

Train the Boys for Business.

There is one element in the home instruction of boys to which, says a Boston paper, too little attention has been given, and that is the cultivation of habits of punctuality, system, order, and responsibility. In too many households boys from twelve to seventeen years are too much administered to by loving mothers or other female members of the family. Boys' lives during those years are the halcyon days of their existence. Up in the morning just in season for break ast; nothing to do but to start off early enough not to be late; looking upon an errand as taking so much time and memory away from enjoyment; little thought of personal appearance except when reminded by mother to "spruce up" a little; finding his wardrobe always where mother puts it—in fact, having nothing to do but enjoy himself.

Thus his life goes on until school ends. Then he is ready for business. He goes into an office where everything is system, order, precision. He is expected to keep things neat and orderly, sometimes kindle fires, file letters, do errands—in short, become a part of a nicely regulated machine, where everything moves in systematic grooves, and each one is responsible for correctness in his department, and where, in place of ministers to his comfort, he finds task masters, more or less lenient, to be sure, and everything in marked contrast to his previous life.

In many instances the change is too great. Errors become numerous; blunders, overlooked at first, get to be a matter of serious moment; then patience is overtaken, and the boy is told his services are no longer wanted. This is his first blow, and sometimes he never rallies from it. Then comes the surprise to the parents, who too often never know the real cause, nor where they have failed in the training of their children.

What is wanted is for every boy to have something special to do; to have some duty at a definite hour, and to learn to watch for that time to come; to be answerable for a certain portion of the routine of the household; to be trained to anticipate the time when he may enter the ranks of business, and be fortified with habits of energy, accuracy, and application, often of more importance than superficial book learning.

The Emery Mines of Chester Co., Pa.

In his communication, printed in our issue of November 2, W. J. L. spoke of the emery mines near Unionville, Chester Co., Pa., as having been abandoned for lack of mineral of marketable purity. Mr. Isaac J. Conner writes that the mines in question "have never been abandoned, only at short intervals, for the last nine or ten years," and that there are at present three different parties actually engaged in mining the mineral in that locality. The purity of the emery of Chester Co., Pa., is, he claims, unsurpassed. It was there, on the premises of Messrs. Chandler & Ball, four or five years ago, that the largest and best mass of emery ever found on the continent was discovered—a solid block weighing about two hundred tons.

A NEW SQUARING SHEAR.

The operation of squaring a sheet of metal when performed by means of ordinary shears requires four movements of the sheet and a careful adjustment of the metal to the gauges. The accompanying engraving represents the new power shear manufactured by the Stiles & Parker Press Company, of Middletown, Conn., by which this operation is facilitated and rendered accurate.

This shear has two blades, each 22 inches long, set at right angles one with the other, and moving in unison, so that a sheet of tin can, with one motion, be squared on two sides, or the whole sheet squared in two motions. As will be seen by the engraving, there are suitable front gauges as well as independent back gauges, one for each blade.

The gauge on one blade can be set to cut a different width from the other, so that a part of a sheet of metal can be cut up into a certain width for one article, and the remainder into a different width for another article, resulting in the saving of stock.

The frame that holds the upper blades is carried down uniformly, by three pitmans, located one at the extreme end of each blade, thus securing a perfectly smooth cut.

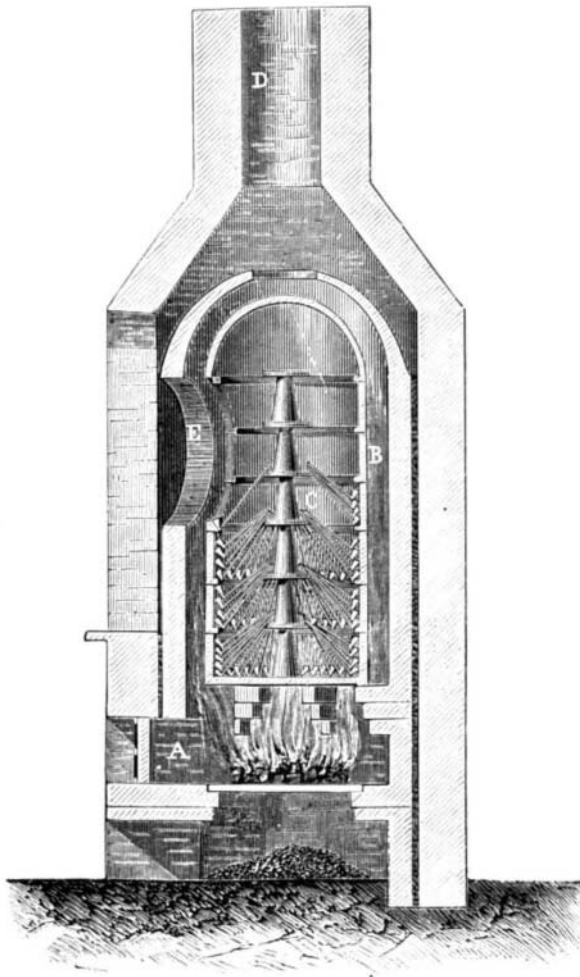
The shear has the patent gib arrangement which this firm have applied to their presses. It is also provided with an automatic stop motion which leaves the blades wide open.

