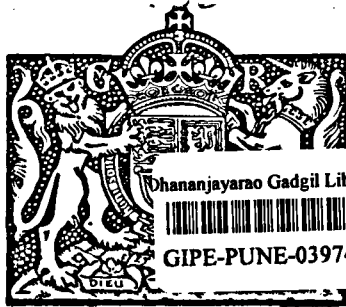


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Economic Series No. 25

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cover)

MINISTRY OF AGRICULTURE AND FISHERIES

# VEGETABLE MARKETING

IN  
ENGLAND AND WALES

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## VEGETABLE MARKETING IN ENGLAND AND WALES

### INTRODUCTION.

The earliest available figures of the area under vegetables\* are for the year 1872, when there were nearly 34,000 acres of market garden crops in England and Wales. By 1931, the acreage had increased to approximately 229,000, excluding crops under glass. Meanwhile, the population had risen from about 23 to 40 millions. The tendency is for vegetables to form an increasing part of the dietary of the people as their significance, as a protective foodstuff, becomes better understood.

Although the value of the output of fresh vegetables is small compared with that of some other branches of agriculture, the industry is clearly of great importance from the standpoint of national health. It is still associated, to a considerable extent, with small holdings and its employment value is high. Moreover, this country is well adapted to produce fresh vegetables of unrivalled quality at moderate cost.

It would thus be generally advantageous if the market for fresh vegetables of all kinds could be largely extended. Growers themselves can, perhaps, do most to promote this development by further improving their marketing technique.

The present Report is, therefore, designed to provide a general picture of present-day marketing conditions in respect of some 40 different kinds of vegetables produced commercially in this country for human consumption, and to indicate the directions in which there seems to be scope for the adoption of improved methods.

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\* **NOTE:**—For the purposes of this report the term “vegetables” does not, except when otherwise stated, include potatoes, tomatoes or cucumbers—which have already been dealt with in Economic Series Nos. 9, 15, and 24.

## PART I.—SUPPLIES AND THE MARKET.

### CHAPTER I.—A PRELIMINARY SURVEY.

Any attempt to estimate the total supplies of vegetables consumed in this country, and the exact proportions in which they divide themselves between imports and home produce, and between individual vegetables, is a matter of extreme difficulty. No annual statistics of home production by tonnage (carrots and onions excepted) or value are available. Annual acreage returns as in June for nine vegetables grown commercially in England and Wales on holdings of one acre and over are published by the Ministry,\* and statistics of tonnage and value for various separate crops are taken for the five-yearly census of production,† other crops, not including glasshouse produce, being grouped together and shown under the headings of acreage and value. But the usefulness of these figures is limited by the influence of changing weather conditions on the year-to-year output of some vegetables, whilst matters are further complicated by the factor of casual production on farms and allotments and in private gardens, as opposed to the activities of regular commercial growers. When it comes to the much smaller imported supplies somewhat better data are available. Imports of onions—by far the most important fresh vegetable supplied from abroad—and of vegetables preserved by various methods, are shown both by quantity and by value in the Annual Statement of Trade of the United Kingdom, and the shares contributed by some of the most important supplying countries are separately recorded. Raw vegetables other than onions and green peas are, however, grouped together and shown by value only. The statistical information in this report has been collated from official sources where possible, otherwise data and estimates obtained mainly from railway companies, shipping companies and merchants, have been used.

It will be evident that, even for a broad outline of total vegetable supplies, recourse must be had to rough estimates based on observation and enquiry. Appendix I gives a table showing, under fifty-four headings, estimates of the average annual supplies and values of vegetable crops produced in England and Wales over the period 1930-32. Totals for each of six groups are also shown.‡ It will be

\* Agricultural Statistics. Part I.

† For the latest figures see "The Agricultural Output of England and Wales, 1930-31." (Cmd. 4605/1934.)

‡ NOTE.—Since there are some 40 vegetables which are grown on a commercial basis in this country, a system of grouping has been found to be desirable and is applied in certain main sections of the report to facilitate reference. Each of the six groups embraces vegetables which have certain characteristics in common, depending generally on the portions of the plant which are used and sold on the market, but sometimes on other considerations: for example, onions bunched and sold in the green state are dealt with as salads and



seen that Group III—which contains cabbage and greens, the heaviest item—is larger than any other both in quantity and value. The second place as regards quantity is taken by the root and onion group, although Groups II and IV both come before it in value. The salad group, though not bulking so large as any of those so far mentioned, is forming an increasing part in the dietary of the nation. As has been indicated, the order above given is based on an estimate of home supplies, but even before the introduction of tariffs the volume of supplies from abroad was not sufficient to make any difference to the order (cf. the estimates of imports before 1931 and in 1934, given in Appendix II).

If the twelve vegetables which bulk largest in the total supplies are set out in order of their tonnage, the following is the list:—

Cabbage and Greens, Ripe Onions, Broccoli and Cauliflower,  
Green Peas, Carrots, Brussels Sprouts, Turnips and Swedes,  
Celery, Rhubarb, Green Beans, Lettuce, Beet.

Of these twelve, the greater part of the supplies of only one vegetable, viz. onions (over 90 per cent. by weight), is drawn from abroad. Of the others, the imports only of lettuce, carrots and cauliflower approached 20 per cent. of supplies, before the imposition of tariffs. Since then, imports of cauliflower and broccoli have been appreciably curtailed. Supplies of the remaining eight important vegetables are almost entirely home-grown. Dried peas and beans, which are mainly imported, would, if included, occupy a high position in the above list. If imports were left out of account, onions would no longer figure in the list above, marrows would come in at the bottom, and the order of the rest would be slightly changed (cf. Appendix I). Turning to the less important crops, even before the imposition of tariffs home supplies practically held the field, with the following exceptions: gherkins (nearly all imported), witloof chicory (about 90 per cent. imported), horseradish (88 per cent.), red cabbage (60 per cent.), asparagus (55 per cent.), shallots (50 per cent.), endive (42 per cent.), mushrooms (30 per cent.), radishes (18 per cent.). Of these, imports of asparagus have fallen considerably, while imports of mushrooms have all but disappeared.

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separated from ripe onions, which are considered under the root group. The scheme which is set out below will make the principle of classification plain.

*Group I. Salads.*—Cabbage lettuce, cos lettuce, watercress, green bunched onions, radishes, mustard and cress and endive.

*Group II. Stem and Stalk Group, including Mushrooms.*—Rhubarb, asparagus, celery, mushrooms and seakale.

*Group III. Leaf and Flower Vegetables (excluding salads and herbs).*—Cabbage, brussels sprouts, savoys, spring greens (Scotch kale, sprouting broccoli, turnip tops), cauliflower and broccoli, leeks, spinach and globe artichokes.

*Group IV. Legumes and Marrows.*—Green peas, dried peas, runner beans, broad beans, kidney beans and vegetable marrow.

*Group V. Roots and Onions.*—Ripe onions, carrots, turnips, swedes, parsnips, red beet, horseradish, chicory, shallots, Jerusalem artichokes and salsify.

*Group VI. Herbs.*—Mint, parsley, sage and thyme.

It has already been mentioned that vegetable production in this country is not confined to the commercial grower. Gardens and allotments do, in fact, make a substantial contribution to the nation's requirements. It is not usual for surplus produce from these sources to be sold, though in some small country towns retailers are supplied from the gardens of large houses in the neighbourhood. Nevertheless in any estimate of the dietary of the nation privately grown vegetables must be taken into account. It may be said in passing that the private cultivation of vegetables in gardens and allotments is more likely to stimulate than to reduce the demand for commercially-grown vegetables. From February to May supplies from these sources are short, and since the private growers have become accustomed to vegetables in their diet, they will, so far as their resources allow, make up the deficiency by purchases.\*\*

To sum up, there are three main sources of supply, home commercial production, home production in gardens and allotments, and imports. The table below gives rough estimates of the totals from each source and the annual consumption per head.

		Weight in thousands of tons.	Value in thousands of £.	Consumption in lbs. per head of a population of 40,000,000, allowing 20 per cent. waste* for fresh produce.	
				<i>Per annum.</i>	<i>Per week.</i>
Home Supplies (fresh).	Commercial ...	1,500	12,000		
	Private ...	470	3,760†		
	Total ...	1,970	15,760	88	Under 1½
Imports (pre-tariff).	Fresh ...	310	2,755	14	
	Preserved‡	24	620	1½	
	Total ...	334	3,375	15½	Over ½
Approximate total from all Sources		Say 2,300	Say 19,000	103½	About 2

\* Outside leaves, portions of stalks and roots, pea-pods, etc.

† Nominal wholesale prices.

‡ Canned and bottled (except tomatoes), vegetables in brine, salt and vinegar, and dried vegetables (except peas and beans harvested ripe).

In certain areas, especially where local production is heavy, consumption at the rates given in the table may be exceeded, whilst in many places it may be a good deal lower.

The figures do not include the proportion of the home dried pea crop (harvested ripe), or the large quantities of imported dried peas

\*\* In pre-war days many people with low incomes used to eat two vegetables at a meal about once a week. The growth of the allotment movement during and after the War stimulated the "second vegetable habit". This has been adopted more generally by the non-gardening section of the community, with beneficial results to the commercial grower.

and beans (harvested ripe) which are used for human consumption. Imports of dried peas for this purpose from all sources have been estimated at nearly 50,000 tons a year up to 1933 and larger quantities since that date. The total net value of the imports of dried peas (except split peas) and dried beans in 1933 was £1,680,000. The distribution of these peas is widespread; they compete with fresh home-grown vegetables and act as a check on the demand for them.

## CHAPTER II.—HOME PRODUCTION.

### (1) Trend.

On balance, the areas devoted to vegetable production in this country have increased in the last twelve years. This applies to vegetables grown in the areas of consumption as well as elsewhere. Appendix IV\* shows the figures of the Ministry's June returns since 1922 for nine of the twelve important crops listed in Chapter I. For each crop in the table, except onions, the 1934 figures show a substantial increase on those for 1922. There was a certain amount of fluctuation, with some setbacks, between 1924 and 1930, but subsequent growth—encouraged, but not necessarily conditioned, since 1931 by tariffs†—has on the whole been steady. Particularly striking are the increases in the acreage of brussels sprouts, cauliflower and broccoli, cabbage, and green peas. As these figures refer to the acreages at the beginning of June, the areas in the course of a year under, e.g. broccoli and cabbages, would be larger and the rates of change from year to year would not be the same as a comparison made in June would show. Part of the increase in brussels sprouts can be attributed to their undoubted popularity, but it is said that the acreage of this and certain other vegetables has been pushed up to the present high figures by cereal farmers and others who have turned to vegetable cultivation owing to the unprofitableness of their regular crops. This has occurred in Bedfordshire and elsewhere; similarly, there has been casual speculative planting of peas and cabbage by farmers in Essex. The acreage under onions has been greatly reduced during the period under consideration. It is claimed that the severe competition from imports has made it unprofitable to grow a crop which occupies the ground for so long and involves such a high expenditure on hand labour.

### (2) Geographical Distribution.

The main vegetable growing areas‡ are to be found at low altitudes where the land is well drained and, generally speaking, in

\* Cf. also *The Agricultural Output of England and Wales—1925 and 1930-1* editions. Cmd. 2815 (1927) and 4605 (1934).

† For tariff rates see Appendix III. The stimulating effect of tariffs has been particularly evident as regards broccoli, glasshouse lettuce and mushrooms.

‡ For a list of these see Appendix V.

places with a high soil fertility. Earliness is a point of first importance with many market garden crops, and consequently light loamy soils are favoured by growers. It is therefore not surprising to find that some of the chief market gardening areas are situated in river valleys or at the confluence of two rivers. The Biggleswade area, for example, is characterised by extensive valley gravel deposits on either side of the rivers Ouse and Ivel. The Tamworth district is situated at the junction of the rivers Tame and Anker, where a deep loamy soil is to be found with a stony and gravel subsoil. The Walton-le-Dale area is between the rivers Darwen and Ribble, whilst at Ripple, in Gloucestershire, crops are grown between the rivers Severn and Avon. The Vale of Evesham, with the river Avon, is well known, whilst some of the most fertile parts of the Rainham district of Essex are to be found on the site of old river beds. Home-produced celery is largely grown on peaty soils in the Eastern part of the country, where the water table is high and the soil retentive of moisture. The main broccoli areas of Cornwall and Kent are situated near the coast, where the risk of spring frosts is less than elsewhere. Heavy crops of carrots are produced on the silt soils of the Isle of Ely, surrounded by the fenlands, and forced rhubarb is largely grown in the Leeds area, chiefly, it is said, because cheap manure is available and because the climate and atmosphere, by encouraging rapid maturity of the stalks in the field, permit of early lifting of the crowns for forcing. The best areas for the cultivation of watercress are to be found to a large extent in the South, where beds are often made on the site of natural springs arising from chalk strata or other water-bearing formations.

The following is a summary of the chief areas of production of each crop :—

**Group I (Salads).**—Cabbage lettuce is grown outdoors to a large extent round London, in the Swanley area of Kent, in Middlesex and adjoining districts, and southern Essex. It is also produced in the Rochester and Sandwich districts of Kent, and the areas of Reading, Portsmouth, Worthing, Bromham, Bristol, Exeter, Plymouth, Penzance and Oxford; Waterbeach, Oakington and other areas around Cambridge; Wisbech, King's Lynn, Ramsey (Hunts) and Biggleswade; Boston, Gosberton and Swineshead in Lincolnshire; Tamworth and Lichfield in Staffordshire; round Leicester, at Melbourne in Derbyshire, near Sunderland in Durham, at Morpeth in Northumberland, round certain of the Yorkshire towns, notably Leeds, and in the neighbourhood of Carlisle. It is an important crop in parts of Lancashire and Cheshire, at Hesketh Bank, Blackpool, Walton-le-Dale, Wallasey and Timperley. In North Wales it is produced near Colwyn Bay, at Rhyl and at several other places. A certain acreage is cropped with cabbage lettuce in the important consuming areas of Newport (Mon.), Swansea, and Cardiff, and it is also grown to some extent in West

Wales near Milford Haven. It is of relatively minor importance in the Evesham and Pershore districts, but is nevertheless grown in moderate quantities round a number of villages and towns in Worcestershire, Warwickshire and Gloucestershire. It is a general crop round many of the large consuming areas in the summer time, but the London area is the chief district of specialised production.

Before the introduction of tariffs the cultivation of lettuce entirely under glass was largely confined to the specialised growing area near Blackpool and to firms of nurserymen and a few glasshouse growers and French gardeners scattered throughout the country, but it has since extended with the expansion of glasshouses, e.g., in the Lea Valley.

*Cos lettuce* is not so widely grown as cabbage lettuce. The main specialised areas of production are the market-gardening areas round and near London, and the Lancashire area south of Manchester, round Glazebrook, Irlam and Rixton Moss. *Cos* lettuce is also grown in appreciable quantities at Wiggshall, near King's Lynn, at Ramsey in Huntingdonshire, and in Bedfordshire and Cambridgeshire, whilst several market-gardening areas elsewhere produce relatively small quantities.

*Radishes*.—The largest acreage of radishes is to be found in the districts round London, where certain growers specialise in this crop, particularly in the Middlesex, Swanley (Kent) and South Essex areas. Specialised production of outdoor radishes also exists in certain other areas; amongst these may be mentioned Evesham (including Pershore, also Ripple and Twynning in the Tewkesbury area), Wallasey, Bristol, Sandy and Retford. The crop is grown to a limited extent in a number of other market-gardening districts, including Portsmouth, Worthing, Plymouth, Cambridge, Spalding, Sunderland, Preston, Rixton, Timperley and Cheltenham. *Indoor radishes* are chiefly grown now and again as a catch crop by glasshouse tomato growers; no area can be specifically mentioned in which supplies are grown in quantity. The early spring demand for radishes has in the past been largely met from the Continent and the Channel Islands.

*Green or spring onions*.—This is a crop of which even large growers have as a rule only a small acreage. The Vale of Evesham and areas round London are the most important centres. The Evesham crop is distributed over a large part of the country. Other districts of less importance include Rochester, Nutbourne (Hants.), Southend-on-Sea, Bristol, Spalding (Lincs.), Biggleswade and Sandy, Cottingham (near Hull), Baguley (near Manchester), Aughton (near Ormskirk), Wallasey, Chester, Cardiff, Abergavenny and Newport (Mon.).

*Cultivated Watercress*.—By far the greatest quantity of cultivated watercress is produced in the South, notably at Berkhamsted, Boxmoor, Bourne End and a number of other places in the

Chilterns; Hurstbourne, Alresford, Andover and elsewhere in the North Downs area; Bere Regis and several other districts in Dorset; Gomshall, Hackbridge and Mitcham in Surrey; Gillingham (Dorset), Fordingbridge and elsewhere in the Salisbury area; Fowlmere in Cambridgeshire and Pewsey and other places in the districts of Hungerford and Newbury. Watercress is also cultivated in a few other scattered localities, amongst which may be mentioned Arundel in Sussex, Challow in Berkshire and small additional areas in Kent, Lincolnshire, Yorkshire, Berkshire, Salop, Middlesex, Gloucestershire, Worcestershire, Monmouthshire and Norfolk.

*Mustard-and-Cress.*—The centres where mustard-and-cress (raised under glass) is produced in large quantities are relatively few, viz., Mitcham and Hackbridge in Surrey, Cleveleys near Blackpool, Bourne in Lincolnshire, Prescott and the Wirral near Liverpool and the Worthing district. Small quantities are grown for local consumption at a number of other places.

*Endive.*—The output of endive, including Batavian endive, in England and Wales has been small and confined mainly to outdoor autumn production in the London area. Limited quantities have also been grown in Cornwall. Before the introduction of tariffs, other supplies were obtained chiefly from the Continent and to a less extent from the Channel Islands.

**Group II. (Stem and Stalk).**—*Forced Rhubarb.*—The main acreage of rhubarb grown for forcing is in Yorkshire, in the neighbourhood of Leeds. The crop is also forced on a small scale in Essex and near Manchester, also in the Vale of Evesham and North Worcestershire, and at Plymouth, Bristol; Cheltenham, Melbourne (Derbyshire), Preston and a few other places. Supplies of rhubarb have been almost entirely of home origin.

*Natural rhubarb.*—The chief growing areas include Yorkshire, Lancashire, Essex and Cheshire. Large quantities of natural rhubarb are grown in the neighbourhood of Liverpool and sold during the season in this and other Lancashire markets. Yorkshire similarly obtains supplies from its local areas of production, and Essex contributes heavy supplies to the London markets, at which quantities are also received from other districts in the home counties. Amongst other areas in which rhubarb is produced, the following may be mentioned:—Penzance, Plymouth, Portsmouth, Bristol, Cottenham, the Cambridge district, and Wisbech; Donington, Gosberton and Long Sutton in Lincolnshire; Melbourne (Derbyshire), Tamworth (Staffs.), Swansea, Cardiff, Abergavenny, Newport (Mon.) and the Vale of Evesham. In a number of these places natural rhubarb is grown for local consumption only.

*Celery.*—The districts of importance comprise roughly the Isles of Ely and Axholme, the area south of Manchester round Glazebrook, Irlam and Rixton Moss, and parts of Huntingdonshire. Celery is also grown to a smaller extent at Bristol and Tamworth,

in the Holland Division of Lincolnshire and the Melbourne district of Derbyshire, near Preston and in Suffolk.

*Asparagus*.—Very small quantities of forced asparagus are grown in this country; the chief districts are in Devon and Southern Essex. For outdoor asparagus the chief growing area is in the Vale of Evesham, followed by areas in the Eastern Counties round Wisbech and Cambridge and elsewhere in Cambridgeshire; production also takes place in Devon, Norfolk, Suffolk, Southern Essex and at Formby in Lancashire, whilst small acreages exist at Biggleswade and in South Lincolnshire.

*Mushrooms*.—Before the introduction of tariffs, the number of growers of forced mushrooms in a large way of business in this country was relatively small, the chief districts being Worthing and elsewhere in Sussex, also at Bradford-on-Avon, Canterbury, places in Middlesex and Hertfordshire and more recently in the Leeds area, as well as in a few other districts. Wild mushrooms are sent to distant markets at irregular intervals from widely scattered districts over the whole country. The marketing period is during the summer and autumn months, but it frequently happens that supplies from a particular area are obtained in appreciable quantities only once in two, three or more years.

*Seakale*.—The main supplies of seakale are produced by a small number of growers and come from the areas near London, notably Middlesex and Southern Essex, and also from Worthing. Smaller quantities are obtained from the Wisbech, Cambridge and Cheltenham districts and elsewhere. Supplies are almost all home produced.

**Group III (Leaf and Flower)**.—*Broccoli (winter cauliflower)* is produced chiefly in the Penzance district of Cornwall and in Kent (including the Margate and Isle of Grain areas), and to a smaller extent round Lichfield in Staffordshire, in Devon, Middlesex, South Lincolnshire, Bedfordshire, Lancashire, Essex, Cheshire, Yorkshire, Nottinghamshire, Worcestershire, and a few other areas. Heretofore, apart from supplies of Cornish broccoli, French and Italian supplies have met a large part of the demand during the last two and first three months of the year.

*Cauliflowers*.—Summer and autumn cauliflower is a general crop grown in many different districts throughout the country.\* Kent, Middlesex and Essex contribute large supplies to London and South-Eastern towns. Cauliflowers are also grown in the South-West of England and at places along the South Coast, e.g., near Portsmouth and Worthing. The Lincolnshire, Staffordshire, Yorkshire, Lancashire, Cheshire (including Holt) and Bedfordshire vegetable-growing areas all specialise in the crop. Early summer cauliflowers from places in the Vale of Evesham appear on the market in May and compete with Dutch produce which, about that time, commences to arrive in bulk.

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\* See also Appendix V and Agricultural Statistics, Part I.

*Spring cabbage and spring cabbage greens.*—Spring cabbage is a crop of great importance in a number of growing areas. The Boston district of Lincolnshire, the Vale of Evesham (where the tonnage is probably equal to that of any other vegetable crop except brussels sprouts), Kent, Essex, the Ormskirk district of Lancashire, Cheshire (including Holt), Bedfordshire, the Penzance district of Cornwall (for very early spring cabbage) and the King's Lynn district of Norfolk are outstanding examples of the specialised production of this crop. In a normal season the Cornish supplies are amongst the first to be sent to market, and the other various specialised districts of production follow, until the presence of large supplies from Lancashire and elsewhere in the North renders the dispatch of further supplies from Southern districts to many of the Northern markets unprofitable. The industrial area of South Wales obtains part of its requirements from production districts in Glamorgan and Monmouth.

*Autumn and Christmas cabbage.*—Many areas of consumption are supplied largely from near at hand. For the demands of the London markets heavy supplies are grown in the Home Counties, notably Kent, Middlesex and Essex, as well as in Bedfordshire and Sussex. Truck loads of cabbage are also consigned to London from Norfolk, Suffolk and elsewhere in the Eastern Counties.

*Purple sprouting broccoli* is used largely to fill the gaps in supplies of late savoy and spring cabbage, and the extent of its use, therefore, depends to a great extent on climatic conditions and the supplies of other green vegetables available early in the year. In any case, its use is largely confined to the South. The Swanley district of Kent, Middlesex and other Home Counties largely supply the requirements of London. In recent years the area under this crop has considerably diminished.

*Borecole or kale.*—What has been said of purple sprouting broccoli is to some extent true of Scotch and other kales (known to some as curly kale or curly greens). Here again production is more extensive in the Home Counties and in the South of England, but small acreages are also to be found in some of the northern market-gardening areas.

*Red cabbage.*—Red cabbage for pickling is not one of the more general crops grown in this country. The requirements of the pickle manufacturer have not been met by home supplies, and for many years much of the red cabbage required has been obtained from the Continent. Crops are grown on a moderate scale in Kent, Middlesex, Lancashire and a few other districts; but in many areas, production is limited to a few small patches of land yielding heads which are not always so good, and usually not so cheap, as the imported article.

*Savoy*s were formerly of importance in the Vale of Evesham, but in recent years supplies in that area have diminished.



The chief area of production is Ormskirk in Lancashire, where thousands of tons are produced annually. In the South a large acreage is grown in Kent and Middlesex, and some of the other Home Counties grow substantial quantities. In the Eastern area Suffolk is one of the heaviest producing counties, and in the Midlands Worcestershire and Staffordshire growers specialise in this crop. A few growers in the Cardiff district and in the other industrial areas of South Wales produce a fair quantity.

*Turnip tops.*—In certain years there is a demand for turnip tops, of which an adequate supply can usually be found in a number of agricultural districts, if there is a market demand for them and other green vegetables are short in supply.

*Brussels sprouts.*—This is the crop of outstanding importance (apart from potatoes) in the Biggleswade district of Bedfordshire. In this area, which is no more than 15 miles long by 12 miles wide, the acreage under brussels sprouts has greatly increased since 1921. 4,648 acres were grown in Bedfordshire in 1921 and 11,777 in 1928. In the latter year, prices of brussels sprouts dropped to a very low point, and the home acreage in 1929 showed a substantial reduction, but in 1931 the acreage in Bedfordshire had nearly risen to the 1928 figure. In 1933 it was rather less. Apart from Bedfordshire, Huntingdonshire and Hertfordshire, there are important areas of production in the Vale of Evesham and elsewhere in Worcestershire, and in Kent, Cambridgeshire and Essex. Suffolk is an area of increasing importance. It is worth noting that the acreage in Lancashire, which in 1931 was 575, had increased more than four-fold since 1921. Supplies for Wigan and certain other Lancashire markets, which were formerly obtained from the Evesham area and elsewhere, are now being drawn in larger quantities from within the county.

*Spinach.*—In spite of the health-giving properties of spinach, it is estimated that home-grown supplies still total no more than a few thousand tons per annum. The chief supplies are probably obtained from the highly intensive market-gardening districts in the Middlesex area and Kent.

*Leeks* are grown extensively in the Vale of Evesham, the Middlesex district and other market-gardening areas round London. They are popular in the North of England and are produced in quantity in the market-gardening areas of Cheshire. The Morpeth growers supply them for local consumption in the Newcastle-on-Tyne area: Bristol grows for its own requirements and Tamworth (Staffs.) for those of Birmingham; and most other market-gardening areas near consuming centres supply part of the latter's demands.

**Group IV (Legumes and Marrows).**—*Green peas.*—The largest green pea growing area in the country is Essex, followed by Yorkshire, Worcestershire, Kent, Lincolnshire and Bedfordshire. Some of the earliest peas in the country are grown in the Bridgewater

district of Somerset, and some of the latest on the warp lands near Goole (Yorkshire) and the limestone soils between Doncaster and Knottingley.

*Dried peas (for human consumption).*—Of the home-grown crop, the greater part used in this way comes from Lincolnshire.

*Runner beans.*—Important areas of production of runner beans include the Vale of Evesham, Bedfordshire, the Swanley district of Kent and Southern Essex. Runner beans are a general crop in market-gardening areas in the South of England, but in northern parts they are not so popular.

*Kidney or French beans.*—Although in the North of England these are more popular than runner beans, the quantity marketed over the whole country is a good deal less. French beans are produced outdoors to a limited extent in market-gardening districts, but one of the principal areas of production is the Vale of Evesham from which they are sent in the early part of the season over a wide area, both North and South. There are important growing areas in the South-Eastern counties, whilst in the North the market-gardening districts of Cheshire may be mentioned. The glasshouse growers of the Worthing area specialise in indoor or forced beans, and they are also grown in the Lea Valley. This produce has to compete with the Guernsey hothouse crops, and to some extent with beans from the Continent and overseas. All three are on the market over more or less the same period, although the foreign beans realise less money.

*Broad beans* are not such an important crop as runners; they are overshadowed to some extent by green peas, the season of which begins about the same time. A relatively large acreage of the early Seville Longpod bean is grown in the Vale of Evesham, although other varieties are also grown in that district. Essex and Kent are also important counties for broad beans. They are grown in fair quantities in several other Southern counties, including Middlesex and Bedfordshire, and to a smaller extent in a number of market-gardening districts, including South Wales and Monmouthshire.

*Vegetable marrows.*—The most important area of outdoor production for vegetable marrows is probably the Bedfordshire district, followed by Kent, Middlesex, Essex and the Vale of Evesham. Vegetable marrows, however, are grown in all market gardening districts, and during the main season of production supplies obtained from the neighbourhood of consuming areas largely cater for local needs. Marrows are not one of the most important vegetable crops either as regards consumption or value. The production of forced marrows (i.e., marrows grown entirely under glass) in this country is confined to a few growers of glasshouse produce, mainly in the Worthing district. Limited quantities are received from France and Madeira.

**Group V (Roots and Onions).**—*Turnips and swedes.*—It is difficult to estimate the quantities of these crops utilised for human consumption; they are grown in widely scattered agricultural districts throughout the country by farmers and market-gardeners, usually for markets at no great distance. *Bunched turnips* enjoy moderately good sales in certain districts in the summer. They are grown in market-gardening areas, amongst which may be mentioned those near London, in and near the Vale of Evesham and in Cheshire. The earliest home-produced bunched turnips are a speciality of French gardens.

*Harvested or ripe onions.*—Bedfordshire, Huntingdonshire, certain West Midland counties, Lancashire, Cheshire, Lincolnshire, Cambridgeshire and a few other counties contribute to the few thousand tons of this crop produced at home.

*Artichokes.*—The demand for artichokes in this country, either of the globe or tuber kinds, is small. The tonnage of home-grown globe artichokes is light, and imported supplies probably amount to less than 200 tons per annum. A few hundred tons of Jerusalem artichokes are produced in Bedfordshire, and a small acreage is grown in Huntingdonshire, Lincolnshire, Cheshire and a few other counties.

*Parsnips.*—Parsnips are grown extensively in the South of England. The chief specialised centres of production are to be found in the neighbourhood of Langford near Biggleswade and elsewhere in that area, in the Vale of Evesham and also in the market-gardening areas round London. Parsnips are grown to a smaller extent in the Bromham district of Wiltshire and at Wellington in Shropshire, Stourport in Worcestershire, South Pether-ton in Somerset, Wisbech in Cambridgeshire and Spalding in Lincolnshire. A few are grown in South Wales.

*Carrots for bunching* are grown in the Biggleswade district of Bedfordshire, but in recent years the quantities bunched have decreased, owing to the extra labour involved in tying up bunches and the change over to topped carrots in July. Early carrots, like early turnips, are one of the specialised crops of French gardens, previously referred to in these notes, examples of which are found in Middlesex and elsewhere round London, and in a few other districts, including Carlisle. There are a number of districts, however, where bunching is carried out on a relatively small scale, including Wallasey, Bristol, Hesketh Bank, Chatteris, the Peterborough area, Tamworth, Anglesey, the Vale of Evesham, Cheltenham and several others. *Topped main-crop carrots* represent, by value, the most important of the home-grown root crops covered by this report. The Chatteris area is still the largest producing centre in the country, but the Market Weighton district of Yorkshire, which has more than doubled its acreage in the last ten years, now follows fairly closely behind. The carrots in the latter area are reputed to be of long keeping quality. The bulk of those in the

Isle of Ely is generally marketed before Christmas. Other districts which specialise in the production of carrots are Kirton-in-Lindsey, Collingham (Notts.) and Swinderby (Lincs.), Bedfordshire, Huntingdonshire and Norfolk, Wellington (Shropshire), Bromham (Wilts.) and Stourport (Worcs.).

*Red Beet* is grown in all market-gardening districts. Some of the chief areas of production are the districts round London, Bedfordshire, Huntingdonshire, Lancashire, the neighbourhood of Haxe (Lincolnshire) and the Vale of Evesham.

*Horseradish*.—Home supplies, which are not large, are grown chiefly in Cheshire. Small quantities are also grown in the Sandwich district of Kent.

*Shallots*.—The commercial production of shallots in England and Wales is very small, nor is there a large demand. Some are grown in the Wisbech area and the Vale of Evesham.

*Chicory for grinding*.—The area of chicory grown in 1911 in England and Wales was 225 acres. In 1918 it had increased to 1,045 acres, owing to interference with cultivation in Belgium during the War. In 1921 the acreage was down again to 268, but in 1930, a firm of chicory driers built a factory at St. Ives, Huntingdonshire, and the acreage again increased. In 1931 the total home production of raw root probably amounted to between 4,000 and 5,000 tons. In 1933, the quantity of raw root grown for the St. Ives firm was 16,000 tons. The area of production was mainly in Hunts. and the Isle of Ely, Cambs. and Beds. As a result of increased home production, imports have been considerably reduced.

*Witloof chicory* is at present an unimportant crop in England and Wales.

**Group VI (Herbs).**—*Mint*.—All market gardening areas grow enough of the outdoor crop to satisfy local demand, and no particular area of production calls for special comment. Forced mint, however, has now assumed some importance amongst glasshouse growers and nurserymen in this country, who grow it for market during the winter and early spring. Specialised production exists particularly in Lancashire and Cheshire, also in Devon, the Home Counties, Staffordshire and Sussex.

*Sage*.—An important area for the production of sage is the Vale of Evesham where, although one of the minor crops, it is grown extensively for market, particularly in the Badsey district. A quantity is bought up and sold to manufacturers for drying. Sage is also grown in other market-gardening areas.

*Thyme*.—This is another of the crops in which growers in the Vale of Evesham specialise and, as with sage, a quantity is sold to manufacturers for drying. A small quantity of thyme is grown in several other market-gardening areas.

**Parsley.**—The Biggleswade district of Bedfordshire, which is the chief producing area for parsley, has in the past catered to a large extent for the Scottish trade. In Bedfordshire parsley is often inter-cropped or grown together with some other vegetable such as onions. A certain amount is produced in other market-gardening areas, notably in the Vale of Evesham, Middlesex, Yorkshire and Lancashire.

## CHAPTER III.—IMPORTS.

### (1) General.

Imported fresh vegetables arrive mainly from the Continent, particularly France and Holland. As might be expected they are received in the greatest quantities at ports on the eastern and southern shores of England; this applies especially to those of a perishable nature.

Appendix VI shows the figures given in the annual United Kingdom Trade Returns from 1927-34 for imports of onions (by quantity and value) and of "other raw vegetables" (by value only). The latter category, however, includes cucumbers, which fall outside the scope of this report. Exports of vegetables grown in the United Kingdom, and re-exports of imported produce, are small; figures for 1933, and imports for the same year of fresh vegetables as well as vegetables preserved by methods other than by canning and bottling, have been brought together in Appendix VII. Notes on various areas abroad producing crops which compete on the home market are given in Appendix VIII.

**Onions.**—Only a very small quantity of onions is obtained from Empire countries. Imports from the three chief sources (Spain, the Netherlands and Egypt) fluctuate individually but in the aggregate account for well over 90 per cent. of imported supplies.\* The table below shows the percentages drawn from these three sources and from the rest during each of the years 1930-33.

			Percentage from			Others.
			Spain.	Netherlands.	Egypt.	
1930	...	...	48	30	15	7
1931	...	...	45	31	18	6
1932	...	...	48	26	21	5
1933	...	...	37	37	21	5

**Other raw vegetables.**—(a) *Fresh.*—France and the Netherlands provide the greater part of the imports under the heading of "other raw vegetables", accounting in 1933 for about 75 per cent. by value of the total. Cauliflowers and broccoli form the bulk of the unclassified fresh vegetables arriving from France,

\* Empire Marketing Board: Bulletin No. 49: Fruit Supplies in 1931, p. 73.

followed by salads, green peas, and asparagus. Carrots and salads represent a large proportion of the imports from Holland. In 1927 the value of French imports was more than twice that of Dutch, while in 1933 the position was reversed. The imports from Italy are small although in 1931 heavy supplies of cauliflowers were received, which amounted to over 4,500 tons\* as compared with 45 tons† in 1929 to 600 tons† in 1930. In 1933 Spain occupied third place; imports from this source (including greatly increased quantities of lettuce) were valued at £58,000, or more than twice the 1932 figure. Next in importance by value were the Channel Islands (chiefly Guernsey), Madeira, Germany, Italy and Belgium, in that order. Imports from the Channel Islands consist largely of glasshouse beans, radishes, peas and broccoli. Those from Madeira are chiefly of beans. Belgium is responsible for imports of witloof chicory and carrots, and Germany for the main supplies of horse-radish.

(b) *Preserved and Dried.*—The Netherlands, France and Italy are the main suppliers of vegetables in brine; consignments from the Netherlands represent about two-thirds by value of all imports under this heading. Dried peas come mainly from Japan and the Netherlands, and dried beans from Japan, Roumania and Canada. Kiln-dried chicory comes in considerable quantities from Belgium. Other dried vegetables are a less important item; the Netherlands are the largest supplying country.

## (2) Details of Sources and Supplies.

### France.

*Fresh Vegetables.*—Whilst some produce is generally sent direct from the areas of production, quantities of vegetables from various parts of France are sent in the first instance to Paris and there assembled for export. This produce, together with that grown in the Paris area, is frequently consigned to this country under the general designation of "Legumes frais". This includes many of the most important kinds of vegetables, as well as the greater part of those dispatched in small consignments, such as celery, parsley, endive, celeriac, aubergines, dandelions, capsicums, etc. Apart from supplies of onions, cauliflowers and broccoli, it is estimated that up to 1931, the total quantity of fresh vegetables imported annually

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\* Empire Marketing Board: Bulletin No. 49, Fruit Supplies, 1931, p. 84.

† Empire Marketing Board, Fruit Notes, 1st April, 1931, p. 17.

into this country from France was in the neighbourhood of 14,000 to 15,000 tons, and the tonnages of the imported vegetables which directly compete with home supplies probably approximate as follows :—

<i>Crop.</i>	<i>Tons.</i>
Lettuce (largely cabbage-lettuce) ... ..	3,000
Cabbage (chiefly spring cabbage) ... ..	2,500
Green Peas ... ..	2,000
Asparagus ... ..	About 1,700
Carrots (both topped and bunched) ... ..	1,500
Mushrooms ... ..	600
Turnips and Radishes ... ..	350 each
Endive ... ..	300
Spinach and Parsnips ... ..	250 each
Broad Beans and French or Kidney Beans ...	150 each
Artichokes ... ..	145

Cauliflower and broccoli from France amounted to 23,610 tons in 1930 and 33,290 in 1931.\* In certain years, therefore, the tonnage of fresh vegetables, including onions, imported from France has been over 50,000. In 1933 this figure dropped to 10,000 tons.

Supplies from Cherbourg, St. Malo and Nantes are liable to be affected between April 8 and October 14 in any year by the Importation of Plants Orders, 1933 and 1934, although a good deal of the cauliflower, broccoli and onions is marketed outside this period. The large and important areas of production in the South of France are not appreciably affected by the provisions of these orders.

*Vegetables in Brine.*—In 1931 importations from France amounted to 1,267 tons, with a value of £20,352, consisting almost entirely of gherkins shipped from Bordeaux. In 1933 the figures had dropped to 487 tons with a value of £11,306.

*Dried Vegetables.*—Between 1926 and 1931, the annual imports from France varied from about 25 to 75 tons, with a value of from rather less than £1,000 to over £2,550; in 1932 the quantity was 9 tons with a value of £550. These imports are believed to consist largely of dried herbs, e.g., sage and thyme.

### **The Netherlands.**

The chief vegetables received from the Netherlands are dried peas, onions, bunched and topped carrots, lettuce, cauliflowers and vegetables in brine.

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\* Empire Marketing Board figures.

*Fresh Vegetables.*—It is estimated that apart from onions, the imports of fresh vegetables in the United Kingdom from the Netherlands in 1933 were 28,000 tons, made up as follows :—

<i>Crop.</i>	<i>Tons.</i>
White and Savoy Cabbage ... ..	181
Red Cabbage ... ..	1,891
Cauliflowers and Broccoli ... ..	1,501
Salads (of which cabbage lettuce is by far the most important).	10,761
Carrots ... ..	12,504
Gherkins ... ..	822
Other fresh vegetables (chiefly parsnips, beet and forced rhubarb).	582
Total ... ..	28,242

The addition of onions would bring the 1933 imports to about 122,000 tons.

*Vegetables in Brine* are of considerable importance. They amounted in 1931 to 11,830 tons valued at £144,751, and in 1933 to 9,160 tons at £109,782, representing in the latter case about 80 per cent. by value of the total imports of this produce. A large proportion of the quantity from Holland consists of cauliflowers; the remainder includes silverskin onions and gherkins, and sauerkraut.

*Chicory (kiln-dried).*—The amount in 1933 was 11 tons with a value of £129, compared with 1,173 tons in 1926 valued at £12,579. This fall is probably due to the increase of home production.

*Dried peas.*—No statistics relating to the imports of dried peas for human consumption are published, but it is known that thousands of tons are imported annually.

*Dried vegetables.*—Vegetables dried in the factory, as distinct from dried peas, are also received from the Netherlands, chiefly in the form of vegetable meals and powders for soups. The quantity is, however, small; in 1933 it was 102 tons valued at £5,600.

### **Belgium.**

*Fresh vegetables.*—In 1930 and 1931, the average imports, other than onions, amounted in value to £32,000. This was made up of about 500 tons of witloof chicory, 800 tons of cauliflowers and broccoli, 250 tons of carrots, both topped and bunched, 120 tons of endive, and a small quantity of lettuce, asparagus, beans and other vegetables. The value imported in 1933 was £15,747 (see Appendix VII).

*Vegetables in Brine.*—Quantities under this heading are very small.

*Chicory (kiln dried).*—Imports from Belgium to the United Kingdom amounted to 1,404 tons with a value of £12,474 in 1933.



### The Channel Islands.

Jersey sends a small quantity of vegetables to the United Kingdom, but Guernsey is by far the largest contributor. Great Britain is the market for all the supplies exported. In 1933 the exports from Guernsey to the United Kingdom consisted of 740 tons of broccoli, 217 tons of radishes, 216 tons of glasshouse beans, 18 tons of glasshouse peas and 28 tons of other vegetables, total 1,219 tons. Total supplies in the same year from all the Channel Islands amount to 1,362 tons.\* The introduction of tariffs on foreign imports has tended to increase the annual quantities from the Channel Islands.

### Italy.

*Fresh Vegetables.*—Cauliflowers form the bulk of these. In 1931 the quantity of cauliflowers received was over 4,500 tons,† compared with about 120 tons in 1926.‡ Information from a trade source in this country indicates that the vegetables imported in 1933 from Italy were made up chiefly of cauliflowers, some green peas, garlic, asparagus, spinach, lettuce and fennel. Owing to the considerable distances which have to be covered, freight and marketing expenses are relatively heavy.

*Vegetables in Brine.*—Imports under this heading also consist largely of cauliflowers; some gherkins are sent. They amounted in 1931, to 558 tons, value £8,465, and in 1932 to 416 tons, value £6,778.

### Germany.

*Fresh vegetables.*—Imports from Germany (other than onions) varied in value since 1926 from £26,000 to £34,000 annually. It is probable that these imports consist chiefly of horseradish, of which nearly 950 tons were received from Hamburg at one of the London wharves in 1927.

*Dried vegetable powders* are also received from Germany, but since 1930 the value has been less than £1,000 annually.

### Madeira.

Madeira sends beans and marrows to the United Kingdom.\* Of the two, beans are believed to be the more important in quantity, and the average tonnage may amount to 650 per annum. The quantity imported at Southampton in 1927 was rather less than 500 tons.

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\* Fruit Supplies in 1933. H.M. Stationery Office, price 1s. net.

† Empire Marketing Board, Fruit Notes, 1931, p. 84.

‡ "Note sur les exportations Italiennes de fruits et primeurs", by M. Sanguinetti, read at the Second International Congress at Strasbourg, April, 1929.

### Spain.

Supplies of lettuce from Spain are now important. Consignments of peas, grown around Barcelona, have been recorded. Globe artichokes, grown in the district north of Barcelona, are also known to be received, and these arrive earlier than those grown in France. Cauliflowers are said to be included amongst the consignments, and several tons of asparagus were imported from Cieza in 1928. Amongst other vegetables which may be sent in relatively small quantities are beans and garlic.

### Algeria.

Imports from Algeria are small. The kinds of fresh vegetables known to have been received are carrots and peas, and of preserved vegetables, cauliflowers in brine. Small quantities of other fresh vegetables are imported, including turnips, beans and globe artichokes.

### United States.

Small consignments of fresh vegetables, including cabbage, celery and asparagus, are sent from the United States. According to United States statistics,\* in 1930 exports of fresh vegetables, excluding potatoes, to the United Kingdom amounted to approximately 185 tons.

### Other Countries.

Asparagus is received from the Argentine and horse-radish from Sweden. Some raw onions and gherkins are imported from the Soviet Union, and, together with small quantities of dried mushrooms, from the Baltic ports. Dried vegetable powders are sent from Czecho-Slovakia.

*Dried Peas.*—Japanese consignments of dried peas for human consumption are of considerable importance. Supplies are also received from Tasmania.

*Dried Beans.*—According to trade information received, supplies from Japan, Manchuria, etc., of the Otenashi kidney bean well exceed 5,000 tons annually. These are cheaper than, but in other respects not preferred to, the Roumanian pearl beans, which are grown in Roumania and adjacent countries, and largely sorted at Antwerp and Marseilles before being consigned to this country. More recently, some of these beans have been imported from Canada and have been found to be particularly satisfactory for canning. The total supplies for canning from these various sources are estimated at over 8,000 tons per annum.

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\* Foreign Commerce and Navigation of the United States, 1930.

## CHAPTER IV.—SUPPLY, DEMAND AND PRICE.

It is not within the scope of this Report to analyse the price structure of the vegetable market. The subject is exceptionally wide and intricate, owing to the large number and inter-relations of the kinds of vegetables marketed. Moreover, in the absence until quite recent times of any extensive system of standard grades or standard containers, the limited data available are difficult to interpret. The present chapter will be confined to pointing out certain characteristic features of the market.

### (1) Supply Conditions.

**Vegetables as a marketable commodity.**—Though vegetables in general must be classed as perishable, the degrees of perishability vary greatly for different kinds. Some, e.g. asparagus and lettuce, must be marketed within a short time of reaching maturity or the right stage of development. Others need not be harvested until some time after this stage, and can be kept for a considerable period after harvesting. The periods during which different kinds of vegetables can retain their marketable quality before and after harvesting are shown in Appendix IX.

Supplies of many fresh vegetables are definitely seasonal (cf. Appendix X), owing to the limitations of the growing season and the perishability of the crop. For the reasons mentioned in Chapter XI, deliberate storage is undertaken only for a few root crops. The marketing season for different vegetables has, however, been extended by the use of glass, the development of special early and late varieties, the importation of foreign produce, and the canning and bottling of home supplies.

Another marketing characteristic of vegetables is the close inter-relation between different kinds. The market for a given kind can seldom be considered in isolation; the volume of supplies of other competing or complementary kinds of vegetables (or even of fruit) generally has an important influence. More will be said on this point when the conditions of demand are considered.

Finally, many vegetables vary widely in quality. The marketable standard tends to be higher when supplies are plentiful than when there is a scarcity.

**Seasonal supplies.**—The quantity available in a given season is determined by acreage, yield and volume of imports.

Acreage is, of course, dependent primarily on arrangements made by individual growers: the price level of the different kinds of vegetables in the preceding season often has an important influence on the acreage planted. Yield is determined primarily by the uncontrollable factor of weather: for example, a warm spell at cutting time causes the asparagus crop to be larger, or a severe frost will reduce the broccoli crop. Disease and insect pests, some of which are controllable, are also of some significance as influencing

the amount of supplies available for the market in certain years: for example, the yield of cabbage is affected by Finger-and-Toe Disease, and that of brussels sprouts by white fly or aphid. Changes in methods of cultivation also influence the volume of supplies. On the whole there is probably not so much variation in the yield of leaves, stems and roots as in that of fruit; nevertheless, the variation in yield of vegetables is considerable.

As has been explained in Chapter I, the proportion of imported fresh vegetables in the total supply is not large, but it varies in importance as between the different kinds. In some cases, e.g. parsnips, green peas and spinach, imports are merely supplementary to the home crop. In the case of onions\* they constitute the bulk of the supply and dominate the British market. Dried peas are another conspicuous example.

With no vegetable is the volume of home exports large enough to have any appreciable effect on the level of supplies available in Great Britain.

**Short-period supplies.**—The flow of supplies within the season is again determined partly by uncontrollable factors, partly by growers' decisions based upon market prospects or production conditions, and partly by the volume of imports.

Weather conditions once more play an important part. In the first place they are the chief factor determining whether the season or its peak is early, normal or late. In cold weather the opening of the Worcestershire asparagus season in April is delayed. Hot, dry weather conditions are likely to hasten different varieties of peas to maturity at the same time, thus causing a glut. A mild spring in the South of England will bring supplies of naturally-grown rhubarb on to the market in competition with the forced product. Secondly, weather variations during the season may greatly affect the flow from week to week, or even from day to day, by their influence on harvesting or marketing conditions. For example, in spells of exceptionally cold weather it is much easier to cut cabbage than to gather sprouts. Again, mild weather during the picking season tends to make sprouts more perishable, so that they must be disposed of more expeditiously than when the weather is cold; instances have been recorded of consignments being destroyed in London during a mild spell at the end of November. Similarly, wet weather makes it more difficult to market peas, as they heat very rapidly during transit.†

Diseases and pests, to which practically all vegetables are subject, may also affect short-period supplies by influencing the time at which growers offer a product for sale. For example, the ravages of the carrot fly, particularly in certain Eastern counties, necessitate the marketing of the bulk of the crop before Christmas, with the result that the market usually becomes overloaded.

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\* See Appendices II, VI and VII.

† See also Linlithgow Committee: Second Interim Report, Cmd. 1892 (1923), para. 54.

Growers' decisions are, of course, strongly influenced by the current level of prices and the prospects of good prices at certain seasons and on certain dates. In addition, since two or more crops are frequently taken from the same ground in a year, growers may make room for the next in rotation; this may lead to temporary gluts.

Where, as is generally true, the bulk of a crop is home produced, the rate of importation depends largely on the level of prices prevailing in the British market, and therefore tends to vary inversely with home supplies.

## (2) Demand Conditions.

It is very difficult to make generalizations which apply to the demand for all classes of vegetables. Climatic conditions influence consumption to a marked degree. Again, different vegetables are in season at different times of the year, whilst some varieties are more popular in certain areas than others. These and a multitude of other circumstances have a bearing on demand throughout the year. No factor can be considered independently of others for any great length of time, though on certain occasions a single consideration may exercise temporary sway.

**Weather.**—Lettuce and other salad crops are in great request during a spell of hot weather, but a few hours of cold winds will turn the public taste to carrots, onions, cabbage and other crops suitable for serving with hot dishes. During a fine summer the habit of making week-end excursions is said to have an adverse effect on the market for certain vegetables.

**Seasonal and periodic influences.**—Some fresh vegetables are available only during certain months of the year. Many consumers, when their circumstances permit, act on their natural inclination to buy the various kinds when they first appear on the market. There is also seasonal demand associated with religious festivals: for example, parsley is in good demand at Christmas, and at Easter large quantities of watercress are consumed. There are, again, regular short-period movements in demand, the time of sale within the season often being a vital factor. Produce habitually sells better on some days of the week than others. The mid-week trade is often poor, particularly on half-holidays. Highly perishable products usually sell best early in the morning: for example, green peas which arrive late on the market generally realise lower prices than earlier arrivals, as by then the demands of many of the best buyers have been satisfied.

**Substitution.**—The demand for all kinds of vegetables is affected by the supplies of alternative vegetables, and also, to some extent,

by the quantity of fruits on the market at the same time of the year. Such influences, of course, affect all foodstuffs, but the situation is particularly complicated with vegetables, since the numerous kinds afford so much scope for change. In fact, vegetables of one kind or another are, except on rare occasions, in plentiful supply throughout the year. Many examples of the substitution of one vegetable for another and of fruits for vegetables could be cited, but a few examples will suffice to show how the market for one product can be jeopardised by the appearance of an alternative.

A scarcity of peas and beans is soon reflected in a better demand for vegetable marrows. Green peas compete during part of the season with runner beans. The arrival of strawberries on the market in good quantities spoils the prospect of radishes, whilst the advent of gooseberries lowers the sale of rhubarb. The sale of forced peas and beans from Guernsey is affected by the supply of asparagus, and heavy arrivals of peas will actually stop consignments of Dutch cauliflower. A shortage of brussels sprouts is immediately reflected in a heavier demand for cabbage, and conversely, a glut of sprouts spoils the cabbage market. This is particularly noticeable in London. The advent of Cornish broccoli has a depressing effect on the market for Lancashire savoy and the demand for broccoli is affected by the arrival of spring cabbages. Canned vegetables, again, (particularly peas, beans and carrots) compete on the market with fresh.

**Local preferences.**—The popularity of a vegetable often varies from one part of the country to another.

Parsnips are more popular in South Wales than in the North of England, and runner beans are more popular in the southern half of the country. Cos lettuce is more sought after in some districts than cabbage lettuce. Covent Garden is one of the best markets for vegetables of all descriptions when they are scarce; London is also probably the best market in the country for asparagus. Leeks are popular on the north-east coast, spring onions and radishes sell well in south Yorkshire and Derbyshire towns, and Lancashire displays a marked appetite for pickled vegetables. Swedes, carrots and onions are usually in demand in poor districts. South Lancashire consumes large quantities of celery, which is grown to perfection near Manchester.

On the other hand, some districts appear to have a decided aversion from certain vegetables. Long radishes are not generally popular in London or outdoor dwarf or kidney beans in Cardiff or Bristol.

**(3) Prices.**

The above sketch of supply and demand conditions shows how complex are the factors governing the price level. Appendices XI-XIII give certain statistical information on wholesale prices of vegetables for a number of years. It is difficult to draw any well-defined conclusion from these figures, on account of possible differences in quality standards and, in some instances, vagueness of the unit of sale—e.g., bunch and bundle. Unfortunately, no more satisfactory data are available on growers' or retail prices. It may be mentioned, however, that the combined price index based on the price of six kinds of vegetables, as given in Appendix XI, has remained well above the general index for agricultural produce during the past three years; the reason for this doubtless is that the vegetable market in Great Britain has been comparatively independent of world supply and price conditions.

**General factors.**—Weather conditions exercise an important influence on the price level of vegetables, since they affect both supply and demand. Inter-competition between the various kinds of vegetables, and between vegetables and fruit, has an influence on seasonal price levels. Substitution occurs very easily when, owing to a shortage, the price of one vegetable begins to move seriously out of line with the price of possible alternatives. Conversely, the depression of prices for a particular kind owing to a glut may be mitigated by the extension of the demand for it through substitution.

Under given demand conditions the general price level for a vegetable in any season is governed in most cases chiefly by the size of the British crop at that time both of the vegetable itself and of possible substitutes.

The violent changes in the price of peas from 1924 to 1927 deserve special mention.\* The acreage of peas in 1924 was very high, and low prices apparently resulted in a contraction of acreage by one-third in 1925. High prices in 1925 encouraged pea growers to extend their acreage again in 1926. Prices were exceptionally low in that year, perhaps owing partly to the disturbed economic conditions, and contraction occurred again in 1927, followed by an improvement in prices. By way of contrast, spinach and watercress may be cited as showing remarkably little variation in seasonal average prices during recent years. Turnips and swedes are in some measure exceptional in that only a negligible proportion of the crop is used for human consumption, the rest being fed to stock on the farm; the price level is comparatively little affected by the size of the home crop. With certain vegetables, notably onions, the supplies of imports are so large as to be the dominant or at least a highly important factor in determining the price level.

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\* See Appendix XII.

Apart from the actual volume of supplies, quality is a vital factor affecting price. Although a shortage tends to lower the marketable standard and may result in high prices being paid for inferior produce, the reverse conditions are more frequent, and when supplies are heavy, only the very best produce will secure a fair market.

The size of the package may influence the price secured. It is generally advantageous to make up long radishes in rather larger bundles than are usual with some growers in the West Midlands. Branded goods, for example watercress, frequently make better prices than unidentified packs, and vegetables graded and packed to national standards should secure a more stable price than ungraded supplies.

Local preferences may tend to maintain prices for a given product at a higher level in one market than in another.

**Short-period factors.**—Within the season changes in the rate of supply and demand, due to the influences already discussed, bring about considerable fluctuations in the prices of most vegetables. The weekly prices of six important crops (second quality only, at Covent Garden) for the year 1933 given in Appendix XIII show very clearly the magnitude and frequency of price changes in the vegetable market.

Some of the changes within the season are due to seasonal influences and have a certain regularity. The prices of a number of vegetables, for example peas and forced beans, tend to be higher at the beginning of the season than when it is well advanced. Increased supplies are the chief cause of such a decline, but satiation of the public taste for the product, or a decline in the quality, may also play a part, and as previously stated there may be a definite break in the price when a competing product comes into season.

Irregular changes during the season may be due to many causes, such as changes in weather affecting supply or demand, miscalculation of the general or local market situation by growers, the arrival of consignments from abroad, special requirements at holiday periods and on certain days of the week, temporary gluts or deficiencies of competing products or variations in the quality marketed. With certain commodities the total season's supply is made up of crops maturing at different times and in different areas; thus the success or failure of the different parts of the crop may greatly affect the course of prices. In 1928, for example, when the acreage of peas was not very large and Essex peas were off the market early, the Yorkshire crop, marketed afterwards, realised relatively high prices; in 1929 the total acreage was increased by one-fifth, and the Yorkshire peas, which arrived on the market before the crop in the South had been cleared, did not realise high prices till the end of the season; in 1933, the prolonged hot weather caused several different varieties of peas to be ready at the same time, and the markets suffered from poor quality consignments and over-supplies.



The inter-action of seasonal and irregular influences on prices makes the market for vegetables highly speculative. The following table, showing prices for lettuce over four consecutive years, indicates how wide the variations during a given season and between seasons may be.

*Average Monthly Price of Lettuce during Four Consecutive Seasons.*

(The prices relate to commission sales.)

Month.	1st Year.	2nd Year.	3rd Year.	4th Year.
	Per dozen. <i>s. d.</i>	Per dozen. <i>s. d.</i>	Per dozen. <i>s. d.</i>	Per dozen. <i>s. d.</i>
March (Frame Lettuce) ...	2 0	1 6	1 3	1 1
April " " ...	2 3½	1 9	0 10	1 1
May (Outdoor Lettuce) ...	1 3	1 9	1 1	0 11
June " " ...	0 8	1 9	0 6	0 9
July " " ...	—	2 4	0 4	—
August " " ...	0 5	2 1	0 5	0 6
September (Outdoor Lettuce)	1 5	0 9	1 2	0 5
October " " ...	0 7	0 3½	0 6	—
November " " ...	0 4	0 5	0 9	—

## PART II.—ASSEMBLING.

### CHAPTER V.—ASSEMBLING IN ENGLAND AND WALES.

When vegetables leave the grower's holding they may enter directly into the channels of distribution in consuming centres. Growers with large quantities to offer can dispatch their produce on commission, or sell it outright, to merchants in the various consuming centres; some market salesmen themselves grow vegetables and market them either in the same way or through their own sales organisation. In many towns, again, facilities are provided for growers and dealers to sell vegetables on their own account, either in a section of the wholesale market or elsewhere. Direct trade with retailers, and to a small extent even with consumers, also occurs.

There are, however, various ways in which produce, especially from holdings of small or average size, can be assembled before it reaches the consuming centre, and it is with assembling that this Chapter is concerned. The media may be classified as follows:—

- (1) Country dealers and agents of town salesmen who negotiate privately with growers in most of the specialised areas of production.
- (2) Private or corporation auction markets.
- (3) Agencies operated by the growers themselves, which may take the form of:—
  - (a) auctions, or
  - (b) dispatching and marketing societies.

#### (1) Country Dealers and Buyers.

(a) **Types.**—There are three main types of country dealers and buyers:—

- (i) The agent or representative of the market salesman.
- (ii) The country buyer or dealer working on his own account, who buys produce outright or takes it on commission from the grower and chooses the market according to his own judgment.
- (iii) The grower, usually in a substantial way of business, who obtains from other growers, on pre-arranged terms, the produce usually required to complete, or make up, his own market consignments.

(b) **Methods of operation.**—The agent or representative of the market salesman adopts different methods according to the district in which he operates. Thus, at certain centres in the West Midlands, vegetables may be bought outright at the produce auctions,

whereas elsewhere smallholders may be offered the choice of sending vegetables to any one of the salesmen whom the agent represents. In the latter instance the agent usually supplies the salesmen's returnable packages and labels and arranges for the loading of the produce in bulk at the station. An agent may thus represent more than 20 market salesmen in various places.

Agents of market salesmen who send produce forward for sale on commission are to be found chiefly in areas where smallholdings are plentiful, e.g., around the market-gardening villages near Cambridge and Wisbech. Agents representing market salesmen attend the auctions at Pershore and Evesham and are also prominent in the Penzance broccoli area in the season.

Country dealers of the type mentioned under (ii), sometimes known as jobbers, cover a wide range of activities. (a) They may share with the grower the expenses of growing the crop afterwards marketed by the dealer. In Yorkshire the country buyer often enters into an agreement with the producer of peas by which the former provides the seed and the labour for hand cultivation and picking, whilst the latter grows the crop, attends to horse cultivation and carts the produce to the station. Under the terms of the agreement it is usual for the producer to retain the haulm. (b) Fields of produce, e.g., peas or cabbage, may be bought outright, usually on the understanding that the crop must be cleared by a certain date. Fields of early peas are bought by auction in some districts. Broccoli and spring cabbage are bought on the fields by dealers in the Penzance area and spring cabbage and other crops are purchased in the same way in the West Midlands. Many acres of savoys are purchased by country dealers in the Ormskirk district, and peas, in many cases, are bought on the fields in Somerset and Worcestershire. (c) A country dealer may take over the crop, or part of it, after it has been packed for market. Dealers sometimes act as direct intermediaries between growers and retailers, particularly when the growing areas are reasonably close to areas of consumption. In such cases the dealer either agrees to sell the produce on commission on behalf of the grower or, after selling it to the best of his ability, gives the grower a lump sum in settlement without disclosing the price at which it was sold.

(c) **Charges.**—At West Midland auctions country buyers representing market salesmen are often paid as commission about 5 per cent. of the value of the produce supplied; sometimes the percentage is less. In the Eastern Counties it is more usual for country buyers of the same class to receive so much per package. Examples of such charges are 3d. to 4d. for a half-sieve and 1d. to 1½d. for a 4-lb. chip. The prices offered for produce bought on the ground vary according to the season and the relative scarcity of the product in question.

(d) **Functions.**—At one time smallholders were better able to make a reasonable profit, even if they marketed their vegetables in

small and uneven quantities at irregular intervals. The efficiency and speed of modern transport, combined with the heavier supplies that are now available, have had the effect of reducing the profits of the smallholder who persists in marketing his goods single-handed. The need for the assembling of the produce of small growers at the point of production is obvious, particularly when the markets are at some distance. In performing this service the country dealer, or country agent of the market salesman, has played an important part. Through his organisation he facilitates the bulking of produce at the dispatching station, thus effecting an economy in rail expenses for the small grower. Using his specialised marketing knowledge, the dealer or agent selects the markets where he can dispose of the produce to the greatest advantage, and endeavours to maintain during their seasons a continuous supply of the vegetables grown in the districts in which he operates.

