

be carefully sorted and packed; but this is especially true in years of large crops and low prices, since at such times it is sent to many parts of Great Britain not usually reached. In this way new markets are opened, and if the fruit is satisfactory these customers will buy again the following year, even though the price is considerably advanced. Mr. Starr summed up the points to be worked for as follows: Good fruit, honest packing, quick transit, good ventilation, careful handling.

The need of irrigation, even in the comparatively moist climate of Nova Scotia, was shown by the experience of Mr. Henry Shaw, of Waterville. He has been irrigating for the past two seasons, using a twelve-foot windmill and raising the water twenty-four feet. The pump is capable of raising one hundred and fifty barrels per hour. The cost of the whole did not exceed over one hundred and fifty dollars. The water is distributed in ditches to the parts of the orchard where wanted. The trees are principally plums and apples. In the summer of 1906 Mr. Shaw applied water freely to most parts of his orchard; some parts, however, received but little water, and other parts none at all. He raised that year a full crop of fruit, but the same was true of his neighbors who did not irrigate. However, the benefits of irrigating were shown the following year, when all those trees which had received a liberal amount of water gave another full crop. The trees which had received but little water gave, perhaps, a half crop, while those which had not received any water gave practically no fruit at all; and, furthermore, there is a marked difference in the prospects for the next year; the trees on the dry land, after resting the past season, give promise of a fair crop, but the trees on irrigated land, though they have borne two full crops in succession, are far in the lead in the indications for the coming season. Mr. Shaw's land is sandy, so that no doubt he has secured better results than might have been the case on clay soil, but his experience is certainly of interest in its bearing on the vexed problem of how to secure continuous crops in successive years.

Cranberry culture was fully discussed, and the showing for the past year is certainly excellent. The following figures were given as to the profits from a bog of two acres: Yield, 174 bbls.; gross receipts, \$1,135; net profit, \$720, or \$360 per acre. Not a bad showing. The owner of this bog urged the necessity of mixing varieties in planting. He has four different sorts in the bog mentioned. Cross-fertilization, resulting in a larger setting of fruit, is the object aimed at.

Officers were elected for the ensuing year as follows: President, J. W. Bigelow, Wolfville; Vice-President, Peter Innes; Secretary, S. O. Parker, Berwick; Treasurer, Geo. W. Munro, Wolfville.

Grafting.

BY M. BURRELL, LINCOLN CO., ONT.

Although many plants are propagated by means of seeds or cuttings, grafting and budding are the two processes by which nearly all our fruit trees are now propagated. A thorough knowledge of these processes is, of course, necessary to every nurseryman, and a practical familiarity with the subject would often be extremely helpful to every horticulturist, amateur or professional.

Grafting is of very ancient origin, the Greeks and Romans having both practiced it in various forms, and some readers may recall Pliny's description of a tree grafted with olives, almonds, apples, pears, plums, figs and grapes. Like a good many other things in Pliny, we must take this with the proverbial grain of salt. As a matter of fact, there must be some affinity between scion and stock. Varieties of the same species take most successfully, such as apple with apple, and so on. Different species, such as apple and pear, may succeed, though not so well; and different genera, such as cherry and plum, are still less likely to prove a success.

As to the age of the stock, there is hardly a limit. As a rule, the younger the stock the better the result; but in 1891 I put about 100 grafts in a pear tree at least seventy years old, and though union did not take place in all cases, I have since taken a good many bushels of fine "Bartlett's" and "Beurré Boscs" from that same old "choke-pear" tree.

Grafting is practiced for a great many reasons, amongst them the following: To induce a dwarf habit of the plant—for which purpose the pear is grafted on the quince; to overcome climatic conditions that are unfavorable, by grafting tender fruits on a hardy and vigorous stock; for the purpose of obtaining a great many varieties of fruit from a very few trees; to hasten the bearing of certain fruits; and lastly—a very important reason for many an unfortunate fruit-grower—to replace poor fruits which have turned out untrue to name after years of growth, by top grafting with desirable kinds.

It is impossible to touch on the many methods of grafting; something like fifty different ones have been practiced. The essentials to success are much the same in all methods. The theory of grafting is based on the power of union between

