file should be entirely free from oil when it is applied to smooth glassy surfaces, but when it is used on narrow pieces of fibrous metal oil may be applied to advantage. Good workmen often fill the teeth with oil and chalk, thus lessening the disposition of the file to "pin."

One of the most destructive customs among a large number of mechanics is that of loosely throwing their files, fine and coarse, small and large, into a drawer filled with cold chisels, hammers, turning tools, etc., and then throwing chisels, hammers and other tools on the files.

When we consider the small portion of the points of the teeth that is worn off by use; and that to effectually dull them for some kinds of work requires but the slightest rubbing upon a hard substance, it will be admitted that the evils of this habit should be more carefully considered.

Rosin and Beer.

The veteran temperance leader, Neal Dow, favors us with a communication in which the serious physiological results attending the use of beer containing rosin are dwelt upon at considerable length. Mr. Dow neglects, however, to offer any evidence to show that brewers ever use rosin in the manufacture of beer. It may be that Mr. Dow, like many others, labors under the erroneous impression that every article embraced in brewers' supplies is somehow made an ingredient of beer. Only the other day an apparently intelligent gentleman endeavored to convince us that brewers put oil of vitriol into beer. He knew they did, for he had seen carboys of the acid set down at the brewer's door. The observation was correct, but the inference was wild, the acid being used simply in cleaning the brewer's coppers. So with rosin. Because it is largely employed by brewers, it by no means follows that it goes into beer. It is used for coating the insides of beer barrels to prevent the escape of the gas or "life" of the beer, a purpose for which it would be worthless were it not insoluble in beer.

A SIMPLE PHONOGRAPH.

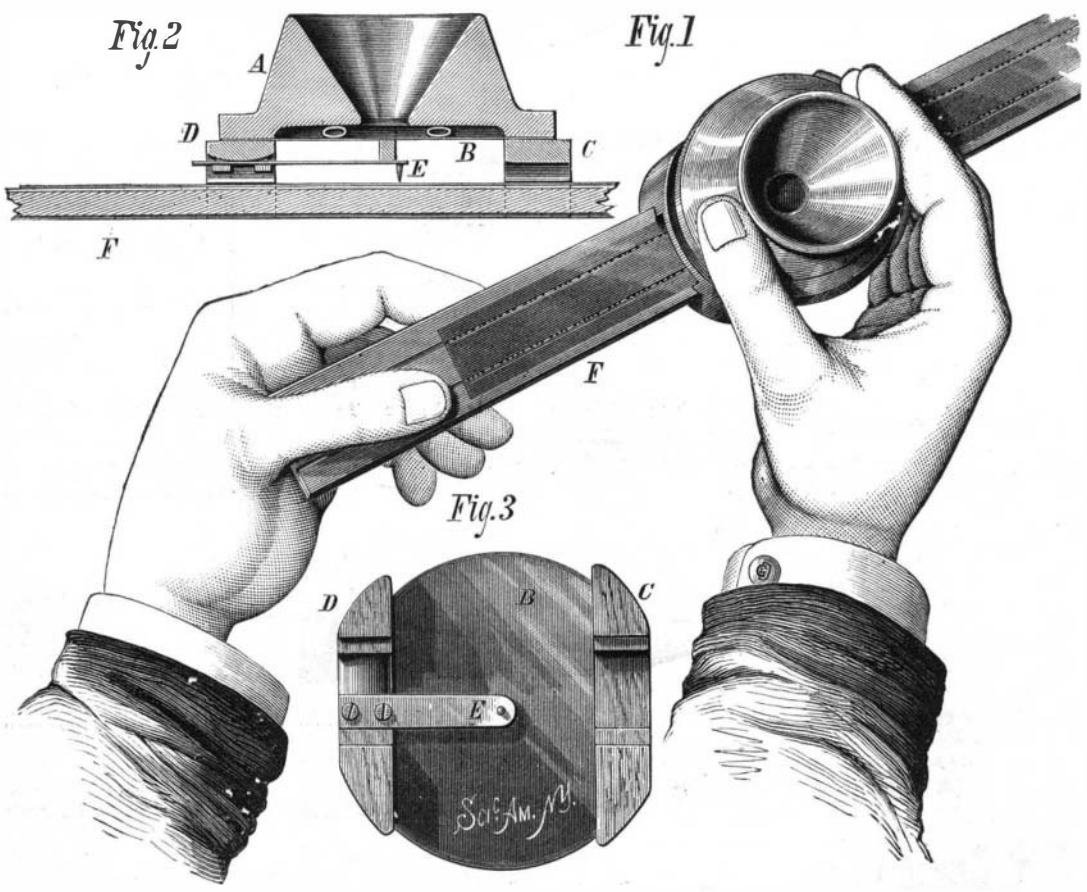
This simple instrument, which is shown in perspective in Fig. 1, in section in Fig. 2, and in plan in Fig. 3, consists of a mouthpiece, A, to which is attached a thin ferrotype plate diaphragm, B, by means of a good quality of sealing wax or cement.

