

gether by a transverse board. After 12 hours of immersion, draw off  $3\frac{1}{2}$  gallons of water, by means of a faucet placed at the bottom of the barrel, and pour into this hogshead which we will call No 1,  $3\frac{1}{2}$  gallons of pure water; the first juice taken from it pour into No 2 hogshead, having previously placed in it another 100 lbs of crushed apples. After another 12 hours of immersion, draw off the juice from the two hogsheads; the juice of No 2 is put into No 3, another 100 lbs of apples having been previously added, then the juice of No 1 is put into No 2 and  $3\frac{1}{2}$  gallons more of pure water is poured into No 1 which is the last. At the end of 12 hours the same work is repeated, the juice of No 3 is collected and the juice of the other two is added successively. After they have passed No 3, the crushed apples are thrown away. There should now be about 12 gallons of apple-juice, and when this is fermented it makes a very good family cider.

This juice should be placed in a barrel, left open at the bung-hole. Before long, a bubbling sound will be heard, produced by the liberation of carbonic acid. This working lasts usually three or four weeks. The cider should be kept in a temperature of not less than  $46^{\circ}$ , and no sudden variations of temperature should be allowed in the fermenting-room.

Care must be taken that the cask be kept constantly filled up, so as to allow the foreign matter, brought to the surface by the fermentation, to run off. The addition of sugar to the juice increases the alcohol, when, at the same time, tannin and tartaric acid are added. For the quantity of juice above mentioned, sugar 1 lb 12 ounces, 2 grammes tannin, and  $\frac{1}{2}$  ounce of tartaric acid should be added for each degree of alcohol desired.

When fermentation ceases cork up tightly, and to be sure that no accident happens, it is well to bore a gimlet hole at the side of the bung, in which place a straw for a few days, and finally make air-tight with a wooden plug.

#### **Diseases of the apple**

*Strangling of the trunk.*—To remedy this, make three or four longitudinal incisions in the trunk, penetrating into the inner bark or alburnum.

*Canker.*—Canker is a point on the road to disorganisation in the midst of a living tissue. It is said to be open when the central portion, in full disorganisation, is surrounded by a round swelling of healthy tissue, and it is said to be close when the lips of the swelling are greatly developed and

have a tendency to come together. Apples planted in moist soils are often affected with this disease, and it also develops when the circulation of the sap is suddenly checked by cutting off branches when it is in full activity, in April and May.

To avoid canker, we must

1st. Not make rents or scratches, but only clean cuts.

2nd. Not plant apple trees in too moist places.

To cure canker: with a very sharp knife, cut away the damaged tissue, so as to remove the germs of decay, then cut the clean wounds with sorrel, when the wound is dry cover it with grafting wax.

*Rust.*—The stems and branches, which present cavities resulting from destruction of the tissues, are said to be rusted. To stop the ravages of the disease and preserve the infected parts, the coming of the corrupting germs and the elements necessary for their development must be arrested. For this purpose, the walls of the cavity must be sheltered from the air and moisture by filling them with mortar and excluding the air by covering the opening with grafting wax.

*Mosses and lichens.*—Scrape the old bark with a scraper to take off the mosses and lichens and cover the cleansed parts with milk of lime.

*Caterpillars.*—In March, while the trees are still leafless, take off all the rings of caterpillar's eggs round the branches. Destroy their nests as fast as they appear, and crush the caterpillars, smear a portion of the stem with linseed or olive oil, to prevent their ascent.

*Green grub or plant louse.*—These feed on the green matter contained in the leaves and the soft extremities of the young shoots: coal-oil emulsion will kill them:

Dissolve  $\frac{1}{2}$  lb strong soap in one gallon of boiling water; when the soap is thoroughly dissolved pour in 2 gallons of coal oil, stir or churn and thoroughly mix until the emulsion has a creaming appearance: then add nine times its volume of water, that is to say, 27 gallons. Apply with a sprayer when the trees are young, and later, by means of a watering barrel mounted on wheels.

Be careful that the emulsion is properly made; one drop of pure coal oil will immediately burn the part of the tree on which it falls.

*Woolly grub.*—This insect is reddish brown covered with white down, and does great injury to the apple-tree. The waxy down with which it is covered protects it from most insecticides.