

The following will be found a good way of making trays for developing, fixing, washing, etc. Make a wooden tray by screwing together one-half inch planed deal; then lay down with marine glue, inside the tray, white marble cloth. Put the cloth on in one piece, turning the edges over the end sides of the tray, and tack them down. One thing which is greatly in favor of this tray is little weight for a large-sized dish; this is a great help, as it enables you to hold the tray and keep the developer in motion. The writer has had in constant use a tray made as above for the full-sized sheet for over two years, and it is as good to-day as when made. Do not cut the cloth at the corners, but turn the stuff in, and fasten with the marine glue. Should there be any cracks in the oil coating, rub in some of the glue, and you will have no further trouble. I have also used one of these trays for fixing, and have not noticed any injury to cloth. In this way I have made good trays out of old herring boxes and used them constantly for years.

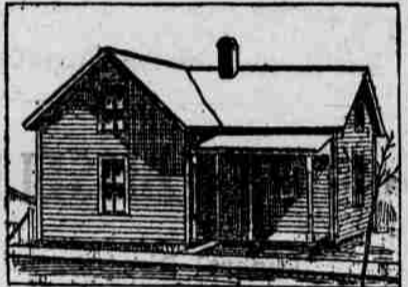
**A JOHN BROWN RELIC.**

**Partial Destruction of the Great Abolitionist's Home.**

The recent partial destruction by fire of John Brown's home at Tabor, Iowa, serves to recall the exciting period when the noted abolition leader made the little one-story cottage in Iowa the headquarters of the "underground railway" for the transfer of slaves from the South to Canada.

In 1857 this little house was the center of perhaps more attention than the national capital itself. Brown was being heard from. Already were gathering around him men from Massachusetts and Maine and other New England States. Already had shipments of arms, and even a cannon, been received at Tabor. And hundreds of runaway slaves had passed through the town, coming at night and leaving the following night. And the eyes of those men, who four years later became the leaders of the secession movement, were also fastened on this little house. Northern politicians were regarding anxiously the preparations "Old" Brown was making. The Kansas "Jayhawkers" hated him bitterly, and several contemplated raids on the place were narrowly averted.

But through it all Brown and his friends continued their work, and it



JOHN BROWN'S IOWA HOME.

was while residing in Tabor that Brown decided upon the move which he hoped would set the country ablaze, but which ended in his own death.

It is told by one of the old settlers that one night there marched into the little town of Tabor, 200 recruits for Brown. They came from Maine, were all well armed, and were en route to help the free cause in Kansas. Accompanying the body was a single wagon loaded with corn. The party stopped in Tabor several weeks, and were drilled and instructed by old Brown himself. Two weeks after the party arrived, a company of runaway slaves arrived from Missouri. The following day the owner of several of them arrived. With him was the sheriff of his county, and several deputies. They demanded the slaves. Brown refused to deliver them. The sheriff attempted to take them by force. Brown gave a shrill whistle and the Maine men swarmed from all directions. The officers were overpowered and robbed of their arms. They left, vowing to return with re-enforcements and capture the whole body. Then the corn was thrown out of the wagon and from beneath the grain was brought a small cannon, which was quickly mounted and placed in a position commanding the road by which the Missourians would return.

But the slave-owners never came back and the cannon was covered with the corn and was taken down into Kansas with the men from Maine.

**GUARD FOR TROLLEY WIRE.**

Overhead Lines Are Protected According to Law in England.

Guard wires are required wherever telegraph or telephone wires unprotected with a permanent insulating cover cross above or are liable to fall upon or be blown on to the electric conductors of a tramway. Each guard wire should be well grounded at one point at least and at intervals of not more than five spans. The earth connection should be made by connecting the wire through the support to the rails by means of a copper bond. Guard wires should in general be of galvanized steel, but may be of bronze or hard drawn copper in districts where steel is liable to excessive corrosion. In general these wires must be installed at a minimum height of twenty-four inches above the trolley wire. Where there is but one trolley wire parallel to this—one on each side at a horizontal distance of eight inches from the trolley wire—are necessary. If there are two trolley wires not more than twelve feet apart, but the telegraph wires do not weigh more than

100 pounds per mile, two guard wires are sufficient, stretched a minimum distance of twenty-four inches above the former and the outside at a horizontal distance of eight inches from the trolley wires.