As already indicated the country buyer may buy crops on the field, as well as produce ready for market, as cheaply as possible and sell it to the best of his ability. In this way he has made it possible for farmers to grow larger acreages of crops which they could not dispose of in a satisfactory manner themselves, because they had neither the time nor sufficient marketing knowledge. Some country buyers who specialise to a large extent in purchasing fields of peas and potatoes, have their own gangs of pickers which they transport swiftly from field to field in a locality according to requirements. The buyers are used to dealing with this type of labour and know how to obtain the best results from it.

To place his produce to the best advantage the country buyer must keep careful records of his transactions, both with growers and salesmen, and must maintain telephonic communication with the salesmen to whom he has sent produce.

A country buyer acting as an agent for a commission salesman is expected to provide produce as required. Thus a country buyer in the Bridgwater district of Somerset may be called upon to supply so many bags of peas a day to his principal in a London market.

(e) **Value of the service.**—It will be clear from the foregoing that the country dealer or buyer renders in general valuable assistance to growers. When produce is relatively scarce, country buyers can dispose of it without much difficulty, and return a price to the grower which will normally be accepted as satisfactory. At such a time the grower will not have to look far to find dealers who are ready to help him. It is when supplies are plentiful that the service is apt to fail. When the dealer has sufficient produce for his requirements there is little inducement to him to expend energy in the effort to effect further sales or find markets for more. The grower may thus at times find that the system of marketing on which he has relied leaves him stranded without a market.

## (2) Private and Corporation Auction Markets (other than growers' auctions).

Amongst the places at which growers may dispose of their produce through auction markets the following may be mentioned :—

Abergavenny, Bridgnorth, Bromsgrove, Carlisle, Evesham (Central Market and Smithfield Market), Gloucester, Kidderminster (Corporation Market), Maidstone, Pershore (Central Market), Stratford-on-Avon (three auction marts), Usk, Wimborne (Dorset).

The quantities of vegetables passing through the auctions vary to a large extent: thus whilst the smaller cater almost entirely for local buyers, i.e., retailers, the larger, e.g. Evesham, deal with thousands of tons of vegetables per annum. Buyers at the larger auctions purchase supplies chiefly for despatch to distant areas of consumption. An account of one of the Corporation auctions is given below.

*Kidderminster Corporation Market.*—The market for fruit and vegetables is held weekly on Thursdays. On other days some buyers purchase vegetables direct from farms in the area. It is estimated that the quantity of vegetables (excluding potatoes, tomatoes and cucumbers) sold in the market in a year exceeds 1,000 tons. Probably 85 per cent. of the supplies are drawn from the Ombersley, Astley and Hartlebury districts. Buyers, chiefly retailers who purchase vegetables in small quantities, attend the market from the Black Country and the Stourbridge and Kidderminster districts. About 10 per cent. of the produce on offer is sold to local buyers. Vegetables are mostly sold by auction, but private sales take place from the opening of the market at 9.30 a.m. to the beginning of the auctions at 11 a.m. Auction sales are conducted by three firms, who charge  $7\frac{1}{2}$  per cent. commission. Growers provide their own packages or deposit the vegetables unpacked on the market floor. If packed, the produce is usually "shot" by buyers before removal from the market to avoid the payment of deposit charges. Tolls charged by the Corporation are as follows :—2s. per motor lorry, 1s. 6d. per waggon, 1s. per cart, 6d. per barrow, and 3d. per package.

## (3) Growers' Assembling Organizations.

The position of the fruit and vegetable co-operative societies was summarised in 1926 in Economic Series No. 1, "Co-operative Marketing of Agricultural Produce in England and Wales" as follows: "Co-operative effort has made little headway. The whole position of co-operation in this field seems to suggest that little is to be gained from this form of organization unless it is pushed much further than has so far been attempted." The position is much the same to-day. Little progress has been made by growers in the formation of fresh organizations for their particular needs.

As has been mentioned, there are at the present time two classes of growers' assembling organizations, viz., producer-operated auctions and growers' dispatching and marketing societies.

(a) **Producer-operated auctions.**—The following associations of growers fall into this class :—

- (i) Gloucestershire Marketing Society, Cheltenham.
- (ii) Growers Sales (Coventry), Ltd.
- (iii) Pershore Co-operative Fruit Market, Ltd.
- (iv) Worcestershire Farmers, Ltd.

(i) *Gloucestershire Marketing Society, Cheltenham.*—Most growers who send their produce for sale at the auction cultivate less than five acres, and a large proportion of the supplies come from holdings five or more miles away. Wholesalers attend from Swindon and other Wiltshire towns, the Newport district of Monmouthshire, and the nearby western valleys, as well as from Gloucester, Stroud and other places in the county. Very few, if any, vegetables are sent to the North from Cheltenham owing, it is said, to the competition from Evesham and Pershore, which acts as an effective barrier in this direction. The bulk is taken by buyers from the locality or from Cotswold towns, and although for several years none but non-returnable packages have been used for vegetables, very few of these are in practice used for one journey only. Part of the market is set apart for the sales of produce of guaranteed quality.

(ii) *Growers Sales (Coventry), Ltd.*—This organization was started after the war owing to a feeling amongst certain growers in the Evesham district that by the establishment of a market in the consuming area, one intermediate charge on produce passing through the various channels to the consumer would be avoided. Three associations of growers were originally interested in the venture, viz., those at Bidford-on-Avon, Welford-on-Avon and Littleton and Badsey. Coventry was finally decided upon as a suitable centre for the Society and a central site obtained in Barrack Square at a rental of about £80 a year. Since that time a number of merchants have also rented space in the square for the sale of fruit and vegetables, and Growers Sales, Ltd., claim that their venture has thus brought increased revenue to the Local Authority. The capital of the Society at the end of 1934 was about £1,600, the net profit for the year about £240 and the turnover about £31,000. The produce of the small growers in the Vale of Evesham who consign to Growers Sales, Ltd., is collected by cartage contractors, recognised by the Society, who deliver it to Barrack Square at a standard charge per package, e.g., at 6d. per pot from Bidford-on-Avon. Produce is collected from this and other places in the eastern area of the Evesham Valley situated between 20 and 30 miles away.

Sales begin comparatively late in the morning. The auction sale of the Society begins at 8 a.m., but since it is not convenient for a number of buyers to attend this, a substantial quantity of vegetables, particularly the more highly perishable kinds, is sold by private treaty. Prices depend to an appreciable extent on those realised at the three auction markets at Stratford-on-Avon; these are visited regularly by Coventry buyers of fruit and vegetables, and the prices realised are often subject to wide fluctuations from day to day. Well-known growers in the Vale of Evesham are on the management committee of the Coventry Society which has provided an outlet for small scale producers. There is, however, a tendency on the part of certain senders to market their first quality produce to other firms, leaving the Society to handle a proportion of second quality produce which, owing to the low prices which it frequently realises, does not provide profitable business. The rate of commission is 10 per cent., and experience shows that this is sufficient to cover the cost of sale so long as the price per package does not fall below 2s. 6d. Numerous small lots of vegetables are offered and the selling expenses for these are, as in other similar cases, unavoidably high. The Society also deals in oversea supplies, but does not buy these while home produce is available. The Welford Growers' Association, which has now about 100 members, arranges for the collection of members' produce and its transportation by road to the premises of Growers' Sales (Coventry) Ltd., in which about 70 of the members have an interest. Surplus vegetables are consigned to Manchester and occasionally to Birmingham.

(iii) *Pershore Co-operative Fruit Market, Ltd.*, is one of two auction markets at Pershore. The other, the Central Market, is privately owned and not run on a co-operative basis; the Central Market's supplies are drawn from within a five-mile radius to the extent of about 250 tons per annum and are distributed chiefly to Birmingham and the Black Country.

The Pershore Co-operative Fruit Market, Ltd., has been fully described on pages 87-93 of the Ministry's Economic Series No. 1. The area from which the vegetables are drawn is fairly extensive, but most of the supplies are grown within a few miles of the market.

The weekly quantities of vegetables received for sale approach 40 tons in March, increasing later in the season to about 100 tons. The annual tonnage sold through the market may thus range from 3,500 to 4,500. The weight of vegetables sold is said to represent at least 50 per cent. of the total weight of produce passing through the market. It is probable that over 25 per cent. of the vegetable traffic dispatched from a railway station in the locality is cabbage.

Buyers at the auction fall into three main classes:—

- (1) The agents of wholesalers in distant wholesale markets.
- (2) Retailers and small wholesalers whose premises are near enough for them to attend in person.

(3) A few grower-merchants who wish to supplement their own supplies and purchase about 10 per cent. of the vegetables sold.

It is estimated that 20 per cent. of the vegetables are consigned to Yorkshire and Lancashire and 20 per cent. to South Wales markets, whilst the remainder includes a large percentage distributed in the Midlands. The quantity sent to South Wales has declined in the past few years.

An important innovation was introduced in 1928 and continued until 1931, viz., the "Grading Floor." Facilities were given for the inspection of produce by a grading official appointed by the market committee, who indicated on each lot of produce submitted for inspection the grade that, in his opinion, it represented.

In 1931 a new scheme was put into operation. Growers were invited to supply graded produce for consignment either direct to distant salesmen or through the hands of local buyers. Produce was examined in separate premises close to the auction sheds. Sale arrangements were negotiated by a grading inspector. The scheme at the outset had for its object a constant supply of graded produce to suit distant buyers who could not make regular purchases at the auction itself. It was also hoped to attract some of the larger growers of the district who in the normal course would not pass their produce through the auction. The quality of the grades was, however, varied from week to week according to the general condition of the produce with which the inspector had to deal. Third grade produce was usually sent up for sale on the auction floor.

Strong criticism was levelled at this scheme both by buyers and by growers themselves; growers also became dissatisfied with the values obtained for second-grade produce. The grading inspector canvassed hard for supplies, but found that there were relatively few growers upon whom he could rely to pack as required. However, in spite of the difficulties, the effort was considered worth while, and the quantity of cabbage passed over the grading floor rose to 700 pots a week. The North, Midlands and South Wales took produce under this scheme in about equal proportions.

Some of the advantages of sale claimed at this market may be summarised as follows:—

(1) The journey to the market is for many growers a short one. This facilitates transport, and allows of saving in clerical work, tying down (except for cabbages) and labelling; and the grower can attend and see his own produce sold.

(2) Growers' own labels, giving a guarantee of packing and weight, are recognised by the market and the buyers.

(3) It is held that a co-operative market assures on the whole steadier prices than other methods of local sale.

(4) Selling expenses are uniformly  $7\frac{1}{2}$  per cent.

(5) The market takes the risk of bad debts.



Some of the objections that have been put forward to this system of sale are indicated below :—

(1) When deliveries of produce are exceptionally heavy, it may happen that regular senders to the market are rationed as regards supplies of packages. The rationing of empties has presented technical difficulties; one suggested solution is that at such times the quantity of market empties loaned to an individual grower should depend upon the extent to which he has patronised the market during the preceding twelve months. (This difficulty is overcome in the Evesham markets by the use of non-returnable containers.)

(2) Sale by auction in production areas is considered by certain wholesale distributors to be mistaken policy in view of the expenses incurred, e.g., the expense of carrying produce from the grower's premises to the auction, the auction expenses, cartage of the produce to the railway station, the expenses of the commission buyer and the salesman's commission.

(3) It has been represented that fluctuations in market prices may be accentuated to some extent by the day to day decisions of distant wholesale firms not to purchase supplies from particular markets.

(iv) *Worcestershire Farmers, Ltd.*—This business was started during the War by the Worcestershire Fruit and Vegetable Marketing Society. The change of ownership occurred about the year 1920, in which year the auction premises now occupied, which are covered but inconveniently small, were built by the local authority.

From 1928 to 1930 the average annual turnover of the fruit and vegetables department was £28,000. The bonus payable to grower-shareholders varies with the profits.

Most of the produce comes from holdings of from 10 to 20 acres. Sales by private treaty are rare, though certain growers may be occasionally asked to meet a particular order received by the Society. It is estimated that during the summer 30 per cent. of the vegetables are sold locally, 30 per cent. go to the Birmingham and Black Country districts and 40 per cent. to other distant areas, while in the winter 70 per cent. are sold locally and 30 per cent. to distant markets. Some growers make a practice of supplying local shops direct and dumping their surplus on the market.

Vegetables are not graded or packed by the management, but farmers are urged to grade and pack properly, and topping is severely discouraged. There is a stock of returnable packages, for which a hire charge of 2d. each is made unless they are returned within 28 days. For non-returnables, e.g., chips for watercress and mushrooms, 40 lb. nets for brussels sprouts and bags for root vegetables, a charge of 4d. each is made, of which 3d. is refunded when the container is returned filled with produce. The buyer

pays 3d. for a bag and 4d. for a net. It is estimated that about 50 per cent. of the produce is emptied out of the packages by local buyers in order to avoid the charges.

(b) **Growers' dispatching and marketing societies.**

(i) **Past societies.**—For the sake of their experimental value, notes on two societies which no longer exist are given below.

*Boxted Smallholders*, formed near Colchester in 1922 as a co-operative society, included vegetable marketing among its activities. Sales were arranged through an Inspector of the Essex County Council. Outlets included a firm of salesmen in Stratford Market, London, a retail stall in Colchester and shops in the locality. About thirty growers, representing the majority of vegetable growers in the district, joined the Society, but a number who did not join supplied local shops direct. The London firm of salesmen experienced difficulty in disposing of the produce owing to the numerous small lots and multiplicity of quantities consigned for sale. Members gradually withdrew their support, and the Society went into liquidation in 1927.

*The Oxfordshire Fruit and Vegetable Society, Ltd.*, was registered in 1919. Fruit and vegetable produce was collected from smallholders and allotment holders by the Society's own vehicle and resold, mainly to hotels, restaurants and shops; some produce was consigned to Covent Garden, but this did not show a profit. Members were urged to grade and pack their produce, but in spite of continued advice re-packing was often found necessary before sale. A retail shop which was opened to dispose of surplus produce was unsuccessful owing to high expenses. The lorry often travelled long distances without finding any produce to collect. Towards the end of 1920 the business was taken over by the Oxford Co-operative Society, which carried it on for a short time before closing it down.

These failures may be attributed partly to lack of enthusiasm on the part of members, and partly to the difficulty with the multiplicity of small consignments, which suggest that the system of bulking was not properly developed; the failure at Oxford has also been put down to lack of capital and heavy expenses.

(ii) **Existing societies.**—Amongst active associations interested in the sale of vegetables, the South West Lancashire Farmers, Ltd. (Ormskirk) and the Littleton and Badsey Growers, Ltd. (Blackminster, near Evesham) may be mentioned; an account of the latter is given below.\*

*Littleton and Badsey Growers, Ltd.*—The premises of this Society are well placed, adjoining the G.W.R. Station and next door to a canning factory. The membership has risen from 230 in 1924 to 366 in 1933, and the turnover from about £21,000 to nearly £40,000. The managing committee has enjoyed the confidence of members,

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\* See also Economic Series No. 1, pp. 93-7.

and activities are now to a great extent conducted by an executive committee of two, who together with the manager have shown energy in furthering the Society's aims and improving the service to members and buyers. A noteworthy departure in more recent times has been the introduction of the "asparagus pool". This pool was formed in 1930 as a result of complaints by a leading distributive firm of the grading and packing of the home crop. Members of the pool, which was kept separate from other activities, agreed to set aside a definite acreage of asparagus for marketing; the crop was cut, placed in boxes of a certain size and delivered ungraded to the Society's premises, where it was sorted into recognised grades, washed, packed in non-returnable crates and marketed to salesmen in selected consuming areas. On the whole, members appeared fairly satisfied with the results achieved, and freedom from the responsibility of packing was appreciated by growers who had other urgent work on their holdings to attend to. During the first year of operation 32 growers joined the scheme and the Society successfully marketed over 42,000 bundles, representing over 40 tons. The Society has consistently improved its service, and the support given by growers has been maintained. Owing, however, to the low yields per acre of asparagus in those two years, it was impossible to satisfy the demand for the graded article. Nevertheless the Society can now claim to represent itself as the leading distributor of asparagus in the Vale of Evesham, and has moreover built up a valuable reputation for good grading and packing. Its services have unquestionably been appreciated by the trade, and if they are continued in the same spirit, buyers of the pooled produce should increase in numbers.

#### **(4) Development of Growers' Assembling Organization in Areas of Specialised Production.**

It will be apparent that a very small proportion of home-grown vegetables is at present assembled by growers working on a co-operative basis.

In other countries (Chapter VI) organizations established for this purpose have often been found to meet a definite need. Among the motives prompting their formation overseas have been dissatisfaction with the prices offered by local buyers, the long distances over which produce may have to be sent to wholesale markets and the possibilities of increased bargaining power in the sale of the growers' products. It is recognised that success is determined by the efficiency with which the business is conducted and the degree of service rendered to members. Lack of capital is, however, a frequent difficulty and complete co-operation is often absent where a society is run on a voluntary basis.

In this country certain well-defined areas of specialised production exist from which vegetables are consigned on long journeys—examples are Cornwall (broccoli and spring cabbage), areas in the

South of England (watercress), Leeds (forced rhubarb), Cambridgeshire (asparagus), the Glazebrook district near Manchester (cos lettuce), Bedfordshire (various market garden crops)—in each of which some form of producers' marketing association might be of service to growers. In localised areas such as these, individual marketing, particularly by small growers, too often lacks the strength of the co-ordinated unit. Bulking of consignments puts the producer in a stronger position to overcome the difficulties of imperfect knowledge of market conditions, and enables him to deal better with glut conditions and price-cutting.

Greater continuity of supply becomes possible under a co-ordinated system. Since produce can be loaded in larger units, a reduction in transport charges may be obtained. The larger the organization the less it will be inclined to include poor stuff with that of better quality, or to sell inferior produce through the same channels as those used for its regular lines of produce (cf. the compulsory grading at Dutch auctions, referred to in Chap. VI). Attractive and uniform packing, preferably under the association's own trade mark, is a further step. Once the confidence of buyers in the quality and regularity of supplies has been established, they will find fresh outlets, and new buyers will be attracted; the area of distribution of the association will thus be widened. Further avenues of sale can be opened up by advertising.

#### (5) Note on Growers' Organizations in General.

Vegetable growers' associations other than those engaged in assembling now usually take the form of local branches of the National Farmers' Union. Information on a number of these organizations is contained in Appendix XIV. They have in the past been mainly engaged on problems of production, railway rates, insurance, etc., and the staging in a few cases of a local annual show. A few, however, have studied the problem of better marketing, and it is in this direction that the future of these associations appears to lie. In many areas where there is a large number of vegetable growers, special branches of the National Farmers' Union have been formed to cater for their needs, and there may also be a fruit and vegetable committee of the county branch executive.

The following case in which a growers' association, now defunct, attempted to control the price of a commodity sold by its members, is of particular interest in this report. The Chatteris Growers' Association (not to be confused with the branch of the National Farmers' Union) was formed in 1931 and had about 40 members in the surrounding area. Members held from 2,000 to 2,500 acres of carrots, representing the bulk of the acreage under carrots in the district and perhaps 20 per cent. of the total in England and Wales. Each member was to hold back his supplies from the market until the price, which was very low at £3 10s. per ton, had reached a reasonable level. In two days this was raised to £5. The association failed in five weeks, as it was unable to control the individual

activities of its members. During that time, however, it has been estimated that members between them benefited to the extent of £2,000.

Welsh growers are represented by two small associations in the north and one in the south. North Wales has a commercial growers' committee which acts as a central body for furthering the interests of horticulture in the area.

## CHAPTER VI.—ORGANIZED ASSEMBLING OVERSEAS.

### (1) The Netherlands.

It is probable that nowhere on the Continent has the organized assembling of produce by growers attained greater success than in the Netherlands. Throughout that country auction sale for vegetables is the rule, and in every specialised area of production properly constituted growers' auctions exist. There are upwards of 130 of these, each affiliated to one of the eight provincial associations, which in turn are represented on the Central Bureau of Auctions at The Hague. The Bureau deals with all questions affecting the welfare of the auctions, and is largely responsible for leaflets and other propaganda advertising Dutch produce in foreign markets.

The auction system has steadily gained ground. Progress in the Westland has been accelerated by the facilities offered by farmers' banks, in which adults and children have been encouraged to deposit savings. The money thus collected has been loaned to growers for a number of purposes, including glasshouse building. Practically all commercial vegetable supplies in the Netherlands pass through the auctions: the onion crop, however, is sold largely through merchants. The Dutch auction system of sale is well known. Buyers are seated in an amphitheatre. Opposite them are the auctioneer and staff and an electrically-operated dial or clock. The produce on sale passes in front of the rostrum. The dial is manipulated by a wheel. The buyer brings the pointer to rest at a price which he is prepared to pay, by pressing an electric button in front of him. The number of his seat is then illuminated in the centre of the dial. It is practically impossible for two numbers to be registered on the clock even when buyers appear to press their buttons simultaneously. The produce may be brought before buyers on barges by water, as at the Poeldijk auction in the Westland, and the Broek-op-Langedijk and North Scharwoude (see figure 1) auctions in North Holland, or on trolleys or carts, as at Venlo. One of the newest and best auction buildings is at Utrecht. Figure 2 shows the central hall where produce is assembled for inspection by buyers. Figure 3 shows the clock in the auction sales room at Naaldwijk.

The grower's daily sales form, which is prepared in duplicate, shows his name and auction number, and the date of sale, the name of the buyer, the commodity, price per unit, total amount, hire charge on empties and number of packages used. The original,

required for recording the sale, is detached by the auction authorities, the duplicate remaining in the grower's book. The grower's weekly return form shows the amount outstanding on packages, dates of sale and amounts realised, and amount credited to the grower for returned packages. The account form submitted to merchants shows the merchant's name, date of sale, grower's number, produce, total price realised, number of packages supplied to the merchant and amount charged for them.

The regulations vary somewhat from auction to auction. The commission charge made at Utrecht in 1929 was 6 per cent., and 2 per cent. was refunded to growers who passed all their produce through the auction during the year. The growers' entrance fee may be about 25 guilders, with an annual subscription of a few shillings, but at many auctions all costs are covered by the commission charge and no subscription is paid. Sales are usually so arranged that all growers benefit by having their produce sold sometimes at an early stage of the auction and sometimes later. Auctions are private, and the committee has the right to exclude any buyer and to refuse or recognise bids. It is usual for merchants to pay for produce on the day following purchase. In 1928 the turnover of the Westland group of fruit and vegetable auctions was approximately 20 million guilders, and of this sum only 10,000 guilders was regarded as lost through bad debts. The names of defaulting buyers are submitted to the Central Bureau, which has the right to exclude such buyers or their agents from similar auctions. Lots are sold by sample, and buyers have the right, before accepting vegetables, to demand inspection as to quality, etc., by the auction society's official. Penalties for "topping" are severe, and if repeated complaints are received against any particular grower, his produce may be refused by the auction authorities. The market inspector may reduce the value of the produce at the grower's expense if a complaint is upheld. In the event of short weight being discovered, the authorities may refund 10 per cent. of the value of the lot and withhold the amount thus paid from the sum payable to the grower. Appeal may be made to two arbitrators, one appointed by the growers and the other by the merchants. Some auction societies allow exporters to pack their purchases in premises provided near the auction building (see figure 4). There are usually a number of such packing sheds; at the Naaldwijk auction in the Westland the average size is about 40 metres by 7. Railway sidings are sometimes run up to the packing premises, e.g., at Naaldwijk (see figure 5).

The auctions at Naaldwijk and at Riverside Quay, Hull,\* are in progress more or less simultaneously. A buyer at Naaldwijk can bid in the auction hall and keep in touch with a Hull merchant on the telephone at the same time. In the height of the season about 6,000 crates of lettuce, of which 70 per cent. was sent to Germany, have been known to pass through the auction at Poeldijk in a day.

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\* See page 131.

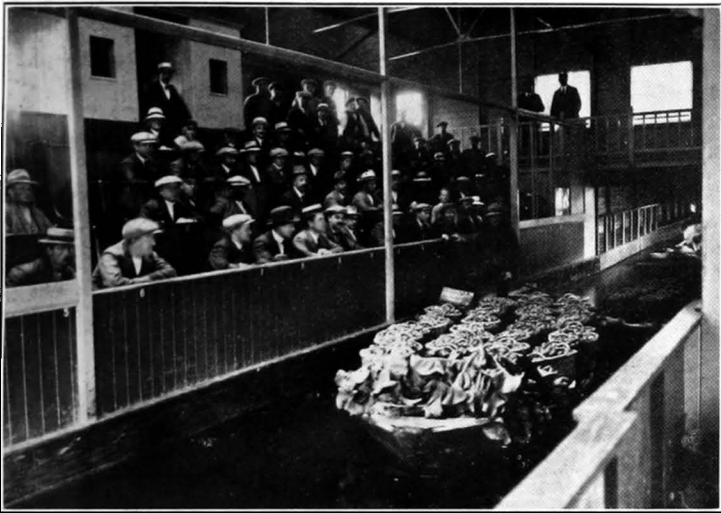


Fig. 1. Produce brought before buyers on barges at the North Scharwoude auction, North Holland. (By courtesy of Messrs. W. D. Niestadt and Son, Photographers, Schagen, Holland.)



Fig. 2. Central Hall of Auction Building at Utrecht, Holland.

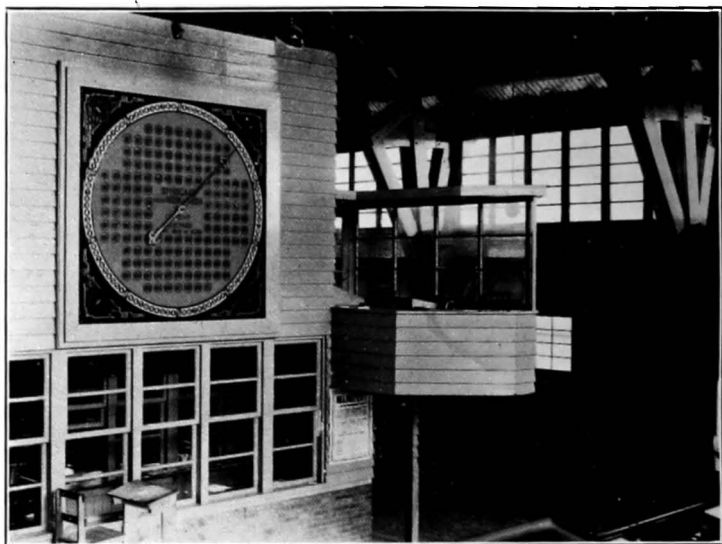


Fig. 3. Clock in auction salesroom at Naaldwijk, Holland.

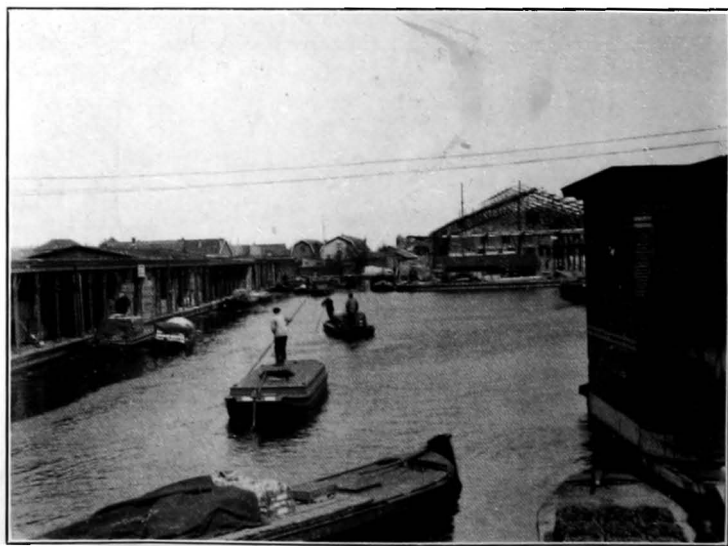


Fig. 4. Proximity of merchants' packing sheds (seen on left) to wholesale vegetables auction (right) Holland. Barge transport.



It is maintained that Dutch growers have obtained better prices by the system of co-operation established. Auction sale and systematic grading ensure a continuous supply of well-graded produce and give buyers confidence, often attracting specialists with an intimate knowledge of the markets of several countries. The system also minimises marketing expenses, and helps to reduce gluts by keeping away surplus and low-quality produce from centres of consumption, since the auctions may refuse to sell when the price drops below a certain figure. Moreover, the assembling of produce at convenient points for inspection and purchase facilitates sale to canneries.

## (2) France.

Co-operative marketing of vegetables has not developed so far in France as in the Netherlands, but progress, though slow, has received some impetus since the War. Apart from the co-operative purchase of manures, agricultural co-operation in France is based on a law passed in 1920, under which co-operative societies escape turnover tax. It has been stated that French growers are extremely individualistic and often consign only second-quality produce to co-operative associations for sale. The success of such ventures must therefore depend predominantly on the business ability of their managers.

In most of the chief areas of specialised vegetable production there are one or more growers' associations which undertake the sale of produce on behalf of members. Some of these associations are linked up with central organisations, while others are independent.

An example of the affiliated type is the co-operative at St. Pol-de-Léon, which in 1929 had 800 members. It includes amongst its activities the sale of broccoli on behalf of its members, and subscribes to the Union des Syndicats Agricoles du Finistère et des Côtes-du-Nord, which has its headquarters at Landerneau (Finistère). This, in turn, is affiliated to a central body with offices in Paris, which co-ordinates the activities of various other unions of the same type in the country, some having attached to them co-operatives such as that mentioned above.

The Union at Landerneau represents about 38,000 members and has over 400 syndicates affiliated to it. These syndicates were originally formed for the sale of manures and agricultural requisites, but in its efforts to obtain the custom of members the Union found itself in competition with merchants who also carried on a wholesale vegetable trade. Members found it unsatisfactory to sell vegetables to these merchants and buy their manures and other requisites from the syndicates. Accordingly, a co-operative (St. Pol-de-Léon) was founded as a subsidiary of the Union to undertake the sale of produce and, in 1928, 600 tons of broccoli were exported through the facilities thus afforded.

Another Union of the same type, the Union du Sud-Est des Syndicats Agricoles, has its headquarters at Lyons. The membership of this Union, which was started over 40 years ago, exceeds

150,000, and its branches cover an area of 10 Departments in France. Starting with a small business in agricultural requisites, manures, threshing machinery, etc., the Union gradually widened its scope to include first a credit system, then various forms of insurance, and lastly a sales department: each of these sections has its own representative on the General Council. About 1926, premises for the sale of produce were acquired in Lyons, and during three years the sales turn-over increased from 600,000 francs to 3,000,000, representing the produce of 1,700 members. Members need not buy or sell through the association unless they choose. Only a small proportion of the growers around Lyons are non-members. Sales are made on behalf of members at a commission of 8 per cent. No vegetables are sent to the United Kingdom.

Descriptions of the activities of a few other vegetable growers' associations which market produce on behalf of members are given below.

(a) *La Maraîchère Avignonnaise*.—Avignon, which is in a production area in the Department of the Vaucluse, possesses a wholesale market, but about the year 1924 certain growers in the district, hoping that co-operation would produce better prices than could be obtained from dispatch agents on the market, formed an association under the title of *La Maraîchère Avignonnaise*. In 1929 this association had 28 members. The manager considers that this number is adequate for the needs of the Society and allows him to cope with the quantities supplied. Members send their produce to headquarters, where it is sorted and packed. Growers wishing to join have to be elected by a majority of the Council of Administration. Each member has to purchase a certain number of shares, and must market all his produce through the Society. The manager is in touch with French and German buyers and obtains a list of prices from Avignon market every morning. Acting on this information, he buys outright from members, and supplies them with tickets on which the prices are stated. Payment is made about 15 days after delivery. The premises consist of a large open space, a commodious "empties" shed, and a packing shed. The turnover in 1929 was about 5,000,000 francs. By belonging to an association of this kind, members avoid the payment of turnover tax, which on the amount stated would be substantial. It is also claimed that produce is marketed in a fresher state than if exposed on the market at Avignon, which is situated in a warm climate.

(b) *La Perpignanaise*.—Perpignan, in the Department of the Pyrénées-Orientales, is situated in one of the most important salad-growing regions in the South of France. As at Avignon, there is a wholesale market (see figure 6) where growers' produce is assembled. Merchants and exporters have packing premises in various parts of the town, where produce is sorted and packed for distant markets in Germany, England, France, Switzerland and other countries. The larger of the two growers' Associations with sales organizations is *La Perpignanaise*, founded



Fig. 5. Lettuce being loaded into ventilated and covered vans outside the packing premises of a Dutch exporter.



Fig. 6. Baskets of salads at the early morning sale by producers at Perpignan (France) Wholesale Market.



**Fig. 7. Intensive vegetable culture in the vegetable gardens at Nantes, France.**



**Fig. 8. Packing radishes at the premises of the Growers' Co-operative Society, Nantes, France.**

in 1926, which exists only for the sale of produce and not for the purchase of agricultural requisites. Members (numbering 22 in 1929) have to pass all their produce through the Association, but the Association is permitted to buy from other sources when necessary; these latter transactions are subject to the usual turnover tax. Purchases are made from members in the same way as at Avignon. At the end of the year the balance, loss or profit, as defined in the statutes, is shared amongst the members according to the amount of vegetables each has delivered during the year. The Association supplies very little produce to the United Kingdom, preferring to transact business on a cash rather than on a commission basis. At the premises, which are partly under cover, packages and wood for crates are stored, packages are made up, and grading and packing operations are carried out, etc., by a body of women and girls. Four years ago the annual turnover was approximately 4,000,000 francs a year, and it was estimated that from 5 to 6 per cent. of the salads dispatched from Perpignan were handled by the Association.

(c) *La Société des Jardiniers Maraîchers de Nantes* was brought into being on account of dissatisfaction in the Nantes area with prices obtained from merchants. In the early stages of its existence, the Society dealt chiefly in William pears, for which the district is well known; but a general trade was gradually worked up with buyers in Paris. The Society, however, got into difficulties and had a hard struggle for existence; members became dissatisfied and only the strenuous efforts of one of its leaders saved it from extinction. After this it gradually improved its position; in 1929 the annual turnover was over 2,000,000 francs.

Produce is sorted and packed at the Society's premises. Ninety per cent. is sent direct to Paris and other places in France. The Society has a shop at La Baule, and distributes produce to other seaside resorts. Members are not compelled to market all their produce through the Society; this means that it does not run the same risk of being forced to buy from members more than it can dispose of to advantage. It is said that the existence of the Society has a steadying influence on prices. Produce sent to England includes early carrots and turnips, radishes, peas and beans. A general view of intensive vegetable culture in the walled-in gardens at Nantes is shown in figure 7, and the packing of radishes at the premises of the *Jardiniers Maraîchers de Nantes* in figure 8.

(d) *La Bretonne, St. Pol-de-Léon*.—There is an important assembling market at St. Pol-de-Léon, over five acres in area, and at times during the broccoli season from 1,000 to 1,500 cart-loads of broccoli may be taken there in a day for sale by farmers to merchants, etc. Figure 21 is a photograph of the market. The average cart-load holds about 400 to 600 of the size of broccoli sent to England, or from 200 to 300 of the large size distributed in France, Germany and Holland. During the seasons 1919-20,

1920-21, 1921-22, the number of cart-loads offered on the market ranged from about 30,000 to 33,000, and between the seasons 1922-23 and 1926-27 from 53,000 to 65,000. There are a number of exporters in the district with their own packing stations. These exporters buy up the produce in the market and distribute it, after grading and packing, to markets in France, the United Kingdom, Germany, Belgium, Holland and Switzerland. Reference has already been made to the co-operative at St. Pol-de-Léon, which is attached to the Central Union of Growers' Syndicates at Landerneau. There is another growers' marketing association in the district, established as long ago as 1910. This Society, in the early years of its existence, passed through some very anxious times and on two occasions escaped extinction by the narrowest margin. About the year 1913 the French Government advanced a loan of 50,000 francs at 2 per cent., and in 1923 the loan had all been repaid. After about 20 years' work the Society had 52 members, the value of the property was about 600,000 francs, and the capital about 78,000 francs, and the bonus paid to members (6 per cent.) represented nearly the rent of their farms. The turnover was between 4,000,000 and 5,000,000 francs and the output of broccoli about 700 to 800 crates a day. In addition to its selling activities, which cover a number of commodities, the Association makes loans to members at the rate of  $4\frac{1}{2}$  per cent. for the purchase of agricultural requisites. Further particulars of this Association were given in the Journal of the Ministry, June, 1924.

### (3) Belgium.

The chief growers' organization in Belgium is the Boerenbond in Malines. This is a very large and powerful association, but, at any rate up to 1929, it had not interested itself to any large extent in the marketing of members' vegetable produce. A large part of the vegetables disposed of up to that time consisted of cauliflower, partly packed and partly sold loose. Some arrangements have also been made for the collection of witloof chicory grown by small producers at centres such as Cortenburg, Saventhem and Haren. The motor lorry collecting the produce goes on to Vilvorde, from which station one or two waggons a day are sent to Paris. Thus, by consignment in five-ton lots, growers reap the benefit of reduced rates.

There are a few other growers' associations in Belgium which undertake the sale of members' produce. One of these, a syndicate of market gardeners, is a small organization with its offices at Louvain. This Society buys celery, cauliflower and brussels sprouts from its members and re-sells them to merchants. The members of another Society co-operate to sell their produce at the Halle des Producteurs in Brussels; grapes, however, represent one of the most important commodities of this organization. It appears that the bulk of the produce sent away or exported from Brussels is obtained direct by merchants from growers.

**(4) United States.**

The earliest organization of growers of fruits and vegetables in the United States of which definite records have been found is the Fruit Growers' Union and Co-operative Society of Hammonton, New Jersey, formed in 1867.\* Mismanagement and too much credit brought about the downfall of the Society in the last years of the century. Colorado growers formed an organization in 1887, known as the Grand Junction Fruit Association, for marketing certain kinds of fruits and vegetables. In ten years sales had risen to \$88,937, and in a further ten years to \$814,000; at the end of this period there were 666 members and the Association was said to be doing a larger business than any other co-operative in the State. An organization which was formed in Virginia as early as 1900 for marketing produce including cabbages, potatoes and onions, is known as the Eastern Shore of Virginia Produce Exchange, and has its headquarters at Onley. The number of shareholders has risen from 300 to over 3,000. The organization has standardized its products, established its brands, and created a demand for them, disseminated information regarding the most desirable varieties, secured improved rail transport facilities, placed representatives in a number of large cities, and kept in close touch with markets. The Exchange operates at 41 shipping points. The territory is divided into 34 districts, each of which elects one director to the board of directors of the Exchange. Each Division also has its business agents and its inspector. Daily sales are pooled, and each grower receives an average price less the commission on sales. Each local agent attends to the book-keeping for his division, and growers usually receive their payments in three or four days after delivery of produce. The local inspector decides on the brand label which a shipment is entitled to bear, and this helps the sales department to choose the market for it. In 1925, there were 1,237 fruit and vegetable associations reporting to the Department of Agriculture, representing 180,000 members, with annual transactions estimated at \$280,000,000. In 1928 the number was 1,269 with an estimated membership of 215,000. The total business transacted by corporation associations in 1930-31 handling fruit, vegetables and nuts amounted to \$332,000,000.† The extensive advertising of some of the larger organizations has helped to bring their commodities and merchandising brands before the public.

Under the terms of the Act of Congress approved July 2, 1926, the Secretary of Agriculture was authorised to establish a division of co-operative marketing in his Department, to deal with the marketing and distribution of farm products. Horticultural products were included under the provisions of the Act.

The Agricultural Marketing Act of June 15, 1929, and amendment of March 4, 1931, provided opportunities in the United

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\* Preliminary report of U.S.A. Dept. of Agriculture, July, 1928: Beginnings of Co-operative Fruit and Vegetable Marketing.

† Federal Farm Board Bulletin No. 8, April, 1932.

States for producers to organize and develop their industry to their mutual advantage. The Federal Farm Board was appointed to administer the Act, the policy of which was to put agriculture on a basis of economic equality with other industries. It was sought to minimise speculation, to prevent inefficient and wasteful methods of distribution, to promote unity of effort in marketing by encouraging the organization of producer-controlled associations or corporations, and to control and where possible prevent surpluses through orderly production and distribution. The Board was granted special powers and authority to administer a revolving fund of \$500,000,000. Loans to co-operative associations for purposes calculated to further the policy were authorised under certain conditions. The Board assisted in the establishment of eight national agencies to deal with various commodities.\* One of these agencies was the National Fruit and Vegetable Exchange,† (incorporated May, 1931), which was established to act as a co-operative sales organization on markets throughout the States, distributing fruits and vegetables assembled by its member co-operatives previously working independently, and also furnishing them with shipping point sales services where desired.

The administration of the Act as amended by the Farm Credit Act of 1933 was taken over on May 27 of that year by the Farm Credit Administration,‡ the Federal Farm Board being abolished. The activities of the new organization also cover the Federal land Banks, the Federal intermediate credit banks, the Production Credit Corporations, and the Banks for Co-operatives. The financing of agriculture has thus been taken over by a single organization.

It is estimated that in 1929 the total number of associations handling fruits and vegetables in the States probably exceeded 2,000.

An example§ of a fruit and vegetable growers' marketing society with accommodation on a wholesale produce market is afforded by the St. Louis County Growers' Co-operative Sales Company. In 1926, 150 fruit and vegetable growers organized a co-operative sales agency under the above title, with a stall on the St. Louis Wholesale produce market. At the beginning of 1932 the Growers' Company, as it has come to be called, had made considerable progress,

\* Federal Farm Bulletin No. 8, 1932.

† Market Growers' Journal, June 15, 1931, p. 403.

‡ Circular No. 5 of the Farm Credit Administration, September, 1933.

§ Further details of co-operative marketing in the various states will be found in the following numbers of the "Market Growers' Journal":—

September 1, 1928, p. 615—Massachusetts.

April 1, 1930, p. 287—Tennessee.

April 1, 1930, p. 292—Michigan.

April 15, 1930, p. 335—South Carolina.

July 1, 1930, p. 451—Wisconsin.

July 15, 1930, p. 491—New Jersey.

November 1, 1931, p. 633—Colorado.

January 15, 1932, pp. 40-45—Missouri.



and had 350 members supplying produce. At times the Company has sold produce to the value of 7,000 to 10,000 dollars a week to commission houses operating on the same market. During the summer months it is not unusual for 7,000 packages to be offered for sale in a day. In 1930 the value of produce handled on behalf of growers amounted to over 300,000 dollars. Although at the present time the produce of each grower is sold under a separate number allotted by the Company, it is hoped before long to institute central packing. The rules dealing with the apportionment of the total net earnings, over and above all expenses and a reserve for depreciation, provide for patronage refunds to members on the basis of produce delivered to and purchases made from the Company during the year; non-members may receive refunds at a quarter the rate paid to members provided these are first applied to the purchase of one share of the capital stock. The refunds are paid out of the remainder of the total net earnings after percentages have been deducted for a contingencies reserve, dividend on capital stock and, if so determined, for educational purposes.

It is of interest to note that the following five points were found essential to the success of this co-operative company :—

- (1) Premises situated at an advantageous point in the market, with ample accommodation for goods.
- (2) An efficient manager, capable of securing the co-operation of growers and buyers alike.
- (3) Immediate payment to growers for produce supplied.
- (4) A minimum and maximum charge for packages. With a flat 10 per cent. commission, the Company found that they lost money on cheap packages, while on packages worth several dollars the commission was too high for the growers. A 10 per cent. commission with a minimum charge of 5 cents and a maximum of 25 cents has proved satisfactory.
- (5) A cautious start. Though a large volume of produce must be handled efficiently if a profit is to be secured, the market has to be built up over a period of years.

## PART III.—PREPARATION FOR MARKET.

### CHAPTER VII.—PREPARATION FOR MARKET (I) IN ENGLAND AND WALES.

#### (1) General.

To secure the best results from his land the vegetable grower must, of course, use good seed of the best varieties and strains, but even so the highest returns are seldom realised unless efficient marketing methods are employed. Moreover the existence of countless differences in respect of quality, size, freshness, containers and packing weights, aggravates confusion on the markets and renders impossible sound comparison of prices. This Chapter accordingly sets out to describe as briefly as possible the methods of preparation actually in use among home producers for the markets of England and Wales and to indicate how general improvement could be effected. Each commercially-grown crop will be dealt with separately, but the following general remarks may be made by way of introduction.

**Harvesting.**—A number of vegetables are marketed in an active stage of growth, and are highly perishable. Roots, when mature, may be stored for a period after being dug, but other vegetables are usually marketed either on the day of harvesting or the day after. Some crops are generally cleared in one operation; others are more usually picked or cut over once, twice or more before clearing takes place. In certain instances where packages are used, produce is merely emptied or picked direct into them. Vegetables are often harvested in the early morning, and in some months in a poor light, so that they may be marketed the same day. At certain times of the year growers of market garden crops have to work at top speed to get their produce harvested and marketed in a fit state.

**Grading.**—It is the view of wholesale traders that many packers could present their produce better. Wholesale buying of home-grown vegetables is at present often attended by uncertainty and speculation, necessitating careful inspection before purchase. Grading has improved during the last few years, but there is room for a further advance. From an important area of production it is reported that there is very little grading of vegetables. The amount of grading actually attempted appears to depend on ruling prices: if produce is cheap, grading is deemed necessary, but if it is dear, packers include more rubbish in their market consignments. Such waste produce is useless to the consumer, and, to eliminate unnecessary transport expenses and confusion on the wholesale market, it should be left at the grower's end where it may act as humus on the land.

With certain exceptions grading of most vegetables is roughly carried out at the time of harvesting. Methods, however, vary between grower and grower, and labour problems are a difficulty.

**Packing.**—Certain vegetables are sometimes marketed loose, i.e., without being enclosed in any form of package. They may thus be handled five or more times before they reach the consumer and during that time there is a distinct risk of bruising or other damage, which hastens deterioration and loss of freshness, spoils appearance and lowers market value. Most buyers prefer to purchase packed produce whenever possible. Less produce is marketed loose than formerly: unpacked produce may represent about 20 per cent. of the total supplies of home-grown fresh vegetables.\*

There is no universally recognised count or weight of vegetables in a bunch, and the size of a bunch frequently varies substantially according to the district of production.

Vegetables are sometimes marketed in a dirty and unsightly condition. When washing is carried out it is frequently done by hand by women, but machines are in use by some packers for washing carrots and celery. Good and well-lighted sheds are desirable for vegetable packing.

The practice of overloading containers is encouraged by the fact that at some railway stations there is a recognised computed weight for pots of vegetables at certain times of the year. The railway companies use their discretion and make periodical tests, but during the rush season it is improbable that the heavier packages cost more in freight than the light ones. Thus railway freight can be saved by decreasing the number of packages employed for the same quantity of vegetables. Certain growers and their employees are highly skilled in this form of packing and buyers, for obvious reasons, usually prefer the heavier-looking packages. Thus any attempt on the part of individuals to discontinue the system might result in unsatisfactory sales on the markets. Other factors also promote the continuance of the practice, e.g., such items as market tolls charged at the rate of so much per package and the saving in the use of baskets which, if the producer works on a large scale, are often his own property. Overloading of containers has in fact arisen largely through the grower's efforts to effect economies, but the practice is nevertheless undesirable.

Packing, like grading, has improved in the last few years. Some growers are so well known on the markets as good packers that their produce may be bespoke or actually sold before it reaches the market. Declaration of weight and count, however, is unusual, and the practice of "topping" is sometimes resorted to. In this connection it may be noted that the regulations of the wholesale fruit and vegetable market in Paris forbid the packing of inferior produce under the top layer, the use of excessive amounts of packing material and the leaving of spaces in packages. Carelessness in packing or lack of attention to detail gives an unattractive appearance when the package is opened out for display, and thus helps to spoil the sale.

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\* See footnote on p. 1.

**Packages.**—Assuming that unpacked home supplies may be estimated at 20 per cent. of the total, the percentage marketed in non-returnable containers may be put at under 25. Of the remainder accounted for by returnables probably about 60 per cent. is packed in bags, mats and nets, rather more than 20 per cent. in boxes and wooden crates, and the remainder in wicker baskets. The different kinds of containers used throughout the country are too numerous to be listed here. Packages vary in capacity, shape, type and material to an appreciable extent, and different packages of the same kind may themselves vary in their specifications.

The Ministry, guided by the advice of representatives chosen from all sections of the industry, prepared and published in 1934 comprehensive lists† of recommended packages. Wider use of these containers to the exclusion of others would encourage manufacturers to concentrate on approved types, thereby saving expenses and waste.\* Reductions in the prices of packages might thus be made possible.

## (2) Particular Crops.

### GROUP I (SALADS).

Salad vegetables are marketed in an active stage of growth. The practice of progressive growers is to grow the crop quickly and market it attractively. Salads are highly perishable, and should arrive at their destination in a clean, fresh and undamaged condition. Efficient grading and packing are therefore essential. Lettuces should be well hearted and unspoilt by diseases or pests; radishes need to be firm and of medium size; flowering shoots or badly discoloured leaves are not desirable in packages of water-cress.

There are substantial variations in the size of bunches of radishes and green onions in different districts.

Probably about three-quarters by weight of the vegetables in this group are marketed in returnable containers. The remainder is marketed partly loose but mainly in non-returnables. The returnable containers in use are boxes, wooden crates and wicker baskets.

Leafy vegetables, such as lettuces, should not be left exposed to a hot sun a moment longer than is necessary and should be put under cover or in a shady place immediately after harvesting.

**Cabbage lettuce.**—*Harvesting.*—Cabbage lettuce is always cut and never pulled or twisted off the plant, except where this is demanded by local buyers. Outdoor cabbage lettuce, particularly in warm weather, is cut over two or three times a week, usually very early in the morning when it is fresh with the dew. The lettuces are laid in rows and packed into boxes. Before marketing,

\* Box-testing is now carried out for the purpose of determining the strength and general suitability of containers for the kind of produce to be packed in them, at the Forest Products Research Laboratory at Princes Risborough, Bucks.

† Marketing Leaflet No. 58. National Mark schemes for Fresh Vegetables.



Fig. 9. Pots of Cabbage lettuce, holding about 3 dozen each, in a Midland wholesale market.



Fig. 10. Sample lettuces from the consignment in Fig. 9, showing variations in size and quality.

Facing page 51].



Fig. 11. Two methods of packing lettuce competing side by side in a Northern market.



Fig. 12. Packing mustard and cress at the premises of a grower near Blackpool.

they are sometimes taken to a shed where the boxes are lightly sprayed with water. Glasshouse lettuce is also lightly sprayed. Some packers prefer to hose the lettuces two hours before cutting.

It pays to cut lettuce carefully. A six days experiment was carried out in Florida, U.S.A., with the following\* results:—

	<i>Prime.</i> Per cent.	<i>Marketable.</i> Per cent.	<i>Worthless.</i> Per cent.
Carefully cut (above lower leaves) ...	59.6	100	—
Commercial (cut just above the ground)...	25.7	96.5	3.5

Glasshouse lettuce is particularly susceptible to damage and should be handled with care and as little as possible. It is best put into single layer trays and conveyed to a packing shed for packing into market containers, but lettuce grown in the open is usually packed in the field. As a general rule, lettuces should always be well hearted before being cut.

*Grading and Packing.*—Some growers grade cabbage lettuce roughly as cut into "hearted" and "second." Poor, unhearted specimens are sometimes found in the same consignments as well-hearted produce (see figures 9 and 10). Several leading growers concentrate on one outdoor grade consisting of well-hearted lettuces.

All unsatisfactory lettuces, including those which show the slightest signs of decay, should be discarded. Decay is not always apparent at first glance, and may have only affected the tips of the leaves immediately inside those which protect the heart, but it is very likely to spread after packing. All damaged outside or yellow leaves and unsightly butts should be trimmed as packing proceeds. Packages containing glasshouse lettuce are usually lined with paper. Something better than newspaper is desirable for this; figure 11 illustrates the difference in appearance between white greaseproof paper and torn newspaper. It also shows bad packing, the flat having a half-filled appearance. For outdoor cabbage lettuce adequate ventilation is necessary, and paper linings are therefore rarely used.

Cabbage lettuce is best packed in non-returnable wooden crates, in two layers with the top layer inverted. Head-to-head packing is usually found satisfactory, although some growers prefer head-to-stalk.

Shortages of count sometimes occur. Recognised counts are usually in multiples of six.

Various sizes of returnable boxes, wooden and wicker crates, second-hand empties and non-returnable containers are used as packages. Over forty have been counted, holding counts of from one to fifteen dozen and sometimes more.

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\* U.S.A. Bulletin No. 601: The handling and pre-cooling of Florida lettuce.

**Cos lettuce.**—*Harvesting.*—Cos lettuce is sometimes spoilt by overcrowding of the plants. 8 in., which is all that is often allowed, is not a sufficient interval; the lettuce should be planted 14 in. by 14 in.

In the London area a piece of raffia or fillis is tied, or more frequently a rubber ring is placed, round the outside leaves of each plant a few days before marketing, to assist in the bleaching and formation of a heart and to protect the lettuce in the market package. In certain districts self-folding varieties of cos lettuce are grown. Some growers pull and market lettuce with roots attached in order to keep them fresh for the longest possible period; others screw off the plants at about ground level to save labour and package space. The latter practice is probably preferable, since lettuces should be marketed in clean condition. If harvested during the day for short-range marketing early the following morning, lettuces are sometimes kept fresh by being transferred to a shed and carefully watered late at night.

*Grading.*—Grading is to a large extent carried out at the time of tying. Although some growers make two grades, "bests" and "seconds," wide size variations sometimes occur in individual packages: hearted cos lettuces are found packed with small unhearted plants. Unhearted cos lettuces tend to overburden the market, and the best growers usually plough in such as are left when the ground is finally cleared. Badly discoloured leaves are usually removed during packing. Plants to be marketed should show no signs of seed stems.

*Packing and Packages.*—The count in a package is sometimes expressed in dozens. In the London area, however, the score of 22 is often used, and here cos lettuces are marketed in bushel or two-bushel returnable boxes, first grade lettuces being stood upright in the boxes and "seconds" laid flat. Cos lettuce tied, but with the roots removed, is sometimes packed in two layers in a non-returnable large lettuce crate holding 12 heads. The three lettuces in each layer at each end of the crate are packed alternately head to stem. The non-returnable broccoli crate is also used to hold 18-24 heads. Other packages used in various production areas include wicker hampers and boxes of large and medium size. Cos lettuce is sometimes marketed loose in railway wagons or on lorries.

**Watercress.**—*Harvesting.*—Cress should preferably be grown in pure spring or artesian well water, river water being excluded from the beds. The early supplies of winter cress are usually pulled from the beds, but later on the cress grows out of the water and supplies are cut. Badly discoloured leaves and flowering shoots are usually removed during harvesting operations. In hot weather watercress has to be handled with great speed, since it will not keep long. For London markets in the summer time growers in that area cut it



at day-break and get it on to the market as early as possible in the morning. Cress for bunching is usually gathered overnight.

*Washing and Trimming.*—If pulled from the beds, cress is often washed before packing for market. The roots are cut off, and the overall length is then usually 4 in. to 5 in. ; it should not in any case be longer than 6 in. to 7 in. Cut cress is not usually washed except when bunched; thus harvesting and packing may be one continuous operation.

*Bunching.*—Watercress is marketed both bunched and unbunched. If to be bunched, it is usually taken to packing sheds in wicker packages, such as half flats, or in zinc baths. Here it is bunched by women, each bunch being secured by a piece of raffia about 8 in. long or by rubber bands. The stems are trimmed and the bunches washed. The tops of the shoots should all be on a level. In the London area 8 or 9 dozen bunches are packed in a half flat or 12 dozen in a wicker hamper.

*Packing.*—A half flat contains from 17 to 25 "hands" of  $1\frac{1}{4}$  lb. or more, according to the packer. Much of the cress is packed above the rim of the half flat, so that the lid is open for a distance of 6 in. to 7 in. Cress is also packed in quarter flats. Stalks are laid towards the ends of the package. Some growers leave a hollow centre for ventilation, but most pack solid. Ends of stalks protruding from the package are trimmed off, and the lid is secured with string at the front corners. Though the half flat is popular in the London area, the non-returnable chip is more hygienic. The No. 12 chip holds about 7 lb. loose or 3 doz. bunches. The lid is pressed down and secured with string. Non-returnable chip baskets without handles, each holding about 7 lb. of cress, are now extensively used for provincial trade. There is sometimes a tendency to leave too much stalk on the watercress. After packing, baskets are generally immersed in a "dipping pool" of spring water, but not longer than two to three hours, as otherwise the quality of the cress is affected; or the packages may be sprayed with water for a short time before marketing.

Cress should not be marketed with flowering shoots, yellow leaves or roots. Yellowing may be caused by frost or stagnant water or by pulling too much cress from one area at the beginning of the season. After removal from the beds the cress should not be exposed to sun or wind. Tight packing is necessary.

**Green bunched (salad) onions.**—*Harvesting.*—A dry morning is the best time for harvesting spring onions. They are usually loosened with a fork and pulled by women.

*Grading.*—Spring onions are usually marketed in one grade, but there are two types in demand. Whilst in many areas the trade demands onions without any pronounced bulb, in others, e.g. parts of London, there is a ready sale for more mature green onions.

*Bunching.*—Bunching usually takes place in the field, but is sometimes done in a packing shed, to which the onions are taken

in baskets or other containers. The size of bunches varies according to variety and district. White Spanish onions are tied in bunches of three in the Exeter district, whilst from 12 to 14 white Lisbon onions constitute a bunch there and in Lancashire. At Evesham bunches of Lisbon onions are made of about half the size, but in the London area they may weigh from 3 to 5 lb. or more. Bunches are usually secured with raffia.

*Dozening.*—In some districts, e.g. Evesham and Exeter, bunches are tied into bundles with osier twigs or rubber bands.

*Washing.*—Spring onions are usually washed before marketing, sometimes both before and after *dozening*. They are placed in tanks and allowed to soak, then washed in other tanks and afterwards allowed to drain for at least half an hour. They must not be placed too tightly together, or heating may result.

*Packing.*—Returnable boxes, wicker hampers or flats and non-returnable wooden crates are all used. Small well-ventilated wooden crates, such as those used for lettuces, are preferable to larger packages, since if packed thickly together spring onions soon "heat" and lose condition owing to their wateriness.

*Radishes.—Harvesting.*—The radish trade is diminishing rather than increasing. To stimulate demand, radishes should be quickly grown, and marketed when young, tender and of reasonable size, and before they are over-mature. If allowed to remain in the ground too long they become hollow and coarse.

*Grading.*—Radishes are marketed in one grade as grown. Only properly developed radishes should be included in a bunch, and any which are soft to the touch or of exceptionally large or small size should be left out. There is no sale for wholly white radishes.

*Bunching.*—In the London area harvesting and bunching are carried through in one operation. In Worcestershire bunching is usually carried out in packing sheds.

There are three main types of radishes, long, French breakfast, and round. The sizes of bunches of the different types vary according to district. From 5 to 15 long radishes are tied in a bunch; in the West Midlands bunches are small, but in Cheshire the fan-shaped bunches are large. At Worthing a bunch of medium-sized French breakfast radishes contains about 15-20. Bunches of the round type sometimes contain about 14-20, but in the London area they are much larger. Tying is often done with two or three ply fillis string wound twice round each bunch, and firmly secured well above the radishes but below the bottom leaves. Radishes are always washed before marketing.

*Packing and Packages.*—The cabbage lettuce tray is used for 2 dozen bunches of round radishes in the London area, the bushel box for 3-5 dozen at Worthing, the half pot for 10 dozen bunches of long radishes in Worcestershire, and the large wicker crate for 600-800 fan-shaped bunches at Bristol. Half sieves, bushel sieves

and other wicker containers, egg boxes, trays, non-returnable wooden crates, and crates similar to those for lettuce, are also used.

**Mustard and cress.**—*Harvesting.*—Mustard and cress are usually grown in glasshouses. The seedlings are marketed on the cotyledon stage of growth. Rape is often grown in place of mustard.

Cutting is a skilled operation. Sufficient mustard or cress for a punnet is cut at one time and harvesting and packing continue in one operation. Care has to be taken that soil, and as far as possible seeds and other extraneous matter, are excluded.

*Packing.*—Punnets, whether round or square, are usually packed in wooden containers holding from 2 to 14 dozen (see figure 12). Punnets should be well filled and the top of the salad even in outline without any straggling appearance.

Mustard and cress are not usually packed together in the same punnet. Punnets of cress may or may not be packed in one container with punnets of mustard or rape, according to the requirements of the different markets. Wooden crates holding about 4 dozen punnets are among the most convenient packages, although a smaller package holding 2 dozen punnets is useful for the small-scale retailer.

Some small-scale growers bunch mustard and cress and wrap it in newspaper, but this system of packing is not attractive.

**Endive.**—*Harvesting.*—Endive is harvested in a similar manner to cabbage lettuce, but is best cut about mid-day when it is dry. Batavian endive is tied on the field before harvesting in similar manner to cos lettuce.

*Grading and Packing.*—Endive is sorted into one or two grades according to size and the extent to which the heart is bleached. Endive with lacinated leaves as grown in Cornwall is usually packed in a count of 24 in the small lettuce crate. Batavian endive as grown in the London area is usually marketed in returnable bushel or two-bushel boxes. The plants are usually laid on their sides.

**Witloof chicory.**—See p. 75.

## GROUP II (STEM AND STALK VEGETABLES AND MUSHROOMS).

In this group the bundle sizes of asparagus and rhubarb are not standardised in the country as a whole. The bulk of unwashed celery is marketed loose, and harder trimming of celery heads would often be an improvement. Some growers pack small heads or sticks in the centre of bundles of celery or rhubarb; unsatisfactory grading of mushrooms is also the subject of complaint by retailers, whilst the terms "best," "ordinary," etc., as applied to grades of asparagus, have no universally recognised meaning.

About a quarter by weight of the vegetables in this group is marketed in returnable containers, and about two-thirds without any containers at all.

**Forced rhubarb.**—*Harvesting.*—Forced rhubarb should be pulled at the marketable stage, or loss of colour may result. Each stick should be pulled carefully by pushing the forefinger as far as possible down the sheath or stipule, so as to lend support to the stalk and ensure that it is drawn clean away from the plant without breaking the skin. Care should also be taken not to damage other crowns. When the roots are not to be retained after forcing, pulling is usually continued over as long a period as possible. The sticks are laid in long boxes or other suitable containers and taken to the packing sheds.

*Grading.*—Some growers make two grades of forced rhubarb, but frequently small and large stalks are marketed together.

*Bunching.*—Most growers make bunches weighing about 6-8 oz. and consisting of 1-3 sticks according to size. Rubber bands are sometimes used in preference to tying material such as single-ply fillis. In either case bunches are secured a short distance from each end. Foot-pedal or electric tying machines are employed by some growers, but machine tying is not favoured by others, since the string only encircles the bunch once, whereas in hand tying a double tie ensures that the sticks will remain firm and be less subject to damage by the material. Care is necessary in handling rhubarb since the skin is easily bruised.