Upon the outer face of the diaphragm and at opposite edges there are guides, C D, for receiving the wooden strip, F. These guides present only a slight bearing surface to the strip. The guide, D, is rounded to receive the spring, E, which is secured to it by two screws, by which also the spring is adjusted so as to bear with more or less force on the small rubber block which rests upon the center of the diaphragm.

A needle, which is sharpened like a leather sewing needle or awl, is soldered to the spring, and is located directly opposite the center of the diaphragm. The guides, C D, are placed so that the median line of the strip, F, is at one side of the needle. The strip, F, has four slight longitudinal grooves, two on each side, which are made with an ordinary carpenter's gauge. These grooves are located so that when the strip is moved through the guides, one or the other of them will pass over the needle. A piece of beeswax is rubbed over the sides of the strip to give it an adhesive coating for receiving the foil used in recording the sounds.

The foil, which should be rather heavy, must be cut into strips wide enough to extend beyond the grooves in the wooden strip. The foil is laid on the wooden strip and burnished down with the thumb nail, so that it will adhere. The strip thus prepared is placed in the guides, C D, and the needle is adjusted so that it indents the foil slightly as the stick is moved along.

By talking in the mouthpiece and at the same time moving the strip along with a smooth steady motion, the sounds are recorded on the foil. By passing the strip again through the guides, so that the needle traverses the same groove, and applying to the mouthpiece a paper funnel or resonator, the sounds or words spoken into the instrument will be reproduced. It is even possible to record the sounds on a plain strip of wood so that they may be reproduced. The engraving is about two thirds the actual size of the instrument.



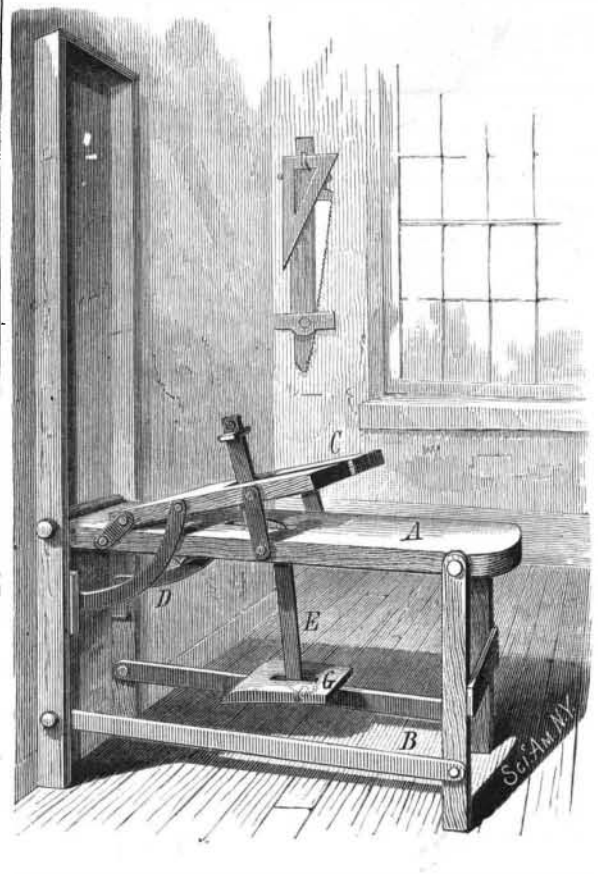
A SIMPLE PHONOGRAPH.

