

PHYLLOXERA-RESISTANT VINE-STOCKS.

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IN view of the spread of phylloxera in the vinehouses of the Auckland Province grape-growers should ensure against this pest by grafting their vines on resistant stocks wherever a vine is being replaced or new vines being planted. The choice of a suitable stock for the conditions available can only be definitely resolved by experiment, as we have no records of their exact behaviour when growing in artificial borders and under glass. We have, however, to help us reports from different parts of the world of experiments extending over some forty years, and made under different climatic and soil conditions, and on numerous phylloxera-resistant vine-stocks and their hybrids. We have also some local outdoor experience.

European vines belong to one species, the *Vitis vinifera*, and will grow in most soils. The American vines from which the resistant stocks have been selected belong to several species differing from the European vines and among themselves, and each species, having adapted itself to special conditions, gives different results when planted under similar conditions of soil and climate. The gradual selection which has taken place with the object of discovering the variety which will give the best results in a given soil, and in its affinity for the variety of *Vinifera* to be grafted on it, has resulted in the choice of a few stocks of real value for the purpose. A good selection of these is grown at the Department's Arataki Horticultural Station, Havelock North, Hawke's Bay.

Judging from what we know of the *Riparia* species, whose natural habitat is on river-bed formations, with its tendency to send out horizontal roots having an inclination to rise to the surface, and thus adapting it more especially to surface feeding—a desirable condition in a vine border—it should be the most useful for growing in rich well-kept borders. These same qualities also indicate it as a suitable stock for growing on sandy soils and river-bed formations where the water-table is near the surface (but not in swampy or badly drained soils, which are quite unsuitable for grapes), and where the varieties with deeply penetrating roots like the *Rupestris* would lose their fibrous roots from decay, and thus be deprived of their means of obtaining water.

There are two *Riparias* now in general use, the *Riparia Gloire de Montpellier* and the *Riparia Grand Glabre*, both very good, the preference being generally given to the former. They root easily and take grafts well. The grafts are very vigorous, very fructiferous, and mature early. The *Riparias* do not succeed well in poor soils. The difference in size between the stock and scion under such conditions becomes very accentuated, the stock becoming more slender than the vine it supports. On account of the majority of the roots being near the surface and only a few shooting down perpendicularly to the water-table, it is essential that the borders containing *Riparia* stocks should be well mulched to preserve the moisture.

Among other stocks, the *Solonis Robusta* is a less vigorous grower and preferable for varieties of the *Vinifera* which do not set their