

and writers Thomas Brooks of Brantford said that a tree was a living thing and cannot roam about for food, but was tied to the spot. "Take your cow," said he, "into the field, and give her only twenty feet of rope. She will soon have eaten up all the feed within the forty feet of her reach and have nothing but the ground to stand on, and if you do not supply her wants, the pail will soon show the reason. Now, I believe this to be the condition of too many of the apple trees; they have little more than the ground to hold them up." Much diversity of opinion was expressed by different members as to the kind of soil which gave the best crops. A strong clay loam was generally regarded as better than sand; but it appeared that natural drainage was essential. Mr. Brooks said that if the orchard was on hard clay or cold subsoil, deep and thorough tile draining with a perfect outlet was essential (1). He had seen ruinous results from overmuch pruning. In answer to the question: "Would you take a crop from the soil?" C. C. Caston said: "I would not, unless sufficient fertilising material was put in, so that what is taken away would not rob the tree. If you have not sufficient fertilising material, do not crop at all, but simply summer-fallow and feed the tree. No better use could be made of the ground at forty feet when the trees come to maturity." On the subject of thinning, Prof. Craig said that the thinned gave a larger number of bushels, and he left it to fruit growers to say which would bring the most money.

On the subject of soils, Mr. Pattison said that in his experience, clay soil, and especially high red clay, was peculiarly well adapted to growing the following kinds of fruit, namely—grapes, pears, plums, apples, quinces, red and black currants. As applied to grapes, he claimed the following advantages on clay soil. First, earliness. On high red clay, most varieties will ripen from ten days to three weeks earlier than on sand in the same locality. This advantage is of great importance from a pecuniary point of view, frequently from this cause alone doubling the profits from the vineyard. He said grapes grown upon sand were insipid, watery, flavorless productions. He was informed by a neighbor, who attended the Hamilton market, that the buyers there eagerly sought for grapes grown upon a clay soil. In deciding questions of this kind and determining the value of different soils, there are several controlling causes to be borne in mind, such as one that is wet or thoroughly drained; deeply cultivated or with only shallow depth; while a strong soil will retain fertilisers, those consisting chiefly of sand would have them soon washed away.

The subject of timber screens for shielding crops from strong winds appears to have engaged special attention. Mr. Good of Brantford said that in his own and other exposed orchards there was hardly a perfect apple, while in the shaded orchards they were nearly all first-class, and sold for \$1.60 a barrel, which he ascribed wholly to the wind-break. Mr. Allen said wind-breaks were planted too close, and the trees should be placed thirty or forty feet apart, so as to allow a part of the wind to blow through and merely break the force; plant in a double row, which would make them practically twenty feet apart. Mr. Good spoke of an orch-

(1) A long experience enables us to say that the drains would soon be stopped up by the roots.—Ed.

and so closely screened that one could carry a lighted match on the lee side, and none of the fruit was affected with scab. Mr. Fraser took and opposite view and said his orchard was screened with trees twelve feet apart and thirty feet high, and his fruit was far more scabby than that on the trees of a neighbor who had no screen. Many other members gave an account of their experiments with wind-breaks, most of which were favorable, but others were decidedly opposed to their use, and when closely planted and in localities where they were not needed, they appear to have done more harm than good.

Much valuable information is given in the report relative to other fruits, and the association is one of much usefulness and success. There are over two thousand members, distributed over the whole province. A. H. PETTIT, Grimsby, is president, and L. Woolverton, secretary-treasurer, of the same place, who claims that the membership is larger than that of any other association of its kind in the world. *Ex.*

#### ONION-RAISING—FAILURE AND SUCCESS.

Three years ago I raised a crop of cabbage on a piece of land but two years cleared of wild pasture growth and some hundreds of tons of rocks, mostly large boulders. The soil was naturally strong, and under good treatment it yielded an excellent crop of cabbage. Now, onions have the reputation of doing poorly when preceded by such potash-loving crops as cabbage and mangels, but I never found serious difficulty when planted after such crops, provided, in addition to very liberal manuring, I added an extra quantity of potash. It having been my plan to follow the cabbage with onions, soon after the cabbage crop was off I applied a hundred bushels of unleached ashes to the acre. I purchased these ashes from the same party whose former carload had analysed as high as 10 per cent potash. Though I could hardly expect to receive another carload as good as my first one, yet, as the party selling them to me stated that they were collected in the same region as the first lot, I assumed that they might be relied on to analyze as high as 7 or 8 per cent.

In the spring, I had plowed in eight cords of stable manure to the acre, to which had been added fish waste, the napes and bones of boned fish. This latter was composted with the manure, and much of the nitrogen it contained and a portion of the phosphoric acid doubtless became plant food in the course of the growing season. The fish waste was applied at the rate of about a ton to the acre. The stable manure was city made, and was deficient in both potash and nitrogen. I relied on the ashes to supply the deficiency of the former and the fish that of the latter. At planting time about 1,000 lb. per acre of a standard onion fertiliser was raked in. With such liberal treatment, though the land was new to onions, I anticipated a good crop. With the exception of being over-crowded with purslane at one period of growth, the crop had an average chance. The final result was a crop of onions averaging hardly half the normal size for market onions. What was the cause? Buying another carload of ashes from the same party the next year, I had it analysed. Instead of giving the seven or eight per cent, I had assumed to be present in the ashes I had applied to the

onion-bed, it yielded less than five per cent.

