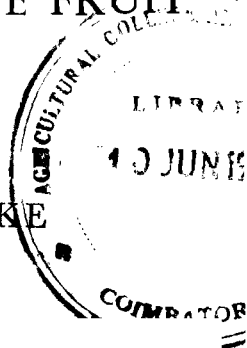


PEACHES, APRICOTS
AND OTHER STONE FRUIT

by
JUSTIN BROOKE



FABER AND FABER LIMITED

24 Russell Square

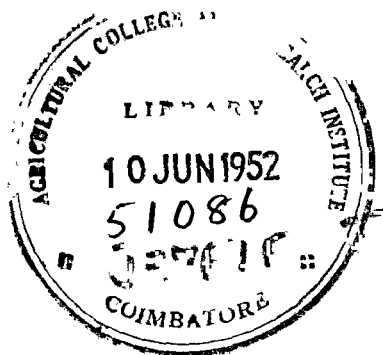
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PEACHES, APRICOTS
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Young Early Alexander peach in bloom

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FOREWORD

This volume contains the information given in my previous book *Peach Orchards in England*, revised and brought up to date. Three more years of cropping experience have added to the knowledge of peach growing without contradicting any of the views given in the earlier volume.

As I mentioned in that book, as soon as I saw my experiments with peaches were likely to be successful, I began to experiment with nectarines, and a little later with apricots. The nectarine is after all only a kind of peach, and the apricot is closely allied. I now take the matter further and give directions for growing these two fruits in bush form.

Further, the pruning technique developed for peaches was so successful that I considered it worth while to use the same method of pruning on all other stone fruits. In this volume I give the results of these experiments and develop from them simple rules for pruning all stone fruit.

Hitherto little, if any, work has been done on this. Pruning of stone fruit has been haphazard and unscientific. I believe with the methods laid down here it will be possible to increase the average yield per tree of all stone fruits in this country. This seems a large claim to make. I suggest that both the private gardener and the commercial grower should try to see whether my contention is right.

I hope the reader who takes up this book will begin it with a healthy scepticism—that is always the right attitude to adopt when reading books on fruit-growing. In all matters connected with the land, it is only too easy to jump to conclusions, to generalize from one or two particular cases, and to assume that what is true in such cases must necessarily be true in all circumstances. If the prospective grower finds himself unable to disbelieve what he reads in this book, then he may go forward with confidence.

Foreword

But if there is any doubt in his mind he must pause. However careful I am, there must be foolish and irrelevant points in these pages which should be rejected by all right-thinking fruit-growers. There are, I trust, some good points too. These should be adopted and will, I hope, compensate the reader for the time he spends on reading yet another book on fruit-growing.

FRUIT GROWING ON A SPECIALIST FARM

I will begin with a short account of the Clopton Hall undertaking so that the reader can understand the conditions under which we work.

I started here in 1928 with some three hundred acres of worn-out, poverty-stricken land, in the middle of the worst agricultural depression this country has ever known. One-half of the land was well known locally as being the 'worst old land in Wickhambrook'; how much that means can only be appreciated by those who are acquainted with the heavy boulder clay of this district. Many of the fields were derelict and all wanted draining.

Right from the start we were essentially a specialist farm with all that that implies. We specialized in fruit, dairy farming and pig breeding—a nursery was soon added. We took up mechanized corn-growing at the outbreak of war and gave up dairy farming a little later.

As to fruit: we planted ten acres in 1928 and from then on added some fifty acres a year of new planting, buying extra land as occasion offered. In the early 1930's we started a nursery to produce the fruit trees we required and to supply other growers with reliable stock. The fact that we employ skilled nurserymen gives us valuable information with regard to the growing of fruit trees; and our nurserymen have been able to see the trees from our nursery fruiting in our orchards. This has led of course to improvements both in nursery methods and in orchard technique; and to a growing co-operation between the nurseryman and the fruit-grower. The reader may realize the advantage of this co-operation when he reads this book.

Fruit-Growing on a Specialist Farm

The war stopped us from planting any more fruit and we now have arrears to make up. We are planting as fast as we can and have hitherto managed some sixty acres a year.

As to the farming—at the time of Munich we had only ten acres under plough and the rest was grass and rough grazing. The national emergency caused us to plough up all this grass and develop mechanized corn-growing with a combine and a grain-drying plant.

Although we gave up dairy farming altogether during the war we still maintained our herd of pigs, of course on a reduced scale. We had some 2,000 pigs at the outbreak of war, at one time reduced to a little over 300, owing to lack of food. On 4th June 1950 it was 734. We now have only 9½ acres of permanent grass—all the rest of the land is either under plough or fruit; so that we now find ourselves a specialist farm growing fruit, corn, and pigs, with a nursery of commercial fruit stocks of every description.

The herd of pigs lost money steadily throughout the war, but we had the advantage of their manure as some compensation. We have also had the satisfaction of making our contribution to the meat supply of this country.

We have learned that mechanized corn-growing and fruit-growing work together very well. It is all a question of the full employment of both tractors and men. The peak demands for labour on corn and on fruit-growing come at different times of the year. That is, of course, one of the points of specialized farming. Crops should be chosen so that steady regular employment is found both for the man and for the machine. Moreover, farming experience is of great practical help in growing fruit—I would like to suggest also that fruit-growing experience is of some help to farming. Be that as it may, in productivity this farm is well above that of the conventional mixed farm. During the war we had tussles with the officials of the War Agricultural Committee of course. Any suggestion that eighteenth-century methods were perhaps a little out of date in this twentieth century aroused their pious zeal. To the official agriculturalist the four-course shift is the Ark of the Covenant. They tried to

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thwart us and were singularly lacking in helpfulness. We managed, however, to elude their zeal and continued to produce more food than would have been produced under their old-fashioned methods. For our duty during wartime was clear—we had to produce all the food we could whatever the authorities might say.

We are always glad to see visitors here who are interested in the future of English farming and fruit-growing. With all its faults we contend that our farm is a good illustration of the superiority of specialized farming as compared with mixed farming.

Our general costs for the production of corn are very low indeed. We foresee further reductions in costs and we shall go on producing corn even when prices slump as they are bound to do. So long as we can get a higher price than our bare cost of production (exclusive of overheads) we shall go on producing corn because such a course will assist fruit-production. From this it follows that we can if necessary undersell overseas competitors in the wheat market. Even the export of wheat to America has been an economic possibility and will be so again—although, of course, I do not suggest that anyone would be guilty of such folly as to send wheat from England to America at present.

The cropping of the farm as shown by the 1950 June returns is to be seen in Table 1.

Acreage figures for top fruit, however, are rather misleading to the fruit-grower on account of the wide variation throughout the country in the number of fruit-trees planted to the acre. I accordingly set out in Table 2 (on page 19) the numbers of top-fruit trees which we have here and the corresponding figures for England and Wales as shown by the last census undertaken by the Ministry of Agriculture. The Ministry's figures of course include only areas from one acre upwards and so, in general, exclude the private gardener.

It will be seen that quite an important proportion of the total number of fruit trees in England and Wales is grown on this farm, and that we grow a wide selection of English fruits. In point of fact we have grown for market every kind of commercial fruit, with the sole exception of red currants. Gooseberries we

Fruit-Growing on a Specialist Farm

have given up, and loganberries, once the pride of the farm, have all been scrapped.

In my previous book I had to tell a melancholy tale of muddle with regard to the fixing of soft fruit prices during the war. I am happy to say that all control on the price of soft fruit has now been abolished. Prices have risen to a remunerative level and as a result the acreages of soft fruit are increasing at a remarkable pace. There will soon be plenty of soft fruit for everyone—and prices will drop to an economic level.

Because we have grown so many fruits here, we have had the opportunity to see fruit-growing as a whole. We have adopted some of the knowledge gained in growing one kind of fruit to improve the growing of another kind—a very valuable source of knowledge. We are beginning to realize some of the underlying principles of fruit-growing with a completeness which we should never have achieved if we had been growing only one kind. For example, we have spent some time working on peaches, and have devised a method by which we can grow peaches easily and profitably on a large scale. But the knowledge which we have so obtained can be applied, and already is being applied, to the growing of sweet cherries, sour cherries, plums, and apricots—in fact all the stone fruits; while the work done on the cover crops for apples and pears helped us in our experiments for cover crops for peaches.

Now as to peaches: I had been of the opinion for many years that peaches would grow and ripen in this country in the open, without the protection of walls. I was not able to make a practical experiment, however, until fourteen years ago. On the 20th of February 1936, I planted out twenty-eight peach bushes. The varieties I chose were Peregrine (20) and Royal George (8). Both are popular varieties in this country for growing on the wall, and both fruit well. I chose one of the most exposed situations I could find, 360 feet above sea level, open to every wind. I planted at a distance of 18 ft. by 18 ft. I took peaches that were 'throw-outs' from the nursery, that is to say, peaches which had undergone training and failed to make a fan-trained shape good enough for my trade. This was, of course, weighting the scales



1. The Peregrine peach in the foreground was planted in 1939. It was planted at the same time and received the same treatment as the Peregrine peach in the photograph below. This peach was planted in poor soil without manure



2. This Peregrine peach was planted within 15 yards of the peach shown above and received the same treatment. It was, however, planted on the site of an old dung-hill. These two pictures illustrate the importance of good soil and good manure, particularly in the early stages



3. Young peach bushes bearing a full crop. Summer 1949



4. Mature cropping peach bush. Summer 1949. Note the branch to the right of the picture—weighed down to the ground with fruit. This branch was sawn off at the trunk in 1950

Fruit-Growing on a Specialist Farm

against my theory. But I wanted to show that peaches could be grown in the open even with poor bushes. And as poorly grown bushes are of course more likely to develop troublesome diseases than good bushes, therefore such bushes would give me ample experience of the difficulties likely to be encountered.

I started without knowledge, because the only information to be obtained from fruit-growing manuals was useless to me. My aim was to grow peaches on bushes in a commercial orchard, just as apples are grown. The books only dealt with peaches grown on walls, and said the peach would not ripen except on a wall.

The fruit-grower who wishes to prove a theory with regard to fruit-growing in this country is met with a singular difficulty at the outset. The writers of gardening journals and fruit growing manuals have the habit of taking information from previously published books and manuals; they reproduce in their own words what they have read elsewhere, without considering whether the statements they reproduce are in accordance with the facts. There is but one honourable exception to this charge, whose name will readily be called to mind by all fruit-growers, by all amateur gardeners and by all readers of *The Countryman*. Sometimes of course these statements are correct, but sometimes they are not; then the error is passed on from book to book, and becomes part of our general horticultural outlook. The view that outdoor peaches can only be grown on walls is one of these errors. Unfortunately such errors are to be found in the otherwise excellent bulletins on fruit-growing issued by the Ministry of Agriculture.

I realized, therefore, that I had to start entirely afresh, to pay no heed to current views, and to set myself to find out all I could of the habits of the peach and how it could be grown. One by one I have faced the difficulties and found, I think, the answers. Any amateur who follows the directions in this book should be able to grow outdoor peaches on bushes wherever local conditions are not definitely unfavourable.

I am well aware of the many limitations of my work, which has been unscientific and insufficiently proved. A great deal of real research remains to be done to bring outdoor peach-grow

Fruit-Growing on a Specialist Farm

ing in this country up to the standards of apple-growing, for example. All this book purports to do is to give an account of the methods adopted here after several years' experience—methods which have resulted in producing good crops of peaches of a high quality, without the troubles, difficulties, and expense of growing them on walls or under glass.

It was not, of course, sufficient for me to show that peach bushes planted in the open would occasionally produce a worthwhile crop. I had to prove to myself that they could be made to crop regularly and well, and that the cost of production would be sufficiently low to enable the peach to be sold freely, and at a price within the reach of all. For it has never been the aim of our organization here to cater for the luxury trade.

TABLE I

<i>Farm Crops</i>	<i>Acres</i>	<i>Fruit</i>	<i>Acres</i>
Wheat	305½	Apples	466½
Barley	310¾	Pears	105¼
Oats	32½	Plums	136¾
Peas (for stock feeding)	8¼	Peaches (8 acres interplanted with strawberries)	56
Potatoes	15¾	Apricots and Nectarines	5
Temporary grasses	247¼	Cherries	5
Permanent grasses	9¾	Nuts	½
Rough grazing	13¼	Figs	1½
Bare fallow	9½	Strawberries	13¾
		Raspberries	1½
		Currants, black	50
	<hr/> 952½		<hr/> 841¾
<i>Nursery</i>	55½	<i>Total Acreage</i>	1849¾

Fruit-Growing on a Specialist Farm

TABLE 2

	<i>Number of Top Fruit Trees Grown on Clopton Hall Estates</i>	<i>Total Trees in England and Wales</i>	<i>Percentage of Total Trees in England and Wales Grown on Clopton Hall Estates</i>
Cox's Orange Pippin	12,393	4,537,000	0·273
Worcester Pearmain	3,382	1,481,700	0·228
All other desserts	12,727	2,653,200	0·480
Bramley Seedling	2,507	2,172,800	0·115
Grenadier Early Victoria	42	642,300	0·007
All other cookers	1,047	2,797,600	0·038
Conference Pears	1,028	858,900	0·120
All other pears	8,945	1,104,000	0·810
Victoria Plums	2,606	1,222,300	0·213
Gages and gage plums	625	252,300	0·248
Damsons	198	563,400	0·035
All other plums	5,560	3,736,100	0·149
Sweet Cherries	13	698,800	0·002
Sour Cherries	595	119,300	0·499
Cobnuts	96	326,900	0·029
<i>Total apples</i>	32,098	14,683,000	0·219
<i>Total pears</i>	9,973	1,962,900	0·508
<i>Total plums</i>	8,989	5,774,100	0·157
<i>Total cherries</i>	608	818,100	0·074

II

GENERAL OBSERVATIONS ON PEACHES

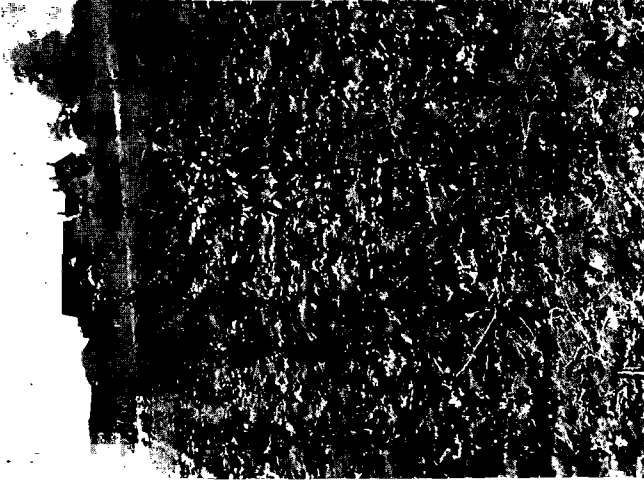
Experience has shown that all stone fruits grown in this country require much the same general treatment. It will therefore be convenient (to save repetition) first to discuss the growing of peaches from every angle, and then to consider in general all stone fruit and the minor differences in treatment that each requires.

Now the matter of pruning is of overwhelming importance. I therefore discuss this at some length in a separate chapter; but for the convenience of the reader I give short rules for pruning each class of stone fruit in the chapter relating to the class.

Moreover, root-stocks are also of outstanding importance. Again, I deal with this in a separate chapter, and again I give my recommendations of the best root-stocks of each class of stone fruit, this information coming after the pruning rules.

Let us begin, then, with a consideration of the peach.

We are told that the peach tree came originally from Persia, hence its name. It has been grown in this country for a long time, and has always been considered a delicate subject, which must be protected from frost and grown against walls. In England, very little is known of Persia or of its climate; but there is a general impression that Persia is a country of softness and luxury, where everything flourishes of its own accord. Some, I believe, place the Garden of Eden in Persia. So it seemed natural to suppose that a Persian fruit would not grow in the open in our country. Be that as it may, every authority and every book warned me that it was only possible to grow good outdoor peaches in England on walls.



5. Young peach planted in 1944 on ploughed-up meadowland. Photograph taken in spring 1946. These bushes produced a small crop in 1945. Compare with Plate 7



6. A seedling peach



The same view as Plate 5, taken in Summer 1949. Note the good growth and healthy appearance of the bushes

General Observations on Peaches

Now if our expert gardeners and scientists had considered the climatic conditions which the peach-grower has to face in America, where the best peaches are grown, they would have corrected this mistake, and we should now be enjoying a plentiful supply of English peaches. We are told by the Farmers' Bulletin No. 917 of the U.S.A. Department of Agriculture that 'in its commercial and economic importance the peach is second only to the apple among deciduous tree fruits, and that it is grown commercially in more than thirty of the forty-eight states'. It is also grown extensively in Canada, in a far more rigorous climate than we have in this country.

Let us go into the question of frost damage and deal first with winter frosts. Will the winter frost in England damage the peach bush?—in other words, are peaches winter-hardy here?

In America, peaches are grown under all sorts of climatic conditions, so American experience is of great value to us. They consider there that the danger-point for winter damage on peaches is 20 degrees below zero—in other words, 52 degrees of frost. I think we may therefore rule out the possibility of winter damage to outdoor peaches in England; that is to say, peaches are winter-hardy in this country.

Will the blossoms be destroyed by spring frosts? Here we must be a little more cautious because, as we all know, apple, pear, plum, and cherry blossoms are all damaged at times by late spring frosts. The grower wants to know whether the peach blossom is more sensitive to frost than other fruit blossoms in this country. The answer is 'No'. My experience here is that peach blossom is rather less sensitive to frost damage than Victoria plum blossom. I would therefore lay it down that wherever Victoria plums withstand the spring frosts, there peaches will also withstand them.

Moreover, I have received first-hand information as to the spring frosts in the Niagara district of North America, one of the most famous peach districts in the world. My informant, Miss Clarke, of Oxford, who picked peaches in the Niagara district during the war, tells me that growers there view spring frosts with the greatest apprehension. There the effect of a

General Observations on Peaches

spring frost is sometimes serious indeed, almost amounting to a black-out. Here in Suffolk my records hitherto have shown no loss in the final crop which could be attributed to frost. It is true that I have found a few frosted fruitlets on one or two occasions at the time of thinning, but these frosted fruitlets were, of course, removed then; and the thinned crop was normal for the show of blossom. No, in this country we need not regard frost damage in spring as a more serious menace for peaches than for any other fruit, provided that we choose good sites for our peach orchards.

There are, however, other climatic conditions to be considered.

RAINFALL

The peach requires far less water than the apple. This farm is situated in the driest part of England, yet on only one occasion in thirteen years have I known the leaves of peach bushes to show signs of flagging in the middle of the day. This occurred in the long drought of 1949. It had no effect whatever, so far as I could trace, on the cropping. I should imagine there are many places in England where there is rather too much rain for peaches. And I therefore suggest to prospective peach-growers that areas of low rainfall should be preferred for planting peaches, as these areas are generally associated with higher temperatures in the summer. I refer particularly to the south-eastern side of England, from Lincolnshire to Hampshire. I know that peaches can be grown well in the west, but the hotter summer and colder winter of the east is clearly more to their liking. In this respect the peach resembles the dessert pear.

SUNSHINE

Do we get enough sunshine in this country to ripen the fruit satisfactorily? Here again we must be careful. It may be taken as a general rule that it is the warmth of the summer sun that determines the colour, flavour and sweetness of the peach. Ex-

General Observations on Peaches

perience here shows that it is not worth while growing peaches which ripen out of doors after the middle of September. I have grown such peaches and they were worthless as dessert fruit though excellent when stewed. It seemed a pity to grow culinary peaches when dessert peaches could more easily be grown. I have therefore given up attempting to grow late peaches. Now follows this question: Is the sunshine sufficient for the earlier ripening varieties? My answer is 'Yes'.

During the war I had visitors from overseas who sampled the peaches grown here. I have been fortunate enough to talk to growers of peaches from South Africa, New Zealand, Canada and the United States, and their information has been of great value. But the point I wish to make here is that when I questioned every overseas visitor who bought my peaches, to find out how these peaches compared with peaches grown in his own country, I was told they were the same. It is true that one Canadian peach-grower did detect a difference, for he said our peaches were juicier than the Canadian ones. This is, of course what one would expect, owing to the damper conditions of our climate. But apart from this, the unanimous opinion was that English peaches are just the same in size, quality and flavour as the peaches grown overseas. So I think it fair to assume that climatic conditions are perfectly suitable for growing early peaches on bushes planted out in the open.

The peach is a fruit which is particularly suitable for the small garden. Left to itself, the bush will grow to some twelve feet or even more in height. It is beautiful in spring when it is in blossom, and even more beautiful when the ripening fruit is on the bush. The leaves, too, hang on late in the autumn.

I look forward to the time when most gardens will have at least one peach bush. I must, however, give this caution to the private gardener: if he takes his annual holiday in August, he will miss most of his Peregrine peaches.

The method to be employed in growing one or two bushes in a garden is precisely the same as that of the commercial grower. I ought to add that the private gardener *can* grow peaches without spraying if he wishes. If he does so he will of course run the

General Observations on Peaches

risk of Leaf Curl, but so long as he prunes according to the instructions given in this book he will be able to keep his tree growing and will get crops from time to time. I mention this for the benefit of the lazy gardener.

I will begin by emphasizing the importance of the nourishment of the bush as a means of preventing pests and disease. The proverb tells us that 'Prevention is better than cure'. So far as fruit trees are concerned, good nourishment is the best means of prevention of pests and diseases. Let me explain this a little further. Fruit trees, like human beings, keep alive under all sorts of adverse conditions. Indeed, it is wonderful to observe how both trees and men manage to live in many of the situations in which they find themselves. It is a common criticism of the medical profession that it spends too much time in seeking for cures and not enough in ensuring healthy living. I am not able to express a worthwhile opinion on the truth of this criticism so far as human beings are concerned; but I do know that our scientific horticultural experts tend to overlook the essential importance of the nourishment of the fruit tree. The well-nourished fruit tree is able to withstand, to a marked degree, many of the ills which tend to afflict it, while the half-starved tree falls an easy victim to plagues. Of course there are diseases such as virus diseases which afflict both the healthy and the unhealthy tree, but many of our fruit-growing diseases can be resisted by a well-nourished fruit tree. So we must consider first of all what it is the fruit tree requires.

It is of the utmost importance to start with a tree in good condition, then to consider what steps may be necessary to maintain that condition, and in the last resort to cure any pest, should this afflict the tree in spite of all other precautions. When we come to the question of peaches, we must remember a further most important point. The peach bears its fruit on second-year wood; therefore it is necessary to get plenty of sturdy growth each year with a view to forming second-year wood for the following season. Thus the growth habit is much like that of the blackcurrant, and not at all like that of apple or pear. As will be seen later, it is, therefore, necessary to prune peaches like

General Observations on Peaches

blackcurrants rather than like apples or pears. The fruiting of the peach bears out this observation, because good cropping comes with good growth, whereas apples and pears grown too strongly tend to produce little fruit.

III

SUITABLE SITES FOR PEACHES

Let us now suppose that someone new to peach-growing wants to make a start. Where does he plant his peaches, what varieties does he plant, and how does he plant them?

In choosing a site it is of course important to choose one which is not in a frost hole. On this farm peaches prove to be rather more resistant to frost than Victoria plums. It would appear, therefore, that you can plant peaches with confidence (so far as frost damage is concerned) on any site where Victoria plums fruit regularly.

Those who wish to study the matter of frost incidence more carefully should read Mr. Raymond Bush's admirable book, *Frost and the Fruit Grower*. I would add, however, for the consideration of the grower, a further point not I think mentioned by Mr. Bush.

The direction of the slope of the land has a considerable effect on the incidence of frost damage. The best slopes are those facing east or north. Here you may plant safely on a lower contour level than on a slope facing south or west. I turn aside for the moment to point out that practically every fruit-growing book recommends planting fruit on a southern slope. It is assumed that the southern slopes are freer from frost damage. This is contrary to the fact, as simple observation will show the inquiring reader. Here is another example of the errors which have become traditional in our books on fruit-growing.

Apple-growers who plant on a southern or western slope will suffer from gales which generally come from that direction. However, this is a matter of little importance to the peach-

Suitable Sites for Peaches

grower. Very few peaches are shaken off by a high wind. In 1944 we had high winds during the picking season. Records show that not one in a hundred of the peaches harvested were picked up from the ground, and a large proportion of those picked up proved to be marketable. So plant your peaches right out in the open without fear of wind; do not plant windbreaks; have everything open and free to the passage of air.

I think I must add this other point. The presence of a few houses at the bottom of a little valley may act just as orchard-heaters would act. The suburban gardener has a large number of houses around him and each house has at least one chimney which remains warm throughout the night and early morning, and causes a 'turbulence' in the atmosphere. This turbulence is generally sufficient to check a moderate spring frost, where conditions are not too unfavourable.

The peach is more resistant to frost than many plums, for two reasons. First, whereas with the plum the 'cot' splits early and falls off, with peaches the cot is thicker and stays on for some little time after the fruit is set. It acts as a sort of blanket against the frost. Second, all peach blossoms do not come out on the bush at the same time, but blossoming is spread over a considerable period. If the frost destroys some blossoms it does not destroy them all.

I have known a period of frosty nights to coincide with the first blossoming of my peaches here. This happened in the early days of my investigations, and I assumed the crop would be a total failure. Such was not the case. I harvested a full crop. The frosts were not heavy but they were on that occasion sufficient to damage my Victoria plum blossom seriously, even those planted at a higher elevation than the peaches.

For the convenience of the reader I give in Table 3 a record of the periods in which established peach trees were in bloom on this farm, with Victoria plums as a comparison. Note the longer period of blooming of the peach—ten days longer in 1944, five days in 1945, and seven days in 1946. The peach blooms first.

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TABLE 3—DURATION OF PEACH BLOSSOM

	<i>First blossom</i>	<i>Full blossom</i>	<i>Blossom over</i>
1944			
Peach	April 6th	April 18th	April 27th
Victoria Plum	April 20th	April 24th	May 1st
1945			
Peach	March 24th	April 7th	April 17th
Victoria Plum	March 29th	April 2nd	April 17th
1946			
Peach	April 2nd	April 11th	April 29th
Victoria Plum	April 5th	April 14th	April 25th

SOIL REQUIREMENTS

Peaches require a soil which will give free, vigorous growth. Where the elm tree flourishes, and where plums flourish in cottage gardens, there the peach should do well. I am growing peaches successfully on boulder clay where the rainfall is some twenty inches a year. This boulder clay is stiff and tenacious, and contains plenty of chalk. It is two-horse land, i.e. in the old days of horse-ploughing two horses were required to draw one furrow. The rainfall comes principally in the winter months. We have a May drought every year, which often lasts well into June. It is good soil of its kind, and peaches do well here; but no doubt there are many better soils for peaches. I do not consider mine to be the ideal soil, because it is too heavy; I should prefer a more mixed soil or possibly a lighter one in really good heart, well drained, with as high a humus content as it is possible to get. The peach tree is a surface rooter and when fully grown produces great lengths of roots. In this respect it is similar in habit to the elm tree, only the roots are, if anything, nearer the surface. I stress the need for a well-drained soil, and I think it is safe to assume that peaches require lime in the soil.

The private gardener should plant his peaches on the best land at his disposal; and as long as it is in a well-tilled garden, in



8. Mature peach bushes planted at a distance of 18 ft. by 18 ft. in February 1936. Photographed spring 1946. It will be seen that there is not sufficient room for a tractor to go down the rows without damaging the crop. Straw spread as an experiment for conserving moisture failed to improve either growth or crop



9. Another part of the same orchard as shown in Plate 8. Taken summer 1949. Straw has been replaced by a grass layer. Note the grass layer under these bushes is beginning to grow long after having been mown short throughout the spring

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good heart, no preparation is necessary beyond seeing that the land is well drained, and that lime is available in the soil.

PLANTING METHODS

If, however, the private gardener has only peaches budded on plum at his disposal, he will be well advised to dig deep holes where he intends to plant, and put up to a small barrow-load of manure at the bottom of the hole. He should throw plenty of soil over the manure and allow the land to settle well. The peach bushes will later be planted on top of this manure, taking care that the roots do not actually touch the manure. This is the procedure I adopted myself with my original planting, and there is no doubt that the bushes responded fully to this generous treatment.

