

Helping Children to Write Compositions.

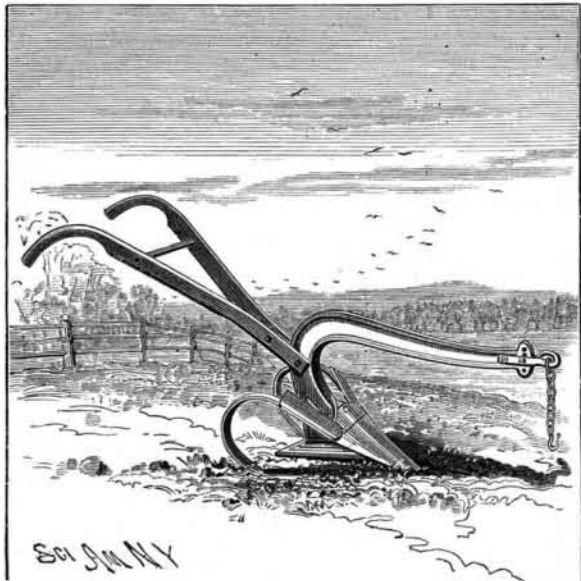
Every *paterfamilias* understands how difficult it is to get children to write their first "compositions." This is, for all ordinary children, the most irksome task of anything which comes up in the routine of school work, and every sort of device and makeshift is resorted to for evading the duty. What strikes us as a very pretty and ingenious idea for greatly lightening the labor of such work, if not making it an actual pleasure, has lately been made a feature of a New York publication, the *Pupil's Companion*. It consists of the presentation of attractive pictures, amusing or instructive, but such as cannot fail to catch a child's fancy, about which the teacher asks the child to write. Among those presented, one shows a child seated on the grass with a plate of soup in its lap, but the soup is being spilled and the child is crying in dismay because a toad has jumped on the plate; another is of a very pretty aquarium, which, besides its variety of fish, mosses, etc., has a fine show of water lilies and other plants; a third is of a bird's nest in the crotch of an old tree, the baby birds reaching out for the food which the parents are seen bringing to them, but underneath is a sign, put on by the proprietor of a farm house appearing near by, and which reads: "Furnished rooms to let—board, small family, no children." We do not believe most children of from six to twelve would count it a task to "write a story" on such subjects.

Luminous Jewels.

M. Gaston Trouve, the well known electrician of Paris, has lately designed a series of ornaments for ladies' wear consisting of glass, colored and cut to imitate rubies, diamonds, etc., fitted in an envelope, surrounding a small incandescent lamp of low resistance. The light shines through the pieces of glass only, and gives them all the appearance of the stone they are intended to imitate. The lamp is fed from a small battery, which is carried about the person. It is composed of three pairs of zinc carbon plates (two carbons to each zinc), or a larger number according to the current required. These plates dip in a saturated solution of bichromate of potash, which is contained in an ebonite cell with three compartments. The plates are fitted into a cover, which is kept securely down on the top of the cell by two bands of India rubber passed around the whole. Finally, the battery is incased in two sheets of gutta percha, so as to prevent any leakage. A miniature switch is carried in the pocket or elsewhere, within reach, to which the battery and lamp wires are connected. The pressure of a finger on the arm of this switch makes or breaks communication with the lamp. The battery weighs (with six plates) 300 grammes, and will work about thirty minutes with a lamp of from 2 to 3 volts. A larger battery, to work a 4 or 8 volt lamp, weighs 800 grammes.

SHOVEL PLOW.

The invention recently patented by Mr. Walden Eddy, and now being manufactured by W. Eddy & Sons, of Greenwich, New York, relates to winged shovel plows having spring teeth arranged to follow in the wake of the plow, on each side of it, and to work at a lower depth than the point of the plow, for loosening the ground laterally beyond the center of the row in which the plow works and nearer to the growing crop. These teeth are formed of flat bent bars, arranged to project laterally and backwardly in diverging directions from the under side of the mould board, and their rear ends are curved downwardly and bent so as to bring them in proper subsoiling position. The forward



EDDY'S SHOVEL PLOW.

portions of the teeth resting against the under side of the mould board are provided with two slots, one in the rear of the other. These slots are so shaped that the attachment may be widened or contracted, or made to run deeper or shallower at its points. The bolts passing through these slots to secure the spring teeth also hold the shovel point and wings to the mould board. In this way the construction is simplified and the mould board and wings are strengthened by the subsoiling attachment passing under them. By slackening the bolts the attachment may be adjusted as required when the bolts are tightened; or it may be easily removed from the plow when not needed. The engraving plainly shows the construction.

