Arts, Manufactures and Machinery.

Economy of Materials employed.—Mode of spreading ink on type.—Difference between printing by hand and by machinery.—Identity of work produced by the same machine.

The precision with which all operations by machinery are executed, and the exact similarity of the articles thus made, produce a degree of economy in the consumption of the raw material which is in some cases of great importance.

The earliest mode of cutting the trunk of a tree into planks, was by the use of the hatchet or the adze. It might, perhaps, be first split into three or four portions, and then each portion was reduced to a uniform thickness by those instruments. With such means the quantity of plank produced would probably not equal the quantity of the raw material wasted by the process, and, if the planks were thin, would certainly fall far short of it. An improved tool, the saw, completely reverses the case; in converting a tree into thick planks, it causes a waste of a very small fractional part; and even in reducing it to planks of only an inch in thickness, it does not waste more than an eighth of the raw material

The rapid improvements which have taken place in the printing press during the last twenty years, afford another instance of saving in the materials consumed, which is interesting from its connection with literature, and valuable because admitted, and well ascertained by measurement.

In the old method of inking type, by large hemispherical balls, stuffed and covered with leather, the printer, after taking a small portion of ink from the ink-block, was continually rolling them in various directions against each other, in order that a thin layer of ink might be uniformly spread over their surface. This he again transferred to the type by a kind of rolling action. In such a process, even admitting considerable skill in the operator, it could not fail to happen that a large quantity of ink should get near the edges of the balls, which, not being transferred to the type, became hard and useless, and was taken off in the form of a thick black crust. Another inconvenience also arose,—the quantity of ink spread on the block not being regulated by measure, and the number and direction of the transits of the inking balls over each other depending on the will of the operator and being irregular, it was impossible to place on the type a uniform layer of ink, of exactly the quantity sufficient for the impression. The introduction of cylindrical rollers of an elastic substance, formed by the mixture of glue and molasses, superseding the inking balls, and produced considerable saving in the consumption of ink:—but the most perfect economy was to be produced only by mechanism.

When Printing Presses moved by the power of steam were introduced, the action of these rollers was found well calculated to be performed by the Machine, and a reservoir of ink was formed from which one roller regularly abstracted a small quantity at each impression. From three to five other rollers spread this portion uniformly over the slab (by most ingenious contrivances varied in almost every kind of press,) and another travelling roller, having fed itself on the slab, passed and repassed over the type just previously to its giving the impression on the paper. The following is an account of the results of an accurate experiment made at one of our largest printing establishments. Two hundred reams of paper were printed off, the old method of inking with balls being employed; two hundred reams of the same paper, and for the same book, were then printed off in the presses which inked their own type.

The consumption of ink by the machine was to that by the balls as four to nine, or rather less than one half.

In order to show that this plan of inking puts the proper quantity of ink upon the type we must prove first that it is not too little:—this would soon have been discovered from the complaints of the Public and the Booksellers:—and, secondly,—that it is not too much. This latter point is satisfactorily established by a reference to the frequency of change of what is called "the set-off sheet" in the old method. A few hours after one side of a sheet of paper has been printed upon, the ink is sufficiently dry to allow it to receive the impression upon the other, and as considerable pressure is made use of, the tympan on which the side first printed is laid is guarded from soiling it by a sheet of paper called the set-off sheet. This paper receives in succession every sheet of the work to be printed, and acquires from them more or less of the ink, according to their dryness or the quantity upon them. It was usual in the former process, after about one hundered impressions, to change the set-off-sheet, which, in that time became too much soiled for further use. In the new method of printing by machinery no set-off sheet is used, but a blanket is employed as its substitute: this does not require changing above once in five thousand impressions, and instances, have occurred of its remaining sufficiently clean for twenty thousand. Here, then, is proof that the quantity of superfluous ink put upon the paper in Machine-printing is so small, that if multiplied by five thousand, and in some instances even by twenty thousand, it is only sufficient to render useless a single piece of clean cloth.

Nothing is more remarkable, and yet less unexpected, than the perfect identity of things manufactured by the same tool. If the top of a box is to be made to fit over the lower part, it may be done by gradually advancing the tool of the sliding rest, the proper degree of tightness between the box and its lid being found by trial. After this adjustment, if a thousand boxes are made, no additional care is required; the tool is always carried up to the stop, and each box will be equally adapted to every lid.

