

spur wheel and rack, the spur wheel being driven by a crank in such a manner that the crank pin is brought down to the dead center just at the end of each movement of the bed plate. By this means a gradual, instead of a sudden absorption of the momentum is accomplished, and a very quiet motion is produced.

The feed tables slide back on ways, so that the bed plate is easily reached for putting on or taking off, and adjusting the forms.

The apparatus for the distribution of ink to the forms does this work in a very superior manner, and does not produce that sticky condition of the ink caused by some methods used in the ordinary cylinder presses.

The press is beautifully finished, and its action is an interesting thing to witness. The paper is fed into the press from the lower tables, and each ascending upon the opposite side of the cylinder to that on which it is fed in, is delivered upon the upper table on that side, the papers following each other in so rapid a succession that they produce the effect of almost a constant stream.

It is perhaps as high a recommendation of the quality of the work performed on this press as we can give, to state that the SCIENTIFIC AMERICAN is printed upon it, and that it has impressed its own image in the engraving accompanying the present article. To the professional printer this work speaks for itself, and it would be entirely superfluous to descant upon its merits.

A two-cylinder double-feeder, with a single fiat form, has recently been added to the line of Wharfedale presses, which does in a very superior manner four times the work possible upon the ordinary one-cylinder machine.

The press is from the celebrated manufactory of Hughes & Kimber, London, and imported by their sole agent, Mr. Victor E. Mauger, 110 Reade street, N. Y., to whom all orders should be addressed.

SCIENTIFIC EDUCATION FOR WOMEN.

Scott Russell thinks a certain amount of science is a necessary qualification for a good wife. In other words, that the art of good and economical living which mainly depends upon the exertions of the wife, no matter how liberal the provision made by the husband, can only be secured in the highest degree through the aid of technical knowledge. He asks "Ought a wife to know anything about fuel or not? Should she know that there is good and bad coal?—that what is sold to her as best coal is oftener bad coal than good?—that bad coal produces smoke and flame and not heat, and that the one wastes money and the other uses it? Ought a woman to know this knowledge, or is it beneath her?"

"I must answer once for all, that I do not think any household knowledge of this sort is beneath any well-born woman. When of two things you have to choose, whether you will do the better or the worse, it seems to me you have a grave responsibility. It seems to me, if you choose the worse, or don't choose, you are to blame. It seems to me, then, that a woman should know good coal from bad, or she may waste her husband's earnings. But next, if she buys only the best coal, comes the question, Is there a right way of using the coal and a wrong?"

"Ought a wife to know how to use good coal? to use it to the purpose for which it is bought? to use it for light, cheerfulness, ventilation, warmth, cookery, cleanliness, or to use it to waste, smoke, discomfort? Is any knowledge necessary for that? Cannot anybody make a good fire?—keep a good fire, prevent smoke, maintain cheerful heat, warmth without waste?"

"Verily, there are few women who know this: the art to make, to maintain a good fire without excess, without waste, without smoke. Much science goes to understand a fire. 1. What is fuel made of? 2. What feeds the fire? 3. What wastes the fire? 4. What regulates the fire? 5. What makes flame? 6. What wastes heat? 7. What preserves and maintains heat? 8. What spreads it equally around a room? 9. What creates smoke, drafts, rheumatism, and colds?"

"It is not the work of a moment to understand and answer all these questions. A wise housekeeper should have asked them all, and get a good answer to each; that is one element of a home, health, and comfort. Can every housekeeper solve all this?"

"To feed her household well, agreeably, wholesomely, without stint, without waste, there is a technical problem of home life. What does each kind of food cost? What parts of food are the more wholesome, the more nutritious? What kinds of food do harm?—to the young, the middle-aged, the old? What quantity should be cooked, so as to give plenty without waste? What is the real value of each kind of food compared to its price? What is the price of food bought wholesale and bought at retail? What is the true weight of good kinds of food? How do I know good food from bad? How can I tell adulterated food from pure and wholesome food?"

"What are the wholesome ways of cookery? What kinds of cooking render wholesome food more or less nutritious, palatable? What dishes are comely, elegant, clumsy, gross, vulgar? How can I use the least sum of my husband's earnings in housekeeping, and yet never make him feel in want of anything?"

"Shall I be told that all these things come by intuition, by experience, by practice? That they are for the servants to study, not for the mistress? That in every household they are already perfectly well done? If I am assured that this is already known and done, I have only to admit that no technical education in housekeeping is required by women."

"Should the mother of a family know anything about her

own clothes—her husband's—her family's? What sort, quality, price of stuff, they should be made of? What stuffs wear well? what wash well? what wash out? Which parts wear out first? How to make these parts last the longest? What sewing holds? How many yards of stuff go to each piece of dress?—how much for lining, how much for trimming, how much for shaping how much for sewing?"

"Should the head of a household know how to make anything with her own hands—out of her own head? to cut out, to shape and fashion, to use a sewing machine, to sew, embroider, mend?"