DEVICE FOR FASTENING SAW-CLAMPS, ETC., TO WORK-BENCHES.

In the accompanying engraving is a saw-clamp provided with a stationary jaw attached to the bar, *a*, and a removable jaw attached to the upper end of a lever, *f*, which is pivoted to the upper end of the arm, *d*. The lower end of the lever is bent upward to form a hook, and is engaged by a pin on a lever pivoted to the part, *d*, for locking the jaws closed or open. A block carrying the stud-pins, *c*, is arranged to slide in inclined ways (shown by the dotted lines) of arms of a saw-clamp projecting back over the top of the bench from the bar or frame, *a*, that is to be secured to the side of the bench. The ways are so pitched that the block will descend when drawn forward, and force the stud-pins into the top of the bench. It is moved by an elbow lever, *e*, so pivoted to the frame that down or back pressure on the lever will shift the block forward and engage the pins. The lever also



FASTENING SAW CLAMPS, ETC., TO WORK BENCHES.

serves to keep the block in place after being secured by swinging the pivot-joint, by which the rod, *b*, is connected to or below the line of the pivot attaching the lever to the arm, *d*. The bar, *a*, is also formed with stud-pins, *g*, which are at the same time forced into the side of the bench. This makes a simple and efficient device for connecting a saw-clamp to the bench, and it may be readily disconnected by raising the lever to thrust out the stud-pins. Vises and other tools may be as easily connected to the corners of work benches.

This invention has been patented by Mr. Augustus B. Curn, of 1006 East 5th Street, Kansas City, Missouri.

Two Systems of Water Proofing.

They who have watched the growth of the textile industries for the last half century must have observed the gradually increasing demand for water proof fabrics. At first this demand manifested itself in the ready sale of coarse oiled goods for sailors' "dreadnaughts." Then in the elegant rubber lined material for the hunters' and the travelers' "Macintosh." Afterward in the cheap poncho, blanket, and overcoat, also rubber lined, and now in the "gossamer" for either sex. With hoods and without, as long, loose saccos, or as "Garricks," the number of them sold is greater than that of any other kind of outer garment. Generally worn as they are by throngs of pedestrians in rainy weather, they give as somber an appearance to our streets at the time as would be given by a series of processions of monks and nuns.

Unpleasant as the garments may be in the eyes of spectators, they are probably more so to the feelings of wearers. Impregnated with caoutchouc, gutta-percha, or drying oils, so as completely to close its pores, the fabric entirely arrests the vapors and gases arising from and accompanying the perspiration. Garments made of it are, when worn all day, not only disagreeable to the wearer, but unhealthy, and both on the ground of comfort and of personal hygiene the demand has arisen for a method of water proofing which shall not resist the passage of gases and vapors.

At first sight the invention of such a method would seem to be impracticable, but a little reflection recalled to the minds of manufacturers that there are many substances which water will not wet; which repel it when they are brought in contact with it. Such bodies, in scientific language, are said to be destitute of capillarity.

Familiar examples of this property are sometimes seen in several species of insects which dart over the surface of the still water of springs and brooks. Their feet, which are not moistened, are the centers of little circular depressions of the liquid surface, and seem to repel the water. In this case they exercise on the liquid, and receive in turn by reaction, a repulsive force, the extent of which is measured by the weight of the amount of liquid required to fill the depressions. In other words, the weight of the insect is exactly equal to the sum of the weights of the water required to fill the depressions produced by its feet.

