

nozzle of small aperture, so as to render the spray as fine as possible. The suggestion of the carbolic acid was due to the results obtained by Professor Gustav Foëx, Director of the École Nationale d'Agriculture at that place.

It was very gratifying to find this recommendation at once acted upon, and, up to the time when I left Montpellier, with satisfactory results. Reports of further trials showed also that this mixture so sprayed at once arrests the spread of the mildew. I was well aware of the difficulty of dealing satisfactorily with a fungus which may, in a single night, without any warning, manifest itself all over a vineyard; but it is a great point gained to know how to check it, even if the knowledge may at times be of little practical avail in large vineyards. But much good nevertheless resulted, and "*le procédé Riley*" was much written about in *La Vigne Americaine* and other viticultural journals a year ago. However, the experience of the past year in France has furnished a remedy which, from all accounts, is in every way satisfactory, because it not only destroys direct, but acts as a prophylactic.

My attention was drawn some months ago to two articles by C. B. Cerletti, published the 15th and 30th August in the *Revista di viticoltura ed Enologia Italiana*, announcing the success of hydrate or slaked lime. My friends, M. J. Lichtenstein and P. Viala, of Montpellier, the latter having charge of the Laboratoire de Viticulture at the École Nationale d'Agriculture de Montpellier, soon thereafter communicated to me the discoveries made. M. Velicogna, in a report in the *Actes et Memoires de la Societé Imperiale et Royale de Agriculture de Gortiz*, for September and October, 1885, has also discussed the effect of hydrate of lime at length, his formula being 2½ 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.*, 5th October, 1885, and by M. A. Millardet in the same publication, and reproduced in the *Messenger Agricole du Midi* for the 10th November, 1885. From this latter article I condense the following: Dissolve eight kilogrammes (18lb.) 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 34lb.) of coarse lime so as to make a milk of lime. Then mix with this the solution of sulphate of copper which will form a bluish paste.

#### WINE-MAKING.

We have been urged to embody in this manual a chapter upon this subject; and, notwithstanding the assurance that, within the limited scope of this catalogue, we think it impossible to furnish anything that would be valuable, either as a guide to the inexperienced or as a *vade mecum* to the wine-maker, we have been called upon again and again by many of our customers for some concise information which might aid the intelligent farmer and the amateur grape-grower to transform their surplus fruit into that health-giving beverage "wine." The books on wine-making to which we have referred were either not accessible or too costly, and contained so much that was unnecessary, to say the least, that we finally concluded to write this brief treatise, which, however, should be regarded as a collection of mere hints, being only intended to give the inexperienced a correct idea of the general principles of wine-making, and to contain some plain directions that may guard against false theories and wrong practice.

Those who intend to make wine, as a business, on a large scale, and who desire full information on all its branches, cannot expect to find it in this brief manual. Moreover, wine-making is an art which, however simple, cannot be acquired from books only, but must be learned practically; and we can only repeat our advice, given in the former editions of this catalogue, viz., to engage some experienced "wine-cooper" who knows how to make and treat wines, who has learned and has been accustomed to attend to wines from his youth, and who will watch over and nurse them with the care and cheerfulness of a mother to her infant, until you or your son may have practically learned from him. Such a man you may have to pay well, and you may think you cannot afford it; but to learn from sad experience, unless on a very small scale, would prove by far more costly and unprofitable.

Thus, without presuming to present anything new in this chapter, we hope that the grape-growers of this country may find therein as much information of practical value on so vast a subject as could be condensed in so limited a space.\*

#### I. WINE, ITS NATURE AND SUBSTANCES, ITS FORMATION AND CLASSIFICATION.

Wine is the properly fermented juice of the grape; its unfermented juice is called must. The product of vinous fermentation of other saccharine juices of plants and fruits is also often called wine, but none contain the life-giving, restorative qualities, the exquisite taste, the delicate bouquet, that harmonious combination of substances that we enjoy in the properly fermented juice of the grape. At all events, we, as grape-growers, have to deal with the product of grape-juice only, and it is of this alone that we intend to speak.

\* There are but few books on wine-making written in the English language. Haraszthy's "Grape Culture and Wine-making" was published (by Harper and Brothers, New York, 1862) more than twenty years ago. Among the many scientific German works on this subject, the new "Handbuch des Weinbaues und der Kellerwirthschaft, von Frhr. A. v. Babo, &c., Berlin, 1883," is probably the best and most complete.