Science and Art.

The Grape Vine Disease.

The following new and important facts concerning the nature of that great pest of the vine grower, *oidium*, and its operations upon the vine plants, form the substance of a paper lately presented to the Academy of Sciences at Paris, by M. de la Vergne. "The *oidium* does not spread to any alarming extent, except when the temperature is, day and night, above 68° Fah., as is the case in the neighborhood of Bordeaux, from the end of May to that of September. Whenever the temperature is lowered considerably, the growth of the *oidium*, is stopped, to acquire fresh vigor as soon as the sun adds warmth to the humidity with which the parasite is saturated. The same vine plant is not equally subject to the attacks of the *oidium*, hence the operation of sulphuring need not extend to every point attacked. The action of the sulphur is circumscribed, and almost strictly local. Its curative properties have no effect below the temperature of 68°, hence the warmth necessary to its action is precisely that which favors the growth of the *oidium*. As wind and rain carry off the sulphur, this substance can only protect the vine during a limited period. Sulphur destroys the shoots of *oidium* of recent formation and thus prevents it from spreading; and as no vineyard is attacked by the *oidium* at once throughout its whole extent, the vines which first betray the presence of the enemy, should point out the proper time of sulphuring. Too much sulphur should not be applied as the particles of flower of sulphur, contain minute portions of sulphuric acid, which, when accumulated to excess will burn the plant and often injure it irretrievably. Whenever a white or farinaceous spot appears on the leaves or stems of plants, situated near buildings or ditches, or trees casting a shade over them, in a temperature exceeding 68° by night as well as by day, it is certain that all the vines are attacked, although the eye cannot discover a trace of the fungus elsewhere, and then every plant of the vineyard should be sulphured."

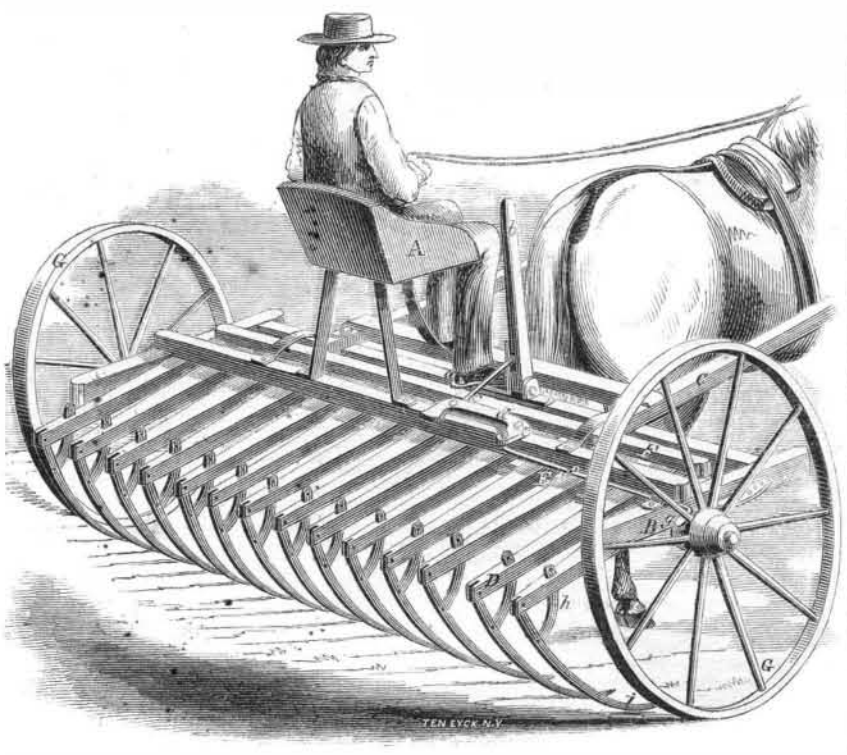
In connection with the above, *Galignani's Messenger* translates a few practical remarks just published by the committee of the *Academia dei Georfili*, of Florence, appointed to enquire into the results obtained from sulphur during the years 1856 and 1857. The committee state that the wines were made excellent; the slightly sulphurous taste they sometimes had, disappeared in a short time. The washing of the grapes immediately after the tying of the vines, with from five to seven pounds of glue dissolved in 100 pounds of water, and with the addition of a little flour or clay, had produced excellent effects. Laying the vines down, so as to bring the grapes as near as possible to the ground, had also been found advantageous. Lastly, the report mentions a curious fact, that the grafting of the American wines upon those of Tuscany produces a great increase in the quantity of grapes, and that vines so grafted are little liable, if at all, to be invaded by the *oidium*. This system, however, is attended with two serious drawbacks—the vine grower loses the produce of two years, and the wine obtained, though extremely abundant, is inferior in quality.

Improved Horse Rake.

The great objection to the majority of horse rakes is, that they roll and "rope" the material they gather, leaving it in a condition too compact for properly curing, and making it laborious to "fork up" afterwards. The subject of our engraving avoids all these objections, and leaves its gatherings perfectly light, with the butts turned up to the sun, and this without any more labor from the attendant than to drive the horse and sit in the seat.