If his peaches are budded on to peach root-stock, this last procedure is not necessary. One of the advantages of using the peach root-stock is that adequate growth is obtained without the extravagant use of manure.

The commercial grower will probably start with a field which may have borne crops or may be grass. Which preparations of the land will ensure the best conditions for peach-growing?

There is no doubt that good old pasture-land provides an excellent soil for growing peaches. It is well known that old pastures form some of the richest soils in England. The best method is to plant out on the grass without breaking it up. The combined effect of the growing of the grass and the grazing of the animals continually enriches the soil, until a very high level of fertility is reached. It is highest where a variety of livestock is used (including ducks and geese) and where the animals are heavily fed. In addition, however, to what may be termed the normal fertility resulting from the grazing and dropping of manure by the animals and birds, the roots of the sward are able to extract potash from the soil and make it available to the fruit tree. We all know there is plenty of potash in clay lands, but you get bad cases of potash deficiencies on the clay simply because the potash in the soil is not *available* to the fruit tree.

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Apparently grass roots and other roots can make this potash available. So we find that pasture is the best soil for peaches, which require ample feeding to make them grow strongly and vigorously. Our method of planting on grass is as follows:

ORCHARD PLANTING

Some time in June, after haymaking, we mark out the rows in which it is proposed to plant the peaches. These rows are thirty feet apart. We use a three-furrow plough and plough out six furrows. The land so ploughed thereby gets a bastard fallow; the soil will be in excellent condition for planting in the autumn. A tractor with a mole drain blade or other marker crosses these strips at right angles at twenty feet apart, thus marking out the position where each bush is to be planted.

If, on the other hand, the field to be planted is not under grass the land is marked out and planted in the usual way. Always after planting the bushes are wired individually and are heavily mulched. A permanent grass mixture is drilled both ways the following July. Drilling in this manner leaves a square undrilled round the bush, and this of course is where the mulch has to be placed.

AVAILABILITY OF POTASH

Here I would like to point out that the fruit-grower ought to have more information with regard to leys. Wallace's epoch-making discovery about potash deficiency led to the use of large quantities of sulphate of potash, particularly in those areas, such as East Anglia, Essex and East Kent, where orchards were grown on bare fallow. The war broke out and no more potash was available to the fruit-grower. As a result there was widespread potash deficiency and even the death of trees in some parts of Essex. Now we all know that potash can be made available to the tree by means of certain plants; but no one has yet published research to show which plants are best grown for bringing the potash from the clay into a state in which it can be absorbed

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by the fruit tree. This is the information that we urgently require. A great deal of research work has been done on ley-improvement for the farmer, from the experiments of Arthur Young to those of Elliot and Sir George Stapledon, but these writers are all considering the *farmers'* needs, not the fruit-growers'. When I put down a permanent ley I have only information concerning the type of leys recommended by experience for the purpose of restoring fertility to farmlands and providing good grazing for farm stock. As I cannot graze below peach trees, I want to know what seeds mixture I should drill when I put down a permanent ley under the peaches. Instead of grazing animals I must use the gang-mower, leaving the cut herbage to die on the surface. Will some horticultural scientist please help us in this matter?

IV

RECOMMENDED VARIETIES OF PEACHES

I have been testing many varieties of peaches in order to be able to recommend those which succeed best in our climate. I started with the experience that late-ripening peaches cannot be relied on to ripen properly when grown on bushes. It is true that in a warm autumn, such varieties as *Sea Eagle* will ripen but this fruit does not come into its full flavour and the peach can then only be used for cooking (see p. 87). In testing new varieties, I have therefore ruled out all those which ripen late and am only experimenting with the earlier varieties. I am well aware that *Sea Eagle* is grown on walls successfully from a commercial standpoint, but still that does not affect the fact that as bushes they are unsuccessful.

I have also, after trial, rejected *Early Rivers* for two reasons. The first is that it bruises easily and shows every mark—I learned from an Australian grower that it has been rejected in Australia as a commercial variety for this reason. The second reason is that it rarely attains its full sweetness and flavour in this country so that here it is a second-grade peach, whereas in warmer climates it is first class.

Since the demand in this country is for dessert peaches and not for canning peaches, I have confined myself to those earlier peaches which are good in flavour and colour. I started with the two varieties, *Peregrine* and *Royal George*. *Royal George* had to be eliminated because of its liability to mildew. Perhaps some other experimenter may find a cure for this, and may, in spite of my experience, succeed in growing *Royal George*. It is certainly a most prolific peach, smaller in general than *Peregrine*,

Recommended Varieties of Peaches

and I consider it inferior in flavour. This, however, is a matter of taste,—not the fruit-grower's taste, incidentally; the grower should, of course, grow the kind of peach that the housewife wants and not seek to impose his own preferences.

The question of cross-pollination need not worry us. So far as is at present known, all peaches are self-fertile with the single exception of *Hale's Early*. This peach does not produce enough pollen and so should not be planted without another peach nearby to act as pollinator.

VARIETIES THAT HAVE PROVED THEIR WORTH

In dealing with new varieties, then, I did not consider canning peaches and this in the main excludes freestone peaches, i.e. those peaches whose stone will come away easily from the flesh when the peach is divided in halves. I also excluded all peaches ripening later than Royal George. It would appear that all dessert peaches ripening up to mid-September could be grown in this country if a grower chose to do so.

However, it would be wrong to recommend any peach which has not proved by successive crops that it crops well in this country. So far I have proved the following varieties, all of which produce good crops of well-coloured peaches; I have at present several other peaches under trial.

Early Alexander begins to ripen towards the end of July. When budded on plum the bush is small and growth is never vigorous. It exhibits in fact the symptoms of modified incompatibility with the plum root-stock. I now have *Early Alexander* budded on peach root-stock. I think I am bound to get better results in growth, possibly also in size of the fruit, when budded on the more vigorous root-stock. *Early Alexander* does, however, produce on *Mussel* good crops of well-coloured peaches; the flavour is definitely inferior to the next variety, *Duke of York*, and even more so to *Peregrine*. In appearance, however, I do not think the public would detect much difference.

Again, the peaches that come on to the market early com-

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mand the highest prices, so that Early Alexander in spite of its smaller size and not so good flavour, sells well and should be planted where it is desired to extend the season.

Duke of York. Now following Early Alexander closely in time of ripening we have Duke of York. It has a more vigorous growth than the former. The peaches are well-coloured, and of better flavour than Early Alexander, and it is a larger peach. Again, it bears such a resemblance to Peregrine that the consumer can scarcely tell whether it is Duke of York or Peregrine. I myself would feel considerable diffidence, purely on the question of flavour, in recognizing a Duke of York from a Peregrine of perhaps not the best quality. This peach comes in when Early Alexander finishes and runs on into the season of Peregrine. Actually when packing the earliest Peregrines for market, we do not worry about distinguishing between the two varieties.

Peregrine. In order of ripening, we next come to Peregrine, which still remains in my opinion far and away the best peach to grow in this country, alike for flavour, appearance, vigour of the bush, and fertility.

Bellegarde. Following on after Peregrine is Bellegarde; indeed, the first Bellegardes ripen during the end of the Peregrine season. This is a very fine peach, second only in flavour to Peregrine. If anything, it has a deeper colour. I regard it as the latest-ripening peach which should be planted to grow as a bush in this country. I am not now experimenting with any later ones.

Those gardeners and commercial growers who are in a late-ripening district should in my opinion think carefully before planting this peach. A correspondent from Scotland tells me that his Duke of York ripens there in mid-August; that would be some ten days later than Duke of York ripens here. This will serve as an indication of the effect of climate and may be of help to growers in more northerly districts who contemplate planting Bellegarde. I would not recommend planting a bush of Bellegarde in Scotland because if this peach ripens at the end of September there it is unlikely to come to full maturity save in exceptional seasons. I should warn the commercial grower that even where he grows Bellegarde well, he must not expect

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to get as high a price for this variety as for earlier ripening peaches, although it is of such excellent quality and appearance. Prices tend to drop at the end of the season.

I must add one word of caution in case the grower wishes to try other varieties not mentioned above. I am told that those peach trees which do not have glands on the base of their leaves are liable to mildew. Certainly this is true of the variety Royal George. I was unable to control the mildew on this peach, and therefore gave up trying to grow it. (See Plate 33.)

VARIETIES UNDER TRIAL

Of the other new varieties I have under trial, *Mayflower* and *Amsden June* appear to be the most promising. *Mayflower* is one of the very earliest peaches. In France it ripens, according to the district, from the end of May until the beginning of July. It is a vigorous grower and produces good crops. The quality is described by the French as 'passable', a description with which I am not disposed to quarrel. But its earliness is of great advantage, as it ripens a fortnight to three weeks before *Early Alexander*. *Amsden June* comes between *Mayflower* and *Early Alexander*. It is a difficult tree to establish, but the quality of the fruit is good.

V

PLANTING OF PEACHES

The moment has come to amplify my notes on planting already included in Chapter III. This section is addressed particularly to the home gardener with just a few trees.

The peach should be planted with great care. This is, of course, unnecessary advice to the fruit-grower, but the private gardener may be glad of a few words of advice.

Years ago I received a complaint from a private purchaser that one of my trees was not growing properly and he asked me to look at the tree. I found that instead of planting it he had made a hole in the ground, stuffed the roots in, and then thrown soil over the roots. As he entirely omitted to tread the roots, the tree had been caught by the wind. It was an apple tree and he had not pruned it at all; so the wind had twisted it about and lifted it on one side—it could have been pulled up easily with one hand. Of course the tree was not growing; it could not possibly grow when it had received such treatment. Therefore I beg the private gardener to read the following notes, and I ask the commercial fruit-grower to ignore this part of my book.

First, it is not necessary to stake the tree at the time of planting unless the situation is very exposed. It is a peculiarity of the peach tree that it establishes a very firm roothold a year after it is planted—far firmer than an apple or pear will establish in that period. It therefore follows that if the peach is properly planted at the start, there is no need to stake, except in exposed areas. Dig out a good large hole and break the soil at the bottom of the hole. Plant as early as you can in the autumn. Peaches have priority of lifting in my nursery, and I like to plant them

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while there are still leaves on the tree. Take great care not to plant too deeply; look for the soil mark on the stem and see that it is in the right position when the planting is finally finished. Planting that is good enough for apples is not quite good enough for peaches. Tread the soil carefully as you put it in over the roots. When finally finished it is a good scheme to ram the soil with a rammer, then mulch heavily with good pig manure. Failing that, put on ample grass cuttings, decayed vegetable matter, or chaff—all with the idea of conserving moisture the following spring, and of nourishing the bush right from the start. Wire the bush at the time of planting, if rabbits or hares have access to your garden.

Remember that peach bushes are not easy to establish. There will normally be a higher proportion of deaths than with, say, apples or pears. Hence the need for great care in planting. Do not be disappointed if you lose some of your trees the first or even the second year.

Though some of the peach roots grow downwards, most of them run along near the surface of the soil. They are long and require free rooting space. It is advisable, therefore, not to plant too closely together. I regard twenty feet each way as the distance for planting a commercial orchard on a small scale. If the area finally to be planted is, say, two acres or more, I recommend planting (as I do myself) at a distance of 20 ft. by 30 ft. The thirty-foot space is to facilitate the harvesting of the crop. It permits the passage of a tractor even when the trees are fully grown. If this tractor were to brush against the trees in fruit it would damage the crop.

When the peaches are picked, the picker leaves the containers of peaches under the bushes, and these containers are carefully picked up by the tractor men and taken straight to the packing-shed. If the space were only 20 ft. by 20 ft., it would be necessary to carry out each container by hand, when the bushes were fully grown. This, of course, would be expensive in labour, and there would be a greater risk of damage. A twenty-foot space is just sufficient to get a small tractor through at all times when grass-cutting and spraying are necessary.

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INTERCROPPING

I am sometimes asked if it pays to intercrop peaches either with other fruit or with farm crops, and I usually advise against it: I have tried. By so doing you 'rob Peter to pay Paul'. But if the peaches are newly planted, little harm will result, provided the intercrop is set at a good distance from the roots of the newly planted bush; and provided that either the land is naturally rich or that adequate manure is put on to ensure that the humus content of the soil is not reduced by the other crop. I have set strawberries under newly planted peaches within three feet of the bushes, and the effect of the growth of the strawberries was to rob the peaches of nutriment in the course of a year or two. Supposing you plant peaches at thirty feet, there is no harm in planting your other crop say six feet from the tree in the first year, and twelve feet in the second. This question of interplanting is one which is continually coming up, so perhaps I may be allowed to carry it a bit further.

In the Wisbech area of Cambridgeshire, to give one example, the soil is naturally extremely rich in humus and the water-table is high, so that the plants or bushes rarely suffer from drought in the dry season. It is difficult to grow good Cox's in this area, on account of the richness of the soil. Growers there are in the habit of planting gooseberries under their apple trees. Though this greatly increases the cost of cultivations, there is no doubt that the crop so obtained on this particularly rich and well-watered soil justifies the practice. But there are few districts in this country where such is the case, so in general do not attempt it. The townsman is apt to exaggerate the cost of land as an item of production. Remember, as Mr. Street has pointed out, that a square yard of agricultural land, with its appropriate share of buildings, is only worth a single cigarette. This was true before the war, and the increased price of cigarettes makes it true to-day, for land has gone up in value to unjustifiable heights, just as cigarettes have. Productive land is one of the cheapest commodities that the fruit-grower deals with, and it is a mistake in general to intercrop, because the one crop tends to

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rob the other, and because intercropping increases the cost of cultivating and harvesting operations.

In a private garden I should recommend 15 ft. by 15 ft. The trees will then just about meet each other in ten years' time. As cultivation is carried out by hand, this is no disadvantage. If space is a consideration, they could be set closer, but certainly not nearer than 12 ft. by 12 ft. That I regard as the absolute minimum.

Peaches should not be planted in the shade of other trees. Plenty of sunshine and a free passage of air are essential. They like an exposed situation.

On the other hand we must not forget that the private gardener is not tied by commercial principles. He plants his bush peaches not only for the fruit, but also to enjoy the loveliness of the blossom in spring and the beauty of the ripening peaches in summer. Now to enjoy this to the full, he should have a background to his peaches to show up the beauty of fruit and blossom. A distant hedge of evergreen is probably the best—or a building or a shed. It is worth while for the private gardener to consider this matter in choosing the planting site.

VI

CULTIVATION AND MANURES

I now recommend growing peaches under grass in all cases, with the grass kept short in spring and early summer. But no doubt there are some growers who will prefer to keep a bare cultivation and to maintain humus with heavy doses of farmyard manure. In such cases cultivations will of course vary according to the soil on which you plant. In any case, the shallow-rooting habit of the peach must always be borne in mind. The commercial grower must never plough between his established peaches, and the private gardener must not use the spade. The garden land can be lightly forked over or the weeds kept down in the spring with the hoe. I have tried the experiment of ploughing between established peaches and the ill results were definite and clear. I ploughed in the early spring to a depth of some four inches, as shallow as I could manage, but I noticed that several important roots were cut. The peaches that year were slightly smaller; but the following year the flowering was sparse indeed. The crop almost failed. But I must add that a mild attack of leaf blister was a contributory cause of failure. The grower under bare fallow or annual cover crops should always use the disc harrow. Never use the plough or any tool which may damage the surface roots.

I used formerly, myself, to keep a bare fallow between the peaches from March to June, and then allow the weeds to grow freely until the land was again cultivated in the following March. But experience shows that peaches thrive best under grass.

THE ROOT-RUN

As the root growth of the peach is nearly double the growth of the bush above ground, the necessity of a free root-run for

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the peach is beyond dispute. The peach bush must be planted where there is nothing to check the growth of the root. I have here a peach tree originally trained and planted against a wooden shed (see Plate 10). This shed has been used for many years as a garage. It has a clay floor, worn down hard by the tyres of the cars which have been garaged there. Oil has from time to time dripped on to this floor and no water has got there since the shed was built some sixteen years ago. In fact one might be tempted to say that nothing could possibly grow there. Yet this peach has sent out roots into this unpromising medium, and it sends up suckers from these roots every year which grow inside the shed in spite of everything. Indeed they have grown well enough for us to take up the suckers—a matter of some difficulty, as may well be imagined—and to plant them out. I relate this incident as showing to what lengths the peach will go, in order to extend its root-run.

If this peach had been planted against a wall with proper foundations, it could not have penetrated into the shed. But here we have only a wooden shed without foundations. It is clear, I think, that this matter of free root-run is of great importance to the growth of the peach bush. This is one of the reasons for the heavier crop of peaches produced on bushes grown in the open, as compared with peaches trained against a wall. The accepted practice of watering peach trees growing on a wall is, of course, a help to the peach cramped in its natural root development. It cannot, however, compensate for the lack of free growth. Peaches grown in the open never require watering. Indeed, as I know from experience, watering is definitely harmful since it causes the stone of the peach to split. Where this occurs the peach itself is worthless.

I now have a permanent grass layer under all my established bush peaches. The mixture we use for such layers is as follows:

Wild white clover	1 lb.
English rye-grass	23 lb.
Melilotis (sweet clover)	3 lb.
Chicory	2 lb.

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We mow this with a gang-mower, beginning in March, and keep the grass as short as a lawn until the end of June. This is in accordance with the method we use for apples. The following spring we use the gang-mower again. Cutting the grass in this manner we provide humus for the bush. We can then safely use nitrogenous artificial manures such as sulphate of ammonia, without upsetting the balance of the nutriment to the tree.

To sum up. Plant on permanent grass or lawn if you have it, otherwise plant on a bare fallow and put down a permanent layer the following July. Cut the grass short with a gang-mower throughout the growing season. In normal seasons we cut about once a week. In private gardens the work is done with a lawn-mower, leaving the mowings on the ground to rot.

In our part of the country we get too much rain in winter, so we cease to mow at the beginning of July. This allows the grass mixture to grow and the long herbage takes up the excess moisture of late autumn and winter. It also allows some of the plants in the mixture to seed themselves. The system will in general be sufficient to increase the humus content of the soil.

Let me explain how it works. Every time the grass and other herbage is cut, the mowings, of course, gradually decay and are incorporated in the soil, forming humus, but in addition to this at every mowing the deeper roots of the grass and other herbage die. This is the old story of the balance of root and top.

Directly after the mowing the herbage begins to grow again and new roots are formed to nourish this new growth. Now experiment has shown that the weight of the new roots so formed is equal to the weight of the new growth above ground. So we feel we are justified in considering that every hundredweight of grass cut gives us also one hundredweight of dead roots underground, making two hundredweight of material for humus; and it appears that this is enough in general to increase considerably the humus content of the soil.

Certainly the effect of grassing down orchards in this country has been most beneficial. We get improved growth and freedom from soil deficiencies whenever we grass down. This country is not the only one by any means to realize the advantage

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of grassing down. The American fruit-grower is adopting the method of 'sod culture', as it is called over there. The growing of grass in many areas of the United States presents much difficulty, but long experiments have proved to them that annual cover crops cannot maintain the humus content of the soil. Their experiments showed that a mixture of oats and tares was the best cover crop from the humus point of view; but even this mixture did not *maintain* the humus, let alone increase it. That no doubt, is the reason why sod culture is becoming increasingly popular in the United States.

ADDITIONAL HUMUS

If still more humus is required, farmyard manure, compost, straw or any other humus-making rubbish can be spread on the orchards preferably in the autumn. I have had this system in operation on pears and apples for three years. Since adopting it on these two fruits, signs of deficiencies in the leaves have vanished except on one or two small areas where a known deficiency of potash existed. It will be remembered that it takes some time for the potash to be absorbed by the fruit tree.

Humus is, of course, the foundation of all good fruit-growing. Fruit cannot be grown successfully without an adequate humus content of the soil. The plan suggested above shows how to achieve this end, and the question of the advisability of using inorganic fertilizers now arises. *We do not in any case use these until the bush is well established.*

American authorities tell us that no general principles can be laid down in America governing the use of inorganic fertilizers. On account of the wide range of soils on which peaches are grown, growers are advised to experiment and find out which manurial treatment gives the best results in their own particular districts.

ARTIFICIAL FERTILIZERS

Now the peach responds principally to nitrogen and potash, particularly the former. With too little nitrogen the peach will

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drop its fruit after setting. In spite of the very high claims made by American growers as to the nitrogen-fixing qualities of Melilotis, and our own views on the value of white clover for the same purpose, experience shows that additional nitrogen should be obtained from artificials. On a calcareous soil sulphate of ammonia is cheapest and best. On a lime-deficient soil nitro-chalk is best. Our annual dressing of sulphate of ammonia is at present 7 cwt. to the acre, put on to the grass under the established trees in the early autumn. It is given as soon as the leaves of the peach have fallen in the autumn, for if it were given while the leaves were on, it might lead to sappy autumn growth of the peach, a most undesirable thing. It takes some time for a nitrogen dressing on grass to get through to the tree, that is why we put it on as soon as the leaves are off. Now this autumn dressing stimulates the autumn growth of grass, which is a good thing, for we want the grass to grow lush in the autumn and take up the excess rains of autumn and winter. And the nitrogen taken up by the grass will ultimately benefit the bush when the grass decays.

With regard to potash, if the orchard is not under grass at least one hundredweight of Sulphate of Potash should be added to the soil every year. If the orchard is under grass it is not necessary, because the grass itself will provide all the necessary potash.

We have now dealt with nitrogen and potash, two elements of the 'Big Five'. The Big Five are those elements which are required by the fruit tree in quantity. Other elements, such as boron, are known as 'trace elements': these are essential to the well-being of the tree, but are only required in very small quantities. For the benefit of the private gardener, here is a list of the Big Five:

Nitrogen, Potash, Lime, Phosphate, Magnesium.

With regard to lime, on this farm we have a highly calcareous soil, so no additional lime is necessary; but it is very necessary in my opinion, on an acid or even a neutral soil. I recommend the use of chalk in preference to burnt lime, because chalk is slower in action and more beneficial.

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With regard to phosphate, research in the past appeared to show that it was not necessary for fruit trees. Recently, however, wiser counsels have prevailed in view of further experiments. The better information now is that fruit trees require phosphate. However, whether this is so or not, phosphate is admittedly necessary for the growth of the clovers. We put on a dressing of one hundredweight per acre of superphosphate every year, and thereby the fruit tree gets such phosphates as it requires.

Now we come to the last of the Big Five, namely magnesium, the importance of which has only recently been realized. It was formerly regarded as a trace element only. We have never seen signs of magnesium deficiency on this land, but we consider magnesium to be so necessary that we take what precautions we can to prevent a magnesium deficiency from arising. It is considered by some to be the commonest deficiency of English soils.

There are indications that the chicory plant contains magnesium in some quantity. It is a biennial with a deep tap root, and as a humus-making plant alone is worthy of consideration. It is not an expensive seed, so I always put it into my grass mixture (see page 41).

If a magnesium deficiency should occur, probably the simplest way of putting matters right is to spray the leaves with a solution of Epsom salts. The amateur will of course consult his County Horticultural Adviser if he suspects a deficiency in any of his fruit trees. This official is generally competent to detect signs of any deficiency and to advise on the method of correcting it. Do not, however, consult him about peach-growing; and accept his advice with regard to the growing of other stone fruits with some discretion; the Government pamphlets are not up to date on this subject.

Let me once again stress the importance of ample humus in the soil for peaches. Every means should be used to increase the humus content. The private gardener who is unable to obtain pig manure should use the product of his compost heap freely on his peaches. That will probably be all that is required to ensure good growth. Similarly the grower with plenty of pig

Cultivation and Manures

manure or other farmyard manure can grow his peaches well, even on a soil cultivated throughout the year. I have found that pig manure gives excellent results and so does dried blood.

CROPPING POLICY

The peach will overcrop itself in a good season to such an extent that the crop will fail the following year. We get over this difficulty by rigorous thinning, and by lavish manuring with organic and humus-making manures. The habit of the peach of cropping very heavily in certain years leads to gluts on the American continent—to times when a big basket of peaches may be had for a trifle, and a proportion of the crop is not marketed at all. English growers must remember that the time will come when gluts of this nature may occur in this country if peach-growing is extended in the way that I believe it will be.

To sum up then. Everything must be done to stimulate the growth of the peach bush if good crops are to result. In other words, the general treatment is the same as for soft fruits, where vigorous growth and heavy crops go hand in hand; not as in the growing of apples and pears, where over-vigorous growth means little or no crop, and where the important thing is to strike the balance between growth and fruiting, restraining those trees which grow too much and stimulating those which grow too little.

GROWTH-STIMULATION

There are many ways of stimulating the growth of peach bushes. Manuring is one, pruning another, and thinning the fruits heavily is another. All these must be employed, and every method used to increase the growth of the bush. At all events such is my experience with peaches on plum root-stocks in this district.

We deal with pruning on pages 136-49, and with thinning in the next chapter.

VII

THINNING OF PEACHES

The thinning of the fruit is a most necessary operation in peach-growing. It takes a little time and you must not be soft-hearted about it. The amateur grower feels it is a dreadful thing to take off perhaps two-thirds of the crop from a bush covered with little peaches. He reflects that each peach when ripe may represent something like sixpence. It is indeed a melancholy sight to see potential sixpences littering the ground after the first thinning. But the grower must harden his heart—the work must be done if he aims at regular crops of good-quality peaches.

I have tried the experiment of not thinning, just to see what would happen. On the year when I did not thin, many of the fruitlets dropped off by themselves, but many more stayed on and ripened. They were small and of not very good quality. The real trouble happened the following year, for the blossom that following year was almost non-existent. The bushes had over-cropped one year and the next year practically no peaches were harvested. You thin, therefore, to get regular crops of good-quality peaches (see Plates 12 to 14).

Some years ago a grower from the Okanagan Valley of British Columbia came here on holiday. He was one of a group of apple-growers who were marketing all their fruit co-operatively. Each grower had a comparatively small acreage and they assisted each other in the production of the fruit. He told me it was a custom of theirs that no grower should be allowed to thin his own apples. They took the view that no grower would thin his own apples drastically enough to maintain the standard required. But of course a neighbour would, so each grower

Thinning of Peaches

thinned his neighbour's trees. If I point out that the thinning of peaches is far more important than the thinning of apples, it will be realized how carefully this must be done; even though I think it scarcely practicable for us to adopt the British Columbian expedient in this country.

FIRST AND SECOND THINNING

We will suppose, to begin with, that you have the promise of a full crop in early spring. Thinning has to be done twice. The first thinning takes place at the time of pruning; the peaches then are large enough to handle. It is advisable to prune first and then to thin. At your first thinning, leave one fruit, or possibly two, at each place. These single fruits should be so spaced that they are roughly four inches apart on the branches. There is generally a drop after the first thinning, and you wait until this drop has finished (about a fortnight) before thinning a second time. Most of the peaches will then be about the size of a thumb-nail, or larger. The second thinning has to be done more carefully. I used to recommend thinning to eight inches this time; this is probably about right for peaches on plum root-stock. On peach root-stock, however, I consider this may be too drastic. It all depends on the growth of the bush: the stronger the growth the more you can leave. But never leave so many that the peaches when fully ripe will touch each other. You will possibly find a few 'Siamese twins'. These are never any good, because one-half of the twin will ripen before the other, so take them off. You will find it impossible to keep absolutely to the eight-inch rule. For example, you may have a sturdy branch with only three or four peaches on it. Leave all these on in such a case, even if they are only three or four inches apart. Judge by the number there are on the tree first, and then by the number there are on each individual branch. All this sounds more complicated than it is. A hard heart, common sense, and good eyesight, are the three things required. The heavier the crop, the more you thin. If you have only a very few peaches on the tree, you need not thin at all. I have ob-



10. This peach was originally trained against the shed. Training was abandoned in the early stages and the bush allowed to grow without shaping. Compare with photograph below



11. The same peach as above, photographed Summer 1949. This peach started to die in 1948 and was pruned very heavily at the end of May in that year. Vigour has been restored

HOW TO THIN PEACHES



12. Showing a fruiting branch ready for the first thinning. There were 14 peaches but only 13 are visible in the photograph



13. After the first thinning; there are now only 8 peaches. Note that a double has been left. Bear in mind that there will be a drop after the first thinning



14. The peaches have now had their final thinning, leaving only 4 peaches out of the original 14

Thinning of Peaches

served that peaches will often swell and ripen on a branch badly affected by dieback. Even when the infection is such that all the leaves in the near neighbourhood of the peach fall off, the peach itself will often stand and ripen quite satisfactorily. Such a situation would not occur if the May pruning had been done properly. I only mention this matter in passing, because I think it somewhat surprising.