*Packing.*—Returnable and non-returnable boxes (including orange boxes), and, to a lesser extent, wicker flats and other baskets, are all used in Yorkshire districts (where the great bulk of forced rhubarb is produced) for packing forced rhubarb. These hold counts varying from about 4 to 14 dozen. There has been a strong demand in recent years for packages holding about 6 dozen bunches. Non-returnable crates measuring 28 in. by 11½ in. by 7½ in. are being used to an increasing extent. Boxes to hold 6-8 dozen bunches are used in the Exeter district. In the Bristol district about 25 dozen bunches are packed in wicker crates.

**Natural rhubarb.**—*Harvesting.*—In harvesting the same care is necessary as with forced rhubarb to ensure freedom from damage. Sticks should not be cut or twisted from the plants. To avoid exhaustion of the plants, many growers stop pulling for the season in June.

*Grading and Bunching.*—Only one grade of natural rhubarb is usually made. The sizes of bunches or bundles vary in different districts. In the North bunches are usually small, in the Brighton area they carry 5-8 sticks and weigh about 2 lb., and at Exeter they usually consist of 2 or 3 sticks. In the early part of the season London bundles may weigh from 2 to 3 lb., but as the season progresses they may weigh more than twice as much; bundles as packed by individual growers increase in length, but the width is kept uniform. Some growers include very small thin sticks as packing material in the centres of the bundles to ensure good

shape; this, however, is unessential to good packing and is not to be recommended. Variations in the sizes of bunches or bundles within certain limits must occur, but should be defined. Very large bundles are not favoured by retailers in some districts. Bundles tied near each end are often secured by osier twigs; these hold the sticks firmly together, but frequently bruise them at the points of tying.

*Trimming.*—When the leaves become large, they are usually neatly and uniformly trimmed to within a few inches of the tops of the sticks, or they may be almost entirely removed.

*Packing and Packages.*—There is an increasing tendency for rhubarb to be marketed unbunched in the package. For this purpose containers of about a bushel capacity are satisfactory. Rather larger containers are required for bunched rhubarb, but very heavy cumbersome packages are a handicap in distribution. In the London area returnable boxes up to about two bushels capacity are used, but rhubarb is sometimes consigned loose in bundles. About three dozen bunches are packed in the Brighton area in a three bushel returnable wooden crate measuring 28 in. by 17½ in. wide and 18 in. deep. At Exeter 12 dozen bunches are marketed in very large wicker baskets weighing about 11 lb. each when empty. Two or three rhubarb leaves cover the bottom of the basket, and the rhubarb is then packed to a height of 6-8 in. above the rim. The protective material over the top consists of rhubarb leaves or brown paper doubled and secured by string across the centre.

*Asparagus.—Harvesting.*—Care is necessary to avoid damage to the crowns. Knives of various patterns are used.\*

The frequency of cutting depends on weather conditions, since the spears grow much quicker in hot weather than in cold. They should not be allowed to grow too long, or open buds will result and detract from the market value of the crop. Buds as cut are collected together in small heaps on the beds, all facing in the same direction. To prevent them from drying out they should be gathered up as quickly as possible and taken away to be packed.

*Grading and Packing.*—Asparagus is often sorted into three grades, but at Wisbech, where both white and green asparagus are produced, as many as six grades have been sometimes made ("extra selected white", "best white", "best green", "white shorts", "white sprue" and "white crooks"), although statutory grades (see Chapter X) are now in use.

*Packing and Packages.*—In the Evesham district a large portion of the crop is still packed in bundles of about 120 buds or half bundles of about 60 buds. A number of packers, however, use wooden or meal holders, or boxing machines holding about 2 lb. and specially constructed for the bunching of asparagus.

Bundles are secured by pieces of raffia or tape tightly tied. The ends of the stalks are then trimmed on a board and the bundles

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\* See Ministry's Bulletin No. 60, page 40.

washed or immersed in water for a few minutes. After draining the lower portions are sometimes wrapped. The bundles are then packed in crates lined with greaseproof paper holding 6, 12 or 24 bundles. Slats for the top of the crate can be conveniently secured by  $1\frac{1}{4}$  in. cement-coated nails.

Bundles of different grades are frequently marketed in the same package. This necessitates inspection by the wholesale merchant in the early morning when he is attending to buyers' requirements.

Wicker packages, chiefly flats, are extensively used. The large flats used in the North hold as much as 60 bundles. These are cumbersome and not so attractive as non-returnable wooden crates of moderate size, which are the most serviceable containers for asparagus.

**Celery.**—*Harvesting.*—Celery is often harvested by gangs, each consisting of diggers, sorters and a tyer. Generally speaking, at least four weeks should elapse from the final earthing up before harvesting takes place. The heads should be well hearted and bleached. If the celery is to be marketed washed, roots and outer leaves may be trimmed off as dug.

*Grading.*—*Unwashed Celery.*—When bundled, celery is graded in the field. Unwashed celery is commonly sorted into two grades, "Firsts" and "Mids". Three hundred bundles sorted by a grower into 285 "firsts" and 15 "mids" as likely as not are sold by the market salesman as 190 "firsts", 70 "seconds" and 40 "chats" or "smalls". Bundles which appear on the outside to contain nothing but first-class stuff are in fact sometimes "faced up", the smaller heads being packed on the inside (compare figures 13 and 14). Prices suffer accordingly and the grower loses in the long run.

*Washed Celery.*—Certain Covent Garden firms of salesmen regularly wash celery, tie it into fans, and distribute it in London and provincial areas. In recent years the quantity of celery washed by packers in production areas has increased. If the washed celery is to be wrapped and packed in crates, the roots and most of the leaves and top portions of the stems are removed. The waste portions and soil removed in the process of trimming and washing represent about 50 per cent. of the weight of unwashed bundles. After washing, celery is usually stacked to drain.

A machine which has been devised for washing celery was described in the *Journal of the Ministry*, July, 1932, p. 352. Its daily output of washed celery represents not less than the produce of about half an acre.

*Packing and Packages.*—Probably 60 per cent. of home-produced celery is marketed in bundles unwashed and not packed in any form of container, but there is an increasing tendency year by year to box both washed and unwashed celery. Some trimmed and well-graded unwashed celery is marketed in shallow wooden crates



Fig. 13. Bundle of celery as packed for market.



Fig. 14. Sample heads from the consignment in Fig. 13, showing from left to right a good head, a small head and a head running to seed.

holding one dozen heads or more. Washed celery is wrapped in cellophane or greaseproof paper and marketed in similar non-returnable crates. In the Bristol district, washed celery is usually packed unwrapped. The tops are cut level across and not severely trimmed. Bundles of 4-5 firsts or 6-8 seconds are secured top and bottom with three-ply fillis string, and packed in counts of three to four dozen bundles in large wicker crates.

**Mushrooms.—Harvesting.**—During the period April to September, mushroom beds yielding a crop require picking over once a day at least, and at other times on alternate days. Mushrooms should be twisted gently from the beds and not cut or pulled. Care should be taken to ensure that no rubbish is left about near the growing site, or disease and insect pests may be encouraged. Mushrooms may be picked conveniently into shallow trays, in which they are stood stem down and taken intact to the packing sheds.

**Grading and Trimming.**—There are three main grades, depending on maturity, viz., "buttons", "cups", and "flats" (or "opens"). "Buttons" are mushrooms which are not mature and have their gills completely covered by a thick membrane. Two or even three size grades of these are sometimes made. "Cups" can be either closed or open, i.e. the protective membrane may remain intact or it may be broken away; mushrooms are said to reach their greatest weight about five hours before it breaks. In "flats" the cap has expanded and flattened. Cultivated mushrooms may be white, creamy white or brown. White mushrooms usually make from 3d. to 6d. per lb. more than brown.

Some growers make little pretence of grading, and deliberate topping is sometimes practised, very large "flats" being packed at the bottom of baskets which appear to contain good saleable mushrooms of normal size. The size of mushroom can be controlled to some extent by the kind of spawn used.

In the packing shed the stems are trimmed to the required length, preferably with a stainless steel knife. The ends can be conveniently disposed of by allowing them to drop through holes in the packing bench. Some packers trim the stems to a length of  $\frac{1}{2}$  in. to 1 in. measured from the gills or protective membrane, but others leave the stalks too long.

**Packing.**—Mushrooms are usually packed in chip baskets ranging from 370 to 670 cubic in. in capacity. The smaller size takes about 4 lb. of buttons, and the larger about 4-5 lb. of flats. The mushrooms are inverted and placed carefully in the baskets (which may be lined with white or blue tissue paper) stalks up. The mushrooms in one layer should rest on the peripheries or rims of the caps of those below. It is a good plan to provide for the loss in weight which occurs during distribution by packing at least 4 oz. more than the declared weight in each package. The lid is secured by string or rubber bands. Cardboard lids allow



better ventilation than paper covers, and offer greater protection to the contents. There is an increasing demand for 1 lb. packages of mushrooms.

**Forced seakale.**—*Harvesting.*—The arrangement of modern forcing pits enables seakale to be grown quickly and efficiently. The resulting product is usually well bleached, clean and of reasonable size. Heads should not be less than 6 in. long when marketed. Sometimes they are marketed with too much of the crown attached. This should not exceed 1 in. in length. Careful handling is necessary to avoid damage to the tender shoots.

*Grading and Packing.*—Two grades are sometimes made, large and small. Careful packing is necessary to avoid injury, and shallow boxes should be used. Seakale is often packed in well made non-returnable fibreboard or wooden boxes with inside dimensions of 16 in. by 10 in. by  $3\frac{1}{2}$  in. and holding 6 lb. The box can be conveniently lined with blue paper and the heads arranged in orderly layers with butts towards the ends. Only undamaged heads should be packed. Stalks should be well bleached, the terminal points only showing traces of leaf structure. Forced seakale is also packed bundled and with the lower portions wrapped in paper, in punnets holding about  $2\frac{1}{2}$  lb. each, 12 of these being packed between straw in boxes. This method of packing is, however, disappearing.

**Natural seakale.**—*Harvesting.*—Natural seakale, grown with the aid of seaweed on the South Coast, is much esteemed by buyers who appreciate its special flavour. It is cut with a knife and about  $\frac{1}{2}$  in. of crown is marketed with each head. In the London area a spade is often used for severing the heads from the plants.

*Grading and Packing.*—Stalks may be tinged with violet, but should have no purple colouration except a tinge at the terminal points of the stalks. On the South Coast four heads are tied with raffia into a bundle. Twelve of these bundles are laid in three layers alternately in an unpapered returnable box  $21\frac{1}{2}$  in. long by  $13\frac{1}{2}$  in. wide by  $8\frac{1}{2}$  in. deep. The seakale is protected with cabbage leaves and tied down with string. In the Cheltenham area seakale is often marketed in 1 lb. bundles, packed in flower boxes holding a dozen, or in half pots or crates. In the London area natural seakale is usually packed in boxes in the same way as forced seakale. Formerly half-bushel baskets were used.

### GROUP III (LEAF AND FLOWER VEGETABLES).

In recent years much work has been done in the introduction of new varieties and strains in this group: fresh varieties of broccoli have enabled home growers to compete more successfully with imported supplies, good strains of brussels sprouts seed have reduced the number of open sprouts or "blowers" in the crop, and our best varieties of savoys are amongst the finest obtainable.

The improved types of packages used for long-range marketing are another noticeable development. Loose marketing is still prevalent; it is an easy and inexpensive method, but the damage caused to the vegetables by dumping them loose in the market or roadway, together with the extra time taken in handling, are in themselves sufficient to condemn the practice and justify the use of packages. The general standard of marketing still needs improvement in several respects: in particular the overloading of packages detracts from the condition of the vegetables as marketed.

It has been estimated that about two-thirds by weight of leaf and flower vegetables are marketed in returnable containers, about one-fifth loose, and the remainder in non-returnables. A fair percentage of autumn and Christmas cabbages, and smaller percentages of cauliflower and broccoli, savoys, spring cabbages and leeks are marketed loose. Of those packed in returnable containers, probably nearly 60 per cent. is marketed in bags, mats or nets, and slightly more than a quarter in wickers.

The lack of declaration of minimum net weights on the part of packers of brussels sprouts and spring cabbage greens hampers the retail trade. In the absence of a distinction between spring cabbage greens and spring cabbages as sold wholesale, it would be desirable for declared sales of spring cabbages to be governed by the condition that any cabbage in a container marked as containing spring cabbage should be not less than a recognised minimum weight.

**Broccoli and cauliflowers.**—*Harvesting.*—The frequency of cutting depends on climatic conditions and the strain. In summer particularly, the period over which heads will remain at the proper stage for cutting is very short, often only a day or two. Late varieties of cauliflowers, such as Autumn Giant, which are very susceptible to frost injury, should be marketed before there is any likelihood of damage from this cause. Unless cut for immediate sale in the locality, heads are best marketed when firm but slightly under-mature, so as to avoid discolouration. Some growers prefer to cut the large woody stems of broccoli just above the second leaf from the ground, where the tissue is relatively soft. Some prefer to cut the heads in the early morning, claiming that they retain their freshness for a longer period than when harvested with the sun on them. Cutters generally throw the heads into the rows between them, each man dealing with two rows at a time as he works along the field. Packing is often done on the field, but it is preferable for the heads to be removed at once in a suitable cart to a packing shed. Alternatively, heads when harvested are packed into crates, which are stacked on a wooden platform mounted on a well-sprung vehicle. Crates thus transported will reach the packing shed in the best possible condition. Control of packing operations is easiest when they take place in a packing shed, and this practice is increasing.

*Trimming.*—The amount of trimming depends on the style of packing and the package adopted. If the heads are to be packed

in mats or large wicker crates, a few leaves may be completely removed and the remainder left intact. Wooden crates are however, much better, and in this case sufficient leaf only is required to protect each head, the wrapper leaves being trimmed to within a few inches of the surface of the curd. The butt should be so trimmed as not to protrude below the point at which the basal leaves join the stem. After trimming, heads should be packed as soon as possible.

*Grading.*—Grading depends on the condition, size and colour of the head. Two or sometimes three grades are made according to season. Good packers keep open and discoloured heads out of the best grade. Despite much propaganda, there is still a definite need for improvement in grading. A wholesaler in a Midland market inspecting a package of broccoli taken at random, found that out of 25 heads, only one or two were very good, whilst several were very poor. 9 in all could be classed as first grade, 6 as second and 10 as third. In a retail market, a stallholder opened a package of broccoli for inspection. The crate included good heads of 5½ in. diameter, woolly or over-mature heads of 5 in., a good head of 4½ in. and a discoloured head of 3 in. The heads in the package might well have been sorted into three grades. Sample heads from the package are illustrated in figure 15.

*Packing and Packages.*—Reasonable uniformity in size of heads is desirable and firm packing is necessary. Heads should be handled by the leaves and not by the curds. Butts should face outwards to the sides of the crate. From 12 to 30 heads are packed in a non-returnable wooden crate which should be well filled with a slight bulge, and the top of the crate nailed, or wired by a wiring machine.

In some districts large wicker crates are used (figure 16), chiefly for short-range marketing. These will take 2½-3 dozen "best", 4-5 dozen "seconds" and 6-7 dozen of the "throw-outs". The heads are packed on their sides round the inside of the crate, the curd of one following the butt of another, until the top of the crate is reached. At this stage the butts are turned outwards and the cauliflowers packed above the rim of the crate pyramid-fashion and finally secured by string passed over the centre. In other districts heads are loaded loose in road or rail vehicles.

Cocoanut fibre nets (mats) are also frequently used; these hold normally from 18 to 24 heads. The advantages of wooden crates over mats include retention of freshness and quality over a longer period (especially in long-distance marketing), better prices over the season as a whole, and more confidence on the part of buyers.

*Cabbage greens.*—*Harvesting and Packing.*—Cabbage greens are usually cleared from the ground as harvesting proceeds, and packing is generally carried out on the field. The plants are cut below the basal leaves and broken or yellow leaves removed during packing. In the West Midlands, greens for the Midlands and



Fig. 15. Lack of uniformity in size and quality of broccoli received on a Midland market.



Fig. 16. Cornish broccoli being loaded into trucks in large wicker crates.

North are often consigned in pots; these usually contain about 40 lb., but the weights vary according to the month of marketing. In Lincolnshire and the home counties greens are commonly packed in half-bags holding from 28 to 40 lb. Cabbage bags holding 70 lb. are also in use.

**Cabbages and savoys.—Harvesting—Spring Cabbages.**—In some districts, particularly Lancashire, growers tie string round the leaves of spring cabbages some days before they are ready for harvesting, so that cutters can select cabbages which have reached about the same stage of maturity. Lincolnshire crops are sometimes cut over and only hearted cabbages selected. Early spring crops are often purchased by country buyers who employ their own men for cutting. Packing is usually done on the field. Early morning cutting maintains freshness for a longer period.

*Others.*—Narrow strips of land are often used for growing plants of early maturing crops in fields of summer and Christmas cabbages; thus strips of land may be planted with Primo cabbage in fields of Christmas Drumhead. The roadways thus opened facilitate harvesting of the chief crop.

*Grading and Packing.—Spring Cabbages.*—Apart from the selection for size, which is sometimes carried out in the field, there is little grading of spring cabbage.

In Lincolnshire one grade is customary for northern markets, which demand well-hearted produce. The cabbages are packed in pots holding about 40 lb., though the weight may vary with the time of season. To retain their freshness as long as possible they are sometimes dipped before marketing or watered in the railway trucks.

Cabbages must be firmly packed. In early districts from 15 to 40 or more are packed in a pot, and there are sometimes almost as many outside as inside the package, the cabbages being tied down with a small wad of straw on the top for protection. For short-range marketing, spring cabbages are frequently packed in returnable wooden boxes of varying capacity. In the London area the usual count is from 18 to 24 in a two bushel box. Large wicker and wooden crates are also used, but quantities of cabbage are marketed loose. For long-range marketing, bags, e.g. large pea bags, are utilised by some packers. Bags, however, are not suitable for tender produce of this description, and a more satisfactory, though more expensive, package is the non-returnable wooden crate. The rigid broccoli crate holding 2-3 dozen is being used more extensively for spring cabbage, which is in this case packed like broccoli with the butts facing the sides of the container.

*Others.*—Two size grades are sometimes made. Of savoys, those which are hard and dark green, weighing about 3-4 lb. per head, are in chief demand.

Autumn and Christmas cabbages and savoys are less subject to damage than spring cabbage, and here the use of bags or mats is

less open to criticism, but for well-hearted cabbage, boxes or crates are preferable. When savoys are loaded loose in trucks, about 15 per cent. (loose leaves, etc.) of the weight may be left behind at the arrival station. The cabbage bag is in common use, particularly in Bedfordshire and Kent. It holds about 20 large cabbages and 24-30 of smaller size, the contents weighing from 60-70 lb. The bags are often fitted with eyelet holes for tying, and last about four journeys. Two-bushel boxes as used in the London area normally hold 16-26 cabbages and 12-18 savoys. In the Brighton district cabbage for local marketing is packed in large wooden crates in counts of 2-3 dozen; a similar number is packed in the wicker crate used at Exeter. During July and August the large wicker crate used at Bristol may contain four dozen. Open-mesh onion bags, similar to those used in the Netherlands, afford adequate ventilation for bulky kinds of cabbage. Coconut mats as well as nets are sometimes used for packing savoys, but other kinds of cabbage are more often packed in bags.

Red cabbages for pickle manufacture should be of good size, solid, deep red, and free from wrapper or loose outer leaves. They are usually packed in bags or mats.

**Scotch kale, sprouting broccoli and turnip tops.**—These help to fill the gap which may be caused by a shortage of greenstuff in the winter and early spring. Apart from selection in the field grading of these vegetables is not usually practised. The sale of sprouting broccoli has fallen off during recent years. Only stems with unopened flowers should be included, and coarse stems or leaves should be left out.

Bags are commonly used for packing, but freshness can be better preserved by the use of wicker or wooden packages. In the London area Scotch kale is often packed in bags holding from 30 to 36 lb.

**Brussels sprouts.**—*Harvesting.*—Sprouts are apt to become slimy and yellowish if allowed to remain on the plants too long. Plants are usually picked over 3-5 times before the crop is cleared, the pickers working upwards from the bottoms of the stems. In a typical area they are picked into baskets or "skips," sometimes made with wire bottoms to save wear and tear, from which they are emptied into large bags, holding perhaps 1 cwt. The bags are then riddled over a wire meshed riddle, usually about  $\frac{3}{8}$  in. in diameter, to remove extraneous matter. Yellow leaves are picked off, and the loose or "blown" sprouts are sorted out for marketing separately. The appearance of the final product depends to an appreciable extent on the way in which the sprouts are picked and the time allowed for "dressing."

Sprouts, particularly if free from "blight," are sometimes picked direct into the market package.

*Grading.*—Sprouts vary in size, compactness, colour and brightness, and freedom from pests. Growers usually make at least two

grades, consisting of hard firm knobs on the one hand and open sprouts on the other. The latter, however, are largely disposed of early in the season and are not marketed by some growers; in any case this trouble is less frequent with sprouts from a good strain. For sorting before dispatch to market, the more progressive growers use a packing shed or covered yard, or temporary field shelters which can be rapidly moved; these may consist of tarpaulin sheets secured to posts and pegged down. Some growers trim off the long stalks, but extensive trimming is not general.

*Packing.*—Large quantities of Bedfordshire sprouts are marketed in half bags holding about 28 lb., but some growers prefer to use baskets and boxes, which present the produce in better condition. In half sieves the top layer is "ringed in." Packages are occasionally "topped." Returnable bushel boxes hold about 32 lb., bushel sieves 28 lb., half sieves 14-18 lb., and wicker pots 40 lb. Nets of 20 lb. are also in use.

*Leeks.*—*Harvesting.*—Leeks should be harvested before the flower stems appear. They are dug by hand, skinned or trimmed, and usually bundled in the field.

*Grading.*—Leeks are often graded for size, and in some districts large leeks are marketed and bundled differently from the small ones used for soup.

*Bunching.*—Both fan and rectangular bundles are made, the latter in the chief areas of production. In the London area it is stated that fan-shaped bundles cannot be packed into boxes as conveniently as the others. The number of leeks in a bundle varies from three to twelve according to the size and district. Osier twigs are commonly used for tying.

*Trimming.*—Usually a few inches of the leaves are neatly trimmed, but trimming of the roots is not general.

*Washing.*—Bundles are generally washed. A jet of water from a hose pipe may be used, or washing may be done in two or more lots of water.

*Packing and Packages.*—In short-range marketing containers are sometimes dispensed with. In the London area, 18 to 24 bundles are packed in heavy two-bushel boxes. In the West Midlands a similar number of bundles is packed in a wicker pot. Leeks are sometimes packed high above the level of the pots; one man may be unable to lift such a package and the topmost leeks may easily be damaged.

*Spinach.*—*Harvesting and Washing.*—The leaves only of winter spinach should be picked. They should be pulled outwards and to the side, since pulling upwards is more likely to damage them. Yellow leaves should be excluded.

If summer spinach is quite young the whole of the plant except the roots is often marketed. Seedy stems are discarded. New Zealand spinach is usually picked over every few days and only the leaves are marketed.

Spinach is picked into bushel baskets or other receptacles and carried in these to the packing shed. Here it is usually washed before marketing, except in hot weather, when washing may cause overheating in the packages.

*Grading and Packing.*—Spinach is marketed in one grade. The parts packed should be quite green and fresh. If the packing is too tight, heating may result.

In the Worthing area spinach is sometimes marketed in bushel boxes holding 12 lb.; non-returnable lettuce crates, only partly lined with greaseproof paper to allow ventilation, are also used. Returnable bushel boxes are used in the London area; returnable cabbage lettuce trays and bushel sieves holding about 20 lb. each are also used, and are often covered with paper. The half-pot holding 10 lb. of spinach is in common use in Worcestershire.

*Globe artichokes.*—See p. 75.

#### GROUP IV (LEGUMES AND MARROWS).

Vegetables in this group are from the botanical aspect fruits and, with the exception of forced beans and marrows, are marketed in the summer and autumn months. Being somewhat irregular in maturing, they are with certain exceptions harvested over a period so that there are opportunities for selection at each gathering. One grade is usually enough, and the crop is packed on the field. Faulty selection results in a number of the individual pods or fruits arriving on the markets either too soon, or more often too late, to be at their best, and there is room for improvement in grading. "Seedy" or "stringy" runner beans and "corny", or old peas help to glut the market and so reduce demand and price.

Probably about four-fifths by weight of these vegetables are marketed in returnables, and the bulk of the remaining fifth (including green peas for canning and some marrows) loose. Bags and similar containers account for more than half the quantity in returnables, and wicker baskets or hampers for most of the remainder. The use of bags is, however, open to serious objections. Legumes and marrows are mainly marketed in the immature state, are highly perishable, and fall in value as soon as they lose their freshness. Bags not only increase the risk of such loss but are responsible for broken pods and other damage to peas and beans; pieces of the material adhere to runner beans, and marrows suffer in appearance. Further, peas may lose their flavour and appearance through heating, and in wet weather may become slimy and unmarketable in a day. Ventilated boxes or wooden crates, if necessary with liners, are decidedly preferable. The non-returnable types of these are not much used at present owing to their cost. Systematic declaration of contents and of the minimum net weights per package of peas and beans would be welcome to the distributive trade.



**Green peas.—Harvesting.**—Hired pickers are usually imported into the production area. Supervised by gang-masters, they form a chain across the field, and each picker takes a strip a yard or two wide. The plants are pulled and the peas stripped off into receptacles and afterwards emptied into the market packages. Careful supervision is essential to ensure that nothing but pods is put in; pea haulm and other rubbish to make up weight have been found in packages, but on the whole this is not so frequent as formerly. Once the peas have been emptied into the packages, detailed inspection or sorting is seldom carried out before they are rushed to market, and if complaint is made by commission salesmen or buyers the gang-masters are held responsible. In small areas of production, such as the Bromham district of Wiltshire, certain varieties may be picked over twice before they are cleared, with payment to the pickers at so much per hour instead of per package, and it is claimed that the more careful sorting which thus becomes possible enables samples to gain a reputation for quality on the markets. In the larger areas the system of cultivation necessitates clearing the field or section in one picking, but it is still possible by better organization to ensure that "flats" and "corny" pods are removed before marketing. Experience counts in pea picking. Pods may be roughly classified in three stages of maturity according to their position on the plant; peas about halfway up are likely to be less mature than the so-called "sun" peas at the bottom, but maturer than those at the top. Picking should generally take place as soon as the "sun" peas are in perfect condition. The "flats" or immature pods at the top of the plant should be left on. Picking is easier when the crop is lying away from the pickers, since the base of the stem can then be easily grasped and the plant uprooted and turned upside down for stripping. Supervision is assisted if the pickers pick not direct into bags, but into open containers. These are brought to a weighing machine, where the crop may be inspected before being weighed and transferred to the market packages.

Although packers may continue picking in wet weather and benefit by this owing to the reduced quantities reaching the markets, the practice of marketing wet peas in bags cannot be recommended.

**Grading.**—Peas are usually marketed in one grade only. Early peas often contain a large proportion of "flats," and the inclusion of these in market consignments has a detrimental effect on the trade. There is a small demand, chiefly by hotels in London, for shelled peas. The few wholesale firms who specialise in this trade sometimes use four grades, siftings, small, medium and large; the largest grade usually consists of peas which will not pass through a  $\frac{7}{16}$  in. riddle. Attempts by producers in specialised areas of production to cater for this trade have not been entirely successful, since the peas soon lose their flavour after shelling and must be sold quickly.

*Packing and Packages.*—There is a diversity of containers, but the bulk is packed in half-bags. According to some growers these should hold 40 lb. with practically nothing to spare. Others point out that small bags have to be shaken to get the required weight into them; this may damage the pods, so that a half-bag big enough to hold 40 lb. easily is desirable. It has been represented that whereas 40 lb. of the variety "Thomas Laxton" can be packed into a half-bag without difficulty, this is not true of some early peas and other varieties such as "Alderman" and "Prince Edward." The retailer, however, expects to receive 40 lb. of peas in a half-bag. With peas, as with other vegetables, evaporation takes place during transit. This may amount to as much as 2 lb. per half-bag, and certain growers prefer to obviate complaints by packing 42 lb. instead of 40 lb. where possible.

Wooden boxes have recently been gaining in popularity for pea packing. In the Brighton district the returnable bushel box used holds 30 lb. of peas and measures  $28\frac{1}{2}$  in. long by 13 in. wide and  $6\frac{1}{2}$  in. deep; in the Portsmouth district the returnable bushel box for 28 lb. of peas measures 21 in. by  $14\frac{1}{2}$  in. by  $8\frac{1}{2}$  in. At Southampton the recognised weight of a bushel of peas is 36 lb., whilst in Portsmouth it varies from 24 to 30 lb. or even by as much as 8 lb.

Wicker hampers are often used with satisfactory results for peas dispatched to Midland and Northern markets, but a heavy deposit has to be charged to the retailer for their use (see also section (3)).

*Dried peas.—Harvesting.*—Some crops contain too many plants of Dun varieties, which go black on boiling and therefore reduce the value of the crop. The Dun varieties have purple flowers, whereas plants of the true crop have white flowers.

The pea vines are cut by reaping machines in the period July to September. They are then left in the field and turned at intervals for several days until the crop is stacked. Subsequently the stack is threshed and the peas delivered to buyers in bags holding 19 stone.

Probably about 50 per cent. of the crop is grown on contract. Some peas are sold by sample to the pea packers or merchants.

The use of four-pods (wooden structures which keep the crop off the ground) facilitates harvesting the crop in good condition, prevents damage, and preserves the colour of the peas. Four-pods are cheap to purchase or hire; 20 to 25 are required per acre. When four-pods are employed the peas do not have to be turned, and if necessary the land between the four-pods can be ploughed before the peas are taken from the field. The value of peas so harvested may be increased by as much as 10s. a quarter.

*Preparation for Market by Merchants.*—On arrival at the factory the peas are dressed by machine to remove stalks, dirt, broken and damaged peas and other extraneous matter. Hand picking then removes stained, discoloured and any damaged peas left behind by the machines. Cleaning is carried out chiefly from October to March.

*Grading.*—Marrowfat peas are usually graded into three sizes, varying according to the season and known as Jumbo (the largest), English Marrowfats, and Screenings. The round or Lincolnshire blue varieties are not graded.

*Packing.*—Dried peas are sold in bulk in bags holding usually one, and occasionally two, cwt. Part of the marrowfat crop is packed in cartons, each holding  $\frac{3}{4}$  lb. or smaller quantities. Discarded peas are sold as cattle food.

**Runner beans.**—*Harvesting.*—Seedy and stringy pods in market consignments of runner beans are harmful to the trade. This condition is liable to arise if the pods are left on the plants longer than four or five days after being ready for picking. In general, plants should be picked over twice a week.

Beans are sometimes picked into half-bushel baskets and then emptied into half bags holding 40 lb.

*Grading and Packing.*—Runner beans, whether grown on the ground or on sticks, are usually marketed in one grade only. Beans grown on sticks are cleaner and straighter than those grown on the ground, and there is an increasing demand for them. Ground beans are usually the first to be gathered in the early districts. Ground beans, if very dirty, are sometimes washed after rain and then laid in bushel sieves to dry or, if the weather is very hot and beans are inclined to wilt, some growers immerse them in tubs of water.

Runner beans grown on sticks in Kent are often marketed in returnable bushel boxes holding about 30 lb. Some Bedfordshire growers also use this package. In Worcestershire early beans are marketed in chips holding 8 lb. and later beans in pots and half-pots. Non-returnable pot and half-pot crates with liners are satisfactory. Half-bags are commonly used in the specialised areas of production in the South of England, but are liable to cause damage and spoil appearance.

**Broad beans.**—*Harvesting.*—The pods should be picked when the beans are fairly young and tender.

*Grading and Packing.*—One grade only of broad beans is generally made. Beans attacked by Dolphin Fly are of little use for market. Washing, which would injure the appearance of the pods, is not practised. Half-pots and pots are used in Worcestershire early in the season. For short-range marketing returnable boxes holding about a bushel are sometimes used, but half-bags of about 40 lb. are employed for a large part of the crop.

**Outdoor dwarf and kidney beans.**—*Harvesting.*—These beans are usually picked direct into the market packages and the best practice is to pick over the crop every three or four days.

*Grading and Packing.*—Only one grade is usual, but two are sometimes desirable so that the first may be limited to straight, well-shaped, clean and brightly coloured beans.

*Packing and Packages.*—There is a diversity of containers, but the bulk is packed in half-bags. According to some growers these should hold 40 lb. with practically nothing to spare. Others point out that small bags have to be shaken to get the required weight into them; this may damage the pods, so that a half-bag big enough to hold 40 lb. easily is desirable. It has been represented that whereas 40 lb. of the variety "Thomas Laxton" can be packed into a half-bag without difficulty, this is not true of some early peas and other varieties such as "Alderman" and "Prince Edward." The retailer, however, expects to receive 40 lb. of peas in a half-bag. With peas, as with other vegetables, evaporation takes place during transit. This may amount to as much as 2 lb. per half-bag, and certain growers prefer to obviate complaints by packing 42 lb. instead of 40 lb. where possible.

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**Broad beans.**—*Harvesting.*—The pods should be picked when the beans are fairly young and tender.

*Grading and Packing.*—One grade only of broad beans is generally made. Beans attacked by Dolphin Fly are of little use for market. Washing, which would injure the appearance of the pods, is not practised. Half-pots and pots are used in Worcestershire early in the season. For short-range marketing returnable boxes holding about a bushel are sometimes used, but half-bags of about 40 lb. are employed for a large part of the crop.

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*Grading and Packing.*—Only one grade is usual, but two are sometimes desirable so that the first may be limited to straight, well-shaped, clean and brightly coloured beans.

For the first few days of the picking season 12 lb. fruit chips holding 8 lb. of beans are often used. The Worcestershire crop is chiefly marketed in half-pots holding 20 lb. A non-returnable half-pot crate fitted with liner is giving satisfactory results. Pots are also in use. For short-range marketing returnable boxes or trays are general; the half-bushel box is used in the London area.

**Forced beans.**—*Harvesting.*—Forced beans should be picked without stalks and at the stage when they snap readily. Some growers pick direct into market packages; others put them into baskets and take them to the packing shed for grading and packing into the chips or other containers used for marketing.

*Grading.*—Growers usually make either one or two grades depending on colour development, size and shape. A good fresh green colour is desirable, and for the better grade straight, narrow, well-shaped, well-grown beans are necessary. A few beans showing marked signs of seed development may spoil the sale of a whole consignment.

*Packing.*—The beans are packed usually in chips holding 4 to 6 lb. and sometimes in handle baskets. They should never be packed wet. Dead flowers adhering to the spurs should be removed. The package usually permits of a double row packed end to end: thus two separate lots are marketed in each package, often with a narrow space between. The beans pay for careful packing and may be laid out straight with the spurs of each lot facing towards the centre of the package. Blue tissue lining paper shows them up to the best advantage. Some growers secure each lot by passing string between the folds of blue paper strips laid across the beans. Probably about 50 per cent. of the home crop is marketed in chips.

**Marrows.**—*Harvesting.*—Marrows are best gathered before reaching full size and before the skin assumes a hard, yellowish appearance; at the end of the season, however, there is a demand for large marrows for preserving. Marrows required for storage will wither if gathered too soon.

Outdoor marrows are usually wrung off the plants, and gathering should normally be done three times a week.

*Grading and Packing.*—Marrows are generally laid out in heaps and packed on the field. Usually only one grade is made, but some growers make three (large, medium and small) and pack counts of 12, 18 and 24 in hay in unpapered non-returnable cauliflower crates. When marketed in pots as in the Midlands, newspaper is sometimes used to wrap the marrows. Around London 12 marrows are usually packed in a bushel box. In some provincial centres large wicker crates are employed to hold 3 to 8 dozen protected by straw.

As marrows sometimes fail to realise even the amount paid in carriage, bags such as the half-bag, cabbage bag and large pea bag are frequently used, but these, though cheap, are not so

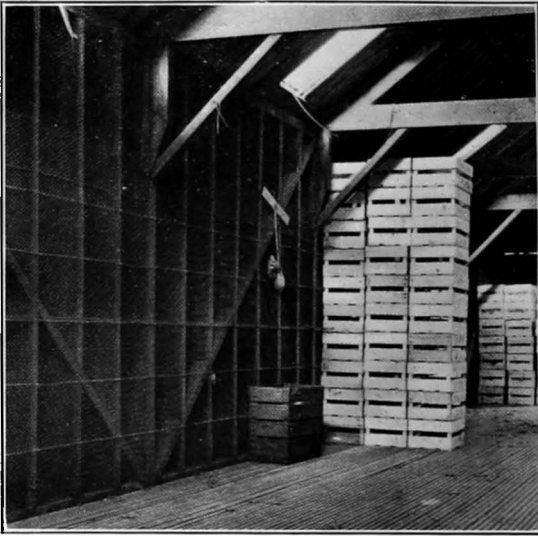


Fig. 17. Interior of a Bedfordshire onion shed.

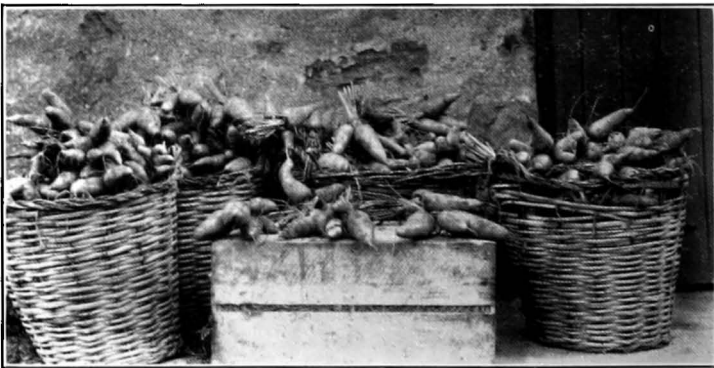


Fig. 18. Bunched carrots badly graded for market, including large, small, cracked, fanged and twisted carrots.

attractive as wooden crates or wicker containers of the pot size. At times dealers load loose marrows on to their lorries for direct disposal to shops.

**Forced marrows.**—Indoor forced marrows are usually firmly packed in chips, handle baskets or cucumber boxes lined with wood-wool and paper. Blue or light green paper sets off the marrows to advantage. Three marrows of moderate size can be packed in a handle basket and six or eight in a cucumber box.

#### GROUP V (ROOTS AND ONIONS).

Care is necessary both in the harvesting and preparation for market of this group to ensure that only well-shaped and undamaged produce is marketed. Onions and beet demand particularly careful treatment in harvesting, whilst carrots and parsnips which are twisted, cracked, fanged, worm-eaten or otherwise damaged are liable to spoil the market even for good quality produce. Generally speaking roots of medium size are preferred; the demand for large roots, which are often coarse, is very limited.

Root vegetables are generally packed in bags. Only a small percentage of the total weight, consisting largely of turnips, swedes and bunched carrots, is marketed loose. In recent years there has been a commendable tendency to pack smaller quantities in packages: thus the cwt. bag of carrots has largely given way to the half-bag.

**Ripe onions.**—*Harvesting.*—The production of good onions depends to a large extent on successful harvesting. Ripe onions are pulled and laid out in rows over the field, where they remain until the tops are dead. Within two or three weeks the onions are dry. The tops are then pulled away and the onions carted into the storing sheds or lofts. The onion shed as employed in Bedfordshire is a wooden building supported on concrete piers. It has a wooden slatted floor and sides made of feather-edged boarding to obtain the maximum draught (figure 17). A shed to hold 100 tons measures approximately 60 ft. long and 20 ft. wide. Inside the shed the onions are piled in graded heaps. To ensure sufficient ventilation and prevent "heating," these are built round square wooden chimneys 6 ft. long and having the sides of the aperture 9 in. square.

*Grading and Packing.*—In Bedfordshire onions are usually sorted into three grades, large over 1½ in. diameter, medium 1¼ in.-1½ in. diameter, and picklers.

Onions are usually marketed in bags or 56 or 112 lb.

**Shallots.**—In harvesting and storing shallots, the same care is necessary as with onions to avoid losses through "heating" and decay.

**Topped carrots.**—*Harvesting.*—After digging, main-crop carrots are all laid out in one direction and the tops cut off, and the carrots are put into bags. In some areas lifting of the crop begins



in September. Part of the crop may be clamped, and marketed at intervals during the winter and spring. Some growers do not clamp carrots extensively, since they can withstand slight frosts and will keep in the fields until November.

*Grading.*—Growers usually make two grades of carrots. Lack of attention to grading in the past has encouraged importations from abroad. Some growers are now hand-picking the crops and grading them on sloping tables in the field. Progressive packers leave worm-eaten and other undesirable carrots on the field and throw out those of bad shape on grading. Split, forked and damaged carrots may amount to as much as 20 per cent. of the crop. Low-grade roots should be disposed of by feeding to animals.

As regards size, there are two main classes of demand, London requiring carrots measuring from  $\frac{1}{2}$  in. to  $1\frac{1}{2}$  in. diameter and the North longer carrots from  $\frac{3}{4}$  in. to  $2\frac{1}{2}$  in. diameter.

*Washing.*—The North to a large extent favours unwashed carrots, while London is an important market for washed carrots.

There are several types of washing machine. With one or two exceptions, they depend on a revolving or rocking movement. The hand rocking machine has been replaced by various types of machines driven by internal combustion engines.

**Bunched carrots.**—Not all varieties are suitable for marketing in this form. The "thinnings" from carrots grown for the main crop are not so early or so tender as the special varieties grown for bunching and raised under glass, such as the half-long variety of Amsterdam.

Carrots are frequently bunched as they are pulled, and one grade is usually made. Sometimes carrots are marketed ungraded, but this is undesirable, as a few poor specimens spoil the appearance of the bunches. Figure 18 illustrates ungraded bunches, made up of large and small, good and poor roots, including cracked, fanged and distorted specimens. The extensive importations of bunched carrots emphasise the need for good grading.

*Bunching and Dozening.*—The count in a bunch varies in different districts from three or four carrots up to 12 or more. In the Exeter district the number is decreased from 12 to seven or eight as the season goes on. Bunches are larger in the London area than in most other districts. In Cheshire and some other areas a dozen bunches are made into a bundle.

*Washing.*—Bunched carrots are generally washed free from soil and fibre. Machines run by electricity and fitted with revolving brushes are manufactured for the purpose but are not commonly used in this country.

*Packing and Packages.*—Bunches and bundles are sometimes marketed loose, sometimes in bags. Various kinds of wicker hampers and boxes and second-hand non-returnable containers are also used. Amongst the best packages for the purpose are clean wooden crates, in which the carrots, packed in orderly layers, can

be well displayed. Packages should not be so heavy as to be cumbersome when filled, or so large as to cause "heating" of the contents. For glasshouse carrots, non-returnable lettuce crates lined with paper are suitable containers.

**Topped turnips and swedes.**—*Harvesting.*—These are harvested in a similar manner to parsnips (see below).

*Grading and Packing.*—Tops are removed as for parsnips. The best sale is for roots of medium size. In certain places, including London, there is a demand for washed turnips, but swedes are usually marketed unwashed. Care is necessary to select only those roots which are well-shaped, undamaged and free from secondary rootlets. Sacks holding 1 cwt. are generally employed for swedes, but for turnips, particularly if washed, bags holding 56 lb. are usual.

**Bunched turnips.**—*Bunching.*—Turnips for bunching are white-fleshed and should be of small or medium size. If bunching is done in the packing shed, odd counts of turnips are usually packed, the turnips being placed in a double row on the bench so that three rest in the spaces formed by the four first placed in position. Some growers, however, make round bunches of six. In the Exeter district three, five or seven are tied in a bunch according to the season, whilst at Bristol the number is usually four or five. In the London area, bunches are often double this size.

*Trimming.*—The leaves of early varieties such as Early Milan are not usually trimmed but with later varieties, e.g., New Model, about half of each leaf may be docked.

*Packing and Packages* are similar to those used for bunched carrots. Returnable boxes are commonly used in the London area.

**Parsnips.**—*Harvesting.*—After parsnips have been dug or ploughed out of the land, the tops are cut off close to the crown and the roots are sometimes trimmed. Some growers find that parsnips sell less well when stored than when kept in the land and dug as required. A supply of stored parsnips is, however, desirable for use in frosty weather when the ground is unworkable.

*Grading and Packing.*—Some growers make three grades of parsnips ("bests", "seconds" and "chumps"), others only two or one. Cankered, fanged and badly-shaped roots are probably worth £1 a ton kept on the farm, and small quantities may be boiled for pig food. The best size of marketable parsnips is probably about 3 in. diameter across the crown. They should be well-shaped, practically free from soil and free from secondary rootlets and damage. Packages of parsnips inspected at a West Midland auction market contained knotted, fanged, twisted and uneven roots, both small and large, involving much waste for the housewife. Parsnips are usually marketed unwashed in half-cwt. bags, but baskets and boxes are also used, particularly for local sale. The bushel box is used in the London area.

**Red beet.**—*Harvesting.*—Red beets are usually grown fairly close together, since they are then less likely to become too large for marketing.

Round summer beet is generally bunched. Pulling is done by hand. The crop should be marketed when quite young, and any roots which have bolted should be discarded. The beets are best taken to a packing shed in boxes or baskets for tying into bunches and packing into crates of suitable size.

Long or winter beet of the Cheltenham green top type is usually grown for storage. In any case the crop should be lifted by the beginning of November, as it will not stand severe frost. In the Rochester district roots are dug by hand and laid out in rows. The tops are screwed off and not cut. Soil is rubbed off.

*Summer Beet.*—*Grading and Bunching.*—This crop is usually marketed untrimmed and unwashed. One grade is usual, consisting of roots about 2 in. to 3 in. in diameter. The quantity of roots in a bunch varies according to the district from 3 to 12 or more.

*Packages.*—Bunched beet is sometimes marketed loose or in bags. Both methods are unsatisfactory, since bruising or damage may result in bleeding, loss of colour and reduction in market value. Hampers and returnable boxes are also used. Suitable packages for long-range marketing include a non-returnable crate such as is used for cabbage lettuce, and the Roscoff broccoli crate holding 18 to 24 bunches of six roots each.

*Winter Beet.*—*Grading.*—Beet is sometimes sorted into as many as six grades (large, best, seconds, thirds, smalls and chumps) ; two or three (small, medium and large) are not uncommon. Some packers exclude large, coarse and very small beets from market consignments. These, together with beets of bad shape and poor colour, are fed to stock, for which purpose their value has been put at 30s. a ton.

*Packing and Packages.*—This crop is often disposed of in returnable bushel boxes or wickers. Declaration of contents, if made, may be by count or by weight.

**Horseradish.**—*Harvesting, Grading and Packing.*—The roots as lifted are sometimes washed, e.g., in Cheshire, although washing does not improve their keeping qualities. They are tied into bunches of three, and again into bundles of 12 bunches, or the sticks themselves may be marketed in bundles of 12. Small or discoloured roots are discarded. Sticks of Cheshire-grown horseradish are usually 9 or 10 in. long, and, though not extensively grown, this crop is generally at least equal in quality to the imported article. Good straight thick sticks, not knotted, are required.

**Jerusalem artichokes.**—There are both red and white types of Jerusalem artichokes. Demand is limited, but the white type is more popular.

*Harvesting, grading and packing.*—Jerusalem artichokes are impervious to frost in the ground, and are usually marketed freshly dug, in small quantities, as required. The "small", or those not more than  $1\frac{1}{2}$  in. in diameter, are taken out, and the crop is generally packed on the field into half-cwt. bags, bushel boxes, or half-sieves.

**Globe artichokes.**—Heads are best cut early in the morning. Damaged, blown and misshapen heads should be rejected, and the remainder graded for size. A non-returnable lettuce crate holding two, three or four dozen is a suitable form of container.

**Salsify.**—Salsify is tied at both ends into neat bundles of six roots, and marketed in a similar manner to horseradish.

**Chicory (Witloof).**—On being lifted from the beds, witloof chicory should be removed from the roots and damaged leaves taken off. Small and open heads should be kept separate from those which are closed and well developed. Heads should be well bleached. Small packages such as chips and wooden boxes are best; these may be lined, preferably with white greaseproof and blue paper, and the chicory should be firmly packed in orderly layers with pieces of white greaseproof paper between each layer.

**Chicory for grinding.**—*Harvesting.*—Lifting is carried on from October to February, but should not be attempted in frosty weather. The roots are dug or ploughed out of the soil and the tops screwed off the plants. The roots are then carted to the factory.

*Factory treatment.*—At the factory, the loads of chicory roots are tipped into large concrete tanks and conveyed in narrow channels of water which remove most of the soil. After further washing the roots are then machine cut into cosettes of regular size, thus ensuring uniformity of drying. The drying process takes place on three floors, one above another. The finished product is about one-quarter the weight of the original roots. On cooling the cosettes are shovelled into bags. Single-dried chicory contains about 10-12 per cent. moisture and has to be roasted before use: double-dried contains 2 or 3 per cent. and is ready for grinding direct.

Chicory should be stored in dark, dry warehouses, as light has a detrimental effect on its keeping qualities.

## GROUP VI (HERBS).

Herbs are usually bunched, but some quantities of parsley and sage are sold unbunched. Sufficient care is not always taken to ensure marketing in good condition. Parsley, the most important member of the group, is sometimes roughly pulled with roots attached and bundled into bags too large for the requirements of many retailers. Herbs marketed in this way are also liable to unnecessary damage and loss of freshness. There is sufficient variation in the size of bunches and the types of containers in use to

justify efforts to achieve greater uniformity. Herbs are mainly marketed in returnables such as bags, wicker baskets and boxes; bags are used for a large proportion by weight of the total.

**Forced mint.**—*Harvesting.*—The length of shoot depends on the time of marketing; in the winter months it is from 8 to 9 in. and in the spring from 9 to 12 in.

*Grading and Packing.*—Diseased or aphid-infested stems should be discarded. The quantity tied in a bunch varies. Before marketing some growers stand the bunches upright in 3 in. to 4 in. of water.

Forced mint is packed in wooden boxes (either returnable or non-returnable), in leather-board boxes and in wicker packages, including flats. In the Worthing area six dozen bunches, of 18-25 stems each, are packed in a non-returnable lettuce crate lined with grease-proof paper. In Staffordshire the 12 lb. tomato box is used. A leather-board box of about the same size is used for four dozen bunches in Lancashire.

*Outdoor Mint.*—This crop is usually cut and bunched on the field and afterwards dipped in water. The size of bunches varies in different districts: thus in London 12 bunches usually fill a half bushel box, whilst in Cheshire hampers with rather more than three-and-a-half times the capacity hold 20 dozen bunches each consisting of eight sprigs.

**Parsley.**—*Harvesting.*—Parsley is best picked in a fresh bright green state, washed and marketed free from roots.

*Bunching.*—Parsley is marketed both in bunches and loose. From Bedfordshire it is consigned bunched to London and loose to the North. Discoloured leaves, roots, coarse stalks, and dirt should be excluded from the market package.

Bunching is usually performed on the field, but the size of bunches varies: London demands a large bunch of about 2-2½ lb.

*Packing.*—In the Bedfordshire area, from 2 to 2½ dozen bunches are packed in mats holding about 60 lb., also in large pea and cabbage bags. Some growers use half-bags holding 14 lb. In the London area 12 large bunches are sometimes marketed in 2-bushel returnable boxes, but loose parsley is often packed in returnable lettuce crates.

The sale of parsley is closely associated with the fish trade, and for the North there is a demand for smaller packages than the large bags or mats in which parsley is often consigned.

**Sage.**—*Harvesting and Bunching.*—Sage is sold loose and in bunches of different sizes. In the Evesham district bunches contain about 12-16 sprigs each; a skilled hand can cut and tie 100 dozen such bunches in a day. In the London area large bunches are used, whilst at Plymouth 4 to 5 sprigs form a bunch. Sage is not usually bunched when consigned to manufacturers for drying.

*Packages.*—Pots, half pots, bags, nets and boxes are all used. Sage travels better in wooden or wicker containers than in bags. About 15 dozen bunches are marketed in an Evesham pot.

*Thyme.*—Thyme is harvested in a similar manner to sage. The wicker pot used in the Evesham district holds about 25 dozen bunches, 12 sprigs in a bunch. It is also packed in half-pots and bags. In other districts thyme is often marketed in boxes of about half a bushel capacity.

### (3) Note on Returnable and Non-returnable Containers.

The relative advantages of returnables and non-returnables have been dealt with as regards fruit in a previous report\*, and many of the arguments there advanced in favour of the non-returnable apply also to vegetables. The use of non-returnables seems to be particularly advisable for long-range transport, and also where absolute cleanliness is called for in the container. The monetary advantages that may be realised, though difficult to estimate precisely, depend on the following points:—

1. Quality for quality, produce in non-returnables is usually sold first.

2. The cost of a journey to or from the market is saved; on returnables this may amount to 1½d. each or more, though it is less on light packages such as bags. Again, some non-returnables are lighter in weight than returnables of approximately the same capacity. By using non-returnables, therefore, a saving in freight charges can often be achieved, particularly if improved methods of marketing, which may involve the trimming of leaves, stalks or roots, are adopted. Some growers estimate that a wicker pot bought, say, for 2s. 6d., will on an average last out ten complete journeys, thus costing 3d. a journey. The pot weighs 8 lb. which is often one-sixth of the gross weight of the package when filled with produce, and is heavier than a non-returnable container of equal capacity. If it is consigned by rail the return journey has to be paid for at the returned empties rate: this will amount, say, to 1d. excluding carting charges to and from the stations.

3. Hire charges on packages may be eliminated. The hire charge, for example, made by some market salesmen for a returnable half-bag is 3d. It may be mentioned here that the experience at a West Midland auction market has been that 50 per cent. of the produce after sale is "shot out" of the packages into buyers' empties to avoid the charge made by the auction proprietors. Produce treated in this way is liable to suffer unnecessary damage; the incentive to better grading and packing on the part of growers is stifled, but the marketing of inferior produce is not discouraged, and this in no way helps to relieve gluts. At some auctions non-returnable containers are compulsory.

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\* Economic Series No. 15, pp. 26-28.

4. Some market salesmen dispense with part of their commission when produce is marketed in non-returnables. Where the commission is normally 10 per cent., a common reduction is  $2\frac{1}{2}$  per cent. If a non-returnable package is used instead of a wicker pot this saving may amount to 1d. or more.

5. There is a saving in the costs of warehousing and checking. When pots are sent from a specialised area of production to distant markets, expense is involved in recording their movements and debiting the deposit value to customers. Difficulties are experienced in having them properly returned, and there is endless room for leakage, abuses and friction. It is sometimes difficult for the retailer to know to whom empties belong, since there is a countless number of different marks. A commission buyer has made the following comments on the use of returnable packages:—

“ A receiver of returned empties must have accommodation to take them; on receipt he must enter particulars, address them to their original owner and perhaps make out a consignment note; carriage may have to be paid in advance; if the consignment happens to be short of the number advised, a note must be sent to the railway company within three days so that a claim may be made, and books also have to be kept to enable such claims to be settled.”

Amongst returnable containers, bags, mats and nets predominate and together carry about 3 times the quantity marketed in wickers or in returnable boxes. They are important packages for the marketing of leaf and flower vegetables, roots and onions, legumes, marrows and herbs. They are light and cheap and can be stored in a relatively small space.

For certain vegetables, however, wickers are preferred by many buyers, particularly in the Midlands and North. Produce in these keeps fresher and is less liable to damage in transit. Some buyers state that produce in wickers of reasonable size, pots for example, will often realise 1d. per lb. more than if packed in bags. A difference of 1s. per package is common for peas and beans. Present-day market conditions demand that wicker hampers, when used, shall be of manageable proportions, and of suitable shape and size for stacking economically in wholesale markets and on lorries. For these reasons wickers of exceptionally large size, as well as those, such as the two-bushel hamper, which taper appreciably from top to bottom, are unsatisfactory. Although sieves and half-sieves occupy additional space and require roping more securely on to lorries than rectangular packages, they stack well. They are good packages for conveying certain vegetables to market in a fresh condition, and they also give opportunities for attractive packing.

Wickers, however, are expensive packages, and for short-range marketing, particularly when the grower acts as his own wholesaler, returnable boxes are often preferred, as for example in the London area, the Brighton district, the district round Leeds and

the vicinity of Baguley in Cheshire. Returnable boxes of convenient size are handy packages. They stack well on lorries and seem to be as satisfactory as wickers for short-range marketing. They can usually be bought cheaper than wickers, and offer better opportunities for advertisement, since the growers' name can be branded on, whereas it is usual for the trade mark only to appear on wickers. The deposit charge\* is also frequently less on a box than on a wicker: on a bushel box it is usually 1s., on a bushel sieve 2s., and on a bushel flat 3s. Supposing the vegetable produce of 100 acres to be marketed exclusively in bushel boxes, the number of packages per annum that would have to be filled in the normal course by the grower has been put at about 25,000, whilst it is stated that some growers endeavour to realise an annual profit on the use of returnable boxes. (The cost of the box may be less than the deposit charge.) Others contend that these packages are too liable to be stolen.

Whilst the quantity of produce marketed loose is diminishing, there is as yet no general movement in short-range marketing towards the use of non-returnables. This is partly due to their cost: the cost for a returnable wooden crate has been estimated at  $\frac{1}{2}$ d. a journey compared with 3d. for a non-returnable crate of similar size. The first experiments with non-returnable crates by growers in the London area some years ago were unsatisfactory owing to breakages, but the crates are now more strongly made and the price has gone down. The introduction of new types of non-returnables during the past few years has not been accompanied by any tendency to limit designs to the least possible number in the interests of general utility and cheapness. There is still much to be said for the use of returnable packages for the short-range marketing of certain crops.

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\* A list of deposit charges on some of the vegetable containers chargeable to buyers of produce and recognised by the National Federation of Fruit and Potato Trades, Ltd., is as follows:—

Bags (marked) ...	6d. and 1s.	Flats ...	...	...	3s.
Nets and Coconut Mats...	6d.	Half Flats ...	...	...	2s.
Bushel Sieves ...	...	Handle Baskets ...	...	...	1s.
Half-bushels ...	...	Pots (wicker) ...	...	...	2s.
Crates (Cornish) ...	...	Half-pots ...	...	...	2s.



## CHAPTER VIII.

## PREPARATION FOR MARKET (II)—IMPORTS.

As already stated, apart from ripe onions, the Netherlands and France are the chief countries from which supplies of fresh vegetables are received. The produce for export is usually assembled and carefully packed in non-returnable packages, more or less standardised, by merchants or associations of growers before despatch.

## GROUP I (SALADS).

*Cabbage lettuce.*—Cabbage lettuce is received from Holland and France, and has latterly come in quantity from Spain. In Holland trimming and packing for export usually takes place in merchants' packing houses. Non-returnable wooden crates lined with paper are in general use. The usual counts are 24 or 30 in two layers, head to head or head down (see figures 11 and 19). French lettuce is similarly packed. At Perpignan in the south of France the produce is taken from the market or holding to the packing houses of *expéditeurs* or of growers' co-operative societies, where the butts are trimmed, discoloured leaves removed, and the lettuces packed head to head with a sheet of paper between the layers. Two and sometimes three grades are made.

Even during the early months of the year the lettuces received are usually well-hearted, light green and uniform in size. Formerly, during the winter months, unhearted French lettuces or "butterflies," grown under portable glass and consisting of only a few leaves, were marketed extensively in counts of 4 to 6 dozen. Supplies of hearted lettuce from Southern France and Spain, however, have considerably reduced the demand for unhearted lettuce.

The crates for French lettuce are often secured at each corner by short wires, the ends of which are twisted together with a hooked instrument known as a "lieuse." Crates can be fastened quickly and effectively by this means.

The French crate (see figure 20) measures approximately 21½ in. by 15 in. by 7 in. Spanish lettuce is similarly packed. Two kinds of crate, approximately 22½ in. long by 7½ in. deep, and 13½ in. and 16½ in. wide respectively are used for Dutch lettuce.

*Radishes.*—Radishes are imported from Holland, France and the Channel Islands in non-returnable wooden crates, also in cane baskets (France) and in wicker flats (Guernsey). Bunches are of medium size. Long and French Breakfast radishes are received from Guernsey in crates measuring approximately 22 in. by 14½ in. by 8½ in. About 10 to 14 long radishes are tied in a fan-shaped bunch. Each crate contains from 6 to 10 dozen bunches packed in rows, leaves facing outwards. The count depends to some extent on the amount of leaf. "French Breakfast" radishes,

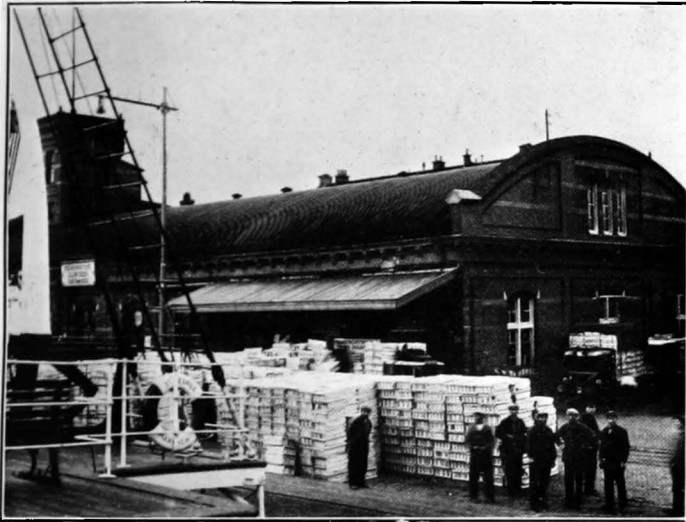


Fig. 19. Stacks of non-returnable crates of lettuce on the quayside at the Hook of Holland ready for despatch to Harwich.

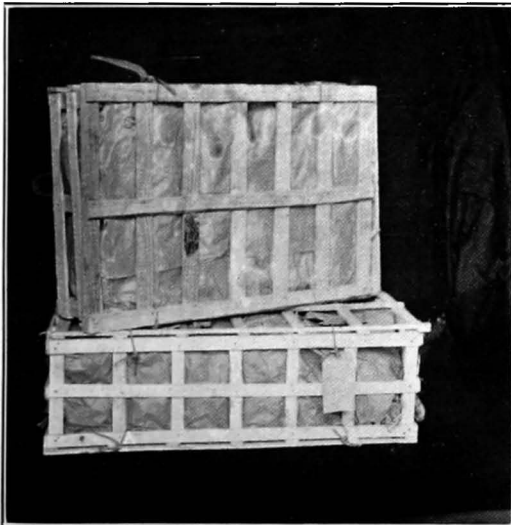


Fig. 20. Non-returnable French crate used for export of salads.

packed in two layers, are received from Holland in smaller crates. At Nantes this variety is packed in the packing sheds in crates which measure approximately 21 in. by 11 in. by 5 in. and hold three layers, each consisting of a dozen bunches, with 30 to 40 radishes in a bunch.

*Endive*.—French endive, uniform in size and well-bleached, is usually packed in counts of 24 in the salad crate, one grade only being made.

*Witloof chicory*.—See p. 84.

## GROUP II (STEM AND STALK VEGETABLES AND MUSHROOMS).

Asparagus is the chief vegetable imported in this group. French asparagus for England is packed by *expéditeurs*, chiefly in the Cavailon district. The merchants have their own packing houses, and obtain crates from several factories in the district which specialise in their manufacture. Spears of medium to large-sized French asparagus (green-tipped) are tied in round bundles holding about 2 lb. The heads are protected with soft packing material rolled in paper. Bundles are packed in non-returnable crates holding 6 or 12. A crate for 12 bundles measures approximately 20½ in. by 11 in. by 7¼ in.