If the telegraph wires weigh 100 pounds or more per mile this latter arrangement is sufficient if the trolley wires are not more than fifteen inches apart. Where the trolley wires are separated by a distance of from fifteen to forty-eight inches three wires are required parallel to the trolley—two on the outside, a horizontal distance of eight inches, and the other midway between the two trolleys, all at a minimum distance of twenty-four inches above the trolley wire. If the distance between the wires is over forty-eight inches and the telegraph wires weigh more than 100 pounds per mile two guard wires are required for each trolley wire, as for a single wire. Guard wires are also required where telegraph wires do not cross the trolley wire, but are apt to be blown against it. Where a telegraph wire may fall upon an arm or span wire and so slide down on a trolley wire guard hooks must be provided.—New York Evening Post.

**Pictures as an Aid in Teaching.**

Three hundred years ago a German savant had a wonderful vision. At that time children were taught to read by force of arms, so to speak, through hardships and with bitter toll on the part of teacher and of child. It seems curious, says a writer in Household, that the first real step toward lightening the labor of children as they climb the ladder of learning was the product of the imagination, not of some fond mother or gentle woman teacher, but of a bewigged and betitled university doctor. It was Johann Comenius, however, who first conceived the darling idea that children could be taught by the aid of memory and the imagination working together. "By means," as he quaintly expressed it, "of sensuous impressions conveyed to the eye, so that visual objects may be made the medium of expressing moral lessons to the young mind and of impressing those lessons upon the memory." In other words, the good Herr Doctor had the bright idea that picture books could be useful to children. Comenius made his first picture book and called it "Orbis Pictus." It contains rude wood cuts representing objects in the natural world, trees and animals, with little lessons about the pictures.

It is a quaint volume, and one that would cause the average modern child not a little astonishment were it placed before him. As truly, however, as that term may be applied to any other book that has since been written, the "Orbis Pictus" was an epoch-making book. It was the precursor of all children's picture books, and modern childhood has great cause to bless the name of Comenius.

**The Comma.**

The Countess Henriette de Witt, the daughter of Guizot, the historian, was a charming lady; but she had a culpable indifference to the art of punctuation. Her father wrote her two pretty little essays on the subject. Whether she was able to take the "middle course," after her second lecture, we are not told; but at least she had not found it before.

"My dear Henriette," wrote Guizot, "I am afraid I shall still have to take you to task with regard to your punctuation. There is little or none of it in your letters. All punctuation marks a period of repose for the mind, a stage more or less long, an idea which is done with, or momentarily suspended, and which is divided by such a sign from the next.

"You, Henriette, suppress those periods, those intervals. You write as the stream flows, as the arrow flies. That will not do at all; because the ideas one expresses are not all intimately connected, like drops of water."

Either Mademoiselle Guizot was taking a clever revenge, or she was past all redemption, for this is her father's next letter:

"I dare say you will find me very provoking; but let me beg of you not to fling so many commas at my head. You are absolutely pelted me with them, as the Sabines pelted poor Tarpeia with their bucklers."

It is the unmarried young thing who talks about the gray monotony of life, but it is the married one who knows what it is.

**OLD FAVORITES**

**John Burns of Gettysburg.**  
Have you heard the story that gossips tell of Burns of Gettysburg? No? Ah, well!

Brief is the glory that hero earns, Briefer is the story of poor John Burns; He was the fellow who won renown—The only man who didn't back down When the rebels rode through his native town; But held his own in the fight next day. When all his townfolk ran away. That was in July, sixty-three. The very day that General Lee, Flower of Southern chivalry, Baffled and beaten, backward reeled From a stubborn Meade and a barren field.