Restoration of Faded Handwriting.

Von Bibra reports (*Jour. Pract. Chem.*) that a moderately concentrated aqueous solution of tannin (gallo-tannic acid) will render legible writing which has faded through age, with none of the destructive effects on the paper occasioned by the use of hydro-sulphate of ammonia. He applies the tannin solution with a brush, removes the excess by a current of water, and dries the document at a temperature of 50°–60° R. The writing developed in this manner remains clear and black after the lapse of several months. Of course only manuscripts written with ordinary ink can be restored in this way.

FOLDING SHAVING HORSE.

We give herewith an engraving of a novel folding shaving horse, the invention of Mr. Samuel E. Cress, of Hillsborough, Ill.



FOLDING SHAVING HORSE.

This horse is designed for the use of coopers and others who require a convenient device for holding work while it is shaved.

The bench, A, is pivoted at one end between vertical studs, and has at the other end two legs that are connected with the vertical studs by rods, B. An inclined work support, C, is connected with the bench by two straps at each side; it is also connected with one of the vertical studs by a curved bar, D, which serves to move the support, C, into a working position when the bench is let down, and it brings the support into a position parallel with the bench when the latter is folded up.

The clamping lever, E, is bent twice at right angles upon opposite sides of its pivot, and the work support, C, is slotted, so that when the bench is folded up the upper end of the lever lies in contact with the upper face of the bench, and its lower end rests against the lower surface of the bench. The lower end of the lever, E, is bent at a right angle, and to it the foot board, G, is pivoted.

All of the parts of the horse may be folded up between the two vertical studs, so that the floor may be used for other purposes when the horse is not in use.

This invention was patented through the Scientific American Patent Agency July 16, 1878. For further particulars address the inventor as above.

Little Mothers.

The little world of petite humanity has been sorely tried of late in the pathetic death of Minnie Warren and the scarcely less pathetic saving of Fannie Burdette through the sacrifice of her child. Had the first been properly treated her life also might have been saved; but her physician would not destroy the child without the mother's consent, and that could not be obtained until it was too late. It will be remembered that Minnie was married some years ago to "Major" Newell, better known as "General Grant, Jr.," at the same time that her diminutive sister Lavinia was married to General Tom Thumb. The latter pair have had one child, which died in its third year. Fannie Burdette, or, more correctly, Mrs. W. H. Bristol, is perhaps the smallest of living mothers, her height being only 2 feet 8 inches, and her weight 50 pounds. She has been married two years and has lost one other child, stillborn. Her husband, formerly doorkeeper to the circus with which Mrs. B. traveled, is of full size.

New Agricultural Inventions.

Messrs. Robert B. Wright and Parvin Wright, of Rock Creek, Wyoming Ter., are the inventors of an improved Hay Rake and Baling Press, which is so constructed as to collect the hay and press it into bales while the machine is being drawn forward through the meadow.

Mr. Richard N. B. Kirkham of Kansas, Ill., has patented an improved Horse Hay Fork, which is constructed so that it may be easily thrust into the hay and will hold a load securely.

Messrs. James H. Barley and Thomas K. Barley, of Sedalia, Mo., have patented an improved Fastening for securing Harrow Teeth to the side of the bars of a harrow frame, in such a way that the teeth may be held in a vertical, inclined, or horizontal position parallel with the bars.