*Mushrooms*.—Mushrooms from France are described under two colours, blond or white. 6 lb. are packed in a chip basket, lined with blue or white paper, and measuring approximately 12 in. by 6½ in. by 5½ in. Three, six or twelve of these baskets are packed together in protective crates.

## GROUP III (LEAF AND FLOWER VEGETABLES).

*Broccoli and Cauliflower*.—Although French supplies of broccoli to this country have been greatly reduced, some thousands of tons are still imported annually. The Breton growers deliver the heads, stacked in cartloads, to the packing sheds of the exporters, either direct or after sale at a local market such as that at St. Pol-de-Léon (see figure 21). On arrival at the packing houses, the leaves and butts are trimmed, the former to a distance of about 3 in. to 5 in. from the surface of the curd. The heads are graded into three sizes, large, small and very small, which are packed in non-returnable crates very similar in type to the rigid non-returnable pattern used in this country. The crates hold 12 large, 24 medium and from 30 to 36 small heads. The large heads are mainly used for Continental trade. The United Kingdom chiefly takes the 24's, consisting of heads of smaller size (see figure 22) approximately 4½ in. by 5 in. in diameter across the curd. Figure 23 shows a packing house with broccoli ready for despatch.

The leaves are taken back to the farms for stock-feeding and manure. In some seasons, if fodder is scarce, as much as 2s. 6d. per cartload may be given for them.

Italian cauliflowers, which are subject to strict inspection before export, arrive in large wooden crates, wider than the French and not so deep; in these the heads are often packed in one layer, curd downwards. The count in a crate is often 12, but varies, in multiples of three, from 6 to 18 and sometimes more. The white pointed heads of fine quality, often 6 or 7 in. across, travel exceedingly well when packed in this way. Belgian cauliflowers are packed in a somewhat similar manner to French. Dutch cauliflowers, such as are grown in the large "Warenhuizen" type of glasshouse, an example of which may be seen in figure 24, are sent to this country in the early part of the season, wrapped in paper and packed in counts of 15, 18, etc. (see figure 25), in a crate measuring approximately  $22\frac{1}{2}$  in. by  $16\frac{1}{2}$  in. by  $7\frac{1}{4}$  in. In this case very little leaf may be left on each head.

*Cabbage*.—Imports of French spring cabbage, which used to be packed in non-returnable crates holding two dozen, have practically ceased. Dutch red cabbages, firm, solid and of good colour, are packed free from loose outer leaves in bags holding 1 cwt.

*Brussels Sprouts* from Holland are sent in nets holding 10 kg., or about 20 lb., similar to those used in the West Midlands.

*Spinach* is sent from France packed in large rectangular crates holding 7 kg. Only leaf spinach is packed, chiefly from Tarascon and Avignon.

*Globe Artichokes*.—In Brittany globe artichokes are sorted into as many as five size grades, marketed in broccoli crates and sold by count. They are usually sent to this country from France (Bouches-du-Rhône, Vaucluse and Pyrénées Orientales) and Spain (Barcelona) in billots or boat-shaped packages, graded according to size and packed in counts of 10 to 20 in a package.

#### GROUP IV (LEGUMES AND MARROWS).

Small quantities of glasshouse peas are received from Guernsey and realise high prices. These are cut from the plants and packed in handle baskets holding 6 lb., care being taken that the bloom on the pods is not removed. Outdoor peas from France are packed in small net bags holding 15 or 16 lb., whilst those from Italy, which are now being grown from English seed of "Thomas Laxton" and other good varieties, are packed in non-returnable wooden packages holding 15-18 lb. Forced beans from Guernsey, originally consigned in handle baskets holding 8 lb., are now often sent in chips. The beans are usually sorted into two grades, one of pods which are straight and even in outline, the other containing curved pods and those showing signs of seed development. Outdoor kidney beans are sometimes received from France in chip baskets of 6 lb. or in billots. Those from Madeira, which realise lower prices than glasshouse beans, are firmly packed in orderly rows, often in small wooden boxes holding 7 or 8 lb. Broad beans from France and Spain are packed in billots. The

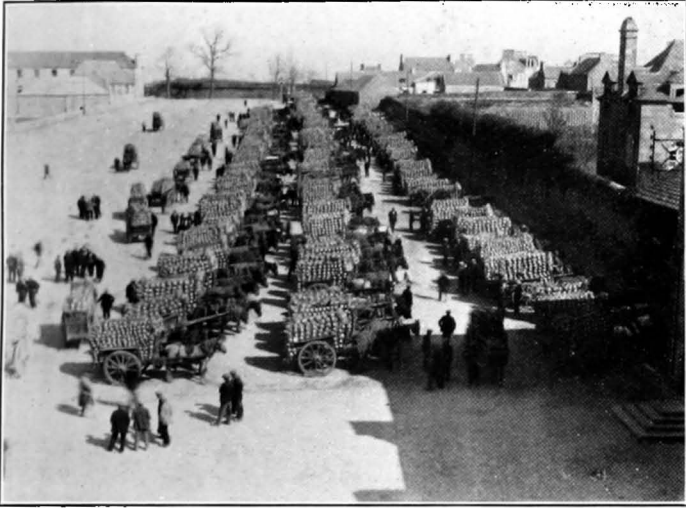


Fig. 21. Loose loads of broccoli for sale by producers at St. Pol-de-Léon wholesale market.



Fig. 22. Graded broccoli at the packing house of a French exporter.



Fig. 23. Packing house of a Brittany exporter, showing broccoli packed ready for dispatch.



Fig. 24. Large scale production of cauliflowers and lettuce under glass (lights removed) Holland.

same package is used for French marrows, which are of small size and white in colour, in counts of 8 to 12 or more. Madeira marrows are packed in counts of 16 to 30, covered with banana foliage, in large wooden crates.

*Dried Peas.*—Imported dried peas are mainly obtained from the Netherlands and Japan. Those from the Netherlands are usually marketed in five grades, "Jumbo Marrowfats", "Marrowfats", "Imperials", "Large Blues" and "Small Blues."

"Jumbo Marrowfats" are the largest grade, while "Marrowfats" represent the normal run of this kind. Both are hand-picked; sizes vary from year to year. "Imperials" represent a small and dying trade. "Large Blues" give a better yield after soaking than "Small Blues", and command a slightly higher price for this class of trade. Peas from the Netherlands are usually received in cwt. bags.

Peas from Japan are sold in one grade only, viz., "Marrowfats", in bags, or pockets as they are called, containing 100 lb. The bags are sealed under Government inspection and the year of growth is declared. The peas are drier, harder and a fraction smaller than Dutch "Marrowfats." They are not so attractive in appearance and realise less money, but the grading is good. The peas are hand-picked, and damaged peas are rejected.

Overseas producers benefit by paying careful attention to periodical renewals of seed stocks.

#### GROUP V (ROOTS AND ONIONS).

*Onions.*—French onions are often brought over to this country loose, and are then tied into ropes and sold direct to the consumer by Bretons. Dutch onions intended for export (other than preserved, silver and spring onions) have to be graded and packed in accordance with regulations made under the Agricultural Produce (Exportation) Act, 1929 (see Chapter IX). In general, apart from onions required for the pickling trade, packers often reserve small onions for Continental use and send those of medium or large size to the United Kingdom. Onion grading machines are used.\* The onions are packed in open-mesh bags. The weight per bag to the United Kingdom is declared either as 50 kg. or 112 lb. Picklers (onions less than 36 mm. in diameter) are frequently packed in half-bags.

State control is exercised over the grading and packing of onions exported from Egypt (cf. Chapter IX). These are the first of the new crop ripe onions to appear in any year. They closely resemble Dutch onions, but are harder and drier in texture. The bags—usually containing a declared weight of 1 cwt.—in which the Egyptian onions are packed, frequently bear the brand of the British importer.

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\* For a reference to one of these, see Journal of the Ministry, Vol. XL, No. 10\* January, 1934.

Spanish onions are of two kinds—the Babosa or summer onion which appears on the markets about the beginning of June and is softer and of poorer quality, and the Grano or winter onion which follows about five weeks after and is marketed until the end of March. Spanish onions are sorted for the English market into three main sizes, viz., 4-tier (large, 240 weighing about 120 lb. in a case), 5-tier (medium, 450 in a case) and 6-tier (small, 756 in a case). The general demand is for the 5-tier onions, which usually realise more money than the 4-tier, though the latter are still popular in certain Northern towns. Spanish onions have a mild flavour and sell even better in the North than in the South. They are usually distributed under exporters' marks.

Hungarian onions represent a new feature of the trade. They arrive via Germany and Holland over approximately the same season as the Spanish and are graded in similar sizes, but packed in cwt. bags. They are of good quality and milder in flavour than the Dutch or Egyptian, and are increasing in quantity and popularity.

*Carrots.*—Early French carrots are sent in wooden crates and packed as in figure 25. There are from 12 to 18 bunches, each containing about a score of carrots, in each crate. They are also despatched in billots; at Nantes these weigh approximately 32 lb. each and measure  $22\frac{1}{2}$  in. long and  $14\frac{1}{2}$  in. wide across the top. Dutch early carrots, in bunches each containing about 50, are sent in non-returnable crates and in Dutch pots (a wicker container with lid costing 3d. or 4d.) holding 15 or 18 bunches. The carrots are washed and fairly uniform in size. Topped carrots from Holland are consigned in cwt., half-cwt. and sometimes 50 kg. bags.

*Turnips.*—French bunched turnips, which are always of the long varieties, are consigned from Nantes and Perpignan in billots similar to those used for carrots and also in non-returnable crates.

*Parsnips.*—Dutch parsnips are sorted into two grades, large and medium, and are packed in bags of 25 and 50 kg.

*Horseradish.*—German horseradish is packed in grape barrels. These contain from 7 to 9 bundles, each weighing about 12 lb. and containing 10 sticks. The sticks are long, stout and free from knots. The bundles are caked with soil to prevent them from drying out during distribution.

*Chicory (Witloof).*—Witloof chicory is received from Belgium, where this vegetable is greatly appreciated and where the roots, on being removed after lifting, are fed to cattle. The chicons or heads, which must be well blanched, are wiped clean with a cloth and sorted into two or three grades, the most compact heads being in the highest grade. Wooden boxes, commonly holding 5 kg. and lined with blue and grease-proof paper, are generally used for packing. The chicory is arranged in the boxes in rows, layer on





Fig. 25. Wrapping and packing cauliflowers in the packing shed of a Dutch exporter.

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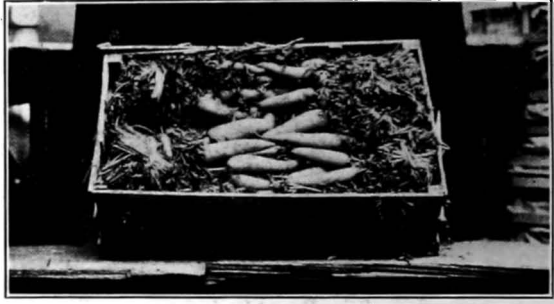


Fig. 26. French bunched carrots as received in a non-returnable crate at a London market.

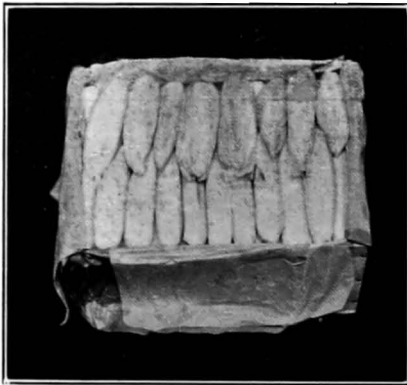


Fig. 27. Belgian witloof chicory as received in a non-returnable box at a London market.

layer (figure 27). The inside measurements of the box are approximately 11 in. by 9 in. by 5½ in. Heads of good medium size weigh 3 oz.

*Chicory (Root).*—In Belgium the cosettes are spread to a depth of 12 inches and dried at two levels. On the top level, drying occupies about 12 hours at from 70° to 80° C. and on the lower floor 12 hours at a temperature of 45° to 50° C. The chicory is turned several times and ventilators are kept open for the first eight hours of drying. The State does not allow more than 15 per cent. of water in roasted chicory or more than 10 per cent. of burnt matter. Kiln-dried chicory is packed in 50 kg. bags.

## CHAPTER IX.—STANDARDIZATION ABROAD.

### (1) Countries with Substantial Exports to the United Kingdom.

*Holland.*—The controlling authority for standard grades of different commodities in Holland is the Export Control Office (Uitvoer-Controle-Bureau) at The Hague, founded in 1924. The Committee is made up of four growers representing the Central Bureau of Auctions, and one representative of each of the four Unions of Exporters. Its objects are "to direct and guide the export trade in order to supply foreign purchasers with guarantees as regards quality, grade, packing, measurement and weight of first-class Dutch produce". Standard grades have been prepared for commodities for distribution under the trade mark of the Office, the Lion and Flag brand.\* Thus there are five size grades for gherkins, four for onions, and two for carrots, whilst French and runner beans, late cauliflowers, and red, white and savoy cabbages can also be exported under the trade mark. These schemes are voluntary. It is possible to bring any agricultural product under the compulsory provisions of the Agricultural Produce (Exportation) Act, 1929, but so far as vegetables are concerned the Act has been applied only to onions. As from September 15, 1930, onions, other than preserved, silver and spring onions, may only be exported if accompanied by a certificate showing that they comply with the regulations. Unless loaded loose, onions must be packed in strong sacks, bags or other packages holding either 25 or 50 kilograms, with the net weight shown conspicuously on the package. Onions must be sound, ripe and dry, reasonably free from soil, and free from malformation, doubles, etc. Only onions of the same shape and size grade may be packed in one container.

*Italy.*—Under a law of June 23, 1927, the National Export Institute is authorized to establish a National Mark for fruit and garden produce. The Act was amended subsequently to embrace any agricultural and industrial product. The use of the mark is optional and reserved to legally registered and recognised exporters, authorized by the Institute. Control over the marked goods is

\* See also Economic Series, No. 34, pp. 86, 87.

exercised by inspectors appointed by the Institute. The Ministry of National Economy may prohibit the export of goods without the mark, provide for inspection before application of the mark, and prescribe the form of packing to be employed. A levy is made on all fruit and vegetable exports under the scheme, whether bearing the mark or not, to cover the Institute's expenditure in controlling these commodities. By a Ministerial decree of September 30, 1932, the National Mark system was applied compulsorily to cauliflowers; standards are laid down to which all cauliflowers exported from Italy, whether under the mark or not, must conform. These standards are strictly enforced. Crates permitted in the various areas of production are specified, and details of the method of inspecting consignments are prescribed.

**France.**—In 1932 the National Committee for the Exportation of Fruit and Early Vegetables devised, on the authority of the Ministries of Agriculture and Commerce, a scheme for the standardization of 14 kinds of fruit and three kinds of vegetables. Arrangements were made in the areas represented on the permanent committee (63 in 1932) for expert control of the produce before despatch. A stamp is affixed to packings which conform with the standards adopted. Early in 1933 a decree was issued by the Ministry of Agriculture making the sale of "topped" fruit and vegetables punishable even when fraudulent intent could not be proved.

**Egypt.**—Under a decree of December 5, 1932, all onions for export must conform to standards of grading and packing prescribed by the Finance Minister. Control is exercised by offices established in the principal ports and working under the direction of the Department of Commerce and Industry. Appeal may be made against the decisions of a control office to a commission consisting of the head of the office as president, an onion exporter to be chosen by the appellant from a list published each year by the Department, and a customs officer nominated by the Director-General of Customs. Power has since been given to the Finance Minister to prohibit the exportation of any grade or grades over prescribed periods.

## (2) Other Countries.

### (a) *The Dominions and the Channel Islands.*

**Canada.**—The main provisions of the Root Vegetables Act, passed in 1922 and since amended, are as follows:—

(1) Vegetables may not be sold "faced," i.e., having more than 10 per cent. of the bulk smaller than, or inferior in grade to, the produce on view.

(2) All old marks on re-used empties are to be obliterated.

(3) No vegetables may be sold in a condition unfit for human consumption.

(4) Except as provided by the Act or regulations made thereunder, all onions, turnips, artichokes, parsnips, beet and carrots are to be sold by weight avoirdupois.

(5) Regulations may be made prescribing grades, standard containers, dimensions and materials, units of sale in small quantities, brands and marks, inspection costs and fees, the time when regulations shall come into force, and the kinds of vegetables covered.

Grades have been made for onions, turnips, celery, beet, cabbage, lettuce, carrots, parsnips and asparagus. Anyone selling vegetables for which grades have been prescribed must mark the containers with his name and address and the grade and weight of the contents. To meet demands for the inclusion of other vegetables, recommended grades have been introduced, on the basis of which inspection is carried out by Departmental officials at the request either of shippers or of receivers. Five standard celery crates have been established under the Act.

The Fruit and Honey Act and Regulations, 1934, provide for grades for field rhubarb when packed in closed packages and a minimum weight per bunch for forced rhubarb.

**Newfoundland.**—The Grading of Vegetables Act provides that potatoes and turnips grown in Newfoundland and sold by wholesalers must have been sorted into grades.

**Australia.**—By regulations made in 1926 under the Customs Acts, 1901-25 and the Commerce (Trade Descriptions) Act, 1905, a trade description must be applied to fresh vegetables, including onions intended for export. The description is to be in the form of a principal label or brand which must bear the word "Australia," and may include in addition the name of the State in which the goods were produced, and the name of the producer or exporter. If the producer is not the exporter, the producer's name, or registered brand, must be included, unless the name and address of the producer is set forth in the notice of intention to export. A declaration by the exporter stating the condition of the consignment in respect of soundness must accompany the notice of intention to export.

**Queensland.**—The Fruit and Vegetable Act, passed in 1927 and subsequently amended, applies to onions, green peas, green beans, turnips, cabbages, carrots, cauliflowers and parsnips. These vegetables must be sold in sound condition, and the external layer must be a true indication of the average grade in the package or lot. They must be graded as prescribed by regulation; misleading information in respect of colour, kind, number, size, soundness, variety, weight, or measurements of the packages is an offence under the Act. The regulations may prescribe the kind of packages which are to be used.

*South Australia.*—Under the Fruit and Vegetables (Grading) Act, 1934, regulations may be prescribed for standard grades and grade definitions for any vegetables for sale whether in packages or in lots, and may forbid the sale of any vegetables not graded in accordance with the prescribed standards or below the standards prescribed. Official control of the use of the quality standards is also provided for.

*Victoria.*—Under the Fruit and Vegetables Act, 1928, the Governor in Council may by regulation prescribe compulsory grading, packing and package standards for vegetables. Regulations made in 1930 provide that the outside layers of any package or lot must be uniform in grade and a true indication of the average grade, method of packing or arrangement, and foreign matter present throughout; all vegetables in a package or lot must be sound; packages must be clean and free from disease; the proportion of foreign matter and packing material which may be present is prescribed; misleading marks or labels are prohibited; the grade of onions and the net weight or number of other vegetables must be declared, and the actual weight of peas and beans must be at least 95 per cent. of the declared weight. Regulations made in 1931, covering onions, repeat the prohibition of "topping," and prescribe three compulsory grades (1st Quality Large, 1st Quality Table and Picklers) modifying those prescribed in the 1930 regulations. Standards are enforced by inspectors appointed by the Governor.

*Tasmania.*—Under the Exported Products Act, 1901, minimum standards have been laid down for turnips (February, 1929) and carrots and parsnips (September, 1930) intended for shipment to other States of the Commonwealth. Inspection takes place at the port of shipment.

*New Zealand.*—In New Zealand it has been suggested that a Bill should be introduced to effect compulsory standardization for certain kinds of fruits and for onions, other products to be included later if necessary.

*Guernsey.*—Local legislation was enacted in 1932, regulating methods of grading and packing horticultural produce, and rendering it liable to inspection before shipment. Grading and packing in the island as a whole has reached a high standard in consequence.

#### (b) *Foreign Countries.*

*United States.*—Standardization of vegetable grades has been making headway in the United States for some years past. Local farmer's organizations, banks, warehouses, crop insurance companies, educational institutions and the trade in general have endorsed the policy.

Funds are voted annually by Congress "to enable the Secretary of Agriculture to investigate and certify to shippers and other interested parties the class, quality, and/or condition" of certain agricultural commodities, including vegetables, when offered for inter-State shipment or when received at various important central markets. Fees are charged for the issue of the certificates, which are based on official standards. Grades have been provided by the Department of Agriculture for the following vegetables: radishes, lettuce, endive; celery, asparagus, mushrooms, rhubarb; cabbage, cauliflower, broccoli, spinach, turnip greens, kale, globe artichokes; beans, fresh peas; onions, shallots, garlic, bunched and topped beet, bunched and topped carrots, bunched and topped turnips; parsley.

**Germany.**—The "German Loading Control for Fruit and Vegetables" was instituted a few years ago by a Marketing Committee, including representatives of the competent organizations for agriculture and horticulture. The object of the control is "the correct handling, grading and loading of fruit and vegetables with a view to supplying consumers and industry with goods of uniform high quality." Controllers are appointed in Bavaria by the Bavarian Fruit-Growing and Horticultural Union and in the other States by the Chambers of Agriculture. Applications for the exercise of the control have to be made by the senders. If a consignment comes up to the prescribed standards of quality and method of packing, a control placard showing the quality, size and arrangement of the vegetables in the consignment is posted inside and outside the railway truck. The control has been made applicable to cabbages (red, white and savoy), cauliflowers, onions and carrots. The Reich Food Estate proposes to apply a National Mark to market garden produce.

**Morocco.**—By a series of decrees issued in 1932-33 a system of compulsory control was established for Moroccan fruits and early vegetables intended for export. Grading and packing requirements are laid down by the Director-General of Agriculture, Commerce and Colonisation, on the proposition of the consultative committee of the Office of Control and Exportation. The vegetables to which the system of inspection has been applied are carrots, artichokes, marrows, beans and green peas. Control is carried out by the Office, and disputes are submitted to a committee consisting of a controller of the Office as president, a member of the consultative committee, and two representatives nominated by the regional chambers of agriculture and commerce. The use of a National Mark, at first optional, is now compulsory on consignments intended for export.

## CHAPTER X.—THE NATIONAL MARK SCHEMES.

The imperative need for the standardization of grades, packs and packages in the home vegetable industry, which is clear from the preceding chapters, has in recent years been fully appreciated by producers' and distributors' organizations. A summary of the case for standardization, so far as fruit is concerned, was given in Chapter VI of Economic Series No. 15. The arguments there brought forward largely apply also to vegetables.

At the request of a number of growers and distributors, the first National Mark vegetable schemes, namely, those for cauliflowers and broccoli and cabbage lettuce, were launched in February, 1933.

These and subsequent voluntary schemes\* are based on the Agricultural Produce (Grading and Marking) Acts, 1928 and 1931, which give the Minister of Agriculture and Fisheries power to prescribe *grade designations* for any agricultural product. A grade designation is a form of words, such as "Selected," "Extra Selected," "Selected Large," used as the name of a grade. When prescribing such a designation, the Minister has also to define the standard of quality indicated by it. Under the Acts he may further prescribe *grade designation marks*, and when an article is sold with a grade designation or grade designation mark on it, it becomes a term of the contract of sale that the article shall reach the defined standard. The design reproduced below, when used together with a grade designation and the words "Empire Buying Begins at Home," constitutes a grade designation mark.



It has been used with many different kinds of graded home-grown produce and has come to be known as the National Mark. The National Mark design and words are registered under the Trade Marks Acts in the name of the Minister of Agriculture and Fisheries and are specially protected from abuse by the Agricultural Produce (Grading and Marking) Acts.

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\* Full details of the schemes are contained in the Ministry's Marketing Leaflet No. 58.



No one may mark any article, covering or label with the National Mark unless authorised to do so, and a National Mark Committee has been appointed by the Minister with powers to authorize packers, who may be individuals, firms or growers' associations, to apply the Mark subject to conditions.

A Trade Committee appointed by the Minister, consisting of representative growers and distributors with an independent Chairman, advises the National Mark Committee as to the issue of authorizations to apply the Mark to vegetables, and advises the Minister on the general administration of the schemes. If the Trade Committee declines to recommend authorization, the applicant has a right of appeal to the National Mark Committee.

The standards for the grading and packing of vegetables to which schemes apply are based on the best commercial practice and have been prepared in collaboration with the National Farmers' Union and representatives of the distributive trade.

The following is a list of the vegetables for which schemes have been promulgated; they include practically the whole range of fresh vegetables in commercial production.

*Group I (Salads).*

Endive and Batavian Endive.  
Cabbage Lettuce.  
Cos Lettuce.  
Mustard and Cress.  
Salad (Spring) Onions.  
Radishes.  
Watercress.  
Witloof Chicory.

*Group II (Stem and Stalk).*

Asparagus.  
Celery.  
Cultivated Mushrooms.  
Rhubarb (forced and natural).  
Seakale.

*Group III (Leaf and Flower).*

Globe Artichokes.  
Purple Sprouting Broccoli.  
Cabbage Greens and Cabbages.  
Red Cabbage.  
Savoy Cabbage.  
Cauliflower and Broccoli.  
Scotch Kale.

*Group III—cont.*

Leeks.  
Spinach.  
Brussels Sprouts.

*Group IV (Legumes).*

Broad Beans.  
Kidney and Runner Beans.  
Marrows.  
Green Peas.

*Group V (Roots and Onions).*

Jerusalem Artichokes.  
Red Beet.  
Carrots.  
Horseradish.  
Ripe Onions and Shallots.  
Parsnips.  
Table Swedes.  
Table Turnips.

*Group VI (Herbs).*

Mint.  
Parsley.  
Sage.  
Thyme.

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\* For the purpose of the administration of the National Mark schemes, rhubarb is regarded as fruit.

**Grading.**—Authorized packers may apply the National Mark only to vegetables grown in England and Wales which, at the time of packing, comply with the definitions of quality prescribed for the appropriate grade designations.

One grade is prescribed for many vegetables and for others there may be two or more. These provide only for vegetables of good quality, substantially free from damage, discolouration or other defects likely to affect edibility. The differences between the grades usually lie in size, shape, type and other kindred factors. Importance is sometimes attached by distributors to large or small size, and the order of the grades reflect this. Thus the largest asparagus is regarded as the best and is represented by a blue label. For brussels sprouts, however, this label is reserved for those of small or medium size, for which there is a premium in price. Glasshouse products usually bear a blue label. The use of the blue or red label for kidney or runner beans depends largely upon the degree of straightness and for celery, carrots, parsnips and turnips, upon cleanness.

The definitions of quality have been largely framed under three headings, (1) size, (2) colour and variety, and (3) condition.

Size can usually be determined conveniently by linear measurement, e.g., by the greatest transverse diameter of the vegetable (the commonest criterion) or its length (often as trimmed); but sometimes (as for cabbage and cabbage greens) it is more easily expressed by reference to weight. Although in some of the schemes more than one size grade is provided for, reasonable uniformity of size amongst the vegetables packed in any one container is generally required.

**Colour and Variety.**—In some instances it has been necessary to define colour more or less closely, whilst in others a requirement that vegetables shall be "well coloured" has been thought sufficient. The packing of discoloured vegetables under the National Mark is not permitted. In some schemes all the vegetables in one container are required to be of one type and variety, and in general all in one container are required to show similar varietal characteristics.

**Condition.**—The quality of vegetables when marketed depends largely on their condition. Under this heading the commonest requirements are freshness—all-important—reasonable cleanness, and freedom from damage due, e.g., to decay, disease, bruising, frost, or insects. Reference is also made in various schemes to good shape (roots and onions); correct stage of maturity; tenderness, smoothness, firmness; freedom from seed stems (cabbage lettuce, watercress and celery), from flowering shoots (cabbage), and from secondary rootlets, splits, and pithiness or woody fibre (roots); adequate trimming (for celery and certain other vegetables, and the tops of roots); and to other factors.

In several schemes a small tolerance is permitted to cover variations incidental to proper grading.

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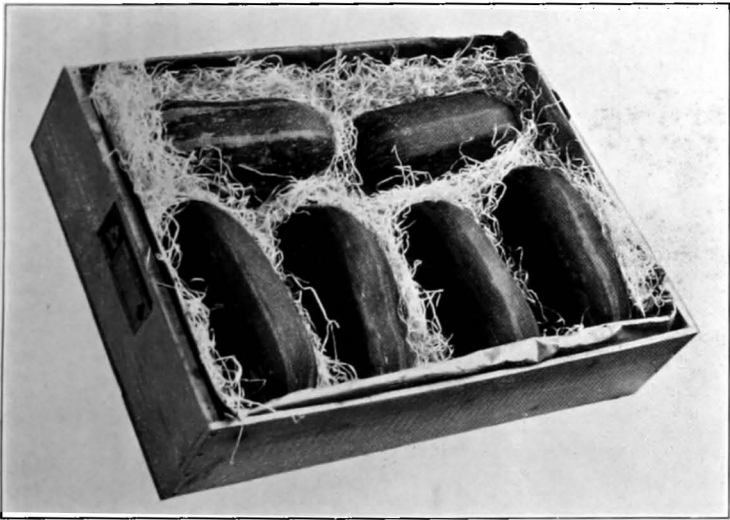


Fig. 28. The National Mark Scheme.  
Forced marrows, packed in a cucumber box.

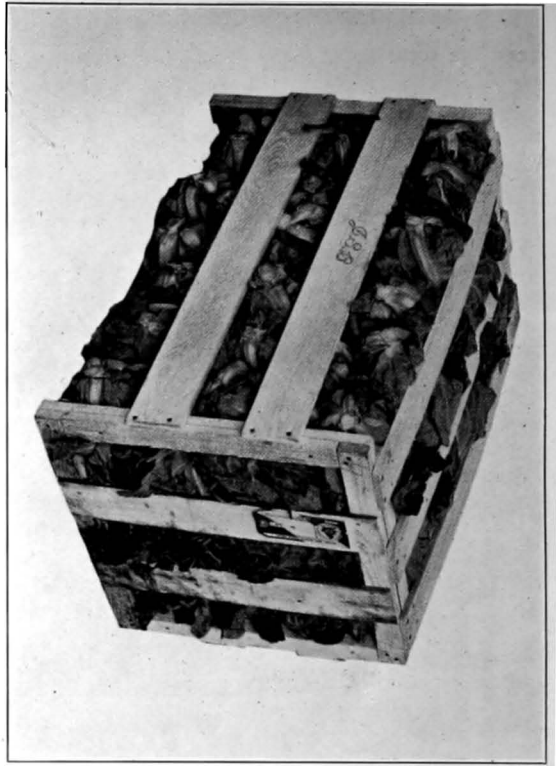


Fig. 29. The National Mark Scheme.  
Cabbage greens packed in the Roscoff type broccoli crate.

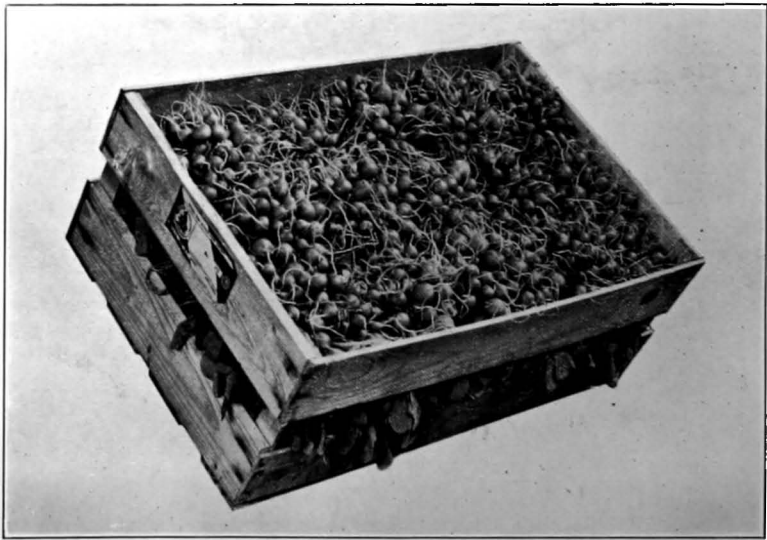


Fig. 30. The National Mark Scheme.  
Radishes packed in the small lettuce crate.

**Packing.**—Firm packing is a necessity, but in order to avoid damage, including bruising, in transit, provision has been made in the schemes to prevent overloading of packages (see Figures 28, 29 and 30). Radishes, salad onions, asparagus and leeks are put up in bunches; this applies also to one grade of watercress, one of red beet, and two of carrots. Sometimes the bunches may, or must, be tied together in bundles. Bunches and bundles are to be neatly and firmly tied, sometimes at a specified point, e.g., immediately above the blanched portion for leeks. The sizes of bunches and bundles have been standardized. The net contents, or minimum net contents, of the packages are declared on the containers by count or weight.

**Packages.**—A container bearing a National Mark label may contain only National Mark produce. Often two or three different sizes of standard containers are allowed under one scheme. Standard packages are usually specified by linear measurement, e.g., wooden crates, boxes, wickers and bags. There are, however, some exceptions. For example, chip baskets of fixed cubic capacity are specified for watercress, mushrooms, forced beans, etc. Bags and sacks are required to be clean, strong, sound and serviceable. The use of a limited number of both non-returnable and returnable containers is permitted in the schemes, as it has been found impracticable owing to their higher cost to limit the use of containers to non-returnables.

**Quality control.**—Quality control inspections, which are vitally necessary to ensure that consignments are of the quality prescribed and are packed in accordance with the conditions of authorization, have so far been carried out on packers' and distributors' premises almost entirely by the Ministry.

**Output.**—The minimum output, qualifying a packer for enrolment, varies somewhat in the different schemes, according to the nature of the vegetable and the acreage that occupiers of holdings usually set aside for it annually. Thus in some schemes the minimum output is no more than a quarter of an acre, or the approximate weight of produce which can be grown on it, whilst in other schemes it is two acres or more. In some of the schemes provision is made for the authorization of approved merchant packers, for whom the minimum quantities to be handled are considerably higher. To encourage the marketing of vegetables under the National Mark by approved associations of growers, these are generally exempted from any output requirements.

**Labels.**—There are two classes of labels: official labels are supplied direct by the Ministry, but if packers wish to do so they may with the Minister's approval incorporate the National Mark in their own private labels. Registered distributors may also be given authority to incorporate the National Mark in their own labels for issue to authorized packers.

**Registered distributors.**—With the co-operation of the National Federation of Fruit and Potato Trades, Ltd., an official list of distributors who are registered as distributors of National Mark vegetables has been published by the Ministry for the guidance of growers. The conditions of registration involve an undertaking by the firms concerned to promote the interests of the National Mark Scheme, advertise their authorization, accept consignments from any authorized National Mark packer, and distribute not less than a specified amount of National Mark produce. The firms are expected to collaborate with the Ministry in its quality control by ensuring that the National Mark is removed from deteriorated consignments. By the end of March, 1935, the Minister had appointed in all 182 registered distributors, including many of the leading firms in the wholesale trade in London and the provinces.

The holding of a certificate by a distributor does not imply any guarantee on the part of the Ministry as to his standing, financial or otherwise, and the Ministry does not hold itself responsible for any loss or inconvenience which may be incurred by any authorized packer as a result of business transacted with registered distributors.

The majority of the National Mark schemes for fresh vegetables were not inaugurated until the latter part of 1934, and the spring of 1935. The schemes may still be said to be largely of an experimental character. At the same time, as judged by the number of enrolments of packers, the grades are being found practicable of effective operation. Thus, at the end of March, 1935, there were 129 authorized packers in the cauliflower and broccoli scheme, 59 in the cabbage lettuce scheme, 33 in the green peas scheme, 20 in the brussels sprouts scheme, 17 in the celery scheme, and 18 in the cultivated mushroom scheme. Packers have also been enrolled in nine other schemes.

## CHAPTER XI.—STORAGE.

Commodities are stored with a view to (1) adjusting the flow of supplies to demand, (2) avoiding wastage, (3) prolonging the season, (4) stabilizing the price. An American authority claims the following advantages for the storage of fresh vegetables :—

- (1) Avoidance of surplus.
- (2) Prolongation of fresh food supply.
- (3) Cheapness as compared with canning or drying.
- (4) Lengthening of period of contracts.
- (5) Spreading of money income from eight months to ten or twelve.
- (6) Possible prevention of loss due to yearly gluts at harvest.
- (7) In many years, increase in possible cash returns.

Successful storage is stated to depend on :—

- (1) Good quality and correct stage of maturity.
- (2) Proper handling.
- (3) Correct temperature.
- (4) Maintenance of correct temperature.
- (5) Protection from stagnant or excessively moist atmosphere.
- (6) Proper ventilation.
- (7) Reasonable degree of moisture.
- (8) Proper light relationship, or no light at all.
- (9) Daily management or watchfulness.

Amongst the vegetables stored in America, it has been noted that cabbage, cauliflower, celery and several other crops have better storing qualities if not fully matured. Proper handling should start in the field and particular attention should be given to disease control. Protection from frost or freezing, or from heat or heating, is obtained by correct construction of buildings, pits or cellars. Onions need a dry air, or a small degree of moisture, whilst cabbage and root crops need a fairly moist atmosphere. With celery and onions, greening, or the persistence of green colour occurs, if too much light is given. Roots are generally stored in the dark.

Economic storage depends on

- (1) Climate.
- (2) Time taken in marketing.
- (3) Availability of supplies and regularity of their arrival for consumption.
- (4) Length of the period over which supplies are normally available.
- (5) Nature and degree of perishability of the vegetable.
- (6) Value in relation to bulk.

The climate of this country is such that fresh vegetables of one kind or another can be produced all the year round. Some vegetables are interchangeable. Growing areas are numerous, and the journeys to market are usually covered overnight, or take less than a day. As the English climate is fairly equable, reasonable regularity of supply during the season can be maintained, and the heat is rarely so intense, or the cold so severe, that extreme precautions are necessary to ensure delivery in good condition. Many vegetables, especially when cultivated under glass, enjoy a season of reasonable length, and market supplies are assured at short intervals and often in abundance. The actual date of harvesting can be delayed or hastened at the will of the grower, although the vagaries of the weather may upset his plans. On the whole, therefore, the scope for extended vegetable storage is restricted; most of the crops are highly perishable and a number, in their main season of supply, have a low value in proportion to their bulk. Asparagus, however,

owing to its short season (about 10 weeks out of doors) would probably offer an adequate return for storage over a period not exceeding a few weeks.

Vegetable storage may be considered briefly under the following headings :—

- (1) Storage in production areas :
  - (i) in pits or clamps ;
  - (ii) in sheds.
- (2) Storage during distribution :
  - (i) in open trucks and ventilated vans ;
  - (ii) in warehouses.
- (3) Pre-cooling.
- (4) Freezing.
- (5) Cold storage.
- (6) Processing :
  - (i) canning and bottling ;
  - (ii) brining ;
  - (iii) drying.

#### (1) Storage in Production Areas.

(i) **In pits or clamps.**—Of all vegetables, roots are naturally easiest to store. Some roots will stand more frost than others, for example, parsnips are less susceptible to frost injury than carrots and beetroot; but in any case supplies are more easily handled in clamps during the winter, particularly in frosty weather when the ground is hard. Beetroot and carrots are usually lifted and stored in the autumn. Moderate quantities can be kept in a dry shed and covered with straw or a little sand to prevent undue drying, but this is not usual. In bulk they are stored in low clamps, which should be made on a dry site. Sound roots from which the tops have been removed are stacked to a uniform height and covered with straw, or other light, suitable material (for beet the tops of the plants are often used) and then further protected with several inches of soil. Carrots should be stored in clamps of moderate size, since in large clamps they are more susceptible to heating and decay.

(ii) **In sheds.**—Ripe onions require very different treatment from roots. They should be harvested mature and laid out on the ground for some days until well dried. The conditions most favourable for the decomposition of onions in storage are heat and moisture. Immature, soft, decayed and thick-necked onions should not be stored. At one time well-ventilated lofts or sheds were commonly used in Bedfordshire\* for storing onions (see page 71) but owing to the decreased acreage of the crop such specially equipped sheds are now rarely erected. Abroad, however, special sheds for vegetable storage are common, notably in the Netherlands for cabbages, which are stored to ensure fresh supplies during the winter and

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\* Ministry's Bulletin No. 69 (Onions and related crops), p. 28.



early spring. The cabbages thus kept through the winter are large, hard, firm specimens of the ball-headed type, both white and red. All the outer leaves are stripped off. The sheds are somewhat similar to those of the well-known ventilated apple store. The walls are insulated and ventilation can be controlled both at ground level and in the roof, but air from outside is not allowed to pass in direct, and undesirable draughts are thus excluded. Cabbages are carefully sorted and only good, sound specimens retained for storage. These are piled up about ten layers high. Once a fortnight they are handled and inspected for signs of decay and damaged leaves removed. In England and Wales supplies of savoys, brussels sprouts and other fresh vegetables sufficiently hardy to withstand the home climate are obtainable throughout the winter.

Great importance is attached to the storage of onions in "rens" in the Netherlands,\* notably in Zeeland and the South Holland islands. A "ren" is a simple, shed-like structure of laths and wire netting. The roof is thatched, but apart from this the onions are exposed to the elements except in frosty weather, when the sides of the "rens" are covered with straw. Sweating, with its deteriorating effects, is avoided by the free circulation of air thus ensured. This method of storage has been largely responsible for the prolongation of the Dutch marketing season, which enables onions to be exported from Holland in varying quantities throughout the year.

## (2) Storage during Distribution.

(i) **In open trucks and ventilated vans.**—Wholesalers seek to avoid gluts by warning senders of produce when markets are over-stocked, but in spite of this supplies may continue to come forward for which there is no immediate demand. Such produce, e.g. cabbages and celery, arriving by rail is sometimes unavoidably held up and left in the wagons for a day, or perhaps longer, by the consignees in the hope that market supplies will diminish and demand improve.

(ii) **In warehouses.**—Most kinds of imported fresh vegetables are highly perishable, and the need for special storage accommodation does not usually arise except with onions which are stored at ports and by railway companies in certain important areas of consumption (see Chapter XIV (3), page 122 and Appendix XVI). Onions are permitted to remain on the quay at Manchester for five days without charge, after which a package charge of a  $\frac{3}{4}$ d. each package up to 56 lb. and 1d. over 56 lb. per 72 hours is made by the Manchester Ship Canal Company.

Grower-wholesalers usually have little, if any, covered storage accommodation near their market stands for produce remaining

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\* See also Journal of the Ministry, November, 1927, pp. 771-773.

unsold after the day's trading. They are sometimes permitted to leave vegetables on their stands from one day to the next. Merchants generally have warehouses near their business premises, with accommodation for empty returnables and for the temporary storage of roots and other vegetables. Washed carrots and turnips, for which there is a preference in London, are more perishable than unwashed roots, and stocks have therefore to be kept as low as possible. On the whole, the amount of accommodation in the various markets for fresh vegetable storage has in the past been inadequate. There is now a tendency for traders to increase their accommodation.

### (3) Pre-cooling.\*

Gathering vegetables in the early morning whilst the dew is still on them, spraying and immersion in cold water are all expedients adopted for maintaining freshness—an important selling factor—for as long as possible during the marketing stage. Nevertheless, produce such as lettuce and similar salads, spring greens and other leaf vegetables, is liable to lose much of its freshness in the course of distribution. If during the warmer periods of the year such vegetables could be pre-cooled economically and transported in suitable containers which would keep them in good condition, better demand and price might be realised by the specialised producer marketing at long range.

A system which effects this object has recently been evolved in Italy, and is now widely in use on the Italian State Railways. This consists in the use of specially constructed light-weight containers which can be brought, together with the pre-cooling and ice-making plant, right up to the place of harvesting. Repeated handlings are thus avoided and loading under the most favourable conditions ensured. The containers, which can be hermetically sealed, are easily movable even when full. They rest on four legs and can thus be lifted and placed on rollers for transfer to a small motor tractor, or on a petrol or electrically-driven truck which is pushed underneath. Two ice boxes of a capacity of 150 kg. of ice each are fixed below the roof of each container, which is itself insulated with expanded cork slabs. The ice water remains in the boxes at a temperature of about 32° F. To keep the loaded container at a low temperature for several days, a system of pre-cooling is adopted by which cold air is drawn in by a conduit and exhausted through another. The plant, which can deal with six containers at once, consists of an electrically-driven ammonia compressor, tubular condenser with pumps for the circulating water, radiator for the compressor and liquefied ammonia, serpentine evaporator and two electric fans which can be driven in either direction. Pre-cooling operations take several hours. The possibilities of economic adaptation of the system to this country need investigation.

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\* See also § (5) (iv).

**(4) Freezing.**

Runner beans and peas have been preserved successfully in a frozen state at the Low Temperature Research Station at Cambridge\*, and the method is claimed to give better results than canning. During the last two or three years the freezing method of preserving peas has been used commercially in London. Some anxiety has been felt in America† that food poisoning may result from the consumption of frozen vegetables, but recent bacteriological investigations have shown that there is no danger provided the correct technique is used and the products cooked and eaten promptly after removal from storage.

**(5) Cold Storage.**

(i) **Home.**—No extensive experiments have been carried out on cold storage of vegetables in this country. Some, however, are known to respond fairly well; others, e.g. brussels sprouts, have not given such good results. Cold storage has been used commercially in this country for asparagus. With lettuce, however, and a number of other fresh vegetables which have a longer season and are marketed in large quantities daily throughout the warmer part of the year, the need is not nearly so apparent. It has been intimated by members of the trade that cold storage of lettuce would not be profitable in the normal course.

In passenger-carrying steamships vegetables required as ships' stores are customarily kept by this method. Results have not always been satisfactory and experiments were made by the Low Temperature Research Station some years ago to ascertain the possibilities of improvement. It was shown that cabbages could be kept for 5 weeks at a temperature of 33° F. and for 3 weeks at 45° F. Onions kept for 10 weeks at 33° F., turnips for 5, celery for 3 and cauliflowers for 4 at 33° F. and 1½ at 45° F., whilst brussels sprouts only kept from 1 to 2 weeks at 33° F. and for 3 days at 45° F. These periods represent the time over which good edible condition was maintained in storage; since the primary concern was preservation for use on board ship, no critical observations of deterioration after removal from storage were made. It has, however, been suggested that deterioration of cabbage and broccoli would not be unduly rapid after a fortnight in storage at 33° F. Such information is useful when questions of exportation arise.

(ii) **United States.**—Cold storage is used in the United States particularly for celery, lettuce, potatoes, onions, carrots, cabbage,

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\* The Preservation of Fruit and Vegetables by Freezing, J. Barker, M.A. Ph.D., and T. Morris, M.A., Dip.Ag. Low Temperature Research Station, Cambridge, Department of Scientific and Industrial Research, Food Investigation Leaflet No. 2, 1932.

† University of California, College of Agriculture, Agricultural Experiment Station, Berkeley, California. Circular 302, October, 1930. Preservation of Fruits and Vegetables by Freezing Storage: M. A. Jostyn.

cauliflower.\* It is claimed that practically all vegetables can be kept in cold storage for a short period, and for most a temperature of 32° F. is considered best.

The relative humidity of the air in storage rooms has a direct relation to the keeping quality of the products held in them.† Too dry an atmosphere is likely to cause wilting in most vegetables, whilst excessive humidity favours the development of decay, especially where there is a considerable variation in temperature. The relative humidity recommended for certain vegetables, together with the approximate length of the storage period, is shown in the table below. The recommended temperature of the store is in all cases 32° F., except for celery and Jerusalem artichokes, which may be stored at from 31° to 32°.

<i>Commodity.</i>	<i>Relative Humidity.</i>	<i>Approximate length of storage period.</i>
Bunched Beets ... ..	85-90	7-10 days.
Bunched Carrots ... ..	90-95	
Spinach ... ..	90-95	1-3 weeks.
Green Peas ... ..	85-90	
Cauliflower ... ..	85-90	2-3 weeks.
Lettuce ... ..	90-95	
Endive ... ..	90-95	3-4 weeks.
Rhubarb ... ..	90-95	
Asparagus ... ..	85-90	1-3 months.
Green Beans ... ..	85-90	
Topped Beets ... ..	90-95	2-4 months.
Leeks ... ..	85-90	
Celery ... ..	90-95	2-5 months.
Topped Carrots ... ..	90-95	
Salsify ... ..	90-95	3-4 "
Parsnips ... ..	90-95	
Turnips ... ..	90-95	4-6 "
Jerusalem Artichokes ... ..	90-95	
Cabbage ... ..	90-95	5-6 "
Horseradish ... ..	85-90	
Onions ... ..	70-75	

*Cabbages and Carrots* are not usually held in cold storage in quantity, since their values do not justify the expense of handling.

*Celery.*—Much of the late celery grown in the Northern States, notably New York and Michigan, is cold-stored to supply the market till late in the winter, when the competition of new celery from the South makes further holding unprofitable. Considerable quantities from Florida are also cold-stored towards the end of the shipping season from the State and held to supply the market during the summer, or until supplies of early northern-grown stock appear on the market. Celery is best stored at a temperature of 31-32° F. with a humidity of 90-95 per cent. to prevent wilting and with sufficient air circulation to keep the temperatures at the top

\* Vegetable Crops, H. C. Thompson, B.Sc.

† United States Department of Agriculture Circular No. 278 (Commercial Storage of Fruits, Vegetables and Florists' Stocks), September, 1933.

and bottom of the room as nearly equal as possible. Considerable heat is given off by celery because of its active respiration, and the air at the top of a storage room is likely to be 3-4° warmer than at the bottom unless special precautions are taken to avoid such a condition. There should be free air circulation round the crates, and they should not be piled too high. Some growth takes place in storage; the central stalks lengthen considerably, obtaining their food at the expense of the outer stalks and the roots. Blanching of the stalks also takes place in most varieties that are put into storage.

*Onions* are usually held in cold storage from 1st March, since in ordinary storage there is a danger of sprouting after this date. They are stacked off the floor in 100 lb. bags and allowance is made for air circulation.

*Green peas* tend shortly after picking to lose part of their sugar content, on which much of the flavour depends. They cannot be expected to keep in saleable condition for more than 1-3 weeks unless packed in crushed ice, when the storage period may be extended perhaps a week.

(iii) **Germany.**—Experiments were carried out in 1931 to show that cold storage of asparagus is a profitable proposition.\* After eight weeks' storage, the price realised averaged £2 per cwt. against quotations of about 30s. at the time of purchase. The results suggest that fresh asparagus of good quality, undamaged and with firm white heads, can be maintained in perfect condition for five to seven weeks in waterproof wrapping at 0-1° C. in a relative humidity of 90 per cent. Since individual heads began to turn soft on longer storage, longer periods cannot be recommended.† Cooking tests showed that asparagus which had been stored in cellophane for six to eight weeks tasted absolutely fresh. It is, therefore, claimed that cold storage of asparagus offers the possibility of levelling out extreme price fluctuations due to temporary over-supply and that risk of loss can be avoided by the cold storing of unsold produce; it also appears possible to prolong the season for several weeks.

(iv) **Italy.**—About the year 1930, a large cold store was erected at a cost of 14,000,000 lire at Verona‡ for the pre-cooling of fruit and vegetables intended for export. The building has three tiers and is over 400 feet in diameter and about 100 feet in height. Its circular shape gives the maximum internal area combined with the minimum outside surface and loss of coldness. Delivered fruit and vegetables may be packed for export in large airy halls into which railway wagons can travel; goods already packed may be

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\* *Blätter für Landwirtschaftliche Marktforschung*, March, 1932.

† Heavy manuring with nitrogen alone diminishes the keeping qualities of asparagus.

‡ "Modern Transport", 2nd August, 1930; also *Blätter für Landwirtschaftliche Marktforschung*, September, 1930.

transferred direct from wagons into the cold chambers. Produce intended for export is inspected in the building by Government officials. It is graded and packed according to the demands of the various countries of destination. The temperature of the eight cold storage cells, each of which can contain up to 200 tons of goods, is maintained at about freezing point. Produce is kept in the cells for about twenty-four hours. Railway wagons are pre-cooled in adjoining tunnels. The cooling of the cells and tunnels is carried out by chilled air drawn through spacious air ducts. A door leads out of each cold storage cell and tunnel on to the central turntable, which accommodates two trucks at a time and occupies practically the whole of the central hall, eighty feet in diameter. There is an ice factory on the first floor from which incoming railway trucks, standing in the main gallery below, can be loaded with ice.

### (6) Processing.

Storage in the wider sense of the term may include processes such as canning, brining and drying. In past years this country has largely depended on imports for its requirements of processed vegetables, but the value of imports has dropped, probably by over 20 per cent., in recent years.\*

(i) **Canning and bottling.**—The increasing importance of the canned vegetable industry at home has some bearing on the storage problem, particularly as regards fresh green peas, since producers of peas for market have now the opportunity to grow them on contract for canners. On the other hand, many of the varieties grown specially for canning are small-podded, and owing to the extra cost of hand-picking, unsuitable for the fresh pea market. For canning purposes, the pods are stripped from the vine and the peas shelled by machinery; machine stripping will not do for the fresh market, since damage to the pods is inevitable. Canned fresh peas compete to some extent with peas in pod during the harvesting period, largely because the canned article can be more quickly prepared for the table. They also compete with fresh vegetables marketed at other times of the year. Peas are by far the most important vegetable canned in this country; the output in 1932 of canned fresh peas has been put at 210,000 cwt. and of canned dried peas at 445,000 cwt. The quantity of canned green beans, carrots, celery, spinach and other vegetables was small in comparison.

(ii) **Brining.**—Cauliflowers are the chief home-grown vegetable used for brining. Supplies of onions used for this purpose are relatively insignificant. Vegetables for pickle manufacturers are usually grown on contract, but probably less than 4 per cent. of home-grown cauliflowers are used for pickling. With the advantage of tariffs home growers, by using improved varieties and studying the requirements of the trade, should be able to supply all the cauliflowers and broccoli required by manufacturers.

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\* See also Chapter III.

(iii) **Drying.**—Home-grown herbs, such as sage and thyme, are bought, to some extent, by manufacturers for drying. The demand for these and for other dried vegetables used, e.g., in soup-making, is small but could probably be expanded. During the last few years the technique of drying has been closely studied and a better article with a more natural colour can now be produced.

## PART IV.—TRANSPORTATION

### CHAPTER XII.—TRANSPORTATION IN ENGLAND AND WALES. (I) RAIL.

Most vegetables consigned by rail are carried by goods train. Some, however, such as watercress, asparagus, mushrooms and mustard-and-cress, usually go by passenger train.

Traffic for distant markets to which the necessary transport facilities cannot be provided by goods train may have to be forwarded by passenger train to reach the market in time. If the rates by passenger train should be prohibitive for the distance, the marketing area for the particular produce is in consequence curtailed.

Growers or packers usually arrange transport to the station. Exceptions occur in special districts where the railway companies provide a farm collection service. Senders also attend, in many cases, to the actual loading of the produce into the wagons, although assistance may be given by railway employees.

#### (1) Facilities.

(a) **Goods Traffic.**—(i) **Loading and dispatching.**—Loading facilities at the more important dispatching stations seem to be satisfactory and adequate for the needs of an extensive traffic. At one station it has been noted that 214 wagons containing 18,367 packages were loaded, and between 7,000 and 8,000 empties received in the course of a day. At the same time four motors and nine horse teams were provided to collect produce from within 12 miles of the station.

Though ordinary open trucks without vacuum brakes are in use throughout the country for vegetable transport, special covered and ventilated wagons fitted with vacuum brakes are often provided, especially for long distances; about 80 per cent. of the wagons conveying vegetables from one important area are of this kind. Clean ventilated cattle wagons are also used, though in some districts only when special wagons are not available. For leafy vegetables, such as cabbage or lettuce, covered ventilated wagons are generally preferable. 100 bags of cabbage or 120 bags of peas or 250 to 300 bundles of celery or from 130 to 200 dozen cos lettuce may be loaded in a truck.

The system of loading may have a considerable influence on the prices realised. Experienced loaders have found that produce travels better and is less liable to "heating" and other damage if stacked in the trucks in a particular way. For example, celery when loaded loose in trucks frequently gets heated and may become too hot to handle with comfort, whilst if blight is present it will deteriorate rapidly; it should be stood on end with the leaves



upwards and the tops as far as possible level. Bags of peas, again, are best stood on end at an angle and stacked mouth downwards; they arrive in better condition if the wagons are not sheeted.

The hour at which goods yards are closed for traffic varies at different stations. At certain places exception has been taken to the relatively early closing time, and it has been pointed out that if harvesting goes on till later in the day the produce must go by road. In recent years, however, the railway companies have, in a large number of cases, found it possible, by expediting the running of the vegetable trains, to extend considerably the time during which the yards are open.

In a specialised area where vegetables are grown in substantial quantities, there are usually one or more stations at which special facilities exist for the dispatch of produce by express goods train to some of the more important markets. During the busy season special trains are run for a number of different crops, e.g., for Cornish and Kentish broccoli, green peas from Essex and Yorkshire, cabbage from Lincolnshire and rhubarb from the West Riding of Yorkshire. There are also fast goods services running regularly between certain points. The North East Coast Service from the Vale of Evesham is an illustration of the way in which an efficient railway service can widen the area of distribution.

Provided a minimum load of 10 cwt. is consigned, arrangements can sometimes be made at the specially equipped stations for through trucks to a particular consuming centre. If road and rail transport in large producing areas could be judiciously co-ordinated so that more produce was assembled at one or two such stations, the railway companies might conceivably provide further facilities. It is particularly important that produce travelling during the night should be available for purchase by retail buyers by 5 or 6 a.m. at latest next morning.

(ii) **Receiving.**—From time to time traders complain of the late arrival of vegetable traffic at markets. It should be stated, however, that complaints have become less frequent, and the companies have shown themselves anxious to overcome the difficulties: e.g., to ensure that forced rhubarb consigned from Leeds arrives at an important consuming centre in the Midlands in time for the early morning market, the company unloads the produce at a station about 14 miles away and transports it to the market by road. Delays occur through various causes not connected with the railways, and the following may be mentioned as examples:—

(1) Insufficient notice. To ensure adequate wagon supply and service arrangements, growers should endeavour to keep the companies well informed as to probable loadings.

(2) Holding up of supplies at a railhead centre until salesmen have cleared some of the trucks on hand.

(3) Congestion at a market owing to lack of proper accommodation for vehicles to draw up promptly alongside traders' stands.

(4) Delay, e.g., in London, caused by waiting for salesmen's premises to open; a list has to be kept showing the times at which various firms open their premises.

(5) Delay in despatch of traffic from loading stations through growers or merchants not handing in consignment notes sufficiently early to enable the wagon to leave at the scheduled time.

Although the companies cannot guarantee any specific time of arrival at destination stations of vegetables conveyed by goods train, it is well to emphasise the importance of early morning delivery at the various markets. When home-grown produce, broccoli for example, is delivered on the markets late in the morning, a salesman may be obliged to sell foreign; the home produce may remain unsold till the following day and in the meantime suffer deterioration and loss in market value. The wholesale distributor may also be a sufferer, since the custom of one of his best buyers may be lost when produce does not arrive in time.

*London area.*—The greater part of the vegetables consigned to London by Southern Railway goods trains comes from Kent. A special service of market trains has been designed to ensure the several services reaching Blackfriars Depot between 10.30 p.m. and 2.15 a.m. The traffic is unloaded at Blackfriars Goods Station from trucks on the high or low level according to the volume of traffic. All consignments are carted by the Company and taken direct to salesmen in the various markets, roughly in the proportion of 70 per cent. to Covent Garden, 20 per cent. to the Borough and 10 per cent. to Spitalfields and Stratford. As far as possible, one vehicle is allowed for each consignee. The Agent is advised every night of the probable amount arriving for delivery early the following morning, and arrangements are made to obtain the necessary labour and vehicles. In 1933, 32,234 tons of fruit and vegetables were dealt with at this station. Goods traffic from Sussex is unloaded at Bricklayers Arms and distributed by the company to Covent Garden, Spitalfields and the Borough.

Market produce received by the Great Western Railway in London is unloaded at Paddington Goods Depot. A large sum has been expended since 1927 on improvements at the goods sidings and approaches of the Great Western Railway Co. at Old Oak Common. The main vegetable traffic consists of broccoli and cabbage. In 1933 the quantity of vegetables\* unloaded at the Paddington depot was about 6,000 tons.

King's Cross, Stratford Market, Bishopsgate and Farringdon Street are amongst the most important London and North Eastern Railway depots. King's Cross is used both as a market and as a

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\* Excluding potatoes.

centre for consignment to other London markets. About 30 salesmen, tenants of the company, are supplied with accommodation in the market. There are about 40 warehouses, each with sufficient rail space to accommodate three or four trucks. The chief vegetables\* handled by the tenants are celery and peas. Fifty merchants, who have no accommodation at the market, receive consignments of vegetables at this depot for sale elsewhere. 250 trucks can be unloaded at the same time, whilst the total number of trucks that can be accommodated for vegetables, exclusive of rhubarb and certain others which are unloaded in the "packed" goods shed, is 500. All loose and bulky vegetables are dealt with in the "unpacked" yard. The quantity of vegetables\* handled in 1933 was over 27,000 tons. A large proportion of this quantity represented celery from the Isles of Ely and Axholme. This arrives in open trucks unsheeted. On some days during the height of the season 200 trucks of green peas may come in, chiefly from Lincolnshire and Yorkshire. Special pea trains from Yorkshire are run into this depot. Other vegetables unloaded in the "unpacked" goods yard are cos lettuce from Lancashire, loose cauliflowers from Lincolnshire and smaller quantities of other vegetables from Bedfordshire, Cambridgeshire, Yorkshire, and elsewhere. Forced rhubarb, as well as a few mushrooms and other non-bulky vegetables, are dealt with in the "packed" goods shed†.

Supplies of vegetables received at Stratford Market‡ depot are sold on the spot before being distributed. Vegetables for Stratford Market are drawn from the Eastern Counties. About 75 per cent. of these are packed, but a quantity of cabbage, cauliflower and bundled celery is received loose in trucks. In 1933, over 28,000 tons of vegetables\* were received by rail; the figure for November was about 3,300. Some vegetables also come to the market by road.

Vegetables received at Bishopsgate are consigned to one of the three chief London markets, viz., Covent Garden, Spitalfields and the Borough. In addition to imported vegetables received via Harwich, large quantities of home-grown produce from the Eastern Counties are dealt with. In the year 1933, over 30,000 tons of vegetables\* were received, including nearly 3,000 tons of green peas. The company carts 75 per cent. of the green pea traffic and 50 per cent. of the rest. The distance to Covent Garden is about 2½ miles, and over this distance the company's charges compare favourably with those of firms ready to contract for the transport of the produce. Owing to the quantities handled, the company has to keep a large number of vehicles on hand for cartage. The average number of trucks of vegetables\* received on the chief market days in that year was 91. The inwards vegetable trains are booked to arrive at this depot from midnight up to 6 a.m.

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\* Excluding potatoes.

† Further information on King's Cross Market will be found in Economic Series No. 26.

‡ Described in Economic Series Nos. 15 and 23.