"All about clothes I think woman's work and woman's duty: price, stuff, shaping, sewing, durability, washing, ironing, and mending. A woman who cannot do all these things, and teach them to servants and daughters by example and precept, has not, to my mind, got a good technical education."

"There is no such physician as a wise wife or mother. Not to cure disease—that is a doctor's work—but to prevent disease, or to stop it at starting. What are our gravest illnesses?—neglected colds, indigestion, headaches. Who first finds out that we are ill? Who knows what has caused our illness? Who first takes alarm? Why should not every wife know the early symptoms of disease, the cause, the cure? There—not by the sick bed or in the hospital, but there, by the family fireside, the kindly mother should wisely watch the first symptoms of disease, wisely give the early warning, wisely apply the simple cure. Which is better in the house, a wise wife, or a perpetual physician? There is no technical training so valuable to a woman as that which shall enable her both to keep the doctor out of the house, and to send for him the moment he is wanted."

Curculio Extermination Possible.

Mr. J. E. Chamberlain, Secretary of the St. Joseph (Mich.) Fruit Growers' Association and editor of the St. Joseph Herald, has issued an extra containing the following statements which we deem so important to the fruit growing interests of the country that we probably cannot occupy space more profitably to our readers than by reprinting it.

The importance of this subject; the demand for prompt and persistent action; the absolute necessity of arousing every peach, plum, and stone-fruit grower to destroy the curculio, has led the editor of the Herald, as Secretary of the St. Joseph Fruit Growers' Association, to issue this extra. Not a single day should be lost, for, with united action, 500,000 curculio may be killed in a single day.

There is no doubt on this point. This morning, Hon. John Whittlesey called at the Herald office and stated that on the 14th inst., he killed 2,715 curculio about the roots of 200 trees, and on the 15th, in four hours on the same trees he killed 1,566 by actual count.

Mr. Whittlesey also stated that Mr. Ransom, Mr. Bonelle, and himself had in five hours killed upwards of 5,000 curculio in a proportion of three small orchards. That he had himself alone in two days of eight hours each killed one half more curculio than were ever taken by three men with the old-fashioned sheet in a week. Mr. Whittlesey is one of the most successful and scientific fruit growers of St. Joseph, whose word is a bond; but he said, "Do not believe me; go to Mr. Ransom's orchard and see for yourself."

Entering Mr. Ransom's orchard the editor met Dr. Lyman Collins coming out. Dr. Collins is widely known for his successful peach culture.

"Well, Doctor, is it a success?"

"Most assuredly. I tried the experiment on eight of my trees in the evening and the next morning took 104 curculio. I am going home to bug my whole orchard in this manner."

Wm. B. Ransom, the discoverer of the new method of exterminating the curculio, was found on his knees in the back of his orchard examining his curculio traps. This was at 10 o'clock A.M., and he had already killed 1,357 on 300 trees. The editor stooped down and lifted a corn cob six inches long and found and killed 7 curculio. There is no doubt whatever that the long-desired means of exterminating the curculio is discovered.

HERE IT IS.

Put the orchard in the best order; level down the soil about root of every peach tree, and smooth a circle for a diameter of two and a half feet from the tree as a center. Have the ground very clean around the base of the tree. Do not leave a single hole next the tree. Leave no place where the curculio can hide except under the shelter you provide. Now lay close to the tree, and close to the ground, about four pieces to a tree, either chip, or bark, or board, or lath, or rag, or corn-cob, or old leather, or anything for a covert.

The curculio will conceal itself under this shelter and may be destroyed by the thousand. Go around every day and turn over each chip, kill every curculio. They will generally adhere to the chip, but may often be found on the ground under the chip.

Probably no person in the United States has studied the curculio and its habits more carefully than William B. Ransom. Some fifteen years he has been trying newspaper experiments unsuccessfully. Last year, when bugging, he discovered that all the curculio dropped within two or three feet of the roots of the peach tree, and on examination found the little Turk sheltered on the trunk and in holes near the base and the under side of the principal limbs.

For the last fortnight, Mr. Ransom has spent almost all the hours of the day lying on the ground in his orchard patiently watching and waiting for the first curculio to show himself. On the 4th of May a few single curculio were discovered, but not a single pair; on the 5th a few pair were found coupling. Constant, careful observation has led Mr. Ransom, to these conclusions.

In the fall the curculio seeks a warm and safe shelter to hibernate. This is either the ground, or leaves, stumps, logs, old fences, woods, and other congenial places of concealment. The first warm day in spring that starts vegetable life calls the curculio forth, and it proceeds to its feeding and breeding ground. They walk very fast, and they fly and feed generally at night, eating the young and tender leaves. The first warm days this year they fed, then the weather fell cold, and for a week Mr. Ransom found no indication of their feeding. Since Friday night, the 13th, the weather warm, the curculios have been feeding. They scatter all over the tree to feed, and come down towards morning and as late as 7 A.M. to hide.