the young tissues, and for that union to take place it is necessary that the cambium layers should as nearly as possible meet in scion and stock. The cambium layer is that part of the tree lying between the bark and the inner wood. During the earlier part of the season it is a soft, gummy substance, which readily unites wounded surfaces. Later it becomes firmer, the outer part of it forming bark and the inner wood. Root grafting, which is practiced largely by nurserymen on young stocks in the cellars during the winter, need not be discussed here. Top grafting, which is usually performed by cleft grafting, is of immense use to the practical orchardist, and some general suggestions may be thrown out on this subject. The time for top grafting is in the spring as soon as the sap is in motion. The work may be commenced directly the buds of the tree begin to swell, and continue till the leaves are half-grown. These later graftings are not so likely to be satisfactory, and it must be carefully borne in mind that the buds of the scion should be in as nearly a dormant condition as possible. As to the time of cutting the scions, it does not matter very much whether they are cut in the fall, in the winter, or just before they are wanted in the spring. In very cold latitudes it might possibly be better to cut in the fall and place in a dry, cool cellar, under a light covering of sand. If cut in the spring, they must be cut before the buds have begun to swell, as it is all the better if the stock is a little further advanced than the scion. Let the scions be cut to about four buds each, and always take them from good, healthy, vigorous shoots of last year's growth. A fine, sharp saw, a chisel or strong knife and small mallet are all the necessary tools. The branch should be carefully sawn off, and a smooth, clean surface left. If the stub is small, it may be split with a heavy-bladed knife; for bigger branches the chisel will answer the purpose. The chisel itself or a small wedge can be used to hold the cleft open till the scions are inserted. Two scions are usually inserted where the stub is any size. The lower ends of the scions are cut wedge shape, the wedge being about an inch and a half long, and the outer edge of the wedge a little thicker than the inner. Fit the inner bark of the scion carefully to the inner bark of the stock, withdraw the chisel, and carefully cover all the exposed surface and wounded parts with grafting wax. The two specially important points are: First, to see that the scion fits tightly down its whole length; and second, to be sure that every cut or exposed surface is completely covered with wax. A good wax is: Resin, 4 parts by weight; beeswax, 2 parts; tallow, 1 part; or, resin, 6 lb.; beeswax, 1 lb.; linseed oil, 1 pint. Apply the latter hot with a brush about a quarter of an inch thick or a little less over all the joints. In top grafting large trees, the shaping of the future top must be carefully considered. The old top must be removed gradually, three or four years elapsing before the new grafts entirely take its place. As a rule, it is better to graft on the smaller branches from an inch to two inches in diameter. The scions will usually do better in branches of this size, and the wounds are more likely to heal. Put the scions in at even distances throughout the tree, and graft some of the lower and smaller side branches. In this way a well-balanced, shapely top can be secured.

Meetings of British Columbia Fruit Growers.

During the third week of January three Provincial organizations have held consecutive meetings in the City of New Westminster, viz., the British Columbia Fruit Exchange, the Fruit Growers' and Horticultural Association, and the Dairymen's Association. Representative men from all parts of the Province were in attendance, although the number present was not so large as anticipated.

The British Columbia Fruit Exchange is a co-operative organization for the marketing of home-grown fruits, most of its business being in distant markets, although attention is also given to the local demand. Large shipments were made during the past year to the Northwest Territories, Manitoba and the Kootenays. Its directors met on the 19th inst., and so far as possible wound up the business of the season. This was followed on the 20th inst. by the annual meeting of the Exchange for the election of officers and transaction of general business. The statements of the Secretary showed that the operations of the Exchange were largely in excess of previous seasons, the value of fruit handled amounting to over \$75,000.00. Returns for plums averaged lower than usual, owing largely to the shipping of soft varieties, which did not carry well, and in some measure to overripeness of the fruit and poor packing. Shipments of apples turned out well. The demand was good and satisfactory prices realized, averaging \$1 per box for choice fruit. The returns for small fruits were also considered satisfactory, but pears were in small demand and prices low for anything but first-class fruit.

Although great improvement has been made since the formation of the Exchange in methods of picking, grading and packing fruit, also in the style of the packages used, the year's experience has once more demonstrated the absolute necessity for greater attention to these matters by our fruit-growers to ensure legitimate profits to the producer and satisfaction to the purchaser. On the whole, good progress has been made, markets have been extended and others opened up in the Northwest and Kootenay. The available supply of first-class fruit is far short of the demand, and it was shown that the business of the Exchange is capable of almost indefinite expansion under judicious management.

Mr. E. Hutcherson was appointed manager for 1908, and Mr. T. R. Pearson, secretary.

The Fruit Growers' and Horticultural Society convened

on the 20th inst., and held three sessions, which proved more than usually interesting and valuable.

The address of the president, Mr. T. G. Earl, of Lytton (a noted fruit-grower), was a lengthy one. Special reference was made to the recent developments of the vast mineral wealth of the Province and in the Yukon, with the consequent extended markets for home-grown fruits and farm produce, pointing out the opportunities existing for creating veritable Klondykes in our fields and orchards. The formation of Farmers' Institutes in the Province was referred to, and the hope expressed that they would be a success and work in harmony with existing kindred associations.

The Spokane fruit fair of 1897, at which the Association made an exhibit of fruit which took a number of prizes, was mentioned, and the suggestion made that, having obtained all possible honors there, in the future exhibits of B. C. fruit should be made in the Northwest Territories and Manitoba, where our surplus fruit must find a market.

