because he could not pay a few shillings he had borrowed. Women had very few rights in law or in fact. A woman belonged to her husband, and all she earned was his. He owned her clothes, her jewelry, her mirror, her complexion, and even her false teeth, and might chastise her like a child if she did not behave to suit him.

Slavery and serfdom have been abolished. Piracy is dead. The press-gang has vanished and thievery is trying to hide itself. Our principal robbers do not club their victims on the highways, but carry them in street-cars and railway trains, or capture their money politely with stocks and trusts. Nothing has improved more than robbery. Instead of a dangerous encounter with pistols, to get the goods and cash that two or three travelers may have with them, the modern highwayman builds a railroad system with other people's money, or a gas or electric plant, or a street railway, or secures a telegraph or telephone franchise, or waters some stock, or gets a rebate on oil, beef, or wheat, or forms a giant trust and robs the population of a continent at a stroke. Then the robber buys a newspaper or caresses it with greenbacks, and has himself entitled a "Napoleon of Finance," while the rudimentary, undeveloped aggressor or peculative survival of more primitive times who steals a bag of flour instead of a grain crop, or takes a few hundreds instead of a million, has to put up with the old-time, uncivilized name of "thief." Imprisonment for debt has been abolished, and also imprisonment for theft—if it is committed according to the law and by methods approved by the particular variety of "Napoleon" having control of the government. Capital punishment is administered under our law for only two offenses—murder and treason, though the death penalty is still incurred, outside of the law sometimes, in punishment for slander, violence, or offenses against the family.

Some attempt is made at the reformation of criminals; personal liberty and trial by jury are guaranteed, and on the whole are well enforced. Women have made much progress

toward equality—economic, social, and political. They are no longer regarded as personal property, as in days of yore; but under most governments they are still classed politically with infants, idiots, and criminals, and even their economic and social rights are not quite equal to their brothers'. As compared with the past, however, the nineteenth century has been the age of emancipation for women. Upon the whole, in spite of the new development of theft under the forms of monopoly taxation and fraudulent contract, justice has made enormous gains in the last one hundred years.

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