Now let us suppose that the crop is light; then you will find that the fruit may be crowded on one or two of the branches with none on the others. Your first thinning is designed only to allow ample room for each peach left on the tree to swell—in other words, two or three inches round each peach; or if you like, two separate peaches growing close to each other, and no others within four inches. The second thinning in this case will be just to check over the first. Keep to the four-inch distance.

When you visit your bushes for the second thinning you should take a pair of secateurs with you, then you can prune off any dieback shoots that may have been missed at the time of pruning. This is a useful check-over of your pruning.

I have said above that peaches remain in bloom for a considerable period. The flowers do not all open out at once, and the time of opening is spread over some three weeks. The earliest blooms set their fruit and other buds open up. Some flowers come quite late. Now when you do your first thinning, many of these latest peaches will be so small as to escape your observation. You must take special care to look out for them at the second thinning, otherwise your peaches will still be too close after the second thinning. You must not hastily assume, as I did on the first occasion, that these insignificant fruitlets will not swell. Generally they will.

If your peaches have grown well the first year, you can take a few fruits the second year after planting. You will thin with this in view. You must always thin according to the growth and crop on the tree, and one good thinning is sufficient for the first four or five years after planting. Remember not to strain the young tree. I base this on the following experiment, which has been confirmed by later observation.

Thinning of Peaches

A THINNING AND CROPPING EXPERIMENT

I planted two large blocks of peaches in 1944, mainly of the variety Peregrine, on plum root-stock; two, three and four-year-old trees, and a few maidens; the soil was a good one, old meadow-land, and conditions were good. In 1945, of course, all bloom was removed—that was the first summer after planting. It was noticeable, incidentally, that those peaches on plum root-stock which were planted as maidens did not do so well by any means as the older bushes. In America they plant maidens, but there the root-stock is peach root-stock, and I consider the right way is to plant two, three or four-year-old peaches if on plum root-stock, and maidens or two-year if you plant on peach root-stock.

In 1946 many of these young peaches had a considerable amount of bloom and I decided to try the effect of fruiting them in their second year from planting. I therefore took a crop from one block of peaches and removed all fruitlets from the other. The soil in both cases was similar and the treatment precisely the same. I thinned these blocks myself. Now some trees were growing poorly, and some were showing good vigour, so for each bush to be thinned a different treatment was clearly indicated. Where the tree was growing poorly—and this included all which were maidens at the time of planting—I took off all the fruitlets; where the trees were growing moderately, I thinned to two or three fruits per tree; where they were growing vigorously, I left more fruits according to the vigour; and in some cases there must have been up to twenty fruitlets left.

When we came to pick the peaches, we harvested 600 marketable peaches in all. There were 800 bushes, including maidens, in the block, so we did not average one marketable peach per bush. On the other hand, some of the bushes had over a dozen good peaches. The birds pecked one or two of the peaches, just as they peck apples on young apple trees; the amount of damage, however, was insignificant.

Then I waited until 1947 to see the effect, if any, that the

Thinning of Peaches

fruiting had on subsequent growth of the bushes. Very little fruit blossom indeed was shown by these two blocks of young peaches in 1947. It was, of course, an 'off' year. The fruit did not require thinning and only one or two peaches developed. The interesting thing, however, is that both blocks behaved in exactly the same way in growth, and there was no significant difference between those peach bushes where we had taken a crop, and those where we had not done so. I assume, therefore, that it is quite safe to take a crop off a peach bush the second year of planting, if care is taken to thin according to the vigour of the young bush.

With regard to the suggestion about the 'off' year, the fruit-grower must always beware of explanations such as these. We must always assume there is a reason for everything that happens in nature, and it is our duty to go on asking ourselves questions until we find a reasonable explanation. A wise old horticulturalist of my acquaintance—long since dead—put the matter thus: 'Ask nature an intelligent question and she will always give an intelligent answer—but your question must be intelligent.' It is the duty, therefore, of fruit-growers continually to ask intelligent questions and not be put off by the ready made answer: 'It is due to the season.'

Pruning is fully discussed on pages 136-49, but for the convenience of the reader, here are the short rules for pruning:

1. Prune at the end of May, at the time of the first thinning, when the sideshoots are two to three inches long. Never prune after mid-June.
2. Cut out all dieback and blind wood to the second strong sideshoot.
3. Gradually shape the bush to an open cup shape.

Root-stocks are fully discussed in Chapter XXII. Peach root-stock is by far the best.

VIII

PICKING AND MARKETING

No work is done in the peach orchards from the time of the final thinning until the fruit is ready to be picked.

I believe that many private gardeners and some commercial growers, too, are not aware of the order in which fruits ripen on any given tree. This has some small importance in peach-growing because peaches ripen over a period of weeks in this country and it saves time in picking if we know where to go for those peaches which ripen first.

Some growers of outdoor peaches will, in the course of time, have bushes which require a step-ladder to pick the fruit at the top of the bush. These peaches are the last to ripen, so it is not necessary to take a step-ladder for the earlier pickings. The peaches that grow at the top of the full-grown bush can be left to the last. We use ladders only towards the end of the season.

ORDER OF RIPENING

Let us consider the order of ripening of the crop on any stone-fruit bush or tree. The first ripe fruits are to be found not on the bottom boughs, nor on the top boughs. It is the fruits three or four feet from the ground which are the first to show signs of maturity. On the first pickings of peaches, the grower should therefore direct his eyes to those and those only. As the season advances, the lower branches will come into ripening and so will the upper, and the top fruits ripen right at the end of the season.

But there is another interesting point, too often overlooked. Where a fruit tree is planted in an open situation, those fruits on the eastern half of the tree will, in general, ripen earlier than those on the western half. We are told that the early morning

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sun has more ultra-violet rays than the afternoon sun. This may be the explanation for the earlier ripening of those fruits on the east. The fact, however, remains that fruit does ripen on the tree in this way and, as far as I can learn, this rule is of universal application with all fruits here. Of course, the presence of shelter, or overhanging trees will modify the general proposition; Apart from this the order of ripening is as stated above. This fact has no significance with most fruits, but it enables the picking of peaches to be done expeditiously when it is borne in mind.

When we grew loganberries on this farm, the rows of loganberries ran (as they should run) north and south, which, of course, gives one side of the plant an eastern and the other a western aspect. The difference between the ripening stage of these two sides was about four days.

So with peaches. If in the fore part of the season you find no ripe peaches, or only one or two, on the east, you need not look on the west side of the bush, for there will be none there.

In the matter of picking we must make a distinction between the private gardener and the commercial grower. The private gardener will wait until his peaches are fully ripe. He will easily find out the right state of ripeness by the simple method of trial and error.

PICKING FOR THE MARKET

The commercial grower, however, has to pick his peaches at such a stage that they will ripen a day or two after they reach the retailer's shop. Where he delivers direct to the shop they can, of course, be in a riper stage than when they go by the usual routine of the wholesale market. When he uses his own road transport (as we do for all areas except Scotland) he can still deliver in the riper stage. But if he uses rail transport, let him beware. We have known rail transport to take three days from Suffolk to Glasgow. This was British Railways' 'special express service'. The average rate achieved for the distance was about equal to a walking pace, and a great deal slower than the stage coach of a hundred and fifty years ago. Again more elaborate packing is necessary when sending by rail because of

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the increasingly rough handling on the way. We are of the opinion that we had quicker and better service for fruit during the war than we do in this post-war period.

Our Suffolk proverb runs thus: 'The shoemaker's children go the worst shod.' We all own the railways now, so it is not surprising that we receive worse service in transport, and we must take precautions accordingly. Therefore if you send peaches by rail for any considerable distance you must pick them so that they will not ripen for at least five days after picking. To test whether the peaches are in the right condition for this, observe first the colour and appearance. The peach has a 'live' look at this moment, impossible to describe accurately in words, and not very easy at first to identify, even when the peach is hanging on the tree in front of you. Still, experience will soon show the grower what I mean. If you think the peach is in this condition you put your whole hand around it with the fingers towards the base of the stalk and you exert a gentle and uniform pressure, particularly near the stalk. You must not thrust your finger or thumb into the peach, because that would cause a bruise. If your peach is in the right condition, there will be a gentle yielding and it may even be soft, particularly near the stalk. Now, for experiment, put your hand around a peach which is clearly not ready. You will feel a sort of 'boniness'—no yielding at all—like stone. It sounds difficult, but I have taught several pickers how to pick peaches, and the work has been done, after a lesson or two, quite satisfactorily. A little experience of picking will enable you to judge the ripeness just with the tips of your fingers and thumb. That will speed up the picking, but always in case of doubt you should put the whole hand round the peach. It is an advantage to the retailer if some of his peaches are riper than others, so make no attempt to get all the peaches in one consignment in exactly the same condition.

SKILLED PICKING

On one occasion I gave a lesson in picking to two quite inexperienced workers. I checked over their work, and then left

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them to pick without supervision. The peaches they brought in were in the right condition; but I reflected that it was possible that they had missed several, so I went round the peach trees again myself with the greatest care, and was only able to find two peaches which should have been picked. I regard this as very excellent picking indeed, for it is easy of course for the most highly skilled picker to miss an occasional peach.

PACKING THE PEACHES

The peaches should be picked into baskets or orchard boxes. Do not fill your container. The peaches should not lie more than three deep and should be taken, without jarring or shaking, straight into the packing-shed. There they are graded according to size and colour; they are then packed. Containers are supplied by market salesmen to the grower of indoor peaches so that each peach can be packed with the greatest care, and surrounded by cotton-wool. That, of course, is expensive packing. I have hitherto adopted a much cheaper method, because the object of our work here is not to produce fruit at high prices for the rich, but to provide it in abundance for those whose means are more limited. Cheaper packing helps to lower the price to the consumer, and I look to the time when the £6-a-week household will buy peaches regularly.

At present I use 2-lb. and 4-lb. chips for the packing of the large peaches. Each basket is three parts filled with cellophane shavings, and the peaches are nested in so that they do not move about and rub each other. A cellophane cover is placed on each chip, and this provides a 'consumer pack', containing four and eight peaches respectively. Smaller peaches are packed in the same material in trays. I am using old tomato trays and am thus able to supply a non-returnable pack similar to that used by the Italians, but smaller in size and distinctive in appearance: it is always important, when competing with foreign supplies, to have a distinctive package—otherwise the public may be misled.

I trust I may be permitted here to explain the importance of economical packing in the marketing of fruit generally. High-

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cost grading and high-cost packing are always ultimately paid for by the consumer. Does the consumer realize this, and does the consumer want it? It will probably surprise the reader to know that the combined cost of grading and packing apples is greater than the combined cost of growing and picking those apples. Nevertheless this is a fact, and the same applies in some degree to other fruit.

The grower's duty is to look after the consumer first, last, and all the time. If we do this we are rightly performing our duty to the community and our reward is bound to follow. Hitherto Government marketing schemes have ignored the consumer and considered only the other interests—the retailer's, the wholesaler's, the processor's, the grower's. Now all these interests should be subservient to those of the consumer, and not opposed to them. This does not imply a lowering of the standards of fruit-production: on the contrary it means a better standard of quality.

May I point out to the Whitehall planner that the retail purchaser of English fruit is the housewife, in almost every case? If it is desired to make any change in marketing, it is the housewife who should be consulted, and the housewife only. Do not try to dictate to the housewife, or tell her what she ought to like, and do not go by your own preferences. A small extra sum in your weekly budget is nothing to you, but is a matter of great importance to the working housewife. So ask her all about her preferences, and abide by her views, and then you will avoid many of the mistakes you have made in previous marketing schemes.

A certain number of peaches will be unmarketable, owing to some minor defect, or perhaps because they are too small. I give particulars in a subsequent chapter, page 87, of how to deal with these.

If you pick your peaches too late and send them to market, by the time they reach the public they will be out of condition, overripe, and poor in flavour and texture, even if they are not already rotten. If you pick them too early, they will be a long time ripening in the shop, and when ripe will be rather sour

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and bitter in flavour, and the flesh will not be melting. So it is important to strike the happy mean. It is not so difficult as one might think; once again common sense and keen eyesight are what is required.

In America it is considered that three pickings are sufficient to deal with the whole crop of any one variety. Here I have known the picking of Peregrine to last for over five weeks. This is no doubt due to the cooler summer here. It makes the picking of peaches a little more expensive in this country, but it spreads the crop over a longer season.

GRADING

We grade peaches according to size. Until 1949 we graded by eye—a troublesome and annoying process. We make three main grades, and it is a matter of extreme difficulty, by eye, to draw the line between these. Some growers, I believe, actually weigh each peach.

This is what we do. We have constructed a home-made grader for size. This consists of two stout canvas bands running on a hand-operated spool. These bands are not placed parallel, but diverge so that the space between them becomes increasingly wider. It will be seen that the small peaches drop between the bands first, then the medium ones and lastly the large ones. One band moves quicker than the other, so the peach is turned round as it moves along. Below the bands there is a canvas set at a gentle slope. The peaches drop on this canvas and move down gently to a grading tray (see Plate 17).

A packer stands at each tray and packs peaches from the tray into the various standard containers ready for market. These containers are half filled with cellophane shavings, and each peach is nested into this bedding so that it will not roll about or touch the next peach in transit. The man who operates the hand-grader examines each peach as he puts it on. All split stones are taken out, as these peaches are useless for selling and must be made into jam or chutney. All peaches with the smallest defect, such as a bird-peck or damage by insect or the like,

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are put aside for bottling or for sale as bottling fruit. The public buy these at 1s. per pound for bottling and preserving. Some of these peaches are, of course, perfectly good for dessert, but they all have some definite defect, though it may be trivial. Again, the packer examines each peach in packing, as a check on the work of the man who operates the grader.

Now most of our trees are young ones, and picking entails a considerable amount of walking for a comparatively small number of peaches. Working on these lines, however, we find that we can pick, grade and pack for market one hundred peaches per hour for each employee engaged in the operation. The grader only costs a few shillings to make, and can be seen in operation here at any time during the picking season. According to the hourly wages paid, the cost of picking, grading and packing can thus be worked out by each grower for himself.

IX

THE EFFECTS OF THE SEVERE WINTER OF 1946-7

In 1946-7 we had the coldest and longest winter that this country has known for many years. We thus had a real test of how bush peaches in the open stand up to abnormally cold conditions in winter in this country. Once the snow and frost were gone, we had no further spring frosts. Then following this, we had the longest drought that we have experienced in the previous twenty years. These abnormal conditions had their effect on the peach bushes and I propose to discuss them fully, as there are useful lessons to be learnt.

When the frost and snow had cleared away, I received rather alarming reports from other districts that peach buds had been destroyed by the frost and samples were sent to me which certainly showed this result. To begin with, I could find no buds damaged by frost on my own bushes, but as normal development took place, I found that several buds had been damaged, and in general these appeared to be the leaf buds. I went at once and examined all the other fruit trees growing here, apples, plums, pears, cherries, and I found they had all suffered in the same way. Cherries seemed to suffer worst of all, then apples, then peaches—there was not a great deal in it.

In other words, bush peaches here seemed to stand the exceptional winter of 1946-7 at least as well as apples. In other districts they did not do so. Why was the damage so much worse in other districts than it was here? Certainly one would expect it to be more or less the same here as in the Home Counties.

Now it was an interesting season and strange things happened; for example, the gorse bushes in the south were cut down

The Effects of the Severe Winter of 1946-7

by the frost, and gorse is, of course, an indigenous plant. Figs, too, were in many cases cut to the ground in our district. I know of one fig tree in particular, which must have been at least thirty years old. It was a beautiful tree producing good fruits year by year, and it grew on a wooden building facing due south. This fig tree was cut right to the ground by the frost. Yet I have figs here, planted out in the open, and they were only just touched. Why the discrepancy?

SHELTER AND FROST DAMAGE

I thought it might be likely that those fig trees which were in sheltered positions suffered most in a heavy frost, while those out in the open would not be so affected. I consequently went round to all the fig trees I could find in my neighbourhood to discover if the suggestion had anything in it. I found it was universally true. So true, that if a man told me he had a fig in his garden, and described where it was growing, I could then tell him if it had been cut by the frost or not. In every case I was right.

I think the explanation is partly due to the very wet autumn we had in 1946. Those fig trees which were sheltered produced a good deal of sappy growth and were thus more tender than those fig trees grown out in the open. I think this is the reason to account for the fact that in some parts of the Home Counties many of the buds of the peach were destroyed by the frost, whereas here only a few were destroyed. It is, in my opinion, always wrong to plant peaches in sheltered positions. So this is the first lesson to be learnt from the cold season of 1946-7.

LATE FLOWERING

An interesting feature of the 1947 season was that the peach flowered extremely late in that year. I have the records of the date on which we reckoned that Peregrine peach was in full bloom here; in 1944, April 18th; in 1945, April 7th; and in 1947, May 9th. It will be seen that the blossom came out a *month* late

The Effects of the Severe Winter of 1946-7

in 1947. The ripening, however, was only a day or two later than normal. In other words, between May and August, the peach made up almost the whole of the arrears of development. Fruits generally do this when their early growth is retarded in the spring. As I say, the ripening of Peregrine was a little later, the first consignment to the market being on August 14th, as against August 12th in 1944, and August 10th in 1945. Not only did Peregrine begin ripening later, but it ended earlier. All the Peregrine finished by the 23rd August: it was a light crop.

When the blossom came out after the severe winter, I was gratified to see that there was a fair show of blossom on the experimental trees which had been sprayed according to the routine. Those peaches which had undergone the experiment of not being sprayed in the previous year, and which consequently suffered extensively from leaf curl in 1946, produced (as I predicted) practically no blossom in 1947 and no fruit at all in 1947. The other trees came out with a fair show and weather conditions were normal except for the prolonged drought.

But the resulting crop of fruit was a small one, and this small crop was due to an abnormal drop after the first thinning. Can we account for this abnormal drop? Was it due to the fact that 1947 was an 'off' year for peaches here, was it the effect of the abnormal cold of winter, or was there some other reason?

NITROGEN DEFICIENCY AND DROPPING

Now trials at Lafayette, Indiana, in 1945, showed that lack of available nitrogen when the peach is beginning to harden and development of the cotyledons is taking place is directly connected with an abnormally large drop of peaches.

It so happened that no nitrogen was put on my experimental peaches in the season leading up to the harvest of 1947. Dried blood had been put on in January 1946 and the drop was small in that year. It seems reasonable to suppose that deficiency of nitrogen caused that abnormal drop in 1947. I recommend now that some nitrogenous manure should be used every year on established bushes.

The Effects of the Severe Winter of 1948-9

After this cold and prolonged winter, when the peaches came into leaf they grew very vigorously. I have never known such growth of leaves since I started in 1936. The leaves were larger and a darker green in the fore part of the season. Evidently the cold winter stimulated growth.

A PRUNING ERROR

We had to face a problem with regard to pruning then. As will be explained later, we cut out all blind wood in normal pruning. This year, realizing that several of the leaf buds were apparently frosted, we considered we should modify our pruning. It was considered that some of the blind wood might be caused by the bud being killed by the frost, and not by dieback.

Therefore, our method of pruning was only to cut out blind wood if we felt sure it was nothing but dieback. I consider that this modified pruning special to the season was wrong, judging from the later development of the trees. I think we should have done better to have kept strictly to our pruning rules. It appeared to me that we left quite a number of shoots which should have been pruned out owing to dieback.

It is unlikely, of course, that such a hard winter will occur again within the next fifty years, but I intend henceforth to prune strictly in accordance with the plans laid down. There are indications that the few buds frosted were almost entirely on twigs suffering from dieback.

Little harm has been done and we put the matter right when we pruned in 1948.

X

THE EFFECTS OF THE MILD WINTER OF 1948-49

This was the mildest and driest winter in living memory, so we were naturally interested to see what effect it would have on the peach bushes.

As farmers and general fruit-growers we rejoiced in this mild and dry winter. All agricultural and horticultural winter work was done under the best conditions—planting and pruning both went forward almost without a break, and agricultural preparedness took a leap forward. But what effect did this have on the peaches? Not a very favourable one, I regret to say. Growth in the spring of 1949 was slow and lacking in vigour. The setting of the peaches was excellent, due no doubt to the use of nitrogen, and heavy thinning had to take place. But the bushes were late coming into leaf. The elm tree, too, was very late in breaking, being a month behind the time noted by Robert Browning.

Now following this mild winter we had a drought worse in its effects than the drought in 1947. It is true that we had one good soaking shower at the beginning of June, but from then on we only had one or two light showers up to the end of August. Other districts in East Anglia were more fortunate than we were. The weather was hot, too, although 87 degrees was our maximum temperature. Now the peaches liked the hot weather of the summer, but for the first time since 1936 the leaves showed signs of flagging in the middle of the day. The fruit everywhere was highly coloured and juicy, though small in size on some of the younger bushes. Had we been able to foresee the drought we should, of course, have thinned and pruned the bushes harder than we did.

The Effects of the Mild Winter of 1948-9

We noticed plenty of fruit buds forming in the summer of 1949, and these gave us a good display of blossom in the spring of 1950. But again, the winter of 1949-50 was a mild winter (though not as mild as that of 1948-9). Again the growth in the spring of 1950 was slow, and lacking in vigour.

PESTS

In the early spring of 1949 we were warned by East Malling that 1949 would be an aphis year. Here let me pay tribute to the service which East Malling performs in this matter of pests. Again, this year, their predictions were fully justified. I cannot remember a year in which aphis was so plentiful and so persistent. In spite of using winter sprays we had to spray apples and pears with nicotine in May. Some pears had to be sprayed three times. The strawberries were particularly affected, and this was the experience of all areas in East Anglia and Essex. We have to take great care with strawberries, as we grow runners for sale. We sprayed our strawberries four times instead of the usual twice.

Peaches were no exception. We used nicotine dust (3 per cent Belumnite) wherever we saw signs of aphis on the peaches, and this entailed spraying about 5 per cent of the bushes.

In the course of experiments here, lasting now for fourteen years, we have only had to spray on two previous occasions and on each of these occasions it was only three or four bushes out of our total acreage that needed spraying. It is to be noted that aphis was only found on peaches in sheltered positions. Here is another reason for choosing an exposed situation for peaches.

A LEAF CURL ATTACK

But there was another feature of the spring of 1949 which must be noted. We had an attack of leaf curl, even on those bushes which had had a full normal routine spraying with Buisol and Sulsol. This is the first occasion when we have had such an attack since we developed the full spraying programme, and it shows that our spraying routine is not yet quite a hundred



15. Mature bush insufficiently thinned



16. Mature bush correctly thinned



17. Home-made peach grader

The Effects of the Mild Winter of 1948-9

per cent effective. The infection was light, and it had no effect on the next year's cropping, but it was there and must be noted. I do not know if the leaf curl can be associated with the mild winter. Again, I beg our research stations to investigate leaf curl more fully. We do not know enough about it. From reports all over the country 1949 was a bad year indeed for leaf curl—the trouble seems to have occurred almost everywhere. Those growers who did not spray their trees have had a severe attack. I attribute the attack on our sprayed bushes to the fact that we sprayed in misty weather. The bushes should be absolutely dry at the time of spraying, with a prospect of at least twenty-four hours without rain. Experience shows that knapsack sprayers do not give sufficient cover to combat leaf curl. High-pressure sprayers are necessary. The grower who is compelled to use knapsack sprayers should spray with Sulsol twice, with an interval of a week or so between the sprays.

DELAYED GROWTH

Another feature of the mild winter of 1948-9 is its effect on peach bushes planted in that season. Without exception they have been slow in coming into leaf. So slow, in fact, that I had several letters from growers who were worried as to whether their bushes were alive or not. However, apparently there has not been an undue number of deaths; with two exceptions, it was only a question of delay in growth. The same phenomenon was very clear on this farm. I am inclined to think from experience here and elsewhere that it is inadvisable to plant peaches from the end of December to the middle of February. It is better to wait until the middle of February or later if you cannot plant before mid-December. If the newly planted bush is slow in coming into leaf, prune it really hard at the end of May instead of pruning only to the second strong sideshoot (see page 141).

DORMANCY AND MILD WINTERS

From our experience both of the abnormally cold winter of 1946-7 and of the abnormally mild winters of 1948-9 and

The Effects of the Mild Winter of 1948-9

1949-50 we can sum up the position with regard to winter temperatures on the peach in this country: the colder the winter weather the better will be the growth of the peach in the spring, while mild winters lead to slow and delayed growth. We can, however, congratulate ourselves that our peach bushes do not suffer from what is known as 'dormancy'. In the southern states of America, in the south of Italy and in parts of South Africa, the length of the winter is sometimes insufficient to perfect the formation of both leaf and fruit bud of certain peaches. Most peaches require as much as a thousand hours in the winter of under 45 degrees Fahrenheit: the variety Mayflower requires 1,300 hours of chilling. If they do not get this, then the buds are not formed properly, resulting in delayed spring growth, loss of blossom and loss of leaf.

Now the winter of 1949-50 was a mild winter, and I happen to have the temperature records for this farm. Here we had 2,734 hours below 45 degrees, so I do not think it likely that we shall ever suffer from dormancy in this country. Though our winters are in general not cold enough to get the very best results, yet they are certainly *long* enough to ensure that the peach buds are developed properly.

In the southern states of America varieties are chosen which only require a short period of dormancy. Florida peaches are generally of this special type: they are reported to be lacking in size and quality.

XI

PESTS AND DISEASES

In this country the peach bush is singularly free from many of the pests and diseases which afflict other fruit trees. It is also free here from many of the pests and diseases which affect the peach abroad.

RABBITS AND HARES

Rabbits and hares are not particularly fond of peach trees. They both prefer the bark of other trees, particularly apples; but they will cause much damage to young peach bushes unless they are prevented from doing so. It is generally the young shoots of the newly planted bushes which they damage. When the bush is well grown, they do no harm in my peach orchards. I have never known them to touch the stem of a peach of five years old and upwards. As this is so, it is not necessary to wire the outside boundary of the whole field. Instead, I put wire round each bush at the time of planting. This wire should be at least two feet high, and should be pegged down to keep it in place when winter gales blow. I have lost quite a few young trees because the wind blew off the wire; then the rabbits and hares got busy. The wire has to be removed for hoeing once or twice during the summer, because otherwise the weeds growing round the peach bush compete with it for the moisture in the soil. Four or five years after planting, according to the growth of the bush, I remove the wire altogether, at the time of the May pruning. I then leave the peach unprotected. Note that some of the young branches occasionally rub against the wire and develop dieback as a consequence. Such branches should, of course, be pruned off close to the main stem in the May prun-

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ing. In my garden, near to the house, I find it is unnecessary to use any wire at all.

On one occasion my planters were careless and failed to wire one or two bushes planted in the field on a Saturday morning. The hares had them over the weekend, and they had to be replaced.

GREENFLY, RED SPIDER, ETC.

Peach leaves appear to be *almost* impervious to the attentions of the greenfly. I have never observed damage by any caterpillar. Insects appear to leave the peach severely alone. All this is very helpful, as it follows that there is no need to spray the bush with tar-oil distillate. I have never used ordinary winter wash on my peaches. In 1947-8, as an experiment, I sprayed a few peach bushes with D.N.C. I completely killed one thriving bush by so doing, and two other trees each lost a limb. So the grower must not use tar-oil or D.N.C. on peaches—if he does so, apart from the damage to the bush, he will kill the predators which live on red spider. The result may well be a heavy infection of red spider. Personally I have never found more than an occasional red spider mite on my peaches, and they have had no effect whatever on the growth or fruiting.