Quicklime a Wood Preservative.

The *Builder* states that M. Lostal, a French railway contractor, recommends quicklime as a preservative for timber. He puts the sleepers into pits, and covers them with quicklime, which is slowly slaked with water. Timber for mines must be left for eight days before it is completely impregnated. It becomes extremely hard and tough, and is said never to rot. Beech wood, prepared in the same manner, has been used in several ironworks for hammers and other tools, and is reputed to be as hard as iron, without the loss of the elasticity peculiar to it. According to the *Kurze Berichte*, lime slaked in a solution of chloride of calcium is used at Strasburg as a fireproof and weatherproof coating for wood.

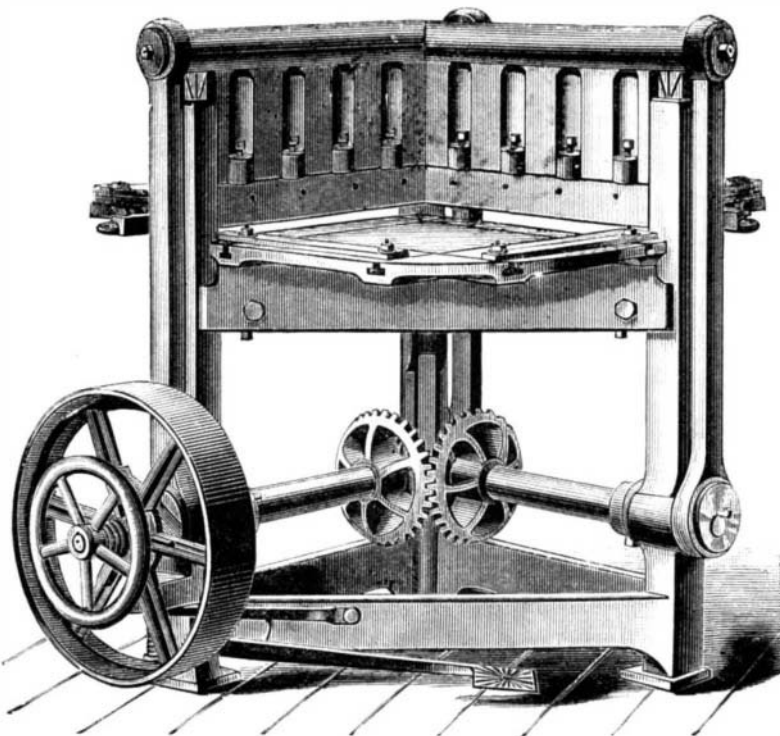
CLAY PIPES AND THEIR MANUFACTURE.

Tobacco and the pipe are articles the habitual use of which has become general all over the globe, in imitation of the former inhabitants of America. Among the branches of industry which have been a consequence of the introduction of tobacco, the manufacture of pipes has become of considerable importance. Immense quantities of wood,

**PIPE-MAKER'S OVEN.**

meerschaum, china clay, and pipe clay are annually converted into pipes, principally in England, France, Germany, and Austria; a smaller quantity being produced in Holland and Turkey. Wooden, china, and meerschaum pipes are made mostly in Germany and Austria, and among clay pipe producers England takes the first rank. Although the value of clay pipes is comparatively small, the enormous quantity in which they are made makes them an important product of industry to England.

