VALUE OF INVENTIONS IN TIME OF WAR—WHAT THEY HAVE DONE FOR ENGLAND.

War is not necessarily destructive to all the arts of peace, or to the invention of new contrivances calculated to further develop our natural resources. It may greatly retard, or only slightly check, a nation's progress, according to its severity and continuation; but in the present enlightened era of the world, and as war is now conducted, it can never bring to a stand still a nation like our own, composed of a population of nineteen millions of loyal citizens. The war in which we are engaged may destroy much property already accumulated, private estates may be and have already been swept entirely away, but many of the ordinary industries will continue with their usual success, many more will be, and already have been, greatly enlarged in their operations, and what is of more importance than all, through the inventive faculties of our people, new industries will be discovered and new and other property will be created. It is true that war draws many men from their accustomed fields of labor. The farm, the workshop, the store, the college, all send forth their patriotic contributions to swell the armies of an independent people. More than this, when one man leaves an employment in order to engage in the battles of his country some proportion of the labor of other men is required for his support; then, instead of developing wealth, he becomes a consumer, and just in that proportion he is felt as a burden upon the state. But the era when physical power was the only, or even the chief, agency in the development of wealth has now passed away. We do not fill our factories now with a multitude of hands; we place a steam engine there, this turns the shafting in every part of the building, and drives machines that multiply in themseles the mere hand work of a thousand mechanics. Mind is much more effective than brute force. Brain is the best producer of the two. When one-third of a country's population is destroyed we cannot say that she has lost one-third of her productive power; we must first ascertain who have been taken away and who are still left.

The history of the last one hundred years will show that the world is much more indebted to the few than the many, and of these few a large proportion have been inventors. Peace is undoubtedly the period of the inventor's best prosperity; but in times of war, in spite of war's desolation, they have carried to the homes of the people, a new thrift and a new prosperity. In proof of this we have the encouraging fact that during the period of time extending from 1793 to 1816, when England was involved in her most expensive wars, that nation increased in wealth and prosperity in a greater ratio than ever before. And this was mainly due to a few inventions, and to a few prominent inventors. The English revenue, which in 1797 was only £23,126,000 increased steadily until it reached the sum of £72,210,000 in 1815. In 1797 the revenue from lands was only £3,000,000 and in 1715 it was £15,000,000. The total net aggregate amount of revenue from the accession of George III. to the end of that period, exceeded the prodigious sum (never before imagined) of £1,386,000,000; nor can we help remarking, though it is foreign from our subject, that this immense sum was mainly expended in endeavoring to enforce unjust laws in the American colonies, in upholding the dethroned house of Bourbon, and in fostering aristocracy.

And for this power of endurance, we have before said, England was mainly indebted to the genius of a few men, not statesmen, or bankers, or merchants, or noblemen, or churchmen, but simply inventors. At the beginning of this period, Robert Fulton was experimenting in France upon the application of steam to the propulsion of vessels through water. In 1806 he returned to this country and continued his experiments on a larger scale, and with what result the world already knows. In the same period Eli Whitney brought forth his cotton gin, and Hargrave, Arckwright and Bolton followd soon afterward with the spinner, and combination of machinery which made it possible to manufacture cotton into a cloth of great usefulness and of universal demand. Then, also, steam power was largely directed to manufacturing operations, rapidly increasing their extent and importance. By thus introdueing steam engines, England multiplied a hundred fold her population; by steam communication she brought, practically, the producer and consumer within a short distance of each other. She thus increased, at one and the same time, her ability to manufacture, the value of the article produced, and, by a saving in the cost of transportation, the price she was able to command. In 1797 the article of cotton was comparatively valueless, but the inventions already referred to imparted to it a value before unknown. This stimulated its growth, especially in this country, and as fast as it could be produced and prepared it was shipped to England, and has resulted in the establishment of that immense cotton manufacturing interest, which it has been boastingly said commands the world, and, especially, the conscience of Great Britain.

In 1815 England had already consumed $119,000,000 worth of the raw material. If we add to this the increased value placed upon the material by the operation of manufacture, and its carriage to market and preparation for consumption, we find it equivalent to at least $500,000,000. And this was the contribution of only one article, made available by a few inventors, to the British exchequer. And what has been true of cotton bas been true of many other articles of less importance, but in the aggregate far surpassing it in value, that have been useful to society by the application of their newly-invented machinery. Had it not been for these novel inventions, for the lives and services of their authors, the people of England could never have endured those exhausting wars, or have paid the taxes under which she labored. Unable to maintain her armies she must have been defeated in battle, and then discouraged and ruined at home her citizens would have sunk to a new barbarism.

We think this lesson, derived from the history of one of the greatest of nations, of peculiar interest to all loyal citizens, and, especially at this time, to inventors. What has been done by England can be done again by the United States. Because we are in a war is no reason why we should go backward. No country is as fertile as our own, either in inventive talent or in products capable of being applied to new purposes. Articles yet unknown may, by the ingenuity of some inventor, become new garments to clothe us; new products may feed our bodies, may be used in building our houses, and in warming our houses; and still new values may be imparted to old articles. Physical power is alone circumscribed by given boundaries; there is no limitations to results in the ever-widening field of inventions. And when the history of the world is written the brightest pages will be those that record the lives and achievements of its inventors; and they, too, will be pronounced the world's greatest benefactors.