Now if we immerse a tissue in a solution composed of

Gelatine	5 parts.
Soap	5 parts.
Alum	7 parts.
Water	170 parts.

we shall find, upon lifting and thoroughly drying the cloth, that we have communicated to the surface of each particular filament of which the stuff is composed the property of exercising on water a repulsive force similar to that of the feet of the insects above mentioned. Consequently, if upon the surface of the stuff water be thrown, it will not penetrate between the threads, it will be repelled; it will run over without passing through. The texture of the stuff has not been changed by the immersion in the aluminous bath, and gases and vapors can traverse it as before.

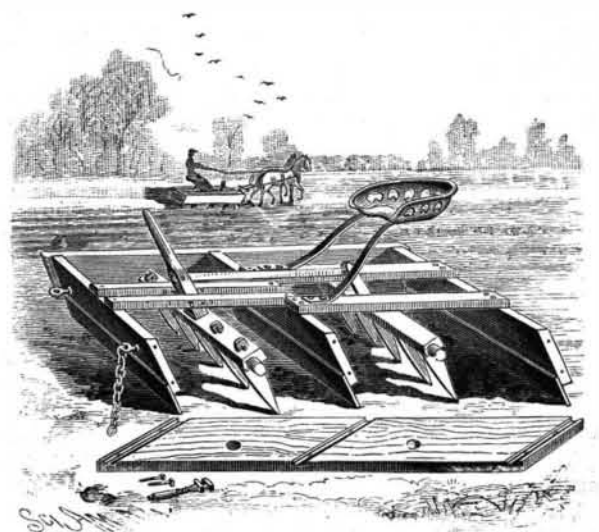
But the impermeability to water is not absolute. Theory and practice both show that under pressure, which varies with the nature of the tissue, it will allow water to penetrate. As water never collects upon our vestments in sufficient quantity to exert an appreciable pressure, little inconvenience is to be apprehended from this property. The new system of water-proofing based upon the principle of capillarity, although far from perfect, promises in time to prove a formidable competitor to the system now in general use. —*The Textile Record*.

Prosperity and Disaster.

According to an exchange, the failing of the Comstock mines brings hopeless ruin upon Virginia City. This place and Gold Hill, which is practically a part of the same town, had 35,000 inhabitants eight years ago; merchants with \$1,000,000 capital, a score or more men worth from \$300,000 to \$80,000 each, private homes that cost \$100,000, and hotels and everything else to match. Now there are but 5,000 inhabitants, nearly all miners and gamblers; the fine houses are all carried away or abandoned; real estate cannot be sold for the amount of the taxes; nothing can be sold which is not worth carrying away; and in a little time the gorgeous city must entirely disappear. There have been \$285,000,000 worth of gold and silver taken from the Comstock mines, and this within a distance of half a mile.

FIELD DRAG.

The side boards of the machine are of any desired length, breadth, and thickness, and their forward ends are beveled upon the lower side and their rear ends upon the upper side. Inclined grooves are formed near their ends and at their centers, as shown in the detached side board in the engraving. Fitted in these grooves are cross boards, held by bolts passing through the side board and into nuts embedded near the ends of the cross boards. To the lower part of the forward sides of the cross boards are fastened steel plates projecting a little below the edge of the board to act upon the soil. Between the grooves in the side boards are holes to receive the journals formed upon the ends of cross bars, to which are attached, by suitable means, the shanks of steel knives, the rear set of knives being arranged to travel midway between the cuts made by the forward set. Levers are attached to the cross bars, the forward lever being longer than the rear one. To the upper end of the short lever is pivoted one end of a connecting rod, the other end of which is pivoted to the middle part of the long lever, so that the two sets of knives can be adjusted to work at any desired depth in the ground and can be raised above the ground. The knives may be held in place by a chain attached to the long lever and hooked upon a pin fastened to the cross board



HILL'S FIELD DRAG.

in the rear of the lever. Or the long lever may pass between two parallel bars having holes in which a pin is inserted as shown in the engraving. To the forward cross board or to the forward ends of the side boards are eyebolts to receive the draught. The driver's seat may be arranged as shown. When the machine is drawn over the ground the forward scraper partially levels the soil so that the forward set of knives cuts it into pieces; the center scraper further packs and levels it, and the other knives cut it into smaller pieces, while the rear scraper leaves it in good condition for the planter or seed drill.

This invention has been patented by Mr. Daniel Hill, of New Vienna, Ohio.