An improved Seed Planter has been patented by Arnold J. West, of West's Mills, Mich. This invention consists essentially in a series of rotating arms carrying pivoted buckets that lift the seed in suitable quantities and at proper intervals, and deliver it to the hollow drill teeth. The machine is provided with markers or stampers of novel construction, which press the earth on the planted seed and at the same time produce a distinct mark, which indicates the location of the hill.

An improved Corn Dropper has been patented by Mr. Hiram H. Hartsock, of Clear Creek, Ill. The marker arms carry at opposite ends adjustable feet or markers, having sleeves for receiving the marker arms and set screws for clamping them in any desired position, the object being to adapt the marker to different kinds of soil. The markers and the dropper cam are attached to the same shaft, so that they will always bear the same relation to each other, and must therefore be accurate.

Mr. Thomas Delany, of Geneva, N. Y., has patented an improved Strawberry Protector, which consists of a saucer for protecting strawberries and other small fruits against being covered with sand and dirt. The saucer will also accelerate the growth of the plants and berries by shedding the water to the roots, and concentrating the rays of the sun immediately upon or about them.

Mr. William A. Woodward, of North Tunbridge, Vt., has patented an improved Draught Adjuster for Plows, intended to be used in land containing stumps or large stones. The object is to enable the plowman to avoid said stumps or stones by shifting the draught to either side of the beam instead of lifting the heavy plow by muscular power.

Mr. Theophilus Harrison, of Belleville, Ill., has patented an improved Thrashing Machine Frame, which is so constructed that it may be turned in a very small space and readily arranged or set in the desired position for use.

Mr. Homer T. Rector, of Clinton, Mich., has patented an improved Attachment for Plows for use in keeping them clear of stubble, stalks, weeds, grass, and other rubbish, without having to stop the team to clear the plows of the said rubbish.

Silkworm Breeding.

BY PROFESSOR CHAS. V. RILEY.

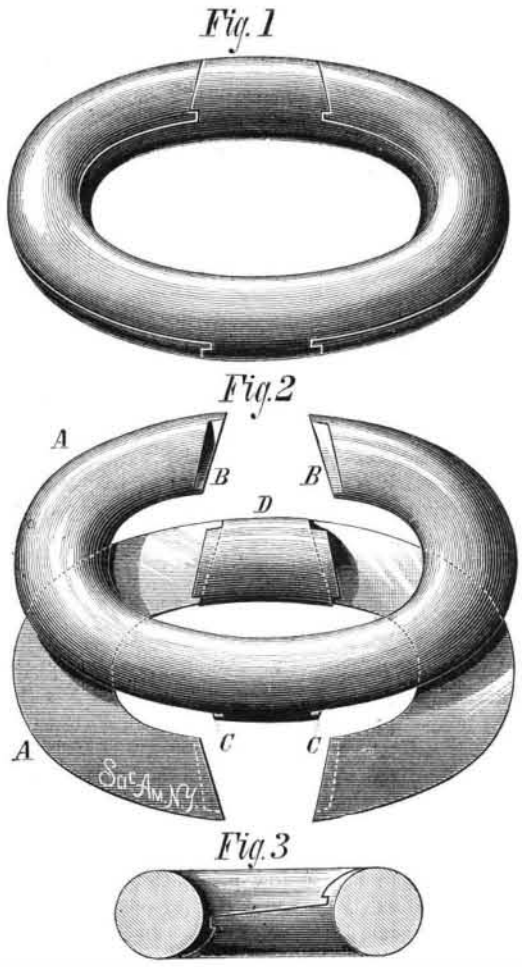
The possibility of producing two annual yields of raw silk, which you refer to in your issue of August 10th, cannot be considered a discovery, and will certainly create no change in the production of silk. In all silk growing countries, races of worms that are single, double, or treble brooded, that is, which produce one, two, or three generations annually, have been known for centuries. In France they are termed respectively *annuel*, *bivoltin*, and *trévoltin*. As a rule the eggs of the annuals cannot be made to hatch the same season they are laid, no matter how manipulated; but occasionally an exceptional batch will hatch, and by changed conditions any race may, in a few years, be rendered inconstant and variable. Quite a number of a white annual race, which had bred constant for seven years under my care, produced last summer a second generation; while some eggs of the same race, that had been attached to some woodwork of an apartment that was subsequently kept warm throughout the winter, did not hatch till the leaves began to unfold the next spring. Of the eggs obtained from the progeny of the second generation above mentioned, but about five per cent hatched this summer—the rest failing to hatch though exposed to the full heat of the past month—an interesting case of atavism or reversion to the more normal habit of the race. While some of the digoneutic races are reared at Milan and other places where the summers are pretty equable, they have not been found as profitable as the annuals, the summer generations proving less healthy and productive than the annuals reared in spring. What is true in this respect for Europe and Asia is fully as true for America. At the Department of Agriculture the present year there has been a good illustration in point. A number of worms of different races were fed on various species of *Morus* and a large number on *Maclura*. The worms were very much crowded and not as thoroughly cared for as they should have been. Yet, all things considered, they did remarkably well. A small lot of a digoneutic race were hatched later, and though receiving the greatest care, with plenty of room, one half of them perished ere spinning, and the rest formed small and very slight cocoons. The heat of July is too great for their well-being.