They crawl on cold days and nights, and hide under the shelter of the trunk of the tree, waiting to feed when the nights become sufficiently warm. The curculio uses the green

peach only to hold its egg. It sometimes eats the ripe peach, also blackberries, quinces, and other fruits.

Some idea of the quantity to be taken from a single tree may be found from the following: Mr. Ransom states that on the 14th he took 25; on the 15th in the morning 50; in the evening about sundown 15; and on the 16th, 60 were killed from the same tree, and of these 41 were taken in a cluster under a chip two by three inches.

The editor of the Herald visited Mr. Ransom at 1½ P.M., and found he had in about four hours killed 2,109 by actual count, and went himself into the orchard and found curculio lying asleep under the traps in the intense heat of a boiling sun.

Improvement in Enameling Iron and Steel.

The process of Benjamin Baugh, of Chadwick, England, of enameling iron and steel, patented recently in the United States, is as follows:

Lay upon the surface of the plate of the metal to be enamelled a uniform ground, of any color required to produce the intended design, as, for instance, a name-plate, or tablet, with the ground white and the inscription in blue. The white ground, having been fused on in the melting-furnace and allowed to cool, there is then applied with a brush evenly over the whole surface a coating of blue enamel, the materials of which are finely levigated and mixed with gum-arabic and water, or other mucilage, to form a paste of slightly adherent properties.

When dry, a stencil of the inscription, or of each letter separately, is laid on, and the enamel paste is removed from the parts which are unprotected by the stencil, by the application of a stiff brush, leaving the ground clean, except the letters. The plate is then again subjected to heat, whereby the paste, which is fusible at a lower temperature than the ground previously laid, becomes permanently fixed upon it.

The mechanical removal, by means of a brush, enables very delicate lines to be formed through the paste, to expose the enamel ground, and admits of the use of ornaments having sharp angles and minute points and details to be distinctly and perfectly rendered.

The ground may be dark, and of any color, as well as of the kind described, and the subsequent coat of a lighter color; as, for instance, the ground may be of blue and the inscription white and a succession of colors may be given, to produce a variously-colored design, by the same method.

The inscription or design may be cut out in the stencil, and the ground thereby exposed be removed by the brush, instead of the surrounding parts, with a like effect, it being left to the choice of the designer whether this process be followed, or that previously described.

The stencils are formed of very thin sheet-metal (or even of paper, where they require to be used but a few times), which, by their flexibility, lie more closely in contact with the surface, and leave the lines and margins of the figures perfect, while they conform to convex and irregular surfaces.

He combines with the method described, the use of artistic graphic representations, such as views, portraits, or groups, thereby producing metal tablets decorated in enamel, in a manner adapted to architectural purposes, as the finishing of interiors, panels for cabinet-work, etc. Such designs are produced upon stone in the usual lithographic manner, and printed in successive impressions upon paper prepared for transferring, by having its surface coated with gum-arabic, or other substance that is soluble in water, mineral colors and fluxes being used, which are adapted to fuse under heat, and combine to form the picture in enamel, of appropriate colors.

The enamel ground having been fused on, as previously described, for stenciling, it is covered with copal or other suitable varnish, and the face of the prepared picture is laid upon it and pressed, to insure adhesion of all parts, when the paper is removed by wetting, as is ordinarily done in transferring prints. The plate is then subjected to heat until the colors of the picture are fused, and become incorporated with the previously enameled surface.

Care of Brushes.

Brushes used for applying finishing varnishes should be cared for with the utmost pains, as good work depends much upon the good condition of the brushes. The Coach-Makers' Monthly suggests that a good way to keep them is to suspend them by the handles in a covered can, keeping the points at least half an inch from the bottom, and apart from each other. The can should be filled with slow drying varnish up to a line about a sixteenth of an inch above the bristles or hair. The can should then be kept in a close cupboard, or in a box fitted for the purpose.

As wiping a brush on a sharp edge of tin will gradually split the bristles, cause them to curl backward and eventually ruin the brush, the top of the can should have a wire soldered along the edge of the tin turned over, in order to prevent injury. Finishing brushes should not be cleansed in turpentine, except in extreme cases. When taken from the can, prepare them for use by working them out in varnish, and before replacing them cleanse the handles and binding with turpentine.

The Season of Fairs.

The season of fairs and exhibitions is at hand. The more enterprising associations under whose auspices these exhibitions are held, are beginning to issue prospectuses, and it appears that the coming summer and autumn will be more fruitful than usual in agricultural and mechanical displays of this kind. If the managers of such associations will please forward information concerning any contemplated display to be held by them, we shall be happy to give it brief mention in our columns.

It is said that the Mexican Government has ordered Mr. Williams, an engineer, to survey the Isthmus of Tehuantepec for a ship canal.