In the course of fourteen years I have only found aphid on peaches on four occasions, and on only three occasions has it been necessary to take action. I then sprayed with nicotine dust and cleared the infection. It will be noticed that the leaf of the peach is hard and tough. The aphid can only live on the very youngest opening leaves and a little nicotine powder will prevent them from establishing themselves if they are ever seen to curl the leaves.

In the spring of 1946, three entomologists came here from Cambridge to look for aphid on my peach bushes. The reason for their search was this: there is a serious disease of sugar-beet called the 'Yellows', and apparently this is transmitted to the sugar-beet by an aphid of the peach. These entomologists wished to find out if this aphid was to be found on my peach bushes. If they had found large numbers on my peaches they



18. The effect of leaf curl on an unsprayed peach



19. Young Early Rivers Nectarine in bearing. Summer 1949



20. Apricot bush. Summer 1949

Pests and Diseases

might have linked up the growing of peaches with the infection of the 'Yellows' on sugar-beet. Now the 'Yellows' is a common and widespread disease, and there are not enough peaches grown in England to affect the sugar-beet crop on a commercial scale. Moreover, I myself have grown sugar-beet between rows of peaches and have not seen any beet affected by the 'Yellows'. So I was in no doubt as to the result of their investigation. The three scientists did their best—they peered at the peach bushes through magnifying glasses but they failed to discover a single aphid. This is a late district and I attribute their failure to the fact that they came a little too early for the first hatch. However, as I say above, it is not likely that peach bushes are the source of the greenfly which affects our sugar-beet. The spindle-wood tree is the alternative host.

DISEASES OF PEACHES

The peach suffers from two serious diseases. The first is die-back and this is indeed a serious disease. Unless it is dealt with it will kill the tree. Its outward manifestation is as follows: first of all (if the infection is slight) the leaves come out late in the spring, are small, and tend to be yellowish. Then some of the terminal buds fail to develop and the bark at the end of such twigs begins to shrivel. This shrivelling will develop right down the twig to the main stem and even farther. If the reader refers to the illustration (Plate 30), 'Peach unsprayed', he will see good examples of this manifestation. Again, sometimes the terminal bud will develop but there will be a considerable portion of 'blind' wood below the terminal bud until we come to the first sideshoots. The reader should refer again to the same illustration to see examples of this too.

Another indication is gum on the bark, often to be found some way below the dying portion. If the dying portion of the twig is cut off below the withered bark, there is a brown mark in the wood. Let the grower now cut off just above the first sideshoot. Still the brown mark is visible, If, however, he cuts be-

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low the second strong shoot, he will get clear wood; that is the reason for pruning to the second strong shoot.

I sometimes wonder whether the dying of the shoots was not attributed to frost in the old days. If so, that would account for the mistaken belief that the peach is a tender subject.

DIEBACK

Whenever a fruit-grower tells me that the young wood on his fruit tree fails to ripen in the autumn, I suspect the presence of some disease or some incorrect soil condition. It is an easy mistake to attribute abnormality to climatic conditions, when in fact disease or ill nourishment is the primary cause. Be that as it may, it is quite certain that the dying of shoots on the peach bush is due to dieback and not to climate. Now dieback must be tackled from the start, first by producing strong vigorous growth. This is why I stress the importance of good soil conditions, of propagating on the peach stock, of manuring, of pruning, and thinning; for all these cause the tree to grow strongly and well.

If you want to ensure that the slum child grows up into a healthy adult, you take the child into the sunshine of the country and give it an adequate and varied diet. It is not sufficient to leave it half-starved in the slums and dope it with drugs. So with peaches. Have all the cultural conditions right and you build up the tree and give it power to resist disease.

Secondly, preventive and curative measures must be taken by spraying. I will begin by saying that the private gardener can sometimes dispense with spraying altogether if he wishes; and that up to the third year the commercial grower can cut down the programme to one autumn spray and to one spray of Sulsol in the spring. For more mature trees, however, it is necessary to carry out the following spraying routine.

SPRAYING PROCEDURE

In the autumn, when the first leaves begin to fall from the peach trees, spray with colloidal copper sulphate. Experience

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will show you which is the best form to use of the various proprietary brands. We use three pints of Buisol (Boots) to one hundred gallons of water. About a fortnight later we repeat the spray. Always spray when weather conditions are right, i.e. the bush should be fairly dry and there should be a likelihood of at least twenty-four hours' fine weather after the spray is put on. After the turn of the year (sometimes in January, sometimes in February) the buds begin to swell slightly. This can only be observed by close examination. This is the moment when you should repeat the colloidal copper sulphate spray. About a fortnight later the buds will crack, showing the first faint signs of pink. Then spray again, but this time use Sulsol or lime sulphur. This last spray is apparently a control of the next disease we have to discuss, namely Leaf Curl.

Here let me explain that weather conditions may postpone these sprays for quite a considerable period. Never mind if this is so. Wait for the right weather and then spray, even though the season is advanced.

LEAF CURL CONTROL

Leaf Curl on the peach bush looks so horrible that the amateur is very upset when he sees it. He can comfort himself, for unlike dieback it will not kill the bush. Articles on peach-growing recommend him to pick off each blistered leaf. I do not consider this worthwhile. But at the time of pruning the pruner will of course, cut back to a clean shoot wherever possible and that will remove a large proportion of the leaf curl.

There was a time when I thought I had controlled leaf curl entirely by the use of colloidal copper sulphate. Experience subsequently showed that this was not so. Leaf curl is a queer infection, of which little is known; it comes and goes in a remarkable way. Apparently Sulsol does give some measure of control, but I was wrong once about control and I may be wrong again. However, I give the best information I have.

In 1945-6 I left certain bushes entirely unsprayed (see Plates 18 and 30). Compare this with the sprayed peaches, particularly in

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relation to leaf curl. As will be seen in the photographs reproduced in this book, there is practically no leaf blister on the sprayed bushes, whereas the unsprayed bushes are badly affected.

From observation I can give this further point. If you get a bad outbreak of leaf curl it will not destroy your crop of peaches for that year. You must prune hard and thin the peaches hard to make up for the lack of leaf in the spring, and your peaches will probably be smaller in size, though they will ripen satisfactorily. It is the following year's crop which will suffer. You must expect to get very little blossom in the following spring; and little blossom means less fruit. I think the reason for this is that the spring crop of leaves determines the formation of fruit buds for the following year.

BIRD DAMAGE

I am often asked if birds damage the buds of the peach. The answer is that I have not known this to occur. But I am fortunately placed here with regard to birds. The two worst enemies of the fruit-grower are the bullfinch and the tit. Neither of these birds is common here.

While on the subject of birds in relation to horticulture and agriculture, I regret to see the amount of untruthful propaganda issued by those persons who write to the Press, signing themselves 'Bird Lover' and the like. We all like to watch the habits of wild birds, but amateur ornithologists should be careful not to make statements which are inconsistent with the facts.

It is well known, for example, that certain birds attack fruit buds in the early spring, and cause serious damage. The damage is most serious in the case of the greengage, causing it to crop only occasionally in the private garden. I have seen it alleged in the Press by bird lovers that birds strike out the buds in the early spring to get at the caterpillars inside the buds. Of course, this is quite untrue; there are no caterpillars inside the buds of the greengage or any plum in January, February or early March. The birds strike out the buds because of the sweet sap.

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They eat a little of the buds, but scatter most on the ground. On this account (incidentally) the private gardener who plants greengages in his garden stands far less chance of getting fruit than he who plants peaches.

ROOKS AND WIREWORM

Again, it is frequently claimed that rooks do more good to the farmer by eating the wireworm than they do harm by taking corn seed from the fields. A large number of rooks have been killed, and their crops examined. In general it is found that these crops contain more wireworms than corn seed, and so the bird lover uses this fact to argue that the rook is more beneficial than harmful. But who is to assess the good of one grain of wheat as opposed to the harm done by one wireworm? It has been estimated that the total population of rooks in this island is three million. There may well be more than three million wireworms in a single acre of arable land. Can it seriously be alleged that rooks are an adequate control of the wireworm menace? The few hundred million wireworms that rooks destroy each year can have no appreciable effect on the wireworm population of our fields. On the other hand the damage to our fields caused by rooks taking the seed is a serious item indeed, as any unprejudiced farmer will tell you. There are, in fact, plenty of ways of dealing with wireworms—but the use of the rook is not one of them.

Rooks are extremely interesting birds, and it would be a tragedy if we had none in this country. We must, however, keep the numbers strictly limited. In general, the more numerous birds of a species are, the more harm they individually tend to do. If too numerous they are forced to seek new sources of food supplies, and their natural course is to seek these at the expense of man. A good example of this is the case of starlings on the heavy lands of West Suffolk. When I came to Wickhambrook in 1928 there were not many starlings here, because this was an arable district, with little grass. They never attacked my fruit, and I of course left them alone.

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STARLINGS

The agricultural distress of 1928 and after led to large areas being put down to grass, and the starlings began to increase very rapidly in numbers. They found themselves hungry and thirsty in the summer and so attacked the fruit. I was put to some considerable trouble to try to reduce the number. In spite of my efforts, however, they were a most serious pest, destroying many hundredweights of soft fruit. After 1939, almost all the grassland of this district was ploughed up again under the orders of the War Agricultural Committee, and it was brought back into arable farming. The number of starlings rapidly declined as the grassland declined. Starlings now do practically no damage to fruit here, and I can once more leave them undisturbed. Starlings are interesting birds, and I have often been delighted by their astonishing powers of mimicry. I have known a starling to perch at the top of an ash tree here and mew like a kitten, so much so that the kitten's owner begged me to climb up and rescue her pet. It took some time to persuade her that a bird was the source of those pathetic mewings. I have also known starlings that imitated the sound of drawing water from a well; the rattle of the chain and the creak of the winch were supremely well done.

There is one more pest to be mentioned. The commercial fruit-grower must remember that ripe peaches on a bush are very tempting to those of us who are apt to be light-fingered. They are also readily saleable in any market.

There is a story of a man who had peaches growing on a wall in his garden, but only a few ever seemed to ripen sufficiently to be brought into the house. On one occasion he happened to get up before breakfast to walk in his garden, and came to the north side of the wall on which his peaches were growing. From the other side he heard two voices in somewhat heated conversation, one of which was unknown to him. The other he quickly recognized, however, when he heard his head gardener say in tones of indignation: 'What, only three bob a dozen for them peaches! I'd sooner the master ate them.'

Pests and Diseases

We must see to it, too, that the casual stranger from the town is not tempted to forget the eighth commandment. Country people in general realize that petty theft is too anti-social to be indulged in at the expense of neighbours, but townfolk do not feel under the same obligation. Therefore protect your crop from the visitor to the country, particularly the visitor from London; for I regret to say, our experience shows that the larger the town the greater the dishonesty of certain of its individual inhabitants.

XII

PEACHES IN THE OPEN AND PEACHES ON WALLS

The reader who has read thus far, if he agrees with me, will realize that people who grow peaches on walls give themselves (and their trees) a lot of unnecessary trouble. Let us compare growing peaches on walls as trained trees, and growing peaches in the open as bushes.

THE QUESTION OF ASPECT

Peaches grown on walls come into flower earlier than those grown as bushes, and the flowers are more tender. The early blooming is a disadvantage as it increases the risk of frost damage. There are several schemes, of course, for protecting peaches grown on walls from frost damage, but they are all troublesome. The wall facing west is the first to suffer from frost (other things being equal), and the east is the last. Virgil says: 'Avoid sloping your vineyard towards the setting sun', and he is quite right, because the slope facing west is the slope most liable to frosts. The same is true of fruit grown on walls. Is it not strange to reflect that though Virgil knew this fact nearly 2,000 years ago, our government experts to-day are still ignorant of it? They still recommend south and west aspects, and even warn prospective growers against the east and the north. There must be many of the highest officials of the Ministry of Agriculture who have received the benefit of a classical education; would they please instruct their subordinates to follow Virgil on this point, for he is right and the experts are wrong.

The training of peaches on a wall is a work requiring great



21. A view of the apricot orchard. Summer 1949



22. Another view of the same orchard. Summer 1949. The bushes in the foreground were planted in 1948



23. Damage caused by birds to greengage bush. These two shoots were cut from the same greengage bush, growing in the garden of Clopton Hall. The birds did not touch the buds of the shoot on the right. The one on the left has been almost stripped of its buds by birds during February. It should be noted that new growth will never come again on greengages where the bud has been destroyed. The wood will remain blind so long as the bush lives. Moreover, dieback infection will generally enter where the bud was pecked out

Peaches in the Open and Peaches on Walls

skill, patience, and plenty of time. A well-trained peach on a wall is a beautiful sight and a badly trained one is untidy and ugly. A few years ago I saw a garden with beautifully trained peaches. I asked the head gardener, a highly skilled man, how long it took him to train one peach. He told me he could train one peach in about three-quarters of a day, but that his second gardener took a whole day to a peach, sometimes a little more. How many owners of gardens will be able to afford the skilled staff necessary for peach training? Surely very few. Fruit-growers in this country owe an immense debt to the old Victorian gardeners of the stately homes of England. The work they have done, the discoveries they made, and the new varieties they have introduced all bear testimony to their knowledge and experience; but their work was based on cheap and plentiful labour, no longer available. I greatly fear that the heyday of English gardening on the grand scale is passed. Of course, we now have East Malling, Wisley and Long Ashton to help us in our problems. But let us not forget the great work done by the English—or should I say Scots?—gardener of the last century.

Birds, earwigs and wasps all attack peaches grown on walls, and the last two may be really serious pests, as every gardener knows.

I said in the preceding chapter that I had not known peaches to be damaged by the pecking of birds. This is generally true with regard to the experimental peach trees and those which are near my house, but I must now mention that in 1946 and 1947 a few peaches were pecked by birds. This occurred on the recently planted trees only, and only when they were some little distance from the house. I suspect the rook and jackdaw of being the guilty parties, but I was not able to detect any birds in the act. If it is the rook and jackdaw, that is what one might expect, because rooks and jackdaws in this district will peck apples on little apple trees of about the same stage of growth. They seem to leave the apples on the larger trees entirely alone. I cannot account for this, but it is what I have observed over the course of years here. Rooks and jackdaws are troublesome in this district. I do not consider that the damage to the one or two

Peaches in the Open and Peaches on Walls

peaches done by birds is of any economic significance, because the proportion so damaged is extremely small. It is well, however, that it should be remembered, because the grower who plants his young trees away from human supervision is liable to have a few fruits pecked when the trees are young.

EARWIG DAMAGE

Earwigs may do a little damage to bush peaches. There will always be one or two peaches with split stones. The earwigs creep into the crevice by the split stone and make an unpleasant mess in the centre of the peach. I should mention here that the incidence of split stone is extremely small, unless the grower makes the mistake of watering his outdoor bush peaches. When I made the experiment of overhead watering I greatly increased the number of split stones on the peach bushes so treated. The grower should note, therefore, that he should never water outdoor peaches. If earwigs are troublesome the cure is to spray the ground under the peach bush with D.D.T. a month before the picking season. Peaches with split stones should not be sent to market but should be used to make jam or pickles.

WASP DAMAGE

I have only seen trifling damage done by wasps to peaches. We take great care to destroy all the nests we can, for we grow a considerable acreage of fruit here. Possibly as a result, we have not had what may be termed a 'wasp year' for a long time. It might be that if wasps were very plentiful they would start attacking the peaches and we might experience difficulty. Up to the present, however, I do not regard the wasp as harmful to peaches grown on bushes in the open.

Fruit-growers sometimes experience difficulty in finding out where wasps have their nests. There is an easy way of doing this which I commend to the fruit-grower and to the private gardener.

In the evening, all the wasps fly home. The wasp-hunter who

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suspects a nest in the neighbourhood should squat down low and gaze towards the west after the sun has just dropped below the horizon. He will thus be able to see the homing wasp against the sky and can watch the direction taken by the insect. He goes in the direction, squats again and follows the next wasp with his eye. It is possible by this means to find out wasps' nests more easily than by any other method short of stumbling over a wasps' nest and getting stung. We have destroyed as many as seventy wasps' nests in one year. The fruit-grower who makes a practice of taking wasps' nests, will earn the grateful thanks of all gardeners in his district—and of all picnic parties!

OTHER DISADVANTAGES OF WALL-GROWING

Another serious handicap which faces the grower of peaches on a wall is the fact that the roots can only grow away from the wall. You cut off half its land from the bush when you plant it against a wall. I have emphasized that the peach is a surface-rooter, and the roots travel for long distances; it is important that each tree should have a free root-run in every direction. The wall peach is limited in root-run; the peaches it produces on that account tend to be smaller than the peaches grown on a bush, less juicy, and not so well flavoured.

Perhaps the most serious disadvantage of wall growing is that you can only spray one side of the bush; the other side is protected from the spray by the wall. I see no method of overcoming this difficulty.

I have here a trained Peregrine peach bush, planted against a wooden shed, and this I have used experimentally. I soon came to the conclusion that it was wiser not to train it, and I allowed it to grow out from the shed as a bush, entirely neglecting the training. This peach used to bloom before those peaches planted in the open. It fruited perhaps a day or two earlier—there was very little in it. Grass and weeds grew round the foot of the tree, and I did not remove them. The peaches were then much smaller than on the bush in the open, not so juicy nor so well flavoured. The tree began to go back, leaves were small,

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and the fruit became smaller. I then put on two barrowloads of pig manure at the base of the bush, on top of the grass in the early spring. The effect was clearly marked. That year the peaches were nearly up to the size of those grown in the open and the vigour of the bush improved to a considerable degree. I have since repeated the dose each year. The tree is getting more like a bush each year, and is now almost as good as those bushes grown in the open. It is leaning away from the shed, and has practically ceased to be a wall peach.

It is only fair to add that this bush is awkward in shape. Those people who care for the appearance of their walled gardens should not, of course, let their trained peaches grow in this way.

One other experience. Many years ago, I knew of some wall-trained peaches which started to fail. Drastic steps were clearly indicated, and the trees were dug up for inspection. It was a case of starvation. The roots had got to the pure sand of the subsoil. A deep hole was dug and a large quantity of farmyard manure was put in each hole, the soil placed over it and the trained trees replanted on top. As a result the peaches came into growth again and subsequently fruited in a normal way for wall peaches.

XIII

CROPPING OF PEACHES

The prospective peach-grower will want to be given some idea as to the crops which he may expect if he carries out the routine correctly. Now it is very easy in all forms of agriculture and horticulture to be over-optimistic in giving such particulars. One is apt to judge from particular cases and from particular years. One is apt, too, to forget the failures and to remember only the successes. Speak to any fruit-grower you like and ask him what crops he gets from a certain field, and in nine cases out of ten he will tell you the highest crop he has ever got there and forget the year when that field yielded nothing. Or ask him the price he obtained and similarly he will generally quote you the highest price. I think, therefore, that I will give the actual figures of my experiment with the twenty-eight peach bushes as far as I am able to do so, and leave the prospective grower to make up his mind whether peach-growing is worth his attention. I must first explain that my figures are for peaches sent to market only.

My original twenty-eight bushes produced a little fruit in 1937 and 1938, but it was not until 1939 that I had a crop large enough to send to market. The eight Royal George were scrapped after 1942, and three of the twenty Peregrine bushes had to be replaced. This is not surprising, as I started my experiment with 'throw-outs'.

In 1944 and 1945 other peach bushes, planted later than the first experiment, began to produce a little fruit and this fruit is included in the figures given in Table 4.

Cropping of Peaches

TABLE 4. PEACHES SENT TO MARKET

1939	531	1943	2,763
1940	10	1944	4,983
1941	3,717	1945	666
1942	3,960	1946	5,107

It will be noticed that the crop in 1940 was only 10 peaches. This was due to the failure to thin in 1939. Then the crop for 1945 was only 666—this was due to ploughing between the bushes in the spring of 1944 and to an attack of leaf blister in that year.

It must be borne in mind that not only did I start with throw-out bushes; I also subjected these seventeen bushes to all the various experiments which have taken place here.

In 1949, the total crop of marketable peaches from these seventeen bushes amounted to just over 500 per bush. I have known one peach bush to produce over a thousand marketable peaches.

The size of each individual peach is determined by the thinning, the pruning and the manuring. Until recently I aimed to get peaches about four or five to the pound. Peaches are heavier than apples of the same size. In 1949, however, when the market was glutted, I found that the demand was for larger peaches than I was producing. In 1950 therefore, I thinned harder and pruned harder, in order to get larger peaches. I aimed to get two to three to the pound. The whole question to be considered is whether one receives more money for three medium-sized peaches or for two large ones. The public are now asking for large fruit of all kinds, and we must satisfy their preferences. It would have paid me well, in 1949, to have produced a smaller number of peaches of a larger size.

Every grower of apples knows that the young apple tree produces large fruit, but the young peach bush does not do this. On the contrary, the young bush tends to produce small fruit, and the mature bush large fruit. This fact, too, must be borne in mind when thinning.

Cropping of Peaches

THE YEAR'S WORK ON PEACHES (EXCLUSIVE OF PICKING)

Peaches only require labour at certain times of the year.

For the benefit of prospective growers, I give below particulars of the work done during one season. The dates I give are the dates on which the work was begun.

I must explain that this is a late district. It is late partly on account of the climate and partly on account of the soil, so growers in other parts of England must bear this in mind. A lighter soil would give earlier growth and fruiting, so would a milder climate. Each season, of course, varies, as will be seen from the blossoming record in Table 3, page 28. The calendar is but a rough guide to the fruit-grower.

I keep each year a record of the blossoming of each kind of fruit. This gives me an early indication as to whether the growing and ripening season is likely to be early or late. I am thus enabled to plan ahead; but, of course, actual operations must be carried out when the bush is ready for them, subject to the exigencies of other work on the farm.

The figures I give are for 1945-6. Spring 1946 was earlier than spring 1943-4 (which was about normal) and ten days later than 1944-5, an exceptionally early spring.

9th October 1945. Planting of new peach orchards was begun.

17th October 1945. The first spraying with colloidal copper sulphate.

29th October 1945. The second spraying with colloidal copper sulphate.

3rd December 1945. Newly planted peaches were mulched.

16th January 1946. 10 cwt. per acre of dried blood was put on the experimental plot.

9th February 1946. The third spraying with colloidal copper sulphate.

25th February 1946. Sulsol spray; straw put on to experimental plot.

16th May 1946. Pruning was begun, followed by the first thinning.

28th May 1946. Second thinning.

COSTS OF PEACH PRODUCTION

Tractor costs, sprayer costs, and overhead costs vary very much from farm to farm. The only item of costs which will be

Cropping of Peaches

of real help to the prospective peach-grower is the total labour cost. By adding his own tractor, sprayer, and overhead costs, he can form an opinion of what costs he must face in growing peaches. My figures do not include the cost of picking, but do include the labour spent in spraying, pruning and thinning. They do not include the cost of the use of the tractor, the sprayer, and other tools, or manure used. I calculated the figures by dividing the total labour cost by the number of bushes in the appropriate year, excluding all planting costs, which, of course, are a capital charge, but including the first year's pruning.

Labour and Material Costs (Exclusive of Picking Costs)

<i>Year</i> <i>Jan. to</i> <i>Dec.</i>	<i>Number</i> <i>of</i> <i>Bushes</i>	<i>Average</i> <i>cost per</i> <i>Bush (pence)</i>
1943	200	9.92
1944	200	11.80
1945	1,644	6.25
1946	2,845	10.74
1947	3,378	16.93
1948	3,673	14.82
1949	3,673	16.09

The drop in the cost per bush for 1945 is, of course, due to the planting of 1,444 more bushes. Young bushes require little labour. The increase in cost per bush from 1946 onwards is due partly to the increased wage of the agricultural worker, and partly to the fact that the peach bushes are growing older and require more attention.

The commercial grower will be able to compare these costs with his own costs of looking after other fruit bushes. For the benefit of the private gardener I may say that on this farm it costs in labour and material just about five times as much to look after an apple tree as it does to look after a peach bush. This means, of course, that peaches, apart from picking, require far less labour than apples require. This is an important consideration for the part-time gardener.

The prospective grower who wishes to convert these figures to

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acreage figures should multiply them by 75, as that is the number of bushes per acre. But please remember, these figures give the *labour and material costs only*, and are exclusive of picking costs.

PRICES OF PEACHES

During the war peaches were, of course, abnormally expensive. The retail price in August varied from 7s. 6d. each downwards, but these prices were purely wartime, and bore no relation to the cost of production and distribution. In 1946 the Government permitted very large imports of fresh fruit (mainly peaches) into this country, amounting to over two million pounds' worth, we are told. This policy was repeated in 1947 and 1948, and then in 1949 fruit imports from Italy, particularly pears, were permitted on such a scale that the British market was hopelessly glutted. Large quantities of Italian pears were sold wholesale at $\frac{1}{2}$ d. per pound, and this brought down the price of all English fruits at that time. The consumer, of course, did not get the advantage of this low price.

Our average wholesale price for peaches in 1949 (all sizes) was $1\frac{1}{2}$ d. each. I said in my previous book that I regarded $1\frac{1}{2}$ d. each as the lowest price at which a profit could be made. It is interesting to note that we made a profit at $1\frac{1}{2}$ d. per peach. As our bushes grow older and more productive, I consider we should make a bare profit at a 1d. each. I set out below the approximate average wholesale prices of all the peaches sold during these years:

Wartime price	2s. each
1946	6d. each
1947	$8\frac{3}{4}$ d. each
1948	6d. each
1949	$1\frac{1}{2}$ d. each
1950	$4\frac{1}{2}$ d. each

Fortunately for us, the majority of imported peaches are canning and not dessert peaches, and the flavour cannot compare with our home-grown fruit. A friend of mine carried out a

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'blind tasting', as it is called. He purchased some English hot-house peaches, some Italian peaches, and some outdoor peaches grown here. He then invited his friends at a luncheon party to taste one each of the three different peaches and to place them in order of merit. He told me that everyone placed the outdoor English peaches on top; that one or two considered that the Italian peaches came next, but the majority thought the English hot-house peaches came next and the Italians at the bottom of the list.

XIV

HOW TO DEAL WITH PEACHES AND APRICOTS WHICH ARE NOT MARKETABLE

The grower of peaches and apricots will find that a small proportion of his crop is not marketable. Some of the peaches may possibly be punctured by insects, have split stones, or be otherwise damaged in some way; they may be too ripe to send to market, or they may be too small. These peaches are not a dead loss and I give suggestions below for dealing with them.

The peach that is too ripe to send to market can, of course, be sold at the back door, but if this fails, it can be bottled. Such peaches, when bottled, are delicious and far better in flavour than the canned product of California. The same treatment is best for those which have been punctured by some insect, only in this case you will have to allow them to ripen fully before bottling, for peaches should be fully ripe when bottled. Peaches can be bottled either whole or cut. Dessert peaches in general are clingstone peaches, that is to say, the flesh of the peach adheres to the stone and does not fall apart as is the case with the freestone peach. The latter in general are canning peaches and are of inferior flavour. It is obvious that the canner must have a freestone peach if he is to can economically, except when he cans the peach whole. This does not apply to domestic bottling in the same degree. The peaches can be skinned before bottling. If the stone is to be removed, it is sometimes convenient to cut off a proportion of the flesh for bottling and to use the remainder for stewing, removing the stones in the process. An excellent recipe for pickled peaches, tested by us here with success, is

Peaches and Apricots that are not Marketable

to be found in *Good Food on the Aga* by Ambrose Heath (Faber & Faber Ltd.).

I am told by an ex-Serviceman who was stationed in Canada with his wife for some little time during the war, that in the district where he lived, peaches were sold in seven-pound baskets. Sometimes these were exceedingly cheap, depending, of course, on whether the year happened to be a glut one for peaches. They were on the small side and were not graded. The price varied while he was there from 35 cents to 1 dollar a seven-pound basket. Some of the peaches were ripe and others were not. The housewife picked out the best ones for dessert and the rest were bottled in heavy syrup or sometimes cooked for immediate consumption. So in like way we here use peaches which are not up to market standard for culinary purposes. No doubt the time will come when similar methods of marketing of the not so good peach will be adopted in this country, but we are a long way from this state of affairs at present; in the meantime, the peach grower who wants to save everything will adopt one or other of the methods given above. The amount of peaches which are not suitable for market is a small proportion indeed of the crop. We have never had enough of these yet to justify peach jam on a commercial scale.

