

## AMERICAN COTTON STATISTICS.

An interesting article on "Statistics of Cotton Manufacture," taken from the eleventh annual report of the Boston Board of Trade, by Samuel Batchelder, Esq., has lately been published. We condense the following from its pages:—

In 1860 there were in Massachusetts 1,688,471 spindles and 41,620 looms. Since 1850 there has been a total increase of 31 per cent in the number of spindles; but during the past five years the ratio of the increase has been only 11 per cent, which is much lower than that of the same number of years since 1840.

The consumption of cotton in Massachusetts in 1850 was 95,032,975 pounds, or 73.70 for each spindle; in 1855, the amount consumed was 105,851,749 pounds.

It is stated in this report that there is no positive data by which to determine the present number of spindles in the United States, but according to the census of 1850, there were 272,527,000 pounds of cotton consumed; and by allowing 75 pounds to a spindle, there would have been 3,633,693. "If we add," says Mr. Batchelder, "twenty per cent for the increase of the next ten years, during which time the spindles in Massachusetts have increased 31 per cent, we shall have 4,360,430 for the number in the United States in 1860."

In Tennessee, Alabama, Georgia and South Carolina, there were 140,602 spindles, according to De Bow, in 1850, and the bales of cotton consumed were 60,000; but the statistics for that year make the consumption of bales in these States only 41,778. The report of the Philadelphia Board of Trade for 1860 gives the consumption of cotton in States north of Virginia at 760,218 bales, and in States south at 164,700, making a total of 924,918. Mr. Batchelder is of opinion, however, that 900,000 bales is probably nearest the truth.

In 1855 there were 314,996,567 yards of cotton cloth produced in Massachusetts, at a cost, for labor and material, of 7.76 cents per yard. The exportation of American goods is larger than many persons suppose. For the year ending June 30, 1860, the value of such exports amounted to \$10,934,796. It is understood that goods to the value of \$4,200,000 went directly to China from the ports of New York and Boston. The London *Economist* states that the total cotton goods and yarn exported from Great Britain last year amounted in value to £48,200,000, of which sum the United States took £4,635,000 (about \$22,479,750). We therefore export cotton goods valued at nearly one-half that which we take from England. This is more favorable than most people imagine.

Mr. Batchelder says: "As to the future prospects of our cotton manufacture, the greatest apprehension seems to be on account of our relations with the Southern States. There is little doubt that we shall be able to obtain our supply of cotton at the market price, unless all the laws of trade are nullified." This is no doubt a sound conclusion, but it affords no satisfaction to any person. Cotton can always be obtained at the market price. It is stated that the value of the entire cotton manufactures of the United States in 1850 was \$61,869,184, of which \$57,134,760 as consumed at home and the rest exported; and of this amount the free States produced \$52,502,853. About seven per cent of this only is supplied to the fifteen slave States. Our foreign exports of cotton goods have increased rapidly. In 1850, they were valued at \$4,734,424; the increase in ten years is \$6,200,372.

A common opinion prevails that the increase of cotton machinery has kept in advance of the supply of cotton. Mr. Batchelder asserts that this is not the case. He gives some statistics of British manufacture in proof of this opinion. In 1856 the number of spindles in England and Wales was 25,818,576; looms, 275,590. In Scotland—spindles, 2,041,139; looms, 21,624. In Ireland—spindles, 150,502; looms, 1,633. The increase of spindles in Great Britain in six years was 30 per cent. At the present time it is believed that there are 33,612,260 spindles in England, Ireland and Scotland, allowing an increase of 20 per cent for the last four years. The increase of cotton machinery in England has been proportionally greater than in the United States. The average number of spindles to the loom in Great Britain is 84, or about twice the proportion of this country. More cotton is exported in the form of yarn, and the looms are driven with greater speed in England. But the whole increase of cotton machinery in Europe and America, from 1850 to 1860, is stated to be no more than 50 per cent,

while the average increase of the cotton crop in the same period has been no less than 64 per cent. Instead of the machinery increasing beyond the power of the cotton crop to supply the spindles (as has been predicted for some years past) the supply of cotton has been increasing beyond the spindles. At the close of 1860 there were 403,000 bales of American cotton in Liverpool. Mr. Batchelder states that he had hoped to obtain from Washington some statistics from the census of 1860; but on application at the Census Bureau, the manufacturing statistics had not been made up so as to afford any information on the subject.