Washington, D. C., August 3, 1878.

WOOD'S LAP RING.

The engraving represents a new form of lap ring, which is made without pivotal connections. When it is in use it is securely locked, so that the parts cannot become accidentally disconnected.

The sections, A A, are both exactly alike, both being cast from the same pattern. Each section is open at the center at one side, and the opening converges toward the outer side of the ring. Tongues, B, are formed on ends of each section, which are fitted in grooves, C, in the raised solid center portion, D, of the other section.



WOOD'S LAP RING.

The sections of the lap ring are readily connected by sliding one of them over the other until the solid middle portion of each section enters the opening in the other section. This ring is very easily applied to chains or tackling, and forms a reliable connection, which may be easily disconnected without the use of tools of any sort.

Patented through the Scientific American Patent Agency, May 28, 1878, by Mr. Henry S. Wood, of Rob Roy, Ark., from whom further particulars may be obtained.

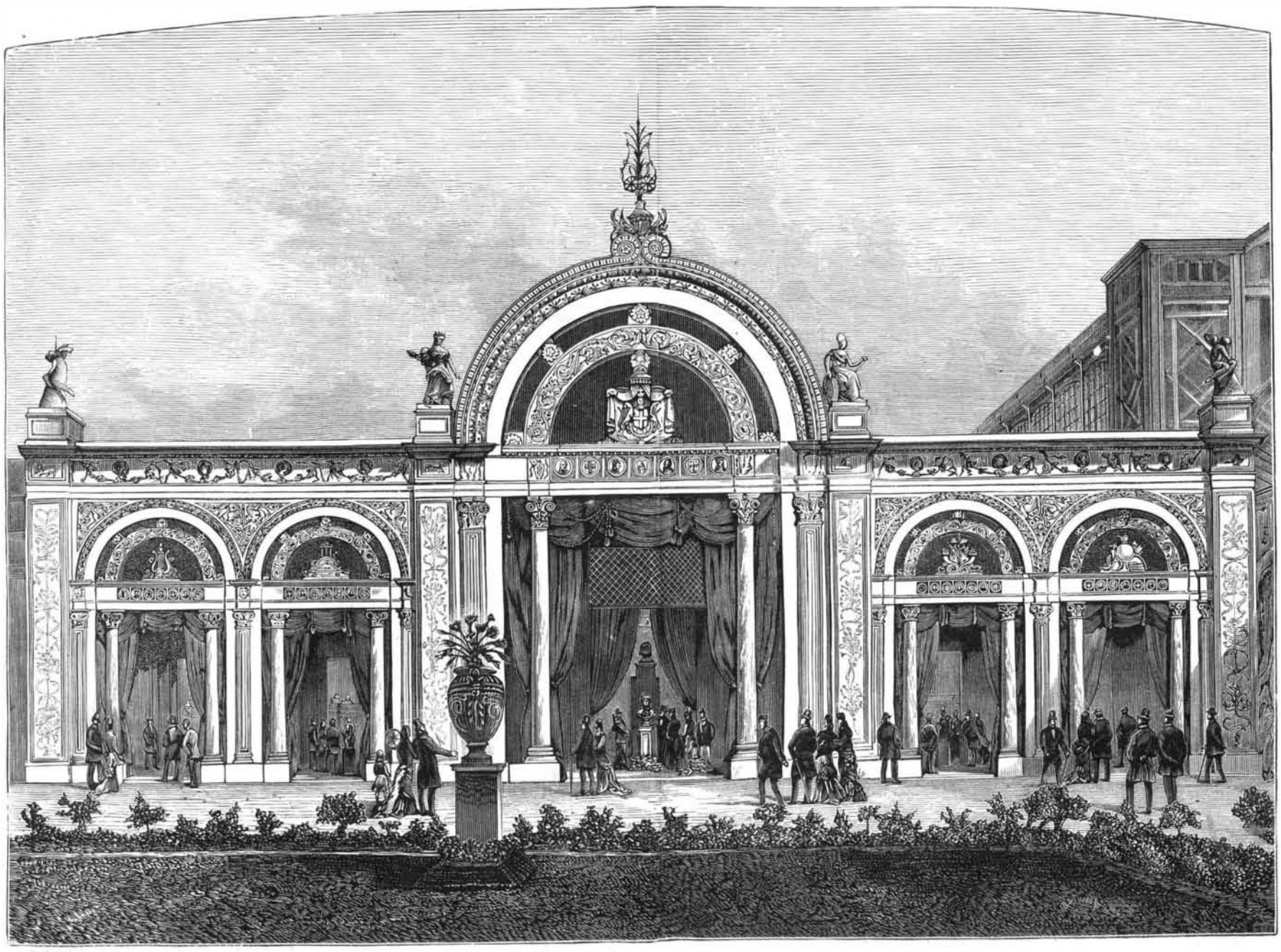
PARIS EXHIBITION.—THE ITALIAN FACADE.

The Italian façade presents a series of five arches, the central arch being nearly twice the height and width of the other four arches, the whole length of this façade being 32 meters, or 104 feet. The central arch is twofold, that is to say, with two concentric arches in the archway, which rises to the height of 30 feet. The arches are constructed of white marble and terra cotta intermixed; their span is traversed, in each opening, by a horizontal piece of marble, in which are inserted mosaics representing the portraits of illustrious Italians, poets, artists, and