The same identity pervades all the arts of printing; the impressions from the same block, or the same copper plate, have a similarity which no labor could produce by hand. The minutest traces are transferred to all the impressions, and no omission can arise from the inattention or unskillfulness of the operator. The steel punch with which the card wadding for a fowling-piece is cut, if it once performs its office with accuracy, constantly reproduces the same exact circle.

Migration of Eels.

The curious were started the other day, (says the Banffshire, Scotland, Gazette,) by seeing a whole shoal of eels wending their way up the Deveron, to their summer retreats. The shoal was not less than 300 yards in length, was of considerable breadth and depth and was steadily passing upwards at the rate of a mile an hour. No obstacles seemed to retard its progress. The mill-lead was traversed and the waterfall ascended. This interesting phenomena is witnessed every year about the same time, and shoals of several miles in length are at times seen. It is thus explained:—At the beginning of winter the whole eel tribe descend from the upper parts of rivers, where the cold is most severe, to the mouth of the stream; where, amid the brackish water, they enjoy a less diminished temperature and deposit their spawn. From these spring the young fry, to whom the warm weather forms a signal to ascend the rivers; and in their upward progress they congregate in such shoals as that above mentioned.

The Indian and his Famishing Wife.

In the year 1762, (says the Rev. Mr. Heckwelder,) I was witness to a remarkable instance of the disposition of the Indians to indulge their wives. There was a famine in the land, and a sick Indian woman expressed a great desire for a mess of Indian corn. Her husband having heard that a trader at Lower Sandusky had a little, set off on horseback for that place, one hundred miles distant, and returned with as much corn as filled the crown of his hat, for which he gave his horse in exchange, and came home on foot bringing his saddle back with him.

Sickness.

The average sickness of human life has been computed at two years in every seventy or about ten days per annum. Before forty years of age, it is but half, but after that epoch it increases rapidly and in a continually progressing ratio, till the close of life.

Foreign Correspondence.

[The following letter of our Foreign Correspondent, although touching upon subjects which are somewhat different from the tenor of the Scientific American correspondence, will nevertheless be read with much interest, as being the opinions of a calm and sound thinker upon those subjects which are now agitating Europe.

GLASGOW, June 8, 1848.

Dear Sci.—The great facilities now afforded in transmitting intelligence across the Atlantic, will furnish you almost with a weekly arrival, every one of which must convince you of the rapid decline and overthrow of monarchy in the European world. This is an epoch in our planet's history, a data of subsequent results from present events, which is neither fanatical, nor assuming prophetic vision to forsee. The question remains unsolved, "What shall the end of these things be?" There is within the minds of the people both Europe and America, and over the civilized world, an inward anxiety to gain "a look into the future." The "divine right" of Kings, the unlimited control of the monarch over the civil and sacred rights of the people has now become nonplused, paralized and shaken, and without a proper recognition of the sovereignty of Deity, and the unseen power which governs the universe, men will seek in vain to trace in the momentous events of the nineteenth century the true character and tendency of the present contentions for civil and religious liberty. Many on the political platform imagine that they recognise the twilight, the morning dawn of universal freedom already spreading its dim rays over the world. Since the crown of France has fallen and monarchy been overthrown, the sagest of their men have been placed at the helm of the nation, but they cannot establish peace nor unite the commonwealth under a polity securing what they at first aimed at, the blessings of republicanism, as established in the United States. She wants the spirit of your Pilgrim Fathers, and the pious patriotism which inspired the signers of your Declaration of Independence. France rides likes a bark on the stormy main,—she has been delivered from monarchy, and placed under anarchy and tumult; strong suspicions are afloat regarding her principal revolutionary leaders and members of the provisional government, having aided and assisted in the late attempt to overthrow the present arrangements and create civil war The commercial and financial business is in a bad condition, and they have lost much of our country's sympathies in their present struggle, from the fact of their expelling our artists and mechanics from their country—unlike your own Republic. "a home for the oppressed of all nations." England, Scotland and Ireland, continue in the same agitated condition. The great aim of many of the leading Reformers is an entire separation between the three countries, though their course is represented in another form. The late restrictive enactments embodying prohibition against seditious meetings, have partly quieted political excitement in Glasgow, Edinburg, and other places, hitherto the scenes of mob-law and riot. Next to your own, we believe the British government to be the best in existence, had we a limited constitutional monarchy. But we must have reform, government must make concessions. It is not so much the want of Liberty, as it is the crushing debts, the heavy load of taxation, and sinecure pension list, which oppresses our people. But pacific means are more likely to rectify our wrongs, than physical insurrection and riot—that reform has been set about. Mr. Hume with nearly one hundred members of the Commons have come out in its support, leagued with masses of the most influential portion of the people. The points to be contended for are these, extension of the franchise, vote by ballot, and triennial parliaments. The age we live in is signalized for discovery, the world has been centralised by steam and electricity. But the great eternal Truth and religious freedom advances invincibly over the troubled nations, convulsed empires and crumbling monarchies. Christianity in its pristine purity and simplicity, begins to spread its reign, and has already planted her holy standards on many a land hitherto overruled by fraud and force. Our times are ominous of greater changes yet to be accomplished.