During 1933, over 6,000 tons of vegetables\* were received for distribution at Farringdon Street. The heaviest month was July with about 1,200 tons, and the lightest December with about 300. Bedfordshire produce, particularly brussels sprouts, accounts for much of the vegetable traffic. The proportions\* for the various markets in 1933 were roughly as follows:—

	<i>per cent.</i>
Spitalfields ... ..	45
Borough ... ..	39
Covent Garden ... ..	13
Stratford ... ..	3

The Company deliver to traders' premises 20 per cent. of the total\* received at the depot.

The London, Midland and Scottish Railway Company deals with vegetables for the London markets at its depots at Somers Town, Shoreditch, Worship Street, Camden, Commercial Road and St. Pancras.

The Somers Town depot is chiefly a potato market, but 4,000 tons of vegetables were received from Bedfordshire in 1933. Brussels sprouts from Bedfordshire make an important contribution. From time to time celery is received from Cambridgeshire, savoys from Lancashire, and other vegetables, including cabbage and peas, from Lincolnshire.

At the depot at Shoreditch vegetables are received chiefly from London Midland and Scottish stations in the Bedfordshire market-gardening area. No loose produce is accepted. Probably 50 per cent. is consigned to Spitalfields. The Shoreditch and Worship Street depots work largely in conjunction. The latter receives vegetables from Bedfordshire, Lancashire and Yorkshire. Over 6,000 tons were received at the two depots in 1933.

At Camden approximately 50 tons of vegetables were received in 1933. Produce is drawn from Bedfordshire and the Ormskirk savoy area, chiefly on behalf of salesmen in Covent Garden, Spitalfields and Borough Markets.

The Commercial Road depot received about 300 tons in 1933. The Southend area is the most important source.

*Other distributing centres—Swansea.*—It has been estimated that the total quantity of vegetables\* received at Swansea by rail as goods traffic is approximately 140 tons a week towards the end of January. Goods traffic by the Great Western Railway is unloaded at Hafod Yard, which is about half a mile from the premises of fruit and vegetable merchants in Alexandra Road. The merchants collect the traffic from the depot themselves between 7 and 7.30 a.m.

*Newport, Mon.*—Seventy-five per cent. of the vegetable traffic from London, and 50 per cent. of that from all sources to Newport,

\* Excluding potatoes.

Mon., is station-to-station traffic. Traders can take delivery of their produce at 6 a.m. The Great Western Railway carts less produce for consignees than formerly, but Evesham traffic is still to a large extent consigned at the delivered rate.

*Sheffield.*—The London and North Eastern Railway has a well-equipped goods depot at Blast Lane, a few minutes' walk from the wholesale market. Unloading of vegetables takes place chiefly between 2.30 and 6 a.m. Produce sent by London Midland and Scottish Railway is chiefly received at the City Station, 150 yards from the market. Consignees largely cart their own produce, but the companies cart light, small vegetables as opposed to the heavy and bulky kinds such as celery, cabbage, cauliflowers or savoys.

*Bradford.*—There are goods depots of the London Midland and Scottish Railway at Bridge Street and the Valley. The former deals with produce conveyed over the original Lancashire and Yorkshire Railway as well as the late North Western Section of the London Midland and Scottish. The latter is the depot for the Midland section. The Bridge Street depot is about a quarter of a mile from St. James' wholesale market and the Valley depot about half a mile. The sidings of the London and North Eastern Railway run up close to the wholesale merchants' stands in St. James' market. Both companies charge the same cartage rates from the rail depots to the market. Sometimes cartage contractors are employed to carry produce from the rail depots to the merchants' premises.

*Manchester.*—Oldham Road and Ancoats are the two London Midland and Scottish Railway goods depots for vegetables at Manchester, and Deansgate and Ducie Street the chief London and North Eastern Railway depots. Full train-loads are received from Bedfordshire and Lincolnshire.

*Liverpool.*—The Great Western Railway unloading depot is at Birkenhead, whence traffic is delivered, either by cart in conjunction with the Great Western Railway ferry service across the Mersey, or by motor lorry via the Mersey Tunnel. The Cheshire Lines Committee has receiving depots for vegetables at Wavertree, Brunswick and Huskisson, and the London Midland and Scottish Railway at Great Howard Street and Edge Hill.

At Edge Hill there is a depot specially set aside for the discharge of perishable traffic. The depot is equipped with three sets of metals in the open and seven under cover. Sufficient space is provided for wagons to be unloaded immediately on arrival. The company delivers to consignees all produce brought into the shed or covered accommodation. The depot is about one-and-a-half miles from Queens Square and two miles from the North Market at Liverpool. Vegetable traffic is received at this depot from Evesham, Pershore, etc., and during the latter part of June large quantities are received daily, arriving early in the morning. Heavy supplies of Cornish broccoli arrive during the season, which is at its height in March; fourteen to fifteen wagons are received

on certain days, also early in the morning. Large quantities of forced rhubarb are received from Leeds. The railway goods service to Edge Hill for vegetables is efficient and the delivery to consignees prompt.

The above are examples of the facilities afforded by the railway companies at receiving centres. Other important centres for vegetable distribution are Birmingham, Bristol, Cardiff, Derby, Leeds, Leicester, Newcastle and Nottingham.

(iii) **Re-consigning.**—A small proportion of vegetable traffic is re-consigned by rail from wholesale markets. This takes place chiefly from London. It has been estimated that in one recent year from one London station alone, the quantity thus distributed amounted to 1,525 tons\*, all from Covent Garden.

Vegetables are re-distributed from London markets throughout the whole of Great Britain, and the kinds dealt with include the following :—

In March, Continental carrots, turnips, broad beans and spinach ;

In April, beans, asparagus, peas, carrots, onions, cauliflowers or broccoli, endive, celeriac, artichokes and lettuce ;

In June, beans, peas and carrots ;

In July, peas, beans, garlic, beetroot, radishes, onions, cauliflowers, spinach, marrows, artichokes and lettuce ; and

In December, cauliflowers from France, endive, mustard-and-cress and beans.

Celery, brussels sprouts and mushrooms are also re-consigned from London markets.

(b) **Passenger Traffic.**—The amount of vegetable traffic consigned by passenger train depends to an appreciable extent on the degree of efficiency of the goods service. In recent years the quantity of miscellaneous vegetables despatched by passenger trains to the chief markets has decreased. Light and highly perishable produce, e.g., watercress, glasshouse lettuce, mushrooms and forced beans, is conveyed by passenger train, and the facilities provided make this a dependable means of conveyance. Passenger train traffic can usually be loaded later in the day than goods traffic.

Vegetables consigned by passenger train from the West Midland market-gardening area include cabbage, brussels sprouts, peas, runner beans, and herbs, and sometimes lettuces, spring onions, radishes, Seville beans, marrows, savoys, parsnips and carrots. Consignments of spring onions are sent, amongst other places, to London and Liverpool, asparagus to London and dwarf beans to Liverpool. Apart from the asparagus traffic, such consignments are often the result of definite orders from retailers and others.

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\* Excluding potatoes.

Vegetables transported from other areas by passenger train include glasshouse lettuce from the Blackpool area to Yorkshire towns; early green peas to certain markets from the Bridgwater pea area, and glasshouse produce such as forced beans and mushrooms from the Worthing area. Watercress is almost invariably consigned by passenger train from numerous stations in Hampshire, Dorset, Hertfordshire and elsewhere. Re-distribution from the London markets takes place to some extent by passenger train.

## (2) Rates.

(a) **Goods traffic.**—Charges for vegetables consigned by goods train are made under one of three main headings as follows:—

- (1) Consignments of 3 cwt. and over at standard rates; consignments of less than 3 cwt. at small parcels scale.
- (2) Consignments carried at exceptional rates.
- (3) Consignments carried at agricultural lists rates.

Produce consigned at the standard rates under the classification set out in "General Classification of Merchandise, January, 1934", is carried at Company's Risk. Exceptional rates have been introduced from time to time for regular and substantial consignments between specific points. Particulars of the Agricultural Lists are given in "Conveyance of Agricultural, Farm, and Dairy Produce by Goods Train", Great Western Railway, December, 1932. The Southern Railway also have a special Fruit and Vegetable Tariff operating from stations in Kent and including delivery to the London markets. Particulars of this tariff are contained in a pamphlet published by the company in 1930. The London, Midland and Scottish and London and North Eastern Railways have also introduced exceptional rates, i.e. they have met the need under (2) above rather than (3).

Vegetables carried by goods train are largely consigned under one of the Classes 8 to 14. Class 8 is applicable to consignments of four tons and upwards and includes root vegetables (not bunched), such as onions, beetroot, turnips, swedes, carrots and parsnips. Rates in this class are usually station-to-station rates. Class 9 includes celery consigned in four-ton lots. Class 10 is applicable to certain vegetables in quantities of two tons and upwards, including celery, parsley, lettuce, savoys, peas, spinach, cabbage, runner beans, brussels sprouts, rhubarb, cauliflowers, broccoli, radishes, spring or green onions, leeks, broad beans, French or kidney beans and marrows. Class 10 standard rates apply with station-to-station conditions; exceptional rates sometimes include cartage at one or both ends of the journey. Class 12 includes certain vegetables in consignments of not less than 20 cwt., or on which the charge for 20 cwt. is paid. Class 14 includes certain vegetables despatched in quantities less than 20 cwt. (subject to the small parcels scale). Any quantity of onions and parsnips of 3 cwt. and upwards may be consigned in Class 12, although a similar weight of cabbage (i.e.,

under 1 ton) would be consigned in Class 14. Asparagus, sage, mint and thyme are consigned in Class 18 and mushrooms in Class 19.

Class 8 rates are at present made on the following basis :—

	<i>Per ton per mile. d.</i>
For the first 20 miles ... ..	3·20
For the next 30 miles ... ..	1·90
For the next 50 miles ... ..	1·45
For the remainder of distance... ..	1·00

A terminal charge for each end of the journey is made at the rate of 1s. 2d. per ton.

Other charges include 5d. per ton for loading.  
5d. per ton for unloading.  
3d. per ton for sheeting.

To show the differences in respect of consignments of vegetables transported under different classes between the same two points, the following example may be taken :—

*Rates for vegetables by goods train from Evesham to South Shields (232 miles).*

	<i>Per ton. s. d.</i>
Class 8, in four-ton lots, station to station ...	29 8
Class 9, in four-ton lots, station to station ...	33 7
Class 10, in two-ton lots, station to station ...	36 6
Class 12, in one-ton lots, delivered rate ...	46 3
Class 14, in less than one-ton lots and of, or over, three cwts., delivered rate ... ..	57 4
Class 18, any quantity ... ..	73 2
Class 19, any quantity ... ..	89 9

Owing to the revision of rates on January 1, 1928, standard rates for vegetables are often actually below the exceptional rates previously quoted. Exceptional rates are, however, still in use for certain vegetables at some of the principal despatching stations. Examples of the charges made for the transport of vegetables by goods train between certain selected points are shown in Appendix XV.A.

The Great Western Railway Agricultural Lists rates are appreciated by senders, and their value compared with the standard charges is illustrated by the following examples, which show the cost of sending varying quantities of cabbages, carrots, onions, parsnips, turnips, artichokes, beans, beetroot, broccoli, brussels sprouts, cauliflowers, celery, endive, horseradish, lettuce, peas, radishes, rhubarb and seakale, from a West Midland Great



Western Railway Station to another station in South Wales, not served by any other company :—

Distance : 83 miles.

Weight of vegetables consigned.	Agricultural Scale rates, including delivery within usual limits.	Standard rates, including delivery within usual limits.	Class in which vegetables are consigned when despatched under the standard rate.
	<i>Per ton.</i> <i>s. d.</i>	<i>Per ton.</i> <i>s. d. s. d.</i>	
10 cwt. ... ..	23 5	*28 0 or 32 3	*12 or 14
1 ton ... ..	22 1	28 0	12
2 tons ... ..	20 9	22 7.	10
3 tons ... ..	19 5	22 7	10

\* Beetroot, carrots, celery, onions, parsnips and turnips only.

Since January 1, 1933, most outdoor-grown vegetables have been included in one list for the purposes of the Agricultural Lists rates.

In addition to the above mentioned headings under which vegetables may be consigned by goods train, reference should also be made to what is known as the composite rate system of charging. These rates have operated between various points since February, 1928. They cover a number of crops, including vegetables normally grouped in different classes. The main object of introducing them was to meet the competition of road transport. The composite rate for produce sent to Leicester from London, Manchester and Liverpool covers onions and various fruits. The two-ton station-to-station rate from Liverpool to Leicester is 22s. 3d. per ton, carted in Leicester only, and from Manchester Docks to Leicester 19s. 1d. per ton, carted in Leicester only; from London to Leicester the two-ton rate is 30s. per ton collected and delivered. These low rates are designed to assist merchants who wish to reconsign imported and other produce in one lot from market to market.

A consignment of vegetables from London to a town in South Wales in April included 15 crates of lettuce weighing 1 cwt. 3 qrs. 14 lb., two boxes of salads weighing 2 qrs., two boxes of rhubarb weighing 1 cwt. 2 qrs., and a further five packages of rhubarb weighing 3 cwt. 3 qrs.; these were consigned at the rate of 26s. per ton. In November, 38 nets of savoys (weighing 12 cwt.) despatched from a West Midland station to the same town were consigned at the rate of 24s. 6d. per ton.

It is said that about 80 per cent. of the vegetables consigned by goods train from one West Midland station (from which market garden produce is chiefly despatched) is sent to market at Class 14 rates (quantities of less than a ton), 10 per cent. at Class 12 rates

(minimum one ton), and the remaining 10 per cent. at Class 10 rates (minimum two tons). There is thus scope for economy in freight rates if senders can bulk produce intended for the same markets at certain selected despatching stations. (See remarks on the bulking scheme of the Worthing District Growers Ltd. Appendix XIV.)

*Consignments of less than three cwt.*—Charges for these are based on the companies' Small Parcels Scale. The freight rate per ton is that applicable to traffic in less than 2-ton lots, an additional charge per consignment being added as shown below :—

<i>Rate not exceeding :—</i>	<i>Additional charge per consignment :—</i>
10s. per ton ... ..	4d.
20s. per ton ... ..	5d.
30s. per ton ... ..	6d.
50s. per ton ... ..	7d.
70s. per ton ... ..	8d.
100s. per ton ... ..	9d.
Exceeding 100s. per ton ... ..	10d.

When traffic is consigned to be carted by the railway company, the appropriate tonnage charge for cartage is added to the rate, plus a surcharge of 1d. per consignment in respect of each end of the journey.

*Returned empties.*—Charges for returned empties used for vegetables are made in either Class A or Class C. Both are station-to-station rates. Class A includes bags and Class C all other packages, including mats, nets and wicker hampers. The charges are as follows :—

<i>Distance in miles.</i>	<i>Class A. Class C.</i>	
	<i>Per cwt.</i>	<i>Per cwt.</i>
Not exceeding 25 ... ..	1½d.	3d.
25-50 ... ..	3d.	6d.
50-100 ... ..	6d.	10d.
100-150 ... ..	8½d.	1s. 3d.
150-200 ... ..	11d.	1s. 6d.

For empties carted in London under Class C an additional 5d. per cwt. is charged (2d. in other areas). Branded bags weigh approximately two pounds each and are generally packed in bundles of fifty.

(b) **Passenger traffic.**—The classification of vegetables for conveyance by passenger train is shown in the "Book of rates applicable only to merchandise by passenger train or other similar service, Part II, Scales and Charges," Railway Clearing House, 1st January, 1928. Vegetables are included under Division II, Sections 2, 3 and 4. Section 2 covers endive, green herbs, mint, rhubarb, and vegetables (not hothouse) including beans, marrows,

mustard-and-cress, peas and watercress, Section 3 asparagus, blanched chicory, mushrooms and seakale, and Section 4 hothouse vegetables not provided for elsewhere.

All vegetables sent by passenger train go under one or other of these headings at the Standard or Exceptional Owner's Risk rates unless the weight of the consignment is such that charges at the General Parcels Scales work out more cheaply. The cost of sending small consignments by passenger train is in certain cases very low: for example, the charge for a "flat" of asparagus (about 35 lb.) from Littleton and Badsey (Worcs.) to London by passenger train is about 1s., or less than the goods train rate. Certain merchants have arranged for bulking of asparagus at this station, and more is now sent by passenger train than heretofore, since by this method of bulking the asparagus costs proportionately less in freight than if conveyed in small quantities, and arrives earlier at the market.

Examples of charges for vegetable traffic, carried by passenger train between certain places in Great Britain, are shown in Appendix XV B.

## CHAPTER XIII.—TRANSPORTATION IN ENGLAND AND WALES.

### (II) ROAD AND WATER.

#### (1) Road.

(a) **General.**—Mechanical road transport for vegetable marketing has made great strides in this country since the war. It is recorded that the produce of at least two growers in the London area was being taken by motor lorry to Covent Garden as early as 1906. A firm in the Swanley district of Kent started in 1915; it was not until 1920, however, that several haulage firms with headquarters in production areas began to take vegetables regularly to market.

Some companies specialising in vegetable transport have a number of lorries in continuous use for the purpose; a large firm may employ 20 to 30 or more. Such firms cater chiefly for large growers who can maintain a regular flow of direct-to-market consignments. Other companies send light lorries round to collect produce from farms, assemble it at their depots, and take it in heavier lorries to the market. Empties are carried on the reverse journey, and where possible return loads to production areas are arranged. In some districts railway companies have provided a road collection service for growers.

Illustrations of the extent and diffusion of the motor transport are its widespread use for carrying vegetables from Bedfordshire and other areas round London; its use for peas from the Leeds area to Liverpool (about 80 miles), from the Chatteris area to Sandy (about 30 miles) for loading on rail for Scotland by express goods service, and for 20 per cent. of peas from the Selby district

of Yorkshire; for spring cabbage from the Lancashire areas to markets or consuming centres in the county; for 30 per cent. of the vegetables bought at Pershore, for 20 to 30 per cent. of those arriving in Birmingham, and for the bulk of the crops grown in the Tamworth area of Staffordshire for Birmingham and other markets.

In certain areas wholesalers rely largely on road transport for distribution to retailers: Bournemouth merchants, for example, distribute by road a large percentage of the vegetables they sell. In a scattered area the distance thus covered in a day may be considerable; one Midland wholesaler has distributed by road within a radius of 50 miles from his headquarters. Wholesalers who distribute vegetables at a distance may return with produce of other kinds for sale.

(b) **Types of vehicle and costs.**—For vegetable transport the usual range of carrying capacity is from 1 to 6 tons. The lighter vehicles are more often used for transport to railway loading stations, road collection depots or nearby markets; they are also largely used by retailers. The heavier vehicles are used particularly between holdings of substantial size and the markets, and also by wholesalers between one town and another. Racks are often fitted to these lorries; these facilitate the loading of produce—which can thus be carried more securely and in larger quantities—and of returnable empties. There is now a tendency for road haulage companies to use faster lorries of 3-4 tons carrying capacity in place of the slower, larger vehicles with solid tyres previously in use. The smaller vehicle operates on a lower overhead cost and saves time in collection, while its smaller carrying capacity is not a disadvantage of sufficient importance to offset the higher legal speed limit.\*

Examples of possible loads for lorries of various capacities are given below:—

<i>Tonnage.</i>	<i>Load.</i>
1	70 to 80 bushel boxes of lettuce, or 60 dozen savoys.
1½ to 2	200 dozen early spring cabbage.
3	200 dozen fully-grown spring cabbage.
4	280 bushel boxes, 420 cabbage lettuce crates, or 165 2-bushel boxes.
5	280 bags peas, or 180 bags cabbages.

The following load has been carried in a 5-ton lorry: 100 28-lb. bags of brussels sprouts, 30 cwt. bags of potatoes, 20 (about 40 lb.) bags of beans, 20 80-lb. mats of marrows, and 40 56-lb. bags of carrots and turnips.

The following table of operating costs for various types of vehicles is published by permission of the "Commercial Motor."

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\* Under the Road Traffic Act, 1934, the speed limit for vehicles up to 50 cwt. unladen weight, fitted with pneumatic tyres, is 30 m.p.h., whereas 20 is the limit for pneumatic-tyred vehicles of greater unloaded weight (special conditions apply if a trailer is attached).

Table of operating costs for all types of Vehicle.

		Running Costs (Pence Per Mile).						
		15-cwt.	1-ton.	1½-ton.	2-ton.	3-ton.	4-ton.	5-ton.
Fuel	...	0.75	0.89	1.07	1.15	1.50	1.88	2.30
Lubricants	...	0.03	0.04	0.04	0.05	0.06	0.08	0.08
Tyres	...	0.30	0.35	0.40	0.45	0.54	0.70	0.80
Maintenance	...	0.40	0.55	0.70	0.75	1.00	1.10	1.15
Depreciation	...	0.33	0.36	0.38	0.50	0.75	1.06	1.14
Totals	...	1.81	2.19	2.59	2.90	3.85	4.82	5.47

		Standing Charges (Pence per Week).						
Licences	...	96	96	120	144	144	240	336
Wages (48 hours)	...	600	672	672	720	792	864	864
Rent and Rates	...	66	72	78	90	96	138	138
Insurance	...	84	96	108	120	120	120	120
Interest	...	30	38	40	52	90	110	120
Totals (48 hours)		876	974	1,018	1,126	1,242	1,472	1,578

Operating Costs in Pence per Mile.  
(Various weekly mileages).

Miles per week. (48 hours).								
100	...	10.57	11.93	12.77	14.16	16.27	19.54	21.25
200	...	6.19	7.06	7.68	8.53	10.06	12.18	13.36
300	...	4.73	5.44	5.98	6.65	7.99	9.73	10.73
400	...	4.00	4.63	5.14	5.71	6.95	8.50	9.42
600	...	3.27	3.81	4.29	4.78	5.92	7.27	8.10
800	...	2.90	3.41	3.86	4.31	5.40	6.66	7.44

The table represents actual costs of vehicles operating under many different conditions. The fuel costs are calculated on the basis of a petrol price of 1s. 3d. a gallon. For every 1d. over or under that price the figure for fuel cost must be increased or decreased by one-fifteenth. The third section, "Operating Costs in Pence per Week (Various Weekly Mileages)" is calculated from the first and second categories. For a given weekly mileage the total cost in pence per mile is reached by dividing the total standing charge by the weekly mileage and adding the result of that calculation to the total running cost.

For delivery of market traffic from various railway stations to wholesale markets in the vicinity, the charges made by one of the railway companies have been stated as follows:—

In places other than London.	Per ton.
In all of the classes 7 to 10 (station to station traffic) ...	2s. 11d. to 3s. 4d.
Classes 11 to 16 ...	2s. 6d.
Classes 17 and 18 ...	3s. 4d.
Classes 19 and 20 ...	4s. 2d.

<i>Cartage rates in London.</i>	<i>Per ton.</i>
Classes 7 to 13 ... ..	5s. 10d.
Classes 14 to 18 ... ..	6s. 8d.
Carrots and turnips in sacks or bags...	5s. 4d.
Loose vegetables, minimum 1 ton, no handling or unloading by the Railway Company ... ..	10s. 0d.

Vegetables intended for Spitalfields Market and received at certain railhead depots in London are transported from the depots to the market entirely by road haulage contractors. The contract work is carried out at so much per score of packages, or by tonnage, and one contractor's charges have been quoted as follows:—Hard vegetables (carrots, etc.) 3s. 6d. to 5s. per ton, green stuff 3s. to 4s. per score of large bags, peas 1s. 6d. to 2s. 6d. per score of half bags.

(c) **Road and Rail Transport compared.**—Regular road transport over distances up to 50 miles, or 70 miles for some vegetables, is common. It is claimed that some of the larger lorries used for vegetables can compete with rail up to 100 miles. For distances near the maxima, return loads are necessary if road transport is to pay. It is probable that for some time to come rail transport will as a rule be cheaper beyond the limits given.

Within its sphere of usefulness, road transport has both advantages and disadvantages as compared with rail. These may be summarised as follows:—

*Advantages.*

(1) Reduction in the number of handlings of direct-to-market consignments.

(2) More punctual delivery: a Bedfordshire firm claims that it carried 100 tons of vegetables daily and had not missed a market for three years.

(3) Greater flexibility: e.g. in response to a telephone message sent at 7 a.m. for further supplies, vegetables from the Southend area can be delivered at a London market by mid-day.

(4) On claims for damage, etc., growers not infrequently can obtain redress in direct consultation with the proprietors of road companies.

(5) Extra time may be gained for harvesting during rush periods owing to independence of the closing time of goods yards; it should, however, be remembered that many goods yards are now closed considerably later than before.

(6) Transport of empties from market to producing area may be expedited if they are sent by the lorries which delivered the produce.

(7) For short-range marketing, road transport all the way generally costs less than rail and road combined.

(8) Extension of production : vegetables can now be grown in areas where formerly the long haul to railway stations, together with other transport difficulties, made production unremunerative.

*Disadvantages.*

(1) Road hauliers cannot always guarantee the time of arrival at growers' premises.

(2) When salesmen's stands in the market are full, road vehicles may be detained until buyers arrive. Produce sent by rail, on the other hand, can be left in the trucks until it is needed ; the salesman is thus provided with additional cheap storage accommodation, and the market may be relieved of supplies which, if consigned by road, would have to be dumped on the spot or left outside in the lorries.

(3) Road conveyance necessitates careful tying and roping.

(4) Some markets and market stands are opened up earlier than others. To ensure that a full load is disposed of in good time, the lorry may have to be packed with light, perishable vegetables underneath heavy produce, such as potatoes, which are required by the stands which open up earliest. With a heavy load this may lead to damage and heating in transit.

(5) A salesman's staff may not be large enough to deal with lorry loads as they arrive, and if calls have to be made the same morning at other markets, the resulting delays may severely handicap the hauliers.

Road and rail should be looked upon as supplementary to one another. There is room for more co-ordination between the two, so that produce for distant markets may be assembled at key stations to a greater extent than heretofore.

**(2) Water.**

(a) **Coastal services.**—Bulk conveyance of vegetables round the shores of England and Wales does not take place to any large extent. Two or three companies carry vegetables such as onions and dried peas from Liverpool to South Wales. Parsnips are sometimes carried by boat from Penzance to Liverpool, and Spanish and Egyptian onions from Liverpool to Plymouth and Falmouth. Onions and dried peas are also carried between Hull and Grimsby, in either direction, by companies running daily services. The journey between Liverpool and Swansea via Cardiff takes about 24 hours, and the cost, including terminal charges, is 20s. a ton from quay to quay for onions, plus 3s. 6d. cartage charges in Swansea. Water transport is usually cheaper (by several pence per case for onions) than rail, and is a satisfactory means of conveyance between the ports, particularly for the less perishable vegetables such as ripe onions, topped carrots and parsnips.

(b) **Inland services.**—Inland water services are rarely used for vegetable transport in this country, and then only by growers or

traders in certain favourable positions; e.g., celery grown on certain farms in the Isle of Ely is taken by barge, in loads of 11 or 12 tons, along the rivers Lark and Ouse to the railway station a few miles away.

#### CHAPTER XIV.—TRANSPORTATION OF CONTINENTAL AND OTHER PRODUCE.

This Chapter surveys briefly facilities and rates both for imports into this country\* from the Continent and for transport within Continental countries. It should be borne in mind that conditions obtaining in the various countries are not necessarily the same as at home.

##### (1) Sea Services.

As stated in Chapter III, imported fresh vegetables† other than onions come chiefly from the Netherlands and France, and in smaller quantities from Spain, the Channel Islands, Madeira, Germany, Italy, Belgium and Algeria.

Boulogne and Dieppe are the chief French ports through which the early vegetables ("primeurs") pass, mostly at Grande Vitesse (express) rates. Other ports from which produce has been despatched to this country from France are St. Malo and Roscoff (cauliflower and broccoli), Brest (peas) and Cherbourg (spring cabbage), although recently, owing to lack of support, the service between Cherbourg and Southampton has lapsed. Produce from the Netherlands is shipped at Rotterdam, Amsterdam, the Hook of Holland, and Flushing, and from Belgium at Ostend and Antwerp. Apart from onions and small quantities of certain root vegetables such as carrots, fresh vegetables, owing to their perishable nature, are sent to ports on the eastern and southern shores of England, which are the most accessible to exporting countries (see Appendix XVI).

The sea passages across the Channel and the journeys from Rotterdam and other Dutch ports to London and Hull, etc., are very short. From St. Malo to Southampton the time taken is about 10 hours, and from Roscoff to Weymouth about 15. Produce sold at a Westland (Netherlands) auction in the morning and loaded at Rotterdam the same evening arrives at Hull about noon on the following day. Produce cut very early in the morning in the neighbourhood of Bergen-op-Zoom and despatched to England via Flushing can be received in London the same night. The service from Boulogne to Hull takes about 17 hours, from Hamburg to Grimsby 30, from Rotterdam to Grimsby 16, and from Antwerp to Grimsby 20. Ships carrying perishable produce between Boulogne and Hull are specially built for speed, and all produce is carried on deck. The sea transport from Jersey and Guernsey

\* For convenience the Channel Islands are included in this Chapter.

† See Introduction, p. 1, footnote.



to Southampton and Weymouth is of short duration, and produce is available for sale on the London markets the day following despatch. The journey from Cavaillon and certain other growing areas in the South of France to London takes about three days. Produce despatched early in the day from Perpignan in the South of France arrives at Boulogne little more than 48 hours afterwards, the distance being about 700 miles. The bulk of the Italian cauliflowers consigned to England are sent in trucks with a capacity of 8-10 tons via Chiasso, Bâle and Zeebrugge to Harwich, and the journey to London occupies 4-5 days. Alternative routes available are via Boulogne-Folkestone, Dunkerque-Folkestone and Dieppe-Newhaven.

A quantity of Spanish onions is conveyed from the Valencia district to Liverpool in ships which leave Valencia on Saturday or Monday of each week and take about 5 days on the journey. Each vessel carries on an average 20,000 cases per journey during the season. Ships carrying Egyptian onions from Alexandria run at irregular intervals, being largely dependent on other cargoes such as cotton. The journey to Bristol takes about 16 days. French onions brought to this country by Bretons arrive in small sailing or motor boats and are unloaded at various ports.

### (2) *Transitaires.*

*Transitaires*, or forwarding agents, act on behalf of senders of produce from one country to another. They effect any necessary transfers over the routes of separate railway and shipping companies and attend to the interests of their clients during transit. Produce sent from the South of France to this country is largely handled by these agents, some of whom have premises in London; one or two handle a substantial portion of the traffic. At centres such as Cavaillon, several firms of *transitaires* have representatives who seek traffic for transit to Great Britain over particular routes.

### (3) *Receiving Arrangements by United Kingdom Railways.*

Unloading of perishable vegetables from steamers at the ports of entry\* and reloading into railway wagons has been reduced to a fine art. Large quantities are sometimes received, and special facilities have been provided to expedite their despatch to the various markets. The employees are encouraged to work at high speed. In one case a cargo of 280 tons of broccoli was transferred from ship to rail between 8 p.m. and 6 a.m. Convenient services are provided to connect at French ports with consignments from that country according to requirements. Thus the all-the-year-round daily service from Boulogne to Folkestone gives an arrival in London shortly after midnight, whilst during seasons of heavy traffic, when the French railways work an accelerated service, a special boat connects with evening train arrivals and produce is

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\* Notes on Ports of Entry are given in Appendix XVI.

reforwarded from Folkestone in time to reach the early morning market. Similarly, there is a daily service via Dieppe-Newhaven giving arrival in London for the next morning's market. There are also regular night services, Dieppe-Newhaven and Dunkerque-Folkestone, giving an arrival in London shortly after 8 a.m.

Apart from the port warehouses for such produce as onions and case fruits, railway companies provide storage accommodation for traders at several places inland. Fig. 31 illustrates the London, Midland and Scottish Railway's fruit shed at Camp Hill, Birmingham. This shed is 390 feet long, and has a covered area of 17,840 square feet. The floor is wooden, and sliding doors placed at intervals along the entire length of the shed facilitate entrance and exit. Charges for space are at the rate of 5s. 3d. per square yard per annum.

Vegetables for London sent from France, Spain, Italy and Algiers via Boulogne-Folkestone or Calais-Dover are dealt with at the Southern Railway depot at Gravel Lane. The largest quantities are received in March, April and May. Before the introduction of tariffs the number of packages received sometimes amounted to over 100,000 in a month. The bulk of the traffic is consigned to traders in London, but some is re-directed by *transitaires* to the provinces, where it is received on the morning after despatch from London. Traffic dealt with at this depot can be carted by the Company, but the established practice has been for *transitaires* or the actual importers to make their own arrangements for transfer to markets. Traffic via Dieppe-Newhaven is generally dealt with at Victoria. Produce sent by goods service from Jersey and Guernsey and also from France via Southampton is dealt with at the Southern Railway depot at Nine Elms; traffic by passenger service is received at Waterloo.

Continental traffic received by the London and North Eastern Railway in London from Dutch and Belgian ports such as Flushing, Zeebrugge (train ferry), Hook of Holland, Rotterdam and Antwerp via Harwich and Parkeston Quay is dealt with at Bishopsgate. Such produce is mainly intended for Covent Garden, Spitalfields and the Borough. It is usually consigned at station-to-station rates and carted from the railway terminus to market by road haulage contractors. Continental traffic received by the London, Midland and Scottish Railway at London from Ostend via Tilbury is dealt with at the Company's Commercial Road Depot. The Great Western Railway receives vegetables from France (Roscoff) and the Channel Islands (Guernsey and Jersey) via Weymouth, and the London portion is dealt with at Paddington.

#### (4) Rail Services Abroad.

**France.**—Much has been done by some at least of the French railway companies for the welfare of growers and of the trade in general. Such effort is naturally in the best interests of the



Fig. 31. L.M.S. fruit shed, Camp Hill, Birmingham.

companies themselves. Amongst the claims made by one company in this connection are the following :—

(i) The considerable extension of fruit and early vegetable culture in France during the last half-century has been largely due to the railways.

(ii) Satisfactory conveyance of an increased tonnage of produce over long distances to Paris, England, Germany and Switzerland has been rendered possible by numerous trains and express services.

(iii) The companies have assisted in developing, distributing, and popularising various little-known commodities.

(iv) Horticultural development generally has been encouraged.

The company in question runs its trains as far as possible to suit the needs of consignors and consignees. Some years ago it constructed a series of several thousand special ventilated express wagons. To facilitate the sale of certain vegetables, an end-of-season rate operates for such vegetables as artichokes, cabbages, cauliflowers, beans, peas and salads intended for Paris. In 1923 the company set up a special Agricultural Service Department attached to the Commercial Section. This Department, acting in close association with the French Ministry of Agriculture, has interested itself in agricultural research and education. The company has endeavoured to improve the standard of agriculture, and has undertaken to disseminate information concerning the use of fertilisers, the selection of plants for seed purposes and the prevention of plant diseases. Useful investigational work has been carried out, and provision made for the establishment of nurseries at certain centres to enable growers to buy fruit trees at low cost. Plants and seeds, including many thousands of asparagus crowns and strawberry plants, have been distributed free to encourage their cultivation.

French railway companies have sent representatives to agricultural and horticultural conferences and exhibitions of packages, etc., both in France and abroad.

**The Netherlands.**—Dutch vegetables, particularly when sent on long journeys to foreign countries, are usually transported as Grande Vitesse traffic, but onions, cabbage, carrots and turnips are also sent under Petite Vitesse conditions. The busy period for vegetables is between April and November, when special G.V. trains travel to the principal markets or frontier stations such as Oldenzaal (Bentheim), Groesbeek (Cranenburg), Venlo (Kaldenkirchen) and Nieuweschens (Weener). During the slack period, a conference is held at Rotterdam or Amsterdam with auction authorities, exporters, vegetable merchants and others, to discuss trade requirements and complaints as regards the service.\* Traffic arrangements

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\* A similar conference is held in Germany.

for the season are made and bulletins advertising the services are distributed gratuitously.

For the conveyance of cabbages, onions and lettuces, the Netherlands Railways Company possesses over 2,500 spaciouly built wagons with a capacity of from 15 to 17½ tons. These are adequately ventilated, with adjustable apertures. When supplies of wagons run short, cattle wagons with a capacity of 10 tons are permitted for the transport of cabbage.

### (5) Freight Classification and Charges.

**France.**—Vegetables for consignment by rail at Grande Vitesse rates\* in France itself are classified under two main sections, namely :—

- (i) carrots, cabbage, cauliflowers, pumpkins, turnips, parsnips, leeks and Jerusalem artichokes;
- (ii) mushrooms (excluding truffles), gherkins and others.

Both of these sections are further sub-divided, for the purposes of estimating charges, according to whether the quantity carried is at least (a) 50 kg. (about 110 lb.) or (b) a wagon of 5,000 kg. (say 5 tons).

As regards the general classification of merchandise, there are ten classes, the highest rates being charged in Class I. Vegetables in sections (i), (a) and (b) and (ii), (a) and (b) above are carried in Classes V, VIII, V and VII respectively. The effect of this is that 50 kg. lots of any vegetable are charged at the highest or second highest rates for distances up to 300 km. (about 190 miles) and at the fifth highest for greater distances, whilst 5,000 kg. wagons of (i) and (ii) are charged at the highest and second highest rates respectively, up to 100 km. (say 65 miles) and at progressively decreasing rates over greater distances. A temporary reduction of 20 per cent. on these rates is permitted for journeys over 150 km. (about 90 miles) but this concession is subject to withdrawal in certain circumstances. Under other provisions, the rates on the vegetables in (i) are subject to a further reduction. Certain accessory charges are provided for under Article 25 of the General G.V. Tariff. Special rates apply to cress in lots of at least 100 kg. (about 2 cwt.) from various places in the Oise Department to Paris; to fresh vegetables in 5,000 kg. trucks from Douai and St. Omer to stations on the lines between Lille, La Madeleine and Tourcoing, and in 3,000 kg. (say 3 ton) trucks between various stations in the Departments of Vaucluse and Bouches-du-Rhône; and, with reductions differing for 50 kg. lots and over, and 2,000 kg. (say 2 ton) trucks and over respectively, from any station on the line Agen-Bordeaux to Bordeaux St. Jean for the Halles Centrales.

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\* Transports à Grande Vitesse. Tarif Spécial Intérieur G.V. No. 3 et Commun G.V. No. 103 (Marchandises) le 16 Janvier, 1934.

For transport abroad at G.V. rates\* charges are made according to whether produce is consigned (i) via a frontier station to Belgium, Luxemburg, Germany, Switzerland and beyond or (ii) from any point in France to other countries. Charges in section (i) are for the most part lower than in section (ii). As before, rates are charged under different classes according to the quantity in a consignment and provision is made for certain reductions and accessory charges. Special rates are applicable for cauliflowers in at least 6,000 kg. lots sent from certain stations in production areas to specified frontier stations.

**The Netherlands.**—The railway classification of goods in the Netherlands provides for four different classes, namely, A, B, C and D. Diminishing reductions in charges are made for truckloads of 5, 10 and 15 metric tons. All vegetables are grouped under Class C. Usually Grande Vitesse rates are double those for Petite Vitesse traffic. G.V. vegetable traffic, however, in part loads or full loads, intended for either inland or foreign destinations, may be sent at P.V. rates plus 50 per cent. In certain cases the charges are still further reduced. Special exceptional rates operate for truckloads of cabbages, turnips, carrots, onions and dried peas and beans, conveyed as P.V. traffic.

**Belgium.**—The G.V. or express railway tariff is divided into two categories :—

- (a) general merchandise ;
- (b) perishable goods.

Fresh vegetables are included under (b).

The minimum tariff for over 15 kg. is 9 francs and the charge, e.g. for sending 100 kg. (about 220 lb.) a distance of 50 km. (over 30 miles), is 22·10 francs.

Provided that 5 metric tons† (3 tons for brussels sprouts) are consigned or paid for, fresh vegetables may be transported by G.V. at P.V. rates. The cost is calculated under the P.V. rate of class I, series A. Examples of charges per metric ton are as follows :—

<i>Distance in Kilometres.</i>							<i>Cost in francs.</i>
50	...	...	...	...	...	...	60·90
100	...	...	...	...	...	...	102·60
150	...	...	...	...	...	...	136·90
200	...	...	...	...	...	...	154·90
250	...	...	...	...	...	...	169·10
300	...	...	...	...	...	...	183·40
350	...	...	...	...	...	...	197·60

\* Transports à Grande Vitesse. Tarif Spécial Intérieur et Commun D'Exportation (G.V.) No. 303, le 27 Novembre, 1928.

† Metric ton = 2205 lb.

Another tariff is applicable to *loose* loads of vegetables of different kinds (weight not stated in the bill of lading) forwarded in minimum lots of 5 metric tons or paying for that weight. The cost per metric ton under this tariff for a distance of 50 kilometres is 46 francs.

Other special rates apply to small packages of unpreserved vegetables, witloof chicory for Holland, cauliflowers in lots of 2 metric tons for Holland, cauliflowers and cabbages in lots of 5 metric tons in transit between France and Germany, fresh vegetables and cut flowers sent from Holland to England (20-50 francs per 100 kg.), and fresh grapes and witloof chicory.

Rates from Belgian ports to the U.K. are continually changing to meet special emergencies such as changing rates of exchange, labour costs, requirements of the growers, competition among the various lines, etc. The rate applied in the 1933 season by agreement between the principal regular lines was 86s. 3d. per metric ton for vegetables shipped from Antwerp, Zeebrugge, Ostend and Ghent to London. This price was f.o.b. and was applied to gross weight. The rates charged by other lines are generally lower, but their service is not regular.

Miscellaneous examples of freight rates on produce transported from places abroad are given in Appendix XVII.

## PART V.—DISTRIBUTION

### CHAPTER XV.—DISTRIBUTION (I).—THE GROWER AS WHOLESALE.

Apart from commission salesmen with farms of their own, the grower who finds it possible to wholesale his own produce with success is frequently a market-gardener or large-scale producer growing a fairly wide range of crops; his farm or holding is generally within reasonable road distance of the consuming area which takes his produce, although here and there a direct trade with retailers many miles away has been established.

Sales by the grower acting as his own wholesaler may be classified under four headings :—

1. Yard trade.
2. Sales to nearby retailers.
3. Sales in wholesale markets in consuming areas.
4. Sales to distant retailers and wholesalers.

#### (1) Yard Trade.

Some market growers with holdings of medium or large size, particularly in the outer London area, encourage retailers to buy at their farms instead of in the market. This arrangement sometimes proves satisfactory to both parties. The grower saves transport and market expenses and the retailer may get his supplies in fresher condition and at less cost. Some retail premises, again, are nearer to growers' holdings than to the market. If a retailer's lorry is not large enough to carry all his requirements from market, he may welcome the opportunity to buy direct from a nearby farm. Yard buying may also save the retailer valuable time which would otherwise be spent in the market at a particularly busy hour of the day. Some of the more bulky vegetables, such as cos lettuce, are bought in this way. But the system has its limitations. Some growers have insufficient supplies to provide for a yard trade as well as for a stand on the market, and dispensing with the latter may mean losing touch with current market prices; further, if the grower or a member of his family cannot superintend yard sales, he has to employ a responsible person to undertake the work.

#### (2) Sales to Nearby Retailers.

In areas of consumption where there is no wholesale market place or where the accommodation in the market is cramped, many growers prefer to deal direct with shops rather than utilise the services of a local wholesaler. The decision depends on the variety of crops grown and the size of the holding. In general, only growers with moderate-sized holdings sell in this way; where



supplies are large, a speedier and less expensive method is called for, and sales usually take place through wholesalers or at a grower's hired stand in a wholesale market.

A shop-to-shop trade by growers is common in parts of London, especially the northern suburbs, and in other large towns such as Bath, Birmingham, Bournemouth, Bristol, Burnley, Cambridge, Great Yarmouth, Lincoln, Newport (Mon.), Plymouth, Reading, Southend-on-Sea, Stoke-on-Trent, Swansea, Swindon and West Hartlepool. Competition is sometimes keen amongst growers and merchants alike; thus 32 growers and merchants are said to have called on one Bournemouth retailer in a single day. It has been stated that in the Potteries haphazard shop-to-shop selling by growers helps to depress prices, and at Leeds that the producer gets a better indication of prices by wholesaling his produce on the market.

The number of shops visited by the grower varies with the size of his holding, but a few regular customers are often preferred to many who buy occasionally. In the Bath district, a grower supplying 20 shops has taken about £20 a week; another in the Bristol district who has, amongst others, about ten regular customers, has obtained a weekly turnover of about £100, whilst another at Reading has supplied from 60 to 70 regular customers and taken between £600 and £1,000 a month.

In certain places, growers who take produce to shops for sale on the spot are required to have hawkers' licences. The charge for a licence at Warrington is 1s. a week and at Blackburn £1 per annum. At Exeter a weekly toll, varying with the amount of business done, has to be paid to the local authority. At Derby, growers may not hawk vegetables round to retailers' premises, but may call to take orders for subsequent delivery.

### (3) Sales in Wholesale Markets.

Where wholesale markets exist for the sale of vegetables, accommodation is nearly always provided for growers selling their own produce. At Coventry, however, where commercial production in the immediate locality is small, sales by growers are more or less confined to the growers' society (see Chapter V) established in the market for the purpose. The principal markets are referred to in Chapter XVII.

The number of growers selling in this way varies according to the importance of the market, the facilities offered, the extent of local production, and also the time of year. Thus at Wigan very few growers' vehicles are to be found at a Tuesday market in the winter, but on a Friday during the period April to August the average number may be 40. At Preston about 50 growers sell wholesale in April, and at times up to 90 growers' lorries attend the market. At Birmingham from 70 to 90 vendors bring vehicles into the growers' section, at Derby from 30 to 40, at Birkenhead

from 20 to 30, and at Wolverhampton from 50 to 60. Large quantities of vegetables are sold by growers at Covent Garden, the Smithfield Markets at Birmingham and Manchester, and the North Market at Liverpool. In the last-named market it has been estimated that 80 per cent. of the produce sold in the vegetable section is marketed by the actual producer; in the year ended March 31, 1934, the tolls paid in the section amounted to £7,400.

There is a wide variation in the types of growers who sell produce in this way and in the commodities offered. Some market gardeners in provincial areas with about 100 acres of vegetables will sometimes dispose of 15 to 20 tons a week, representing an annual turnover, in some years, of nearly £10,000. Larger growers in the London area with much greater acreages may market from 15 to 20 tons on an average market day, with an annual turnover of three or four times the figure given above. These are exceptional cases. Many growers in market-gardening areas have holdings of 30 acres or less with no more than about 5 to 10 acres of vegetables, and their turnover is usually less in proportion. Many of the large grower-salesmen at Covent Garden offer a wide range of vegetables, including nearly all the chief market garden crops, together with luxury products such as sea-kale. From time to time several such growers may each offer 2,000 boxes of lettuce alone in the course of a morning. Similarly, a feature of Smithfield Market, Birmingham, is the number of loose loads of cauliflowers brought in for sale in the late summer and autumn. At Manchester, considerable quantities of celery and cos lettuce are sold by growers from Rixton and other adjoining areas south of the city, whilst members of the "Cheshire Side" Association (founded in 1930) bring in all kinds of market garden produce from the districts round Altrincham.

Where a grower, his son, or a partner in the business, cannot sell at the market in person, a whole-time salesman is usually employed. Many growers prefer this to dealing with a commission salesman, believing that sales expenses are lower and average prices higher if they sell on their own. The stand rent and overhead charges of the market commission salesman are, however, often fairly high and he has little inducement to sell produce of low value. (See Chap. XVI (iii) (b) p. 133.)

Many growers' holdings are within about 16 miles of the market centre at which they sell, but greater distances are often covered. Typical journeys are as follows:—from the Melbourne area to Derby and Nottingham, from Morpeth and Hexham to Newcastle-on-Tyne, from Cottingham, Little Weighton and North and South Cave to Hull, from Hartlebury, Ombersley and Wolverley to Wolverhampton, from Hesketh Bank to Blackburn, and from some Bedfordshire farms to London (a distance of more than 40 miles).

Selling expenses at wholesale markets include the rent or toll for a stand or stall, salary of a salesman, costs of repairing returnable empties and renewals, payments to porters and hire of barrows. The charges for accommodation in wholesale markets are dealt with

in Chapter XVII and Appendix XXIV. The salary paid to salesmen varies with the quantity of produce handled; in the London area it may be from £5-£6 a week. The weekly cost of a small stand in a London market, salary of salesmen, wages of a porter and incidental expenses amounted to about £8, with a further £1 a week for upkeep of empties; some growers, however, reckon to make up for losses on their annual empties account by deposits received on empties which are not returned. For the largest growers, sales expenses as specified above may amount to little more than 6 per cent. of the turnover.

Apart from sales by recognised commission agents, who may also be vegetable producers, wholesale sales are undertaken to a small extent by growers on behalf of their neighbours, e.g., in the London area and in East Kent, where vegetables are taken for sale from the production areas to coast towns within easy reach. For this service, apart from any toll chargeable on the produce by the market authority, a charge of 10 per cent. may be made by the grower undertaking the sale.

#### (4) Sales to Distant Retailers and Wholesalers.

Growers who sell to distant retailers are to be found, e.g., in the West Midland areas, where a few have built up a regular trade with retailers situated in various parts of Wales, at Swindon and at Leicester. Only a small proportion of the total supplies is distributed in this way.

The opportunities for direct sale from specialised areas of production to wholesalers in consuming areas are limited, although, other things being equal, the method is preferred by the producer to sale on commission. Growers who sell outright in this way usually work on a substantial scale, maintaining a continuity of supply and keeping up a reputation in the trade for reliability and careful attention to grading and packing.

### CHAPTER XVI.—DISTRIBUTION (II)—SALES THROUGH THE WHOLESALE TRADE.

#### (1) In England and Wales.

Wholesale businesses vary both in size and in type. In size they range from the trade of the greengrocer who buys produce in addition to his own requirements for re-sale to other retailers, to the business of the large wholesale firm with a turnover running into hundreds of thousands of pounds. There is no hard and fast line of demarcation between the different types, but the following classification will be convenient for present purposes:—

- (i) Importers selling by auction.
- (ii) Importers selling by private treaty.
- (iii) Commission salesmen.
- (iv) Wholesale merchants.
- (v) Commission buyers.
- (vi) Others.

(i) **Importers selling by auction.**—Except in a few places, notably Hull and London, the only imported vegetables\* sold by auction are onions. These are disposed of in varying quantities through the sale-rooms at London, Liverpool, Manchester, Hull, Newcastle-on-Tyne, Southampton, Bristol and Cardiff. Firms of brokers who sell onions through the Exchanges number 6 at London, 7 at Liverpool, 5 at Hull and 4 at Cardiff. Frequently part of the value of the onions has to be advanced to the exporters before the goods are shipped. The charges made by brokers at Liverpool for selling Spanish onions amount to about 1s. 5d. a case, including 3 per cent. brokerage debited to the shipper of the onions. The charge also covers dock dues, cataloguing, cartage and sampling, etc.

Soft fruit and vegetables from the Continent are sold by auction at the east end of Riverside Quay, Hull, from June to the end of September or October. Samples are taken from the boats on arrival, and sales begin at about 10 a.m. on Mondays and 1.30 p.m. on Wednesdays and Thursdays. As many as 60 merchants and importers carry on this trade.

(ii) **Importers selling by Private Treaty.**—Apart from the exceptions referred to under (i), imported vegetables are sold by private treaty. Nearly all the onions from Holland and a proportion of the Spanish and Egyptian imports are handled in this way. French onions are to a large extent distributed direct to the consumer by Breton lads, who travel to various parts of Great Britain for this purpose during the season. Onions and other vegetables from Holland are imported direct by wholesalers in all centres of consumption. One of the leading Dutch exporters has intimated that he can afford to handle onions in Holland at a profit of no more than 2d.-3d. a bag. Charges for unloading Dutch onions at Liverpool amount to about 2½d. a bag for portorage and 3s. 4d. a ton payable to the Mersey Docks and Harbour Board for dock and town dues.

Importers of Spanish and Egyptian onions operate chiefly at the ports of entry. At Liverpool there are about 20 who are not members of the "closed room" (cf. Economic Series No. 15, p. 79). Their premises are mainly in and around Victoria Street. They handle a portion of the Egyptian and perhaps 75 per cent. of the Spanish onions received at the port. There are from 300 to 400 members of the Manchester Sale Room, nearly all of whom handle onions. It has been estimated that approximately 50 per cent. of the Spanish onions and 75 per cent. of the Egyptian onions received at Manchester pass through the sale room.

Early French vegetables are chiefly consigned to London and sold on commission at varying charges: 4d. per package market expenses, plus 7½ per cent. commission, have been charged for Nantes carrots consigned to Covent Garden. For vegetables sent direct to the provinces, sales at fixed prices are more usual.

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\* See footnote, Introduction, p. 1.

Cases occur in which Dutch produce is sold on "joint account", i.e., profits and losses are shared by exporter and importer after expenses have been deducted. Good quality produce is often bought outright: a leading Dutch exporter sells onions of a certain standard under his own mark and at a fixed price. Some Dutch merchants send to importers weekly lists of produce on offer, with the prices expected. Highly perishable produce such as lettuce, etc., is often sent on commission: from 60 to 70 per cent. of Westland lettuce sent to this country is so consigned. Extracts from sales notes showing charges by the importer are given below:—

- A. *Lettuce*.—Rotterdam to Bradford.  
Marketing expenses—1d. per crate.  
Commission—5 per cent.
- B. *Lettuce*.—Rotterdam to Manchester.  
Marketing expenses—1½d. per crate.  
Commission—5 per cent.
- C. *Lettuce*.—Rotterdam to Birmingham.  
Porterage—3d. per package.  
Commission—rather less than 5 per cent.
- D. *Lettuce*.—Zwijndrecht to Spitalfields Market, London.  
Tolls, etc.—3d. per package.  
Sale and charges—7½ per cent.
- E. *Radishes*.—Zwijndrecht to Manchester.  
Charges—2d. per package.  
Commission—7½ per cent.

Some of the larger firms in this country have resident agents at centres of specialised production abroad. In France, for example, such agents may be located at Paris, Perpignan, Cavaillon, Nantes and at Roscoff or St. Pol-de-Léon. In that country, however, it is more usual for English firms to be represented by *expéditeurs* or agents, each of whom may act for a number of wholesale houses. These agents usually work on a commission basis, with charges per package varying somewhat according to the value: at Cavaillon the charge usually ranges from 2d. to 3d., but is sometimes more.

Some exporting interests send representatives to arrange for the advantageous distribution of their produce in this country. The representative of a Breton firm of broccoli exporters has resided at a home port during the season, keeping in close touch with the various markets and distributing produce on arrival at the port according to indications of demand.

(iii) **Commission salesmen.**—(a) *Functions.*—Sale on commission is the commonest method adopted by home vegetable growers for disposal to the wholesale trade. The commission salesman acts as an intermediary between vendor and wholesale buyer or retailer when for any reason, such as distance, direct trading is inconvenient. His place of business is in a consuming area. The more important firms usually rely on two or three large growers in the

areas of production from which they have been accustomed to draw supplies; some salesmen on the other hand cater specifically for smallholders. Though the commission salesman may be a grower, buyer of produce and retailer as well, it seldom happens that all these activities are undertaken by one firm. A number of commission salesmen, however, are growers, sometimes on a substantial scale. Similarly it is by no means unusual for the business of the commission salesman to be associated with that of the wholesale merchant who buys outright, and in the vegetable trade, there is frequently no clear line of demarcation between the two.

(b) *Commodities handled*.—All kinds of vegetables are handled by commission salesmen, but at times an important part in distribution is taken by conveniently situated growers. Thus at the height of the outdoor cabbage lettuce season, few Covent Garden salesmen handle the crop, the bulk being disposed of by growers direct; the same is true of late summer and autumn cauliflowers marketed at Birmingham and of summer cabbage and natural rhubarb at Liverpool. A number of commission salesmen have intimated that it does not pay them to handle certain market garden crops during the period of heavy production by local growers. In the country as a whole, however, the bulk of cultivated watercress, forced rhubarb, asparagus, broccoli, celery, early spring cabbage, brussels sprouts, peas and carrots, is marketed through commission salesmen.

Some commission salesmen specialise in particular vegetables. It does not always follow that the best salesman, say, for potatoes can also handle peas to the best advantage; peas are a highly perishable vegetable requiring quick sale, and the salesman should be advantageously situated so that the produce speedily comes under the notice of buyers. Examples of markets at which certain salesmen specialise in various commodities are Covent Garden (Evesham asparagus), King's Cross Potato Market (Eastern Counties celery), Spitalfields (Bedfordshire produce), Manchester (Cheshire produce).

The size of consignments handled depends on the nature of the vegetable, time of year, location of the premises and the extent of the business of consignor and consignee. A wholesaler in a provincial town may handle the following weekly quantities of various vegetables in their respective seasons: 200 cases (say  $10\frac{1}{2}$  tons) of Spanish onions, 1,600 pots (say 28 tons) of green peas, and 5 tons of carrots. There are, of course, wholesalers in the main consuming centres who handle much larger quantities. The pea and bean season is sometimes the period of greatest activity for a commission salesman; the period next in importance may come when Cornish broccoli is finishing and spring cabbage beginning.

(c) *Methods of business*.—Retailers within easy reach often buy their supplies at the salesmen's premises. Porters are employed to unload produce on to the salesmen's stands and to carry it out

for loading on to buyers' vehicles. At the Borough Market, however, unloading is done by the Market Authority's own porters except at times of pressure.

Salesmen will sometimes deliver free within a reasonable distance, particularly in the provinces: at Birmingham a distance of 10 miles has been mentioned, and delivery is also undertaken free at Nottingham.

At Bournemouth, Hull, Stoke-on-Trent, West Hartlepool and many other places, wholesale hawking to retailers' premises, or "shopping" as it is sometimes called, is adopted by salesmen. The practice adds to their overhead expenses, but it is stated that they would lose a good deal of business if the practice were dropped.

Several leading commission agents in some provincial towns, e.g. at Middlesbrough, Sunderland and the Potteries, frequently attend the port auctions and principal markets, such as Covent Garden, to obtain imported supplies of case fruits, etc., and may purchase supplies of vegetables at the same time.

Office accommodation and equipment vary according to the size of the business. Some firms sell a great deal by telephone. Personnel may include salesmen, canvassers, porters, lorry drivers, clerks and typists. At Birmingham the weekly cost of a stand and offices, for a firm with a turnover of about £65,000 annually and a dozen employees, is about £11, with about £4 for warehouse accommodation and about £40 for wages.

(d) *Charges.*—The subject of charges for the sale of produce by commission salesmen has been discussed in the Ministry's Economic Series No. 15,\* pages 75-76, and in the Interim and Final Reports of the Linlithgow Committee.†

Commission is sometimes charged on a percentage basis and sometimes at so much a package; some salesmen allow their senders to have a voice in the matter. Some salesmen use a combination of both methods, or make a charge at so much per package when the price falls below a certain figure. Owing to the different services performed by salesmen, no standard rates of commission have been adopted.

The Horticultural Produce (Sales on Commission) Act, 1926, was passed with the object of enabling the producer to ascertain readily the charges made for commission, market tolls, portorage and the hire of empties. If the charges and amount realised appear to be incorrectly stated in the sales account, the producer may under certain conditions have the books of the salesman inspected, in order to check the statements. Growers have from time to time availed themselves of the privileges of the Act, and in several instances legal action has followed. A number of salesmen sought protection from liability under the Act by an arrangement known as "contracting out". A form of agreement was drawn up and

\* Report on Fruit Marketing in England and Wales. H.M. Stationery Office, 1927.

† Cmd. Nos. 1892/1923 and 2008/1924.

signed by the interested parties, with the object of putting the salesmen outside the scope of the Act. An example of such a form will be found in Appendix XVIII. After receipt of this form, the salesman felt free to send net returns as before. The fact that some growers agreed to sign the form indicates their readiness to act as their salesmen wished.

Appendix XIX gives examples of the variations in the charges made by commission salesmen for services, market tolls and porterage, etc.

(iv) **Wholesale Merchants.**—As already stated, there is no hard and fast distinction between the wholesale merchants and the commission salesmen, since both may buy outright or receive produce on commission according to circumstances. Some wholesale merchants, however, rarely trade on a commission basis. The wholesale merchant is in a position to choose reliable senders; he is fairly certain of supplies for his different customers, since senders will satisfy his requirements before they consign their surplus on commission.

Sales on commission represent the general practice in the larger centres of consumption. The wholesale merchant is usually to be found in the smaller provincial and scattered consuming areas. He relies on his ability and knowledge to buy at the right price and attends markets where he can buy to the best advantage case goods and onions, choice and early vegetables and sometimes others such as topped carrots. A firm operating in a South Wales town endeavours by careful buying to make a profit of about 6d. a package. Produce is obtained from Evesham twice a week and onions are bought direct from Spain and Holland. Distribution takes place within a radius of about twelve miles. Travellers collect orders in the morning; case fruits, etc., are delivered in the afternoon and green vegetables the following morning.

(v) **Commission Buyers.**—The commission buyer is mostly found at Covent Garden and the port auctions. He relies on his specialised knowledge to buy as cheaply as possible produce of the kind required by his wholesaler or retailer clients in the provinces, who are thus saved the expense of personal attendance at the centre where the produce is on offer. Charges usually range from 2d. to 3d. a package. Since home-grown vegetables are chiefly consigned direct to the areas in which they are to be consumed, the commission buyer largely confines himself to choice and out-of-season kinds, including asparagus, lettuces, seakale and mushrooms. Imported onions are also purchased on behalf of clients. Trade that would be carried on in the normal course by a commission buyer is sometimes handled by a provincial wholesaler who may obtain supplies in London and elsewhere for himself and other merchants in his area. Many provincial merchants attend London markets once a week or oftener.

(vi) **Others.**—(a) **Higglers** (or Hagglers) are to be found at certain London markets, e.g., Covent Garden and Spitalfields.



They attend very early in the morning before many retail buyers have arrived, buy up vegetables and other produce in bulk and make their profit by reselling in smaller lots later. Large supplies of cabbage lettuce grown in the London area are marketed at Covent Garden during the season by producers acting as their own wholesalers, and higglers from Spitalfields and Stratford sometimes buy up quantities of these supplies for re-sale.

(b) **Hotel and ships' suppliers** are to be found amongst the traders at certain markets. At Liverpool several firms specialise in the supply of vegetables for ships. For a ship of about 17,000 tons bound for Montreal at the beginning of July, carrying from 155 to 200 passengers and from 225 to 275 crew, the following order is said to be typical of the quantities of fresh vegetables required :—

- 30 dozen bundles rhubarb ;
- 200 lb. broad beans ;
- 4 cwt. beet ;
- 60 dozen cabbages ;
- 30 dozen bunches carrots ;
- 30 dozen bunches new turnips ;
- 20 lb. watercress ;
- 50 dozen cauliflowers ;
- 60 dozen lettuces ;
- 20 dozen bunches mint ;
- 20 lb. parsley ;
- 160 lb. green peas ;
- 30 dozen bunches French breakfast radishes ;
- 300lb. spinach.

Considerably larger orders used to be received before and immediately after the War, when emigrants and other passengers were moving freely between Europe and America.

## (2) Abroad.

(a) **Les Halles Centrales, Paris.**—Four distinct types of sellers operate in the Paris wholesale market, viz., *mandataires*, *approvisionnementneurs* or dealers, recognised commission agents, and growers. The activities of the first two classes differ in some ways from those of home wholesalers, and a brief description may be of interest.