## HEAD DRESS FOR SOLDIERS.

The ladies connected with various churches in our cities and villages have exhibited praiseworthy alacrity and benevolence in preparing articles of dress for the volunteer soldiers. The most conspicuous articles furnished have been Havelocks. This is a new head dress for American troops. It derives its name from General Havelock, the hero of Lucknow, whose pictures represent him with one placed over his military cap. They have always been worn, however, by the natives of India, and have long been in use by British soldiers in that tropical clime. As made for our soldiers, they are simply composed of white cotton, linen or woollen cloth, forming a light thin cover for the cap, with a flap hanging upon the neck. Of what use, it may be asked, are such articles for soldiers, especially the back flap? Their ostensible object is to afford protection for the head and neck from the effects of the burning sun, and thus prevent sunstroke when soldiers are on a march, drilling, or in an engagement. White cloth reflects the rays of light; hence the utility of the Havelock for the protection of the head, but the use of the flap is not so apparent; still, it is very beneficial, and all persons should know the reason why.

The great nervous highway of the brain is the spinal column running down the neck and back from the head. The neck and spine, therefore, require to be nearly as carefully guarded as the head; hence the use of the flap on the Havelock. The Arabian in the desert invariably wears one end of his turban hanging down over his neck; and, beside this, he has a long strip of cloth running down the middle of his back. The Hindoo soldier wears a thick cotton turban, with a thin piece of iron (generally an old horse shoe) sewed on the top, as a defence from sword cuts. The Indian army have their Havelocks wadded in the crown.

The head and neck are perhaps the most important parts of a soldier's body that require attention. Not only the form and color, but the nature of the material, should be objects of consideration in making the cap covers. As it regards color, white is the best for hot climates. The tube of a thermometer placed in the sun, and covered with white cotton sheeting, showed a temperature of 35.5° Fah.; covered with white linen, it showed a temperature of 39.6°; covered with dark blue cloth, it showed a temperature of 42°; and with red cloth, it reached the same figure. Blue and red colored cloths absorb more heat when exposed to the rays of the sun than white; hence the utility of white Havelocks. And as it regards material, bleached cotton is superior to linen, but white woolen flannel is believed to be superior to either linen or cotton, because it is a better non-conductor.

The troops intended for the South ought, therefore, to be all supplied with Havelocks, which will enable them to work in the sun without experiencing any effects from its rays. For want of such a simple protection, several of the soldiers at Washington have been incapacitated. When it is remembered that the British soldiers in India, with Havelocks, were able to stand the intense heat of the country without injurious effects, the value of this protection cannot be over-estimated.

ARMY WORM.—The army worm has been and still is very destructive in some parts of Tennessee, and many fields of grain have been destroyed. We may soon expect to see it charged by the secession editors of that State that the government of the United States has let loose the army worm to prey with "more than savage atrocity upon the innocent fields of grain in that State." If we may believe what we read, an army is worming its way down toward Tennessee that may prove more uncomfortable than the army worm.

## INTERESTING FACTS ABOUT UNITED STATES ARSENALS.

One of the most extensive arsenals in the United States is located at Bridesburg, Philadelphia. The *Inquirer* of that city, gives an interesting account of this arsenal, from which we select a few extracts.

The grounds are trapezoidal in shape, and occupy an area of 60 acres, surrounded by a solid wall of masonry 10 feet high. The Superintendent's office is situated very nearly in the center of the grounds, eastward of which lies the east arsenal or storeroom for arms. It is a handsome edifice, three stories in height, rough cast, to imitate granite. The roof is of slate, and is surrounded by a neat wooden railing, painted white. On the first floor are about 30,000 muskets, 1,000 rifles, 300 Hall's carbines, 300 pistols, and 100 cavalry musketoons. The muskets arrived last week. On the second floor there are about 400 rifles, 300 cavalry sabres, and 100 pistols with holsters, slings and pouches. On the third floor the arms are ranged most beautifully in racks, painted to a snowy whiteness; 740 muskets of the improved pattern, and 900 of the old flint locks, together with 150 pistols, carbines and musketoons, are pivoted on small circular racks, very much resembling umbrella stands. In one room are 2,000 muskets that were brought from Harper's Ferry. Sights are being fixed to them, and 1,300 of them have been already rifled.

