sulphate (1 lb. copper sulphate in 20 gals. water) before the buds start. The careful and thorough application of Bordeaux mixture, as directed in the conclusions of this Bulletin, will be followed by but very slight if any attacks upon the grape, by the four parasitic plants discussed.

Conclusions.

From a study of the nature and habits of the fungi discussed in this Bulletin, we make the following conclusions:

1. Destroy as far as possible all affected material such as diseased leaves, canes and berries.

2. Before the buds start spray with a solution of copper sulphate (1 lb. in 25 gals. water).

3. After growth starts spray once at least before the vines bloom, using Bordeaux mixture (see below); if twice, make the first application as soon as the leaves appear and the second just before blooming.

4. After bloom, as soon as the fruit sets, make three applications at intervals of 12 to 15 days, with the Bordeaux mixture.

The coloring of the berries by this mixture may be overcome by using in the last application an ammoniacal solution of copper carbonate (see below); or it may be removed by dipping the fruit in a solution of vinegar (2 quarts vinegar in 10 gallons water) and then rinsing it in clean water.

5. The best fungicides to prevent the diseases of the grape are (*a*) copper sulphate, 1 lb. in 25 gals. water, for early treatment; (*b*) Bordeaux mixture, 6 lb. of copper sulphate, 4 lb. fresh lime, 45 gals. of water. In making this we grind the copper sulphate and dissolve it in a few gals. of water, slake the lime with about 6 gals. of water; after cooling strain it through some coarse sacking into the barrel that contains the copper sulphate solution and stir it well, adding the rest of the water necessary to make up the mixture; (*c*) eau celeste, 2 lb. copper sulphate, 2½ lb. washing soda, 2 pints ammonia and 25 gals. of water. Dissolve the copper sulphate in 2 gals. of water, the 2½ lb. washing soda in another vessel of water, mix these and when chemical action has ceased add 2 pints of ammonia; (*d*) ammoniacal solution copper carbonate; 3 oz. copper carbonate, 2 pints ammonia, 25 gals. water. Dissolve the 3 oz. of copper carbonate in 2 pints of ammonia, and when about to use dilute with 25 gals. water. Of these the Bordeaux mixture is likely to rank first.

6. These mixtures can be applied with great efficiency by using a Knapsack sprayer with Vermorel nozzle or a barrel pump, drawn upon a stone-boat between the rows.