HOME COURSE IN SCIENTIFIC AGRICULTURE

SIXTH ARTICLE — HOME FRUIT GARDEN.

By L. C. CORBETT, Horticulturist, Bureau of Plant Industry, Department of Agriculture.

THE possibilities in fruit culture upon restricted areas have been very generally overlooked, with the result that many persons who own a city lot, a suburban home or even a farm now look upon fruit as a luxury. This can all be changed, and much of the land which is now practically waste and entirely unremunerative can be made to produce fruits in sufficient quantity to give them a regular place upon the family bill of fare and at the same time add greatly to the attractiveness of the table and healthfulness of the diet.

In order to prove a source of constant pleasure and gratification a fruit plantation must claim the attention of its owner from early spring to late autumn. Its products, too, must be so planned as to cover the greatest possible portion of the seasons between frosts. For a commercial place on an extensive scale it would be out of the question to attempt to alter the character of the soil to suit the needs of the plant, but with a small area the case is quite different. If the soil is heavy it can be lightened with sand if it is not desirable to increase the proportion of humus which it contains. If it is lacking in organic matter the addition of leaf mold and well rotted manure or the turning under of some leguminous crop, such as cowpeas or

Photo by New Hampshire agricultural station.

WELL PRUNED AND WELL CULTIVATED ORCHARD.

Canada field peas, will accomplish the desired result. If the soil is loose and sandy, losing its store of plant food readily, this fault can be remedied by the addition of retentive material, such as clay. The amount of clay to be added must be governed by the degree of stiffness desired in the soil. If, on the other hand, the class of plants to be generally grown is suited to a loose, sandy soil and it seems desirable to add to the collection a plant, such as plum, which naturally requires a heavy, retentive soil, it would undoubtedly be better to change the character of the plant by grafting it upon a stock adapted to sandy soil conditions than to attempt to modify the soil to suit the plant.

Such modifications in plants are not always easily accomplished, and with many plants there is no alternate but to use them on their own roots. In this latter case the soil itself must be made to conform to the demands of the plants. The soil, in addition to being heavy and retentive, may also be cold and wet.

If the soil be unduly moist the only safe and satisfactory remedy lies in thorough underdrainage. This can be accomplished in two ways. Drains may be dug and a stone conduit built to allow the superfluous water to escape, or, what is better, agricultural tile may be laid in the bottom of the trench. If the soil is very stiff and retentive the tiles should not be laid over two and a half or three feet deep and about one rod apart. If the soil is porous the drains may be placed farther apart and buried deeper.

At planting time all broken or decayed roots should be cut away, leaving only smooth cut surfaces and healthy wood to come in contact with the soil. If a large part of the root area of the plant has been lost in transplanting the top should be cut back in proportion to the roots remaining.

The holes in which trees, vines or shrubs are to be set should be ample so that the roots of the plant may have full spread without bending them out of their natural course. The earth at the bottom of the holes should be loosened a spade depth below the line of excavation. The soil placed immediately in contact with the roots of the newly set plant should be rich top soil, free from sod or partially decayed organic matter. Firm the soil over the roots by trampling, as this brings the soil particles together and at the same time in close contact with the surface of the roots. A movement of soil water is thus set up and the food supply of the soil brought immediately to the use of the plant. When the operation of transplanting is complete the plant should stand one or two inches deeper than it stood in the nursery.

In the case of the apple and the pear the fruits are borne upon "spurs" of the previous year's growth only, these spurs appearing on wood one year or more of age. Heading in or shortening each shoot of the season's growth, therefore, must be done with care in order not to reduce the bearing wood beyond a profitable limit. The bearing shoots are usually obscurely located upon the sides of the branches.

With the peach, however, it is the wood of the last season's growth upon which the fruits are directly borne, and with them heading in may be successfully employed to limit the quantity of fruit borne by the tree. Japanese plums bear on both year-old wood and spurs. Pruning may therefore be used to thin the fruit, the same as in the case of the peach.

The grape bears its fruit on shoots of the season, which in turn usually arise from canes of the previous year's growth. Old wood on the grape is therefore of little value; hence the development of so many systems of training which maintain only a single permanent trunk, from the top of which the bearing canes are renewed each year.

By planting the vines closely and carrying up single trunks to a fixed height and from the top of the stalk carrying out horizontal arms along which "spurs" are maintained a short growth from each spur will be sufficient to give a uniform and sufficiently dense canopy of leaves for the arbor.

Raspberries and blackberries both bear their fruits on short shoots which arise from canes of the previous season's growth.

In the case of the currant and gooseberry the fruits are produced on both old and new wood. The fruits appear as axillary growths from the shoot itself, and wood three years or more of age is unprofitable and should be cut away.

Strawberries are rarely produced in profitable quantities by plants more than one year old. Plants over two years of age should be rooted out to give room for new ones.

The interest of a fruit garden may be greatly enhanced by growing there in plants not adapted naturally to the climatic region in which the garden is located. The most hardy sort should be selected, in addition to which the fruiting shoots may be wrapped in matting, covered with straw, and the fruits thus successfully protected, or, if it seems desirable, temporary sheds may be built over the plants and these thatched with straw or fodder sufficiently to protect them from frost. Then, again, semi-hardy sorts may be tipped over by cutting the roots on one side, bending the branches close to the soil, pinning them down and then covering the whole plant with matting and earth or a straw thatch and earth.