Last spring, after having applied about two cords more of the manure per acre than the previous season, using about the same quantity of fish, but in a form richer in nitrogen, and adding potash somewhat liberally, with the same kind and amount of quantity of fertiliser applied at planting time I obtained an exceptionally fine crop of onions. While about all in the vicinity blighted badly and were under sized, this lot showed no sign of blight, were exceptionally large, and ripened down evenly and early with scarcely a scallion to the acre. Now, why did I fail the first season and succeed so well in the second? It is true that the quantity of potash in the ashes applied was probably not as high as I had assumed it to be, yet at 4.75 per cent, this would give over 200 lb. to the acre, as the ashes weighed about 45 lb. to the bushel, and 200 lb. of potash would be considered more than even a large crop would need. I am therefore led to conclude that the cause for the failure the first season was either that the potash in the ashes had not become all soluble, or that the onions were unable to find all that the soil contained. The practical inference I draw is, that when onions follow cabbage, a very liberal application of available potash is necessary to make success possible; otherwise a failure is likely to occur, even when all other plant food is most liberally applied. In neither season did the crop suffer from drouth.

Marblehead Mass.

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(Cultivator.)

#### WHEN TO SPRAY

EDS. COUNTRY GENTLEMAN.—At what time should apple, pear and quince trees be sprayed—the apple trees for canker-worm, codling-moth and apple scab, the pear and quince trees for leaf-blight and scab? Farmers' Bulletin No 7. U. S. Department of Agriculture, says spray first when flowers are opening, I supposed spraying at that time would injure the fruit. As I have about ninety acres of orchard, I wish to economize the labor and expense of spraying, and put Paris green in the Bordeaux mixture so as to affect both scab and insects. Can you advise me what to do, or tell me where I can find authorities on the matter?

Brockport, N. Y.

Spray with Paris green for the canker-worm when the leaves of the apple tree are pushing from their buds, and again before the blossoms appear.

For the codling moth, spray after the blossoms have fallen and the fruit has set, and again a week or ten days later. If rain falls and washes away the arsenite, repeat the spraying.

As a preventive of apple-scab, spray with a solution of copper sulphate—one pound to 25 gallons of water, before growth starts, or with Paris green—one pound to 200 gallons of water, stirring in enough lime to give it a milky appearance. Prof. Goff's experiments appear to indicate that the Paris green is a valuable fungicide, and a better preventive of the scab than the copper sulphate. Or spray with the ammoniacal solution of copper carbonate, as recommended in Farmers' Bulletin, No 7, p. 14.

For pear-tree leaf-blight, spray with the ammoniacal solution of copper carbonate as the leaves begin to open,

and repeat two or three times at intervals of two weeks. Or spray with the Bordeaux mixture while in blossom and repeat in 10 or 12 days, and for the third and fourth times at two and four weeks intervals, as directed in Farmers' Bulletin No. 7, page 15.

For quince-tree leaf blight, employ the same treatment as for that of the pear. The recommendation in the bulletin cited of spraying when the blossoms are opening, is limited to the copper solution and to the Bordeaux mixture. It is not recommended to use the arsenites upon fruit trees while in blossom, lest it might blight the blossoms and poison visiting honey bees (see Bulletin cited, page 9).

It has been found economical in labor and expense to combine an insecticide with a fungicide in spraying, and satisfactory results have been obtained. The following for a combined mixture is recommended: 2 oz. Paris green and 2 oz. copper carbonate dissolved in 3 pints of ammonia, half a pound of lime added to 32 gallons of water, and the whole thoroughly mixed.

J. A. L.

#### ASPARAGUS FOR THE FARMER.

EDS. COUNTRY GENTLEMAN.—For years my parents, when I was a little boy, wished they had an "asparagus bed." For years they went along without it. I supposed it was an intricate and scientific job to start a bed and care for it, so never made the attempt. As I became a young man, I read many articles on asparagus culture, but it seemed to me that there was too much work about it. My neighbors had no asparagus, and they said it was necessary to dig a big hole in the ground, three or four feet deep, and fill it with old boots, shoes, tin pans, bones, corsets and bottles. They said this was necessary to make the "sparrowgrass" grow.

As I had never seen the above "home-made" mixture in any complete list of fertilisers, and knew not the chemical analysis thereof, I doubted its fitness for any civilized soil on this mundane sphere. So, instead of following the advice given by my neighbor—who, by the way, was down on "book farmin'"—I decided to follow the simplest directions given in the very best and most "scientific" farm journals. Two years ago I started a new garden, and arranged for a row (not a bed) of asparagus. I found it difficult to get good roots, without sending away, and decided to sow the seed. As my garden is in the form of a rectangle, I sowed the seed in a row in a rich place, where it could be easily worked both sides, either by a wheel hoe or horse cultivator. By use of the garden line I made a perfectly straight row (as all garden rows should be made), and sowed the seeds about two inches apart in the drill. No manure was used on the surface, as the soil was a rich loam, and manured the year previous.

It was some time before the plants appeared above the surface, and I feared the seed was not good. I took pains now to let my home-made fertilizer neighbor know nothing of what I was at. I wanted to surprise him. The soil in the rows was cultivated and raked several times before the fine, thread-like plants could be seen. Just as soon as the row of plants could be followed, the wheel-hoe was used. It was given the same culture as the other garden vegetables. After the plants had reached the height of four inches or more, we thinned out one-