

My attention was drawn some months ago, to two articles by C. B. Cerletti, published the 15th and 30th of August, in the *Rivista di viticoltura ed Enologia Italiana*, announcing the success of hydrate, or slacked lime. My friends, M. J. Lichtenstein and P. Viala, of Montpellier, the latter having charge of the *Laboratoire de viticulture* at the *Ecole Nationale d'Agriculture de Montpellier*, soon thereafter communicated to me the discoveries made. M. Velicogna, in a report in the *Actes et Memoirs de la Societe imperiale et royale d'Agriculture de Gortiz*, for September and October, 1885, has also discussed the effect of hydrate of lime at length, his formula being $2\frac{1}{2}$ kilogrammes of the lime (chaux éteinte) in 100 litres of water.

The general tone of the experience with this hydrate of lime is satisfactory, but a mixture of hydrate of lime and sulphate of copper is still more conclusive, and numerous communications to viticultural journals and to the French Academy, attest the complete efficacy of the remedy. It has been the custom in some of the wine-growing parts of France to sprinkle lime and verdigris upon those vines which border on the roadside, as a means of warding off depredators. It was found that vines so spattered were not infested by *Peronospora*, while the rest of the vineyard might be attacked. This discovery led to further experiments.

Various formulæ have been given, but the most important articles are those by M. A. Perrey, in the *Comptes Rendus de l'Ac. d. Sc.*, Oct. 5, 1885, and by M. A. Millardet in the same publication, and reproduced in the *Messenger Agricole du Midi* for Nov. 10, 1885. From this latter article I condense the following: Dissolve eight kilogrammes (18 pounds) of ordinary sulphate of copper, in 100 litres (about 22 gallons) of any kind of water (well, rain, or river), in a separate vessel. Mix 30 litres (about 6½ gallons) of water, and 15 kilogrammes (about 34 pounds) of coarse lime, so as to make a milk of lime. Then mix with this the solution of sulphate of copper. These will form a bluish paste. Pour a portion of the mixture in a bucket or other vessel, thoroughly shaking it, and brushing the leaves with a small broom, taking care not to touch the grapes. There is no fear of any accident, not even to the most tender portion of the vines.

The treatment was made from the 10th to the 20th of July. At some points the operation was repeated a second time at the end of August, but without much advantage. It was, therefore, demonstrated that one application was sufficient.

The mixture, when dry, sticks very fast to the leaves. After the vines were treated there were several showers the beginning and end of August, also the frequent September rains, notwithstanding which, the evidence of the efficacy of the treatment, where no more than half the leaves were touched by the mixture, could easily be detected. That this remedy will prove effectual for the many other similar white mildews on other plants, caused by other *Peronospora*, there can be little doubt.

The same fear of danger as to the effect of this fungicide on the vine and on the wine, has been experienced in Europe as we experienced in this country in the early use of Paris green as an insecticide, and experience alone will settle the amount of danger there may be in the use of this new remedy.

BIBLIOGRAPHY.

I know of no one who has more fully recognized the practical bearings on the best method of dealing with these two fungi than Mr. Wm. Saunders. In the report of the Commissioner of Agriculture for the year 1861, p. 495, ff., he has an article: "Remarks on Grape Culture with reference to Mildew, both on the native and foreign varieties," and in a number of subsequent reports, as those of 1864, '65, '66, '67, '69, '81-2, and '83, he has dealt either at length or incidentally on the essential facts that the *Uncinula* is encouraged by a dry atmosphere, and the *Peronospora* by a moist atmosphere. His experience shows that the nature of the soil or mode of cultivation has but little influence on the fungus, and that protection from above, as by covered trellis, is about the best prevention of the *Peronospora*; also that grape-vines with downy foliage are more susceptible to the *Peronospora* than those with smooth foliage. His experience is very well summed up in a statement of it furnished for publication in my 5th report on the Insects of Missouri, p. 70 (foot note).

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