Machines for Spooling Thread.

An interesting paper on the above subject was recently read before the Institution of Mechanical Engineers, by M. Weild, of Manchester, and has been published in *Newton's London Journal of Arts and Sciences*. Previous to the present century, sewing thread was all made up in hanks for sale, and it was not until 1814 that the mode of winding thread on spools was introduced by James Carlile, of Paisley, Scotland. Thread was first wound upon spools in soft, uneven and irregular layers, by a common hand wheel, and the top layer was made smooth by the friction of a small piece of calico pressed against it in winding. About 1830 a spooling machine was brought into use by Mr. George Taylor, of Paisley, having a single grooved guide for laying the thread upon the spool; this guide was made to traverse longitudinally by two screws geared together, so as to distribute the thread evenly upon the spool—one of the screws acting to regulate the distribution in one direction, and the other in the opposite direction. The many-grooved guide and the right-and-left-handed sciew, were introduced about 1834.

The spools commonly used are made of wood, more or less ornamented; and some also of metal, bone, ivory and other materials. Wood spools were first turned by self-acting machinery, invented in 1846 by Mr. John Clark, of Glasgow. The wood is first cut into slices, having a thickness about equal to the length of the intended spools; from these slices the blocks to form the spools are cut by means of a crown saw, which cuts a piece out of the slice in the form of a cylinder and bores a hole through its axis at the same time. The blocks are next supplied to the self-acting turning machine for turning them to the required shape and length, and are afterward finished or ornamented by a milling or stamping process.

For polishing the thread, to give it a glossy appearance, it is placed in a solution of starch, and then subjected to friction; in the first use of machinery for the purpose the thread was polished in the hank by rotating brushes. This is also done by means of machinery similar to that for sizing warp threads; and the last few layers of the thread wound upon spools for the market are polished in the spooling machine by extra pressure upon the thread guide.

The most improved hand-spooling machines at the present time are placed upon long benches, about three feet wide and two feet high, and driven by a shaft passing along under the bench. Each spooling head is driven by a friction clutch or pulley, which is made to engage with the clutch or pulley on the driving shaft by means of a treadle, pressed down by the foot of the winder. The spooling head consists of a small headstock, carrying a horizontal shaft, from the end of which projects the winding spindle that the spool is placed on. The thread guide is fixed on a sliding rod, and the alternate traversing motion is received from a shaft with a right-and-left-handed screw thread on it; the sliding rod has two arms, each carrying part of a screw not on opposite sides of the screw shaft—one to gear with the right-handed screw thread, and the other with the left-handed; so that by a slight oscillation of the sliding rod, first one and then the other nut is thrown in gear with the screw shaft.

In using the spooling head the empty spool is placed upon the winding spindle, and the thread, which is drawn from the end of a large bobbin, is passed under the thread guide, and fixed so as to wind on to the empty spool. The machine is then started, and the winder presses upon the thread guide with the left hand, giving the requisite pressure by the thumb, while the right hand reverses the traversing motion at the end of each layer of thread. When the last layer is being wound upon the spool extra pressure is generally given to the thread guide, to polish the thread and give it the glossy appearance. When the spool is filled a nick is made in the edge of the spool and the end of the thread secured in it. The full spool is then removed by means of a lever, as the repeated tight coiling of the thread has compressed the spool tightly upon the spindle The winders employed in filling the spools are mostly young women, one to each spooling head or spindle.

Several attempts have been made in England to wind thread by self-acting means on to several spools at the same time, but as a large portion of the winder's time is occupied in placing and removing the spools, and in fixing the ends of the thread to them, the advantage was found insufficient to induce perseverance for overcoming the difficulties.

Mr. Weild gave this brief history of spooling machines, introductory to the examination of a self-acting machine which he exhibited, capable of spooling twenty gross of spools per day, and requiring the attention of only one boy. It winds six spools at once, fixes the empty threads ready for winding, guides the threads on to them, and when 200 yards exactly are wound on each, it cuts nicks in the edges of the six spools, draws the end of the threads into them, then cuts off the threads, discharges the full spools and begins winding another set of empty ones. The spools are driven at a speed of 2,000 revolutions per minute, and a set of six spools are filled and exchanged in one minute. With a hand-spooling machine one attendant can spool but three gross of spools per day. One of the new machines, therefore, saves five-sixths of the labor required by the old hand spoolers.

BANK SUSPENSIONS.—On Monday, the 30th ult., a large number of banks in New York, Boston, Philadelphia and other places, suspended specie payments, but a notion has obtained currency that all had suspended, whereas the following in this city have not, namely, the America, Broadway, Chemical, City, Fulton, Greenwich, New York, Park and Seventh Ward. These nine banks pay specie as usual. Twelve banks in New York which have suspended have $22,000,000 of gold in their vaults, which is believed to be sufficient to satisfy any demand that may be made upon them.