Trade in this country remains in the same depressed condition. Calico printing, cotton manufactures, machine makers, and all branches of trade are in a dead state. In Glasgow the number receiving Relief supply is 5237, principally workmen and their families out of employment, while the fund for supporting the same is nearly exhausted. There are great numbers leaving here every week for America, and thousands wish for means to carry them there. The condition of the working classes is truly deplorable.

Very truly yours, D. M. C.

The Clasp Coupling Joint.

Our readers will have perceived by our list of patents last week, that the patent for West & Thompson's Clasp Coupling Joint has been issued from our Patent Office. This mode of coupling pipes is the best ever discovered, as the following Report will abundantly testify.

OFFICE OF ENGINEER IN CHIEF.
March 28, 1848.

SIR.—Concerning the Clasp Coupling Joint of Messrs West & Thompson, which you have referred to us for our opinion, we have to report: That the design of the instrument is to effect a mechanical connection between the ends of pipes, the closing of cylinders and pumps, flanges, &c. &c. In its applications the following elements are presented:—

1st. It dispenses with brazing or soldering; the drilling of holes in flanges; the use of flange bolts, grummets and washers.

2d. It affords, compared with the ordinary joint, greater security with less material.

3d. It reduces the cost of packing, repairs and secures the material interposed between the faces of the flanges from being blown out.

4th. It enables a defective portion of a feed or blow-off pipe, to be cut out, and a new piece to be put in without involving the stopping of the attached engine or arrest of the operation of the attached boiler.

5th. It reduces the cost and weight from an ordinary joint from 50 to 75 per cent, and it occupies less space, which is an essential feature in its application to Naval purposes.

We are of opinion, therefore, that the combination of security, economy of cost, weight and space effected by this instrument, together with the facility of its repair and adjustment, render its use at the several Naval Stations, and on board of all public vessels, a matter of positive importance, and recommend the Bureau to take early steps to provide for the right of application of it, for the engines and boilers of the four steamers in progress of construction. Very respectfully,

C. H. HASWELL, Engineer in Chief. U S. N.
JOHN FARRON, jr. Chief Engineer, U. S. N.
W. SEWELLS, jr Chief Engineer, U. S. N.
Commodore Chas. W. Skinner, Chief of Bureau of Construction, Equip't. and Repairs.

Lamartine's Remembrance of his Youth.

My mother received from her mother on her death-bed, a handsome bible of Royaumont, in which she taught me to read when I was a little child. That bible had engravings of sacred subjects on its leaves. When I had read half a page of the holy history through tolerably well, my mother would uncover the picture, and holding the volume open on her knees, would allow me to contemplate it, as my reward. The silvery, affectionate, solemn, and impassioned tones of her voice, added to all she said, an accent of force, of charm, and of love, which, till this moment rings in my ears, alas! after six years of silence.

Good Humor.

Let us cherish good humor and Christian cheerfulness. Let us endeavor to shake off that sullenness which makes us so uneasy to ourselves, and to all who are near to us. Pythagoras quelled the perturbations of his mind by the use of his harp; and David's music calmed the distraction of Saul, and banished the evil spirit from him. Anger, fretfulness, and peevishness prey upon the tender fibres of our frame, and injure our health.

A miser having heard a very eloquent charity sermon, exclaimed—"This sermon so strongly proves the duty of alms, that I have almost a mind to beg."