historians, the arms of Italian cities, and other subjects; other decorations, in black and white, are introduced above or at the sides. The central arch is supported by terra cotta pilasters and two pillars of stucco colored green to imitate cipollino marble. Heavy red curtains are suspended within the arches, and a few statues are placed there. We take our illustration from the London *News*.

Hardy Catalpa Trees.

A correspondent inquires what we know about "the hardy catalpa." There is but one species of catalpa that we know of. Some have believed they have a variety that blooms a little earlier than the other, and this may be; it is also said that one variety grows straighter than the other. We can only say there are trees in Pennsylvania, four and five feet round, that have endured winters when the thermometer indicated 20 below zero, and are as straight as gun barrels. We do not know in what respects the "hardy" and "straight" catalpa is hardier or straighter than these, and should be glad to know.

There is one point worth noting. In some situations the catalpa, in common with the pawlownia, chestnut, and other trees, dies back the first year, and often the second; or if not dying right down, loses its terminal bud, and this makes the stem a little crooked. If we were growing catalpa for timber we should let it grow as it will for two or three years, and then cut clean to the ground, a clear straight sprout, ten, fifteen, or even twenty feet high, being the result; and it goes on without dying back after. We have seen catalpa that made a sprout fifteen feet high and ten inches round, in one season, when cut back in this way.—*Gardener's Monthly.*



PARIS EXHIBITION.—THE ITALIAN FACADE, CHAMP DE MARS.