The principal pipe factories are located in Dorsetshire and Devonshire, where a pure variety of potter's clay is found in great abundance. It resembles kaolin in its character,

**STILES' NEW POWER SQUARING SHEAR.**

although it contains a little less silica, and remains quite porous after baking. The clay is first freed of all impurities by levigation, and then undergoes repeatedly a process of kneading and curing in open tanks, exposed to the air, in much the same way as clay for other purposes is treated. After it has acquired the desired plasticity, it is divided into masses of about 50 lbs. each, which are then given to the formers.

The first step in making a pipe is the formation of the stem in a metal mould. A small lump of clay is left at-

tached to the rod, of which the cup is afterward formed. The rod is then pierced throughout its length with an oiled brass rod. Holding the pipe by the free end of the stem, the operator now imparts to the cup its external form by means of a copper mould, in which if ornamental pipes are to be made are engraved the designs. It is provided with a spring to open it automatically. The pipe then passes to a third operator, who forms the inside of the cup with his fingers and establishes communication between the cup and the stem by piercing the separating wall with the brass rod. The pipe is now put aside to dry in the sun, after which it is ready for the oven. Three men finish from 600 to 700 pipes a day.

The accompanying engraving represents an oven used by English pipemakers. The fire, A, is located centrally in the oven. The heated gases circulate through the space, B, formed by the walls of the oven and by the muffle, C, which receives the pipes. The latter are introduced through the door, E, and arranged in the position indicated by the engraving, on shelves made of biscuit. An oven of this kind usually contains 2,000 pipes. The pipes are generally baked for eight or nine hours.

Ordinary pipes receive no glazing of any kind, while some of the better class are painted and glazed. They are very porous, hence their tendency to adhere to the lips. To overcome this the mouth ends are dipped in water containing a little pipe clay in suspension, and polished. By this means the pores of the clay are stopped. Pipes of better quality are covered with a mixture of soap, wax, and gum, and then polished.

Difficulty is occasionally experienced in holding the pipes in proper position in the oven. Some manufacturers fill the oven with fine sand after the pipes are in position. The sand fills all interstices and supports the pipes.

Several millions of dollars' worth of clay pipes are annually manufactured in England.

Fortifying the Sub-Treasury.

The great amount of bullion which is concentrated at the Sub-Treasury, in this city, has suggested to the officials the desirability of strengthening the vaults, and taking other means of protecting the vast treasures within the building. To this end Mr. George L. Damon, of Boston, has been selected by Secretary Sherman to do the job.

The improvements will consist of steel gratings, iron bars to the windows of the three floors, wrought iron doors with loopholes, and three steel turrets similarly perforated to be placed on the roof. The center turret is to be octagonal in shape, and will occupy a commanding position in order to enable marksmen to sweep the roofs and the streets below in case of an attack by an armed mob. It is also understood that the Assay Office will be similarly protected, and in addition will be supplied with a Gatling gun. These precautions were first suggested at the time of the great railroad strike two years ago.

Machinery for the Manufacture of Toys.

Toy making by hand cannot bear high wages for labor nor high prices for wood. Hence the most important centers of the toy industry were established on the high mountains of Germany and Switzerland, where forests abound and the population were willing to work long hours for small pay. What can be done in the way of cheap production is illustrated at Leiffen, in Saxony, in a manner almost terrible. For making 180 toy kitchen utensils, as they are usually furnished to this country, three cents are paid. Sixty small boxes for packing these toys are paid for with from ten to fifteen cents. The making of wooden toys is almost the sole industry in many parts of central Europe, and the united labor of all, from the grandchild to the grandfather, formerly sufficed to obtain for the toiling families only a bare subsistence.

Here, one would think, if anywhere, the introduction of machinery would prove disastrous to hand labor. With the machinery now employed one man, working one machine ten hours a day, can turn out an amount of work which was formerly accomplished by a whole family working from eighteen to twenty hours a day for several weeks; and during recent years such machinery has been widely and rapidly introduced in the toy-making regions.

What has happened? The starvation of the poor hand-worker? That ought to be the result, if the socialist's objections to machinery were true; but such is not the result. On the contrary, the condition of the toy makers has been directly improved by the influence of machinery. In this way: The cost of toys, small as it used to be, has been enormously reduced, and the market for toys correspondingly widened. And though machinery now does the larger part of the work, the amount of work to be done has been so increased that the demand for handwork, in putting the parts of the toys together and the like, has been largely augmented. The result is the employment, at fair wages, of all the population, including aged people, cripples, and children, who otherwise would have nothing to do. Besides, the multiplication of factories has brought the scattered peasants together, schools have