I might tell you how, but the day before, John Burns stood at his cottage door, Looking down the village street, Where, in the shade of his peaceful vine, He heard the low of his gathered kine, And felt their breath with incense sweet; Or I might say, when the sunset burned The old farm gable, he thought it turned The milk, that fell in a babbling flood Into the milk pail, red as blood. Or how he fancied the hum of bees Were bullets buzzing among the trees, But all such fanciful thoughts as these Were strange to a practical man like Burns.

Who minded only his own concerns, Troubled no more by fancies fine Than one of his calm-eyed, long-tailed kine—

Quite old-fashioned and matter-of-fact, Slow to argue, but quick to act. That was the reason, as some folks say, He fought so well on that terrible day.

And it was terrible. On the right Raged for hours the heady light, Thundered the battery's double bass— Difficult music for men to face; While on the left—where now the graves Undulate like the living waves That all that day unceasing swept Up to the pits the rebels kept— Round-shot plowed the upland glades, Sown with bullets, reaped with blades; Shattered fences here and there Tossed their splinters in the air; The very trees were stripped and bare; The barns that once held yellow grain Were heaped with harvest of the slain; The cattle bellowed on the plain, The turkeys screamed with might and main.

And brooding barn-fowl left their rest With strange shells bursting in each nest. Just where the tide of battle turns, Erect and lonely stood old John Burns. How do you think the man was dressed? He wore an ancient long buff vest, Yellow as saffron—but his best; And, buttoned over his manly breast, Was a bright-blue coat, with a rolling collar.

And large gilt buttons—size of a dollar— With tails that the country-folk called "swaller."

He wore a broad-brimmed, bell-crowned hat, White as the locks on which it sat. Never had such a sight been seen For forty years on the village green, Since old John Burns was a country beau.

And went to the "quiltings" long ago. Close at his elbows all that day, Veterans of the Peninsula, Sunburnt and bearded, charged away; And striplings, downy of lip and chin— Clerks that the Home Guard mustered in—

Glanced, as they passed, at the hat he wore, Then at the rifle his right hand bore; And hailed him, from out their youthful lore, With scraps of a slangy repertoire:

"How are you, White Hat?" "Put her through."

"Your head's level," and "Bully for you!" Called him "Daddy"; begged he'd disclose The name of the tailor who made his clothes,

And what was the value he set on those; While Burns, unmindful of jeer and scoff, Stood there picking the rebels off— With his long brown rifle, and bell-crown hat,

And the swallow tails they were laughing at.

"Twas but for a moment, for that respect Which collects all courage their voices checked, And something the wildest could understand.

Spake in the old man's strong right hand; And his corded throat, and the lurking frown Of his eyebrows under his old bell-crowns; Until, as they gazed, there crept an awe Through the ranks in whispers, and some men saw

In the antique vestments and long white hair The Past of the Nation in battle there; And some of the soldiers since declare That the gleam of his old white hat afar, Like the crested plume of the brave Navarre,

That day was the oriflamme of war. So raged the battle. You know the rest: How the rebels, beaten and backward pressed, Broke at the final charge and ran.

At which John Burns—a practical man— Shouldered his rifle, unbent his brows, And then went back to his bees and cows. This is the story of old John Burns. This is the moral the reader learns: In fighting the battle, the question's whether

You'll show a hat that's white, or a feather!

—Bret Harte.

**TOBogganing INTO A BEAR.**

Dangers of Bear Hunting on an Icy Northern Island.

A member of the Wellman polar expedition of 1893-9, Paul Bjoervig, is described by Mr. Walter Wellman, in "A Tragedy of the Far North," as a man of superior courage, of unexampled fortitude and of inspiring character. If there was a bit of dangerous work to do, he was sure to be the first to plunge in. He sang and laughed at his work. If he went down into a "porridge," half ice and half salt water, and was pulled out by his

hair, he came up with a joke about the ice-cream freezer.

