Machinery and Tools as they are.---Printing Presses.

(Continued from page 131)

The gigantic presses we have last described are only employed by a few of the leading journals, whose circulation is very large, —the majority of printers still using the ordinary power-presses, except for fine book-work, when Adam's press is generally employed here, but previously to giving a description of this latter kind we will take a cursory glance at the other varieties of cylindrical presses. In the type-cylinder machine it is evident that the columns of type, strictly speaking, form the sides of a polygon, but the breadth of the columns is so small, compared with the diameter of the cylinder, that their surfaces depart very little from the regular cylindrical form, the diameter of the type drum being 4½ feet, and sometimes over 5 feet, but if this principle were applied to small presses, the type-drum being made of proportionate diameter, and having only one cylinder or perhaps two, for the paper, it will be apparent that the polygonal sides formed by the type would be a serious detriment to the operation. In his last patent, Applegath proposes to remedy this defect by using two type cylinders, so arranged that each will carry only one half of the number of columns required. The columns being placed on either type cylinder, alternately, so that the paper first comes in contact with one type-cylinder, and having been impressed by the columns fixed upon it, then encounters the type upon the other cylinder. Such an arrangement would allow the type drums to be very much reduced in size, and by making the type of a taper form a still further reduction might be made. Taking as an instance a case in which the circumference of the cylinders was 200 inches, this modification would allow the circumference to be reduced to 70 inches, and with taper type the cylinder need not be more in circumference than the size of the sheet of paper when measured across the columns. The proposition of using taper type is somewhat analogous to a plan proposed as far back as 1792.

A new method for printing both sides of the sheet, when the paper is once fed to the press, is also indicated in the same patent, but this latter operation, which, by-the-way, is not entirely original, is not of so much importance as many are inclined to suppose, for an equivalent advantage can be gained by an arrangement well known to printers. For this purpose it is only necessary to make the press sufficiently wide to print a sheet large enough to make two copies, when, if the form for both sides be placed on the type cylinder, and a sheet of paper supplied, it will issue from the press having the two halves of the paper printed on it. Now let it be passed through the press again, so that the other side may be similarly printed, and it will be seen that two copies are obtained by a process as quick as that just mentioned, and which is much more simple. The use of revolving type cylinders has been adopted by some printers who carry on business in this city, for book-work, the press employed being in some respects similar to that used for newspapers. It is adapted to print on both sides during the passage of the paper from the hands of the pressman to its egress by the fly-frame, and the following is the manner of operating:—Two type-drums are employed, each having a paper or tympan cylinder, directly over it, so that after the sheet has received an impression on one side, it is released and allowed to fold around the other cylinder in such a manner that the unimpressed side is presented to the type. This press appears well adapted for printing periodicals or cheap books, and is employed for stereotype printing.

The above-mentioned machines are all, however, of very recent date, and by the far greater proportion of printers the Napier press is still employed. It differs greatly from those already described, in having a flat type-bed which moves forth and back horizontally, the paper being folded around a revolving cylinder, which, in its circuit, presses the paper against the form. Such was the leading principle of nearly all the power-presses until within the last few years. Their chief defect lies in the necessity of reversing twice the direction in which the bed is moved for each impression, the magnitude of this evil will be understood by instancing a press of the largest size in which the weight of the bed and type amounted to a ton, which mass had to travel a distance of 88 inches in each direction, it was found that so great a weight could not be driven along such a space with safety at a greater rate than about 45 strokes per minute, which limited its maximum producing power to 5,000 sheets per hour. The momentum of this heavy mass is counteracted by powerful springs, which, at the termination of the stroke either way, receive the shock imparted by the moving bed, and by means of their recoil, dimish the resistance to the retrograde motion. When a bed is to be moved at so high a velocity, it will be easily conceived that the friction would be enormous were it to move on a plane surface, but by causing it to rest on rollers the friction is greatly diminished. There are many variations in minor points among the different species of this description of press, but in the leading principles they are all similar, although some are adapted for rapid, and others for neat typography. There is, however, one ingenious contrivance, common to them all, namely, that by which the paper is pulled forward at the proper time, then grasped by the fingers of the cylinder until the impression having been imparted, they relax their hold, and the paper is carried by the tapes to the fly frame.

