

### SURPRISING FACTS IN REGARD TO THE VALUE OF SEWING MACHINES.

In the recent contest before the Commissioner of Patents for the extension of Howe's patent for sewing machines, the following facts were proved in relation to the value of the patent, which, at first thought, are certainly astonishing.

They are selected from a large number of facts of a similar character which were arranged and presented by George Gifford, Esq., of this city, senior counsel for the applicant, in an argument of great ability, and which we are not surprised to find produced a convincing effect on the mind of the Commissioner.

Ezra Baker states that the amount of the boot and shoe business of Massachusetts is \$55,000,000 annually, and the ladies' and misses' gaiter boot and shoe business is at least one-half of the whole boot and shoe business in that State; and is, therefore, equal to \$27,500,000. He also states that about 1-11th of these \$55,000,000 is paid for sewing labor. From this proportion, it appears that the annual sewing labor upon ladies' and misses' gaiter boots and shoes is \$2,500,000, and that it would cost four times as much if done by hand—so that the *annual* saving by this invention in the manufacture of ladies' and misses' boots and shoes, in one State, is \$7,590,000. The price of these shoes has been reduced to the consumer *one-half* by the introduction of sewing machines; the price of material remaining the same.

Oliver F. Winchester is a manufacturer of shirts at New Haven, Conn. He says that his factory turns out about 800 dozen per week; that he uses 400 sewing machines, and that a machine, with an attendant, will do the work of five hand-sewers, at least—and do it better. He pays, at least, \$4 per week; but, reckoning it at \$3 (the old price for sewing before machines were introduced), it shows a saving in this single manufactory of \$240,000 a year. Allowing the males of the United States to wear out two shirts a year apiece, and a proportional saving would amount to \$11,680,000 annually in making the single article of shirts.

James W. Millar, connected with Brooks Brothers, manufacturers of clothing, states that that house alone do a business of over \$1,000,000 annually, and use 20 sewing machines in the store and patronize those that others use, and do about three-fourths of all their sewing by machines, and pay annually for sewing labor about \$200,000; \$75,000 of this is saved by machines—that is, the machines save \$75,000 on every \$200,000 paid for sewing labor. And he states that the house of Brooks Brothers does not make 1-100th part of the machine-made clothing manufactured in New York. This, putting the proportion at one 1-100th part, would make the business of manufacturing machine clothing in the city of New York \$100,000,000 annually; and, at the rate that house pays for sewing, it brings the cost of sewing in this branch of manufacture in the city of New York (even with the assistance of the sewing machines) up to *twenty millions of dollars*. A saving of \$75,000 on every \$200,000 of this makes \$7,500,000. James McCall states an estimate of what proportion of the clothing business of the United States is done in the city of New York, and puts it at about 1-10th. Multiplying the cost of sewing in that business alone in New York, as shown above, by 10, carries the extent of cost in the United States to \$200,000,000 per annum; and assuming that as large a portion of this is done by machines in other places as is done in the city of New York, it makes the cost of sewing labor in this particular manufacture in the United States the above sum of \$200,000,000; and this, too, by the assistance of machine sewing, \$75,000 on every \$200,000 of this is saving, which makes the saving in the United States amount to \$75,000,000 annually in this branch alone.

Food and clothing are the first two necessities of life. India-rubber, electric telegraphs and steamships are used only by a portion of the community, and by those but a small part of the time; but every person, from the beginning of life to its end, must be supplied with something to eat and something to wear. Those inventions, therefore, which greatly facilitate the production of food and clothing form a class by themselves, entirely different from and above all others. The invention of the spinning jenny, which aids so much the making of cloth,

was, doubtless, of greater importance than that of the sewing machine; and this is also true of the plow, which multiplies so many fold the production of food; but, with the exception of these two, the sewing machine is the most important invention that has ever been made since the world began.

The claim of novelty was very thoroughly examined, and it is interesting to see how near Walter Hunt came to securing this splendid prize 10 years in advance of Howe. But Hunt was lacking in *perseverance*.

Judge Sprague, of the United States Circuit Court for the District of Massachusetts, in 1854, after repeated investigations in suits both in equity and at law, had the whole subject before him, and decided every relation which the alleged experiments of Hunt could have to Howe's patent; and in his opinion delivered on that occasion, among other things, he says:—"Now, to whom is the public indebted for the present useful improvement or useful existence of the sewing machine? Upon that, there is no question. There is no evidence in this case that leaves a shadow of doubt that, for all the benefit conferred upon the public by the introduction of a sewing machine, the public are indebted to Mr. Howe." \* \* \* "If Mr. Hunt did not go to the extent of having perfected a machine, although he made many ingenious devices, it was, in the eye of the patent law, a nullity; it gave nothing to the public." \* \* \* "The whole testimony leaves upon my mind no doubt that, however far Mr. Hunt had advanced with his machine, it was never perfected in the sense of the patent law; that it was only an experiment and ended in experiment, and was laid aside as an unsuccessful experiment until the introduction of Mr. Howe's machine."