One day three men were out bear-hunting on an island. Two of them had rifles, the other had none. The last was Bjoervig. They found a bear, wounded him, and chased him to the top of a glacier. There bruin stood at bay. One of the hunters went to the left, another to the right. Bjoervig laboriously mounted the ice-pile to scare the beast down where the others might get a shot. But one of the hunters became impatient, and started to climb up also. On the way he lost his footing, fell, and slid forty or fifty feet into a pocket of soft snow.

At that moment, unfortunately, Bjoervig frightened the bear. Leaving the summit of the ice-heap, the beast slipped and slid straight toward the helpless man, who was floundering up to his armpits below. Apparently the man's life was not worth a half-kroner. In a few seconds the bear would be upon him, and would tear him to pieces. The brute was wounded, furious, desperate.

Bjoervig saw what he had to do. He did not hesitate. He followed the bear. From his perch at the summit he threw himself down the precipitous slope. He rolled, fell, slipped straight down toward the big white bear. He had no weapon but an oaken skee-staff, a mere cane; nevertheless he made straight for the bear.

Down the hillock slope he came, bumping and leaping, and yelling at the top of his voice. His cries, the commotion which he raised, the vision the bear saw of a man flying down at him, frightened the beast half out of his wits; diverted his attention from the imperiled hunter to the bold pursuer.

This was what Bjoervig was working for. The bear dug his mighty claws into the ice and stopped and looked at Bjoervig, but Bjoervig could not stop. The slope was too steep, his momentum too great. He dug his hands into the crust of the snow; he tried to thrust his skee-staff deep into the surface. It was in vain. Now he was almost upon the bear; the beast crouched to spring at him. Another second and it would all be over. Crack! the rifle spoke. The man down below had had time to recover his equilibrium. Another shot and the battle was over. Bjoervig and the bear rolled down together.

"You saved my life," said the man with the gun, when Bjoervig had picked himself up.

"No, no," responded Bjoervig, whipping the snow out of his hair, "you saved mine."

**Money in Railroading.**

A New York boulevard car was going north one day recently when, with a sudden jar, the current was thrown off and the passengers were bumped rudely together. The car came to a standstill. The motorman, says the New York Times, threw open the front door and ran back to the conductor on the rear platform.

They exchanged a few words, then both ran through the car to the front platform. Every passenger sat mute with surprise. Suddenly the car started and then backed. Then it started again, and once more backed. Then it stopped. Off jumped motorman and conductor, and as the astonished passengers looked out of the windows they saw the two men down on their hands and knees trying to crawl under the car. Presently, with an exclamation of delight, the motorman, covered with mud and grime, slowly emerged. Entering the car and holding up for inspection a ten-dollar bill, he said:

"Excuse me, passengers, for jarring you and keeping you waiting, but I came near running over this ten-dollar bill, and I hated to do it and leave it for the motorman on the car behind me."

**Changed His Mind.**

It is a wise father who knows just which story to tell in regard to his own child. Jackson, like other men, has a horror of infant prodigies as exploited by their proud papas. The New York Times tells of his meeting his friend Wilkins, who greeted him with: "Hello, Jackson! What do you think my little girl said this morning? She's the brightest four-year-old in town. She said—"

"Excuse me, old man!" exclaimed Jackson. "I'm on my way to keep an engagement. Some other time—"

"She said, 'Papa, that Mr. Jackson is the handsomest man I know! Haw! haw! How's that for precocity, eh?'" And Jackson replied, "Wilkins, I'm a little early for my engagement. That youngster certainly is a bright one. Come into this toy store and help me select a few things that will please a girl of her taste, and I'll send them to her, if you don't mind."

**The Autolat on Horseback.**



Automobilist—I wish this confounded thing would run out of gasoline.

**A Mean Man.**

"What has he done?" "Why, he permits his wife to accept alimony from two of her former husbands."—St. Louis Post-Dispatch.