(i) *Mandataires* are commission agents appointed by a body representing administrative and trade interests. They are subject to certain police restrictions, and their trade represents only a small percentage of the total fruit and vegetable sales on the market, but as against this the position carries with it a certain official standing.

The function of a *mandataire* is to supply as much produce as possible, and he must not ask senders to withhold supplies even in times of glut. Credit may only be given at his own risk. Business is conducted in the market pavilions and in an annex situated in

neighbouring streets. The positions occupied may be changed from year to year according to the amounts which each salesman contributes from tolls levied on the sale of produce. A *mandataire* must not buy for sale on his own account, or engage in trade outside the market.

The special sales record form used (Appendix XX) shows the names of sender and buyer, kind, quantity and weight of produce sold, and price realised. One section remains in the book, one is handed to the buyer, one to the porter and one is for the grower. Particulars of sales are kept in a register. Goods not sold on the day of receipt must not be mixed with subsequent consignments.

The commission rate charged is a matter for arrangement, and is usually from 6 to 10 per cent. of gross receipts, though for luxury produce it may reach 12 per cent.

(ii) *Approvisionnement* or dealers purchase supplies from the areas of production for re-sale in the market. Whilst *mandataires* sell both in the pavilions and outside in the annexe, dealers may only sell in the market square. Their position in the market has for years remained one of perplexity, as an old regulation of the market prescribed that sales within the market square were to be conducted only by actual producers. Dealers were later admitted on condition that they did not sell produce on commission, but the legality of the decree was afterwards questioned. The number of dealers in the market amounts to several hundreds, and it is estimated that they handle from two-thirds to four-fifths of the supplies from France arriving in the market square at Paris. Since they pay lower rents than the *mandataires* and commission agents and have very little warehouse accommodation, they are satisfied with a smaller margin of profit.

(b) **United States.**—Some of the provisions of the Perishable Agricultural Commodities Act, passed in 1930 with the object of suppressing unfair and fraudulent practices in the marketing of fresh fruit and vegetables, are of interest :—

(1) Commission merchants, dealers and brokers must be licensed by the Secretary of Agriculture.

(2) Licensees must keep such accounts and records as will show fully and correctly all transactions. Such records must be preserved for a period of two years.

(3) Fraudulent accounting, unjustifiable reductions and misrepresentations are prohibited.

(4) Powers are granted for the investigation of complaints, and the suspension or revocation of licences.

(5) Complaints made under the Act must be lodged within nine months of the time when the alleged offence was committed, and if the licensee does not comply with the requirements of the Act, a public hearing may be ordered.

(6) Licences may be refused to applicants under certain conditions prescribed in the Act.

(c) **Canada.**—The Fruit and Honey Act, 1934, and Regulations, provide for the licensing by the Minister of Agriculture of brokers, commission agents and dealers engaged in inter-provincial trade. Licensees are required to pay fees and deposit securities and bonds. The regulations provide that a licence may be withheld for unfair conduct, and may be suspended or revoked if a licensee fails to honour contracts or keep records of business transactions, gives false or misleading information, makes fraudulent charges in respect of produce received or refuses to allow the examination of books and records by authorized persons.

### (3) Working of the Commission System in England and Wales.

(a) **Complaints by producers.**—Sales on commission are by no means favoured by all growers, and where possible many dispense entirely with the services of commission salesmen. Typical criticisms of the working of the system are given below :—

(1) Charges are too high and prices returned too low.

(2) There is not a market for all the produce grown, and salesmen have the upper hand.

(3) Timely information relating to supplies and prices of home and imported produce at the different markets is essential to the sender who wishes to arrange the size of his consignments accordingly, but market reports are sometimes received too late. Prices may have been low, but in the absence of reports further consignments may be dispatched to the same salesman.

(4) Forward advices sent by salesmen indicating prices received are sometimes misleading, e.g., a salesman when sending a wire may mention the highest price only, without stating the number of packages that realised, say, 3d. to 6d. less.

(5) Sales notes showing the amounts due to consignors are not always accurate. In one season, for example, the price of runner beans returned to a grower by a salesman in the Potteries varied from 1s. 3d. to 11s. per pot. When a net price of 1s. 3d. was declared, the salesman actually sold 30 pots at 1s. each. When the price was higher, however, the grower warned his salesman that he expected to receive 6s. : on that occasion, the actual price realised was 9s. and the salesman was able to recoup himself for the amount he had lost on other occasions.

(6) Growers consigning produce on commission to distant markets are insufficiently safeguarded against salesmen who may, for example, default or go bankrupt.

(7) Market salesmen collectively help to create gluts by sending out too many telegraphic requests for supplies when the market is temporarily understocked. In general, the commission method of sale leads to a surplus of supplies at the more important points of distribution such as London, with

the result that prices are forced down, sometimes below actual marketing costs. A provincial buyer who has come to London to obtain, e.g., case fruits or onions, may be induced by the low prices prevailing to buy up quantities of other kinds of vegetables. He consigns these to his home town, and even after he has paid the freight charges he may be able to sell the produce there at prices which the local growers cannot afford to accept. Not only are these growers thus cut out, but produce which may be highly perishable, and ought therefore to have been consigned direct to the area where it was to be consumed, has been on two long journeys and may deteriorate unnecessarily in condition during transit.

**(b) Complaints by Commission Salesmen.**

(1) Producers do not take enough trouble to study the requirements of markets.

(2) Producers sometimes fail to advise their salesmen in time of goods about to be dispatched for sale on commission.

(3) Some senders cause difficulties by changing backwards and forward from one salesman to another.

It is true that senders who consign large quantities of produce, maintaining a continuity of supply to several markets, usually employ the same salesmen. They compare the prices realised by one salesman with those returned by another, thus obtaining a rough and ready guide to the commission salesmen who serve their interests best. Now and again, the question of increasing or decreasing supplies to a particular salesman arises and occasionally a fresh choice is made. This procedure, however, is vastly different from that adopted by some growers, who market their produce on no set plan, but change from salesman to salesman in different parts of the country. They are always trying to chase the illusory "best market price" and gain little by doing so except additional trouble and expense, since the commission salesman may be expected to give his regular senders prior consideration. Senders who dispatch consignments hither and thither in this way are lacking in marketing sense, and are the despair of the first-class salesman with regular senders. Collectively they contribute to wide fluctuations in market prices and intensify the risk of gluts.

**(c) Remedies.**—There is little doubt that part of the dissatisfaction expressed on both sides is due to lack of standardization and organization, and adequate marketing knowledge on the part of producers. Many of the criticisms appear to be inevitable under the present system of distribution in which, for all practical purposes, no producer-controlled sales organization exists with power either to regulate supplies or to direct the manner in which they are to be marketed. Standardization and organization would improve the position of the grower and facilitate the handling of supplies by distributors and would also assist in disseminating among growers adequate knowledge of market requirements. When

the practice, illustrated under (3) (a) (5) above, of averaging the prices returned to growers is adopted, there may be no suggestion of unfair treatment of the producer. Averaging may occur as the result of the necessity, during the rush hours of business, of clearing large numbers of packages many of which may not show clearly the sender's name or mark. On the other hand, the practice may sometimes be regarded as good business, since when prices are low or produce remains unsold the salesman may be able to return a price which the sender will consider reasonable, thereby avoiding adverse criticism and possible loss of trade. In principle, however, the system is wrong.

Although some salesmen charge for portorage and market tolls separately, there is little doubt that these should be regarded as amongst the salesman's normal overhead expenses and treated accordingly. On the other hand, rail and cartage charges and incidental expenses such as telegrams, as well as the use of empties (which is a separate service), should be treated as separate items.

It has been represented by commission firms of standing that it would be generally advantageous if commission salesmen throughout the country—regard being had to local conditions—worked to a standard code, covering *inter alia*, rates of commission and forms of sales account. It has been further represented that such a code could be negotiated between representatives of growers and distributors and that, if effective arrangements with regard to the registration of salesmen could be made, it could be left to organizations of salesmen to enforce the code themselves. Reference has been made to the licensing provisions in the United States.\* Another conceivable approach might be through a comprehensive organization of growers, with power to determine the persons to or through the agency of whom produce could be sold. This possibility is referred to later.

It is relevant to note in this connection that the Potato Marketing Board have drawn up a list of authorized wholesale merchants to whom, and only to whom, growers may sell who wish to dispose of potatoes to wholesale traders, and that sales on commission have, in general, been prohibited by the Board following a referendum of the growers.

#### (4) Note on Wholesalers' Organisations.

There are voluntary associations of brokers at Liverpool, Manchester and London, all of which are affiliated to the National Federation of Fruit and Potato Trades Limited. Voluntary associations of wholesale merchants and commission agents exist in a number of the larger consuming centres in the country, e.g., London, Manchester, Birmingham, Liverpool, Sheffield, Bristol, Cardiff, Coventry, Bradford, Leeds, Leicester, Stoke-on-Trent (Burslem), Hull, Blackburn and Swansea. In 1934, 41 of these Associations were also affiliated to the National Federation. A branch of the Federation has recently been formed

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\* See page 137.

in a producing area, viz., Ramsey, Hunts. Amongst others of more recent formation may be mentioned the Swansea Wholesale Fruit and Potato Merchants' Association, brought into being in 1930. At Bristol, brokers and merchants are members of the same association. Subjects dealt with by wholesalers' associations include transport rates, third party insurance schemes (e.g., against injury in the market) and preparation of scales and minimum charges in respect of commission, handling and the use of members' empties. Assistance is also rendered to members to ensure the payment of disputed and outstanding accounts.

The *National Federation*, founded in 1903, is a body representative of all sections of the wholesale trade. The following table shows the membership of the association in September, 1934.

Direct members	...	...	...	...	1,846
Affiliated associations	...	...	...	...	40
Membership of affiliated associations	...	...	...	...	2,430

Its activities are many and varied, including assistance to Government Departments with regard to proposed legislation, assistance to horticultural education and research, efforts to secure reductions in freight rates and charges and more favourable terms under which insurance policies may be effected by members, prevention of misuse of members' empties and recognition of an approved scale of deposit charges on empties.

## CHAPTER XVII.— DISTRIBUTION (III).—WHOLESALE MARKETS.

Detailed descriptions of wholesale vegetable markets in this country have already been given in Reports in the Economic Series\* and need not be repeated here. Brief reference will be made to certain markets under the headings of location, facilities, and charges. Notes on the distribution of vegetables from wholesale markets will be found in Appendix XXI and notes on the sources of supply of a number of consuming centres in Appendix XXII.

### (1) Location.

The industrial areas of Lancashire and Yorkshire are fairly well provided with wholesale vegetable markets, which exist, e.g. at Blackburn, Bolton, Bradford, Halifax, Huddersfield, Hull, Leeds, Liverpool, Manchester (see figure 32), Preston and Sheffield. The market at Birkenhead in Cheshire, situated just across the Mersey

\* Economic Series No. 13, Markets and Fairs, Part I (General Review); Economic Series No. 14, Markets and Fairs, Part II, Midland Markets; Economic Series No. 15, Fruit Marketing; Economic Series No. 19, Markets and Fairs, Part III, Northern Markets; Economic Series No. 23, Markets and Fairs, Part IV, Eastern and Southern Markets; Economic Series No. 26, Markets and Fairs, Part V, Welsh Markets; Part VI, London Markets; Part VII, Final Review.

from Liverpool, may also be included in the group. In the Midlands there are only about seven of much importance, also in industrial areas, viz. at Leicester, Derby, Nottingham, Coventry, Birmingham, Wolverhampton and Burton-on-Trent. Greater London, with a population of well over 8,000,000, possesses eight, including those at King's Cross, Somers Town, Greenwich, Stratford and Brentford. There are one or two other markets in the extreme north of the country. In the east, south and west, Norwich, Brighton and Bristol are of some importance.

Produce auctions in different parts of the country cater for locally-grown produce, for example at Bridgnorth, Evesham, Maidstone, Monmouth, Pershore and Wellington. Such auctions are a feature of the West Midland production areas, and reference has already been made to them.\*

At some large centres of consumption there are no wholesale markets for the sale of vegetables: examples are Bournemouth, Croydon, Northampton, Reading, Southampton, Southend-on-Sea, Stoke-on-Trent, Sunderland and West Hartlepool. At such places fruit and vegetable merchants have established themselves either in one locality or in different parts of the town. Local supplies, which are usually available to some extent, are often marketed by growers themselves direct to shops, and in these circumstances wholesale merchants and commission agents may not at times figure prominently in the distribution of some kinds of vegetables.

It has been represented by growers in specialised areas of production that there are too few established wholesale markets to which vegetables can be consigned. Even as regards London itself, the suggestion has been put forward that additional markets should be established on the outer fringe so as to relieve congestion in the centre and effect economies in other directions. Reference may here be made to the success achieved at Brentford, on the western outskirts of London, where there has been a substantial increase, year by year, in the number of buyers' vehicles entering the market.

## (2) Facilities.

(a) **Merchants' section.**—While in some towns the facilities provided by local authorities for the marketing of vegetables by wholesale merchants meet the needs of the district, in others the increase of road traffic and the increase of supplies have made the existing accommodation quite inadequate. Where space is confined, produce cannot be displayed to the best advantage, and inadequate facilities may mean restriction of trade and an increase in costs.

Of the large towns in the *Midlands*, Birmingham has one of the largest and best organised wholesale vegetable markets in the country; at Derby the wholesale market facilities are adequate for present needs; at Leicester lack of space in the market has resulted in wholesalers taking separate premises; Nottingham and

\* See also Economic Series No. 13, p. 30.



Fig. 32. Manchester Wholesale Market.



Fig. 33. Corner of the growers' section, Blackburn Wholesale Market, in the early morning.



Coventry rely on uncovered open spaces, although at Nottingham it is proposed to erect a new market which will be covered. In the *North*, the accommodation at many wholesale markets is above the average of the country as a whole. Improved accommodation is, however, needed at Sheffield and Blackburn; the avenues between the stands at Castlefields Market, Sheffield, are narrow and become congested with the market traffic. At some places it is difficult to acquire adjoining land, and traders have secured premises in the surrounding streets. In the *Southern* and *Eastern* areas, apart from London, the wholesale markets at Brighton and Norwich are inadequate for local needs. Norwich possesses no covered wholesale market, and wholesalers sell quantities of vegetables direct from their lorries to shops. At Brighton plans are being considered for the removal of the market to another site, where improved facilities will be given under cover. At Plymouth, the market is largely used for retail trade; wholesalers take produce to retailers' premises for sale. At Devonport there is accommodation for more wholesalers to establish themselves in the market if they wish to do so, but here again the practice is for wholesalers to deal with retailers at the latter's premises. Portsmouth and Southampton have no facilities for wholesalers. At Bristol, the market accommodation is totally inadequate, but it is understood that proposals which have been made for the removal of the market to another site have not been favourably received; a number of wholesalers have their own premises, conveniently situated near the existing market. In *London*, the accommodation at the Borough and Covent Garden Markets has been improved. Spitalfields Market has been greatly extended, and some of the streets in its neighbourhood widened. Vehicles can drive right into the market and unload direct on to the stands. The ample space and regular lay-out enable produce to be properly displayed. Similar facilities for unloading are now provided at the Borough Market.

The number of market salesmen with premises in the vicinity of wholesale markets varies, to a large extent, according to the importance of the market and the size and population of the areas served. As illustrative of the variations in the number of wholesalers operating in markets, there are roughly 4 at Preston, 10 at Bolton, 9 at Wigan, 6 at Warrington, 40 to 50 at Blackburn (of whom about 20 sell vegetables, excluding potatoes) and 15 at Coventry. There are 90 at Liverpool, where there are in effect two main market centres, viz., the North Market and Queens Square; and at Sheffield the number of merchants handling celery alone has been estimated at between 30 and 40.

(b) **Growers' section.**—With few exceptions, accommodation is provided in wholesale fruit and vegetable markets for produce to be sold direct by the growers. A list of the principal centres where sales by growers on a wholesale basis take place, with the facilities provided, is given in Appendix XXIII.

The space which growers are permitted to occupy is usually fairly well situated, either in the market proper or in a street adjacent to it. There are, however, exceptions: e.g., at Hull the Corporation of Field Market, where sellers are mainly local growers, is some little distance from the main centre of trade activities in Humber Street; similarly, the growers' market at Middlesbrough, held on Wednesday and Saturday on the south-east side of the market place, is in a position away from the centre of the town.

It is comparatively unusual to find the growers' section of the wholesale market covered. Sales take place in open market places at Wolverhampton, Blackburn (figure 33) and Wigan. Accommodation is provided partially under cover at Birmingham, Manchester, Liverpool (North Market), Covent Garden, Preston, Birkenhead, Derby and Hull. Owing to the recent extension of glasshouse cultivation it is even more important than formerly that adequate accommodation under cover should be available.

Overcrowding, which has been accentuated both by the growth of supplies and the improvement of transport, exists in the growers' section in certain wholesale markets, e.g., in the Smithfield Markets at Manchester and Birmingham, and at Preston and Wolverhampton, but the remedy for this does not lie solely in an extension of accommodation, since even the limited space available is not always being used to the best advantage. The division of produce into a number of lots of varying size, marketed by growers in competition with each other, inevitably leads to an undue demand for space. It is essential to provide accommodation for the proper display of graded produce, and if bulk selling of produce became practicable as a result of progress in the technique of standardisation, the notional requirements of the growers' section of a wholesale market might need to be revised.

### (3) Market Charges and Finance.

This subject is discussed in Economic Series No. 13, Markets and Fairs, Part I, General Review (Chapter II).

Market charges in growers' sections are usually made at so much per cwt. or lorry-load according to the capacity of the vehicle, or at so much per package according to the size. The increasing use of standard containers is evidence of better marketing. Package charges do not, however, always tend to encourage the use of smaller packages in preference to larger ones. Alternatively, a charge may be made for space occupied per day, or, in the case of permanent stands, a rent per week may be charged. Charges may also vary according to the position allotted. Examples of charges are given in Appendix XXIV. At one or two markets, additional charges may be incurred. At Covent Garden, growers whose vehicles are placed in position by market porters are required to pay 1s. per lorry. For unloading, the charge is 1s. for a small lorry and 3s. for a large one.

Examples of rent charges paid in the merchants' section are given in Economic Series No. 13, page 15. At Bolton the average charge per square yard per week is  $8\frac{1}{2}$ d., at Derby  $10\frac{1}{2}$ d. and at Sheffield 1s. 6d. Merchants pay an average of 1s. 9d. per square yard per week for stands at Birmingham and 4s. 6d. at Bradford. In some markets, spaces or stalls are let by tender.

To illustrate the statement made in Economic Series No. 13,\* to the effect that profits realised at publicly owned markets in the larger towns tend to be considerable, it may be mentioned that at Brentford Market the profit realised in 1929 was £6,000; at Wigan the profit derived from the wholesale and retail markets together has been from £3,000 to £4,000 for a number of years; whilst in 1930 the Markets Department at Blackburn contributed a profit of £8,000 to the relief of the rates, equivalent to 3d. in the £. It should, however, be borne in mind that the occupation of space in a large market serving a vast population is likely to be of greater value to the seller than in a small market with a more limited area of distribution.

What is a fair level of market charges in publicly owned markets? This is a difficult question. The contention of the sellers, whether tenants of stalls or warehouses, or producers who sell through the markets, is that charges should not be so high as to yield more than a normal return on the capital value of the market; publicly owned markets, it is claimed, should not be regarded as institutions expected to earn profits which may go to relieve the rates. On the other hand, public authorities owning markets may naturally be disposed to operate them primarily in the interests of their rate-payers and to aim at securing the maximum profit on the market undertakings.†

In 1927, the Superintendent of one of the largest fruit and vegetable markets in the country reported that the tolls on potatoes and vegetables exposed for sale in vehicles of various sizes in the wholesale vegetable market represented respectively  $\frac{2}{105}$ ,  $\frac{3}{160}$ ,  $\frac{1}{133}$ ,  $\frac{1}{134}$ ,  $\frac{1}{128}$  and  $\frac{1}{146}$  of the value of the commodity. It was pointed out that such charges are infinitesimal in relation to the value of the commodities and that the surplus receipts, resulting from these charges, could not, in practice, be passed on and would merely be absorbed in the profits of the dealer. There is, no doubt, much truth in this argument. Nevertheless, many instances could be found in which the tolls charged on vegetables represent a higher percentage of the total value of the produce than those indicated. Thus, on the basis of a charge of 5s. per four-ton load, the toll on four tons of carrots at £4 a ton would represent  $\frac{1}{8}$  of the value. Moreover, it does not follow that vegetables taken into a wholesale market for sale during a glut period will all be sold. Generally speaking, however, few complaints respecting market charges are

\* Economic Series No. 13, p. 22; cf. also No. 26, pp. 195-6.

† Economic Series No. 26, p. 195.

made by growers wholesaling their own produce, and many market authorities, whilst realising a profit out of their market undertakings, do not make profit their primary object.

While the agitation which is sometimes raised against market charges may frequently be out of proportion to the burden imposed, it should be borne in mind that when prices are low and production profits are small, increases in market tolls may give rise to much irritation. So long as tolls remain, some system, such as exists at present, of public control over these charges is desirable. The necessity for obtaining the consent of the Ministry of Health, which consults with the Ministry of Agriculture and Fisheries, to any increase in tolls in markets established under the Public Health Acts, should give growers a feeling of confidence that tolls will not be unreasonably increased against them. In other legally constituted markets, i.e., markets established by Charter or special local Acts, the tolls chargeable are usually limited by these Charters or Acts and the limits can only be varied by the granting of new Charters or by fresh legislation.\*

#### (4) Note on the Definition of Wholesale Transactions.

At certain places the market authority prescribes the minimum quantities of different kinds of vegetables that may be sold wholesale in separate transactions. The following quantities are deemed to be wholesale at Blackburn wholesale market; any less quantity is deemed to be retail, except that with foreign produce the quantity contained in any original package as received, is deemed to be wholesale.

Carrots (loose) and turnips (loose) ... ..	28 lb.
Onions, loose (dry) ... ..	28 lb.
Onions (green) ... ..	12 bunches
Turnips, carrots and radishes in bunches ...	12 bunches
Rhubarb (green) ... ..	12 bunches
Rhubarb (forced) ... ..	6 bunches
Parsley and green herbs (one kind) ...	12 bunches
Lettuces ... ..	12 heads
Asparagus ... ..	100 heads
Leeks ... ..	6 bunches
Watercress and Mushrooms ... ..	7 lb.
Scarlet, French and board beans ... ..	14 lb.
Parsnips ... ..	14 lb.

Somewhat similar regulations operate at Liverpool.

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\* Economic Series No. 26, p. 195.

## **CHAPTER XVIII.—DISTRIBUTION (IV).—THE GROWER AS RETAILER.**

Sales by a grower direct to the consumer may take place in five different ways :—

- (1) By hawking produce from house to house.
- (2) By the occupation of a shop.
- (3) By the occupation of a stall in a retail market.
- (4) Through the post and otherwise to distant consumers.
- (5) By roadside marketing.

### **(1) House-to-house Hawking.**

This form of sale is sometimes adopted by the small market-gardener working in a neighbourhood in which there is a sufficient number of houses to ensure reasonably regular sales. Some 20 to 30 growers with holdings of one acre or more sell in this way in a south-western district. In a populous seaside town, a small-holder with  $4\frac{1}{2}$  acres of fruit and vegetables called three times a week over a long period on 120 customers; about 50 of these bought vegetables, but the weekly quantity disposed of was only a few cwt. Occasional journeys to distant towns are undertaken for this purpose by growers in specialised areas of production, more particularly during glut periods.

In general, however, house-to-house hawking takes up much time and is almost impracticable except for the smaller grower. Moreover, it usually entails buying out-of-season vegetables and fruits from wholesalers for re-sale, and the prices for relatively small quantities of these may not compare favourably with those paid by ordinary retailers. The service which such growers render to the consumer is, therefore, apt to be limited.

### **(2) Growers' Shops.**

Sales of vegetables through growers' own shops are not of large extent, although some retailers produce a small quantity of herbs and other vegetables which they want for sale.

### **(3) Growers' Stalls in Retail Markets.**

Sales through this channel are of some importance at certain places. The wives and daughters of small-scale market gardeners sell in the retail market at Darlington, where a weekly charge of from 2s. 6d. to 7s. a stall is made. Farmers sell vegetables in the retail market at Lincoln, and direct sales from grower to consumer also take place in the retail market at Wolverhampton on Wednesdays and Saturdays. This form of sale is also particularly noticeable at Preston market on Wednesdays and Saturdays, though some of the sellers in this market are not growers but small dealers who have bought in the country districts for re-sale. Farmers' stalls are a feature of the Birkenhead retail market on Fridays

and Saturdays. Commodities sold from tables rented at 25s. to 30s. per yard per quarter include vegetables, fruit and dairy produce. The gallery in the retail market at Newport (Mon.) is reserved as far as possible for growers. Some of the smallholders' stalls in retail markets in South Wales are made to look very attractive (Fig. 34). Stalls at Accrington measuring 9 ft. by 6 ft. are rented at from 2s. to 6s. a day according to the position. Growers also occupy stalls in retail markets at a number of other places, e.g. Barrow-in-Furness, Nelson, Bury, St. Albans and Exeter.

Reference may be made here to the work of the National Federation of Women's Institutes and other bodies which have fostered the retail sale of vegetables at market stalls by small producers such as cottagers, allotment holders and smallholders. Rules have been drawn up to promote uniformity of procedure. In some cases, market takings are over £60 on a market day. To avoid overlapping of work by other associations with similar aims, the Women's Institutes have been willing to provide facilities for producers other than members to sell from their stalls. At present most of the stalls are in the south of England.

#### (4) Sales Through the Post.

These are relatively unimportant as a market factor, but there is some demand for asparagus marketed in this way; cardboard packages made to hold one or two bundles have been found satisfactory for the purpose (Fig. 35).

#### (5) Roadside Marketing.

In recent years, roadside marketing has developed considerably. Roadside signs, advertising many kinds of vegetables and other produce in season, are to be seen along a number of main roads. In certain areas of production, growers sell asparagus regularly by the roadside, particularly at the week-end. At some places attractively designed kiosks (figure 36) have been put up at the roadside for the sale of vegetables and other farm products.

It has been represented that sales from roadside stalls are not sufficiently organized, and here and there they have caused trouble to highway authorities and the police. The grower who thinks of opening a stall or kiosk should, in his own interests, choose the position carefully and ascertain that no objections are raised by the local authority. Some smallholders who continue their roadside trade during the winter months find that the sale of vegetables falls off at this time, though there is still a demand for fruit, eggs and other products. Experience shows that good quality peas and lettuces are popular selling lines in the warmer months, but the quantity that can be sold depends on the location of the stall: a main road between the coast and an important consuming centre may be a good position, and since there is a tendency for buyers to pick up produce on their homeward journey from the coast,



Fig. 34. Stall at a retail market in South Wales.

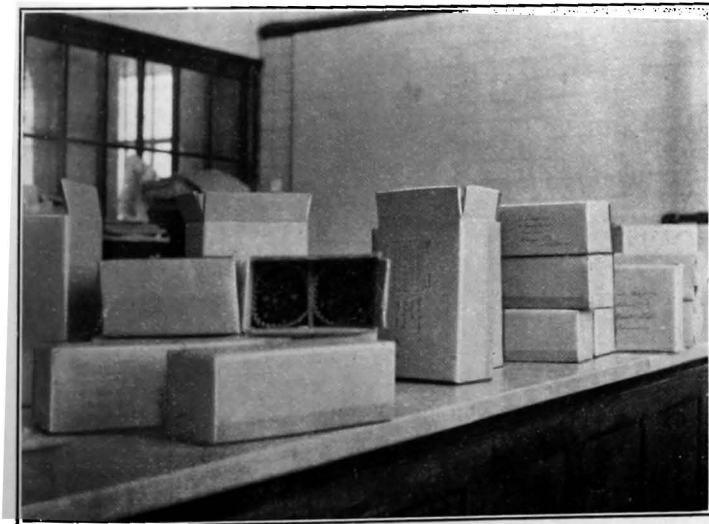


Fig. 35. Cardboard packages holding one or two bundles of asparagus for sale through the post direct to consumers.



Fig. 36. Roadside kiosk for vegetables and other farm products.



Fig. 37. Hawkers of washed celery in a Northern town,



the side of the road on which the stall is put may make a difference to the sales. A smallholder hardly expects in the normal course to dispose of more than a ton of vegetables\* a week through this channel. An average weekly sale of 12 bags of peas of 40 lb. each is considered satisfactory by one smallholder with two acres of vegetables. Some roadside stalls are undoubtedly popular with consumers: one stall proprietor in a fairly large way of business reports that 20,000 cars have visited his stall in a year, and sales of vegetables, including a quantity of choice produce, although representing only a small part of the turnover, amounted to about £400.

## CHAPTER XIX.—DISTRIBUTION (V)—THE RETAIL TRADE.

### (1) Classes of Retailers.

The retailing of vegetables to the public is undertaken by traders of many types. In practically all cases the sale of fresh vegetables is associated with that of fruit. Some retailers sell almost entirely from shops, some from permanent or temporary stalls in retail markets. In addition, a considerable trade is done by hawkers. The previous chapter has dealt with direct sales from grower to consumer.

Ten main classes of vegetable retailers can be distinguished, as follows:—

- (1) Departmental stores in the large consuming centres.
- (2) Florists and fruiterers with high-grade shops, some of whom sell vegetables. Stocks of these are often limited to non-bulky kinds, including forced vegetables and expensive produce such as asparagus, sea-kale, forced beans and mushrooms.
- (3) The family retailer of fruit and vegetables, generally with no more than one or two shops. In some areas, e.g., Lancashire, there are multiple shops of this character.
- (4) Retailers who sell vegetables in addition to other commodities such as groceries, not usually handled by class 3. The large retail co-operative societies may also come within this category.
- (5) The small-scale greengrocer with one shop, selling a limited number of certain vegetables, usually the cheaper varieties.
- (6) Retailers or hawkers relying on a house-to-house rather than on a shop trade.
- (7) The market retailer.
- (8) The regular street trader, to be found in street markets.
- (9) The casual street hawker.
- (10) The hawker of particular commodities, such as washed celery and French onions.

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\* See Introduction, p. 1, footnote.

The family retailer (Class 3) has a large share in the vegetable trade. The small shopkeepers in Class 5 are numerous, but their individual output is generally low. Many retail co-operative societies sell vegetables and, particularly during the last few years, multiple shops for the sale of grocery and provisions have taken up vegetable selling to an increasing extent, though usually only as a side line. Multiple shops of which the principal trade is fruit and vegetables are only found in a few large towns. The multiple shop movement has been spreading in recent years. Vegetable sales by departmental stores represent only a very small percentage of the total vegetables sold. Hawkers of various kinds are usually fairly plentiful in the neighbourhood of large towns, e.g., in Lancashire and South Wales. Market retailers, particularly in the North, certain towns in the Midlands, and South Wales, carry on an important trade in vegetables.

The first four classes usually allow a certain amount of credit, but the remainder trade mostly on a cash-and-carry basis. The following notes indicate the relative importance of the various classes in certain towns.

In Darlington there are no more than two or three representatives of Class 2, 25-30 of Class 3, approximately 200 of Classes 4 and 5, about 100 of Class 6 and relatively few of 9 and 10. In Huddersfield, the number in Class 2 is higher, about 12, whilst representatives of Class 3 and hawkers are numerous. In the nearby town of Halifax there are about equal numbers of shop retailers and hawkers. A substantial percentage of the population of Deptford, in south-east London, buys vegetables from street markets. In Coventry, many retailers who sell groceries also retail vegetables. At Preston a large number of hawkers take vegetables for sale from door to door, and there are no more than about three representatives of Class 2. In Blackburn there are about 300 hawkers, a number of whom sell vegetables, about 40 representatives of Class 3, and about 15 of Class 2. At Chesterfield sales are chiefly by retailers in Classes 3 and 6. At Rochdale there are approximately 100 small fruit and vegetable shops (Class 5), with a very small turnover on vegetable sales: it has been estimated that there are about 5 of these to one of any other type. Shops in Class 4 probably number about 20. In Wigan hawkers predominate. It has been estimated that there are about 2,000 hawkers in Liverpool, about 100 in St. Helens and 100 at Warrington. In South Wales quantities of vegetables are sold by hawkers, for example, at Ammanford, Swansea and Merthyr Tydfil. From Merthyr Tydfil, hawkers, amongst whom there is a good deal of competition, carry produce in quantities of from 10 to 15 cwt. in light, one-horse conveyances to the surrounding areas several miles distant, such as Rhymney Bridge, Tredegar and Ebbw Vale.

In certain towns, the sale of celery by hawkers is important: they buy the unwashed celery and trim and wash it before re-selling to the public. Figure 37 illustrates this system of sale in a northern town. It has been estimated that fifty per cent. of the celery sold to consumers in Newcastle-on-Tyne and Nottingham is disposed of in this way.

## (2) Quantities Handled.

The amounts sold by retailers naturally vary greatly, being affected by circumstances such as the location and appearance of the premises, the quality and display of produce, business efficiency, the service provided and the prices charged. Again, a high-grade retailer may sell, for example, more of an expensive vegetable such as asparagus, but less of more bulky vegetables, e.g., cabbage, than others in the same locality. Hence it is difficult to make general statements about the quantity of any particular vegetable sold in any particular area.

Week-end trade is in many places of primary importance for fresh vegetable sales. In general, holiday resorts excepted, the best time of the year for retail sale of fresh vegetables seems to be spring or early summer. In the late summer and autumn, supplies grown on allotments and home gardens are available, particularly in the provinces, and these local supplies affect retailers' sales: in one area, where allotments are numerous, the turnover of a retailer specialising in vegetables is reduced in September by as much as 50 per cent. compared with the spring months.

The data which follow have been compiled from information supplied by about 40 leading retailers in various towns. The quantities given are weekly sales from one shop or market stall. Many retailers, however, probably do not sell in an average week the quantities mentioned of many of the vegetables in the list. On the other hand some successful retailers with premises in and round London and certain other large towns sell much greater quantities.

*Cabbage Lettuce.*—Retailers in shops and markets appear to sell from about 10 to 40 dozen a week between April and September. Warm weather favours sales, but in a Lancashire town they are heaviest from March to May, during which period certain market retailers will dispose of quantities up to 100 dozen a week.

*Cos Lettuce* is usually less popular than cabbage lettuce, but where good, fresh, well-hearted supplies are available, as for example in certain Lancashire towns, the weekly quantities sold from June to September may even exceed those given for cabbage lettuce.

*Radishes.*—The total trade in radishes is not large. Two important months of sale are April and May, when from 50 to 300 bunches are sold weekly.

*Mustard-and-cress.*—This is a somewhat specialised trade. In addition to its use for salads, there is some demand for it for garnishing and sandwiches. From 1 to 10 dozen punnets is a usual weekly sale.

*Green bunched onions* are chiefly a spring trade which begins to diminish after Whitsun; at certain places, however, e.g., London and Bristol, there is a trade for them throughout their season. Quantities sold are not very large and usually range from 3 to 12 large bundles or 3 to 12 dozen bunches. At Blackburn, however, market retailers are reported to sell much larger quantities.

*Watercress.*—Sales are largest between February and Whitsun, reaching a peak at Easter. The usual quantity sold is from 1 to 6 chips a week, each containing about 7 lb., but certain shops, e.g., in Manchester, sell twice as much. Some retailers in towns near London dispose of still larger quantities.

*Asparagus.*—Quantities may vary from practically nil to 70 bundles. Some shops specialise in the sale of this commodity, and sales of 200 bundles a week are not regarded as unusual by some leading retailers in the South of England.

*Celery.*—Shopkeepers sell from 5 to 12 bundles a week, though at Bristol a higher maximum has been mentioned. The quantity disposed of in some towns by hawkers and market retailers, who specialise in the washed commodity, is several times as much.

*Forced Rhubarb.*—From 5 to 20 dozen bunches.

*Cauliflowers.*—From 4 to 20 dozen.

*Cabbage.*—Slightly larger quantities to twice the quantity of cauliflowers.

*Savoys.*—From 2 to 30 dozen.

*Brussels Sprouts.*—From  $\frac{1}{4}$  to  $2\frac{1}{2}$  cwt. Larger quantities are reported from certain places.

*Spinach.*—With certain exceptions, very little.

*Green Peas.*—5-50 pots or half-bags of about 40 lb. each.

*Dried Packet Peas.*—From 2 to 12 dozen packets; sales increase after Christmas and drop in May. An increasing quantity of canned dried peas is being sold in preference to packets.

*Marrows.*— $2\frac{1}{2}$  to 10 dozen. Marrows do not sell well in some districts.

*Carrots.*—From  $\frac{1}{2}$  to 3 cwt.

*Turnips and Swedes.*—As for carrots.



Fig. 38. Shop front showing 12 different kinds of vegetables.



Fig. 39. Prices clearly marked at a stall in Stockport retail market.



Fig. 40 Arranging vegetables for sale at Birkenhead Retail market.



Fig. 41. Salad stall in the retail section of Kirkgate Market, Leeds.

*Parsnips.*—From  $\frac{1}{2}$  to 2 cwt. Parsnips are not a popular vegetable in some of the northern towns.

*Beetroot.*—Beet, if raw, is usually a small trade, but, if it is boiled, sales can be multiplied many times.

*Onions.*—From  $\frac{1}{2}$  to 4 cases of about 120 lb. each, or an equivalent quantity in bags.

### (3) Display and Accommodation.

In the last few years, there has been a marked improvement in the efforts made by retailers to display vegetables to the best advantage. This tendency has been encouraged by improvements in the design and character of shop-window fixtures. Nevertheless, though attractive displays of fruit are common, displays of vegetables such as will arrest the attention of shoppers are less generally met with, and it is still common to see vegetables dumped loose in odd corners of shops. Figure 38 shows a good display in the month of May. The vegetables shown are spring onions, lettuces, bunched carrots, watercress, broccoli, radishes, mint, beans, peas, parsley, rhubarb, topped carrots and spring cabbage.

Good displays of fresh vegetables are a regular feature of some of the more important retail markets in the country, where adequate show space is usually available for both bulky and non-bulky kinds. Sometimes the vegetable stalls are arranged together, end to end, and the stallholders vie with one another to make the most effective exhibit. Figure 40 illustrates such a market stall. The commodities on one stall in April included old and new potatoes, topped and bunched carrots, beet, parsnips, leeks, natural rhubarb, forced rhubarb (red and white), cabbage, lettuce, different kinds of radishes, mint, spring onions, watercress, mustard-and-cress, forced beans, peas, spinach, savoys and mushrooms. Vegetables only are sold on some market stalls, and on other sales are limited to salad vegetables. An example of the latter type of stall is shown in figure 41.

High-grade retailers often devote their windows to fruit and flowers but neglect vegetables. The efficient display of vegetables calls for adequate space, whilst lack of grading and standard packing accentuate the difficulties of retailers, both as regards display and accommodation. The National Mark schemes should do much to effect an improvement in this respect. Quantities of low-grade vegetables, leaves and extraneous matter, which at present form part of the market supplies, should never reach the retail shop.

### (4) Costs of Retail Distribution.

The costs of retail distribution include rent and rates, wages, insurance, light, wrapping materials and delivery, and market expenses such as portorage. Together these may amount to between 17 per cent. and 25 per cent. of the turnover, although on

occasions the percentage is greater, e.g., when the proportion of sales of bulky vegetables of low value, such as cabbage, is high.

Some retailers with a total turnover of £100-£120 per week work on a net profit on the turnover of about 10 per cent. The average selling price, for various reasons, often represents an addition of about 50 per cent. to the average purchase price of the vegetables sold. In general the gross profit appears to range from 25 per cent. to 33½ per cent. on all sales. It may be of interest to quote, with brief comments, some of the Linlithgow Committee's\* conclusions with regard to the charges on vegetables at the retail stage. The Committee's reports were published in 1923 and 1924, since which date no special long term investigations into the distribution of vegetables have been undertaken officially. There is, however, no reason to suppose that the statements quoted are not broadly true in 1935.

The Committee stated that "taking the trade as a whole, the evidence does not show that retailers of fruit and vegetables are making excessive profits".† The prices charged for vegetables by retailers depend, of course, partly on competition and partly on their own judgment. In this connection, it is interesting to note that a retailer in a county town, in the South of England, has found from experience that if the price at which cauliflowers are offered can be reduced from 4d. to 2d., the sales may be expected to multiply five or six times; similarly, if the price can be reduced from 3d. to 2d., three times the quantity can be sold.

The Committee recalled "a charge of inefficiency which has been made by many witnesses against retailers generally, who, it is asserted, are frequently lacking in modern business training; having drifted casually into the trade owing to its apparent simplicity and to the small initial capital required".‡

The Committee also laid stress on the large number of small establishments engaged in the retail trade. This does not always protect the consumer by making for increased competition. "Many of them are too small and inefficient to render the public the services desired, except on wide margins which, though not more than sufficient to enable these establishments to pay their way, prevent them from being a check on larger and more efficiently managed concerns."§ The turnover on vegetables|| of many fruit and vegetable shops with businesses of average size is said to range between one-sixth and one-tenth of the total business in the shop, the actual turnover on vegetables varying from about £5 to £30 per week. The turnover obtained by a number of the smaller shops, however, does not appear to reach even the minimum

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\* Linlithgow Committee, Interim and Final Reports, 1923-24 (Cmd. 1892/1923 and Cmd. 2008/1924).

† Interim Report, § 159.

‡ Interim Report, § 154.

§ Final Report, § 48.

|| See Introduction, p. 1, footnote.



figure mentioned. For example, a member of the trade in one of the smaller towns in the north has estimated that out of forty retailers five or six would have a turnover on vegetables, excluding potatoes, tomatoes and cucumbers, of £20 to £30 a week, ten about £5 to £10 a week, and the remainder less. In certain towns, it is understood that a number of the smaller retailers are unable to pay their wholesalers in full within the recognised period from the time of purchase, and have to ask for extended credit. Thus in a certain northern town the percentage of retailers in a sound financial position was estimated at no higher figure than 15 per cent.

Retailers do not all enjoy equal facilities for buying fresh vegetables. Reference may be made, for example, to certain retailers in small towns in Wales who have to rely, to some extent, on goods in small lots (on which they pay the carriage) consigned to them by passenger train from production areas. The expenses of handling and transport between the wholesale market and retailers' premises vary in different places. At some markets, e.g., Nottingham, wholesalers deliver free of charge at retailers' premises situated within a certain radius of the market. Similarly, charges are not always made to retailers who make use of the services of porters employed by wholesale firms to take produce from the stands of wholesalers to buyers' vehicles. Thus produce is loaded free of charge on to buyers' vehicles in the retailers' car park at Castlefields Market, Sheffield. In certain markets, however, these services have to be paid for. At Covent Garden it has been reported that the average distance over which porters carry produce is from 200 to 300 yards. Examples of charges approved by the Market Tenants' Association at Covent Garden are as follows:—

Half bags of roots	... ..	2s. per score
Half bags of peas, beans and greens	..	1s. 6d. per score
Chips of mushrooms and beans	..	5 for 3d.
Half bushel boxes	... ..	1d. each
Boxes larger than 1 bushel capacity	...	3d. ,,
Loose cabbages, cauliflowers and marrows (irrespective of weight).		8d. per tally of 60.

The principal reason as stated by the Linlithgow Committee for the high cost of retail distribution is, however, "the numerous and varied services which the retailer performs. It is clear . . . that if consumers wish to effect a reduction in the cost of retailing it rests, in the first instance, largely with themselves to reduce the nature and extent of the services they demand."\*

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\* Final Report, § 53.

### (5) Note on Retailers' Organizations.

**Local associations.**—Retailers' associations interested in the sale of vegetables are to be found in most of the chief cities and towns in the North of England: amongst these may be mentioned the Manchester and District Fruiterers' and Fish Traders' Association, and the Liverpool Fruiterers' Association, Ltd., which has about seven hundred members. In certain places local Chambers of Trade have a retail fruit and vegetable branch: the Preston and District Fruiterers', Florists' and Fishmongers' Section of the Preston Chamber of Trade is an example. In the South, the British Retail Fruiterers' Association, with a membership of about 90, caters for the needs of retailers in the Bristol area.

**The Retail Fruit Trade Federation.**—Until 1934, retailers of vegetables, fruit and some other products had for some years been associated in two national groups, the National Federation of Retail Fruiterers, Florists and Fishmongers, Ltd. (Liverpool, founded about 1910), and the Retail Fruiterers' and Florists' Association, Ltd. (London, founded 1901), both having as their objects the protection of the interests of retailers in the fruit and allied trades. A third organization, the Retailers' Propaganda Association, under the auspices of the Fruit Trades' Federation, was concerned solely with publicity. The existence of several different bodies gave rise to a good deal of confusion and misunderstanding. Efforts at unification culminated towards the end of 1934 in the formation of the Retail Fruit Trade Federation. Among the objects of the Federation are the representation of the trade in its dealings with Parliament, Government Departments, producers' and wholesalers' organizations and other bodies, the fusion of all fruiterers' organizations into a national body, and the carrying on of the work previously done by the retailers' propaganda section of the Fruit Trades' Federation.

**CHAPTER XX.—DISTRIBUTION (VI)—RETAIL  
MARKETS.\***

(1) **General.**—Retail markets, which used to be mainly devoted to the sale of agricultural produce, are in the larger towns turning more and more into arcades of stalls for goods such as haberdashery, crockery, books, clothing, ironmongery and toys. Some local authorities have found that their income from sellers of such general merchandise is more permanent and regular, and the agricultural section of the market suffers accordingly. Where local growers, at certain periods of the year, have not enough produce to occupy the space reserved for them in the market more than one or two days a week, this spreading out of costs over several trades may be of advantage to them, since the charges which fall on their produce are thus lowered. Preference, however, in the allocation of stalls might well be shown to producers and sellers of agricultural produce. This applies particularly to small country towns in producing areas, where the retail markets should be allowed to keep their agricultural character. It is interesting to note that both in Continental countries and in America urban retail markets are still of considerable importance for sales of farm produce, including vegetables.

In certain parts of England and Wales, particularly the North and certain towns in the Midlands and South Wales, the quantities of vegetables sold in the retail markets are of some importance. The following places may be mentioned:—Birkenhead, Blackburn, Cardiff, Darlington; Derby, Hull, Leicester, Leeds, Liverpool, Llanelly, Middlesbrough, Neath, Preston, Stockton-on-Tees, Swansea, Walsall and Wolverhampton. Most retail markets are directly controlled by the local authorities.

In the London area retail markets are very few, and there are none in the City of Westminster.

The following are brief notes on some of the provincial retail markets.

The total number of stalls in the open market at Blackburn is about 330; fruit and vegetables† are sold on about 35. The charge is 6s. per market day for a covered movable stall having an area of approximately 77 square feet. For the permanent stalls, the charge is 1d. per square foot per week, the tenants providing their own cover. At another market in the North, stalls are let by tender. At Wolverhampton, vegetables are sold in the covered retail market on 18 stalls out of 160. About 40 to 50 tenants at the Sheaf Market at Sheffield sell fruit and vegetables. At Middlesbrough, where the market is held on Saturdays only, out of a total of about 120 stalls in the outside market some 20,

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\* See also Economic Series Nos. 13, 14, 19, 23 and 26.

† See Introduction, p. 1, footnote.

occupied by from 12 to 15 tenants (of whom about 8 are small-holders) are used for the sale of vegetables, and at Hull approximately 40 stalls out of 70 are used for fruit and vegetables.

The days on which markets are held vary in different places. Some enclosed market halls are open on all weekdays. Sales at open-air markets, however, are more usually limited to specific days in the week. The market days at Preston are Wednesday and Saturday; at Accrington, Tuesday, Friday and Saturday; and at Bury, Wednesday and Saturday. Some tenants are thus enabled to spread their activities over several markets: for example, a market retailer of vegetables may rent a stall at Accrington on Tuesdays, Colne on Wednesdays, Earby on Thursdays and again at Accrington on Fridays and Saturdays; or at Hinckley on Mondays, at Bedworth on Tuesdays and Nuneaton on Saturdays; or again at the street market at Welshpool on Mondays, at Newtown on Tuesdays, Oswestry on Wednesdays and Shrewsbury on Saturdays.

### **(2) Indoor and Outdoor Retail Markets Compared.**

From the standpoint of the sale of vegetables, retail markets may be divided into three main types, (1) covered markets, e.g., St. John's Market, Liverpool, and the retail market at Birkenhead (Fig. 42), (2) covered retail markets with open sides, as at Preston and Hull, and (3) open markets, as at Blackburn and Leicester (Fig. 43). In certain covered retail markets, sales of vegetables are substantial: a stallholder specialising in the sale of salads in such a market in the North sells at Whitsuntide approximately 40 crates (or up to 100 dozen) of lettuces a day. Opinion appears to be divided, however, on the question whether vegetables are better sold in indoor or outdoor retail markets. Whilst successful examples of both types are to be found, it would appear that an open market or a covered market with open sides has certain advantages—greater ventilation for perishable produce, more possibilities of attracting the attention of casual purchasers and ability for sellers to work on a smaller margin because their costs are less.

### **(3) Advantages of Retail Markets.**

The retail market performs a considerable service in the sale of vegetables in bulk for cash, and though market retailers sell at all periods, their sales at glut periods and of vegetables which are in abundant supply are of particular value to the producer. A retailer in a Midland town, who has a good shop trade and also a stall in the retail market, states that he sells as much produce in 2 days in the retail market as he does in his shop in a week.

The prices charged in the open market for vegetables at a South Wales town have been estimated at from 15 to 20 per cent. less than anywhere else in the locality. A Market Superintendent



Fig. 42. Locally-grown vegetables, Birkenhead retail market.



Fig. 43. Salad stall in Leicester retail market.

in a large northern consuming centre has confirmed the view that a retail market does, in fact, influence prices by the competition set up, not only in the market, but also in the surrounding district.

The Market Superintendent at Blackburn, in pointing out that both shopkeepers and market traders rely on the public for a livelihood and that anything that attracts people to a town is worth encouraging, stated in 1930 that, according to statistics supplied by the Tramways Department, the Bus Companies and the Railway Authorities, the passenger traffic into the town increased on the two retail market days, Wednesdays and Saturdays, by about the numbers given below :—

	<i>Wednesdays.</i>	<i>Saturdays.</i>
Tramways ... ..	10,400	32,400
Bus Service ... ..	7,500	18,100
Railway ... ..	3,500	5,000
	to	to
	4,000	8,000

Whilst this increase is not claimed as being entirely due to the markets, it is maintained that the markets are an important attraction. Since the open retail market was established at Bolton, the market days, Tuesday and Thursday, have become the busiest. It is said that in some small market towns, 80 per cent. of the shopkeepers' trade may be done on the one market day.

#### (4) Street Markets.

Although for traffic reasons street markets are tending to disappear from main thoroughfares and the holding of markets in the roadways is being discouraged, they are still found in a number of towns.\* In the London area street markets number over 100. In some of these the stalls are attractively laid out, often containing many kinds of choice vegetables. The demand for stalls is much in excess of the supply; rents are low, and as produce can frequently be bought more cheaply at street markets than at shops in the neighbourhood, they are widely patronised by the wage-earning section of the population. Stallholders are not allowed to stand outside shops selling the same commodities. Street traders occupying stationary positions must possess licences; the cost of a licence for the sale of vegetables and other produce is 5s. a year. In January, 1935, there were approximately 380 of these traders in the City of Westminster, of whom about 103 (no growers) sold fruit and vegetables. The usual type of stall permitted measures 9 ft. to 6 ft. by 3 ft.

\* See Economic Series No. 13, page 29.

### (5) Market Facilities.

The lay-out of retail vegetable markets is of importance, and the following are features of a well-planned market :—

- (1) A central position.
- (2) If other kinds of agricultural produce are sold in the market, the vegetable stalls should be together, although it may be better for them not to face one another. Such an arrangement is of assistance to the market authority, whilst inspection of produce and comparison of values by the consumer are facilitated. When plans are being prepared for retail markets, it is not uncommon for market authorities to consult prominent and experienced retailers on the best lay-out of stalls and width of passage ways or roadways.
- (3) Only standard and approved types of stalls should be put up; there is an opportunity here for more attractive design.
- (4) The question of display is one for the traders themselves, but provision should be made for produce on sale to be displayed at a reasonable distance above the ground. Produce in reserve should be adequately protected and stored and not scattered about in untidy fashion.

### (6) Undesirable Practices.

Complaints are sometimes made that the bulk as sold by the retailer is not of the same quality as the sample on view, or that occasionally certain sellers classified as producers wrongly describe produce as home-grown or as their own production. Such deception is not in the best interests of traders. Inspections of all market stalls should be carried out periodically, and to maintain the reputation of the market, a trader guilty of such offences should, after warning, be liable to forfeit his right to a stall. The sale of produce graded to national standards should be encouraged.

Certain traders prefer to show prices, particularly of the more expensive commodities, in large figures with the addition " $\frac{1}{2}$  lb." in smaller writing underneath or near them, or alternatively they do not mark up the price at all. The first system is misleading and impairs the confidence of buyers. The second may cause potential buyers to hesitate and pass on elsewhere, rather than enquire; the wish to buy often comes after the price is known. Many progressive traders usually mark up the prices of vegetables in bold figures in such a way that no deception is possible. The price should be shown per bunch, or per pound, except where purchases in bulk are encouraged by such offers as two pounds for  $2\frac{1}{2}$ d (see figure 39).

## PART VI.

## CHAPTER XXI.—PUBLICITY.

One of the most striking developments of the century has been the growth of commercial advertising. Advertising of agricultural produce is however unlikely to give the best results unless the commodity is graded to national standards. The comparatively small amount of publicity hitherto directed to home-grown fresh vegetables may be partly due to the lack of universally recognised standards of grading and packing. The need for publicity is recognised by some of the more progressive elements in the trade. Some years ago, a leading trade journal published an article with the title "Sell More Vegetables," in which the energy devoted to the "Eat More Fruit" and "Say it with Flowers" campaigns was contrasted with the surprising lack of publicity for vegetables. Fine displays of fruit, it was pointed out, are common, whereas vegetables are liable to be jumbled up in any odd corner of the shop. A case was quoted where a retailer's trade in vegetables had been considerably increased by attractive and orderly display, and retailers were urged to further the grower's efforts to develop production at home by doing all in their power to stimulate sales.

**(1) Past and Present Publicity for Vegetables.**

(a) **Home.**—(1) *Food manufacturers.*—Manufacturers of food products such as custard powder and salad oil have encouraged the use, e.g., of salads, by making them a feature of their advertisements.

(2) *The Empire Marketing Board.*—An attractive handbook called "Fruit and Vegetables of Empire," issued free in 1928 by the then existing Empire Marketing Board, contained recipes and dealt among other things with the seasonality of vegetables. Some 230,000 copies were distributed chiefly to the retail trade for the use of consumers.

(3) *The Ministry of Agriculture and Fisheries.*—In order to bring to notice the National Mark grades introduced in 1933 and 1934 for a number of fresh vegetables, the Ministry has carried out publicity of various kinds directed, in the main, towards growers and distributors. Demonstrations of the grading and packing to National Mark standards of such vegetables as asparagus, broccoli and cauliflowers, bunched carrots, brussels sprouts, celery and cabbage lettuce have been staged at a number of agricultural and other shows and exhibitions. Press advertisements have been inserted in trade and provincial papers, posters displayed, and matter relating to the various National Mark schemes issued widely to the Press. A film on the home vegetable industry was released in 1935.

(4) *The Press.*—A number of newspapers and periodicals give space to recipes for cooking vegetables, and to articles calculated to popularise vegetables.



(5) *Retailers*.—Some retailers, for example large city stores and multiple shop firms, employ poster artists to advertise vegetables as well as other leading lines, changes being made weekly and sometimes more often. Posters are displayed in shops here and there showing extracts from newspapers, e.g., on the food value of vegetables, or illustrations of vegetable dishes. Window strips, e.g., for carrots and salads, have been distributed to retailers through their associations. Sometimes suggestions for salads and other vegetables in season are made on blackboards at shop entrances, and 1s. parcels containing fruit and vegetables have been advertised in shop windows. Occasionally, also, market retailers advertise themselves as specialising in certain commodities, e.g., watercress.

(6) *Wholesalers*.—Little advertising of vegetables on the lines of the "Eat more Fruit" campaign has been done. Posters have been distributed dealing particularly with ripe onions, but, unfortunately, this is a commodity of which relatively small quantities are at present produced at home. An exhibit of great credit to the wholesale trade was arranged by the tenants of Spitalfields Market in 1930, when there was an attractive display of vegetables in the Lord Mayor's Show, bearing the slogan "Without green vegetables you cannot have healthy life".

(7) *Growers*.—Apart from the vegetable exhibits staged at certain horticultural shows (Figs. 44-47), one or two shows are held for vegetables alone. Examples of these are the Forced Rhubarb Show of the Leeds and District Market Gardeners' Association and the May Asparagus Show of the Vale of Evesham Asparagus Growers' Association. An "Eat More Blackpool Salads" campaign was arranged some years ago at Manchester. During the first four weeks of the 1929 North-East Coast Exhibition at Newcastle-on-Tyne, displays of vegetables were shown by local growers with assistance from the wholesale trade.

Enterprising growers have endeavoured to improve the sales of some of their vegetable crops by enclosing leaflets, etc., in the packages and by sending pamphlets to retailers. These growers realise that the product which they offer must be well graded, attractively packed and a good selling line. One forced rhubarb grower advertises his rhubarb in leaflets as "Nature's finest laxative. . . . Grown scientifically, handled carefully and bunched electrically . . . Yorkshire's finest and most up-to-date rhubarb gardens." A North Country asparagus grower inserts a small wooden label with his name and address in bundles of asparagus distributed to various customers. A West Midland grower has inserted a slip in each bag of graded brussels sprouts drawing attention to the grading. A further example of enterprise is that of a grower of watercress in the South of England, whose product is known to the trade throughout the country. The watercress is packed in neat, non-returnable chip baskets and every effort has been made

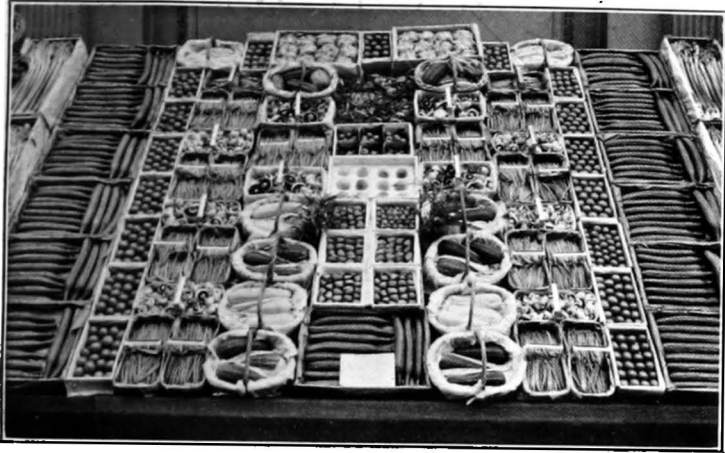


Fig. 44. (*"Farmer and Stockbreeder."*)



(*"Farmer and Stockbreeder."*)

Fig. 45.

Exhibits at Early Market Produce Show of the Royal Horticultural Society, 1934.



Fig. 46. A pleasing exhibit of vegetables at a show of early market produce by an association of growers enrolled in National Mark Schemes.

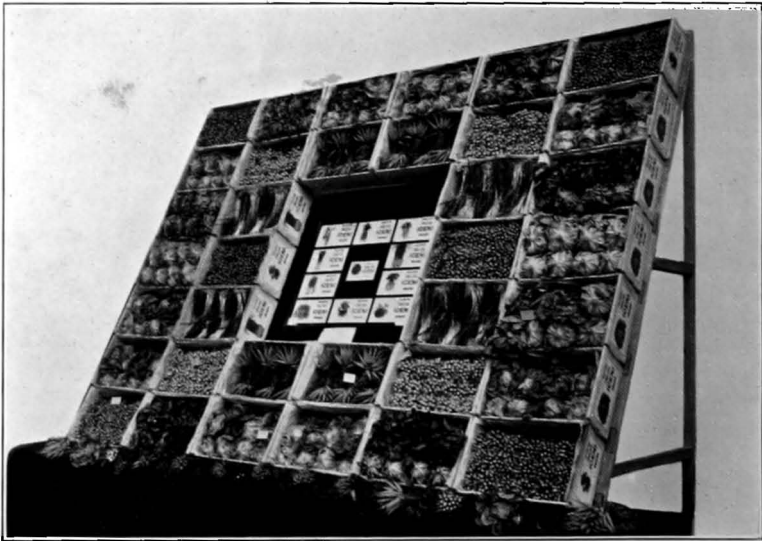


Fig. 47. A range of vegetables packed under a private label, exhibited at the R.H.S. Early Market Produce Show, 1935.  
(The label bears a pictorial representation of the vegetable in the container.)

to supply the consumer with a first-grade product. By his efforts this grower has done much to help the watercress industry in general.

(b) **Abroad.**—Slogans which have been used by vegetable growers in the United States include the following :—

“ For that schoolgirl complexion eat carrots ”.

“ Let your Book of Health contain vegetable leaves ”.

“ Say it with cauliflowers ”.

In the Netherlands the Central Bureau of Auctions set aside in 1928 the sum of Fl.52,000 for propaganda in connection with the sale of Dutch vegetables and fruit. 600,000 copies of a recipe booklet containing new and popular recipes were distributed to the Dutch public. The results were good, and the promoters reported favourably on this system of advertising. Slogan posters were distributed to retailers and shown at railway stations. Co-operation was sought with the Union of Retailers with a view to printing similar advertisements on paper bags used in retail sales. The slogan adopted laid stress on the health-giving properties of vegetables and fruit. Increased consumption was noted which, it is believed, more than paid for the cost of the advertisements. Dutch produce was also advertised in foreign countries by means of attractive cards illustrating different vegetables. These were despatched to the chief customers, both wholesalers and retailers, of merchants in England, Germany, United States, Norway, Sweden, Denmark, Finland, Switzerland, Austria, Italy, Czecho-Slovakia, France and Belgium. Each card drew attention to the excellent quality of the product illustrated on the card and to the guarantee of quality under the Lion and Flag brand, which is the Netherlands equivalent of the National Mark in England and Wales. Trade in tomatoes and cucumbers was stimulated in certain areas, notably Switzerland, by the distribution of samples. A market garden film, first shown at Utrecht, was shown at exhibitions. Fl.50,000 was voted for propaganda purposes for the year 1929, but it was considered that for the best results this sum should be multiplied many times. Figs. 48 to 50 show samples of the illustrated cards used. The cabbage cards are in German, Germany being the chief importer of Dutch cabbage, whilst the cauliflower card was prepared with a French description for propaganda in France.

Some overseas merchants enclose their own advertising material in packages of vegetables sent to Great Britain : the name, address, telephone number and telegraphic address of the exporter are shown (see Appendix XXV).