There are other kinds of power-presses very different in construction to those just mentioned, and which bear a greater resemblance to the hand-press, the most prominent of these is the press manufactured by Adams, of Boston, and which has acquired a high reputation amongst that class of printers who aim rather at excellence than rapidity. It differs from its prototype, the hand-press, in employing a bed which moves up to give an impression, whilst the platen remains stationary, which plan is the reverse of that adopted for the hand-press. The paper having been supplied by the pressman, it is, by means of fingers or clips, carried under the platen; here it pauses, receives the impression, and is carried by tapes for some distance horizontally, when it rises, in order to reach the fly-frame, which operates in the usual manner; the inking process is effected by giving the bed a horizontal motion in addition to its vertical movement. The performance of the larger machines of this description we believe will amount to 600 copies per hour, which appears a small number when compared with the 20,000 copies of the revolving type press, but our readers must recollect that whilst the one is intended for rapidity, the other is intended for excellence.

(To be Continued.)

Intelligent Mechanics.

Messrs. Editors—In your paper of the 25th ult., you complain of the want of a sufficient number of "intelligent mechanics" in our country to fill the numerous openings constantly occurring; you say, "we have frequent applications for practical intelligent mechanics who can superintend their business, and we know from experience how difficult it is to obtain them. A gentleman, writing to us some time ago for a machinist to superintend his foundry and machine shop, said he would give him above $2,000 per annum, but would be willing to give more could he get the proper person, a gentleman, with whom he could associate as a friend. The elevation of our working men is one object about which we are solicitous."

As I have long been a reader and subscriber of your valuable paper, of course I am not ignorant of some of the advantages derived by a mechanic who regularly reads it, and I must own my surprise at your complaint of a want of intelligent mechanics; my means of knowing the wants of the country, in this respect, I do not compare with your means of that knowledge, but from some experience in this community, and taking *it* as an index of the matter, I supposed no demand for intelligent machinists could be made that could not be promptly met, if properly made known to our machinists; for here I know them as a class to be really intelligent men, and as we have supplied, satisfactorily, many wants, for managers, from all parts of the country, and believe we can furnish several at present, I wish to inquire of you whether you have thought of this "village," where your paper has very many readers?" and if you have failed in obtaining an intelligent machinist, a fit companion for a gentleman, *here*, and will communicate the fact to me, I can name one to you who can satisfactorily answer your call, and he will do it, if the location is one where he would not risk too much by going.

Chas. N. Brock,
No. 30 North 10th st., Philadelphia, Pa.

[It would be a sad thing, indeed, for our country, if every city did not contain many very intelligent mechanics, and every village, too, in proportion to its population, but we do assert that, in proportion to their number, our mechanics do not possess the amount of intelligence they should possess, and for this reason they do not exercise a public influence in proportion to their number and real usefulness. The reason why it is difficult to obtain competent men, with the requisite qualifications, is, they are generally prized and can find situations at any time. We had a letter last week, from a mechanic and artist in Boston, stating that he never was out of a situation for one hour in twenty years, and that he always had the highest wages paid him; this he attributed to the reading and study of good works and to a taste for experimental philosophy. Mr. Brock will find one of the complaints to which we referred on page 277, Vol. 6, Scientific American, and the advertisement of the same gentleman on page 279, same volume.

At one time the professions of medicine and surgery were ranked with that of the barber; but education—a high education—has raised the Doctors of the healing art, to a position (as the world judges) far above that of the mechanic. This should not be. Our aim is to elevate, and for the statements which we made in the letter referred to by Mr. Brock, we have already received the thanks of a number of mechanics for uttering them so freely. We are, perhaps, personally acquainted with more mechanics, in different parts of our country, than any other person, and we cannot draw back a single expression we have made. The intelligent (what we consider intelligent) are the select few; we shall labor to make them the *select many*. It has, no doubt, come under the observation of Mr. Brock, as it has under ours, how that one shop in a place will have an average range of intelligent mechanics far above another in the same place, as if like qualities drew together kindred minds. We thank him for writing frankly on this subject; and gentlemen in various parts of the country—manufacturers and others, will be pleased to take notice of his statements in reference to intelligent mechanics.

Ice House Management.