No woman should laugh at a "joke" on her husband



**To Train Grape Vines.**

It may be said that there are a dozen systems of grape vine training in use, all of which have their good qualities and each, perhaps, superior to all others under certain conditions. The system of training from a single upright growth is, however, admitted to be after the most approved lines, and it certainly gives results. The illustration shows how the vine is trained in its first year. It is cut back to two strong buds at the time of planting and is set so that the buds will be just above the surface of the ground. A slight stake is pressed into the ground near the vine and the vine is fastened to it with cord of a waterproof kind. If the trellis is built during this first year this cord is run to the first wire (the top one) and fastened. The vine will make the growth about as shown in the cut during this first year. The trellis is an important feature of the plan. The posts should be set eight feet apart,



TRAINING THE GRAPE VINE.

and so that they will stand about six feet out of the ground. Two wires are used in the position, as shown in the cut, the wires being fourteen inches apart. In training the vine for the second year cut off all that portion above the top wire, and as the lateral canes grow select the strongest opposite each wire, one on either side of the main stalk, and train them along the wires; this gives us two arms, so to speak, running along each wire at the end of the second year from planting. The third season the fruiting buds must be handled, and it is a good plan to select every other bud to supply the canes necessary for the upright growth from the arms. This upright growth is shortened in from time to time during the growing season, so as to throw the strength into the fruiting canes. This system of training requires labor, but it gives most excellent results.

**Cost of an Acre of Strawberries.**

For plowing, \$3; harrowing, \$3; marking, 50 cents; plants (8,000) \$25, average price; plants are scarce this year. Trimming and preparing plants, \$5; setting plants, \$4; cultivating with horse, \$7.50; hoeing six times, \$18; fertilizer, half a ton, \$15; four tons of straw, \$20; applying straw, \$5. This makes the cost about \$100 for the first year. Of course the increase of plants can be used to set a new bed the following year, which will make the cost one-fourth less. The straw is worth as much as it costs almost to the soil. In these figures we are actually giving what it would cost the farmer to hire the work done by men who know how to do it. If the farmer does the work himself, he does not feel the cost any more than he would be putting in a crop of potatoes. We advise setting the strawberry bed near the buildings so it can be attended to without going far. The usual gross sales from an acre of strawberries are about four times the cost of the acre for the first year.—Rural New Yorker.

**Temporarily Blinds the Horse.**

It has long been known, and put to practical test time after time, that to get a horse out of a fire the best plan is to blindfold him, and many an animal has been saved in this way which it was impossible to remove from the burning stable in any other manner.



TO PREVENT FRIGHT VENTOR TO APPLY

practically the same principle to control fractious or vicious horses and to stop runaways which are caused by the animal taking fright at some object on the street or road. While the blinder in common use on bridles prevents the horse from seeing objects on either side, there is nothing to shut out the view of anything approaching which might tend to frighten the animal, and it can also turn its head if it hears a noise; but with this new device the driver or rider has only to pull a cord lying parallel to the reins and a bellows-like curtain is drawn over both eyes to shut out the sight completely. In this condition the animal can only stand and tremble until the object causing the fright has passed, when the curtain is lifted by releasing the cord, and the horse travels on as before. The curtain is housed in a small semi-circular leather casing passing over the animal's forehead just above the eyes, and the operating cords are inserted in the bit rings before passing back with the reins.

**Small Farms to Be the Rule.**

In the future small farms will be the rule. More and better products will be raised on 60 acres than are now on 120 acres. There are farmers to-day who plant a 40-acre field in corn who could take the same amount of manure they used and put it on a 20-acre field, and

get a greater yield and of better quality. Besides this, it will take only half the time to plow and cultivate the 20-acre field, which would further add to the profits. What a lesson the market gardeners are constantly giving to us farmers. Why, some of them use more barnyard manure on 20 acres than some farmers do on 120 acres. The crops the gardeners get are enormous, and their land is constantly increasing in fertility.

