HOME COURSE IN SCIENTIFIC AGRICULTURE

FIFTH ARTICLE — HOME VEGETABLE GARDEN.

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BY means of the home garden the production of the vegetable supply for the family is directly under control and in many cases is the only way whereby clean, fresh produce may be secured.

The work of caring for a garden is usually done at spare times, and for this reason alone the location should be near the dwelling. Many persons prefer to plant the garden in a different location every five or six years. A gentle slope toward the south or southeast is most desirable for the production of early crops. It is an advantage to have protection on the north and northwest.

A FINE HEAD OF CAULIFLOWER.

Good natural drainage of the garden area is of prime importance. The land should have sufficient fall to drain off surplus water during heavy rains, but the fall should not be so great that the soil will be washed. The surface of the garden should not contain depressions. Waste water from surrounding land should not flow toward the garden, and the fall below should be such that there will be no danger of flood water backing up. The garden should not be located along the banks of a stream that will be liable to overflow during the growing season.

A good fence around the garden plot is almost indispensable.

Where the work is to be done mainly by means of horse tools the arrangement should be such as to give the longest possible rows, and straight outlines should be followed. For hand cultivation the arrangement can be quite different. Horse cultivation is recommended whenever possible.

The second matter for consideration is the location of permanent crops and small fruits. The area devoted to the hotbed, cold frame and seed bed should be decided upon, but these may be shifted more or less from year to year or located in some convenient place outside of the garden. If a part of the land is low and moist, such crops as celery, onions and late cucumbers should be placed there. If part of the soil is high, warm and dry, that is the proper location for early crops and those that need quick, warm soil. The land may be occupied at all times.

There are very few soils that are not improved by some form of drainage.

Autumn is the time for plowing hard or stiff clay soils, especially if in a part of the country where freezing takes place. Sandy loams and soils that contain a large amount of humus may be plowed in the spring, but the work should be done early in order that the soil may settle before planting. In the southern states this process must be accomplished by means of frequent cultivations. It is desirable to plow the garden early.

Sandy soils will bear plowing much earlier than heavy clay soils. In the garden greater depth of plowing should be practiced than for ordinary farm crops. Subsoiling will be found advantageous in most cases. Hand spading should be resorted to only in very small gardens or where it is desirable to prepare a small area very thoroughly.

After plowing the next important step is to smooth and pulverize the soil. The pulverizing process should extend as deep as the plowing. Some gardeners prefer to cut the land thoroughly with a disk harrow before plowing, so that when it is turned by the plow the bottom soil will be fine and mellow. After the plow the disk or cutting harrow is again brought into play and the pulverizing process completed. If the soil is a trifle too dry and contains lumps it may be necessary to use a roller or clod crusher.

For garden crops there is no fertilizer that will compare with good, well rotted barnyard manure. Chicken, pigeon and sheep manures rank high as fertilizers. The manure from fowls is especially adapted for dropping in the hills or rows of plants. Market gardeners frequently apply 2,500 pounds of high grade fertilizer per acre each year.

Many of the garden seeds lose their vitality after one year's time.

Throughout the northern states it is desirable to start plants of certain crops before the danger of frost has passed. The simplest method of starting a limited number of early plants is by means of a shallow box placed in a south window of the dwelling. After the plants appear the box should be turned each day to prevent the plants drawing toward the light.

The most common method of starting early plants in the north is by means of a hotbed. In the north the hotbed should be started in February or early in March. It is desirable to have a supply of straw or loose manure on hand to throw over the bed in case of extremely cold weather.

During bright days the hotbed will heat very quickly from the sunshine on the glass, and it will be necessary to ventilate during the early morning by slightly raising the sash on the opposite side from the wind. Care should be taken in ventilating to protect the plants from a draft of cold air. Toward evening close the sash.

Hotbeds should be watered on bright days and in the morning only. After watering, the bed should be well ventilated.

In the north the use of the cold frame is for hardening off plants that have been started in the hotbed, preparatory to setting them in the garden. In the south the cold frame is made to take the place of the hotbed in starting early plants.

Good soil for a seed bed, a specially prepared place for starting plants, consists of one part of well rotted manure, two parts of good garden loam or rotted sods and one part of sharp, fine sand. The manure should be thoroughly rotted, but it should not have been exposed to the weather and the strength leached out of it. The addition of leaf mold or peat will tend to make the soil better adapted for seed bed purposes. Mix all the ingredients together in a heap, stirring well with a shovel, after which the soil should be sifted and placed in boxes or in the bed ready for sowing the seed.

Weed seeds and the spores of fungous diseases may be killed by placing the soil in pans and baking it for an hour in a hot oven.

No definite rule can be given for the depth to which seeds should be planted. In all cases the depth should be uniform. The seed bed should be neither dry nor too wet.

Plants grown in a house, hotbed or cold frame will require to be hardened off before planting in the garden. Hardening off is usually accomplished by ventilating freely and by reducing the amount of water applied to the plant bed. The plant bed should not become too dry.

Some plants require protection from the direct rays of the sun in summer or from cold in winter, and there are many that need special protection while they are quite small. Seedlings of many of the garden crops are unable to force their way through the crust formed on the soil after heavy rains, and it is necessary either to break the crust with a steel rake or soften it by watering.

For protecting plants from cold in winter several kinds of materials are used, such as boards, cloth, pine boughs, straw, manure or leaves. There are a number of crops of a tropical nature that may be grown far north, provided they are properly protected during the winter.