The idea of holding a grand Provincial exhibition at New Westminster in 1898 was strongly commended; also the action of the Board of Horticulture in preventing the importation of diseased and pest-infested fruit and nursery stock. Fruit-growers were advised to buy their nursery stock from home growers, thus getting clean trees and keeping money in the Province. He expressed his pleasure at seeing present so many talented men to take part in the meeting, and concluded by paying a deserved tribute to the work of the secretary, and urging the fruit-growers of the Province to stand by their Exchange, and so ensure profitable prices for their products in the future.

The report of the Secretary-Treasurer showed the finances of the Association to be in a healthy condition, with a surplus on hand of \$431.49.

Mr. Baker, of Victoria, then gave a practical address on fruit packing and packages, showing samples of boxes and methods of packing. This was followed by a paper presented by Mr. H. E. Dosch, Horticultural Commissioner for Oregon, on Horticultural Problems, giving the results of his experience and observation. This paper caused a great deal of discussion of a practical nature, and furnished valuable information.

Mr. A. McD. Allan, of Goderich, Ontario, was endorsed as a candidate for the position of Canadian Fruit Commissioner to the Paris Exposition in 1900.

Papers on Bird and Plant Life, by Tom Wilson, and on Fertilizers for Gardens and Orchards, by Mr. T. F. Patterson, B. S. A., also gave great satisfaction and created lively discussions; that on birds being well maintained, and showing great diversity of opinion as to their value or destructiveness. The majority of fruit-men were opposed to the importation of song birds as proposed by the Natural History Society of B. C., and it was stated that bluejays and crows had been especially destructive in orchards, also waxwings to cherry blossoms.

Mr. R. M. Palmer addressed the meeting on San Jose scale, urging that any suspected instance of its presence should be promptly reported, when measures would at once be taken to destroy infested trees. He also urged the destruction or top grafting of inferior plums, and the better care of plum trees as one means of preventing plum rot (*monilia furcigera*), which had caused considerable loss in some districts. Resolutions were passed pledging the Association to support the proposed grand Provincial Exhibition at New Westminster, and asking the local agricultural associations to assist in the matter.

It was decided to hold the next annual meeting of this Association at Victoria.

Officers of the British Columbia Fruit Growers' Association for 1898: President, Mr. G. H. Hadwen, Duncan's; 1st Vice-President, Mr. W. J. Moggridge, Surrey; 2nd Vice-President, Mr. Donald Graham, M. P. F., Spallumcheen; Secretary-Treasurer, Mr. T. R. Pearson, New Westminster. Directors—T. A. Sharpe, Agassiz; H. Kipp and A. C. Wells, Chilliwack; A. P. Thompson, Dewdney; T. McNeely and E. Hutcherson, Ladner; T. G. Earl, Lytton; Thos. Kidd, M. P. P., and Jas. Mellis, Lulu Island; L. Fortune, Enderby; G. W. Henry and P. Lazenby, Hatzic; W. Fortune and R. Currie, Kamloops; A. Campbell, D. Stevens, F. L. Sere, A. Ohlson, M. Baker, R. M. Palmer, J. R. Anderson, W. C. Grant, C. E. Renouf, D. R. Ker, Victoria; G. H. Hadwen, A. Robertson, H. O. Wolburn, Duncan's; A. Evans, Chilliwack; M. J. Henry, J. M. Browning, T. Cunningham, Vancouver; C. Pt. Stewart, Lulu Island; A. W. Smith, M. P. P., Lillooet; J. Brethour, W. Thompson, Saanich; A. J. Palmer, C. B. Harris, Salmon Arm; D. Graham, M. P. P., Spallumcheen; Price Ellison, Vernon; W. H. Norris, Midway; J. L. Pridham, T. W. Sterling, Kelowna; N. Butchart, Port Moody; J. W. White, Hector Ferguson, Port Haney; W. J. Moggridge, Hazelmere; T. R. Pearson, Geo. Mead, W. J. Armstrong, T. Lewis, J. R. Kennedy, M. P. P., Peter Latham, New Westminster; S. M. Robbins, Nanaimo; Henry Ruckle, Salt Spring Island.

Hens Without Males.

Eggs are only affected favorably by the absence of cocks. A fertilized egg is a living thing, requiring only warmth to start a process of change in it by which its use for culinary purposes is injuriously affected. Moreover, the hens really lay more eggs when free from the attentions of the cock. I tested this some years ago when in New Jersey, near the City of New York, and selling fresh (dated) eggs to private purchasers, and found I had more eggs and better ones, which kept in good condition in the summer, than from the mated breeding flock. A few days' exposure to July heat will spoil a fertilized egg, while a sterile one is not injured in the least by some weeks' keeping.—H. Stewart, in *The Cultivator*.

H. L. LOTT, Glenasmith, Man.—"I do not want to be without the *Advocate*, for I have had it since it started."

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