This is a matter of no small importance yet how often do we see it treated, not only with indifference but upon the very worst principles possible to ensure its preservation; not one ice house in fifty is constructed upon the correct principles—not one in the same number is managed correctly. When we consider that damp and heat are the two great agents of thawing, it should be our endeavor to counteract these by every means in our power. To effect this ventilation must be had resource to, and non-conducting materials employed in the erection. Of materials, we may observe that stone is of all others the worst timber and brick are the best. The usual practice of sinking ice houses to a great depth under the surface is bad; indeed, it has only one redeeming property, which is the convenience of filling from the top. Its advantages are, the difficulty of admitting sufficient ventilation to correct the dampness, which, build them as we may, is sure to exist in underground houses, the conduction of heat from the surrounding soil, and the difficulty of effecting sufficient drainage; these very far overbalance the advantages thus offered. Why are the majority of ice houses and most cellars during winter so much warmer than the surrounding atmosphere? Is it not from the heat conducted through their walls from the surrounding soil? Earth is a much better conductor of heat than air, or, in other words, it communicates its heat to other bodies coming in contact with it much quicker than that element. Hence the necessity of placing between the earth and the ice some slower conductor of heat, and the slowest conductors we have applicable to the case are timber, charcoal or air; both also resist damp, while stone does not, and, besides, it is a rapid conductor of heat. Water is also a rapid conductor of heat, and instances have been known, where rain water has percolated the roof of an ice house, that the temperature has been raised to sixty degrees. Hence the necessity of keeping such houses perfectly dry, not only at the top but also throughout, by efficient drainage of the melted ice, and by ventilation to correct the dampness in the atmosphere and walls. Indeed, the walls of an ice house, to be in proper condition, should be as dry as those of a dwelling.

The cheapest and best way of constructing an ice house is to make its walls double with a space between them, which should be filled with that excellent non-conductor, "charcoal dust." Where timber is cheapest the house should be boarded inside and out, with the charcoal dust between the walls; where bricks are cheapest they should be used. Stone may be safely used with such a good non-conductor between a double wall. Dry saw-dust is also a good non-conductor, and it can easily be obtained everywhere in our country, but it should not be used unless it is perfectly dry.

New Improvement on the Hydraulic Ram.

William Fields, Jr., of Wilmington, Delaware, has lately invented four improvements in addition to a patent he has already received on the Hydraulic Ram. The improvements are as follows: "a valve and valve-box at or near the end of the drive pipe, next to the spring or dam, opening upwardly and inwardly, which valve keeps in the back action, and prevents the water from escaping in the spring;" these are already patented by said Fields, but he has now invented an air chamber similar to the drive pipe, and nicely attached to this valve-box; this gives great efficiency to the ram, and works with such regularity that it is impossible for the ram to stop as long as it is supplied with water. The next improvement is a brass puppet valve under the air chamber, which rises and falls a certain distance; this valve has circular holes all around it, so as to let the water in the air chamber, and excels the hinge valve in durability, and no gravel can prevent it from closing. The third improvement is a horizontal waste-water valve with a piston; this valve is constantly kept open, except when the momentum of the water closes it, then, when the water re-acts, a spiral spring forces it open, which is a very simple and durable plan. The valve is so arranged that not anything can stop its action. The fourth improvement is precisely the same kind of a valve as the waste-water valve and box, but is placed immediately in the rear of the air chamber, attached to a branch pipe suitable for one, two, or more valves of the same kind. Those valves are to take up a good portion of the waste water after it has escaped from the waste-water valve. This waste-water valve and the rear valves, being two or three inches under the water, more or less, when the water is escaping from the waste water valve, the powerful suction of the water into the ram from the others takes the greater part of the waste water in, and the greater the fall and length of the driver pipe, the more is taken in.

Preserved Birds, Mammels, Reptiles, &c.

We have received a letter from A. H. & E. W. Winans, taxidermists and collectors in the varous branches of natural history, Warsaw, Ill., which states that they keep a constant supply of beautiful mounted and stuffed specimens of the birds, mammels, and reptiles of North America, and will furnish orders for public or private collections. They will undertake to fill orders for any or all of the birds of the Upper Mississippi, and do so as fast as they obtain the specimens. We direct attention to the profession of Messrs. Winans, because we think there are many of our readers who have a taste for objects of natural history, and who would be glad to get some, but know not where to obtain them.

We see it stated, in an exchange, that the laborers in England are worse paid and subsisted than they were two centuries ago. This is not true; they are better paid and have more comforts now than they ever had.