## THE INSPECTION OF ARMS.

On the floor are a number of unvarnished mahogany cases, which, upon being opened, revealed a set of exquisitely finished inspecting instruments, consisting of guide plates for different bores, callipers for measuring shot, also a pair of callipers that will measure the thousandth part of an inch, by means of the vernier. But the most wonderful of all was an instrument for measuring the flaws and inaccuracies on the inside of a gun. It was made in the arsenal manufactory, at a cost of \$200.

## GUN METALS.

All the metals employed in gun casting have their defects. Cast iron is quite tenacious, if a sufficient weight is employed, and tolerably hard; but its comparative elasticity (an important element of strength) is so small that its tenacity is invariably destroyed after a certain number of applications of the straining force. The difficulty of obtaining sound castings, by reason of the unequal shrinkage of the metal, is unfavorable, so much so that the strongest "high" iron, by its superior contraction, does not as a rule, make so strong a gun as a metal in itself weaker.

Bronze, a more tenacious compound, has also serious defects. Its density and tenacity are considerable, but its softness unites it, for reasons already stated, for long service, particularly when rifled. Wrought iron has a tensile strength double that of the best cast iron, and is much more elastic, but somewhat softer. Authorities generally unite in stating that it was, when most in use, an improvement on cast iron, but the difficulty of producing large masses sound and homogeneous, has prevented its extensive introduction. In fact, without such instrument as that referred to, to gage the barrels of guns, the difficulty in the way of obtaining reliable weapons would be almost insurmountable.

## PERCUSSION CAPS.

In one of the main rooms of the first floor the interesting process of making percussion caps is carried on. The caps are stamped out on three presses, which bear this inscription: "Invented by George Wright, Washington Arsenal." Eighty thousand caps are turned out per day. They are constructed of an alloy of copper, which is rolled out into thin sheets, and cut into inch strips. These strips are wound upon a reel, whence they pass beneath a dye, which, at one stroke shapes their worldly destiny.

They are then made to revolve upon a steel horizontal disk, so as to pass beneath a funnel filled with fulminating powder. Receiving their quota of the detonating dust, they are conveyed to another department, where they are treated to a coat of varnish, and are then packed up for shipment.

One hundred and sixty thousand percussion caps can be turned out at the Bridesburg arsenal in one day.

## BULLET MAKING.

In the same apartment is a wonderful machine that presses out eighty musket bullets per minute—a decided improvement on the old method of casting.

Next, a machine for rifling gun barrels. About forty barrels are bored here in a single day.

And last of the mechanical wonders is a machine that presses out brass tubes for the neat cannon primers.

But the old engine deserves some mention. It is of fifteen-horse power, and is, therefore, scarcely sufficient to drive the vast machinery of the establishment. It was built at the Franklin Iron Works, in Philadelphia, in 1852.

#### SUPPLIES FOR THE ARSENAL.

All the supplies of caps and primers used by the government are made at this arsenal. The friction primers may be said to have originated here, in so far as they are a modification of the old Prussian primers.

#### THE LABORATORY.

The laboratory is a low one story brick building, where the fulminating powder is being made. It consists of quicksilver dissolved in nitric acid and precipitated in alcohol. Some idea of the expensiveness of the ingredients may be formed when it is stated that \$200 worth of materials are worked up in a day. Over 3,000 pounds of nitric acid are required for every fifteen barrels of alcohol, to make 3,000 pounds of the powder. Mr. Perkins has perhaps manufactured more of this powder, in the last eight years, during which he has been connected with the arsenal, than any other man or company of men in the United States.

The laboratory is situated at a considerable distance from the other buildings, so that in the event of an explosion, the chances of damage to life and property will be materially lessened.

The nitric storehouse is nearly isolated from the main buildings. Upwards of four hundred thousand pounds of this explosive agent are stored here, constituting, as it does, one of the main ingredients in the manufacture of gunpowder.

Two weeks since a sheet of Maynard primers exploded while under the press, making a report equal to that occasioned by the discharge of a 6-pounder. It may not be amiss here to state that 150,000 of these primers were finished in April last, and 70,000 more are now being made up.