We have also, in reference to this question of novelty, carefully examined the report of the acting Examiner—Mr. J. Van Santvoord—to whom this case was referred, and we find that he completely establishes the novelty of the claims issued to Mr. Howe in his patent of Sept. 10, 1845. In reference to the claims of Walter Hunt, and the English patent of Fisher & Gibbons, which have been arrayed against the originality of Mr. Howe's invention, the Examiner shows that Hunt's invention of 1834 did not exhibit the same combination as is embraced in the Howe patent; and, in reference to the supposed interference with the English patent, it appears that Howe had perfected his invention in May, 1845, which was one month previous to the enrollment of the Fisher & Gibbons specification, which, according to the rules of the Office, establishes the priority of Howe's over the English patent. The Examiner, however, goes on to say, that "if the date of the enrollment is not the true date of the publication, the result is not changed, for the reason that this invention does not show the element of Howe's combination, further than the needle and shuttle."

George P. Clapp says that he was in the clothing business in 1845, and saw Howe's original machine operate, and was present when he tried its speed against the hand-work of five girls, and beat them; its work was neater and stronger than hand-work. He saw the same machine operate again in July last, at the rate of 280 stitches per minute, and do good sewing.

George R. Townley says that he is a "manufacturer of fine custom-made boots;" that he uses an original Elias Howe sewing machine; that he has had this machine in use about eight years; that it was made by Mr. Bliss, under the superintendence of Elias Howe, Jr.; that, up to a year ago, he had not "paid out one penny" for repairs on it, and then paid only \$1, and nothing more up to the present time, and that it is just as good and as perfect now as it was when he bought it, and does as good work as ever, and has been in daily use; that his class of work is of the finest quality; that the machine is preferable in that work to any with modern improvements; that the machine is a great saving to his business, and will do as much work in five minutes as a hand-sewer will do in an hour, and the work is stronger.

GUTTA-PERCHA, substance very closely resembling it, has been found in Berbice, British Guiana. It can be vulcanized and molded, and, in short, possesses all the qualities of gutta-percha. The discovery is due to Dr. Van Holst, of Berbice.

### COMPENSATING PENDULUMS

Messrs. Editors:—On pages 36 and 99 of the present volume of the SCIENTIFIC AMERICAN are remarks relative to compensating pendulums. During the last year I have made some experiments in relations to combinations of wood and metals, and of different metals with each other, for the purpose of constructing an apparatus for measuring variations of temperature in a manner to make such measurements susceptible of being recorded by clockwork on a fillet of paper. Those experiments in which wood was employed as a part of the apparatus were full of the most extravagant discrepancies, which were eradicated only after metal was substituted for wood. My experiments enabled me to verify the remarks on page 99. In the construction of a compensating pendulum, the following particulars are to be observed to secure the nearest approach to uniform measurements of time by the pendulum:—The rates of expansion (by variation of temperature) of the particular samples of metals employed in the construction of the pendulum should be first obtained, and the different parts of the compensating system should be so proportioned from these rates as to preserve the distance from the point of support of the pendulum to the center of gravity of the weight at its lower end equal under all temperatures. Accuracy requires that much care be taken in ascertaining the rates, as different samples of iron and brass (the materials usually employed) have different rates of expansion, inasmuch as different methods employed in preparing iron and brass vary the proportions of the alloys which compose them (alloys of various kinds having different rates of expansion). Iron, it is well known, may, when reduced directly from the ore, be alloyed to a considerable extent with various substances, in varying proportions, so that scarcely two samples will be found to agree in their rates of expansion. Of brass the same is equally true, from the fact that atomic precision is not attempted in its fabrication, except in a few rare instances. A pendulum properly compensated may fail to give equal measures of time, being constantly disturbed by various external causes, among which are the varying resistance of the atmosphere, the disturbing influences of those causes which produce tides, and particularly those secondary causes which influence the height of tides; and the disturbances arising from change of position of the earth relative to its axis and its orbit. It is extremely probable that a pendulum cannot be made to make invariably equal measurements of time, in consequence of those disturbances which are constantly varying the force of gravity on the earth's surface acting upon it. An excellent method of compensating a pendulum for variations of temperature would be to have a system of compensating rods fastened to the bracket which supports the pendulum, so as to act upon a convenient device for elevating or depressing the pendulum. This would also make it easy to adjust the pendulum without stopping it for that purpose, while the additional resistance of the atmosphere on the rods, as a part of the pendulum, is obviated.

J. L.

Mohawk, N. J., Sept. 11, 1860.

[The above interesting hints are all based on correct knowledge and sound philosophy.—Eds.]

### A HIT AT AVOIRDUPOIS.

Messrs. Editors:—After such an exposure of our absurd systems of weights and measures, as lately appeared in the columns of the SCIENTIFIC AMERICAN, we will be alike wanting in reason and religion to maintain them. Avoirdupois weight was originally enacted by Henry VIII. (the most ignoble of butcher kings) for the benefit of butchers who gormandized him with mutton chops and roast beef, and is still maintained for the purposes of oppression. A paragraph appeared lately saying a reform of weights and measures was passing through the British Parliament. It at least had gone to a second reading in the House of Lords. Can you inform your numerous readers concerning its nature, and if it became law?

J. E.

Verona, Wis., Sept. 1, 1860.

[We have never heard of this law coming into operation as yet.—Eds.]

THE geological examination of Texas has revealed the existence, in great abundance in that State, of the finest clay, suitable for the manufacture of Queen's ware.