In America they recommend a syrup of 50 to 60 per cent sugar for bottling peaches. They say that when less sugar is used the fruit may develop a strawy flavour and the colour, too, may be adversely affected. Ripe dessert peaches can, however, be successfully bottled in water only. The strawy flavour only develops when the peach has been picked too long before it is ripe. Such peaches become soft in time, but never attain their full sweetness and melting quality; actually, they should not be bottled at all, but should be made into chutney.

RECIPES

Here is our recipe for bottling peaches. Prepare a syrup, using half a pound of sugar to a pint of water. Of course a pound of sugar to a pint of water is better, but this is not practical until

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sugar is free again. Half a pound to a pint will make a good syrup and will be enough to prevent the bottled peaches from acquiring a strawy flavour in storage.

Take a sharp knife. Cut round the peach (which should be firm-ripe) and twist it between the palms of the hands. You will thus get two halves, one of which contains the stone. If the peach is ripe the skin will pull away quite easily, and this is the best way of peeling the peach. It leaves the fruit clean and smooth-looking in the jars, and the syrup remains clear. Pack the peeled and stoned halves, cut-side downwards, into the jars; cover with syrup and sterilize by any of the accepted methods. The half containing the stone may have to be cut into quarters before the stone will come out. These quarters should be packed into separate jars for sterilizing. Sometimes the peach is not quite ripe and the skin is hard to get off. We recommend bottling such peaches with their skins on, rather than trying to take their skins off by dipping the fruit into hot water, as one does when skinning tomatoes.

The next three recipes are also our own:

Peach Jam

4 lb. prepared peaches—not too ripe; 3 lb. sugar; $\frac{1}{2}$ pint water.

Peel and slice the fruit, removing the stones.

Put some of the stones in a small muslin bag with the fruit and water. Simmer gently until fruit is well cooked, and the juice will set when tested in methylated spirit.

Add the sugar. When this has quite melted, boil the jam fast until it is done.

Add a few kernels with the sugar. Remove the stones with the muslin bag, then put into jars at once.

Peach Jelly

Take an equal quantity of apples and peaches. Wipe clean and cut in pieces. No peeling, coring or stoning is necessary.

Place the fruit in a preserving pan; cover with water. Bring the whole to the boil, then just simmer until the fruit is quite soft and the juice sets when tested in methylated spirit. Strain

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the juice through a jelly-bag. Measure the strained juice and add 1 lb. of sugar to each pint. Let it boil fast till the jelly sets when tested.

Apricot or Peach Shrub

Shrub is a drink made by steeping fruit in rum. Perhaps the best shrub is that made from blackcurrants, but both peach and apricot shrub are very good drinks indeed. Here is the recipe:

Take a large jar and half-fill it with whole ripe peaches or apricots. Do not pierce the fruit or remove or damage the skin. Add brown sugar until you have the jar three-quarters full, one-half being fruit and one-quarter being sugar; then fill the jar with rum. Stopper the jar tightly and place it in a window where it can get the maximum amount of sunshine, turning the jar daily, so that the sunshine reaches every part. Leave it in the window until all the sugar has melted; this takes about three months. Then remove the jar to a cellar or dark cupboard and leave it there for not less than three months. Three days before you desire to serve the drink, decant the bottle.

It should be noted that the peaches or apricots should not be thrown away. They can be used as stewed fruit or for making a pie, or they can be sliced, dusted with sugar, and then served as a dessert. The fruit gives flavour to the shrub, and the rum gives flavour to the fruit when served in any of these ways. They benefit each other.

I have never tried the following recipes, which are taken from *A New System of Domestic Cookery*, by a Lady, published in 1858, but I commend them to all who are prepared to be adventurous in their diet.

Apricots or Peaches in Brandy

Wipe, weigh and prick the fruit, and have ready a quarter of the weight of fine sugar in fine powder. Put the fruit into an ice-pot that shuts very close; throw the sugar over it, and then cover the fruit with brandy.

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Between the top and cover of the pot, put a piece of double-cap paper. Set the pot into a saucepan of water till the brandy be as hot as you can possibly bear to put your finger in, but it must not boil. Put the fruit into a jar, and pour brandy on it. When cold, put a bladder over, and tie it down tight.

To Dry Apricots in Half

Pare, thin and halve four pounds of apricots, weighing them after; put them in a dish; straw among them three pounds of sugar in the finest powder. When it melts, set the fruit over a stove to do very gently; as each piece becomes tender, take it out, and put it into a china bowl. When all are done, and the boiling heat a little abated, pour the syrup over them. In a day or two remove the syrup, leaving only a little in each half. After about a day or two more turn them, and so continue daily till quite dry; in the sun or a warm place. Keep in boxes with layers of paper.

Apricot Cheese

Weigh an equal quantity of pared fruit and sugar, wet the latter a very little, and let it boil quickly, or the colour will be spoiled; blanch the kernels, and add to it. Twenty or thirty minutes will boil it. Put it in small pots or cups half filled.

Ratafia

The same volume also gives us a recipe for ratafia. I have never tasted this drink, but references to it in the eighteenth century are many. It is one of the drinks specifically banned by Mirabell in his famous speech to Millamant (Act IV, Scene I of *The Way of the World*). Again, in the first scene of the same play, Mirabell speaks of Lady Wishfort as follows: 'And who may have been the Foundress of this Sect? My Lady Wishfort, I warrant, who publishes her Detestation of Mankind; and full of the Vigour of Fifty-five, declares for a Friend and Ratafia; and let Posterity shift for itself, she'll breed no more.' But indeed there are very many eighteenth-century references to a cordial

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of which we now hear nothing. Coming to later times, all who are acquainted with the sad ballad of the unfortunate Miss Bailey will remember that her lover, smitten by conscience at her sad death, took to drinking ratafia. In these days of alcoholic excess, it is possible that some inquiring fruit-grower may wish to taste the brew. Here, therefore, is the recipe:

‘Blanch two ounces of peach and apricot kernels, bruise and put them into a bottle, and fill nearly up with brandy. Dissolve half a pound of white sugar-candy in a cup of cold water, and add to the brandy after it has stood a month on the kernels, and they are strained off; then filter through paper, and bottle for use.’

It certainly has the merit of simplicity in manufacture.

Peach Chutney

For peach chutney one may use the small unripe peaches which sometimes are found. Our recipe is as follows:

5 lb. unripe, undersized peaches with stones removed; 2 lb. soft brown sugar; 3 oz. salt; 2 level dessertspoonfuls cayenne pepper; $\frac{1}{2}$ pint tarragon vinegar; 2 pints brown vinegar; 1 pint white vinegar; Muslin containing 2 oz. pickled spice and 1 oz. root ginger (bruised); 1 lb. onions, chopped small; $\frac{1}{2}$ lb. raisins or sultanas.

Put all the ingredients in a preserving pan, and simmer until cooked. If the peaches are very unripe, a little more vinegar may be required. This quantity makes just over 9 lb. of chutney.

English Housewifery, by Elizabeth Moxon, published in 1749, gives several recipes for apricots.

To make Apricock Wine

Take twelve pounds of Apricocks when full Ripe, stone and pare them, put the paring into three Gallons of Water, with six Pounds of Powder Sugar, boil them together half an Hour, skim them well, and when it is Blood-warm put it on the Fruit; it must be well bruised, cover it close, and let it stand three Days; skim it every Day as the Skim rises, and put it thro’ a

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Hair Sieve, adding a Pound of Loaf Sugar; when you put it into the Vessel close it up, and when it is fine bottle it.

• *To Preserve Apricocks*

Take Apricocks before they be full ripe, stone and pare them, then weigh them, and to every Pound of Apricocks take a Pound of double refin'd Sugar, beat it very small, lie one Part of your Sugar under the Apricocks, and the other Part at the Top, let them stand all Night, the next Day put them in a Stew pan or Brass-pan; don't do over many at once in your Pan for fear of breaking, let them boil over a slow Fire, skim them very well, and turn them two or three Times in the boiling; you must put about half of them at the first, and let them stand whilst they be cool, then let them boil whilst your Apricocks look clear, and the Syrrup thick, put them into your Pots or Glasses, when they are cold cover them with a Paper Dipt in Brandy, then tye another Paper close over the Pot to keep out the air.

To make Marmalade of Apricocks

Take what Quantity of Apricocks you shall think proper, stone them, and put them immediately into a Skellet of boiling Water, keep them under Water on the Fire until they be soft, then take them out of the Water and wipe them with a Cloth, weigh your Sugar with your Apricocks, weight for Weight, then dissolve your Sugar in Water, and boil it to a candy Height, then put in your Apricocks, being a little bruised; let them boil but a Quarter of an Hour, then glass them up.

XV

NECTARINES

The nectarine, being a kind of peach, requires the same kind of treatment. In growth it makes a larger bush than the peach and is slower to come into useful bearing. The fruit of the nectarine in general is smaller than the peach and as far as I can learn, the productivity is much less. But the main difference, of course, between the nectarine and the peach is that the fruit of the former has a smooth, tight skin, whereas the peach skin is softer and of a velvety texture. I had no difficulty in growing the nectarine bush when I treated it just as a peach. Everything went well with the growth of the bush, but the fruit did not develop. Instead of swelling in a normal manner and reaching proper maturity, it remained the size of a plum even at the time when the fruit should be ripe. Indeed I cannot say the fruit ever *ripened* in the true sense. It got soft, yes, but it was deficient in juice and bitter in flavour; quite worthless in fact. Yet we all know that nectarines will ripen on the wall—indeed they are one of the most delicious fruits we grow in that way in this country.

EXPERIMENT WITH NECTARINES

At one time I almost despaired of succeeding, particularly as a Job's comforter told me that nectarines grown on bushes always behaved in this manner. However, I thought things over. As the only difference between a nectarine and a peach is the skin, it might be that here was the clue to the fact that my nectarines did not swell properly when grown on bushes. The idea came to me from observing the extremely slow swelling of the

Nectarines

nectarine when grown on a bush: possibly there was some factor which prevented it from swelling in the manner in which peaches swell and that factor seemed to be the tight skin. Now the way to make all fruit swell is to give adequate water, as every grower of cucumbers and marrows is aware. So I experimented by increasing the water available to the nectarine in the initial stages of development of the fruit.

Water is a scarce commodity in this part of England. We all have to rely on shallow water wells which are apt to dry out in the summer, on rain water collected in tanks, and on ponds. There is no public supply. Our low summer rainfall, the Ministry of Health and our local authorities, together combine to prevent us from getting water which other happier parts of this island do get. So overhead watering on any scale was out of the question. I therefore mulched the nectarines with straw in February 1946 in the same manner as I mulched cherries, thereby keeping the surface of the soil always moist throughout the spring and early summer. I give full particulars of the manner in which this is done when I come to consider cherries (see page 132).

The result was significant. The nectarine fruit swelled to normal size and ripened properly. I evidently had not mulched them heavily enough in 1946 because one or two of the fruits split as a result of a subsequent shower of rain, but I got good fruits ripening properly that year. Success in one year is not good enough, of course, so in 1947 I repeated the experiment with straw, giving more. In spite of the abnormal drought in 1947, the nectarines again ripened and this time they did not split. Experiments in 1948 and 1949 confirmed the above findings.

I form the opinion, therefore, on the strength of this experiment, that nectarines can be grown on bushes successfully in our conditions if attention is paid to this matter of watering in the very early stages of the formation of the fruit. Apart from that, the normal treatment as for peaches is all that is required.

The reader may well ask how is it that the nectarine will ripen on the wall, but has to be watered when grown as a bush. Now

Nectarines

I never have grown nectarines on a wall, so I am afraid I am ignorant of the methods adopted and cannot make the necessary comparisons: I can certainly think of one or two good reasons which might account for the difference between wall fruit and bush fruit, but as all this is mere guesswork and as this guesswork would not lead to any useful line of investigation, I must just plead ignorance. All I can do is to report the fact that nectarines grown on bushes do need watering in the early stages under conditions obtaining here.

I do not say that it is necessary everywhere to mulch or water nectarines grown as bushes. Customers of mine have been able to ripen nectarines grown as bushes perfectly well without the use of either, particularly in gardens; but that has been in districts where there is good rainfall in the spring. So those people who wish to grow nectarines where there is a drought in the spring should either water overhead or mulch. They will then find that nectarines on bushes ripen their fruit in just the same way that ordinary peaches do.

As a commercial venture, I do not consider that nectarine growing will show the same financial results as peach growing or apricot growing. To begin with, the general public do not appreciate the quality of the nectarine. It has to be picked some time after it has begun to get soft and on this account bruises easily in transit and the bruises show up on the skin of the nectarine. Before the war, when there was a luxury trade, it is true that nectarines fetched higher prices than peaches on Covent Garden, but the cost of producing nectarines is clearly much higher. I do not feel justified, therefore, in recommending the growing of nectarines to my fellow commercial growers. In the private garden, however, conditions of course are quite different and I consider that the private gardener would be well advised to plant nectarines. Apart from the water question they require precisely the same treatment as peaches. The private gardener does not have to send his nectarines long distances by rail. He waits till the nectarines are in melting-ripe condition and picks and eats them right away. Water for overhead watering is often available in gardens, and the May drought, and lack of dew at



24. Young Greengages on their own roots



25. The small greengage bush in the foreground is budded on Brompton. The large bush in the background next the car is on its own roots. These two bushes were planted at the same time and were then almost the same size. They received the same treatment in every respect



26. Victoria Plum tree cured of silverleaf by slitting the bark. This tree is budding on Brompton.
Note the heavy crop

Nectarines

that time, from which we suffer here, does not apply in the majority of English gardens. I recommend the two varieties, *Early Rivers* and *Lord Napier*, both of first quality and both yielding well for nectarines. I would recommend no late-ripening ones.

Although the nectarine makes a larger bush than the peach it should be planted at the same distance apart as the peach (see page 37).

PESTS

I feel, however, I must give a warning to the prospective grower of nectarines. Insects attack the ripening fruit of the nectarine and a large proportion of the crop is spoilt by them. The fruit of the peach, on the other hand, is comparatively immune from attack by insects. In the private garden, to combat the attack by insects, butter muslin can be used as protection (the method is described in the section on cherries, page 125).

There are indications that the use of sulphate of ammonia or nitro-chalk in the autumn on nectarines will cause the fruit to swell steadily and well without the help of the overhead watering which I mentioned previously. I am experimenting on these lines, but have not had sufficient time to reach definite conclusions. I mention this in case anyone should want to grow nectarines in a district where overhead watering is not practical. I consider it worth while to experiment on these lines.

Here again are the short rules for pruning nectarines, rules which are fully discussed on pages 136 seqq. in connection with peaches.

1. Prune at the end of May, at the time of the first thinning, when the sideshoots are two to three inches long. Never prune after mid-June.
2. Cut out all dieback and blind wood to the second strong sideshoot.
3. Gradually shape the bush to an open cup shape.

Root-stocks are discussed fully on pages 150 seqq. Peach root-stock is by far the best.

GENERAL OBSERVATIONS ON
APRICOTS

The textbooks on fruit-growing tell us that apricots can only be grown on a wall in England and Wales and under glass in Scotland—two statements which I had little difficulty in rejecting at the outset. We are also told that apricots will not grow in light soil. Possibly they prefer a heavier soil, but one of the best apricots I have ever seen, grew in the lightest of sand; it flourished exceedingly. So I cleared my mind of these and other guesswork statements and started afresh, treating apricots in the same way as peaches.

As a result of my experiments, I can now say this. Good apricots can be grown easily as bushes in open orchards. You treat them in exactly the same way as peaches with just one or two exceptions which are discussed below.

The apricot on the wall suffers from dieback more perhaps than any other fruit tree grown in this country. Those who grow apricots on walls know how serious the disease can be. Often a whole branch will die out completely from this cause; sometimes, indeed, the whole tree will die. Apart from the loss in crop resulting from the dying of a branch, steps have to be taken in the case of a wall apricot to lay in new shoots to take the place of the old ones, and it is very difficult indeed on this account to maintain a wall-trained apricot in reasonable symmetry. In this respect the apricot is a more difficult subject on the wall even than the peach.

To begin with, I had difficulty in obtaining stock, for there was practically none in the country. I was unable to obtain maidens from any outside source. Fortunately, however, one of my farms has a walled garden and on the southern wall there

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are two apricots. Moreover, these apricots throw up suckers of Brussel stock. I took up the suckers, planted them out, and budded them from the trees.

CONTROLLING DIEBACK IN APRICOTS

From such an exiguous source of supply, it took some time to build up my requirements. However, in October 1943 I was able to plant out a few. I proceeded to give them precisely the same treatment as peaches except that to begin with I did not spray them at all, as I wished to test the efficacy of May pruning as a means of controlling dieback without the aid of sprays. At the time of the first May pruning, a fair amount of dieback had developed. Bearing in mind the apricot's special susceptibility to dieback, I adopted the principle of cutting to the *third* strong sideshoot, instead of the second. Even then, I examined the wood and in the cases where the characteristic brown stain still remained on the wood, I pruned back farther until the brown stain was eliminated. This was only occasionally necessary, but I did it whenever it was indicated.

Now the adoption of this method controlled adequately the incidence of dieback on the young apricot *without spraying*, though it did *not*, of course, eliminate it any more than it does in the case of the peach. There was a lesser outbreak the follow-year and I have continued pruning in this way. Dieback was controlled without spray for the first three years. Since then I have sprayed in the same manner as I spray peaches. The incidence of dieback on these trees is now extremely small. It scarcely exists, in fact.

I recommend, therefore, that apricots should be pruned about the end of May just as we prune peaches, only going to the third shoot instead of the second.

ISLIP APRICOTS

No account of apricots would be complete without a reference to the famous village of Islip in Oxfordshire. I have never had the advantage of visiting this village, so what I am going to

General Observances on Apricots

say is only what I have been told. I submit it with due diffidence, as merely hear-say evidence. If my informants have misled me, I wish to apologize in advance, first, to the inhabitants of Islip and second, to the readers of this book. If the reader wishes for confirmation of these statements, it would be advisable for him to go to Islip. I can accept no responsibility for the tale as it was told to me.

I was told that in Islip, apricots were freely grown on the cottage walls; that they never had any trouble in getting good crops; and that the trees apparently never suffered from disease. I was told that various ideas had been mooted to account for the fact that Islip alone of all the thousands of villages in this country was able to grow apricots in this way. It was attributed partly to the soil, partly to climate, partly to the fact that the apricots were trained up the chimneys of the cottages; the warmth of these chimneys was supposed to ripen the wood in autumn and thus enable the apricot to stand the cold winters.

These were the various explanations put forward. My informants all insisted on the fact that apricots did grow there in this way.

During the war, my brother told me that he was going to the neighbourhood of Islip, so I begged him to verify for me the facts about apricots growing there. I thought that at last I should get the facts of the case from first-hand experience.

Alas, his report was sad indeed. As every investigator into village life should do, he went to the village pub, and stood the requisite rounds to the oldest inhabitants. When he brought the question of apricots into the conversation, there was a shaking of heads; he was told that no longer did the apricot flourish in Islip. He was told that the trees had all started to die in a mysterious way, and they reckoned they would never again grow there as they had grown in the past.

Now if this information is correct, I would suggest that the reason for Islip's reputation was simply that dieback had not reached them. When it did come in, the natural results followed, for clearly the oldest inhabitants' descriptions pointed to dieback and nothing else.

General Observations on Apricots

INFERTILE FLOWERS

The apricot develops a number of infertile blossoms. Recent research has shown that there are six types of ovary, of which only two are fertile. If your pruning is too hard, more sterile blossoms will be formed. Some varieties produce a larger proportion of infertile flowers than others. The apricot, however, produces so many flowers in a normal season that we do not have to worry about the infertile ones. I mention the fact because of course the infertile flowers drop to the ground. Unless the grower has this information he will assume that the drop of blossom is caused by cold wind or possibly by frost. He can rest assured that such falling of blossoms is quite normal, and does not represent frost or wind damage.

The leaf of the apricot, like the leaf of the peach, is hard and tough except in the early spring, and I have never known aphids to establish itself on the apricot. So I regard it as unnecessary and indeed inadvisable to use tar-oil sprays—inadvisable because of the danger of red spider and of spray damage. But the so-called winter moth caterpillar can and does feed on the leaves of the apricot in the spring, so we must use a spray to put this matter right. It is quite simple. Use arsenate of lead as soon as the caterpillar is observed on the leaves. Apart from this, the spraying should be just the same as for the peach. I have never observed leaf curl on apricots.

The manurial requirements of the apricot are precisely the same as those of the peach.

With regard to the fruit, however, there are certain differences on which we must touch. The apricot has to be picked in a fully ripe condition, just as the nectarine must be picked. The apricot begins to get soft some time before it is in fully ripe condition. If the apricot is picked when it begins to get soft, it will never ripen into full flavour and juiciness. It will be suitable for culinary purposes only, unless one is really hungry. It is apt to bruise in transport when it is fully ripe and it follows from this that it is not easy to market in perfect condition. The thinning should

General Observations on Apricots

be carried out in precisely the same way as peach thinning. Unlike the peach, the apricot often drops much of its crop just when the fruit becomes soft, and before it is ripe. Heavy winds blow it off, too. Here is an added reason for heading back the wood and for ruthlessness in thinning. I propose to experiment with hormone spraying to try to combat this habit the fruit has of dropping before it is fully ripe.

When it is fully ripe, it is a delicious fruit, handsome, too, in appearance. It is of high food value. Recent investigations in the State of Victoria show that as a canned fruit the apricot is more highly nutritious and richer in vitamin A than any other fruit grown in that state. So its value as a food is considerable. I have not yet grown sufficient apricots to form a just opinion as to its value in the market. I consider the apricot to have greater commercial possibilities than the nectarine, and think it will be quite as profitable as the peach.

As stated above, the apricot grows more vigorously than the peach and will make a bigger bush. As might be expected from this, it takes a good deal longer to come into bearing. The planter of apricot bushes should not in general expect any crop at all for the first four years after planting.

Pruning rules for the apricot are briefly these:

1. Prune in May, at the time of the first thinning, when the sideshoots are two to three inches long.
2. Cut out all dieback and blind wood to the *third* strong sideshoot. Never prune after mid-June.
3. Cut out all interlacing shoots and shoots which grow towards the centre of the bush.
4. Head back the side branches each year after the second year from planting, to strengthen the wood.
5. Gradually shape the bush to an open cup shape.

Root-stocks are fully discussed on pages 150 seqq. Peach stock or apricot stock are equally good.

XVII

RECOMMENDED VARIETIES OF APRICOTS

Readers of Jane Austen's novel, *Mansfield Park*, will remember the controversy that arose between Mrs. Norris and Dr. Grant about a certain apricot tree. Mrs. Norris says: 'It was only the spring twelvemonth before Mr. Norris's death that we put in the apricot against the stable wall, which is now grown such a noble tree, and getting to such perfection, sir,' addressing herself then to Dr. Grant.

'The tree thrives well beyond a doubt, madam,' replied Dr. Grant. 'The soil is good; and I never pass it without regretting that the fruit should be so little worth the trouble of gathering.'

'Sir, it is a Moor Park, we bought it as a Moor Park, and it cost us—that is, it was a present from Sir Thomas, but I saw the bill, and I know it cost seven shillings, and was charged as a Moor Park.'

'You were imposed on, ma'am,' replied Dr. Grant. 'These potatoes have as much the flavour of a Moor Park apricot as the fruit from that tree. It is an insipid fruit at the best: but a good apricot is eatable, which none from my garden are.'

MOORPARK AND CROUGHTON

Whether the tree actually was a *Moorpark* or no, we are not told, but if it were not, Dr. Grant's remarks may have been perfectly justified. Many apricots are fit only for culinary purposes, whereas a ripe Moorpark is delicious to eat. Now the interesting thing is that the Moorpark is still one of the good varieties to grow. I am experimenting with several different varieties, including the new variety Croughton.

Recommended Varieties of Apricots

I consider this new variety most promising. I have many other varieties under trial; amongst others Royal, Nancy, and Orange, all of which show good promise. My experiments, however, are not sufficiently advanced to offer any conclusions as to which is the best variety to grow, and it will be some years before I shall be able to make recommendations, because apricots take a long time to come into full normal bearing.

With regard to prices, the few apricots I have sold wholesale hitherto have obtained the same price as peaches.

The planting should be done in precisely the same manner as for peaches, and the same methods of culture should be used. The soil requirements appear to be exactly the same and once again it is important to get a vigorously growing bush from the start.

Wherever possible a north-eastern slope should be chosen, as this will form a measure of protection against the south westerly winds which sometimes come at the time when the fruit is ripening.

The apricot flowers before the peach. Below I give records. Unlike the peach, it is unfortunately vulnerable to spring frosts. It therefore requires the most frost-free site available.

	<i>First blossom</i>	<i>Full</i>	<i>Over</i>
1948			
Apricot	March 12th	March 22nd	April 2nd
Peregrine peach	March 21st	April 3rd	April 24th
1949			
Apricot	March 26th	April 8th	April 19th
Peregrine peach	April 6th	April 15th	May 6th

Apricots should be planted at the same distances apart as peaches.

XVIII

GREENGAGES

I do not propose to deal with the growing of plums with the same elaboration as I have used for peaches, nectarines and apricots. The growing of plums is well understood in this country, and for the amateur grower there are pamphlets dealing with ordinary routine matters. I set out on pages 119-23 the method for controlling the dreaded Silver Leaf disease, as this method does not appear in any Government pamphlet or in any official advice. I give in Chap. XXI comprehensive and new instructions on the pruning of stone fruit, including plums; if the grower follows these he will control dieback of plums without the use of colloidal copper sprays. Perhaps I should explain for the benefit of the amateur gardener that unlike peaches, plums must be sprayed with tar-oil or D.N.C. to combat aphis, and need not be sprayed with the sprays used for peaches—this is because dieback is not so serious on plums.

I have, however, done considerable research on the growing of the true greengage, and have I think solved the difficulties which confront the grower; so I propose to discuss this plum fully, for the true greengage is one of the very few plums that should be planted commercially to-day. I think I may say it is the only mid-season plum which maintains its price at the present time. Let me explain why this is so.

In this country we have enough plum trees to supply the whole wants of the country in a normal season, and when big crops come, as they frequently do, there are more plums than the country can consume. But most of these plums are only suitable for culinary purposes, and the old English greengage is by far the finest dessert plum we grow, so it does not suffer in

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price as all other plums do. Its picking season lasts well over a fortnight, and it has the special virtue that the flavour is apparent even in the unripe plum.

IMPORTED FRUIT

Now the use of tar-oil sprays, which began in the early twenties, has greatly increased the output of plums per tree, and that is why a normal crop satisfies the United Kingdom. But the crop position is made generally worse by the action of the present administration in encouraging imports of plums and other fruits, such as pears, coming at the same time as our plum crop. The year 1949 gave us a plum crop under rather than over the normal. But owing to the import of Italian pears and plums, the market broke. One processor told me that he bought Czar plums at one penny a pound carted into his factory. The man who sold these plums at this price would have been better off if he had left them on the trees, for the cost of picking and transport is more than a penny a pound. This is what the Ministry of Food calls 'planned economy'. To the ordinary citizen it appears fantastic folly. We already owe Italy large sums, yet we pay out more in order to bring in Italian fruit, so that our own fruit must either be sold at a loss, or preferably allowed to rot on the trees.

I think it will be agreed that no country can be enriched by such a policy. There might be something to say for it if the public benefited to the full by lower wholesale prices. However, they benefit but little because sudden gluts are not reflected in the retail prices to any considerable extent. Now greengages, owing to their outstanding dessert and bottling value, do maintain their prices, even when the Ministry of Food swamps the country with Italian fruit; therefore, as I say, the true greengage is the only mid-season plum which is worth planting commercially to-day.