To the southeast of the laboratory stands the powder magazine, a granite building, with but little architectural pretensions. It contains about 30,000 pounds of powder.

Altogether there are one hundred and twenty men employed in the establishment, separate gangs being at work on guns day and night. Upon the ground are a considerable number of monster iron guns, that are preserved as trophies of the war of 1812, during which they were captured on board the English ship *Lady Johnson*.

#### SPRINGFIELD (MASS.) ARMORY.

A correspondent of the *Tribune* gives some very interesting facts about the Springfield (Mass.) Armory.

In 1855 the three buildings comprising the arsenal contained two hundred and eighty-seven thousand stand of arms, and the works here have since then been manufacturing them at the rate of about one thousand per month, so that to the above number we may add seventy-two thousand as the product of the past six years. At the present time there are but thirty thousand remaining in the arsenal, and these are being boxed up and sent away for actual service every day. There are now employed in the various shops and arsenals about seven hundred men, and this force is increased as fast as room can be found for them to work in. They now turn out over one hundred rifled muskets per day, and the superintendent intends to complete three thousand this month, and to exceed this number during the coming months. This is nearly three times the number formerly produced, but is by no means the limit to which the works are capable. Several new rifling machines are nearly ready for settling up, which will materially add to the productive power of the establishment, as the number of muskets which one machine is capable of rifling is limited to the number of hours which it runs. This is not the case with other portions of the musket, an increase in the number of men being only necessary to increase production.

The rifled musket manufactured by the United States Armory, in this city, is one of the finest infantry weapons in the world. It carries a Minie ball weighing one ounce, and is capable of killing a man at a distance of one mile. Some five or six years since

Captain Benton, of the Ordnance Department at Washington, was sent here to experiment with this weapon, and with Maynard's primer, and I sometimes accompanied him in his target practising expeditions. He had two targets—one placed at the distance of half a mile, and the other at a full mile. With the half-mile target he could place a ball within the small ring every time, while with the mile-target he could put a ball within a ring of four feet diameter.

The Minie ball, as the reader probably knows, is conical in shape, with a cavity in the end, which rests upon the powder. This cavity being filled with gas by the decomposition or explosion of the powder, adds greatly to the propulsive force of the charge, while the special motion given to the ball by the rifling process preserves for it a steady and straight course.

The rifled musket manufactured here is similar to that made at Enfield, England, the machinery for making which was imported from this country, and was manufactured at the Arms Manufacturing Company in Chicopee, from patterns obtained at the Springfield Armory. It is a singular fact that almost the first demand for the Enfield rifles should be made from the State which six years ago furnished the English authorities with the machinery for manufacturing them. The machinery was not only obtained here for their manufacture, but Mr. Burton, for many years connected with this armory, was selected to take charge of the English works at England.

The bayonet which is attached to the rifled muskets is of the sword pattern, and a handsome as well as a formidable weapon. The weight of the musket and bayonet is nine pounds.

The muskets which are now being sent away, of the older patterns, have not been touched for seven years, and yet such is the dryness of the atmosphere where the arsenals are located that not a particle of rust can be observed upon them, nor even are the barrels tarnished in the slightest manner.

Formerly visitors were admitted with the utmost freedom to any parts of the works, the gates remaining open and having no guards, but since the bombardment of Fort Sumter they have been vigilantly watched night and day, to prevent injury from lurking emissaries of Jeff. Davis, and no stranger is admitted inside of the gates unless accompanied by a guard.

The large amount of money disbursed by the Government at this time must be of immense advantage to the citizens of this town, and greatly lessen the stagnation of business consequent upon the political troubles.

Another very important manufactory of arms is located at Chicopee (formerly a part of Springfield) known as the Ames Manufacturing Company. Yesterday I paid a visit to the works of this Company, and was very much gratified with the activity displayed in this extensive establishment. This Company employs at the present time 500 men in the manufacture of rifled cannon, James's patent projectiles, swords of various kinds, and the sword bayonet used upon the Sharp's and Colt's rifles. All the weapons turned out by this establishment are of the most approved pattern and excellent workmanship, and in the hands of our brave volunteers will do excellent service. In the way of brass cannon, they complete a battery a week—or rather, seven pieces—one over a full battery. In the shop there are a large number of guns of different calibers, recently received from various points, which are to be rifled for the use of the James conical ball and shell. Among them were some Columbiads which throw round shot weighing 64 lbs. but when rifled will throw balls of 124 lbs. weight, and do good execution at a distance of seven miles. These will make splendid peace-makers, and will do more toward cementing the Union than the return of ten times the number of sable contrabands which Ben. Butler has so wisely employed at Old Point Comfort.

