

### REPAIRING WATER PIPES.

When water pipes are burst by the frost, it is easy to repair them in the following manner. The break is usually as seen at *a*, and is caused by the expansion of the water in the pipe when freezing. In repairing such a break in a lead pipe, first bring the edges near together by hammering, then scrape the surface around the broken part, and solder it; or the piece may be cut out, and a new piece inserted. But for iron pipes, and for lead pipes, when it is not convenient to solder them, a different plan may be followed. A strip of stout canvas soaked in a melted cement, made of pitch and brick dust, is wrapped around the pipe, as shown at *b*, until the injured part is covered, or a piece of sheet rubber may be used as at *c*, taking care that the edges do not meet over the break. If the broken edges of the pipe are sharp and likely to cut the covering, file them down. After the wrapping is placed, it is "served" over with copper wire or tarred hemp as illustrated at *d*. A "serving" mallet is used for this purpose; it is made of a piece of wood hollowed to fit the pipe, and with a hole bored through from the center of the hollowed part to the top of the handle. The wire or hemp is passed through the hole, and as the mallet is made to rotate around the pipe it lays the cord or wire in an even coil upon it. The wrapping may be laid tightly by pressing upon it as it enters the handle of the mallet, or by twisting it once around the same as it comes from the ball. When it is firmly bound, the end may be fastened in any secure manner, and the whole covered with a coating of the pitch and brick dust. These directions will apply to all sorts of pipes where the pressure is not very great; otherwise the wrapping will need to be made stronger to resist the greater pressure.

### AMERICAN STEEL.

Only sixteen short years ago the converting of iron into steel was virtually an English monopoly, and Sheffield defied the entire civilized world with her Jessop and Sanderson steel. Our agricultural implements, our tools, our cutlery, required the constant importation of that English metal. To Pittsburg alone belongs the credit of having in a remarkably short space of time reversed the picture, and no industry, perhaps, in these entire United States has made such rapid progress, especially during the last two years, as the manufacture of steel. It may sound strange, but it is nevertheless true, that the manufacture of steel teeth for horse-rakes is received at Pittsburg from England, and the steel now made there is more and more sought for in Europe, as the better quality of our material better suits certain purposes. The letter book of one of the leading steel manufacturers who sells steel to cutlery and agricultural-implement makers all over the country, shows that the latter invariably acknowledge that, though their orders were to make tools from English steel, they would no longer submit to that prejudice, as tests made over and over again proved that the Pittsburg steel was equally good, if not superior in quality. The very fact that such an abundance of it is made in Pittsburg now, and made fit to be used for rails as well as for the fine springs of clocks, is claimed as sufficient evidence that the city has reached that eminence in steel manufacturing which would enable this country to get along easily if there was not a pound of steel imported. The prejudice for the English material only keeps as yet the importation business alive, but day by day it is growing less. Our hammers, our axes, our saws, in fact all our tools, are now being made of the American metal, and the steel manufacturers are continually experimenting with still better ore, which they begin to draw in large quantities from North Carolina. — *N. Y. Herald.*

**CURE FOR SUNSTROKE AND APOPLEXY.**—A New York physician says: I believe sunstroke and apoplexy can be cured almost surely, if taken in any kind of time.

1. Rub powerfully on the back, head and neck, making horizontal and downward movements. This draws the blood from the front brain, and vitalizes the involuntary nerves.

2. While rubbing, call for cold water immediately, which apply to the face and to the hair on the top and side of the head.

3. Call for a bucketful of water as hot as can be borne, and pour it by dipperfuls on the back, head and neck for several minutes. The effect will be wonderful for vitalizing the medulla oblongata; it vitalizes the whole body, and the patient will generally start up into full conscious life in a very short time.

### A SUBURBAN VILLA.

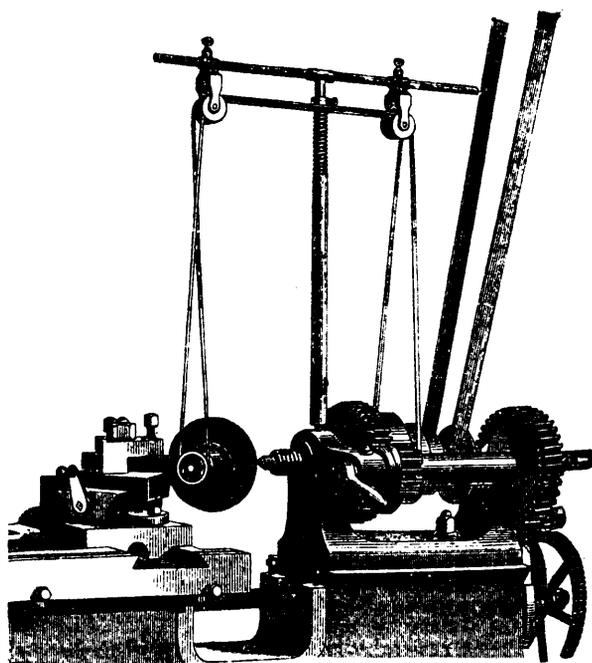
(See page 307.)

The perspective and plans presented to the readers show a design for a villa.

It is a frame building, with cellar walls of brick. The frame is sheathed with matched boards, with sheathing over them previous to clap-boarding.

The interior arrangement of the house is good. On the first floor there is a dining-room, 14 x 22 feet; a library, 14 x 18 feet; a billiard-room, 14 x 18.6 feet; a parlor, 14 x 21.3½ feet; and a kitchen, 14 x 19.3 feet. Off the kitchen there is a store-room, 7 x 8 feet, while between the latter and the dining and billiard-rooms there is a butler's pantry. A hall extends nearly the entire depth of the house, and at the end of the same there is an office 7.6 x 10 feet. On the front and side there is a large piazza, and there are bay-windows in each of the four principal rooms.

On the second story there are five bed-rooms, one 14 x 19 feet; one 14 x 15.6 feet; one 14 x 19.6 feet; one 14 x 16.3 feet; and one 12 x 14 feet. There is a bath-room 7 x 13 feet, and a dressing-room 7 x 11 feet.



### A LATHE-CENTRE GRINDER.

The accompanying engraving shows an ingenious method of applying an emery-wheel for grinding lathe-centres. The usual process occupies considerable time, and is not unaccompanied by a risk of injury, which it is at all times advisable to avoid when possible. The patent lathe-centre grinding machine, manufactured by Messrs. Simon and Co., can be fixed to any lathe in a couple of minutes; will grind the centres true without destroying the temper, and insures accuracy that can only be obtained by the usual means, with the exercise of considerable skill. The holder is held in the slide-rest as shown, the spindle carrying the wheel being conical, so that any wear can be readily taken up by turning a screw. The spindle is surrounded by an oil-chamber, thus obviating the necessity for frequent lubrication, and avoiding the risk of damage from the neglect to which a general tool is usually subjected in a large workshop. To prevent any dust entering the bearing, a leather washer is placed in the holder. The standard carrying the pulleys for the driving belt is made of iron pipe, and is readily adjusted as to height and distance between pulleys. This centre-grinder has been tried for some time at the North London Railway Works, Bow, and, having proved successful, and afforded another instance of the utility of the emery-wheel, is introduced to the notice of machinists.