

flight of rooks up into the sky can easily see how this might happen. In the cases to which I am referring, the earthworm comes out like a hunted thing. I have also noticed that many of the worms that I found dead or torpid were maimed; generally they had their tail cut off, and this when there had been no digging in my garden for a long time, and although there are few birds that would touch them. I have frequently observed that the earthworms were apparently unwilling to go to ground again, though I have tried to make them, in order to watch the rate and manner in which they bury themselves.

A few days ago, however, I saw, I believe, the explanation of most of the cases I had been observing. A large earthworm about nine inches long, bright, clean, and healthy looking, was moving somewhat irregularly on the earth of a flower bed. On stooping to examine it, I found a small yellow animal with a brown head holding on within about half an inch of the tail end of the worm. I sent it to Prof. Westwood, who writes: "Your worm eating larva is evidently one of the Carabidæ, probably *Steropus madidus*" (see *Gardeners' Chronicle*, 1854, p. 613). It was not disturbed by my taking up the worm, but went on biting its way round the worm, holding on like a bull dog, and bettering its hold every now and then. It had nearly got round the worm, leaving a lacerated ring. The wounded part seemed somewhat swollen, but on this point I am not clear, as the unequal power of extension of the wounded part may have produced the effect of swelling.

Mr. Edwin Laurence has recorded (*Nature*, vol. xxvi., p. 549) a similar circumstance observed by him in France, where, however, the larva seems to have attacked the worm differently, and with a view to killing it rather than cutting off a portion, and from his description, moreover, it would not appear to be the larva of the same species. He suggests that the numerous birds in England may have destroyed such an enemy of the earthworm. A sparrow would probably take the larva, and not touch the earthworm. One would have thought that the earthworm would have a better chance of rubbing off his deadly enemy in the earth than above ground, as a salmon is said to clean himself in a gravelly river, but we want further observations on this curious question, as well as on several others raised by the inquiry, How are worms transported to out-of-the-way places? and, How long can they live in soils of various degrees of permeability when the surface is flooded?

#### Consumption of Railway Ties.

There are now fully 148,000 miles of railroad track in the United States, and therefore about 391,000,000 ties, and the average consumption for renewals should be about 56,000,000, or the product of 560,000 acres of land, at 100 ties per acre, requiring 126,800,000 acres = 26,000 square miles, equal to less than half the area of Michigan or Wisconsin, two-thirds the area of Maine, and a little more than half the area of North Carolina, if, as reported, it takes 30 years to grow tie timber.

Mr. Hicks says that the reports to the Forestry Department show that it takes an average of 30 years to grow timber large enough for ties, and that the product is about 100 ties per acre, while the average cost of ties to the railroads is 35 cents. This is a product worth \$35, as the return of an acre for 30 years. If this is all, then with money at 5 per cent, no cost of cultivation and no taxes, it will pay to grow ties on land already wooded worth \$8 per acre, and on land worth \$7 per acre if interest is 6 per cent.

If 113.3 acres of woodland are required to maintain the ties of every mile of railroad, the question with the railroads, says the *Railroad Gazette*, is not simply whether they should produce their own ties, but also whether they may not profitably diminish their consumption. The experience of Germany indicates that an average life nearly three times as long can be had by preserving the ties with chloride of zinc, or creosoting (so called, for there is usually little or no creosote in the oil used). But even if the product of 56 acres per mile is required, it does not follow that the only escape from a famine will be the cultivation of timber. If land planted or stocked naturally with the trees which will make 100 ties in 30 years is worth \$20 an acre—and in many parts of the country it is worth as much as that—at the end of the 30 years required to grow the trees it will represent, with interest at 6 per cent, \$118, and with interest at 5 per cent, \$88; and if then the land after the ties are cut is still worth \$20 an acre, the 100 ties, before cutting, will have cost \$98 in the one case and \$68 in the other. But the taxes meanwhile would probably have cost \$50 or \$60 more, and there would be some expenditure for care. If then the land is not cheaper than \$20 per acre, the railroad will probably do better to depend upon some metallic substitute than to grow tie timber, even if it gets 14 years' life out of a tie.