The rifling process, while it adds greatly to the accuracy of the ball, also enables the gun to take a shot of double the weight which it is able to carry in round shot; thus the 6-pounders are by this process turned into 12-pounders, and other sizes are enlarged in the same proportion.

Of the projectiles 400 shot and shell are turned out daily. The shape of the shot and shell is similar to the Minie ball, and the principle of action is the same, but the material, instead of being lead, as in the lat-

ter case, is mainly of iron, the lead only being used to form about one-twelfth of its weight. The manufacture of the shot is quite interesting, and I will try briefly to describe it. The conical section of the ball is composed entirely of cast iron, and occupies about one-half of its length, the other half having a frame work of iron, with a cavity in the center as in the ordinary Minie balls. The balls are cast in this manner in one piece; the cavities are then filled with sand, and a covering of sheet tin is put around the framework, which is then filled up with molten lead. When they are fired from the gun, the gas arising from the explosion of the powder escapes into the cavity of the ball, forcing the lead into the grooves of the cannon, and thus rendering the action similar to that of the Minie ball. The shell is similar in structure to the ball, only the conical section is hollow, until filled with powder, and contains near its extreme point a small brass tube connecting by a fuse with the powder. The tube is furnished with a nipple for a percussion cap, and the shell is instantly exploded the moment it strikes anything with sufficient force to explode the cap.

The Ames Manufacturing Company turn out about three thousand swords per month, and about one thousand bayonets. The latter are different in form from those manufactured by the United States, resembling the saber, and being longer, and furnished with a handle, so as to be capable of being used independently of the rifle.

This company has recently made four rifling machines for the use of the government, one of which is now in operation on Governor's Island, and the others will shortly be in operation at the Navy Yard in Washington. These rifling machines will render our ordnance vastly more effective, and in times like these literally worth more than their weight in gold.

#### Balloon Reconnoissance and Aerial Telegraph.

On the 18th June, Prof. Lowe made a balloon ascent at Washington, for the purpose of trying whether balloons could be used successfully in making military reconnoissances, and telegraphing to the earth the results of the observations taken above. Professor Lowe was accompanied by General Burns, of the Telegraph Company, and H. C. Robinson, operator. The first message was then sent to the President. It was as follow:—

BALLOON ENTERPRISE,  
WASHINGTON, June 17.

TO THE PRESIDENT OF THE UNITED STATES:  
SIR: This Point of observation commands an area nearly fifty miles in diameter. The city, with its circle of encampments, presents a superb scene. I take great pleasure in sending you this first dispatch ever telegraphed from an ariel station, and in acknowledging my indebtedness to your encouragement for the opportunity of demonstrating the availability of the science of aeronautics in the military service of the country.

Yours respectfully,  
T. S. C. LOWE.

The wire of the telegraph was reeled off as the balloon ascended, and was connected with an instrument on the ground and another in the balloon. Of course there is no difficulty in maintaining telegraphic communication in this manner; but so far as we know, this is the first time a telegraphic message was sent from a balloon, and on that account it is very interesting.

The elevation attained is stated to have been moderate, but it is said to have been satisfactory to the President and several members of the War Department. We believe that in calm weather balloon reconnoissances are perfectly practicable under competent management.

#### Binding.

Subscribers desiring their numbers bound can have them done at this office in the best manner, in handsome, gilt embossed covers, muslin; price, 50c. Covers sent by express, price 40c.; by mail, 50c., which includes postage.

DEATH OF COUNT CAVOUR.—By the latest foreign arrival we have advices that Count Cavour died at Turin on the 6th inst. He has been the Prime Minister of Victor Emanuel through all his glorious struggle for the redemption of Italy, and was recognized as one of the greatest statesmen of the age.

IMMENSE WARLIKE PREPARATIONS IN ENGLAND.—Very extensive fortifications are now being erected on the river Thames, all of which are to be mounted with 100-pounder Armstrong guns.