The fact that trees can be grown as dwarfs as well as standards will enable one to utilize a space which had previously been considered unsuited for the development of a tree. In proportion to size dwarf trees are more fruitful than standards, and they come into bearing sooner.

Dwarfing is accomplished by budding or grafting robust growers on slow growing stocks, and most tree fruits lend themselves to this treatment. Besides this method of modification, there are other methods quite as important to the owners of small areas. Standards may be grown as "bushes" or as "pyramids," thus making it possible to grow them much closer together. Pruning and training used in combination have shown the possibilities of restricting plants to the "espalier," "cordon" and other styles of training employed in growing fruits against walls. These methods not only allow plants to be grown more closely than is common in orchard practice, but they allow the grower to take advantage of locations and conditions under which trees could not develop normally.

Besides the advantage of dwarfing, grafting may be turned to good account to enable the owner of few trees to increase his sorts beyond the limits of the trees he possesses. There are single trees known which bear as many as 150 varieties of apples.

In addition to the advantages to be gained from restricting the growth of plants by training and dwarfing, some of the methods of training offer adaptations which allow of combining plants of various habits of growth to the advantage of the grower and with little or no disadvantage to the plants. To illustrate this, currants may be combined with grapes, apples with currants or raspberries, grapes and strawberries.

The advantages of these methods become apparent at once when the object is the most economical utilization of a limited land area.

Besides the special adaptations afforded by dwarfed trees and by special combinations of low growing and high growing plants, certain well known systems of pruning and training allow additional liberties to the skillful planter. The vine may be utilized as a cover for walks and drives or as a canopy over small outbuildings. A cozy summer veranda may be covered by grapevines, thus securing the double advantage of a cool, shady nook during summer and a supply of fruit in autumn.

Where there is more land at one's disposal there may be both a fruit garden and a vegetable garden.

For specific recommendations as to varieties of fruits adapted to the various fruit sections of the United States see farmers' bulletin No. 208, "Varieties of Fruits Recommended For Planting."

ROTARY BORING DRILL.

Removable Hard Steel Cones Grind Rapidly Through Rock.

For sinking oil and artesian wells through hard rock a new rotary drill bit, the invention of a Texas oil producer, is coming into very general use, says Popular Mechanics. Instead of scraping its passage through rock, as did the old one piece bits, this new instrument crushes its way downward at a rate many times that of the old bits.

The illustration suggests at once how the bit accomplishes its work. When rock is encountered the dirt bit is replaced by the rock bit, which screws on to the pipe by means of the large collar. The pipe revolves with its total weight resting on the rollers. These are thus made to turn by friction, and their hard steel teeth powder the rock beneath rapidly. The flow of water downward through the pipe and up on the outside washes away the powdered rock as fast as it is produced. A small pipe inside of the collar contains lubricating oil and a metal float which forces the oil through canals to the cones. The hardest alloy steel is used in manufacturing the bit. The cones are easily removed and replaced with new ones when they have become worn.

ROTARY BIT WITH EXTRA CONES.

VALUABLE PILING TIMBER.

British Guiana Greenheart Used In Panama Canal Locks.

The secretary of the institute of mines and forests of British Guiana in a book of information which is issued as an official document writes as follows:

There are three varieties of greenheart—yellow, black and maintop—all most serviceable and durable woods if cut at maturity. Greenheart is one of the tallest forest trees of British Guiana, and logs can be had from eighteen to twenty-four inches square and seventy feet long. It grows in clay soil near the rivers and creeks. Owing to the great demand for this timber and the absence of legal restriction to prevent the cutting of the young trees it is becoming extremely difficult to produce good greenheart, and its preservation is worthy of the attention of the legislature.

Greenheart is already familiar to the trade, being highly esteemed for all classes of submerged work—piles, dock gates, etc. It is one of the eight first class woods of Lloyd's, and admirable keelsons, knee and other timbers can be had of it. Sawed into scantling it is used for planking vessels. For wharfs, house framing, mill timbers and many other purposes greenheart is unsurpassed by any other wood in the colony.

The Panama consulting engineers after a comparison of the world's woods have adopted British Guiana greenheart for the Panama canal locks, regarding it as superior to Australian ironback wood in its resistance to the teredo.

Though the excellence of greenheart has never been so prominently brought before the notice of the world, its durability and suitability for lock gates are widely known. Most of the lock gates constructed in the Mersey during the last twenty years have been made with it, as have those at the Manchester ship canal, and when the necessity occurred for enlarging some of the canal lock gates fully thirty years after they were placed in position it was found that the wood was in such an excellent state of preservation that it could be used over again.

Ship With Three Skins.

The launching of the Iron Duke at Portsmouth, England, recently, marks a new era in British naval construction. The vessel is the twenty-eighth British Dreadnought to take the water. Her displacement is 26,400 tons, and her main battery consists of ten 13.5 inch guns firing shells of 1,400 pounds, or 150 pounds more than the projectiles fired by former weapons of this caliber.

The chief feature, however, of the new Dreadnought is the improvement that she demonstrates in her protection against submarine attack. Over the whole length of the "vitals" (from the first turret to the last) the hull of the ship consists of three separate skins, so that even if the two outer ones should be pierced by rocks or torpedoes the stability of the vessel would not be impaired.

Producing Tungsten Wire.

Ductile metallic tungsten is now produced in the electric furnace. Tungsten particles have been hitherto welded into a continuous filament by passing an electric current through a binding material containing the metallic particles and driven off by the high heat. By this new method the metallic tungsten can be drawn into fine wire much stronger and more rugged than the sintered filaments.