I think it is generally agreed that none of the gages can compare in flavour with the original old greengage, the *Reine Claude Dorée* of France, brought to this country (if report be true) in

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the eighteenth century by Sir William Gage of Hengrave Hall near Bury St. Edmunds. The difficulty with regard to the old greengage is that hitherto it has been found to be most irregular in cropping. How often have I heard people say 'I have never got more than one or two greengages from that tree'. I myself had three greengage trees in my garden until I cut them down in 1947. In the course of nineteen years, I had never known a full crop. Sometimes there was a half crop, sometimes there were two or three fruits only. In this district (perhaps because we are only ten miles away from Hengrave Hall), most of the cottage gardens have greengage trees. They similarly give a full crop perhaps once in five or six years, and in the intervening space they give just a few. Sometimes we will have two succeeding years of full crop and then a period of practically none. I know this because I buy up the surplus crops in this district. Why is this?

BIRD DAMAGE TO GREENGAGES

Let us first consider the case of the private gardener. He plants his greengage in the garden near the house; and if he is a bird lover he feeds his feathered friends during the winter, particularly the blue-tit. Even if he does not feed them deliberately, crumbs are thrown out of the back door and the birds come down and feed. When the back door is opened, they fly away and perch in the nearest convenient tree—often the greengage. Anyone interested in birds who observes their habits carefully will no doubt have remarked that birds tend to fly to one or two trees in the garden and rarely visit other trees. This is part of the innate conservatism of birds. From the small bird's point of view, there is no better tree for perching than the greengage. Not only is it generally a handy and convenient place for refuge, safe from humans and not too high, but it affords food after the turn of the year. The greengage is the sweetest of all English fruits. Its sap too is the sweetest and the bud as well. So the blue-tit in particular, the bullfinch also, and the sparrow, to mention the three worst offenders, tackle the buds of the

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greengage in January and February. They are quite wanton in their destruction. It is the fruit buds of course which swell first, and these are the ones they attack. Look at your greengage tree in summer, and you will see where the buds have been struck out during the previous spring, or go to it in February and watch the little birds playing in the greengage tree. They do not entirely destroy the flower buds; some of the blossoms may come out later, but such damaged blossoms will not set fruit.

I observed this damage by birds and set myself to overcome it. My first thought was to spray the buds of the greengages with something which would be distasteful to the birds; I therefore sprayed at the end of January with a copper spray. Now that year I got a good crop of greengages, and I thought to myself: 'Ah, I am right; I have solved this problem which has bothered us for so long.' I repeated the experiment the following year. That year I got no greengages at all. See here the danger of judging from one season's results! I was, of course, completely wrong in my assumption that I had solved the difficulty by spraying. It was our old friend the fallacy, 'Post hoc ergo propter hoc'. The spray had had no effect.

However unwise it may be to make deductions from one or two instances in horticulture, we must remember that most experiments in horticulture and agriculture suffer from the disability that it takes years to see results. So we are bound to make guesses on insufficient data if we wish to improve horticulture within our lifetime. All we do is by trial and error, by guessing and by asking the question, why? I say that even a wrong theory too hastily expounded often leads to the discovery of something of importance. The suggestions I put forward in this book in many cases cannot be justified by my very short experience. I have, however, the hope that they may point the way to more competent investigators, so that knowledge of proven value may ultimately be the outcome. If in this book I show unjustified confidence in some of my guesswork, I do hope this serious fault will be forgiven me by those investigators who are better able to reject the false and to make use of the true. Slowly we are all drawing to our goal, namely that of being able to control the

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whole growth and fruiting of our fruit trees. Thanks to our research stations, very big strides have been taken in the past twenty years. The next twenty years should show even more significant results, and the value of this work to the consumers of our nation—deprived as they have been of their rightful amount of fruit—is very great indeed.

The first year of my experience had been an 'on' year for greengages and the second an 'off' year, and the spraying had not affected the birds at all. I started again. I came to the conclusion from observation that the reason for the irregular cropping of the greengage was this. If the greengage buds swell early and hard weather follows, the birds will tackle the buds any time from the end of January to March. If the buds swell late, the birds seem to have other sources of food and leave the greengage buds alone; the same is true if the weather is open at the critical time. I believe this accounts for the irregularity of the cropping of greengages in the private garden (see Plate 23).

PROTECTIVE DEVICES

From this I suggest to the private gardener that if he desires to grow fruit on his greengages in the garden, he must adopt some form of protection against the birds from January to March, either by covering the whole with a net, or by stringing the tree with black cotton as we do to keep birds off gooseberries. If you are going to net, it would be easier to have trained greengages growing on a wall, but January, February and early March are the critical months and that is the time when the protection is needed.

As I have mentioned on page 72, I regret the fact that bird lovers allow their enthusiasms to carry them away and are inaccurate in their statements as to the value of birds in destroying caterpillars. In particular I object to the statement that when birds peck young fruit buds they only do so to get the caterpillar which is inside. While an earlier book of mine containing such an objection was in the hands of the printers, I am sorry to say that the journal "Agriculture" was rash enough to

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print a statement by an official of the Ministry of Agriculture, reading as follows:

'Much has been made of the tits' habit of stripping off fruit and other buds from trees, but the damage done in this way is more apparent than real. In nearly all cases it will be found that the tits take the buds because the latter have in them some kind of grub, and in any case these buds would not develop. If one watches a tit closely it will be seen that the bird takes a bud only here and there, its keen eye detecting at once the signs of the presence of *some grub or insect within, and passing over the remainder as not being worth attention.*'

Oh dear, oh dear! Here we have special pleading carried to *absurdity!* How can we know that those buds which were struck out contained grubs? Clearly if the buds *had* contained grubs we could not know, because they were destroyed by the birds. I say again, there are no grubs which live inside the bud of the plum tree in January, February and early March.

During the cold winters of the war years, the B.B.C. used to broadcast an appeal to save our birds by putting out food and water for them. They said they did this on the ground that these birds ate caterpillars, thereby controlling insect pests. They certainly eat caterpillars, many of them; but they do not and cannot eat enough caterpillars to have a significant effect on the insect population of this country; and it is only at certain times of the year that they attack caterpillars at all. Please, B.B.C., refer to some competent and accurate entomologist before you broadcast about this matter again. Ask him to name the grubs which are found *inside* fruit buds from January to March.

Of course, it would be a matter of considerable difficulty and expense to set out an experiment to show whether birds do keep down our insect pests or not; but fortunately for all growers and for all who are interested in truth, such an experiment has unwittingly been set up by the Zoological Society at Whipsnade.

Most of us know what a wonderful place Whipsnade is. Apart from all the interest of watching the animals in confinement, it is a wonderful place for certain wild birds. The Zoological Society have very rightly made it a sanctuary for Eng-

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lish birds and have put up nesting boxes for the tits and have done all they can to increase the natural bird life. Certainly I myself have never seen a place where the blue-tit was more abundant.

Near the Whipsnade restaurant there are a few fruit trees evidently planted some time ago. The Zoological Society of course are not fruit-growers and it would appear that they do not spray these fruit trees, but leave them to grow in a state of nature. These fruit trees are quite close to the wood where blue-tits flourish in such numbers.

On two occasions I have been at Whipsnade in the spring when the so-called winter moth caterpillar is most active. The fruit trees were swarming with them, in fact they were partially defoliating the trees. Yet nearby we had as many blue-tits (and the blue-tit does eat caterpillars) as one could possibly see in one day.

Here, then, is a very telling illustration of the fact that blue-tits have no significant effect on the caterpillar population. If the Zoological Society were a Horticultural Society they would undoubtedly spray the trees and clear away the pest, but left as these trees are to a state of nature, they must necessarily suffer in spite of the fact that they are in a bird sanctuary. Anyone who is interested can go and confirm what I say by turning in at the main gate and walking straight towards the restaurant. If you go at the right time of the year when caterpillars are plentiful, you will see the trees, you will see the caterpillars, and you will see the blue-tits.

On this matter let us start on the basis that we are all fond of birds and love to watch them. Let us face the fact that we are all prepared to lose a little fruit in order to enjoy the pleasure of watching birds; but let us be quite sure that the value of the bird as an insect pest control appears to be practically nil. The fact that some birds eat caterpillars at some time of the year can have no real effect whatsoever on the insect population. On the other hand it is beyond all question that the birds in this country are responsible for the poor average crop of the greengage in the private garden.

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Now small birds of all kinds, though they often delight us with their seemingly endless activities, are not very clever. Unless they are pressed for food, they do not adopt new methods of feeding, but go on in the same way from year to year. Only when their numbers increase rapidly do they adopt new methods. May I add that the provision of nesting-boxes for tits and their protection has led recently to a large increase in their numbers. This has resulted in the blue-tit adopting new methods of feeding; as everyone knows, they now attack milk bottles and even fly into rooms and peck the wallpaper off the walls.

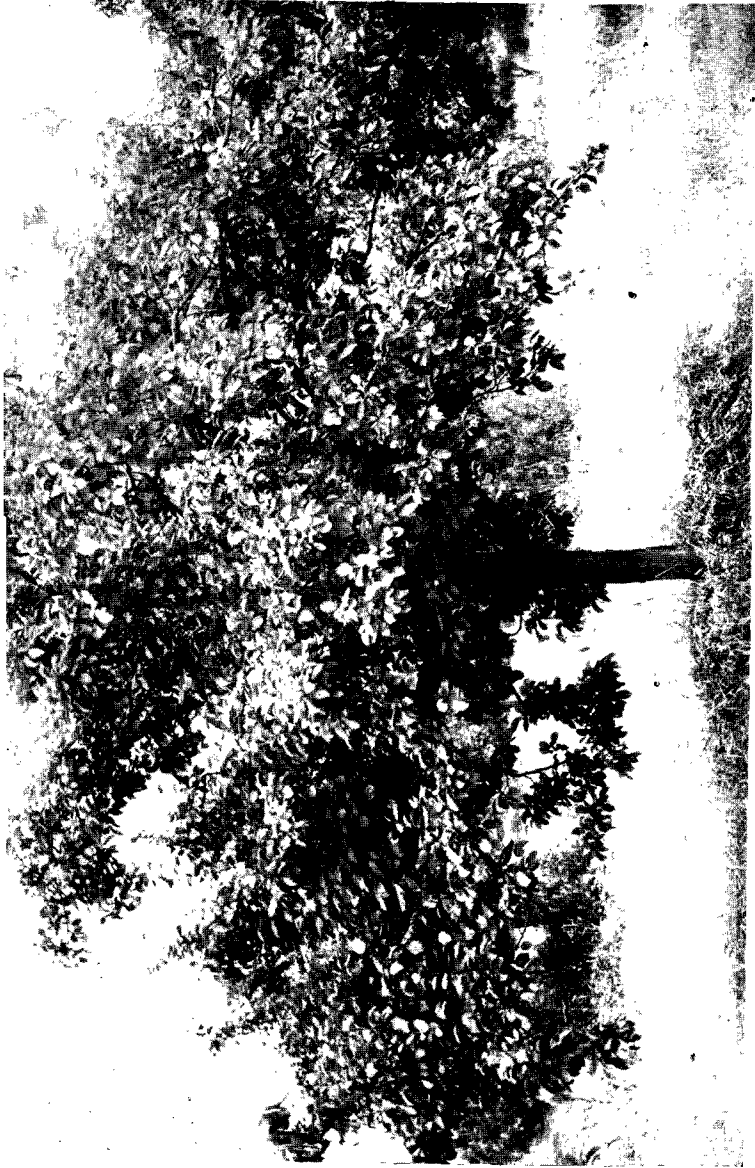
When I first planted my plum orchards, I did not plant greengages but other plums. I had a hedge surrounding the orchards and in this hedge at varying intervals there were saplings growing at a greater height than the hedge.

I had no trouble from the birds to begin with, but one day I observed blue-tits in the orchard near the hedge and went to investigate. I found to my horror that they were rapidly striking out buds on the plum trees. As I came along the birds flew into one of the saplings in the hedge and perched there for a few moments. When I withdrew they at once flew down from the sapling to the plum trees and continued their depredations. When I got close, they flew away. The damage to the buds was near the saplings to which they had flown on my approach. Close investigation showed that the only plum tree buds thus damaged were confined roughly to a half circle from the saplings. The same damage could be observed around other trees which stood above the rest of the hedge. It was clear that the birds, frightened of human beings, liked to have a tree to which they could fly as soon as they saw someone coming along. From this tree they could observe what happened. If the man went away, they could fly down and continue the work of destruction; if he came near the perching tree they flew away and waited for some little time until all was clear again before they returned. I therefore cut down the saplings: that stopped the damage to buds. Unless the birds had a tree of refuge, they went elsewhere.

Now all my hedges have gone and I really do not worry about the small birds at all, except in my private garden where they



27. Close-up of the trunk of the tree in Plate 26, showing that the bark has twice been slit in two succeeding years to effect a full recovery



28. Czar plum cured of silverleaf. Note the cut in the bark and the vigour of the cured tree.

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continue to damage the greengage buds. Here the greengages themselves are the perching trees.

EXPERIMENTS WITH GREENGAGES

About this time I decided to start my experiments with greengages; I planted some greengages on their own roots in my garden, within about twenty yards of the old greengage trees. In due course these newly planted trees began to flower, and the interesting thing is that the birds did not tackle the flowers on the new trees, but continued to destroy the buds on the old trees. These young greengages started to fruit and fruit well for two or three years. Then the birds discovered them; I think in this case it was sparrows, and they started to knock off the buds in the same old way. In other words, they had just realized that these trees were greengages, for as mentioned above, little birds are not very clever.

My experiments with greengages were by this time sufficiently advanced to justify me in planting them extensively, so I made a point of planting small groups of greengages, an acre or two at a time, in the middle of other plum orchards, hoping that the bird would not discover them. This began some fourteen years ago and has been extended from year to year and up to the time of writing the birds have failed to find any of these greengages hidden away among other plums. Not a bud has been disturbed as far as we can check. I would, therefore, say that greengages may be planted safely if the commercial grower plants his greengages among other plums away from hedges. He should cut his hedges to the ground, or if this cannot be done, behead all trees growing higher than the hedge. Then the risk of damage by the birds to the buds will be small. This action alone will ensure that the old greengage will fruit regularly.

DIEBACK ON GREENGAGES

There is, however, another trouble which affects greengages as it affects all stone fruit, namely dieback. There can be no

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doubt that dieback is greatly increased by the action of the birds in striking out the buds and wounding the bark. Their operations take place at a critical time so far as dieback is concerned. Certainly in old greengages one sees a great deal of dieback and of blind wood. The greengage appears never to break into bud again after the bud is pecked out; so in the normal greengage tree left to grow naturally in the garden, you get quantities of dead twigs and quantities of blind wood. The fruits are only borne here and there.

Now this is where the knowledge gained in growing peaches becomes of value. If we adopt the same principle for pruning greengages as we adopt for peaches, in other words, if we prune our greengages only in May and at that time cut out all dieback to the second strong sideshoot, then we can control the dieback on greengages.

I must now explain the course of my experiments with greengages. These experiments have enabled me to get reasonably regular crops in spite of the birds and in spite of the dieback.

I began my first experiment with six greengages budded on Brompton and four greengages growing on their own roots. I planted them in the middle of a plum orchard of other varieties on account of the birds. I gave them the ordinary routine spray of the rest of the plums, and after pruning at the time of planting, I never pruned them at all. They have been growing some fifteen years.

First as to the resultant growth of the tree: the greengages on their own roots grew vigorously from the start and are now considerably more than twice the size of the budded greengages, though they were about the same size at the time of planting. None of the trees, whether on their own roots or budded on root-stock, has been attacked by birds. Until the trees were fourteen years old there was practically no dieback at all or blind wood. All the greengages are grown as bushes, but those on their own roots have to be picked from steps as they are so much higher. The greengages on their own wood have leaves and fruit right into the bush and are getting thick (see Plate 24).

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Then as to cropping: the crops produced on the trees on their own roots were greatly in excess of the crop on the budded trees. Four years ago (1946) when we had a very full crop, we weighed the resulting fruit after picking and found that the four trees on their own root-stocks yielded an average of over four hundred pounds per tree and the budded trees yielded an average of just over one hundred pounds a tree. It was noticeable throughout the years that the budded trees always produced less fruit, and that the individual greengages on the budded trees were always a little larger in size. These trees had not been given any special manure or feeding; they had been treated like the rest of the orchard with bare fallow from April to July, then the weeds had been allowed to grow and had been cultivated in during the following spring.

When the heavy crop of 1946 was near to ripening, I became alarmed for the unbudded trees because the crop was so heavy that the top branches were being pulled down and I feared a break. The wood, however, held the crop and there was no break. The strain on the tree must have been considerable and it certainly must have caused the bark to open up in places. This would, I believed, give the opportunity for dieback infection from the nearby trees which had dieback. Now we observed in the season after the heavy crop a certain amount of dieback and therefore adopted the pruning which we do for peaches; we cut the dieback out at the end of May. We now do this every year if any dieback shows itself. The trees continue to flourish. In 1948 the four greengages on their own roots averaged a little over 5 cwt. per tree as against an average of 150 lb. from the six budded trees.

I should mention here that these trees only produced small crops in 1947 and 1949. At present these trees only bear biennially. I believe this is due purely to lack of nourishment. They have hitherto received very little in the way of artificial or organic manures. I am now being lavish with both artificial and organic, and hope by this means to secure annual bearing.

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GROWING AND CROPPING

To sum up I would say that the two main hindrances to regular cropping of greengages are the birds and the planting of budded stock. If we grow greengages on their own roots they have more vigour and vitality and produce heavier crops than if we use a budded tree. The true greengage should be fed well, and it undoubtedly likes the dry conditions of East Anglia; it also likes heavy soil. It is a most profitable plum. Its picking season lasts for anything from a fortnight to three weeks, the earliest picking, of course, going to the bottlers and only a small proportion of the crop being left for the finest quality dessert. The shopkeeper likes to have them in hard condition because when picked in this state they can be kept in the shop for a long time if necessary without deterioration. As one shopkeeper said to me, 'beautiful condition, hard and firm'. But, of course, the flavour of such greengages cannot be compared with the flavour of a ripe greengage. If the greengages tend to split, the method used for avoiding splitting of cherries can be applied to the greengage to overcome the difficulty (see page 132). One word, however, of warning. One cannot grow greengages and make pets of wasps. The greengage-grower must search out and take every wasps' nest he can. He must avoid having dry banks and waste pieces of land where wasps can conveniently make their nests. The habit of this plum is to throw up suckers, and these if planted out and shaped make the best bush; but great care must be taken that seedlings are not dug up in the same way, for the greengage grows from seed easily and, of course, these seeds do not produce a true greengage or indeed necessarily a greengage at all. It may often be observed in cottage gardens how the greengages seem to grow at random in the garden and in the hedges. This is because of the suckering habit of the tree. The cottage gardener has omitted to clear the sucker away and it develops into a tree. With the passing of time the parent tree, getting very old, will perhaps die and the cottage garden will have perhaps half a dozen resulting suckers

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growing higgledy-piggledy all over the garden itself and even in the hedges.

In the fertility rules prepared by the staff of the John Innes Horticultural Institute it is noted that four varieties are distributed by nurserymen as 'old greengage'. I can well believe this; in fact the right way to get a good old greengage is to wait till the fruit ripens on the tree and taste it. That is the true test of the value from the grower's point of view—the quality of the fruit produced. If it is good and if the tree grows on its own roots, take a sucker from the tree. I have long noticed that there is quite a considerable difference in the quality of the fruit grown and sold as greengages, and I myself have been careful to select *from the trees which produce the best fruit here*. It needs a little care and there is always the possibility of mistakes being made, but it is well worth while.

I know of one cottage garden with over a score of trees, some very young and small and some old ones, which has two 'red greengages' as the cottagers call them. These are red plums about the size of the greengage and with an undoubted greengage flavour, though inferior to the taste and not nearly as sweet as the greengage. These trees are probably seedlings resulting from a cross. It is not worth while planting them as they are not up to the true greengage standard.

An even worse kind of greengage results from a cross between a true greengage and the Shepherd's Bullace. Many cottage gardens about here grow the Shepherd's Bullace, which was originally used for making home-made wine. This is an inferior plum, and the cross is inferior in every way.

I do not recommend the growing of greengages on their own roots against a low wall. The vigour of growth is too great. No, in this case we definitely want a root-stock which will keep the greengage within bounds, so if the greengage is trained and grown on a low wall a budded stock should be used, and the best stock for this purpose is the Brompton.

Here are brief rules for the pruning of plums of every kind:

1. Prune from the end of April until the end of May.
2. Cut out all weak growth, dieback and blind wood, so far

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as is possible and convenient. Weak growth can be recognized by small yellowing leaves. It is not possible always to get to the second strong side shoot on a mature tree.

The manurial requirements of greengages and other plums are the same as for peaches, but plums do suffer from drought in dry climates; therefore a heavy mulch of manure or straw round the trees is highly desirable in areas suffering from drought. This should be put on not later than February so that it may be sodden with rain before March. It will then retain the moisture in the soil. There are certain plums, notably the Purple Pershore, which require additional potash. Victoria Plums, too, benefit from an occasional small dose of potash.

Root-stocks are fully discussed on page 155. I recommend greengages on their own roots, other gages on Brompton, and other plums on *Myrobalan B*.

XIX

HOW TO CONTROL SILVER LEAF

Silver leaf has always been regarded as a deadly disease. It will attack many different kinds of fruit trees and other deciduous trees, including the elm and poplar. Undoubtedly, however, it is far more serious on plums than on any other fruit tree. I have never known it to occur here on any fruit tree but the plum, so I propose to deal with it at this point.

I had the misfortune, when I was inexperienced, to buy plums which developed silver leaf the year after planting. This was one of the reasons why I started a nursery here. I wanted to make certain that I should never be caught again in this manner. I had undoubtedly bought the disease, and I began to fear that I could never get rid of it in my orchards. However, a method has been discovered which ensures almost complete control. I give the method here because it is apparently unknown to our horticultural officials, and it is so simple and on the whole so effective that every grower of fruit trees should be made acquainted with the method.

Now the disease is in the wood, and enters it from a cut or wound in the bark. No spray has yet been found to touch it. The only way to combat it is to stimulate the growth of the tree as rapidly as you can. The tree will then itself overcome the disease.

DANGER OF POPLARS

In this country a large part of our fruit acreage is planted in small fields surrounded by hedges frequently containing old hedgerow trees. These trees are often affected by silver leaf and form a ready source of infection for the orchard. To make matters worse, it has been the custom actually to plant poplars

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around fruit orchards as a protection against the wind. The poplar is peculiarly liable to silver leaf (as well as insect pests) so the use of the poplar as a windbreak is particularly unfortunate. The wise fruit-grower should cut down every poplar in the neighbourhood of his orchard without hesitation. At present, poplars command a ready sale. I am told the wood is required for making chip baskets. So it is up to the fruit-grower to have those poplars down as soon as he can, for it is better to suffer from gales than silver leaf. To a lesser degree, the elm is a source of silver leaf. Now the elm too is wanted at the present moment as it is a timber tree. The poplar was unsaleable before the war, and the elm had but small value. To-day both trees are in demand, and the fruit-grower should make use of the opportunity to get rid of them now. He will be assisting the nation by doing so, because of the urgent need to avoid heavy imports of wood.

So serious is the disease of silver leaf that an order has been in force for some time compelling the fruit-grower to cut out all dead branches of plum trees suffering from silver leaf not later than the 12th of July each year. This does not mean that every branch having silvered leaves must be cut off. These silvered leaves are not a source of infection, but only the outward manifestation of the disease. The fructifications of the fungus grow on the dead wood and that is why the dead wood must be cut out and burnt not later than the 12th of July.

When it was first discovered that stimulating the growth of the tree enabled it to grow away from the disease, the method adopted by far-seeing growers was to give such trees a heavy dose of all the most stimulating manures as soon as the silvering on the leaf was observed at the end of May. This plan was successful in many cases. But it was expensive both in material and in time—that most precious factor of all in horticulture.

So a simpler method was adopted. It is not yet (unfortunately) used by many commercial fruit-growers owing to lack of knowledge, and this applies even more to the private gardener. I am giving it here so that it may be adopted generally because it is successful in well over 90 per cent of cases.

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THE BARK-SPLITTING METHOD

It has long been known that if the bark of a fruit tree is split vertically in May and early June, that tree will spring into vigorous growth. The method we adopt, therefore, is to go to any tree which shows signs of silver leaf at this time and to slit the bark right down the trunk with a sharp pruning knife, cutting well into the cambium, joining this slit with a similar slit from the branch or branches affected. It is quick, it is simple, and it is effective. If the tree does not recover from silver leaf the following year, you will again slit the bark. This may possibly be done three times. Of course, the wood which is *dead* on a silver leaf tree *must* be cut out according to the order of the Ministry.

If the tree is only slightly affected with silver leaf, then it will grow normally the next year. In general, however, you will find (as might be expected) that few plums will be formed the following year. Moreover I have observed that the leaves in the following year will not be dark green but yellowish. Two years after slitting, if all goes well, your tree should be back to normal growth and fruiting.

I have had some interesting experiences with silver leaf. I purchased a farm and in the garden of this farm there was a plum tree badly affected with silver leaf. It was so bad, I decided to wait till the winter and have the tree out then and burn it. I did not worry to slit the bark. Now I regret to say that in the winter I forgot all about the tree and next year there it was, and again it was covered with silver leaf; and I made up my mind that the following winter I would really burn it and have it away. Alas, human nature fails, and again I let the winter pass without destroying the tree. Very shocking indeed, and very bad fruit growing. I have no excuse to offer. However, this next year, when the tree came into leaf it had cured itself completely.

I have on more occasions than one explained the bark-slitting method to fruit-growers and have been met with polite incredulity. It seemed too good to be true. In these cases I have

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at once taken the grower to my trees and have shown him flourishing plum trees with the marks of the cut bark on their trunks. In some cases the bark has been cut three times. There was then no room for incredulity because none of the trees had been operated on except those which showed signs of silver leaf.

I do not claim that it is successful in every case. But in my orchards, it is quite easy to check up the failures, as I do not replant in an established plum orchard, and the misses of course represent the failures: there are very few. The plan is not my own, but was told me by another fruit-grower, to whom I express my deep gratitude (see Plates 27, 28).

VICTORIA PLUM THINNING

Before I leave the subject, I would like to touch on the thinning of the Victoria plum. This plum is apt, in certain seasons, to produce immense quantities of fruit. Now, if we leave all these plums on the tree, it will be more than the tree can bear. A large proportion of the resulting crop will be small and tasteless. They will be what the trade calls 'skin and bone', and therefore the private gardener is advised to thin his Victoria plums drastically. I need only refer the private gardener to Mr. Bush's excellent advice on this subject. (*Tree Fruit Growing*, Vol. II, now included in *Fruit Growing Outdoors*.¹) When I first came here there was a Victoria plum growing in the garden and it bore a heavy crop one year. I was too busy to thin it. The individual plums were, of course, skin and bone, but a worse thing happened because the weight of the fruit smashed three of the principal boughs and the tree had to be grubbed; for the wood of the Victoria plum is brittle and breaks easily.

The man who grows many Victoria plums cannot afford the time to thin in the manner of the private gardener; so he has to adopt other methods. The following plan was suggested to me some years ago. I have adopted it and found it thoroughly satisfactory.

When there is a really heavy crop, I prune away as many of

¹ Published by Faber & Faber, London.

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the ends of the branches bearing fruits as is thought desirable. These shoots loaded with plums are dropped on the ground and the work is done fairly quickly. It will be appreciated that it is the weight of the plums at the end of the branch which causes the tree to smash, because the added leverage due to the length of the branch affects it more than the weight which is nearer the trunk. It is rather a pitiful sight to see vast quantities of plumlets attached to their twigs lying on the ground. The result, however, is not only to save breakages, but also to reduce the number of plums in such a drastic way as to cause the remainder of the crop to swell into normal, well-flavoured, sweet Victoria plums.

This cutting should be done as early as possible of course, and comes at the time of pruning, so that no ill effect need be feared. It is quite safe to cut a plum tree at the end of May and beginning of June. It will be found too that relieving the crop in a heavy cropping year will avoid a completely 'off' year following the 'on' year.