## (2) Suggestions for Advertising Home Produce.

Goods for sale may be divided into two main classes, those for which there are no generally recognised standards of quality and packing and those for which standards have been prescribed and are observed in practice. The advertising of goods

in the former class carries with it a considerable element of risk, since although sales may be temporarily increased, the ground gained may not be held. Purchasers may be satisfied the first time, but disillusionment will follow if the quality is not maintained. The value of a trade mark for all kinds of goods is universally recognised, and experience shows the advantage in any advertising campaign of making it known that a particular mark is associated with a particular standard of quality and packing. With fresh vegetables, such a course may at first seem impracticable, owing to the variations in quality which must be expected from year to year and even from day to day, according to conditions of growth and other factors. Nevertheless, the grading of natural products has proved to be practicable, and the various National Mark schemes for vegetables have assisted growers and the trade by indicating means by which standardization of quality and pack can be effected. National Mark standards form the surest foundation on which a vigorous advertising campaign could be pursued.

The commercial output of fresh vegetables in this country was estimated in the opening chapter of this report at about 1,500,000 tons annually. This output is distributed amongst a population of about 40 millions. A number of vegetables produced for marketing in the fresh state are available for a few months only. It is therefore essential for the market to be prepared in advance when heavy supplies of any vegetable are about to appear, and it is always wise to over-estimate rather than under-estimate the quantities likely to be forthcoming. The consumer's interest in vegetables is stimulated when information is readily available as to the times when certain products are in ample supply and can be obtained at moderate prices.

Vegetable growers are fortunate in that they have attractive products to advertise. The health-giving properties of vegetables, which are rich in minerals and vitamins, cannot be too frequently asserted. Other advertising points include the wide range and variety of vegetable products, their place in the diet as appetisers and the many attractive ways in which they can be cooked and served. This last point especially gives much scope for consumer appeal, for, as a nation, we have not the reputation of making the best use of the wide range of vegetables at our disposal. There is also the possibility of an annual vegetable show in the important areas of consumption, and this might be linked up with other exhibitions at which the housewife is shown ways of improving home life.

Propaganda of this kind is quite as much the business of growers as of distributors. Indeed, whilst the co-operation of wholesalers and retailers is necessary and should be encouraged, the responsibility for increasing the sales of vegetables must primarily be the concern of producers as a whole. In order to ensure the greatest possible economy of effort and expense, the work should be carried on through the medium of a central organization.



Fig. 48.



Fig. 49. Illustrated cards used for advertising Dutch produce in Germany and France.



Fig. 50. (see figs 48 and 49).

(This and figures 48 and 49 are by courtesy of The Central Bureau of Horticultural Auctions, 80 Javastraat, The Hague, Holland.)

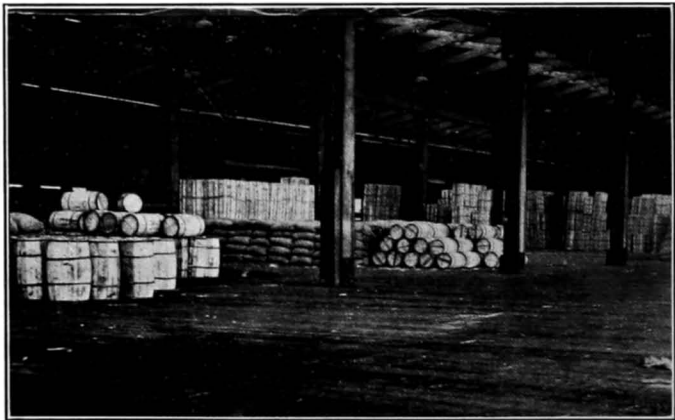


Fig. 51. Section of Riverside Quay, Hull, showing storage facilities for foreign produce.

## PART VII.

## CHAPTER XXII.—VEGETABLES IN THE DIET.

It will not be inappropriate to indicate briefly why it is important to the consumer, that is, to the nation as a whole, that vegetable growing should flourish and that its products should be marketed quickly, cheaply and in the best possible condition. The subject is of paramount importance to growers, too, since their prosperity depends upon the housewife's appreciation of the value of vegetables in the daily diet.

As is now well known, the value of foodstuffs does not depend simply on proteins, carbohydrates and fats, which, essential as they are, cannot alone maintain health. They must be supplemented by other factors which come largely from fresh foods eaten in their natural condition, and among these fresh vegetables take an important place.

At least 6 "accessory food factors" known as vitamins\* are now held to exist. Absolute lack of one or more of these, which leads directly to various diseases, is not common in the Western world; more important, for the present purpose, are the effects of partial vitamin deficiency, which is associated with subnormal health and development and lowered resistance to illness. A proper supply of vitamins is particularly important for pregnant and nursing mothers, for growing children and for those engaged in hard physical work. Vegetables are important sources of vitamins A, B and C. Vitamin A ("growth-promoting") is abundant in green vegetables, especially spinach, green outer leaves of cabbage and lettuce, brussels sprouts, green peas and watercress; carrots are the best root source. Ordinary cooking does not damage vitamin A seriously. Legumes are a rich source of vitamin B (anti-beri-beri and pellagra-preventing). Other potent sources of B are watercress and lettuce, followed by cabbage, spinach and carrots. Ordinary cooking does not destroy B, but loss may occur by diffusion into the cooking water. Cabbage and watercress are among the best sources of Vitamin C (scurvy-preventing), which is also present in lettuce, spinach, turnip-tops and onions. C is not stable in cooking; prolonged boiling or boiling in water with soda may destroy it. Thus the vogue of lettuce, watercress and other raw vegetables in salad preparation, although at present largely confined in this country to the summer months, is, so far as it goes, well calculated to increase Vitamin C intake. When cooking is necessary, a short period at a high temperature is much better than the longer time

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\* The account of vitamins given here is based on "Vitamins: A survey of present knowledge", Medical Research Council, Special Report Series, No. 167.



needed at a low temperature; thus vegetables for serving with stewed meat should be cooked separately and for as short a time as possible.

Vegetables as a class, and particularly those consisting of the shoot, leaves and growing parts of the root, are also valuable sources of certain mineral salts which are indispensable to healthy life. The vegetable kingdom is nature's chemical factory, which converts the minerals in the soil into a form in which the body can best make use of them. Much of the waste material consumed is thrown out via the kidneys, largely in the form of salts, and the supply of minerals must be constantly replenished. The most abundant salts, compounds of potassium, give a characteristic alkaline blood reaction: vegetables are thus complementary to cereal foods, which tend to produce acidity in the blood stream. Calcium, needed for hardening the bones and teeth, is abundant in peas and beans and in the leaves of plants. Spinach is rich in iron, without which the red colouring matter in the blood corpuscles cannot be formed. Sodium, potassium, iron, phosphorus and sulphur are important constituents of roots.

A third reason for the importance of vegetables in the diet is the largeness of their bulk in proportion to their value in body-building and the provision of energy. It is for this reason that vegetables are of great value in preventing constipation; the leafy kinds in particular have no equal for this purpose among ordinary foodstuffs. Although peas, beans, roots and tubers provide a certain amount of protein, proteins from other sources are as a rule needed to supplement them. The energy-value of other vegetables is small.

The importance for vegetables of proper cooking, which has a bearing not only on food value, but also, of course, on palatability, has already been stressed (see also Appendix XXVI). The natural appetising flavour of vegetables is due to the presence of free organic acids in the succulent parts, and the volatile substances present in certain kinds give them their pleasant aroma. Bad cooking and serving can cancel out these natural advantages, and there is scope for the education of the consumer in attractive ways of preparing vegetables as well as in their value for health and the wide variety which they can offer.

### CHAPTER XXIII.—CONCLUDING OBSERVATIONS.

The foregoing Chapters, describing the highly complex conditions under which vegetable marketing is at present carried on, will have suggested a number of directions in which improvement might be effected. Measures which have been taken to improve the conditions of marketing, either in this country or abroad, have also been described. It may be useful now to sketch the broad features of the problem, and indicate the lines on which further efforts towards better marketing might be made.

The market is called upon to deal with over 40 different kinds of vegetables, many of which are grown simultaneously or in succession on the same holdings. The size of a holding is often small, but sometimes it covers many hundreds of acres. There are important areas of production both near to and remote from large consuming centres. Specialised production is not confined to one or the other.

The acreage under vegetables may vary widely from year to year. Weather has a vital influence on both production and marketing; it affects not only the volume of the particular crop but also the time of its first appearance on the market, the length of its season and, particularly with some crops, the intensity of the demand.

With many vegetables the size of the home crop practically determines the total market supply. Imports of some crops, however, particularly of onions and dried peas, are heavy, and the home acreage under onions has declined during recent years. Appreciable quantities of some other crops, such as cauliflower and broccoli and lettuce, are drawn from abroad, and imports may sometimes be encouraged by unfavourable weather conditions at home. For the most part, however, fresh vegetable imports were never large, and have recently been reduced.

The perishable nature of many vegetables demands that they be promptly disposed of soon after reaching the marketable stage, but the market cannot always find remunerative outlets for the quantities thrust upon it. The irregularity of supply and demand causes wide fluctuations in prices from place to place, and from time to time, often even in the course of a single day. These fluctuations are accentuated by the volume of poor-quality and ungraded produce on the markets and by the lack of uniformity in methods of grading and packing. Market information, is, therefore, difficult of interpretation, and production highly speculative.

Many producers situated close to large consuming areas deal direct with retailers or in special circumstances with consumers. Others, not so advantageously placed, rely largely on the services of commission agents and other intermediaries. Whether trading direct or through wholesale channels is more profitable depends on circumstances, but transport and distributive costs often weigh heavily on the remote producer's returns.

Although the heavy importations of raw onions, dried peas and beans (both canned and not canned) and the smaller imports of fresh vegetables and of vegetables in brine reduce the demand for home-grown fresh vegetables, any material improvement in returns to home producers as a whole would appear to depend largely on their own united efforts to achieve such reforms as may be found to be both desirable and practicable.

The following are some of the main objectives :—

(1) Improvement in quality and presentation by better production and more general adoption of grading and standardization of packs and containers.

(2) Stimulation of demand for all classes of fresh vegetables by an advertising and educational campaign coupled with more attractive presentation both on markets and in retail shops. This would be particularly valuable on the approach of peak periods of supply, during which produce is too often sold at prices which do not afford the grower any return for his labour.

(3) Reduction in the risks and therefore in the costs of the marketing process—by standardization, improved market intelligence, bulking of supplies, particularly in areas of specialised production, and withholding low-grade produce from the market, at least during glut periods.

(4) Closer adjustment of supply to demand over long as well as short periods, by the improvements referred to in (3) above, by wider use of facilities for storage and preservation, and in the case of certain crops by some form of acreage planning.

(5) The adoption of uniform trade practices and the introduction of some form of registration of salesmen and dealers.

If these reforms are to be made effective, it is clear that organization of one kind or another will be necessary and that it should cover the bulk of the vegetable supplies of the country, not only those passing through wholesale markets but the large volume of supplies sold through other channels.

Again, the production of most vegetables is widely diffused and so generally interwoven with the production of other kinds that organization in terms of any one crop might be impracticable as well as expensive. It may therefore be necessary to contemplate an organization on a national basis, embracing all kinds of vegetables.

One of the first tasks of such an organization would presumably be to establish uniform methods of grading and packing. Reference has been made to the National Mark vegetable schemes, which were introduced in 1933 and 1934 and are subject to periodical review in consultation with the interests concerned. These voluntary schemes are showing in the first place the practicability of defining quality standards for fresh vegetables, and secondly, the advantages

to producers, distributors and consumers of standard packs and containers, the former carrying with them a warranty of quality and description.

It may be assumed that under any comprehensive scheme of organization, grades would be defined for vegetables of high quality such as are at present prescribed in the National Mark schemes.

Below these high quality grades, it might be sufficient to prescribe a minimum second grade standard and to require vegetables of that standard in a container to be reasonably uniform.

At the bottom end of the scale, it would be the aim to keep off the market definitely inferior produce (i.e. produce below the minimum second grade standard). Such produce, by its very nature, not only depresses price levels over the whole range of quality, but tends to prejudice buyers against vegetables as such.

The purpose of the defined minimum standard grades would be to facilitate the identification of produce of those grades by the wholesale or retail trade, and to ensure to the grower a return commensurate with the quality represented by them, thus encouraging improved production.

Closely linked with improved methods of grading would be the extended use of standard containers, standards of trimming and bunching and declarations of net weight or count. At present a large proportion of vegetable supplies is never put into containers at all, but carried loose by rail or road and dumped in unsightly heaps in markets or on stalls or in shops. The waste frequently incurred by the carriage of material which, on arrival, is found to be unfit for sale would be largely avoided by grading and packing. The increased use of standard containers and methods of packing would bring about greater confidence on the part of buyers who would be assured of a definite count or weight; it would tend to promote fluidity of supplies at times of unequal demand in neighbouring areas; it would facilitate transport by rail or road; combined with national grading it would make national advertising a hopeful possibility.

In certain production areas there may be scope for local action. Efforts which have been made, both in this country and abroad, in the direction of bulking at depots for grading and packing, have been referred to. Further development on these lines may be possible, though not all vegetables lend themselves to organized local assembly in this way. Importance may well be attached to such depots in any plan of national organization of which grading was a feature.

Efficient standardization of product, pack and package would facilitate the provision of an up-to-date market intelligence service. The value of such a service would be enhanced by the

collection and dissemination of information on crop production furnished, from time to time, by the growers themselves, and of statistics of the quantities marketed and the centres to which despatched.

The more complete the organization of producers for marketing purposes, the more effectively such an organization could negotiate with distributive, transport and other interests. The best use of each standard container for the greatest range of vegetables might be achieved as a result of action by organized growers in conjunction with distributors and transport interests. Concessions in regard to transport rates and facilities might be obtained by similar effort. Then there is the question of the registration or licensing of commission salesmen dealing in vegetables. Such a system is already in operation in the United States under the Perishable Agricultural Commodities Act, 1930, and in Canada under the Fruit and Honey Act, 1934, whilst the authorization of merchants by the Potato Marketing Board in this country is not without significance. Any such step would call for closer co-operation between organized producers and representative distributive organizations.

The proposals outlined above by no means exhaust the advantages that might accrue from the rationalization of vegetable marketing. Among other services which producers, if organized comprehensively, might be able to render for themselves are the provision of credit facilities, encouragement of the production of selected crops, the provision of accommodation for storage and preservation, the bulking of supplies for canners, pickle makers and other large users.

The main purpose of this Report has been to direct the attention of producers to the outstanding problems of the industry. It is for producers to decide on the steps that will lead to their solution.

Five main objectives of organization have been suggested, and their desirability would probably not be disputed. Whether they are all practicable to-day or are likely to be all practicable in the future is another matter. The number of vegetables grown, the range of output and of quality per holding, the varying degree of perishability and the daily influence of the weather both on output and on demand combine to suggest that a cautious approach should be made to the problem of organizing this industry. There does, however, seem to be a very strong case for action in the direction of, at any rate, two of these objectives. One of them is the standardization of product, pack and package in order to secure better presentation, to stimulate demand and to facilitate distribution. The other is the standardization of trade practices.

What would be the nature of a plan limited to these two objectives? It would be purely regulatory; it would not involve any collective trading, although it might stimulate local co-operative action by growers in the assembly of their produce. It would not attempt to control the volume of any crop that was to be grown or

to be offered for sale or to limit the individual grower's choice of selling methods. It would preserve the existing channels of sale by the registration of traders and by the prevention of irregular trade practices. It would not attempt to control prices, even in periods of surplus. It would, almost necessarily, involve the exercise of powers derived either from the Agricultural Marketing Acts or from other legislation designed for the particular purpose.

It should not be difficult to attain these two objectives, and in so doing to provide a base from which an advance could be made towards the next objectives, of which the first might well be a programme of national advertising based on standard products.

Markets Division,

Ministry of Agriculture and Fisheries.

June, 1935.

## APPENDIX I.

Estimated Average Annual Supplies and Values of Vegetables for human consumption (excluding potatoes, tomatoes and cucumbers) produced in England and Wales, 1930-1932.

<i>Group.</i>	<i>Crop.</i>	<i>Acreage.</i>	<i>Production.</i> <i>Tons.</i>	<i>Value.</i> <i>£</i>
I (Salads)	Outdoor Cabbage Lettuce ...	4,200	33,600	315,000
	Indoor Cabbage Lettuce ...		1,200	69,000
	Cos Lettuce ... ..	1,500	10,600	90,000
	Outdoor Radishes ... ..	845	5,100	71,000
	Indoor or Frame Radishes ... ..		350	14,700
	Cultivated Watercress ... ..		5,000	181,200
	Green Onions ... ..	1,800	14,400	95,000
	Mustard-and-Cress ... ..		2,500	95,400
	Endive ... ..		550	8,400
Total for Group I ... ..			73,300	939,700
II (Stem and Stalk)	Forced Rhubarb ... ..		10,000	230,000
	Natural Rhubarb ... ..	5,000	65,000	300,000
	Celery ... ..	7,380	75,000	450,000
	Forced Asparagus ... ..		45	9,500
	Outdoor Asparagus ... ..		1,200	101,100
	Forced Mushrooms ... ..		1,050	200,000
	Wild Mushrooms ... ..		350	39,000
	Seakale ... ..		700	30,000
Total for Group II ... ..			153,345	1,359,600
III (Leaf and Flower)	Broccoli and Cauliflower ... ..	21,000	170,000	1,500,000
	Spring Cabbage and Spring Cabbage Greens ... ..	12,000	84,000	615,000
	Autumn and Christmas Cabbage	25,000	300,000	1,200,000
	Purple Sprouting Broccoli ... ..	1,250	6,250	43,700
	Scotch and other Kale ... ..	700	8,500	59,300
	Red Cabbage ... ..	160	1,450	5,800
	Savoys ... ..	5,020	45,180	200,000
	Turnip Tops ... ..	1,250	8,700	52,500
	Brussels Sprouts ... ..	32,850	121,000	1,750,000
	Spinach ... ..	1,500	6,000	85,000
	Leeks ... ..	1,200	8,400	72,000
	Total for Group III ... ..			759,480
IV (Legumes and Marrows)	Green Peas ... ..	59,000	132,000	1,800,000
	Dried Peas (Marrowfats) ... ..	20,000	18,000	306,000
	Dried Peas (Blues) ... ..	12,000	10,000	150,000
	Runner Beans ... ..		43,000	345,000
	Broad Beans ... ..		14,000	130,000
	Outdoor Dwarf or Kidney Beans		12,000	180,000
	Forced Beans ... ..		800	112,000
	Outdoor Vegetable Marrows ... ..	1,900	25,000	130,000
Indoor Vegetable Marrows ... ..		100	2,800	
Total for Group IV ... ..			254,900	3,155,800

<i>Group.</i>	<i>Crop.</i>	<i>Acreage.</i>	<i>Production.</i> <i>Tons.</i>	<i>Value.</i> <i>£</i>
<b>V</b> ( <b>Roots and Onions</b> )	Bunched Turnips ... ..	640	3,200	29,600
	Topped Turnips and Swedes ...	9,000	100,000	300,000
	Harvested or Ripe Onions ...	1,100	7,600	43,000
	Globe and Jerusalem Artichokes		2,600	19,400
	Parsnips ... ..	2,200	17,600	105,600
	Bunched Carrots ... ..	600	2,700	30,000
	Topped Carrots ... ..	10,000	117,000	500,000
	Red Beet ... ..	3,350	40,000	160,000
	Horseradish ... ..		200	7,100
	Shallots ... ..		100	2,100
	Chicory Root ... ..	470	4,700	12,000
Witloof Chicory ... ..		50	1,400	
<b>Total for Group V...</b>			<b>295,750</b>	<b>1,210,200</b>
<b>VI</b> ( <b>Herbs</b> )	Outdoor Mint ... ..		2,160	44,000
	Forced Mint ... ..		140	31,500
	Sage ... ..	150	900	13,000
	Thyme ... ..		270	4,050
	Parsley ... ..	900	5,400	75,600
<b>Total for Group VI</b>			<b>8,870</b>	<b>168,150</b>

**Order of importance of home-produced fresh vegetables  
according to tonnage.**

1. Cabbage and Greens (including Turnip Tops, but excluding Brussels Sprouts).
2. Cauliflower and Broccoli.
3. Green Peas
4. Brussels Sprouts.
5. Carrots.
6. Turnips and Swedes.
7. { Rhubarb.  
    { Celery.
9. Beans.
10. Lettuce.
11. Beet.
12. Marrows.
13. Onions (ripe and green).
14. Parsnips.
15. Herbs.
16. Leeks.
17. Spinach.
18. Radishes.
19. Watercress.
20. Other fresh vegetables taken together slightly exceed the production of herbs.

(Dried Peas and Chicory for grinding are not included in the above list.)



**Order of importance of home-produced fresh vegetables  
according to value.**

1. Cabbage and Greens (including Turnip Tops, but excluding Brussels Sprouts).
2. Green Peas.
3. Brussels Sprouts.
4. Cauliflower and Broccoli.
5. Beans.
6. { Rhubarb.  
Carrots.
8. Lettuce.
9. Celery.
10. Turnips and Swedes.
11. Mushrooms.
12. Watercress.
13. Herbs.
14. Beet.
15. Onions (ripe and green).
16. Marrows.
17. Asparagus.
18. Parsnips.
19. Mustard-and-Cress.
20. Other fresh vegetables together approach Turnips and Swedes in value.  
(Dried Peas and Chicory for grinding are not included in the above list.)

*Total estimated output of home-produced fresh vegetables—1,500,000 tons per annum.*

*Total estimated value of home-produced fresh vegetables—£12,000,000 per annum.*

It is estimated that in the period under review vegetables forced or grown entirely under glass (excluding potatoes, tomatoes and cucumbers) represented approximately 17,000 tons annually with a value of £800,000. Of these vegetables, rhubarb is the most important, followed as regards production by mustard-and-cress, lettuce, mushrooms, beans and seakale, and as regards value by mushrooms, beans, mustard-and-cress, lettuce, mint and seakale.

## APPENDIX II.

Approximate Estimate of Annual Imports of Fresh Vegetables for Consumption  
in England and Wales.

<i>Crop.</i>	<i>Before introduction of tariffs†</i>	<i>1934.</i>
	<i>Tons.</i>	<i>Tons.</i>
Endive ... ..	400	
Lettuce ... ..	10,000	8,000
Witloof chicory ... ..	500	
Salad (spring) onions ... ..	negligible.	negligible.
Radishes ... ..	1,200	*
Watercress ... ..	100	*
Asparagus ... ..	1,500	270
Celery ... ..	100	negligible.
Mushrooms ... ..	600	negligible.
Seakale ... ..	20	*
Cabbage and greens excluding red cabbage	2,650	*
Red cabbage ... ..	2,250	*
Cauliflower and broccoli ... ..	37,100	7,000
Leeks ... ..	40	*
Spinach ... ..	250	*
Brussels sprouts ... ..	1,200	*
Green beans ... ..	1,000	600
Marrows ... ..	100	negligible.
Green peas ... ..	2,000	700
Artichokes ... ..	150	*
Red beet ... ..	270	*
Carrots ... ..	17,100	8,500
Horseradish ... ..	1,425	*
Ripe onions ... ..	226,800	224,500
Shallots ... ..	100	*
Parsnips ... ..	500	*
Turnips and swedes ... ..	450	*
Mint ... ..	negligible.	negligible.
Parsley ... ..	30	*
Sage ... ..	10	*
Thyme ... ..	10	*
Rhubarb ... ..	50	negligible.
Gherkins ... ..	1,250	*
Others ... ..	500	*

\* Figures not available.

† The first duties were imposed on vegetables as from December, 1931.

## APPENDIX III.

Duties Chargeable on Imports of certain Fresh and Preserved Vegetables.  
May, 1935.

Commodity.	Period (inclusive).	Rate of Duty chargeable.*
Vegetables—Fresh—		
Asparagus ... ..	1st January to end of February	4d. per lb.
	1st March to 15th April ... ..	1½d. per lb.
	16th April to 30th June ... ..	4d. per lb.
	1st July to 31st December ... ..	10 per cent. ad val.
Green Beans ... ..	1st January to 31st August ... ..	1½d. per lb.
	1st September to 31st December	10 per cent. ad val.
Broccoli and Cauli- flowers.	1st March to 30th June ... ..	4s. per cwt.
	1st July to last day of February	3s. per cwt.
Carrots ... ..	16th June to 30th April ... ..	2s. 4d. per cwt.
	1st May to 15th June ... ..	10s. per cwt.
Lettuce, Endive and Chicory (Salad)	1st January to end of February	5s. per cwt.
	1st March to 30th April ... ..	10s. per cwt.
	1st May to 31st December ... ..	8s. per cwt.
Mushrooms ... ..	Whole year ... ..	8d. per lb.
Green Peas—shelled	1st January to 31st July ... ..	£1 17s. 4d. per cwt.
	1st August to 31st December ... ..	10 per cent. ad val.
Green Peas—unshelled	1st January to 31st July ... ..	9s. 4d. per cwt.
	1st August to 31st December ... ..	10 per cent. ad val.
Turnips ... ..	16th June to 30th April ... ..	2s. 4d. per cwt.
	1st May to 15th June ... ..	8s. per cwt.
Others (excluding Cucumbers, Potatoes and Tomatoes).	Whole year ... ..	10 per cent. ad val.
Vegetables — Preserved in airtight containers (excluding tomatoes and excluding pickles and vegetables pre- served in vinegar).	Whole year ... ..	20 per cent. ad val.
Vegetables—Preserved— Others ... ..	Whole year ... ..	10 per cent. ad val.

\* On imports from Foreign Countries and Irish Free State only. Imports from other British countries are not chargeable with duty.

## APPENDIX IV.

Acreage under certain Vegetable Crops as returned on Agricultural Holdings above one acre in extent, in June in each of the years  
1922-1934 in England and Wales.

Year.	Carrots.	Onions.	Cabbage for human consumption.	Brussels Sprouts.	Cauliflowers or Broccoli.	Celery.	Rhubarb.	Beans picked green.*	Peas picked green.*
	<i>Acres.</i>	<i>Acres.</i>	<i>Acres.</i>	<i>Acres.</i>	<i>Acres.</i>	<i>Acres.</i>	<i>Acres.</i>	<i>Acres.</i>	<i>Acres.</i>
1922	14,084	3,557	27,954	14,951	10,475	5,282	5,718	12,907	50,894
1923	10,107	2,352	22,823	16,910	11,127	5,331	5,720	†11,616	†46,737
1924	10,746	2,618	25,848	20,511	12,358	5,947	6,332	14,087	62,861
1925	8,133	2,199	22,214	20,901	11,709	4,793	6,246	11,510	42,676
1926	8,341	1,924	25,355	25,468	13,295	5,366	6,410	12,628	46,425
1927	8,741	1,692	25,981	23,667	11,674	5,686	6,677	11,799	41,937
1928	9,956	1,714	27,893	30,434	13,478	5,832	7,037	12,469	44,720
1929	10,269	2,448	32,352	26,715	13,863	5,614	7,192	12,611	53,860
1930	9,040	1,977	30,632	26,331	14,557	6,377	7,370	14,404	56,431
1931	9,430	1,534	35,702	35,580	15,783	7,310	7,843	13,218	57,445
1932	12,489	1,892	33,863	33,043	17,671	7,710	8,253	15,059	60,551
1933	12,868	1,941	33,101	35,890	20,695	7,348	8,175	14,281	63,671
1934	16,432	2,099	36,981	34,048	20,107	7,510	8,233	16,833	74,363

\* Including a proportion cut green for fodder.

† Excluding in 1923, 4,781 acres of beans and peas cut green for fodder—which were not separately distinguished.

## APPENDIX V.

### List of the Vegetable Growing Areas of England and Wales.

#### HOME COUNTIES AREA.

District.	Area covered.	Kinds of crops grown.	Notes.
1. Swanley (Kent) ...	Roughly a six miles' radius from Swanley, but extending to Southfleet, Fawkham, Longfield and Meopham, Bexley, Chelsfield and Orpington.	Cabbage, Brussels Sprouts, Cauliflowers, Spring greens, Runner beans, Lettuce, Peas, Savoys, Spinach, Broad Beans, Marrows, Spring onions, Beet.	Farms often of medium to large size. Vegetables grown chiefly for the London markets. A large and important market-gardening area which has been described as second early land.
2. Rochester ...	Covers the Isle of Grain. Includes Cliffe and Cooling and is more or less bounded by a line drawn N.W. to S.E. from Gravesend to Rochester.	Peas, Cauliflowers, Broccoli, Cabbage, Savoys, Spring Greens.	A large growing area. Farms of medium to large size, but some small-holdings, around Cliffe. Caters largely for the London markets. Very early peas produced in the district.
3. Sittingbourne with Sheerness (Kent).	Extends to Hartlip, Stockbury, Wormshill and Eastling. The small market-gardening area around Minster and Sheerness may also be included.	Broccoli and Cauliflowers, Cabbage, Savoys, Spring greens, Peas, Brussels Sprouts.	Fairly large farms. A district of some importance for the production of the vegetables mentioned.
4. Canterbury ...	Canterbury, Chilham and Wingham	Mushrooms, Watercress ... ..	A small watercress growing district.
5. Margate and Ramsgate	Localities of Margate and Ramsgate	Broccoli and Cauliflowers, Brussels Sprouts, Cabbage, Peas.	An important area for broccoli and cauliflowers supplied to the London markets.

6. Sandwich and Deal	Extends for a radius of about 8 miles around Ash to Staple and Eastry and includes Worth.	Spring cabbage and greens, Broccoli, Savoys, Brussels Sprouts, Cos and Cabbage lettuce, Rhubarb, Broad beans, Peas, Marrows, Runner and Kidney beans.	Probably 70 per cent. of the supplies are marketed locally. A district largely made up of smallholdings, but there are some big farms. The earliest land is at Minster and Woodnesborough. A market-gardening area.
7. Middlesex District and Vicinity.	Stretches roughly from Mortlake on the east, to Windsor on the west, Uxbridge on the north and Walton-on-Thames on the south. More or less located in the large U bend of the Thames between Windsor and Brentford.	Includes a wide range of vegetables, amongst which may be mentioned Cabbage, Savoys, Spring greens, Brussels sprouts, Cauliflowers, Spinach, Beet, Peas, Rhubarb, Cos and Cabbage lettuce, Leeks, Parsnips, Runner and Broad beans, Turnips, Parsley, Seakale, Radishes, Mint.	A large and important vegetable growing area. Half of the land on vegetable growing farms is cultivated by growers with 100-300 acres or more. In this area vegetable growing in every form from open farm land to highly intensive cultivation exists, including the cultivation of the less common vegetables.
8. Mitcham (Surrey) ...	Mitcham and Hackbridge ...	Mustard-and-Cress, Watercress, Market garden crops.	One of the most important districts for the production of mustard-and-cress.
9. Gomshall Area ...	Gomshall, Abinger and Chilworth ...	Watercress ...	An important area of specialised watercress production.
10. Worthing and Brighton.	From Barnham to Portslade, chiefly along the coast; but as far north as Ashington, Thakeham, and Henfield, including Lancing, Sompting, Worthing and Shoreham.	Market garden produce, also forced vegetables including beans, mushrooms, seakale and marrows.	One of the chief areas in the country for forced beans and mushrooms and early lettuce.
11. Arundel ...	Locality of Arundel ...	Watercress.	
12. Southampton and Portsmouth.	From Chichester to Romsey, including Swanwick, Portchester, Hilsa, Hayling and Nutbourne, Botley, Nursling and Romsey.	Cabbage, Beans, Peas, Marrows, Turnips, Swedes, Beet, Broccoli, Lettuce (chiefly Cabbage lettuce).	There are well over 2,000 acres of vegetables grown between Chichester and West End. A market gardening area catering chiefly for local consumption. Some vegetables are sent to the London markets.

HOME COUNTIES AREA—continued.

District.	Area Covered.	Kinds of crops grown.	Notes.
13. Aldershot ... ..	Ash, Elstead, Eashing and Hawley ...	Carrots and Cabbage. A small quantity of forced early vegetables.	A small growing area catering for local requirements.
14. Reading ... ..	Locality of Reading ... ..		There are possibly 300 acres of mixed vegetables grown in market gardens for local needs.
15. Chiltern Hills ... ..	Watlington, Lewknor, Princes Risborough, High Wycombe, West Wycombe, Bourne End, Denham, Rickmansworth, Croxley Green, Chesham, Watford, Berkhamsted, Hemel Hempstead, Boxmoor, Radlett, Park Street, St. Albans, Harpenden, Redbourn, Chiltern Green, Hitchin.	Watercress ... ..	One of the most important areas of specialised watercress production.
16. Biggleswade ... ..	The area extends to St. Neots in the north, Dunton in the east, Willington in the west and to Three Counties Station in the south. Also a smaller area around Ampthill, Clolphill and Flitton.	Brussels Sprouts, Cabbage, Runner Beans, Peas, Marrows, Parsley, Carrots, Parsnips, Beet, Cauliflowers, Spring Onions, Leeks, Lettuce, Radishes.	One of the chief vegetable growing areas, supplying large quantities of vegetables to London and other important centres of consumption. Probably over one-third of the acreage under vegetables is on County Council smallholdings. The chief centre of cultivation of brussels sprouts in the country.
17. Fowlmere (Cambs.)... ..	Fowlmere ... ..	Watercress ... ..	A relatively small watercress area.
18. Waltham Cross ... ..	Locality of Waltham Cross and Enfield.	Miscellaneous vegetables ... ..	A small market-gardening area catering for the London markets.

19. Rainham (Essex) ...	Roughly from Wanstead to Grays and extending in the North to Brentwood.	Peas, Rhubarb, Runner Beans, Cabbage, Broad Beans, Lettuce, Marrows, Beet, and all crops mentioned in the Middlesex area.	The farms are often from 150 to 300 acres. The land on the west is slowly being built over owing to the encroachment of London. A market-gardening area of importance catering for the London markets, and one of the earliest pea-growing areas.
20. Southend-on-Sea ...	Rochford, Gt. Wakering, Barling, Sutton, Gt. Stambridge, Rayleigh.	Spring Greens and Cabbage, Peas, Rhubarb (Rayleigh), Lettuce.	The bulk of spring greens goes to London, and some peas. Various kinds of vegetables are grown for local demand. Some cabbages, beans and peas are also grown for the London markets around Southminster and Tillingham.
21. Chelmsford ....	An area around Chelmsford including Boreham.	Early Peas, Christmas Cabbage, Brussels Sprouts, Runner Beans, Outdoor Rhubarb, Celery.	There are a number of farmers who grow cabbage. Vegetables including cabbage, brussels sprouts and celery are sent to London markets.
22. Kelvedon (Essex) ...	From Maldon enclosing the area to the coast from Braintree and Earls Colne in the west to Manningtree in the north.	Peas, Runner Beans ... ..	A large and important pea-growing area.
23. Ipswich ... ..	Around the Felixstowe Road ...	Cabbage, Savoys, Cauliflowers, Brussels Sprouts, Peas, Turnips, Broccoli, Rhubarb, Marrows.	Some vegetables sent to London.
SOUTH-WESTERN AREA.			
24. Plymouth ....	St. Dominick, Bere Alston, Landrake, Saltash and Plymstock.	Spring Cabbage, Savoys, Turnips, Peas, Beans, Beet, Rhubarb, Lettuce (including some glasshouse lettuce).	A market-gardening area largely catering for Plymouth and district.



SOUTH-WESTERN AREA—*continued.*

District.	Area covered.	Kinds of crops grown.	Notes.
25. Exeter ... ..	Locality of Exeter. ... ..	Market garden produce ... ..	Provides a large percentage of many vegetables required for local consumption. Some broccoli and cauliflower also grown in the Kingsbridge area of Devon and consigned to distant markets.
26. Combe Martin, near Iffracombe.	Combe Martin and Braunton ... ..	Market garden produce ... ..	The growers are chiefly small-holders. About 300 acres of market gardens. Supplies vegetables for Barnstaple, Bideford and Iffracombe. Some broccoli sent to distant markets.
27. Weymouth ... ..	At Upwey ... ..	—	A small vegetable growing district. Possibly 100 acres of vegetables are grown in the locality.
28. South Dorset Area (Frome Valley).	Wareham, Moreton, Warmwell, Wool, Bere Regis, Toller.	Watercress ... ..	A very important area of specialised watercress production.
29. Bournemouth ... ..	Wareham to Lymington, including Wimborne, Poole, West Moors, Sopley and Brockenhurst.	Market garden produce. ... ..	Provides a portion of the local requirements.
30. Salisbury ... ..	Gillingham, Semley, Dinton, Wilton, Broad Chalk, Damerham, Downton, Bishopstone, Cranborne, Fordingbridge and Salisbury.	Watercress ... ..	An important area for the production of watercress.
31. North Downs Area ... ..	Andover, Longparish, Sutton Sootney, Hurstbourne Priors, Whitchurch, Micheldever, Overton, Fleet, Alresford, Alton and West Meon.	Watercress ... ..	A very important area of specialised watercress production.

32. Hungerford, Newbury and Pewsey.	Ramsbury, Kintbury, Theale, Shalbourn, Burgholere district, Great Bedwyn, Axford (Wilts) and Pewsey.	Watercress.	
33. Wallingford	Wallingford	Watercress.	
34. Challow	Challow	Watercress.	
35. Swindon	A small area including Blunsdon, Purton and Wroughton.	—	A small area of production catering for local consumption. Market gardens also at Coxwell and Farringdon.
36. Bromham (Wilts)	West Lavington, Market Lavington, Easterton, Urchfont, Devizes, Rowde, Chittoe, Bromham, Potterne.	Parsnips, Peas, Carrots, Broad Beans, Runner Beans, Beet, Spring Cabbage, Turnips.	Carrots are grown after peas and early potatoes as well as being sown in the early spring. A specialised growing area for root vegetables and peas. There are possibly 300 vegetable growers in the district.
37. Bradford-on-Avon (Wilts).	Bradford-on-Avon	Mushrooms	Of interest as a centre of production of forced mushrooms.
38. Bristol	Chiefly within 10 miles' radius of the city, including Hambrook, Winterbourne, Downend and Mangotsfield, Bitton, Fishponds, Kingswood, Hanham, and St. Georges, Keynsham, Brislington, Whitechurch and Willsbridge.	Market garden produce	Possibly up to 2,000 acres of vegetables grown in the area. Supplies are largely marketed in Bristol; but certain crops, notably rhubarb, celery, lettuces and radishes, are consigned to South Wales.
39. Cheddar	Between Axbridge and Rodney Stoke	Spring Cabbage, Runner Beans, Broad Beans, Peas.	Caters in a small way for Bristol trade. (Also less than 100 acres at Milton, near Weston-super-Mare. Also a small acreage at Tickenham, near Clevedon.)
40. Bridgwater	North Petherton, North Newton, Durston, West Monkton.	Peas	Noted for early peas and is the earliest specialised pea-growing area.

SOUTH-WESTERN AREA.—*continued.*

District.	Area covered.	Kinds of crops grown.	Notes.
41. Penzance ... ..	Chiefly near Penzance and in the direction of Redruth; also near Truro.	Broccoli and Cauliflower, Spring Cabbage, Lettuce and Salads.	Large growers have up to 50 acres of broccoli; 35 per cent. of growers with possibly less than 5 acres of this crop. Acreage of broccoli possibly 2,500 acres. Some other vegetables produced for local consumption only.

EASTERN AREA.

42. Bury St. Edmunds ...	About a radius of 12 to 15 miles around Bury St. Edmunds.	Carrots, Cabbage, Savoys, Brussels Sprouts, Runner Beans, Peas. Note: For Ipswich see No. 23.	Excluding turnips, the area given up to vegetable production is about 1,000 acres.
43. Cambridge ... ..	Wilburton, Stretham and between Stretham, Willingham and Cambridge.	Peas, Beans, Celery, Asparagus, Spring Onions.	Largely grown by smallholders with holdings up to 10 acres each. Land very fertile in the area mentioned.
44. Ely ... ..	Shippea Hill, Ely, Littleport, Soham.	Celery ... ..	A very important specialised celery-growing area.
45. Chatteris and Ramsey District.	Chatteris, Wimblington, Doddington, Manea, Ramsey, Holme, Warboys, Somersham, March, Whittlesey, Yaxley.	Washed Carrots, Celery, Peas, Turnips, Beet, Onions, Parsnips, Lettuce, Cabbage, Asparagus.	The chief carrot-growing area.
46. Wisbech ... ..	Wisbech, Leverington, Elm and Enneth.	Peas, Broad Beans, Asparagus.	—
47. Peakirk ... ..	Crowland, Peakirk, Thorney. ...	Peas (green) ... ..	An important area for the growing of green peas.
48. Oakham ... ..	Oakham ... ..	Mustard-and-ress ... ..	Very small output.

49. Bourne ... ..	Bourne ... ..	Mustard-and-creas, Watercress ...	A very small district but recognised as a centre for the production of mustard-and-creas.
50. Swinderby (Lincoln)	Swinderby, Collingham, East Markham.	Carrots, Beans, Cauliflowers, Cabbage, Brussels Sprouts.	A fairly small growing area of which a speciality is carrots.
51. Lincoln ... ..	Locality of Lincoln ... ..	Cabbage, Celery, Rhubarb, Parsley, Beet, Carrots.	Not a large area of production. Some cabbage is sent to Sheffield.
52. Retford ... ..	Locality of Retford ... ..	Cabbage, Brussels Sprouts, Cauliflowers, Peas, Celery, Beet, Radishes, Lettuce, Marrows, Runner Beans.	A small area of production; estimated at 100 acres within a two miles' radius of the town.
53. Kirton-in-Lindsey ...	Kirton-in-Lindsey, Scotter, Brigg ...	Carrots ... ..	A growing district of medium size. Carrots are a speciality.
54. Haxey District ...	Epworth and Belton in the north, Finningley in the west, Gainsborough in the south; the Trent more or less forms the eastern boundary.	Celery, Peas, Beet ... ..	The important celery-growing area of the Isle of Axholme. Peas are grown at Ranskill.
55. Crowle (Lines.) ...	Fockerby, Luddington, Crowle ...	Late pea area ... ..	Probably the latest specialised pea-growing area in the country.
56. Grimsby ... ..	South and west of Grimsby ... ..	—	Estimated to be about 200 acres of market gardens in the locality of Grimsby. Grown for local use.
57. Boston Area ...	From Old Leake and Wrangle to Frieston and Boston and from thence to include the area bounded by Swineshead in the west, Gosberton on the south and Fosdyke on the south-east. The area also extends to Pinohbeck and Spalding.	Cabbage and Spring Cabbage Greens, Dry and Green Peas, Cauliflowers, Celery, Bunched Carrots, Broccoli, Lettuce, Brussels Sprouts, Beet, Spring Onions, Broad Beans.	One of the most important areas for the production of spring cabbage, spring cabbage greens and dry peas. There are a number of growers with fairly small acreages around Swineshead.
58. Long Sutton and Holbeach.	Includes Long Sutton, Holbeach, Tydd and Newton.	Peas, Celery, Broad Beans, Runner Beans, Cauliflowers, Seakale.	

EASTERN AREA—*continued.*

District.	Area covered.	Kinds of crops grown.	Notes.
59. King's Lynn ...	Wiggenhall St. Mary's, Sandringham and Grimston.	Spring Cabbage, Summer Cabbage, Peas, Lettuce, Rhubarb, Brussels Sprouts, Carrots.	An area of some importance for the production of spring cabbage and oos lettuce.
60. Fakenham (Norfolk)	Fakenham, Great Ryburgh, Buxton Lamas.	Cabbage, Savoys, Carrots, Brussels Sprouts.	A substantial proportion of vegetables is consigned to London markets.
61. Norwich ... ..	Area of 12 to 14 miles from Norwich on the east and south-west sides, including Blofield, Framingham Earl, Bramerton and Brundall.	General market garden crops ...	A good deal of the produce is absorbed locally. A number of growers have smallholdings of under 10 acres in extent and often about 3 acres.
62. Great Yarmouth ...	Between Yarmouth and Stalham, including Martham and Hemaby.	Market garden crops ... ..	Chiefly caters for local consumption.
63. Lowestoft ... ..	North Cove, Sotterley, Henstead and Beccles on the south; Lound on the north.	Market garden crops ... ..	A small growing area catering for local requirements.

NORTHERN AREA.

64. Sheffield ... ..	Totley, Gleadless, Dronfield, Rotherham, Tickhill.	Swedes, Cabbage, Savoys, Late Peas, Cauliflowers, Broccoli, Lettuce, Beet, Carrots, Broad Beans.	Supplies very small; marketed in the locality.
65. Doncaster ... ..	—	Peas, Late Cauliflowers, Leeks. Other crops grown include practically all those mentioned for Sheffield.	For local consumption supplies of locally grown vegetables are largely available during the months of July to October,

66. Salby (Yorks)	...	Chiefly in the area between Knottingley, Pontefract and Sherburn-in-Elmet on the west, Hemingbrough, Cliffe Common and Goole in the east, Heck in the south and Cawood in the north.	Peas. Other crops grown include practically all those mentioned for Sheffield. (Market garden produce grown around Pontefract).	One of the most important green pea producing areas.
67. Leeds	... ..	Chiefly in the area Leeds to Wakefield, Wakefield to Bradford, Bradford to Leeds and Leeds to Castleford.	Forced Rhubarb; also Cabbage, Cauliflowers, Savoys, Peas, Lettuce, Turnips, Spring Onions, Radishes, Swedes.	The chief area for forced rhubarb. Market garden crops are also grown for Leeds and Bradford.
68. Halifax	... ..	Between Sowerby Bridge and Mirfield in the valley of the River Colne ...	Cabbage, Cauliflowers, Rhubarb, Late Broccoli, Lettuce, Turnips, Swedes, Radishes, Mint, Sage, Thyme.	Estimated at nearly 200 acres; grown for local consumption.
69. Huddersfield...	... ..	Rastrick and Elland ... ..	Cabbage, Swedes, Cauliflowers ...	A very small area of production; probably no more than about 30 acres.
70. Hull ... ..	... ..	Cottingham, Beverley, Cherry Burton, Little Weighton, Skidby, Goxhill.	Cabbage and Savoys, Brussels Sprouts, Carrots, Turnips, Broccoli and Cauliflowers, Peas, Beans, Beet, Leeks, Celery, Rhubarb, Lettuce, Scotch Kale, Spring Onions, Radishes.	It is estimated that approximately 66 per cent. of the supplies are marketed locally, the remainder being sent to northern industrial towns. It is estimated that about 500 acres of vegetables are grown in the area mentioned, but supplies at Hull are also received by road from the Market Weighton area.
71. Market Weighton (Yorks.).		A long narrow neck of land stretching from Claxton in the north almost to the Humber, including Fangfoss, Pocklington, Everingham, Market Weighton and North and South Cave.	Carrots.... ..	A large and important district specialising in the production of carrots, including late carrots.

NORTHERN AREA.—*continued.*

District.	Area Covered.	Kinds of crops grown.	Notes.
72. Harrogate ... ..	Knaresborough, Wetherby, Collingham	Brussels Sprouts, Cauliflowers, Peas, Savoys, Rhubarb, Mustard-and-Cress.	A very small area supplying vegetables for local consumption.
73. North Riding Pea Area	Thirsk, Raskelf and Flaxton ... ..	Peas.	
74. Pickering (Yorks.) ... ..	Pickering ... ..	Watercress ... ..	Very small supplies sent to certain northern towns.
75. Middlesbrough, Stockton-on-Tees and Darlington.	Norton-on-Tees, Greatham, Haughton-le Skerne, Hurworth and Neasham Eston.	Spring Cabbage, Savoys, Cauliflowers, Summer Cabbage, Leeks, Rhubarb, Peas, Broad Beans, Dwarf Beans, Lettuce, Swedes, Turnips.	Estimated at 300 acres. Holdings usually from .4 to 10 acres. Crops marketed in the locality.
76. Sunderland ... ..	Silksworth, Southwick-on-Wear and Fulwell.	Cabbage, Brussels Sprouts, Leeks, Carrots, Celery.	A small area of production catering for local consumption.
77. Newcastle-on-Tyne ... ..	Morpeth, North Wylam, Hexham and Corbridge.	Spring Cabbage, Savoys, Leeks, Brussels Sprouts, Beet, Cauliflower, and Broccoli, Peas, Broad Beans, Dwarf Beans, Rhubarb, Lettuce, Spring Onions, Radishes.	It is estimated that there are 400 acres at Morpeth and 120 acres at Hexham. An area of some importance as regards the supply of vegetables to Newcastle-on-Tyne.
78. East Coast of Northumberland.	East coast of Northumberland ... ..	Edible Fungi, including wild mushrooms.	Occasional supplies to northern towns.
79. Carlisle ... ..	Including Rickerby, Stanwix, Scotby, and Linstock.	Savoys ... ..	Provides a portion of the vegetables required by Carlisle.
80. Barrow-in-Furness ... ..	Locality of Barrow-in-Furness ... ..	Cabbage, Cauliflowers, Peas, Swedes, Carrots.	A small growing area.
81. Blackpool and Cleveleys	Marton Moss, Thornton ... ..	Lettuce, Mustard-and-cress ... ..	A small but important area for the production of glasshouse lettuce and mustard-and-cress.

82. Preston (Lancs.) ...	Walton-le-Dale, Higher Walton ...	Natural and forced Rhubarb, Cauliflowers, Lettuce, Cabbage, Brussels Sprouts, Beet, Turnips, Radishes, Spring Onions, Red Cabbage, Mint, Mustard-and-cress.	Most growers in the district have about 10 acres of vegetables. The area of vegetables is estimated at about 200 acres. Supplies are marketed at Preston and certain East Lancashire towns.
83. Midge Hall (near Preston)	Midge Hall, Longton, Farington Moss, Penwortham, Whitestakes.	Cabbage, Celery, Peas, Cauliflowers, Rhubarb, Lettuce, Brussels Sprouts, Beans, Beet, Turnips.	Estimated at 200 acres excluding potatoes. Most growers have from 4 to 8 acres of vegetables. Possibly 50 growers. Chiefly marketed in Lancashire towns. Cabbage is sometimes sent to London.
84. Hesketh Bank (Lancs.)	The district is bounded by Hesketh Bank on the north, Crossens on the south-west, the main Southport-Preston road on the south and the River Douglas on the east.	Celery, Cabbage and Savoys, Peas, Brussels Sprouts, Swedes, Cauliflowers, Lettuce under glass and in the open, Beet, Bunched and Topped Carrots, Spring Onions, Radishes.	It is estimated that there are from 600 to 800 acres of vegetables in the district and possibly 200 growers in the district, many of whom are smallholders. Produce is marketed in towns within easy reach.
85. Ormskirk (Lancs.) ...	Rufford on the north, Lydiate on the west, Skelmersdale on the east and Melling on the south.	Savoys, Spring Cabbage, Utility Cabbage, Rhubarb, Cauliflowers, Broccoli, Brussels Sprouts, Beet, Swedes, Turnips, Broad Beans, Spring Onions, Carrots, Lettuce, Parsley, Celery, Spinach.	A very important area for the production of savoys and cabbage. Large supplies of rhubarb are produced for sale at Liverpool and elsewhere. Whilst crops are grown on a farm rather than on a market garden scale, market gardening areas exist at Maghull, Scarisbrick and Aughton.
86. Formby (Lancs.) ...	Localities of Freshfield and Formby...	Asparagus ... ..	A small growing area. A substantial portion of the asparagus is marketed in Liverpool.



NORTHERN AREA.—*continued.*

District.	Area covered.	Kinds of crops grown.	Notes.
87. Wallasey (Cheshire)...	Along the north-west coast of the Wirral Peninsula from Wallasey village to Hoylake station, chiefly along the Leasowe road at Wallasey.	Spring Cabbage, Lettuce, Cauliflower, Dwarf and Runner Beans, Leeks, Radishes, Bunched Carrots, Marrows, Celery, Spring Onions, Mint.	An early market-gardening district. It is estimated that there are 500 acres of vegetables in the locality and over 30 growers. Produce is chiefly sold by growers in the North Market, Liverpool, but some is sent to other towns in the north.
88. Glazebrook (Manchester)	Including Chat Moss, Irlam, Cadishead, Martinscroft, Padgate, Glazebury and Barton, Rixton Moss and Carrington Moss.	Celery, Lettuce, Cabbage, Cauliflowers, Turnips and Swedes, Beet, Peas, Rhubarb.	An important area of production for Manchester market. Cos lettuce, of which some quantity is sent to London, and celery are specialities of the district. Holdings are usually of medium size.
89. Timperley (Cheshire)	Sale, Baguley, Timperley, Northenden, Northern Etchells.	Brussels Sprouts, Forced and Natural Rhubarb, Beet, Lettuce, Leeks, Forced Mint.	Holdings are generally small and from 4 to 5 acres in size. It is estimated that there are from 400 to 500 acres of vegetables in this market-gardening district. There is a certain amount of forcing.

WEST AND MIDLAND AREA.

90. Oxford ... ..	Locality of Oxford at Cowley, Littlemore, Garsington, Fyfield, Kingstons Bagpuze, Longworth and Beckley.	Cabbage, Brussels Sprouts, Cauliflower and Broccoli (late), Rhubarb, Lettuce, Peas, Parsnips, Beet, Marrows, Leeks, Beans, Herbs.	Supplies for local consumption.
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91. Rugby	... ..	Around Rugby and at Lutterworth...	Celery and small supplies of other vegetables.	A small area of production.
92. Leicester	... ..	Chiefly north of Leicester at Mountsorrel, Sileby, Syston, Barkby and Birstall.	—	A very small area of production.
93. Tamworth (Staffs.)	... ..	Includes Amington, Bonehill, Cliff and Hopwas.	Cabbage, Savoys, Cauliflower, Broccoli, Peas, Brussels Sprouts, Swedes, Lettuce, Beet, Runner Beans, Rhubarb, Leeks, Celery, Broad Beans, Turnips, Bunched Carrots, Spring Onions, Parsnips, Parsley, Radishes.	Caters chiefly for Birmingham market but also supplies Nuneaton. Upwards of 50 market gardeners; it is estimated that there are from 800 to 1,000 acres of market gardens.
94. Lichfield (Staffs.)	... ..	Includes Weeford and Shenstone	... .. Cauliflower, Broccoli, Savoys, Peas, Spring Cabbage, Brussels Sprouts.	Most growers have holdings of from 10 to 30 acres, but there are several of 200 acres each. Contributes substantial supplies of cauliflowers and broccoli to Birmingham and other markets in the district.
95. Burton-on-Trent	... ..	Includes Blackfordby and Castle Gresley.	Peas, Turnips, Parsnips, Marrows...	A small area of production catering for local requirements.
96. Melbourne (Derbyshire).	... ..	Melbourne, King's Newton, Wilson, Borrowash, Aston-on-Trent, Alvas-ton, Shardlow.	Cabbage, Peas, Cauliflowers, Runner Beans, Broad Beans, Celery, Brussels Sprouts, Forced and Natural Rhubarb, Spring Onions, Broccoli, Beet, Lettuce, Parsnips, Leeks, Marrows, Herbs.	Chiefly marketed in Derby and Nottingham, but also at Burton-on-Trent. It is estimated that there are approximately 1,000 acres of market gardens in the area. About 60 to 70 growers.
97. Nottingham	... ..	On the north side of Nottingham, including Burton Joyce, Arnold, Lowdham and Woodborough.	—	A small area of production catering for local consumption.
98. Knutsford (Cheshire)	... ..	Locality of Knutsford.	... .. Turnips, Peas, Beans, Brussels Sprouts.	A small area of production.

WEST AND MIDLAND AREA—*continued.*

District.	Area covered.	Kinds of crops grown.	Notes.
99. Sandbach (Cheshire)	Sandbach, Middlewich, Holmes Chapel	Cabbage, Cauliflowers... ..	Taken to towns in the Potteries by road.
100. Chester ... ..	Locality of Chester ... ..	Cabbage, Brussels Sprouts, Peas ...	It is estimated that there are about 300 acres of market gardens in the district split up between 20 to 30 growers.
101. Holt (near Wrexham)	Holt, Farndon, Churton ... ..	Cabbage, Brussels Sprouts, Cauliflowers, Peas, Lettuce, Broad Beans, Red Cabbage, Green Bunched Onions, Carrots, Turnips, Swedes, Marrows, Parsley.	An important district of medium size for the production of spring cabbage.
102. Whixall (Whitchurch, Salop).	Locality of Whixall ... ..	Savoy, Spring Cabbage, Brussels Sprouts, Cauliflower, Lettuce, Peas, Bunched Onions.	A very small district in which it is estimated that there are approximately 60 acres of vegetables, excluding potatoes. The produce is marketed at Wrexham and at other towns in the neighbourhood.
103. Tibberton (Salop) ...	Largely centred around Tibberton. It is somewhat scattered, extending to Kinnersley in the south, Crudgington in the west, Newport on the east. In the north there are isolated fields of carrots as far north as Hodnet and Stoke Heath.	Carrots, Parsnips, Swedes, Turnips, Beet, Red Cabbage.	Not a large growing area, but substantial supplies of carrots and parsnips are marketed.
104. Wombourn (near Wolverhampton).	Wombourn ... ..	Rhubarb ... ..	Very small supplies.

105. Hartlebury (Worcs.)	Ombersley on the south, Astley on the west, Droitwich on the east, and extending to the Clent district on the north.	Peas, Brussels Sprouts, Cabbage, Cauliflowers, Runner Beans, Carrots, Parsnips, Broad Beans, Savoys, Swedes.	An important vegetable producing area from which produce is distributed to Wolverhampton and the Black Country and also to Birmingham. A speciality of the Stourport locality is carrots.
106. Bromsgrove (Worcs.)	Chiefly around Catchill, Bournheath and Fairfield.	Cauliflowers, Brussels Sprouts, Peas, Cabbage and Savoys, Runner Beans, Parsnips, and certain other vegetables.	A small market-garden area catering chiefly for the Birmingham market.
107. Stratford-on-Avon ...	Approximately 5 miles' radius of Stratford-on-Avon and to Bidford-on-Avon on the south-west.	Peas, Runner Beans, Broad Beans, Brussels Sprouts, Cabbage, Lettuce and also a number of other vegetables.	A district of medium size from which supplies of vegetables are distributed to Coventry, Birmingham, Wolverhampton and other towns.
108. Worcester ...	Roughly a radius of 5 miles, including Hallow, Broadheath, Lower Wick, Bransford, Claines and Kempsey.	Peas, Cabbage and Savoys, Brussels Sprouts, Runner Beans. Also other vegetables which, however, are largely used for local consumption.	Not a well-defined district, as it joins up on the south and east with the Evesham area and on the north with the Hartlebury area. This is relatively not a large area of production, but there is a substantial amount of vegetables in excess of local requirements which is despatched by road and rail to Birmingham and Black Country towns, etc.
109. Vale of Evesham ...	Roughly ten miles radius of Evesham, extending to Alcester, Bidford-on-Avon, Mickleton, Chipping Campden, Winchcombe, Tewkesbury, Ripple, Upton-on-Severn, Kempsey, Drakes Broughton and the Lenches.	Brussels Sprouts, Cabbage and Spring Cabbage Greens, Peas, Runner Beans, Spring Onions, Asparagus, Cauliflowers, Broad Beans, Parsnips, Savoys, Dwarf or French Beans, Marrows, Leeks, Carrots, Radishes, Lettuce, Beet, Sage, Rhubarb.	A very large and early vegetable-growing area from which produce is distributed to all the chief areas of consumption. There are some large growers in the district, but the area of vegetables per holding on the average is small.

WEST AND MIDLAND AREA—*continued.*

District.	Area covered.	Kinds of crops grown.	Notes.
110. Ross ... ..	Locality of Ross ... ..	Peas, Brussels Sprouts, Cabbage, Swedes.	
111. Cheltenham ...	In the Arle district on the west side of Cheltenham.	Cabbage, Savoys, Leeks, Lettuce, Rhubarb, New Carrots, Spring Onions, Radishes, Parsley, Forced Mint, Seakale.	It is estimated that there are about 400 acres of vegetables in the district and about 65 growers. Growers usually have from 5 to 10 acres of land. Some of the vegetables are sent to South Wales.
112. Newent and Gloucester.	Aston Ingham, Gorsley, Sandhurst, Innsworth.	Turnips, Peas, and other kinds of vegetables.	A small growing area. Produce is marketed chiefly in Gloucester.
113. Stroud ... ..	Stroud ... ..	Edible fungi, including mushrooms ...	Although this is one of the chief centres at which wild mushrooms, etc., are assembled for marketing in the Cotswold Hills, they are distributed from a number of places in the West of England.
114. Abergavenny ...	Locality of Abergavenny including Govilon Llanfoist and Llanellen.	Cabbage and Savoys, Broad Beans, Peas, Rhubarb, Cauliflowers, Brussels Sprouts, Runner Beans, Beet, Lettuce.	It is estimated that there are about 250 acres of market gardens in the district.
115. Newport (Mon.) ...	Particularly along the Newport-Chepstow road, around Langstone, Penhow and at Bassaleg.	Savoys, Swedes, Cabbage, Cauliflowers, Beet, Runner and Broad beans, Peas, Carrots, Rhubarb, Lettuce.	Not a large area. Growers are chiefly smallholders.

116. Cardiff	... ..	roughly within a five-mile radius of Cardiff, Whitechurch, Llanishen, Rumney, Llanidarne, Llanilterne, Ely and Barry.	Swedes, Cabbage, Savoys, Cauliflowers, Lettuce, Broad Beans, Celery, Peas, Broccoli, Rhubarb, Runner Beans.	An area of average size. It is estimated that there are approximately 600 acres of market gardening in the district.
117. Cowbridge (Glam.)	... ..	The area around Cowbridge	Runner Beans and other vegetable crops.	A small growing area. Produce is marketed locally.
118. Swansea	... ..	The Gower peninsula, including Bishopston, Sketty, Dunvant, Cockett and Oxwich.	Swedes, Cabbage, Savoys, Runner Beans, Peas, Broad Beans, Beet, Spring Onions, Lettuce, Brussels Sprouts, Leeks, Herbs, Watercress.	It is estimated that there are 100 acres of market gardening in the district. The average size of a holding is about 4 acres.
119. Llanelly	... ..	Llangennech, Hendry, and Pwll on the west of Llanelly.	Cabbage, Savoys, Broad beans, Peas, Carrots.	A very small growing area. Produce is marketed at Llanelly and Swansea.
120. Milford Haven	... ..	Hasguard, St. Ishmael's and Dale	Savoys, Broccoli, Lettuce, Spring Onions, Swedes, Carrots and small supplies of other vegetables.	A very small growing area. Produce is marketed at Milford Haven, Haverfordwest, Pembroke Dook and Carmarthen.
121. Newborough (Anglesey).	... ..	Locality of Newborough and Gaerwen.	Carrots, Peas, Broad Beans, Parsnips, Cabbage, Beet, Swedes and Turnips.	A very small growing area, catering for coast towns on the mainland in the vicinity.
122. Colwyn Bay	... ..	Conway Valley	Peas, Spring and autumn Cabbage, Brussels Sprouts, Lettuce, Cauliflowers, Turnips and Swedes, Spring Onions.	A very small growing area catering for Colwyn Bay and Llandudno.
123. Rhyl	... ..	Locality of Rhyl	Cabbage, Brussels Sprouts, Savoys, Beet, Lettuce, Marrows, Parsley.	A very small area in which vegetables are grown for local consumption only.

## APPENDIX VI.

Imports of Raw Vegetables, other than Potatoes\* and Tomatoes†, into the United Kingdom for the years 1927 to 1934 inclusive.