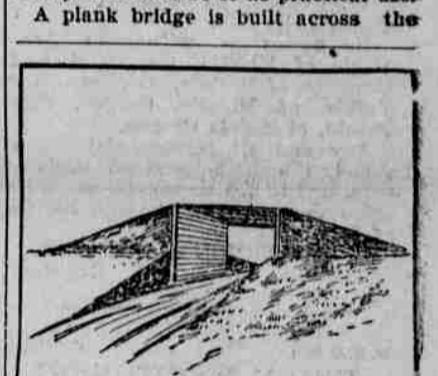
**Extent of Irrigation.**

Exclusive of the rice-producing States the Territory of Hawaii and Indian reservations, the number of irrigators in the United States in 1899 was 108,218, an increase of 54,082, or one hundred per cent over the number reported in 1889. The number of acres irrigated was 7,539,645, an increase during the ten years, of 3,908,165, or 107.6 per cent. Of the total irrigated area, 5,914,412 acres were in crops, and the total value of the products therefrom was \$86,860,491. The total cost of construction of the irrigation systems operated in 1899 was \$67,770,042. In the number of irrigators California stands far ahead of any other State, having about one-fourth of the total number in the United States. Colorado, however, exceeds in the number of acres irrigated, although not in the value of irrigated crops. Of the total irrigated area, 7,063,629 acres were watered from streams, and 169,644 acres from wells. The number of acres in crops irrigated in 1899 was 5,711,965 and the number of irrigated acres in pasture and unimproved crops was 1,551,308. The value of the irrigated crop was \$84,443,438. Of the irrigated area, 7,263,273 acres were in the arid States, 273,117 acres in the semi-arid region and 3,155 in the humid region.

**Connecting Pastures by Causeways.**

It frequently becomes desirable to have the pasture so arranged as to let stock pasture on both sides of a highway. The pasture is sometimes located on one side of the highway and yard and watering place on the other. Much time is required to drive cattle back and forth.

The difficulty can be overcome in a very convenient way. Select a place where there is a little rise in the ground, say from 2 to 4 feet, the more the better. Construct a wide ditch, from 10 to 12 feet, so it will easily admit a team to work with scraper down at bottom of it. Make it from 2 to 4 feet deep, as the natural condition of ground will admit. It must be constructed in such a way that it will have natural drainage at lower side, otherwise it would fill with water after very heavy rains and be of no practical use. A plank bridge is built across the



CAUSEWAY FOR CATTLE UNDER ROAD.

opening and the sides planked. It should be made 5 1/2 to 6 feet high to admit the passage of all kinds of stock or even horses below. The earth taken out in digging is used in constructing the grade on each side of bridge. The bridge, as well as grade or dump, must be made as wide as required by law. The deeper it is practical to make the ditch, the less it will be necessary to dump upon the grade. A tight fence must be constructed from the pasture on each side of the passageway close up to the bridge. I have seen such a passageway constructed on the level prairie, but in such a case is only practical in every dry season, because in a rainy one the ditch will fill up with water.—Lewis Olsen, Kandiyohi, in Farm and Home.

**Agricultural Notes.**

Eggplant is a gross feeder, but easily cultivated.

Interest in the apple box grows apace in the east.

Bone black is said to be good fertilizer for parsnips.

Give a good, thorough cultivation between the rows of strawberries.

Beets will stand considerable cold weather and may be planted early.

In a cold frame or sprout hothed is a good place to start lima beans on sods.

In butter and cheese making every effort should be made to suppress dust, which, according to a dairy authority, carries more infection than any other source.

Bees carry pollen from one flower to another while seeking honey. The real benefactors are the bee keepers, many of whom keep bees for pleasure rather than for profit. But for the bees many fruit trees that blossom out full would produce no fruit.

It has been demonstrated conclusively that when an animal is fed on a variety, instead of on corn exclusively, a greater gain in weight is secured. Corn will excel in the production of fat, but bone and lean meat sell in the live animal as well as fat, rapid growth being a gain in weight.

Preventing the spread of fungus diseases could be accomplished better by destroying the branches and vines that are cut away from trees and bushes than by the use of other methods. It is not sufficient to remove the portions of trees affected with black knot. They should be consigned to the flames, as no remedy is as sure in the destruction of the spores as fire.