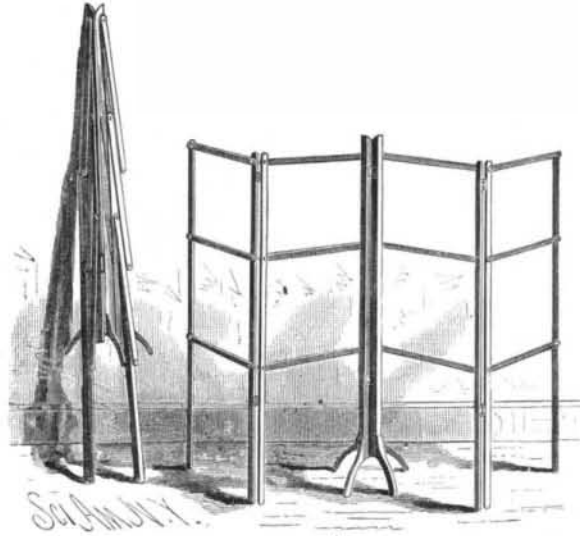
#### Better to Wear Out than Rust.

The late Prof. Samuel D. Gross at a dinner given to him in Philadelphia on April 10, 1879, said: "After fifty years of earnest work I find myself still in the harness; but although I have reached that age when most men, tired of the cares of life, seek repose in retirement and abandon themselves to the study of religion, the claims of friendship, or the contemplation of philosophy, my conviction has al-

ways been that it is far better for a man to wear out than to rust out. Brain work, study, and persistent application have been a great comfort to me, as well as a great help; they have enhanced the enjoyment of daily life, and added largely to the pleasures of the lecture room and of authorship; indeed, they will always, I am sure, if wisely regulated, be conducive both to health and longevity. A man who abandons himself to a life of inactivity, after having always been accustomed to work, is practically dead."

#### CLOTHES HORSE.

The engraving shows an improved clothes horse, for which latter patent have been applied for by Mr. M. F. Blake, of Martinsburg, Pa. Each frame consists of two side bars, to each of which are loosely riveted the ends of cross bars,



BLAKE'S CLOTHES HORSE.

this construction permitting the frame to be folded so that the side bars will rest side by side. The frames are secured to each other by hinges, and the center side bars are provided with branching legs—shown clearly in the right hand view—upon which the device will stand when so folded up that the other side bars will not extend below the center ones. The device may also be folded up as shown in the left of the engraving.

Made in this manner the clothes horse is cheap and durable, and when extended can be made to assume almost any desired position, and when folded occupies but little space. When closed, the center bars are held together by a hook and eye.

#### IMPROVED FAN ATTACHMENT.

The fan attachment shown in the accompanying engraving is the invention of, and is now being manufactured by, Messrs. A. O. Williams & Co., of Nos. 5 & 7 College St., Nashville, Tenn. A treadle is attached to one end of a lever, from the other end of which a rod extends upward and unites with



WILLIAMS & CO'S IMPROVED FAN ATTACHMENT.

an arm of a bent lever fulcrumed on a hanger depending from the ceiling of the room. The lower arm of the bent lever connects with swinging rods suspended from screw eyes made fast in the ceiling. These rods are connected by horizontal bars from which the fans hang—the joints being loose so that the fans, which are rigidly secured, may move freely in a horizontal plane. By placing a foot upon the treadle, any one sitting at the table can transmit motion to the fans through their connections, so that flies will be driven away and the air agreeably moved. The device is simple, cheap, and easily set up and operated, and by its use in warm weather the pleasure and comfort of those at the table can be greatly augmented.