Several of the annual crops can be matured much earlier in the spring if they are planted in the autumn and protected during the winter. A mulch of manure, straw or leaves forms a good protection, but care should be taken that the mulch does not contain seeds.

Frequent shallow cultivation should be employed for most garden crops, and during dry weather the depth should not exceed two inches. By keeping the surface soil well stirred what is termed a "dust mulch" is formed, and, while this layer of finely divided soil will become quite dry, it prevents the escape of moisture through the pores of the soil. A mulch consisting of fine manure, clippings from the lawn or any similar material, spread to a distance of ten or twelve inches around the plants, will preserve the moisture, but the mulch should not be so heavy as to exclude the air.

A crust forming over the soil after a rain or watering is detrimental to plant growth and should be broken up as soon as the land can be worked. To determine when the soil is sufficiently dry for cultivation apply the usual test of squeezing in the hand. If the soil adheres in a ball it is too wet.

CROSS SECTION OF PERMANENT HOTBED WITH ENLARGED PIT.

There are a number of one horse cultivators that are especially adapted for work in the garden. The hand tools should include a spade, a spading fork, a cut steel rake, a ten foot measuring pole, a line for laying off rows, a standard hoe, a narrow hoe, dibbles, a trowel, an assortment of hand weeders, a watering can, a wheelbarrow, and if the work is to be done largely by hand the outfit should also include some form of wheel hoe.

In the control of insects and diseases that infest garden crops it is often possible to accomplish a great amount of good by careful sanitary management. In the autumn any refuse that remains should be gathered and placed in the compost heap or burned if diseased or infested with insects. Several of the garden insects find protection during the winter under boards and any loose material that may remain in the garden. Dead vines or leaves of plants are frequently covered with disease spores and should be burned.

A SANITARY FOUNTAIN.

Equipped With Bubbling Cups That Can Be Lifted to the Lips.

The one great disadvantage of the ordinary bubbling cup sanitary fountain lies in the fact that the drinkers, whether they be men, women or children, tall, short, fat or thin, must place their lips to the cup instead of placing the cup to the lips.

In an endeavor to remedy this disadvantage one sanitary drinking fountain manufacturer has designed a bubbler which may be raised to the height

SANITARY DRINKING FOUNTAIN.

of the lips, so that the user may stand in a perfectly easy and natural position while drinking. This is made possible by a hose and cup arrangement, the hose consisting of a double tube. The inner tube is the feed pipe for the bubbler, and the outer tube acts as a waste pipe, carrying away the surplus water while the person is drinking. The flow of water through the inner tube is continuous, no matter what the position of the cup, but when the cup is lowered into its position in the fountain basin the water flows over it and discharges into the basin instead of being carried away by the outer tube.

Detecting Thunderstorms.

With instruments installed at the Lyons observatory M. Flajolet has noted atmospheric electrical disturbances when these were at a considerable distance, and in some cases storms were observed when they were as much as 300 miles off. He used a modified wireless telegraphy outfit and found that an electrolytic detector was not good for this kind of work, as it needs to be left constantly on the circuit and hence gets out of order. A mineral detector made with sulphide of lead and fine copper points answered very well, however, and it is as sensitive as the other type. A relay could be used to take the storm signals, but when the atmospheric effect was far off the current was much weaker and had to be received by a sensitive galvanometer with photographic registering. In this way he could observe the effects of storms at great distances which would take at least twenty-four hours to arrive.

Concerning Lightning Rods.

Experts now consider that there is more danger from lightning to anything standing alone than to any building in a city. The theory is that the many points offered by the city buildings tend to conduct a silent discharge constantly from the atmosphere. Thus the potential differences and the static force never become as great over a city as they do in the open where there is no opportunity for such continuous discharge. The force of the lightning depends upon the potential difference. It seems, therefore, that lightning rods would be of much more benefit in the country than in a city. Again, when the enormous force and volume of a lightning discharge is considered, it is doubtful if a small rod could have the capacity to convey so much current, although it might help some.—Cleveland Plain Dealer.

A Railway Up Mount Popocatepetl.

It is planned to run an electric railway up to the volcanic crater of the famous Mount Popocatepetl, Mexico, for the primary purpose of transporting the sulphur, of which this crater is one of the world's greatest sources, to the base of the mountain. Incidentally the railway will also be used to carry tourists. Between the altitudes of 7,000 and 15,500 feet it will be operated as an ordinary traction road, but above this the accilivity is too great to be so mounted, and the remainder of the distance to the summit, which is 17,794 feet above sea level, will be by cog road.

Decarbonization of Motor Cylinders.

A new method of decarbonization of gasoline engine cylinders, imported from England and giving promise of considerable success in the eradication of carbon deposit troubles, consists of injecting oxygen into the cylinders by means of a special apparatus. The cylinders are first warmed by running the engine a few minutes, and then, on the application of a flame, the oxygen combines with the carbon until the whole is burnt away. No dismantling of the engine is necessary in this method of decarbonization, which means a saving of time and trouble.

How to Drive Nails to Avoid Splitting.

When it is necessary to drive nails in places where there is danger of splitting and a drill of the proper size is not at hand for starting a hole, simply file or grind the point of the nail to a chisel edge instead of the regular four sided point, and drive the nail with the sharp edge thus made cutting across or at right angles to the grain of the wood.