I do not think it worth while to thin in this manner such plums as the Czar and I have never yet in practice thinned any plums except Victorias in this manner; but Victorias are a special case, for reasons explained above.

When I plant plums now, I plant them as bushes. That I find to be by far the best way of growing them commercially. With Victorias, however, I give a longer leg to the bush because the Victoria has a pendulous habit. Still, I find it a great advantage to have the lower branches so low that when the fruit weighs the branches down, the branch will support itself partly on the ground. This prevents the breaking of these lower branches even if winds are high when the ripe fruit is on the tree.

CHERRIES

I will begin by saying that I have just thirteen sweet cherry trees on this farm. I am, therefore, a very humble amateur and it would be foolish indeed for me to offer advice to the commercial grower on the routine planting and growing of sweet cherries. There are very many growers better qualified. The cherry-growers of Kent and Worcestershire have long experience behind them and know far more about cherries than I do.

I do not think there is anything more beautiful in nature than a well-managed old-fashioned cherry orchard in full bloom. The mass of white blossoms set off by the well-cropped grass underneath the trees cannot in my opinion be rivalled by anything we see in nature.

*Loveliest of trees the cherry now
Is hung with bloom along the bough.*

But with all this beauty and abundance of blossom, the fruit is, alas, not generally commensurate with the flower. I have, however, in the course of my work made some interesting discoveries with regard to the sweet cherry. These discoveries will enable the private gardener greatly to improve his crops and will, I believe, also prove of real advantage to the commercial grower.

The four great difficulties experienced by the grower of cherries are:

1. Damage caused by birds.
2. Dieback.
3. Dropping of fruit before maturity.

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4. Splitting of the fruit.

These are the four points on which I shall enlarge.

1. *Damage Caused by Birds*

Even before the fruit is ripe, the private gardener is faced with the damage caused by birds—the blackbird being Public Enemy Number One. The commercial grower grows cherries in orchards large enough to make it worth while to employ a man with a gun in the orchard all day long at the time of the ripening of the fruit; but the private grower's crop is not large enough to make this worth while. What then is he to do?

I once had occasion to call at a vicarage and was shown in to the private sanctum of the vicar and we began to talk. I noticed during our conversation that he glanced from time to time out of the window. Suddenly he sprang up and pulled a string which led out of the window. There was a clanging of a bell which he had placed in his cherry tree in the garden and a cloud of birds flew away. This operation was repeated two or three times during the interview. I considered it an ingenious method for anyone who can break off in the middle of his work in order to carry it out. There is, however, a better plan. The use of scarecrows is quite effective if proper care is taken. The scarecrow must be in position before the cherries are ripe enough for the birds to visit the trees; and it must be moved into a different position every two or three days, sometimes in the tree, sometimes on the ground. This is suitable where the cherries are a little way from the house. Probably, however, the following is the most effective method from the point of view of the private gardener who is unable to net his cherries.

Sleeves of butter-muslin or other light porous material should be made and these sleeves should be slipped over the shoots which have the best crop. They are then tied above and below, fixing them on the tree. A number of these should be put on each tree, so as to have them well spaced.

Now it will be appreciated that these sleeves wave about in the breeze and frighten the birds from those cherries which are not covered with sleeves. They will not keep the birds off alto-

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gether, but the cherries outside the sleeves should be picked first, possibly for cooking purposes, leaving the others to get dead ripe. The sleeves can easily be opened when the ripest cherries are taken, and then closed.

No one who has only tasted the ordinary commercial half-ripe cherry sold in shops can fail to be impressed with the delicious flavour and juiciness of a cherry allowed to ripen in this manner. No wasps or insects can affect the cherries. They are safe and come to their perfect maturity.

2. *Dieback on Cherries*

I must first explain about the few sweet cherries we grow here. It was clear that our long May drought and our heavy boulder clay soil were unsuitable for producing sweet cherries commercially. Like many others, however, I am very fond of ripe cherries and I decided to plant a few trees to provide cherries for my own use.

The cherry tree grows magnificently here. I know no place where the tree itself does better, but the bulk of the crop used to drop before it ripened and the remainder was apt to be small and dry except in very wet spring seasons.

Knowing the difficulties, I planted these few sweet cherries, including *Napoleon Bigarreau*. Adopting the recommended routine, these were pruned at the time of planting and then left unpruned. My nursery manager at that time protested and begged me to prune them the following year. He drew a dismal picture of what would occur if I did not, so to prove the case, I allowed him to prune one tree in the dormant season on the second year after planting.

The result was perfectly plain. That tree failed to develop as the other trees developed and the difference in size could be seen five years afterwards. So the rule about not pruning cherries after the shaping of the head, proved to be sound where pruning is done in the winter.

We have always been told that cherries could only be grown as standard trees; anything else was a waste of time. Of course, I did not believe this, so I planted some on a short leg. Now that

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these trees have grown I see that my guess was perfectly correct: namely, that sweet cherries should be grown as low bushes. They are easier to spray, easier to pick, and altogether better. I am happy to learn that other growers working independently have come to the same conclusion. In this view they are enthusiastically supported, of course, by the pickers of cherries. I am a little surprised at the outstanding success of the bush cherry as against the standard cherry because the habit of the wild cherry (which I must remind readers is classified as a sweet cherry, though it is sour in taste), is to grow as a standard.

Now in choosing Napoleon Bigarreau as one of the cherries to be planted, I was well aware of its peculiar susceptibility to dieback. It is, however, of outstanding flavour and quality. I planted this variety because I intended to eat the cherries myself. Personal greed was the motive.

As might be expected, dieback did come to this and other varieties and I lost two or three trees completely; they died back to the ground. However, one young Napoleon remained. It did not develop dieback until later, until, in fact, I had learned how to prune peaches with a view to controlling dieback—that is to say, pruning at the end of May.

As soon, therefore, as I saw the dieback develop, I pruned away the dieback at the end of May, cutting out to the third strong sideshoot. The following year two branches developed slight dieback, and I pruned these in the same way. That was the end of it, and the tree is now growing vigorously and fruiting well. During this period I did not spray the trees at all, except with tar-oil.

We thus come to the proposition I wish to put forward, namely this: if we make up our minds never to prune cherries in the winter, but, on the contrary, always to prune at the very end of May and beginning of June (when the sideshoots are two to three inches long); and to prune to the third strong sideshoot, then I suggest we shall be able to control dieback in sweet cherries. This is a large claim to make, particularly as it is based on one experiment with one variety in a district rightly regarded as unsuitable for sweet cherry growing in the normal

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way. But I do hope that cherry growers in other parts of the country may be tempted to experiment to see if my particular instance is of more general application. I have too great an opinion of the cherry growers to think that they will let slip an opportunity which may be of so much help to them. I must add this further point; in a recent tour in Kent, I noticed that dieback was taking a far more serious toll on some soils than on others. The orchards planted on the famous brick earth of Kent seemed to be very free, but where cherries had been planted on other less suitable soils, the deadly disease was very evident. I noticed one orchard in particular where the soil changed. More than half was on brick earth and the rest on lighter soil. The dieback on the lighter soil was bad indeed and the cherries on the brick earth were doing well. In other words, dieback can be resisted by cherry trees grown under really good conditions, and I venture to suggest that the exceptionally fine cherry land to be found in parts of Kent has tended to make the cherry-grower there perhaps a little careless about dieback.

Another pruning experience. In dealing with my few cherry trees, I had, moreover, occasion to go a step further in the pruning. I relate elsewhere the results of pruning a peach tree drastically in May. Now in 1947 I noticed one of my thirteen cherry trees was looking sickly and appeared to be dying. It was a half-standard. The history of this tree is as follows. It was planted on the outside of my little group of cherries. One year tar-oil was put on these trees rather too strongly and two or three of the trees received a shock which weakened them and caused them to exhibit signs of dieback. This particular tree being on the outside suffered most of all. Moreover it had met with an additional sad misfortune. A careless employee lit a fire of hedge trimmings near the tree during the winter months and scorched the tree, actually killing some of the branches. The tree recovered with difficulty and struggled on, but appeared to be in a decline.

It is easy to make the mistake of building a fire so that sparks from the fire drift on to the tree. The damage would be noticed at once if there were leaves on the tree because the leaves would



29. Results of very heavy pruning in 1944. Note the vigorous growth and comparative immunity from dieback. Taken Spring 1945



30. Peach which was not sprayed during the season 1945-6. Note leaf curl and large amount of dead shoots due to dieback. This bush produced practically no fruit in 1947



31. The morello cherry orchard. Summer 1949



32. A young fruiting Peregrine peach bush; well spaced

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wither, but in the winter season it is not observed. Moreover, if the fire were lit in the dark, the sparks would be seen raining on the tree; and then, of course, there would be visible evidence of the damage likely to arise. I once explained this to a Suffolk farm worker who was building fires not far from my orchards. I told him to be careful to keep the fires a long way from the trees, explained that sparks were going from the fire which were invisible in the day time, that these sparks would do a great deal of damage and that if he were working at night, he would soon see how disastrous it might prove. His reply was very typical of Suffolk. To explain that he did no damage, he said: 'You see, I never do light the fires at night!'

But to return to our tree. The leaves were yellow in the spring and showed up in marked contrast to the leaves of the other cherry trees nearby. It appeared to be clear that if the tree were left as it was, it would die in the course of two or three years. I remembered the vigorous growth achieved on peaches by cutting them very hard at the end of May, and I decided to see if cherries which are so sensitive to the knife in winter pruning, might act in the same way as peaches if they were dehorned in May. Accordingly, at the end of May, I cut out two of the main branches of the tree, the larger one measuring over six inches across, and then waited to see the result.

It was remarkable. The vigour of the growth was renewed. The leaves turned a normal dark green, indeed, showed darker than the other trees which I had pruned at that time but had not dehorned. There were a few cherries on it and these ripened into good cherries. I had never secured fruit from this tree since the fire had taken place. This was done in 1947. In 1948 I went round with a saw again at the end of May and the results were equally good.

Now some of these trees are standards and grow well—so well indeed that it is not possible to pick the fruit, so I am de-horning those boughs whose fruit I cannot conveniently pick and hope in course of time to grow no cherries which cannot be easily harvested.

With regard to sour cherries (of which I only grow Morellos),

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inches of water. The cherries he produces are consequently of first-rate quality and size. The private gardener, therefore, should never fail to water his cherries regularly as they come into ripening, particularly those which grow near a wall. This piece of information which was first, I think, given by Evelyn in his advice to his grandson, is of the greatest value to the private gardener. I give it publicity here because the information appears to have been generally forgotten. Cherry trees which now produce little or no fruit can be brought into full and profitable bearing by this simple method alone.

Now the watering must be done systematically and it is important not to let the roots of the tree get dry in the early spring. A bucket of water every other day would be an adequate amount of water to put on, suspending the operation, of course, if a good rain comes. The aim should be to keep the soil round the cherry always moist from the time that the cherries begin to shape up for ripening.

In this district rain is the limiting factor in growing sweet cherries. Water is indeed a scarce commodity in West Suffolk. Consequently I had to devise a scheme for retaining the moisture in the soil which did not depend upon an available water supply. We have plenty of water in the land in winter, too much in fact then, just as we have too little in the summer.

I consequently spread straw all over the land under the sweet cherries in February to the extent of about eight tons to the acre, spreading it as if I were strawing up a bullock yard. The result of this was to retain the moisture in the soil during the spring and summer so that even in long periods of drought, when the straw was pushed aside, the underlying surface of the clay was wringing wet. What was the result? The cherries stayed on and were fleshy and of first-rate quality instead of being skinny, hard and dry.

4. Splitting of the Fruit

Another result, however, accrued from supplying water to the cherry tree at this season. If you do it early enough the cherry will not split even if a later heavy fall of rain should

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occur when the cherries are ripe. This seems a big claim to make, but it is a fact. I suggest it is of great importance to commercial cherry-growers. I hope they will not take my word for it, but will try the scheme out to see if my contention is correct.

How can we account for this?

Here we enter the realm of speculation and I put forward my suggestion with becoming diffidence. If between the period of formation of the fruit and the ripening there comes a long period of drought sufficient to dry out the surface of the land and leave the tree parched of water, the cherry fruit is unable to swell in the normal and proper manner and its skin hardens prematurely. Then if more rain comes the water is absorbed into the cherry at a time when the skin, being hard, cannot expand. So the skin cracks. If, however, the cherry tree has ample water supplies in these earlier stages, the cherry swells naturally and the skin remains capable of expansion and the cherry does not split. Mr. Norbury tells me that his watering of the cherries seems to prevent the cherries from splitting. This is just my contention.

Let us now consider the Morello cherry. With me this cherry is not really liable to splitting even under our conditions; but of course as soon as I realized the increase in the size of the fruit obtained by strawing the sweet cherries, I put straw down in the winter of 1946 on the Morello cherries. The year 1947 was a remarkably good one for Morellos. So the increased crop which I got may be partly attributable to the season. Remembering, however, the drought which we experienced, lasting from the beginning of May to the end of June almost without a break, I think the fact that the individual cherries produced were perhaps half as big again is an indication that the laying of straw under Morello cherries is very well worth while. The following year showed similar results. Where ample water supplies are available, of course, overhead watering would be cheaper and easier. I wish I could do it here on a commercial scale, but it is impossible; I must be content with using straw. I first put the straw on the surface of the land without using sulphate of ammonia. I did not wish the straw to rot, but to remain as a mulch to retain the moisture in the soil. I

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am sure, however, this was wrong, and I now put down nitrogen in some form before spreading straw. Those wise growers who like to see plenty of earthworms in their orchards will find that this method of mulching will increase the earthworm population. Of course, the straw laid on the top of the land will ultimately rot down and provide humus, which is all to the good in the growing of such surface-rooting trees as cherries and indeed of all stone fruit.

Costs of Strawing. The expense, however, of putting down straw is great. Apart from the value of the straw, the labour costs are high. Here we bale our straw behind the combine harvester with a pick-up baler, and we use string for the bales. We also bale with string when we are threshing. We cart these bales on to the orchards, leaving so many to a tree according to the amount of straw per acre to be put on. When the weather is too cold for pruning or other necessary farm operations, the men go to these bales, cut the string and scatter the straw evenly. This is a good job for cold weather. We use string in preference to wire, first because it is cheaper, but more important still, because we do not want bits of wire lying about the orchards. However careful the men may be with the wire, some will be left lying on the ground to prove a nuisance in the following season.

Cherries require the same manurial treatment as peaches, but in addition, as I say above, they require ample supplies of water in May. The commercial grower and the private grower can adopt the method of direct watering, or they can put on a heavy mulch of straw, compost or manure not later than February.

For the convenience of the private gardener I should explain that all cherries, both sweet and sour, should be sprayed with tar-oil in the winter, at a strength not exceeding 5 per cent. If you start with the young cherry, and prune out the dieback as directed as soon as it appears, there will be no need to use colloidal copper sulphate. Starting with young trees you can prevent dieback by pruning alone. If, however, you have a tree which is already heavily infected, I recommend a full spraying programme with Buisol and Sulsol or lime sulphur, just as is

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employed for peaches. And I recommend that **this be continued** until the infection has cleared up.

Here are short pruning rules for cherries:

Sweet Cherries

1. Prune at the end of May and beginning of June.
2. Cut out all dieback and blind wood to the third **strong** sideshoot.
3. Never prune after mid-June.

Morello Cherries

1. Prune at the end of May and beginning of June.
2. Cut out all dieback and blind wood to the second strong sideshoot.
3. Cut out all interlacing shoots, and shoots which grow towards the centre of the bush.
4. Never prune after mid-June.

For root-stocks I recommend the seedling wild cherry (or Gean) for the sweet cherry, and the Morello cherry should be budded on to sour cherry root-stock.

XXI

THE PRUNING OF STONE FRUIT

The private gardener is often at a loss when it comes to pruning time. I fully appreciate his difficulties, and propose to deal with the pruning of stone fruits in this Chapter as simply and as briefly as I can.

Books on fruit-growing generally have diagrams and instructions for pruning, but these are not always as full or as practical as one would like. The trees in the diagrams are all shown with normal growth, so that pruning presents few difficulties. The private gardener wants to know what to do when trees do not grow like the diagrams. I well remember a customer of mine who planted a small apple tree and took her book out with her into the garden and pruned exactly according to the instructions. So far so good. But next year she felt completely at a loss, because the growth of the tree did not conform with the next years' diagram.

Let us begin with the proposition that pruning is not nearly so important as the private gardener thinks. The tree will fruit even if it is not pruned. That is why I say to the private gardener: 'When in doubt, do not prune.' Nourishment of the tree is more important than pruning, though I do not wish, in saying this, to imply that pruning is not important too. The commercial grower, of course, must prune, because it is of the utmost importance to him to get regular crops of well-coloured, well-sized fruits. But the private grower can make use of fruit for which the commercial grower would only get a low price. The commercial element does not enter into the home garden to the same degree.

The trouble with all pruning in this country is that growers of every description tend to prune all their fruit trees as if they

The Pruning of Stone Fruit

were apples. Yes, and as if they were apples of the Cox variety. Now the pruning of apples in this country has certainly improved out of all knowledge during the last few years. This is due to the pioneer work of Mr. C. R. Thompson, whose book, *Modern Apple Tree Pruning*, should be in the hands of every grower of apples. There can be little doubt that the productivity of our commercial orchards will increase and continue to increase as his methods are put into more and more general use and modified to suit special conditions. Those private gardeners who are really enthusiastic should also work on these lines when pruning apples, even though this means disregarding many of the pretty diagrams and instructions on pruning which they will find in the ordinary gardening book. The pruning of stone fruits, however, is a totally different proposition from the pruning of apples, and the skilled apple pruner must always bear this in mind, otherwise he will certainly go wrong when dealing with stone fruit.

Let us consider the information available to the private gardener and the commercial grower on this question of pruning stone fruit. First as to plums. The general instructions are that a head should be formed for the plum, and that very little pruning is then necessary beyond cutting out what is obviously wrong. There is a proviso that damsons should not be pruned at all after the first shaping. A more recent writer advises pruning plums and cherries as little as possible in the winter—late spring or late summer is recommended. This is a step, at all events, in the right direction, but stone fruit should *never* be pruned in late summer, as I have found by experiment here. With regard to peaches and apricots, the pruning recommended in most books is designed to establish a trained tree on the wall, so we who grow these fruits as bushes cannot make use of the technique which has been developed over a long course of years. This is fortunate for us, as such pruning leads to the development of dieback. With cherries the position is similar to that of damsons. Here the general rule given is to prune cherries at the time of planting and never prune them again, beyond, of course, cutting out dead wood.

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That is the best information at present available to stone-fruit growers. It is not enough and it is wrong.

In the Fruit Year Book for 1947 of the Royal Horticultural Society, the Society's Garden Adviser expresses the opinion that it might be possible to devise a standardized form of pruning for all fruit trees for the benefit of the private gardener. I do not consider we can go as far as that, but in my opinion, we certainly can standardize the pruning of all *stone* fruit. When we come to apples, such varieties as Laxton's Superb must be pruned very differently from Cox's, for example, though it ought to be possible to reduce the pruning of apples to three simple classes: those which require Cox pruning, those which require Laxton's Superb pruning, and apples which require pruning like Bramleys. As I say, however, in the case of stone fruit general rules can be made to apply throughout. I am firmly of the opinion that if these rules were universally adopted in this country, it would lead to a marked increase in crops. I therefore strongly recommend my system to the commercial grower, as well as to the private gardener.

But that is not quite the whole story with regard to the private gardener, because another element enters into it which does not affect the commercial grower. This is the question of having a 'pretty tree'. The commercial grower should aim at fruit production pure and simple; but the private gardener must have an eye to the beauty of the tree. What can be more lovely than a well-shaped fruit tree in the garden, covered with bloom or covered with fruit? This applies particularly to the peach and cherry. The keen private gardener will therefore want his fruit tree to be pruned in such a way as to display this beauty and he will want what I term a 'pretty tree'. In the case of stone fruit it is quite easy to satisfy his requirements at the time of May pruning. After he has pruned according to the rules, he will cut out any ugly or misshapen branches of his tree. Again, though cherries in the commercial orchard produce the best crops from the commercial grower's point of view if grown as bushes, the private gardener who is not cramped for land may well prefer to grow his cherries as standards so as to have shade in his gar-

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den for tea out of doors. This distinction is a fundamental one between the commercial grower and the private gardener. It does not involve much extra trouble and from the aspect of beauty in the garden is wholly commendable. I would suggest therefore to the private gardener that he should prune all stone fruit according to the rules first and should then use his knife or secateurs with a view to shaping his trees to the best-proportioned and most aesthetically satisfying form within his reach. He will not get quite so much fruit, and the fruit may not be quite so good, but it is well worth the little extra trouble, particularly where he can give his tree an opportunity of displaying its beauty in the blossoming and fruiting season.

GENERAL PRINCIPLES OF FRUIT-TREE PRUNING

We will begin with a short discussion on certain basic principles to be observed in pruning any deciduous fruit tree. I think this will enable the reader to realize better the reasons for my recommendations. I will not go too deeply into these matters.

First consider the normal shape of the tree which you wish to prune; that is, the shape it will ultimately attain when grown in good surroundings, in good soil, if it is left entirely without pruning. Whatever pruning we adopt we must bear this in mind because our object is to modify the natural growth of the tree so as to attain our ends. In commercial orchards we must not adopt a system of pruning which is directly opposed to the growth of the tree. If we do, we shall be fighting against nature instead of working with her; we shall be knocking our heads against a brick wall instead of walking round it or climbing over it. We may knock sense into our heads by doing this, but we shall not get to the other side of the wall. I attribute much of the success of Mr. Thompson's methods to the fact that he works *with* the tree instead of *against* it.

Next we must remember the balance of root and top. The tree always tends to maintain this balance, so if we cut off part of the top, the tree develops extra growth of the top to get back

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to the balance, and some roots may die. The harder you prune the more growth you get; within limits, for of course if you prune far too hard you will over-reach yourself, and too many of the roots will die. In the case of apples and pears, care must be exercised in pruning because if we over-strengthen the growth of these trees it will cause them to produce wood and not fruit. With stone fruits, the matter is rather different, because as I have said previously, good growth and good fruiting go hand in hand. It is just possible, however, even with stone fruit, to develop too much wood by hard pruning if the trees are heavily manured at the same time.

The tree will develop strong growth where it has been cut because it always seeks to balance itself in the ground. Further, if the tree is subjected to gales and feels itself insecure, it will run out additional roots in the direction of the prevailing wind.

The prevailing wind, coming at the time when the shoots of the tree are green and sappy, will bend those shoots away from the wind in an orchard planted on an exposed south-west slope. This will cause the trees to look as if they were hurrying up the hill. It will also cause the tree to produce more fruit on the sheltered side in the early stages of its growth.

Finally, we must bear in mind the special requirements of peaches, nectarines and apricots with regard to sunshine. We do not get enough sunshine in this country and these three fruits require a maximum exposure to the sun. The more they are exposed directly to the rays of the sun, the more highly coloured and better flavoured the fruit will be. We therefore aim to prune these three to an open cup shape, so that every fruit is exposed to the sun's rays. Plums and cherries, on the other hand, will ripen and colour in the shade, and therefore they can be left as ordinary shaped bushes.

With all deciduous fruit trees in this country, except the stone fruit, it is advisable to prune in the dormant season, that is to say when the leaves are off and the sap is in the roots. By so doing you save sap for growth in the following year.

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STONE-FRUIT TREE PRUNING

With stone fruit, on the other hand, you must prune in the growing season. Why is there this difference? All our stone fruits in this country are liable in a greater or less degree to dieback. I think the apricot suffers most, then the cherry, then peaches and finally plums. Now, pruning stone fruit in the dormant season leads inevitably to an increase in the infection of dieback. All cuts on the branches form open wounds to receive the infection, which is active at that time of the year. The infection is least active in May and the rising sap of the bush at that time may be said to seal off the wound. Dieback is the great difficulty with which we have to contend. This difficulty is intensified by the use of root-stocks which do not give sturdy growth.

I give in a subsequent chapter the root-stocks I recommend for each of the stone fruits, to secure sturdy growth.

It will be seen that the object of pruning stone fruit is first and foremost to cut out dieback. When this has been done the bush or tree can be shaped, if this is desired.

Shortening of the leaders, the basis of apple pruning, should never be done except in so far as it is necessary to cut out dieback. The saw should be used to cut out whole branches if your object is to strengthen the growth of the tree.

The cutting out of dieback stimulates the growth of the stone fruit tree more than one would suppose from the amount of wood removed. The effect of the dieback is to check and finally to strangle the flow of sap up the infected branch. This entails some strain on the tree. When the branch is cut off, the sap which was formerly trying to feed it is diverted to the uninfected branches and causes them to grow vigorously.

We can only see the full effect of dieback in May. Dieback and weak growth can be detected first on the plums and last on the cherries. We thus start pruning the plums, then go on to peaches, nectarines and apricots, and lastly tackle the cherries. Cherry shoots affected by dieback may be flourishing in the middle of

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May then suddenly at the end of the month the whole shoot will begin to wither and die. You want to wait in the case of cherries until this takes place, enabling you to recognize dieback easily. In the case of peaches, nectarines and apricots this occurs a little earlier in the season, and plums can be pruned still earlier because the signs of dieback—blind wood, yellow leaves and feeble growth—all show themselves on plums before they do on other fruit.

We are now in a position to give the simple rules for pruning stone fruit. We will begin by giving a full account of the pruning of peaches and nectarines. This account applies equally to all other stone fruits, subject only to minor differences which will be noted under the separate headings of apricots, cherries and plums.

Peaches and Nectarines. First let us deal with the newly planted peach and nectarine bush. I used to recommend that the newly planted peach should not be pruned at all until the end of May. Recent experiments, however, have shown me that this is a mistake because it throws too great a strain on the newly planted bush and will result in weak growth the first year, or occasionally death. I now recommend, therefore, that the newly planted bush should be gone over in early February and every shoot should be shortened by about half its length, cutting to a good bud. At this time of the year the buds are beginning to swell; it is the time of the spring spraying of the bush.

Now pruning at this time inevitably causes a certain amount of dieback, and this shortening of the shoots is not in any way a substitute for the May pruning. You must go round all your newly planted bushes in May again, and prune in the same way as you prune an established bush. We choose early February for shortening the shoots of a newly planted bush because the sap is rising at that time. But pruning could be done in the autumn at the time of planting if thought desirable, provided that *every shoot so cut is cut again at the end of May*; for the danger of infection from dieback is at its worst in November and December.)

Here is the routine for pruning the peach and nectarine. It is the end of May—the pleasantest time of the year—and we go

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out with our secateurs. There is no need for overcoats or gloves, or for mittens to keep out the icy cold which Soviet Russia sends to us in the winter. The urgency of the earlier spring work in garden, orchard and field is over; and we can work without hurrying in the best possible conditions. The newly planted bush, shortened in February, will consist either of a single upright shoot with side branches, or of several upright shoots, all of which have been shortened. It needs imagination to see that by corrective pruning this bush will ultimately reach the open cup shape. Such is the case, however. Even those who leave their peach bushes entirely unpruned will find that in the course of several years the peach of its own accord will develop into an open-centred, cup-shaped bush. So our pruning is only working along the lines which nature herself has decreed. We are working with nature and not against her. Those who wish to shape their bushes at the start can do so at the time of the first May pruning. I do not adopt this procedure, but devote myself entirely to cutting out dieback. The side shoots will be possibly two inches long, or even less, because this is a newly planted bush. Some of the shortened shoots will be dead at the end. Each one of these shoots is pruned to the second strong side-shoot. If you have a shoot at the extremity, then a portion of blind wood, cut down to the second strong side shoot below the blind wood. If there are no strong side shoots, prune back to the main stem. If all the ends of the branches are growing strongly, do not prune at all. If the wire has damaged any of the lower branches you cut these off to the trunk, and remove all fruitlets and flowers. This is all you do in the first year to the bush peach or nectarine.