The arms, D, to which the rake teeth, *i*, are attached, are connected to the axle, E, of the machine, and they are free to move upon it, yielding to any unevenness of ground, and kept to their work by their own gravity. The teeth, *i*, are held in position by the quadrants, *h*, which are secured to D by wooden pins, these being the only things that can break in case of contact with obstructions, such as roots, &c., the whole being mounted upon wheels, G, with shafts, C, for a horse, and a seat, A, for the driver. At one end of the axle is a clutch, *g*, secured by a key or feather, and free to slide. This clutch is made to mash into a corresponding one upon the wheel. To this clutch is attached a forked

SQUIRE'S SELF-DISCHARGING HORSE RAKE.



lever linked by a rod to a cranked lever, *d*, upon the frame, which is connected to a handle, *b*, or foot-piece, *a*, by a rod, *c*, brought to the side of the driver's seat. Upon the axle, a short distance from each end, are two arms, made fast thereon, so as to move or revolve with the axle. At the opposite ends of these arms is connected a bar, F, extending across the whole width of the rake, and made to come in contact with the same, when it is desired to elevate the rake. There is also a short arm firmly secured to the axle, intermediate between the arms supporting the elevating bar, and extending out in an opposite direction.

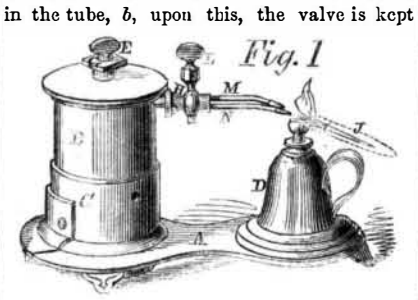
Its operation is as follows:—The driver being mounted in his seat, seeing his rake full, has only to pull the handle towards him. This will throw the clutch in connection with the one upon the wheel; this revolves the axle, presses the elevating bar upon the rake arms, thus elevating the rakes, and at the same time traveling away from its load. When the rake is sufficiently elevated, the short arm is brought in contact with the opposite end of the cranked lever, which throws back the clutch, and allows the rake to fall back to its work by its own gravity.

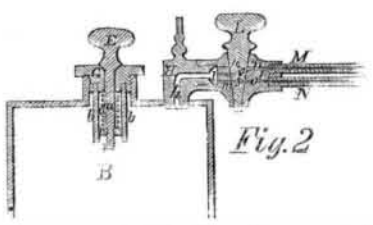
Its efficiency and superiority has been fully demonstrated and tested during the past season. It is the invention of J. J. Squire, of Prairie Lawn, Bunker Hill, Ill., and was patented December 23, 1856. Further information can be obtained by addressing the inventor as above.

Hollely's Blowpipe.

This most useful aid to the chemist, metallurgist, and every one who works in metals, has received some improvements lately, which especially fit it for those who prefer the self-acting one to that which is supplied with air from the mouth. This is illustrated in our engravings, of which Fig. 1 is a perspective view, and Fig. 2 a vertical section of part of the invention

A is a stand of cast iron, having a circular support, C, rising from it; inside this is a small lamp, which heats the receptacle, B, that contains alcohol, and is provided with a safety valve, E. D is the lamp, the flame of which is to be directed on to the object to be fused or melted. The blowpipe may be attached to B, as seen in either Figs. 1 or 2, and to the tube, H, is secured a stop cock, L, from which project two tubes, M N, one broad, producing the broad flame, J, and one narrow, producing the fine flame, I. The lamp in C heats the alcohol in B, the vapor of which, being forced through the pipes and nozzles, M N, on to the flame of the lamp, D, becoming ignited forms a blast or blowpipe flame of great heating power. To prevent the bursting of the vessel, B, from the pressure of the alcohol vapor within, the safety valve, E, is added, passing through the nut, G, the top of which forms a valve seat. From E extends a rod, *a*, to the bottom of which is screwed a plate, *c*, and by the pressure of the spring, *d*, in the tube, *b*, upon this, the valve is kept





close to its seat; but when the pressure becomes greater than the power of the spring, the valve is elevated, and the vapor escapes. The pressure can be regulated by the compression of the spring, but it is so arranged that it cannot be compressed beyond a certain point.

The vapor flows through the passage, *h*, in H, to the space, *l*, next the cock, where it can flow by means of three holes, *m*, through two holes, *v s*, into both tubes, *n o*, of the nozzle tubes, M N, as seen in Fig. 2, so as to produce a very broad blast, or through the passages, *p* or *s*, so as to produce either a very fine or moderately broad flame. All this is regulated by turning L into the desired position.

This is a very simple, cheap and safe spirit blowpipe, and we should think will be extensively patronized by dentists and others, who are in the habit of using such apparatus.

It is the invention of Joseph Hollely, of No. 25 Furman st., Brooklyn, L. I., and he will be happy to furnish any further information. It was patented March 16, 1858.

A Telegraphic Problem.

Whoever originated the following deserves to have his name handed down to posterity: If a dispatch from England to America gains on the sun so as to reach here 4½ hours by the clock before it left England, at what time would it arrive at the point of departure, were a cable carried entirely around the world? Would it not arrive the day before it left, less only the time exhausted in making the circuit? If so, then, with a continuous telegraph line around the world, why not send a dispatch around and around until it reached back to Adam, and let him know what his children are about these latter days?

Hick's Gas Burner.

In our notice of this invention last week we did not do its merits full justice. We said that the gain over the common burner was nearly one-third, whereas from the subjoined letter it will be seen that it is a great deal more:—

NEW YORK, 1858.

I have examined with great care a new form of gas burner, invented and patented by L. E. Hicks, of this city. My experiments prove that with a pressure similar to that at which gas is generally delivered to customers in large cities, its economy over the burners in ordinary use in the consumption of gas for equal illuminating powers is in the ratio of 232 to 100. W. H. ELLET, Chemist.

Laboratory of the Manhattan Gas Light Co.