

times the canes have few leaves left. It soon begins to deposit its minute orange eggs in clusters on the underside of the foliage, and from these there hatch out small dark-brown grubs which eat holes through the leaves and sometimes completely devour them. About the end of June they are full grown, and enter the earth to transform to the pupal stage; two or three weeks later the new brood of beetles appears and feeds upon the foliage of the vine, which by this time is so luxuriant that it is not injured by the attack. Late in autumn the beetles betake themselves to their winter hiding-places.

The chief thing to do in dealing with this insect is to watch for it in the spring, and as soon as any are to be seen to spray or syringe with Paris green to which lime has been added. Another method is to jar the beetles from the vines into a pan of water with some coal-oil floating on the surface, or on a sheet soaked with the oil; this should be done when they are somewhat torpid in the early morning. During the warmer hours of the day they are too lively to be caught in this manner. Later on in the season, should the grubs be seen on the foliage the spraying should be repeated. In the autumn all fallen leaves and rubbish about the vines should be cleaned up and burnt so as to leave no convenient winter quarters for the beetle. As this insect is equally prevalent on the Virginia-creeper, the same treatment should be applied to it if there are any of these favorite plants near by.

THE ROSE-CHAFER (*Macrodactylus subspinosus*), Fig. 52. Later in the season, when the blossoms appear on the vines, another beetle, but of a different family, makes an attack upon them. It is commonly called the Rose-beetle or Rose-chaffer, from its habit of devouring the bloom of roses, but it is even a worse enemy of the grape, as it destroys the blossoms and with them all hope of fruit. Fortunately it is somewhat local, and is not everywhere a pest. During 1906 it appeared in great numbers in various places from the outskirts of Toronto, which seems to be its eastern limit at present, to the County of Essex; it has been abundant for some years in the neighborhood of London, but does not appear to extend much farther north.

The larva lives upon the roots of grasses in old pastures where the soil is sandy; it has not been found in clay land. The eggs are laid by the female an inch or two below the surface of the ground, and the young larvæ gradually grow to maturity during the summer and spend the winter in that condition, hibernating in a cell that they make somewhat deep down in the earth. In spring they work their way to the surface, transform to pupæ and emerge as beetles in June. This destructive stage lasts from three to four weeks. They appear suddenly in great swarms, completely covering the bloom that they attack, crawling and sprawling over each other and looking anything but attractive. Flowers of almost any kind are devoured by them, and they also carry their work of destruction to the partially formed apples. After being in profusion for about a month they disappear as suddenly as they came.