On the second year you wait, of course, till the end of May. You then prune as directed above and remove all fruitlets except about a dozen, the number to vary with the strength and growth of the bush, never more than twenty. On the third year you can leave perhaps forty fruitlets, less, of course, if the bush is not growing strongly.

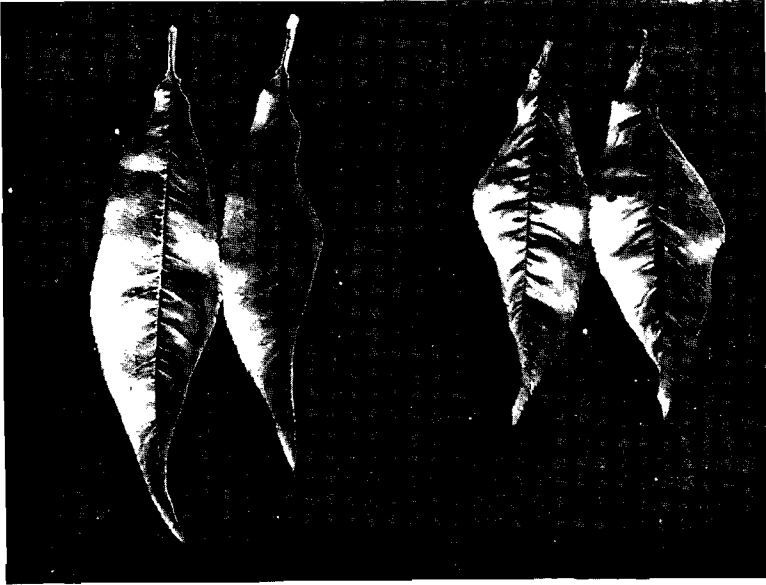
After the first two or three years you begin to remove those shoots which grow towards the centre of the bush, even though

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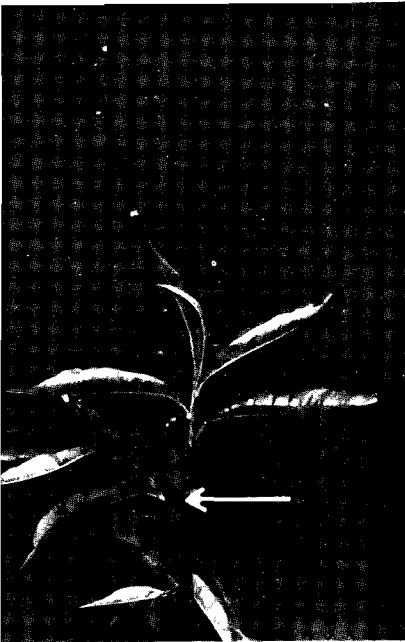
they are not suffering from dieback. Year by year, according to the growth of the bush, you take out more of the centre, pruning harder when the bush is growing weakly and less when it grows strongly. You thus prune out the centre of the bush to make a cup-shaped bush.

The lowest branches of the mature peach will tend in time to touch the ground. This is because the weight of the fruit, year after year, bends the branches down. The time will come, therefore, when one, or possibly two of these lowest branches should be removed with a saw at the end of May; their places will be taken by other branches just above. The result of sawing off a main branch at this time of year is to stimulate the growth of the bush, so that you can notice the difference in a fortnight's time. The gardener is apt to be frightened of sawing off a branch in full leaf in this way; he objects that it will weaken the bush. As a matter of fact it strengthens it greatly, as simple experiment will prove to him. There is no need to put any dressing on to the cut, for the wound made at this time of the year will heal naturally without any further attention. I have never used on my peach bushes any of the preparations made for painting on to cuts, and the cuts have always healed over without difficulty.

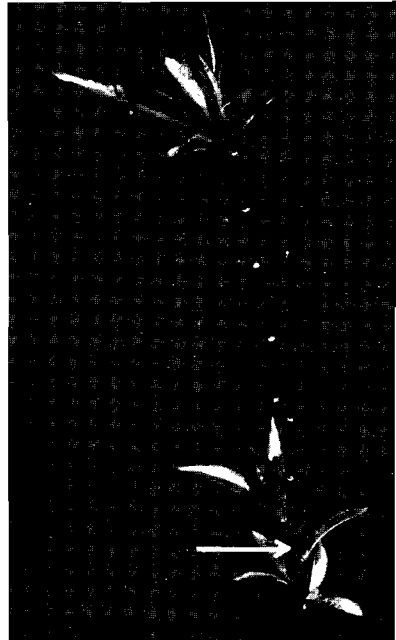
Sometimes a mature peach bush will show obvious signs of weakening, the leaves will come out late, they will be small and yellow, and there will be much gumming. Such a bush is badly infected with dieback, and if left untouched will die. In this case you must cut out two or three, or possibly more of the main branches, choosing those which show the weakest growth, and you must do it at the end of May. This will reinvigorate the bush and bring it back to normal growth and bearing. In 1947 one of my mature bushes failed to ripen its crop. The peaches just shrivelled up. It was a bad case of dieback. At the end of May 1948 I sawed off four large branches, choosing, of course, those which showed most signs of dieback. The tree began to renew itself within a fortnight. It ripened its crop of peaches perfectly successfully and developed growth of about ten inches—not quite enough, so I pruned it hard in May 1949. This



33. Peach leaves showing glands. The two leaves on the left are Peregrine leaves and the two on the right are Royal George. There are two whitish spots at the base of each Peregrine leaf just where the stalk joins the leaf. The Royal George leaves have not got these glands



34. Peach branch showing symptoms of dieback. The terminal shoot has failed to grow. Two strong side shoots have developed below. The arrow shows the point at which the tree should be pruned



35. Blind wood. The terminal shoot has failed to develop but there is blind wood below it. Therefore in pruning the terminal shoot is disregarded and we cut to the second strong side shoot as shown by the arrow



36. Illustrating the pruning of the apricot. The apricot must be headed back each year to strengthen the wood and to induce the formation of spurs



37. Maiden Peregrine peaches on peach stock in the nursery. Summer 1949. Note the vigour of the growth

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finally brought it into really vigorous growth with dark green leaves and good fruits.

By the way, it should not be forgotten that the gumming of stone fruit is the natural and proper reaction of the bush to some injury. Now the injury may be dieback; that is the commonest case; but the injury may be some other damage to the bark. So though gumming often is an indication of dieback, it is not always so, and should not be treated as an infallible sign of that trouble.

The cup shape will be maintained by the hard pruning I just mentioned, because such hard pruning leads to new shoots being formed. Now these new shoots may appear anywhere on the trunk or main branches. You will always allow them to fruit (as they will, the year after growth), and then the following May you will cut out those shoots which are thickening the centre and leave the shoots which look as if they will ultimately form side branches and open up the head to a cup shape. The reason for this cup shape brings me to the question of climate, which I must explain; but before doing so I will end this account of pruning by pointing out that the amateur can, by pruning only, make his peach grow reasonably well and fruit reasonably well. From time to time leaf curl will deprive him of both fruit and blossom, but he can maintain the growth of his peach bush without spraying, if he wishes.

Probably the best climate in the world for peaches is that of the Niagara district of North America. This area is considerably nearer the Equator than we are, but it has not, of course, the mild influence of the Gulf Stream. It has much greater cold in winter than we experience, and considerably more sunshine and heat in the summer. We prune to an open cup shape so that the rays of the sun can strike every peach. We thus use what sunshine we get in our English summer to the best advantage, for sunshine gives both colour and flavour to fruit. We cannot, of course, make our winter climate colder, but by the choice of the right root-stock—peach—and by proper pruning and manuring we can get a sturdy growth, and that will compensate us for the lack of cold in our English winters. The peach bush likes a cold winter.

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Occasionally a little dieback will develop after the May pruning. This is probably due to an oversight on the part of the pruner: be that as it may, branches which yellow or wither their leaves after the May pruning should be cut out at the time of the second thinning, to the second strong sideshoot.

From the fourth year onwards you do more and more each year toward shaping the bush, judging the amount of pruning by the strength or weakness of the bush. Somewhere about the sixth year you will have a cup-shaped bush. And you can then prune out one side of the bush so that the picker can get in to the centre to pick the fruit without having to push his way from the outside, a procedure which is certain to result in damaged fruit and damaged growth.

With pruning alone one has almost complete control of the amount of growth of the peach. But, of course, pruning goes hand in hand with manuring; and extra manure, whether artificial or organic, should be given to those bushes which show lack of growth.

Over-heavy manuring and over-hard pruning cause the peach to grow so strongly that it will fail to fruit. A customer of mine told me on one occasion that his peach bush produced four feet six inches of new growth during the second year after planting. This is too much. On an established tree we aim to get one to two feet of growth every year.

Sometimes in winter the bark of the bush or tree may be seriously damaged, possibly by rabbits. I believe in this case it may be helpful to adopt measures against possible infection. Most of the materials commonly used (including white lead) have little, if any effect, but from experience here I find that Medo, the cure for canker on fruit trees, is excellent when put on to trees damaged by rabbits or hares. It seems to have a healing effect and it is well worth a trial if the damage occurs at times when the infection of silver leaf, dieback or canker is to be expected.

I have a friend to whom I recommended this preparation for canker. He told me later that his goats had got in among his young fruit trees, and had consumed large quantities of the

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bark in the early spring. He thought the trees would probably die, but he painted on Medo and to his surprise the trees all recovered. I pass this information on (for what it is worth) to those optimists who try to combine goat-keeping with fruit-growing.

APRICOT PRUNING

Apricots. We have now dealt fully with the pruning of the peach and nectarine. The apricot also requires to be pruned to an open cup shape, and the pruning is done on the lines of peach and nectarine pruning. But there are minor differences which must be carefully noted by the apricot-grower.

The wood of the apricot, instead of being tough like that of the peach, is brittle. Its brittleness, of course, is increased if affected by dieback. A heavy crop, quite apart from dieback, will cause the side branches to break, a calamity which does not occur with the peach. The branches will break, not only at the crotch (as occasionally occurs in the peach if the crotch is damaged) but also away from the crotch. It is therefore necessary to strengthen the boughs by heading them back each year before good crops are to be expected, so that the tree can bear a full crop without breaking. It will be appreciated that heading back not only strengthens the wood for the next season, but also removes the fruit from the ends of the boughs where added leverage causes the greater strain on the boughs. The apricot differs from other stone fruit in that it is a spur-bearer. It also bears on the new wood, just as the peach does. But the best fruit is formed on spurs. This heading back of the apricot causes the spurs to develop. So in addition to the strengthening of the side branches, heading back increases the fruiting of the bush.

There is another reason why apricots should be headed back. They grow with more vigour and to a greater height than peaches. We do not want to take ladders around with us unnecessarily when we pick apricots and we therefore want the apricot bush to be low enough to pick from the ground where possible. This heading back should begin about three or four years from planting. At the same time ingrowing shoots and

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crossing shoots should be removed, for the apricot tends to develop ingrowing and crossing shoots in its normal growth. These crossing shoots rub together in the wind and then the bark is damaged; such damage renders the tree more liable to dieback. So we prune away these shoots to avoid this. It will be observed that this heading back and cutting out of interlacing branches gives the opportunity of opening up the head of the apricot to the cup shape. In following years all that is necessary is to continue on these lines, strengthening the wood and opening up the bush, pruning (as we do the peach) harder if the tree shows weak growth and more lightly if it shows strong growth (see Plate 36).

The other point to be remembered in pruning apricots is that they are more liable to dieback than any other stone fruit. So we prune to the third strong sideshoot just as we do for sweet cherries and even then examine the cut for traces of discolouration of the wood (the sign of dieback). If there are any such traces we prune harder still until we get to clean wood.

Plums. The plum is pruned as an ordinary bush. If necessary we can begin pruning at the end of April, but early May is the better time. It is not possible, particularly on mature trees, in every case to observe the rule of pruning to the second strong side shoot, but we aim to do this as far as we can.

CHERRY PRUNING

Cherries. The pruning of sweet cherries is simple. We prune them after we have finished the peaches at the end of May and beginning of June. We cut to the third strong side shoot and again, as in the case of apricots, we examine the cut for any trace of discoloured wood, and prune out to clean wood if necessary. Prune to the ordinary bush shape.

With Morello cherries we have more difficulty, because this bush, left to itself, develops a tangle of interlacing branches. It is very liable to dieback.

Again we prune to the ordinary bush shape. We cut out dieback to the second strong shoot and look for the stain on the

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wood for further treatment. But in addition we cut out as many interlacing branches as we dare. The Morello always sets far more fruit than it can ripen. It does not, therefore, reduce the ultimate crop if we prune off many branches with cherries on them.

No pruning of any stone fruit should be attempted after the middle of June. So far do we carry out this rule that if a branch is broken in picking we do not cut it off in the summer, but wait till the following May, being careful at that time to cut off well below the break, in order to check the growth of dieback which inevitably occurs.

The broken or damaged branch is a reminder to us in May that hard pruning is necessary on the damaged branch.

RECOMMENDED ROOT-STOCKS FOR
STONE FRUIT

The root-stock on which a fruit tree is budded has a marked effect on the growth of the tree and we must, in general, be careful in propagating fruit to ensure that this effect is a beneficial one. If the effect of a certain root-stock is to bring the fruit tree into better bearing, then of course we must use that root-stock. For our object is, and must be all the time, to produce the greatest quantity of fruit at the lowest expense, and we must beware of judging the value of the root-stock by the results of the first few years of fruiting. Type IX root-stock, for example, has a dwarfing effect on the apple bush, and causes Cox to fruit early; the fruit is large too, which is all to the good, but in general it is less juicy, and deficient in flavour as compared with the Cox grown on a root-stock which produces bigger trees. This Type IX, which was strongly recommended in the early days to commercial growers, is now more or less relegated to the small private garden where there is insufficient space for a bigger tree. It has one use in commercial orchards, namely where 'fillers' are used.

It is the custom in some parts of the country when planting out an orchard to plant Type IX in between those apples growing on a more vigorous root-stock with the intention of keeping them for a few years, taking the fruit, and then pulling them out. Recent results, however, of long-term experiments carried out at the demonstration plot at Wickham Market go to show that the use of a more vigorous root-stock for this purpose would give a better crop over the first ten years. The whole trend of fruit-growing at the moment is to avoid the use of such exten-

Recommended Root-stocks for Stone Fruit

sively dwarfing root-stocks. In the case of stone fruit it is particularly desirable that this should be borne in mind, because in general with stone fruit the more vigorous the growth, the heavier the crop. I consider that as far as stone fruit is concerned it is a matter of great importance, and in the special case of peaches, apricots and nectarines it is fundamental.

Not only does the root-stock influence the growth of the bush, but the bush influences the growth of the root-stock. Take the case of Miller's Seedling and Cox's Orange Pippin when grafted on Type II root-stock. Now Miller's Seedling is a particularly upright and vigorous grower, and Cox is a more spreading and a weaker grower. When we lift the young Miller's Seedling in the nursery we find that the Type II root-stock tends to go right down into the earth—to grow, in effect, under the ground in a similar way to the habit of the Miller's Seedling above.

On the other hand the Type II root-stock budded to Cox tends to grow underground with a more spreading habit and shallower roots.

In the winter of 1948-9 we transplanted some Cox and some Miller's which had been planted fifteen years. They were all budded on Type II root-stock. The roots of the Cox and the Miller's Seedlings showed a difference in growth just as the young trees did from the nursery. Possibly the difference was not so pronounced, but that is something which, of course, we could not measure or estimate accurately.

We all tend to underestimate the effect and the magnitude of the roots of a deciduous tree. The old country saying is that the roots of the tree will spread as far as the branches spread. This is a gross understatement. They will spread in general much farther, particularly in the case of the peach and apricot and elm whose rooting habits are similar. Years ago I had occasion to make a tennis court. Some little distance from the site there was an elm tree of about twenty feet in height. This elm tree had sent roots as thick as my thumb just under the surface of the ground on to the site of the tennis court to a distance of eighty feet from the bole of the tree.

Recommended Root-stocks for Stone Fruit

We were told some time ago that as the tree grew it tended to dominate more and more the root-stock on which it was budded, the presumption being that so long as the root-stock produced a reasonably good tree it did not matter very much in the long run what root-stock we used. I do not know that I can accept this now. In view of what I have observed in my orchards I am inclined to think that it matters very much what root-stock is chosen, and matters during the whole life of the tree; at all events that is the result of twenty years' experience. Perhaps the next twenty years may cause us again to modify our views. Be that as it may, the present tendency of fruit-growing is, as I say, to shun the dwarfing root-stocks and use more vigorous ones.

ROOT STOCKS FOR PEACHES AND NECTARINES

It was formerly the custom in this country to bud peaches on Broad-Leaf Mussel, Common Mussel or Brompton. In addition Mariana was used; but though this last-named is easy to bud and produces a strongly growing and handsome bush to begin with, we are warned that the root-stock is incompatible, and that peaches budded on Mariana will not prove suitable for fruiting. Avoid at all costs the Mariana root-stock.

Perhaps for the benefit of the amateur gardener, I should explain this matter of compatibility further. If you plant pips from a Cox's Orange Pippin apple (for example) you may get anything from a wild crab apple to a dessert apple. To get a true Cox's Orange Pippin it is necessary to take a bud or scion from a Cox tree, and bud or graft that on another root-stock. The bud or scion will form a union with that root-stock, and will in due course grow into a Cox's Orange tree, nourished on roots which are not its own. That is in practice the only way you can get a true Cox's Orange Pippin. If the union formed by the bud or scion with the root-stock is a good lasting one, then the variety budded or grafted is said to be compatible with that root-stock. If not, it is incompatible. It is true that ease of bud-

Recommended Root-stocks for Stone Fruit

ding and compatibility do not go hand in hand; that is to say it may be easy to bud peaches (for example) on an incompatible root-stock—as indeed is the case with Mariana—and it may be difficult to bud on a more compatible root-stock, as is the case with Kroosje. On Mariana the growth in the first year is excellent and the budding is easy. Nevertheless a tree that is budded on incompatible root-stock will either die out of hand or more often will break at the union in the first gale. For compatibility between fruit and root-stock is in this respect just the same as compatibility in marriage. The incompatible union tends to break when the testing-time comes. In the case of the fruit tree a gale will cause the union to snap and the broken tree will have to be taken to the bonfire.

Now the commercial nurseryman is sometimes tempted to use these incompatible root-stocks, some of which are easy to bud, and which will make a handsome bush in the first year or two. The grower therefore must be careful to ensure that the root-stock on which his tree is budded is a compatible one; that is the first and foremost consideration.

But even if the root-stock is compatible, it by no means follows that it is a desirable root-stock to have; for the root-stock which forms a good union with the tree may have a cramping effect on its growth. This is true of all the plum root-stocks used for peaches, and particularly true of Common Mussel. I found here that the mature tree on Brompton is better than either of the two Mussels, but the mature tree on Kroosje is better than Brompton. This last-named plum root-stock is difficult to bud. We experimented with it in the past and gave it up on that account, but there is no doubt that Kroosje when budded successfully is a better stock than Brompton for peaches. I think I should add that peaches budded on Kroosje and Brompton, particularly the former, are slow to come into useful bearing.

However, it is altogether wrong to use plum root-stocks for peaches in this country. The peach root-stock is by far the best one to use. It gives more vigorous growth and is not so liable to dieback and comes into bearing quickly. I have given up all

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plum root-stocks for peaches entirely, and now bud on nothing but peach.

Another good root-stock for peaches is the almond. Evelyn recommends this root-stock, but adds: 'The almond stone should be set in the place where you would have your peach to remain; for the almond stock does not thrive if removed.' The almonds on which I have budded peaches had already been worked on another root-stock. These double-worked peaches transplanted quite satisfactorily, of course. Evelyn is so reliable a source of information to the horticulturist that I would certainly not bud peaches on almond seedlings commercially without previous careful experiments to examine the truth of his warning.

Peach root-stocks are raised from peach stones. Import peach stones of the wild peach and be careful not to let them get too dry. They must be exposed to the action of the frosts in winter, so that some at least of the shells are broken. The rest must be cracked. Evelyn says: 'Let peach-stones be cracked with a hammer, easily done without prejudice to the kernel, setting them sideways on a stone, the shell will divide in two and let out the kernel.' Another method is to use a vice to crack the stones. In March the kernels should be sown in a good seed-bed and they will soon grow into little peach bushes. A proportion of these will be ready for budding in August of the same year. The rest must be carried through to the following August. Use the three-leafed bud for budding, of course. Remember that to bud a peach is far more difficult than to bud an apple.

Here I must point out that planted peach-kernels of any cultivated peach, if left unbudded, will grow into bushes and produce peaches of a sort. These peaches may possibly be good ones, but more likely they will not be good. Amateurs all over the country have planted peach-stones from time to time, and many of them have written to me telling of their experiences. One such seedling peach in Devon, planted in the garden bed close to a house, has grown until it shades the first floor window and fruits well. In one or two cases amateurs have obtained good varieties, but I have never sampled one up to the quality

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of the best dessert peaches. Seedling peaches take a very long time to come into useful bearing, whereas peaches budded on peach bear quickly. Maiden peaches budded on peach stock will frequently produce blossom.

ROOT-STOCKS FOR APRICOTS

In this country nurserymen generally use Brussel plum root-stock for budding apricots, but peach root-stock and apricot both give far better growth. In the past I, too, used Brussel. I have now given it up altogether and use only peach. Both peach and apricot root-stocks give much better growth than Brussel or any other plum root-stock, and vigorous growth is of the utmost importance in combating our difficulties with die-back. I have tried budding on apricot; there is, however, no significant difference in the growth of apricot whether it is budded on peach or apricot. I therefore now confine myself to peach and recommend this as the root-stock in all cases. Growers of apricots in this country must avoid plum root-stocks at all costs.

In some few districts overseas I am told that Brompton is preferred for very rich soils. This is because it is felt desirable on these soils to have a root-stock which will not give full vigour. In this country we want as much vigour as possible and this is the reason why I warn the grower against planting apricots budded on plum.

It is worth noting that many apricots, including the variety Royal, can be propagated by the private gardener from seed. The resulting bush is so near to the parent as to make no difference for the private grower.

ROOT-STOCKS FOR PLUMS

I consider the best all-round root-stock for plums is Myrobalan B, and that is the root-stock we use in our nursery, except for one important group. That group is the gages—here we use Brompton. Now the gages stand in a class by themselves. We

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have found by experience over sixteen years that Reine Claude Dorée, the true old English greengage, should not be budded at all, but should be grown on its own roots. I am inclined to think that this may be true of some at least of the other gages, but I do not grow them commercially here and so have no data to go upon. Perhaps some other grower will have time to take up this interesting point. Many plums do better on their own roots. It may well be that all do better so. The Risby cherry plum which in growth is so like the Myrobalan B will do better on its own roots rather than on Myrobalan B, and should be so grown. Again the Yellow Pershore plum is largely grown on its own roots in its native habitat in the Vale of Evesham, and quite rightly so. This choice of root-stock may have a profound effect on fruiting.

I have noted carefully over many years the difference of the fruit of Victoria plum on Myrobalan B and on Brompton. The Victoria plum on Myrobalan B has a more vigorous growth, it produces bigger crops and the plum itself is coloured with a deeper red than if budded on Brompton. On the other hand the yellow of the plum on Myrobalan B is not so bright as it is when the plum is budded on Brompton. Here we find that the Victoria on Myrobalan B is less liable to dieback and silver leaf than the Victoria on Brompton. The more vigorous the growth the less likelihood there is of die-back. I consider this to be a principle of general application to all stone fruits.

ROOT-STOCKS FOR CHERRIES

Sweet Cherry. I recommend the seedling wild cherry or Gean. I also recommend that this should be worked low and not top worked. Great care must be taken in obtaining this root-stock. It must come from a district where cultivated cherries are not grown.

Morello Cherry. These should be budded on sour cherry root-stock; but I confess I know of no good sour cherry root-stock in commercial production.

XXIII

MARKETING OF SMALL QUANTITIES OF STONE FRUIT

The grower of large quantities of stone fruit requires no advice from me as to how he should conduct his business. He has learned to disregard the official suggestion which come from time to time: they are not practical. I propose therefore to deal only with the marketing of small quantities because this presents several special difficulties.

The first principle for the small grower is to sell retail all he possibly can. He should sell at the back door, thus avoiding the costs of delivery; for the cost of delivery on small amount of fruit will, in general, take away any profit he may hope to make. I know small growers who not only sell from the back door but get their customers to pick the fruit. The customer is often glad to do this, of course, because it is an interesting job to pick a small quantity of fruit for oneself. If the small grower has a surplus beyond this, he should take his fruit directly to the shopkeeper in his nearest town, or better still get the shopkeeper to collect. He must not expect to get anything near the retail price for such sales: the shopkeeper has to live, and selling fruit retail from a shop is a tricky business. All stone fruit loses weight and condition the longer it is kept in the shop.

If the small grower decides to send to one of the wholesale markets, and is unable to join a growers' co-operative, he is in an unenviable position. He has two things against him. First, he is unable to give quantity and continuity of supply, which is what the market salesman needs; second, as he has only small consignments, he is almost certainly bound to send by rail. Now the large commercial grower of fruit has realized for some time

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past that British Railways cannot handle his fruit satisfactorily. Rail transport is too slow, too uncertain in the time of arrival, too much damage is done to the fruit in transit, and there are too many pilferages. Before sending to market he should get in touch with a market salesman and ask his advice. One market salesman in each market should be the rule. He should always advise the salesman of the actual amount of each fruit loaded at the time of despatch.

On page 55 I explained how we pack peaches for transport at present. This pack is not suitable for plums, which in small quantities should be sent in 12-lb. chips. Twelve-pound chips can also be used for cherries, but often the smaller chip will yield better returns. Morello cherries must be cut off the tree with scissors, rather a laborious task, but pulling off the stalks damages the tree of the sour cherry, and should not be attempted. Of course, sweet cherries should be picked without the use of scissors.

Nectarines are marketed in precisely the same manner as peaches, and so are apricots. Rail transport, however, will damage apricots and nectarines very seriously; though peaches, if packed in the right condition, will often stand the rough handling of rail transport.

I think I should add one further warning. Never sell any fruit to a 'dealer', however tempting the terms may be. Send to a market salesman or to a wholesaler or to a shop, but never sell to a 'dealer'.

One other warning with regard to plums. When gluts occur in our markets owing to the unrestricted dumping of fruit from the Continent, then all growers both large and small, full of just indignation, attack the Ministry of Food in the hope of obtaining a change in policy. The official answer to this in every case is always the same: 'You do not grade and pack your fruit in the best way; if you did, there would be no glut.' I need scarcely say that this statement is not in accordance with the facts, but it is what the politician brings forward time and again. Now grading is an expensive business, and while it is true that by grading plums it is possible to get a higher price

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for the plums so graded, those plums which do not reach the grade can only be sold with the greatest difficulty at an extremely low price. If careful accounts are kept by the grower he will find that his *average* price, if he grades, will in almost all cases be less than if he sent all his plums ungraded. The only real exception to this rule is the special case of Victoria plums, where grading does pay.

May I relate the following true story? It refers to the National Mark Scheme. That scheme, introduced by the Government between the two wars, cost the nation hundreds of thousands of pounds, benefited the consumer not one jot, and brought but trifling benefits to the producer, though undoubtedly the middle-man scored. A friend of mine was approached by the Ministry of Agriculture before the war, to grade a certain horticultural product under National Mark. He obtained the necessary licence and did so. He received a much higher price for his National Mark product in the market, but he had the wisdom to record his *net* returns carefully, both of National Mark grade and of those which failed to reach the grade. He found that for the whole of his crop he got a lower price than if he had not graded at all. When he told me this I said to him: 'Well, I suppose you gave up your licence to pack under National Mark.' 'Oh dear no!' said he. 'You see, it's this way. The Government are staging exhibitions all over the country of National Mark products demonstrating the advantages of grading. They buy their exhibits from me and pay me an exceedingly high price for my product; so I still retain my licence and grade out just what they order, and no more. It pays me well to do this!'

The wise grower is sceptical of any advice on marketing tendered to him by Whitehall, and I think such examples as this demonstrate that his scepticism is not ill-founded.

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