#### Glass from Bradford Rocks.

It was practically demonstrated yesterday afternoon (May 19) that the manufacture of glass from Bradford sand rock through the agency of natural gas is entirely feasible, and our initial glass industry must prove an opening wedge to kindred enterprises which must redound to its credit. A curious crowd gathered at the works yesterday and watched the blowers skillfully gather the molten bolts of glass from the pots and blow huge cylinders, which after passing through the annealing oven will as sheets be cut into window panes. Of course, on a "first performance" of this kind there are numerous little details to be arranged, and it is difficult to speak advisedly of the full measure of success achieved, but its result is regarded as highly satisfactory. In a few days everything will probably be working smoothly, and visitors will see much to interest them. Superintendent McCartney and a number of glass blowers, with several samples of the work in the shape of globes, cylinders, and canes, marched to the Riddle House and received the congratulations of the crowd. Thirty carloads of window glass have already been ordered from the Bradford glass works, and this may be considered as merely an earnest of what will be required should reasonable expectations be realized. The first product of the works will be used in the windows of the buildings. An eight-pot furnace is now in operation, and the ground is laid out for another of the same capacity. The gas fuel works splendidly, producing a most intense heat and fulfilling every requirement.—*Pittsburg Era*.

#### Goods Duty Free into Mexico.

Under the new reciprocity treaty between the United States and Mexico, the articles enumerated below are to be admitted free of duty into Mexico:

Accordions and harmonicas; anvils; asbestos, for roofs; agricultural knives, without their sheaths; anchors, for vessels, large or small; apparatus of all kinds for industrial, agricultural, and mining purposes, sciences and arts, and any extra separate parts and pieces pertaining thereto; bars of steel for mines, round or octagonal; barrows and hand trucks, with one or two wheels; bricks of all kinds; books, printed, unbound or bound in whole or part, with cloth or paper; beams, small, and rafters for iron roofs; barbed wire for fences, and the hooks and nails to fasten the same; coal, of all kinds; cars and carts, with springs, two wheels, four wheels, small hand; coaches and cars for railways, crucibles and melting pots of all materials and sizes; cane knives; clocks, mantel or wall, fine and ordinary; carriages and diligences of all kinds and dimensions; dynamite; fire engines; fire pumps; faucets; fuse and wicks for mines; feed, dry, and straw; fruits, fresh; firewood; guano; hoes, mattocks, and their handles; houses of wood and iron complete; harrows; henequen bags, on condition that they be used for subsequent importation with Mexican products; ice; iron and steel, made into railways; instruments, scientific, ink, printing; iron, beams; instruments of iron, brass, or wood, or composed of these materials, for artisans; lime; locomotives; lithographic stones; masts for vessels; marble, in blocks; marble, in flags for pavements, not exceeding 40 centimeters in square, polished only on one side; machines of all kinds for industrial, agricultural, and mining purposes, sciences and arts, and any separate extra parts and pieces pertaining thereto; metals, precious, in bullion or in powder; money, legal, of silver and gold of the United States; moulds and patterns of the arts; naphtha; oats, in grain or straw; oars, for small vessels; pumps, ordinary, for irrigation purposes; pickaxes; plows and plowshares; paper, tarred, for roofs; plants of any kind not growing in the country, for cultivation; pens of any metal, not silver or gold; petroleum, crude; petroleum or coal oil and its products, for illuminating purposes; powder, common, for mines; quicksilver; rakes; rags or cloth for the manufacture of paper; roof tiles of clay or other material; sickles; shovels; spades; seeds, of any kind not growing in the country, for cultivation; sulphur; stoves, of iron, for cooking and other purposes, with and without ornaments of brass; staves and headings for barrels; steam engines; soda, hydrosulphate; sewing machines; slates, for roofs and pavements; sausages, large or small; teasels of wire, mounted on bands for machinery, or vegetable teasels; types, coats of arms, spaces, rules, vignettes, and accessories for printing of all kinds; vegetables, fresh; wire, telegraph, the destination of which will be proved at the respective custom houses by the parties interested; wire of iron or steel for carding, from No. 26 upward; water pipes of all classes, materials, and dimensions, not considered as comprehended among them tubes of copper or other metal that do not come closed or soldered with seam or with riveting in all their lengths; window blinds, painted or not painted.

#### Fast Speed Telegraphy.

Speaking of a recent contest among Morse operators in London, the *New York Operator* says: "We are willing to admit that England can produce as fast operators as we can, but we claim that with their lumbering code of signals as against our rattling combination we can beat them, everything else being equal. We have sworn records of fast Morse sending at the rate of forty-two words a minute for sixty consecutive minutes—over 2,500 words in one hour."