(Imports of vegetables other than onions are given by value only in the trade returns.)

Countries whence consigned.	1927.			1928.			1929.			1930.		
	Onions.		Other veget- ables.	Onions.		Other veget- ables.	Onions.		Other veget- ables.	Onions.		Other veget- ables.
	Quantity.	Value.		Quantity.	Value.		Quantity.	Value.		Quantity.	Value.	
	<i>Thousand Bushels</i>	£'000	Value £'000	<i>Thousand Bushels</i>	£'000	Value £'000	<i>Thousand Bushels</i>	£'000	Value £'000	<i>Thousand Bushels</i>	£'000	Value £'000
Spain ...	4,518	1,024	(a)	4,255	1,074	(a)	4,526	1,027	(a)	5,127	825	(a)
Netherlands	2,507	410	438	2,459	521	603	2,981	535	521	3,247	373	582
Egypt ...	1,802	431	(a)	2,734	730	(a)	2,438	578	(a)	1,657	274	(a)
France ...	571	102	924	376	68	800	400	65	864	434	65	965
Germany ...	55	13	27	55	14	28	67	14	34	218	37	34
Belgium ...	112	21	22	55	11	24	63	10	23	42	7	30
Madeira ...	(a)	(a)	27	(a)	(a)	47	(a)	(a)	41	(a)	(a)	30

Other foreign countries ...	293	61	15	204	42	31	201	37	37	46	8	28
Total foreign countries ...	9,858	2,062	1,453	10,138	2,460	1,533	10,676	2,266	1,520	10,771	1,589	1,669
Channel Islands	(b)	(b)	56	(b)	(b)	27	(b)	(b)	47	(b)	(b)	40
Other British Countries ...	(b)	(b)	2	(b)	(b)	4	(b)	(b)	9	(b)	(b)	4
Total British Countries ...	37	10	58	17	4	31	10	2	56	13	2	44
Grand Total	9,895	2,072	1,511	10,155	2,464	1,564	10,686	2,268	1,576	10,784	1,591	1,713
<i>Exports of imported produce</i>	467	117	14	505	128	15	621	118	23	414	67	22
<i>Retained imports ...</i>	9,428	1,955	1,497	9,650	2,336	1,549	10,065	2,150	1,553	10,370	1,524	1,691

\* See Economic Series, No. 9.

† See Economic Series, Nos. 15 and 24.



APPENDIX VI.—continued.

Countries whence consigned.	1931.			1932.			1933.			1934 (c).		
	Onions.		Other veget- ables.	Onions.		Other veget- ables.	Onions.		Other veget- ables.	Onions.		Other veget- ables. (e)
	Quantity.	Value.		Quantity.	Value.		Quantity.	Value.		Quantity.	Value.	
	<i>Thousand Bushels</i>	<i>£'000</i>	<i>Value £'000</i>	<i>Thousand Bushels</i>	<i>£'000</i>	<i>Value £'000</i>	<i>Thousand Bushels</i>	<i>£'000</i>	<i>Value £'000</i>	<i>Thousand Bushels</i>	<i>£'000</i>	<i>Value £'000</i>
Spain ...	4,609	845	(a)	4,769	763	26	3,739	517	58	3,585	519	(a)
Netherlands ...	3,109	422	540	2,562	491	551	3,711	415	458	3,891	433	448
Egypt ...	1,821	384	(a)	2,140	467	(a)	2,204	228	(a)	1,950	218	(a)
France ...	370	57	905	144	38	328	133	24	203	170	(f)	150
Germany ...	171	30	26	210	40	33	200	26	29	260	(f)	(a)
Belgium ...	35	6	34	45	(f)	22	22	(f)	16	46	(f)	(a)
Madeira ...	(a)	(a)	37	(a)	(a)	28	(a)	(a)	32	(a)	(a)	(a)
Other foreign countries ...	41	9	102	141	33	27	185	28	32	343	115	250
Total foreign countries ...	10,156	1,753	1,644	10,001	1,832	1,015	10,194	1,238	828	10,245	1,285	848
Channel Islands	(b)	(b)	45	(b)	(b)	41	(b)	(b)	41	(b)	(b)	(b)
Other British Countries ...	(b)	(b)	2	39	5	4	11	2	2	(b)	(b)	(b).

Total British Countries ...	15	3	47	39	5	45	11	2	43	21	3	39
Grand Total	10,171	1,756	1,691	10,040	1,837	1,060	10,205	1,240	871	10,266	1,288	887
<i>Exports of im- ported produce</i>	397	73	14	254	53	7	268	42	2	(d)	(d)	(d)
<i>Retained imports ...</i>	9,774	1,683	1,677	9,786	1,784	1,053	9,937	1,198	869	(d)	(d)	(d)

(a) If any, included under other foreign countries.

(b) If any, included under total British countries.

(c) Provisional figures.

(d) Not available.

(e) Excluding 756 tons of green peas valued at £40,116. For years prior to 1934 green peas were not distinguished separately in the Trade Returns.

(f) Included under other foreign countries.

*Importations of peas, not fresh (other than split peas).*—In the eight-year period 1927 to 1934, inclusive, average annual importations into the United Kingdom have been nearly 75,000 tons, with a value of over £1,300,000. These are largely drawn from foreign countries, particularly Japan and the Netherlands. Re-exports average about 1,500 tons per annum, valued at about £43,000.

*Importations of beans, not fresh (including haricot beans, butter beans and other sorts)* together amounted in the eight-year period on the average to about 52,000 tons per annum with a value of about £600,000. These again are largely drawn from foreign countries, including Japan and Madagascar, although some are received from India. Re-exports amounted to nearly 2,500 tons per annum, with a value of about £60,000.

The returns do not show the proportion of these supplies of peas and beans which are intended for human consumption.

## APPENDIX VII.

**Imports into the United Kingdom of Onions and other Raw Vegetables (excluding Potatoes and Tomatoes), Vegetables Preserved in Salt or Brine (excluding canned or bottled vegetables), Pickles or Vegetables Preserved in Vinegar and Dried Vegetables, for the Year 1933.**

Countries whence Consigned.	1933.								
	Onions.		Other Raw Vegetables.	Vegetables Preserved in Salt or Brine.		Pickles or Vegetables Preserved in Vinegar.		Dried Vegetables.	
	<i>Quantity Bushels</i>	<i>Value £</i>	<i>Value £</i>	<i>Quantity Cwt.</i>	<i>Value £</i>	<i>Quantity Gallons.</i>	<i>Value £</i>	<i>Quantity Cwt.</i>	<i>Value £</i>
Spain ( ... .. )	3,739,361	517,445	58,466	(a)	(a)	(a)	(a)	(a)	(a)
Netherlands ... ..	3,710,037	414,969	458,271	183,232	109,782	(a)	(a)	2,033	5,601
Egypt ... ..	2,203,914	228,074	(a)	(a)	(a)	(a)	(a)	(a)	(a)
France ... ..	133,205	24,441	202,609	9,749	11,306	(a)	(a)	176	548
Germany ... ..	199,889	25,890	29,043	(a)	(a)	(a)	(a)	180	778
Belgium ... ..	(a)	(a)	15,747	1,640	1,098	(a)	(a)	(a)	(a)
Madeira ... ..	(a)	(a)	31,618	(a)	(a)	(a)	(a)	(a)	(a)
Italy ... ..	(a)	(a)	18,894	8,313	6,778	(a)	(a)	(a)	(a)
Other Foreign Countries	206,907	27,497	13,923	4,799	3,809	34,300	6,008	3,586	9,300
<b>Total Foreign Countries</b>	<b>10,194,213</b>	<b>1,238,316</b>	<b>828,571</b>	<b>207,733</b>	<b>132,773</b>	<b>34,300</b>	<b>6,008</b>	<b>5,975</b>	<b>16,227</b>
<b>Total British Countries ...</b>	<b>10,823</b>	<b>1,528</b>	<b>42,799</b>	<b>1,191</b>	<b>1,218</b>	<b>1,189</b>	<b>224</b>	<b>372</b>	<b>639</b>
<b>Grand Total ... ..</b>	<b>10,205,036</b>	<b>1,239,844</b>	<b>871,370</b>	<b>208,924</b>	<b>133,991</b>	<b>35,489</b>	<b>6,232</b>	<b>6,347</b>	<b>16,866</b>
<i>Exports of Imported Produce</i>	268,259	41,733	1,903	61	103	139	55	340	1,196
<i>Retained Imports ...</i>	9,936,777	1,198,111	869,467	208,863	133,888	35,350	6,177	6,007	15,870
<i>Exports of Produce Grown in the United Kingdom.</i>			Raw Vegetables (ex- cluding Potatoes) <i>Quantity Value</i> <i>Cwt. £</i>						
			10,400 17,051	80	182	112,034	48,974	498	4,550

(a) If any, included under "Other Foreign Countries."

	<b>£</b>		<b>£</b>
Total Value of Imports from Foreign Countries ...	2,221,895	Total Value of Exports of Imported Produce ...	44,990
"    "    "    British    "    ...	46,408	"    "    "    U.K.    "    ...	70,757
	<b>2,268,303</b>		<b>115,747</b>

## APPENDIX VIII.

## Areas A broad Producing Crops which Compete on the Home Market.

## The Netherlands.

The *Westland* area comprises roughly the district between The Hague, the Hook of Holland, Rotterdam and Gouda and is the chief glasshouse district of Holland. In 1929 there were about 1,000 acres of glass. The chief centres of production are Loosduinen, Naaldwijk, Poeldijk, Honselersdijk and Delft. According to the 1928 Year Book of the Central Bureau of Auctions, the area under glass in the Netherlands quadrupled from 1912 to 1927. The usual size of a holding is about 3 acres. Small producers can obtain loans to build glasshouses, etc., through the farmers' banks, which are a particular feature of the Westland.

The chief crops are tomatoes, grapes and cucumbers, but amongst vegetable crops, lettuce, carrots and cauliflowers are of particular importance. Lettuces and cauliflowers, lettuces and tomatoes, or spinach and cauliflowers are often intercropped in glasshouses. The "lights" with which these structures are covered can be removed at the grower's convenience and used elsewhere, e.g., for covering crops raised in frames. The houses can be cultivated by horse work and are often of large size; 200 yards long by 37 yards wide is regarded as a moderate area. There are also large areas of frames in which crops, e.g., of lettuce, follow one another in rapid succession. In heated glasshouses beans may follow tomatoes.

At Poeldijk the chief crops grown are tomatoes, grapes, peaches, melons, soft fruit, lettuces, carrots, rhubarb, spinach (distributed chiefly to Germany), scorzonera, purslane, beans, onions, endive, brussels sprouts, witloof chicory, cauliflowers and radishes (regarded as a catch crop). At Loosduinen the chief crops are tomatoes, cucumbers, cauliflowers, lettuces, carrots, spinach and endive. Early carrots are in season from the beginning of May to the middle of July. At Naaldwijk, though tomatoes are the most important crop, large quantities of early cauliflowers, lettuces and carrots are also grown.

The *Rotterdam* growing area is similar in many respects to the Westland.

*North Holland* has three main vegetable growing areas, Alkmaar, Beverwijk and Bovenkarspel. A clay soil is typical of the area and, generally speaking, crops are not grown on the same intensive scale as in the Westland. The chief crops are those produced in the open fields, such as cabbages, cauliflowers, potatoes and onions. The *Alkmaar* district extends north of Alkmaar to Valkoog and includes Broek-op-Langedijk and North Scharwoude, which are two of the chief centres of production in this area. The main vegetable crops other than potatoes are cabbages, both red and white (comprising 90 per cent. of the total Dutch crop), onions (including picklers) and carrots. Some early carrots are grown for the English market. The district is not so suitable for cauliflowers as Bovenkarspel. The *Beverwijk* growing area caters largely for Amsterdam, which has a population of about 700,000. The *Bovenkarspel* district extends from Hoorn to Medemblik, stretching towards the east and penetrating into the Zuider Zee. The centre is at Grootebroek, at which a large new auction was built some years ago. The chief crops are cauliflowers and potatoes. Cauliflowers, chiefly of Italian origin, are grown largely between the coast and Enkhuizen, Hoogkarspel, Wervershoof and Andijk. From 7,500,000 to 9,500,000 cauliflowers were produced in this district annually from 1922 to 1924. They are exported chiefly to Germany, but some are sent to England, Austria and Scandinavia. Holdings are small, ranging from five to ten

acres in extent. Broek-op-Langedijk is a centre of the brining industry and possibly 10 per cent. of the vegetables grown round Grootebroek are made into pickles. Firms of pickle manufacturers are also in business at Amsterdam and round Leiden. The chief silver skin onion growing centre is near Dordrecht.

*Zeeland* is the most important onion-producing area in the Netherlands. Cauliflowers, lettuces and other vegetables and fruit are grown where rapid transport facilities are available. The area includes the district of Ter Neuzen in the S.W. corner of Holland, North and South Beveland, Walcheren and Overflakkee. Places of importance are Aksel, Ter Neuzen, Middelburg, Aardenburg, Krabbendijke, Kruiningen and Middelharnis. Onions, cauliflowers and potatoes may be grown in rotation. Farms of 100 acres are common and the average is even larger. Such a farm may be cropped as follows:—

Crops.	Acreage
Onions	7½
Sugar beet	50
Corn	25
Potatoes	25
Carrots	7½
Cauliflowers	2½

The average crop of onions is said to be nearly 12 tons per acre, but heavier yields are often obtained.

#### France.

The *Nantes* district, situated in the fertile Loire valley, is a good example of early vegetable production on intensive lines. Forced vegetables are produced within a distance of several miles round Nantes. Rich alluvial soil, the best for the purpose, is found near the river. The mild climate is favourable for early crops, and the gardens, which are often walled in, afford added protection. Other crops are produced in the valley of the Loire near St. Nazaire. These play an important part in supplying vegetables for Paris and other markets, and for the important canning industry of Nantes, which absorbs a large proportion of the green peas grown locally. According to the Nantes Chamber of Commerce, between 1st March and 30th June, 70 to 80 tons of market garden produce have been dispatched daily to various centres from this district. Bunched carrots, turnips and radishes are sent to England.

The *Departments of the Vaucluse and Bouches-du-Rhône* send a number of different kinds of vegetables to England, and this market-gardening area has developed considerably in recent years. The district is one of great fertility, and it has been said that the Durance river, in which area Cavailon is situated, brings down more organic material than any other river in the world except the Mississippi. Amongst other places in the area Tarascon, Sénas and Barbentane may be specially noted. Tarascon supplies amongst other vegetables, salads and spinach, Sénas salads, peas, carrots, beans, artichokes, turnips and cauliflowers and Barbentane salads. Asparagus is one of the most important vegetables received from this region. Over 80,000 tons of vegetables were distributed to all destinations in 1927.

A certain amount of forcing is carried out under glass; asparagus is produced in low-roofed houses, some of which are heated. Shelter belts placed at intervals across plantations protect crops from the strong north wind, prevent the soil from cooling and encourage early production.

*Other districts* from which vegetables have been imported into this country include the following:—

<i>District.</i>	<i>Crops.</i>
Paris.	A wide range of vegetables, including early forced produce.
Cherbourg and Barfleur.	Broccoli and spring cabbages.
St. Malo.	Cauliflowers and onions.
Finistère (including Roscoff and St. Pol-de-Léon).	Cauliflowers and broccoli, onions and cabbages.
Brest (Plougastel-Daoulas).	Green peas.
Bordeaux, Montauban and Toulouse. (Chiefly of interest as a canning centre.)	Broad beans and artichokes have been exported from Agen.
Pyrénées-Orientales (Perpignan and Cerbère).	Lettuce, peas, spinach, asparagus, early turnips and carrots, and beans.
South-East Departments of Var and Alpes-Maritimes.	Very early vegetables including salads, beans, asparagus and peas.

### Belgium.

*Malines* and *Louvain* are two of the chief producing areas. In the Malines area cauliflowers are an important crop and have a special market allotted to them. The daily sales in May and June are very large. At Louvain the chief vegetables grown include cauliflowers and carrots. Canning is important in both areas. The bulk of the Belgian onion crop is produced in the area of Alost and Termonde between Brussels and Ghent.

*Brussels.*—Among the vegetables grown in great variety in the neighbourhood of Brussels, witloof chicory is a speciality. This crop was first noticed on the Brussels market about the year 1846. It is now grown in all the chief areas of production, but more particularly in the neighbourhood of Brussels and at Meirelbeke near Ghent. In recent years the industry has grown very rapidly. Exports were 1,510 metric tons in 1919, 6,603 in 1921 and over 23,000 in 1923. In 1927 more than 3,750 acres were grown in the neighbourhood of Brussels alone.\* The yield is given as approximately 4 tons of chicons to the acre, and the production round Brussels alone is estimated at 11,000 metric tons annually. At Saventhem, Evere, and other places in the locality, witloof forcing is an important industry amongst the small holders.

*Roulers* is the chief Belgian area for chicory root (grown for use with coffee). Other centres of production are at Ypres, Thourout, Lichtewelde, Thielt and Menin.

Chicory root is kiln-dried, sometimes by producers, but more often by merchants (trading in manures and feeding-stuffs) and retailers. In 1929 there were three chicory-roasting firms in Roulers, and about 100 in the whole of Belgium, centred particularly at Brussels and Antwerp. Kiln-drying and roasting are not both done by the same firms.

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\* Culture de la Chicorée de Bruxelles ou Witloof, Jules Simon, 1928.

## APPENDIX IX.

### Perishability of certain Vegetables.

Examples to shew the normal duration of marketability during certain months of the year.

The table below shows in Column 4 the normal period over which the marketing of a standing crop can be delayed after it has reached the marketable state, and in Column 5 the normal period over which it remains marketable after harvesting. The times given for each crop apply to the month or months shown in Column 3.

Crop.	Remarks.	Duration of marketability.		
		Time of year.	After reaching marketable state in the field.	After Harvesting.
1. Cabbage lettuce ...	2. Speed of maturity depends upon weather conditions. Crop usually marketed just before maturity, otherwise may show signs of seed stems or over-maturity.	3. June, July and August.	4. A week or less ... ..	5. 1 day or less.
Cos lettuce ... ..		June and July.	Seed stems may appear 3 days after maturity.	2 days or less. Period may be slightly lengthened if root attached.
Watercress ... ..		Early summer.	Up till time of formation of flower stems.	Green watercress is more affected by wind than brown cress. Except during hot spells, brown cress may remain in a marketable condition for 2-3 days.
Green bunched onions	Often marketed before formation of a pronounced bulb, but in certain districts, notably London, larger onions are also marketed. Owing to high water content, very subject to "heating" if closely packed.	March ... ..	6 weeks ... ..	2-4 days.
Radishes ... ..		May ... ..	Round varieties 4-8 days; French Breakfast 3 days.	48 hours.

Endive ... ..		October ...	3-14 days after tying ... ..	For Batavian endive, a slightly longer period than cos lettuce. Should be marketed immediately. May remain in a marketable condition for several days.
Cauliflowers ... ..		August ...	2 days or less. ... ..	
Broccoli ... ..		March ...	About 4 days. ... ..	
Natural rhubarb ... ..		May ...	When full grown, 14-21 days ...	Several days.
Forced rhubarb ... ..		February ...	2-3 days. ... ..	2 days.
Asparagus ... ..		May ...	1-2 days. ... ..	Greatest increase in crude fibre takes place the first 24 hours after cutting. Amount of increase greatest at highest temperature and least at lowest. Product should reach consumer in shortest possible time.*
Washed celery ... ..		October ...	A month or more. ... ..	2-3 days according to system of packing.
Mushrooms ... ..	Durations apply to Cups. ...	December ...	1-2 days. ... ..	In ventilated packages about 2 days.
Spring cabbage ... ..		June ...	7-10 days. ... ..	2 days.
Brussels sprouts ... ..		November ...	3-4 weeks, but condition will not improve if not picked at the right stage.	3 days.
Savoys ... ..		Winter ...	Several weeks ... ..	Several days.
Leeks ... ..	Owing to high water content very subject to heating if closely packed.	Winter ...	Not quickly perishable. ...	Up to 7 days.
Green peas ... ..		June and July	Average about a week for early peas; in hot weather peas become hard very quickly, and the period may only be 1 day for "Senator" and 2 for "Lincoln."	2 days: longer in wicker or properly ventilated packages than in bags.
Runner Beans ... ..		August ...	4-5 days. ... ..	2 days: longer in pots than in bags.
Dwarf beans ... ..		August ...	3-4 days. ... ..	ditto. ditto.



APPENDIX IX.—*continued.*

Crop	Remarks	Duration of marketability.			
		Time of year	After reaching marketable state in the field.	After Harvesting.	
1	2	3	4	5	
Broad beans ...		July ... ..	2 weeks. ... ..	4 days.	
Glasshouse beans ...		March to May	2 days. ... ..	4-5 days.	
Marrows ... ..		July ... ..	If allowed to remain after reaching marketable size, growth of plant affected. .	7 days.	
Onions (ripened) ...		October ...	} Not quickly perishable.	Not quickly perishable if harvested in good condition.	
Bunched Carrots (washed).		July ... ..		2-3 days.	
Topped Carrots (washed).		September ...		3-4 days.	
Topped Carrots (unwashed).		September ...		Not quickly perishable.	
Bunched or topped Turnips (washed).		September ...		4-6 days.	
Topped turnips (unwashed).		September ...		2-3 weeks.	
Topped parsnips (unwashed).		November ...		Not quickly perishable.	
Swedes ... ..		December ...		ditto ditto.	
Bunched Red Beet		August ...		If planted thickly, will not become too large for 3 weeks.	Several days.
Red Beet (boiled) ...		August ...		} Not quickly perishable if stored.	Must be disposed of immediately.
Long Beet (unboiled)		November ...	Several months if stored.		
Horseradish (washed)		October ...	Turns yellow if not disposed of quickly.		

APPENDIX X.

Seasonality Charts.

Seasons for home-grown and imported vegetables.

SEASON		JAN	FEB	MCH	APL	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
<b>LETTUCE:-</b>													
Home Outdoor Cabbage	APL-NOV												
Dutch	MCH-JUN-NOV												
French / Spanish "	NOV-APL												
Home Cos	MAY-SEP												
Indoor Cabbage	NOV-MAY												
<b>RADISHES:-</b>													
Home Indoor / Outdoor	MCH-NOV												
Dutch "	FEB-MAY												
Channel Is "	NOV-APL												
French "	DEC-MAY												
<b>ONIONS:-</b>													
Home Salad or Spring	FEB-OCT												
<b>WATERCRESS:-</b>													
Home	ALL YEAR												
<b>MUSTARD &amp; CRESS:-</b>													
Home	ALL YEAR												
<b>ENDIVE:-</b>													
Cornish	NOV-FEB												
Home Outdoor	SEP-NOV												
French	NOV-JUN												
<b>CHICORY:-</b>													
Belgian Witloof	SEP-MCH												

NOTE:- Black portions denote peak periods.

SEASON		JAN	FEB	MCH	APL	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
<b>CAULIFLOWER-BROCCOLI</b>													
Home Cauliflowers	MAY-DEC												
French Broccoli (RASCOTT)	END DEC-APL												
" Cauliflowers / Broccoli (SPAIN)	END OCT-MCH												
Home Broccoli (CORNWALL)	DEC-APL												
" " (KENT)	JAN-JUN												
Italian Cauliflower	DEC-MCH												
Dutch "	APL-AUG												
Belgian "	MAY-JUN												
<b>SPRING CABBAGE-GREENS:</b>													
Home	FEB-JUL												
<b>CABBAGE (SPRING OR RED):</b>													
Home	END JUL-MCH												
<b>BRUSSELS SPROUTS:-</b>													
Home	END AUG-MCH												
Dutch	SEP-MCH												
<b>SAVOYS:-</b>													
Home	AUG-APL												
<b>TURNIP TOPS:-</b>													
Home	JAN-APL												
<b>SCOTCH KALE:-</b>													
Home	DEC-APL												
<b>SPROUTING BROCCOLI:-</b>													
Home	FEB-APL												
<b>LEERS:-</b>													
Home	AUG-MAY												
<b>SPINACH:-</b>													
Home	ALL YEAR												
French	NOV-APL												
<b>RED CABBAGE:-</b>													
Dutch	NOV-MAY												
Home	OCT-DEC												

NOTE:- Black portions denote peak periods

SEASON	JAN	FEB	MCH	APL	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
<b>RIPE ONIONS:-</b>												
Spanish (BAROSA)												
Home (GRAND)												
Dutch												
Home												
Egyptian												
French												
END MAY- MID JUL MID JUL- END APR AUG- APL SEP- END FEB DEC- MCH JUL- MCH												
<b>TURNIPS:-</b>												
Home Topped												
Bunched												
French "												
JUL- APL MAY- JUL JAN- JUN												
<b>SWEDES:-</b>												
Home												
SEP- MAY												
<b>CARROTS:-</b>												
Home Topped												
Dutch "												
Bunched												
Home "												
French "												
JUL- MAY AUG- MAY MAY- JUL MAY- AUG MCH- JUN												
<b>BETROOT:-</b>												
Home Topped												
Bunched												
JUL- MAY JUN- AUG												
<b>PARSNIPS:-</b>												
Home Topped												
Dutch "												
AUG- APL SEP- FEB												
<b>ARTICHOKES:-</b>												
Home Jerusalem												
" Globe												
French "												
Spanish "												
Algerian "												
OCT- END FEB MID JUN- OCT JUL- OCT JAN- MAY DEC- APL												
<b>HORSERADISH:-</b>												
German												
Home												
JAN- DEC SEP- MCH												

NOTE:- Black portions denote peak periods

SEASON	JAN	FEB	MCH	APL	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
<b>RHUBARB:-</b>												
Home outdoor												
" Forced												
MCH- AUG DEC- MAY												
<b>CELERY:-</b>												
Home												
SEP- FEB												
<b>ASPARAGUS:-</b>												
Home Forced												
Home												
French												
Californian												
DEC- MCH END APL- JUN JAN- MAY MCH- APL												
<b>MUSHROOMS:-</b>												
Home Forced												
" Field												
ALL YEAR JUL- NOV												
<b>SEAKALE:-</b>												
Home Forced												
" Outdoor												
JAN- APL MCH- MAY												

NOTE:- Black portions denote peak periods.

SEASON	JAN	FEB	MCH	APL	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
<b>PEAS:-</b>												
Home Outdoor												
French "												
Channel Is. "												
JUN- OCT FEB- JUN NOV- JUN												
<b>BEANS:-</b>												
Home Runner												
" Broad												
French "												
Home Outdoor												
French "Kilay												
" Forced												
Madeira "												
Guernsey Forced												
French "												
JUL- OCT JUN- JUN MAY- SEP MID FEB- JUL OCT- MAY DEC- MID JUL MAY- JUN												
<b>MARROWS:-</b>												
Home outdoor												
" Indoor												
JUL- NOV APR- JUL												
<b>PARSLEY:-</b>												
Home												
ALL YEAR												
<b>SAGE:-</b>												
Home												
ALL YEAR												
<b>THYME:-</b>												
Home												
ALL YEAR												
<b>MINT:-</b>												
Home Outdoor												
" Forced												
APL- NOV DEC- MAY												

NOTE:- Black portions denote peak periods.

## APPENDIX XI.

Index numbers of Prices of Home-grown Vegetables and of Agricultural Produce as a whole for the Years 1911-13 and 1924-34.  
(Base 1911-13=100).

Description.	1911.	1912.	1913.	1924.	1925.	1926.	1927.	1928.	1929.	1930.	1931.	1932.	1933.	1934
Brussels Sprouts	112	97	92	175	150	155	132	158	173	160	145	125	119	135
Cabbage ...	100	109	82	136	155	136	136	145	145	136	127	102	118	118
Cauliflower ...	95	100	100	168	184	163	142	174	163	153	142	142	153	158
Carrots ...	103	103	92	186	164	197	172	231	178	131	150	225	217	208
Celery ...	100	100	100	164	191	155	164	173	173	164	164	136	127	136
Onions ...	135	94	71	159	157	126	134	176	151	87	110	190	115	104
Combined Index— Vegetables ...	107	100	89	165	167	155	147	176	164	138	140	153	141	143
General Index— Agricultural Produce. ...	95	102	103	161	159	151	144	147	144	134	120	112	107	114

## APPENDIX XII.

Seasonal average Prices (Wholesaler to Retailer) of Vegetables (2nd quality only) at certain large Town Markets in England and Wales  
for the Years 1911-1913 and 1924-1934.

Description.	Weight.	1911.		1912.		1913.		1924.		1925.		1926.		1927.		1928.		1929.		1930.		1931.		1932.		1933.		1934.		
		s.	d.	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.	
Artichokes, Jerusalem ...	Cwt.	—	—	—	—	—	—	9	1	8	0	7	5	8	1	9	2	8	6	7	9	7	8	s.	d.	s.	d.	s.	d.	
Asparagus, Worcester(ord.)	Bun.	1	4	1	6	1	10	2	11	3	0	3	0	2	3	2	7	2	5	2	2	2	2	2	2	2	2	2	2	2
Beans, Dwarf, outdoor	lb.	0	1½	0	1	0	1½	0	1½	0	1½	0	1	0	1½	0	2	0	1½	0	2½	0	2½	0	1½	0	1½	0	2	5
"  Scarlet Runners	Cwt.	14	0	4	8	11	8	7	0	14	0	7	0	8	4	15	9	14	3	12	0	10	9	13	3	12	9	12	9	
"  Broad	Cwt.	—	—	—	—	—	—	7	3	12	9	6	7	9	8	12	9	10	6	8	3	9	6	8	0	10	9	8	7	
Beet ...	Cwt.	2	11	3	2	2	11	6	10	4	11	4	9	4	8	6	4	4	10	4	2	5	3	6	7	3	9	3	9	
Broccoli, Cornish ...	Doz.	1	10	1	10	1	10	2	11	2	6	2	0	2	0	3	3	3	5	3	0	2	9	3	2	2	4	3	1	
Brussels Sprouts ...	Cwt.	11	0	9	6	9	0	17	3	14	9	15	3	13	0	15	6	17	0	15	9	14	3	12	3	11	9	13	3	
Cabbage ...	Doz.	0	11	1	0	0	9	1	3	1	5	1	3	1	3	1	4	1	4	1	3	1	2	0	11½	1	1	1	1	
"  Savoy ...	Doz.	1	0	1	1	0	10	2	1	1	10	1	8	1	7	1	9	1	9	1	10	1	6	1	3	1	1	1	1	
Carrots ...	Cwt.	3	1	3	1	2	9	5	7	4	11	5	11	5	2	6	11	5	4	3	11	4	6	6	9	6	6	6	3	
Cauliflowers ...	Doz.	1	6	1	7	1	7	2	8	2	11	2	7	2	3	2	9	2	7	2	5	2	3	2	3	2	5	2	2	
Celery ...	Bun.	0	11	0	11	0	11	1	6	1	9	1	5	1	6	1	7	1	7	1	7	1	6	1	6	1	3	1	2	
Lettuce, Cos ...	Doz.	0	8	0	5	0	8	1	2	1	7	1	2	0	11½	1	3	1	1	1	1	0	11½	1	1	1	1	0	1	
"  Cabbage	Doz.	—	—	—	—	—	—	0	10½	1	5	1	1	0	11	1	2	1	3	1	0	0	10½	0	11½	1	0	1	1	
Mushrooms, forced	12 lb.	—	—	—	—	9	6	19	9	23	6	24	0	24	6	22	0	21	6	19	0	18	6	20	6	17	6	14	9	
"  outdoor	"	—	—	—	—	4	6	10	3	9	4	15	9	12	6	12	3	9	9	11	3	13	3	12	6	8	11	7	2	
Onions, British ...	Cwt.	7	8	5	4	4	0	9	0	8	11	7	2	7	7	10	0	8	7	4	11	6	3	10	9	6	6	5	11	
Parsnips ...	Cwt.	3	8	3	11	2	10	6	8	5	6	6	6	5	2	6	5	6	9	5	2	4	6	5	3	5	8	7	3	
Peas, Market Garden ...	Cwt.	12	0	9	6	10	0	11	0	24	6	10	6	17	6	19	6	16	9	16	0	15	6	14	6	17	0	14	3	
Spinach ...	Cwt.	—	—	—	—	—	—	18	6	18	3	21	0	22	0	21	6	22	6	19	6	19	6	21	0	20	0	15	6	
Swedes, Table ...	Cwt.	—	—	—	—	—	—	2	10	2	10	2	9	2	8	2	11	2	9	2	5	2	7	2	5	2	5	2	7	
Turnips, White ...	Cwt.	2	4	2	4	2	1	4	0	4	0	3	8	3	7	4	1	4	3	4	1	3	10	3	9	3	8	4	7	
Vegetable Marrows ...	Doz.	1	7	1	0	1	10	1	10	1	9	1	11	2	0	2	1	2	6	2	1	2	4	2	1	2	4	1	9	
Watercress ...	Cwt.	—	—	—	—	—	—	24	6	27	6	29	6	29	0	30	6	31	6	32	6	32	0	30	0	28	0	31	6	

## APPENDIX XIII.

Average Weekly Prices of Certain Vegetables (2nd quality only) at London  
(Covent Garden Market) for the year 1933.

Week ended.	Carrots.	Celery.	Broccoli and cauliflowers.	Lettuce (Cabbage)	Peas (Market Garden).	Brussels Sprouts.
					per doz.	per $\frac{1}{4}$ bag 26-28 lb.
	per cwt.	per bun. (12 heads)	per doz.	per doz.	per 36-40 lb.	per $\frac{1}{4}$ bag 26-28 lb.
	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
January	4th	3 6	9	1 6	—	2 3
	11th	3 6	9	1 6	—	1 9
	18th	4 0	9	2 0	—	1 6
	25th	4 0	9	3 0	—	2 0
February	1st	6 0	—	2 6	—	2 0
	8th	5 6	—	2 0	—	2 6
	15th	4 0	—	2 0	—	1 6
	22nd	4 0	—	2 0	—	2 0
March ...	1st	4 0	—	2 6	—	2 6
	8th	4 0	—	2 6	—	1 9
	15th	3 6	—	2 0	1 0	—
	22nd	3 6	—	3 0	1 0	—
April ...	29th	4 0	—	2 6	1 6	—
	5th	4 0	—	2 6	1 6	—
	12th	4 0	—	1 9	1 6	—
	19th	4 0	—	1 9	1 0	—
May ...	26th	8 0	—	3 0	1 0	—
	3rd	5 0	—	3 0	—	—
	10th	5 0	—	2 10	1 0	—
	17th	5 0	—	2 10	9	—
June ...	24th	7 0	—	4 7	2 0	—
	31st	7 0	—	4 0	1 0	—
	7th	7 0	—	5 0	1 0	9 6
	14th	—	—	2 6	6	4 6
July ...	21st	—	—	2 6	1 0	6 0
	28th	—	—	2 6	1 0	5 0
	5th	—	—	2 6	1 0	7 0
	12th	12 0	—	2 3	9	4 0
August ...	19th	14 0	—	2 6	9	7 0
	26th	8 0	—	1 6	1 9	5 0
	2nd	9 0	—	1 6	1 9	3 0
	9th	10 0	—	1 6	1 0	5 0
September	16th	11 0	—	2 0	1 6	5 0
	23rd	14 0	—	—	1 3	6 0
	30th	—	1 0	—	1 6	10 0
	6th	10 0	1 0	—	1 6	8 0
October ...	13th	10 0	1 0	—	1 6	10 0
	20th	12 0	10	3 0	1 3	10 0
	27th	10 0	8	4 0	1 3	16 0
	4th	9 0	10	3 0	1 0	17 0
November	11th	8 0	10	3 0	1 0	14 0
	18th	7 0	9	1 6	1 0	17 0
	25th	9 0	9	1 6	1 3	—
	1st	8 0	9	2 0	1 3	—
December	8th	7 0	8	2 0	1 3	—
	15th	6 0	—	2 0	—	—
	22nd	6 0	9	3 0	—	—
	29th	6 0	8	3 0	—	—
December	6th	7 0	8	3 0	—	—
	13th	8 0	8	3 0	—	—
	20th	9 0	8	3 6	—	—
	27th	9 0	9	6 0	—	—

## APPENDIX XIV.

## List of Local Growers' Associations (other than assembling organisations).

Name of Association.	Remarks.
Vale of Evesham Growers' Association (Headquarters: Evesham)	Affiliated to N.F.U. Formed originally as the Evesham and District Market Gardeners' and Fruit Growers' Association to safeguard rights of growers in connexion with "Evesham custom" system of compensation due to occupier on quitting holding.
N.F.U. Wisbech (Cambs.) ...	Members chiefly concerned with general farming.
Wisbech and District Fruit Growers' Association.	Affiliated to N.F.U. and chiefly interested in fruit growing.
N.F.U. Maulden ... ..	} Together represent about 800 vegetable growers.
,, St. Neots ... ..	
,, Biggleswade (Beds.)	
,, Sandy (Beds.) ... ..	
,, Dartford (Kent) ... ..	160 members include dairy and arable farmers, fruit growers, and approximately 70 vegetable growers.
,, North-West Kent Growers' Branch. (Headquarters: Dartford).	100 members, of whom about 30 grow vegetables under glass. Several associations amalgamated to form the branch, which covers an area of 12 miles radius from Dartford and concerns itself with glasshouse crops, especially lettuce and beans. Takes no part in marketing of members' produce.
,, Ash and District Branch. (Headquarters: Sandwich).	Founded 1918. About two-thirds of Committee are vegetable growers. Members just over 100. Claims to represent 90 per cent. of market gardeners and fruit growers in district. Has taken up question of unsatisfactory sales accounts, transport problems, etc. Holds annual farm competition and awards cup for best managed holdings not over 10 acres and 35 acres and over 35 acres.
Worthing and West Sussex Growers	Membership about 160, including glasshouse vegetable growers, market gardeners and farmers.
Worthing District Growers, Ltd....	Organised to obtain rebate on freight of market produce by a bulking scheme. In 1932 members secured rebate of 24½ per cent. from rail freight charges.

List of Local Growers' Associations—*continued*.

Name of Association.	Remarks.
N.F.U. Ramsey (Hunts.) ... ..	Has existed over 20 years. 180 members, including over 100 growers of vegetables, chiefly celery and carrots.
N.F.U. Pershore (Worcs.) ... ..	—
,, Preston ... ..	—
,, Holland, Lincs. (Headquarters: Spalding.)	—
,, Northumberland and Durham (Headquarters: Kenton, Newcastle.)	Market growers' branch.
,, Chatteris ... ..	Over 100 members, at least 50 vegetable growers.
Leeds and District Market Gardeners' Association.	Represents about 85 per cent. of the forced rhubarb growers in the area. Started about 1910 and has between 150 and 200 members living within about 20 miles of Leeds. Shows of forced rhubarb (numbering about 20 to date) are usually held on the last Saturday in February at Leeds.
Cottingham (near Hull) and District Growers' Association.	Recently formed.
Tamworth and District Market Gardeners' Association.	Area covered includes Tamworth, Lichfield and Bromsgrove.
Melbourne Market Gardeners' Association.	Membership 40-50. Facilities given to members in connection with the insurance of motor lorries, co-operative purchase of seeds and fertilisers, etc.
Cheddar and District Growers' and Producers' Association.	The number of members is about 180, many of whom are largely interested in fruit production. Buys fertilisers and other requisites in bulk at reduced rates for members. Contemplates co-operative sale of produce on behalf of members.
Bristol and District Market Gardeners' Association.	Membership estimated at 60 per cent. of local growers.
Vale of Evesham Asparagus Growers' Association. (Headquarters: Badsey, Worcs.)	Founded in 1925: (1) to arrange annual Shows and to encourage good grading and packing; (2) to take any action to stimulate sales among the public; and (3) to conduct research work to enable growers to cope with disease, increase yield and quality of their produce and to investigate the problem of "sick" land. Annual Asparagus Show held about the end of May at Evesham.
Swansea and District Horticultural Trades' Association.	Membership 35.



List of Local Growers' Associations—*continued.*

Name of Association.	Remarks.
The Lea Valley Growers' Association. (Headquarters: Cheshunt.)	Largely interested in tomatoes and cucumbers, but some members are now showing interest in other forced crops such as lettuce, mushrooms, etc.*
Dee Valley Growing Association. (Headquarters: Wrexham.)	—
Conway Valley Association ...	—
Liverpool and District Farmers' Club.	—
"Cheshire Side" Growers' Association.	Founded in 1930 to provide a warehouse in Smithfield Market, Manchester, for empties of growers in the Sale and Baguley districts of Cheshire who wholesale their own produce in the market.
N.F.U. Berkshire County Branch, Horticultural Section. (Headquarters, Reading).	Founded in 1935 to provide a central organisation with special facilities for fruit and vegetable growers under the county Branch.
N.F.U. Middlesex. (Headquarters: Watford.)	—
N.F.U. Herts. County Branch (watercress section). (Headquarters: St. Albans.)	Membership 25.
N.F.U. Essex County Branch. (Headquarters: Chelmsford.)	—
N.F.U. Truro (Cornwall County Branch). (Headquarters: Truro.)	Important reductions in railway freight rates have been secured by the local Penzance Branch with the assistance of N.F.U. headquarters.
N.F.U. Marton (Lancs.) ... ..	—
Cheltenham Growers' Association	Formed to provide facilities for local growers to pack fruit and vegetables under the National Mark, many members being unable to comply with the minimum output restriction of the cabbage lettuce scheme. Membership about 30. Probably 90 per cent. of members' lettuce marketed is disposed of by auction or private treaty through the facilities given by the Gloucestershire Marketing Society.

\*The number of enquiries and problems submitted for investigation by members of the Lea Valley Growers' Association to the Research Station at Cheshunt is increasing, and it is evident that the Research Station is providing much practical assistance to growers. Experiments are conducted under the auspices of the Nursery and Market Garden Industries' Development Society, Ltd. As a result of breeding and selection, a new type of cabbage lettuce has been raised (Cheshunt Early Giant), which, it is believed, will prove suitable for providing hearted lettuce under glass during the early spring. Problems connected with the production of beans under glass are also receiving attention.

## APPENDIX XV.

### A.—Examples of Charges for Vegetable Traffic (Goods Train) in Great Britain.

(For abbreviations see footnote at end of this Appendix—page 226).

Despatching Station.	Destination Station.	Dis- tance.	Class 8 Minimum 4 tons (station to station, unless otherwise shown).	Class 10 Minimum 2 tons (station to station, unless otherwise shown).	Class 12 Minimum 1 ton per truck.	Class 14 Any quantity (subject to Smalls Scale).	Miscellaneous.
		<i>Miles.</i>	<i>Per ton.</i>	<i>Per ton.</i>	<i>Per ton.</i>	<i>Per ton.</i>	<i>Per ton.</i>
Evesham ...	Bradford ...	146	22s. 6d.	24s. 9d.	34s. 6d. C. & D.	44s. 5d. Deld. 37s. C. & D. 10 cwt.	—
,, ...	Derby ...	72	15s. 3d.	18s. 5d.	26s. 1d. C. & D.	29s. 9d. Deld. 28s. 7d. C. & D. 10 cwt.	—
,, ...	Huddersfield ...	133	21s. 5d.	26s. 2d.	34s. 6d. C. & D.	42s. 1d. Deld. 37s. C. & D. 10 cwt.	—
,, ...	Newcastle-on- Tyne.	231	29s. 7d.	36s. 4d.	48s. 7d.	59s. 8d. Deld.	—
,, ...	Sheffield ...	107	19s. 3d.	23s. 5d.	31s. C. & D.	37s. 5d. Deld. 33s. 6d. C. & D. 10 cwt.	—
,, ...	Manchester ...	113	19s. 9d.	24s. 1d.	27s. 5d. C. & D.	38s. 6d. Deld. 29s. 11d. C. & D. 10 cwt.	—

A.—Examples of Charges for Vegetable Traffic (Goods Train) in Great Britain.—*continued.*

Despatching Station.	Destination Station.	Distance.	Class 8 Minimum 4 tons (station to station, unless otherwise shown).	Class 10 Minimum 2 tons (station to station, unless otherwise shown).	Class 12 Minimum 1 ton per truck.	Class 14 Any quantity (subject to Smalls Scale).	Miscellaneous.
London ...	Bristol ...	<i>Miles</i> 117	<i>Per ton</i> 20s. C. & D. to 30/6/34.	<i>Per ton</i> 20s. C. & D. to 30/6/34.	<i>Per ton</i> 23s. C. & D. to 30/6/34.	<i>Per ton</i> 39s. 3d. Deld.	<i>Per ton</i> 56s. 9d. (Asparagus) C. & D.
„	Birmingham ...	110	17s. 6d. C. & D. for Carrots, Onions, 24s. C. & D.	27s. 6d. C. & D.	33s. 10d. C. & D.	44s. 8d. C. & D.	Asparagus— 24s. 4 tons C. & D. 27s. 6d. 2 tons C. & D. 33s. 10d. 1 ton C. & D. 55s. 2d. any quan- tity C. & D.
„	Cardiff ...	152	22s. C. & D. to 30/6/34.	27s. C. & D.	30s. C. & D.	30s. 10d. Carted London.	Asparagus— 64s. 10d. C. & D.
Altear Ormskirk }	Manchester ...	30	9s. 6d.	11s. 2d. 10s. 1d. 3 tons Cabbages and Cauliflowers. 33s. 4d.	15s. 1d. S. to S.	19s. 6d. Carted in Manchester only.	—
Altear Ormskirk }	London ...	202	27s. 2d.	27s. 6d. 3 tons Cabbages and Cauliflowers. 34s. 3d.	42s. 3d. S. to S.	51s. 11d. S. to S.	—
Shirdley Hill.	„ ...	211	27s. 11d.	27s. 6d. 3 tons Cabbages and Cauliflowers.	43s. 5d. S. to S.	53s. 7d. S. to S.	—

Chatteris	London	...	75	14s. 10d. 2 tons } 13s. 6d. } Vegetables. 5 tons } 11s. 2d. } Carrots. 8s. 1d. } Carrots 6 tons } and Turnips	15s. 6d.	24s. 1d. S. to S.	27s. 11d. S. to S.	—
"	Kew Bridge (So. Rly.)	...	84	13s. 6d. 5 tons 14s. 10d. 2 tons	15s. 6d.	25s. 8d. S. to S.	30s. S. to S.	—
"	Manchester	...	142	22s. 2d.	27s. 1d.	34s. 3d. S. to S.	41s. 2d. S. to S.	—
"	Leeds	...	130	21s. 2d.	25s. 10d.	32s. 8d. S. to S.	39s. 1d. S. to S.	—
"	Birmingham	...	102	18s. 10d.	21s. 5d. } 2 tons packed 3 tons loose.	28s. 11d. S. to S.	34s. S. to S.	—
"	Liverpool	...	173	24s. 9d.	30s. 4d.	38s. 4d. S. to S.	46s. 9d. S. to S.	—
Hull	Sheffield	...	51	12s. 9d.	15s. 2d. 20s. C. & D.	19s. 8d. S. to S.	22s. 5d. S. to S.	—
"	Rotherham	...	48	12s. 4d.	14s. 7d. 18s. 4d. C. & D.	19s. S. to S.	21s. C. & D.	—
"	Barnsley	...	42	11s. 4d.	13s. 6d. 20s. C. & D. 11s. 9d. Green Peas.	17s. 8d. S. to S.	18s. 2d. Delivered Barnsley.	—
Hull	Leeds	...	35	10s. 3d.	12s. 2d. 15s. 10d. C. & D.	16s. 2d. S. to S.	18s. C. & D. Onions, Carrots, 18s. 3d. S. to S. 20s. 6d. C. & D.	—
"	Birmingham	...	131	21s. 3d.	24s. 6d. C. & D.	31s. 8d. C. & D.	31s. 8d. C. & D.	—
"	Wolverhampton	...	132	21s. 4d.	24s. 6d. C. & D.	31s. 8d. C. & D.	31s. 8d. C. & D.	—
"	Dudley	...	133	21s. 5d.	24s. 6d. C. & D.	31s. 8d. C. & D.	31s. 8d. C. & D.	—
"	Walsall	...	127	20s. 11d.	24s. 6d. C. & D.	31s. 8d. C. & D.	31s. 8d. C. & D.	—

A.—Examples of Charges for Vegetable Traffic (Goods Train) in Great Britain—*continued.*

Despatching Station.	Destination Station.	Distance.	Class 8 Minimum 4 tons (station to station, unless otherwise shown).	Class 10 Minimum 2 tons (station to station, unless otherwise shown).	Class 12 Minimum 1 ton per truck.	Class 14 Any quantity (subject to Smalls Scale).	Miscellaneous.
		<i>Miles.</i>	<i>Per ton.</i>	<i>Per ton.</i>	<i>Per ton.</i>	<i>Per ton.</i>	<i>Per ton.</i>
Doncaster	London ...	155	23s. 3d.	28s. 5d.	36s. S. to S.	43s. 6d. S. to S.	—
"	Manchester ...	50	12s. 8d.	15s.	19s. 6d. S. to S.	22s. 3d. S. to S.	—
Sandy	Middlesbrough ...	191	26s. 3d.	32s. 2d.	40s. 9d. S. to S.	50s. S. to S.	—
Biggleswade	London ...	41	8s. 6d. 11s. 4d. Carted London.	9s. 6d. 12s. 4d. Carted London.	13s. 6d. S. to S. 17s. 6d. Carted London.	19s. 10d. S. to S. 20s. 5 cwt. Carted London.	—
"	Leeds ...	145	22s. 5d.	11s. 4d.—4 tons Carted London. 8s. 6d.—4 tons.	31s. 2d. S. to S.	41s. 9d. S. to S.	—
"	Manchester ...	148	22s. 8d.	23s. 11d.—4 tons 24s. 8d.—2 tons 25s.—4 tons	31s. 6d. S. to S.	42s. 3d. S. to S.	—
"	Nottingham	87	15s. 6d.	26s. 4d.—2 tons 19s. 2d. (2 tons packed, 3 tons loose),	23s. 10d. S. to S.	30s. 8d. S. to S.	—
"	Glasgow	350	39s. 6d.	48s. 9d.	62s. S. to S.	78s. 6d. S. to S.	Rate for Carrots, Turnips Parsnips and Beetroot, five tons, 30s. 5d. S. to S. Glasgow only. (5 tons per truck.)

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Penzance	Bristol	...	207	27s. 7d.—4 tons 26s. 6d.—5 tons C. & D.	33s. 5d.—2 tons, Deld. 32s. 1d.—3 tons, Deld.	Carrots, Onions, Parsnips, Turnips, Beetroot, Celery only — 42s. 11d. less than 2 tons, S. to S. 34s. 9d., 1 ton Deld. 36s. 1d., 10 cwt. Deld.	52s. 10d. S. to S.	Broccoli, Lettuce, Radishes — 29s., 2 tons S. to S. to 30/6/34. Onions in cases, 29s. 7d.—O.R., S. to S. 10 cwt.
	Cardiif	...	252	31s. 4d.	28s. 9d.—2 tons Deld. 37s. 5d.—3 tons Deld.	Carrots, Onions, Parsnips, Turnips, Beetroot and Celery only—less than 2 tons, 48s. 11d. S. to S. 40s. 1d., 1 ton Deld. 41s. 5d., 10 cwt. Deld.	60s. 11d. S. to S. 54s. 8d. S. to S., O.R.	Broccoli, Lettuce, Radishes—33s. 5d. 3 tons, S. to S. 34s. 2 tons, S. to S. to 30/6/34. 48s. 9d. O.R., S. to S.
Penzance	London	...	305	35s. 9d.	40s. C. & D.	42s.—1 ton, C. & D.	43s. 6d., C. & D.	Broccoli, Lettuce, Radishes — 38s., 2 tons per truck C. & D., to 30/6/34. 40s., 1 ton per truck, C. & D., to 30/6/34.
„	Nottingham	...	350	39s. 6d.	48s. 9d.	Carrots, Onions, Parsnips, Turnips, Beetroot and Celery only, less than 2 tons— 62s. S. to S. 58s. 11d. O.R., S. to S.	78s. 6d. S. to S. 58s. 11d. O.R., S. to S.	Broccoli in barrels or hampers— 41s. 6d., 2 tons, S. to S. 52s. 9d., 1 ton, S. to S.

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A.—Examples of Charges for Vegetable Traffic (Goods Train) in Great Britain—*continued.*

Despatching Station.	Destination Station.	Distance.	Class 8 Minimum 4 tons (station to station, unless otherwise shown).	Class 10 Minimum 2 tons (station to station, unless otherwise shown).	Class 12 Minimum 1 ton per truck.	Class 14 Any quantity (subject to Smalls Scale).	Miscellaneous.
		<i>Miles</i>	<i>Per ton</i>	<i>Per ton</i>	<i>Per ton</i>	<i>Per ton</i>	<i>Per ton</i>
Penzance...	Manchester ...	377	41s. 9d.	43s.	45s. S. to S.	50s. S. to S.	
"	Newcastle-on-Tyne.	495	51s. 7d.	59s. 6d. Deld.	75s. 3d. Deld.	83s. 8d. Deld.	
"	Glasgow ...	567	57s. 7d.	71s. 4d.	Carrots, Onions, Parsnips, Turnips, Beetroot and Celery only, less than 2 tons— 90s. 11d. S. to S.	117s. 4d. S. to S.	
"	Sheffield ...	370	41s. 2d.	40s. 8d.	51s. 9d. S. to S.	82s. 1d. S. to S. 61s. 7d. O.R., S. to S.	
Lavenham	London ...	66	12s. 10d., 5 tons 14s. 10d., 2 tons	14s. 2d., 4 tons, packed. 23s. 11d., 2 tons, C. & D. packed.	22s. 5d. S. to S.	20s. S. to S. Min. 1 cwt. 25s. 5d. Carted London.	
Shippea Hill	" ...	77	13s. 6d., 5 tons 14s. 10d., 2 tons.	Cabbages— 14s. 10d., 2 tons. 13s. 6d., 4 tons. 13s., 6 tons. Vegetables (except Cabbage)— 19s. 2d.	24s. 5d. S. to S.	20s. 8d. S. to S. Min. 1 cwt. 26s. 1d. Carted London.	Celery in bundles, S. to S., O.R.— 15s. 6d., 2 tons. 14s. 10d., 4 tons. 14s. 2d., 5 tons.

..	Birmingham ...	114	19s. 10d.	24s. 2d.	30s. 6d. S. to S.	36s. 2d. S. to S.	
..	Newcastle-on-Tyne.	225	29s. 1d.	35s. 9d.	45s. 4d. S. to S.	56s. 1d. S. to S.	Celery, 4 tons, S. to S. 29s. 8d. to 30/6/34.
..	Southampton	164	Carrots, packed, 5 tons—21s. 8d. to 30/6/34.	29s. 5d.	37s. 2d. S. to S.	45s. 2d. S. to S.	Celery, 4 tons, S. to S. 24s. 5d. to 30/6/34.
Bedford Group.	Glasgow Group.	350				75s. 5d. C. & D. 10 cwt.	



**B.—Examples of Charges for Vegetable Traffic (Passenger Train) in Great Britain.**

Commodity.	Despatching Station.	Destination Station.	Distance.	Division II.				Miscellaneous.	Remarks
				Section 2.		Section 3.			
				Standard Rates. C.R., S. to S., Min. 1 cwt.	Exceptional Rates. O.R., S. to S.	Standard Rates. C.R. S. to S., Min. 1 cwt.	Exceptional Rates. O.R., S. to S.		
Watercress	Bailey Gate	Manchester ...	232	6 6	3s. 2d. per $\frac{1}{2}$ cwt. (Min. $\frac{1}{2}$ cwt.) 5s. 6d. per cwt. (Min. 5 cwt.) 5s. 2d. per cwt. (Min. 10 cwt.) 4s. 8d. per cwt. (Min. 1 ton).	Per cwt. s. d.			
									Arundel
	"	Brighton ...	20	1 4	2s. 8d. per cwt. (Min. 5 cwt.)				
	"	Andover Junction.	London ...	65		2 10			
	"	"	Liverpool ...	197	5 9	3s. 2d. per $\frac{1}{2}$ cwt. (Min. $\frac{1}{2}$ cwt.)			
	"	"	Manchester ...	194	5 8	3s. 2d. per $\frac{1}{2}$ cwt. (Min. $\frac{1}{2}$ cwt.)			
	"	"	Birmingham ...	114	3 11	2s. 4d. per $\frac{1}{2}$ cwt.			

Fruit and Vegetables (not hothouse)	Watlington	Birmingham ...	85	3	4	3s. 2d. per cwt. (Min. $\frac{1}{2}$ cwt.). 2s. 9d. per cwt. (Min. $\frac{5}{8}$ cwt.). 3s. 6d. per cwt. (Min. $\frac{1}{2}$ cwt.). 3s. 11d. per cwt. (Min. $\frac{1}{2}$ cwt.). 5s. 2d. per cwt. (Min. $\frac{1}{2}$ cwt.). 4s. 2d. per cwt. (Min. $\frac{5}{8}$ cwt.). 5s. per cwt. (Min. 1 cwt.) 4s. 8d. per cwt. (Min. $\frac{5}{8}$ cwt.). 2s. per $\frac{1}{2}$ cwt. (Min. $\frac{1}{2}$ cwt.) 3s. 6d. per cwt. (Min. $\frac{1}{2}$ cwt.) 4s. 3d. per cwt. (Min. 1 cwt.). 3s. 9d. per cwt. (Min. $\frac{5}{8}$ cwt.). 3s. 8d. per cwt. (Min. 10 cwt.). 3s. 6d. per cwt. (Min. 20 cwt.). 3s. 9d. per cwt. (Min. 20 cwt.). 1s. 8d. per cwt. (Min. 10 cwt.). — 2s. 6d. per cwt. (Min. 10 cwt.).
	..	Wolverhampton	97	3	7	
	..	Manchester ...	163	5	0	
	..	Cardiff ...	136	4	5	
	..	Bolton ...	177	5	4	
	Bourne	Manchester ...	109	3	10	
	..	Leeds ...	103	3	9	
	Bridgwater	London ...	140	4	6	
	..	Birmingham ...	122	4	1	
	..	Bristol ...	33	1	10	
	..	Cardiff ...	79	3	2	
	..	Newport (Mon.)	67	2	11	

B.—Examples of Charges for Vegetable Traffic (Passenger Train) in Great Britain.—(continued)

Commodity.	Despatching Station.	Destination Station.	Distance.	Division II.				Miscellaneous.	Remarks
				Section 2.		Section 3.			
				Standard Rates. C.R., S. to S., Min. 1 cwt.	Exceptional Rates. O.R., S. to S.	Standard Rates. C.R. S. to S., Min. 1 cwt.	Exceptional Rates. O.R., S. to S.		
Fruit and Vegetables (not hothouse).	Blackpool	Bradford ...	69	2 11	10d. per 28 lb. (Min. 28 lb.) 1s. 6d. per $\frac{1}{2}$ cwt. (Min. $\frac{1}{2}$ cwt.) 2s. 9d. per cwt. (Min. 1 cwt.) 2s. 6d. per cwt. (Min. 5 cwt.) 2s. 3d. per cwt. (Min. 10 cwt.) 2s. per cwt. (Min. 3 tons) 11d. per 28 lb. (Min. 28 lb.) 1s. 7d. per $\frac{1}{2}$ cwt. (Min. $\frac{1}{2}$ cwt.)	Per cwt. s. d.	Per cwt. s. d.		Experimental Rates.
"	"	Leeds ...	77						

	„	Bourne ...	Liverpool ...	140	4 6	4s. 3d. per cwt. (Min. $\frac{1}{2}$ cwt.)		
	„	„ ...	Nottingham ...	40	2 1	1s. 3d. per $\frac{1}{2}$ cwt. (Min. $\frac{1}{2}$ cwt.)		
Mushrooms	Monmouth	Leeds ...	176				6 1	5s. 8d. per cwt. (Min. 1 cwt.)
„	„	Hull ...	} 210				6 10	6s. 3d. per cwt. (Min. 1 cwt.)
„	„	Grimsby ...						
„	„	„ Docks ...					5 7	5s. 3d. per cwt. (Min. 1 cwt.)
„	„	Sheffield ...	155				8 4	7s. 5d. per cwt. (Min. 1 cwt.)
„	„	Newcastle-on-Tyne.	272					
Mustard and Cress.	Bourne ...	Leeds ...	103	3 9	2s. per $\frac{1}{2}$ cwt. (Min. $\frac{1}{2}$ cwt.)			
„	„ ...	Leicester ...	37	2 0	1s. 3d. per $\frac{1}{2}$ cwt. (Min. $\frac{1}{2}$ cwt.)			
„	„ ...	Newcastle-on-Tyne.	189	5 7	3s. per $\frac{1}{2}$ cwt. (Min. $\frac{1}{2}$ cwt.)			
Asparagus	Evesham...	Bradford ...	147				5 5	
„	„ ...	Huddersfield ...	134				5 1	
„	„ ...	Newcastle-on-Tyne.	236				7 6	
„	„ ...	Sheffield ...	108				4 6	
„	„ ...	Manchester ...	114				4 7	3s. 11d. per cwt. (Min. 1 cwt.)
„	„ ...	Derby ...	72				3 7	
„	„ ...	Bournemouth...	136				5 2	4s. 8d. per cwt. (Min. 1 cwt.) 4s. 3d. per cwt. (Min. 10 cwt.) 4s. 10d. per cwt. (Min. 1 cwt.) 4s. 6d. per cwt. (Min. 10 cwt.)
„	„ ...	Brighton ...	138				5 2	

B.—Examples of Charges for Vegetable Traffic (Passenger Train) in Great Britain—(continued).

Commodity.	Despatching Station.	Destination Station.	Distance.	Division II.				Miscellaneous.	Remarks.
				Section 2.		Section 3.			
				Standard Rates. C.R., S. to S., Min. 1 cwt.	Exceptional Rates. O.R., S. to S.	Standard Rates. C.R. S. to S., Min. 1 cwt.	Exceptional Rates. O.R., S. to S.		
Asparagus	Evesham ...	Edinburgh ...	324	<i>Miles.</i> <i>Per cwt.</i> <i>s. d.</i>		<i>Per cwt.</i> <i>s. d.</i> 9 6	8s. 3d. per cwt. (Min. 1 cwt.)		
"	" ...	Glasgow ...	328			9 7	8s. 3d. per cwt. (Min. 1 cwt.)		
"	" ...	Hull ...	} 163			5 9	5s. 2d. per cwt. (Min. 1 cwt.)		
"	" ...	Grimsby ...					5 9	5s. 2d. per cwt. (Min. 1 cwt.)	
"	" ...	" Docks				4 9	4s. 2d. per cwt. (Min. 1 cwt.)		
"	" ...	Liverpool ...	120			4 9	4s. 2d. per cwt. (Min. 1 cwt.)		
"	" ...	Scarborough ...	195			6 6	5s. 11d. per cwt. (Min. 1 cwt.)		
"	" ...	Weston-super-Mare.	80			3 10	3s. 6d. per cwt. (Min. 1 cwt.)		
"	" ...	York ...	153			5 6	4s. 3d. per cwt. (Min. 1 cwt.)		

Note.—S. to S. = Station to Station.  
 C. & D. = Collected and Delivered.  
 O.R. = Owner's risk.  
 C.R. = Company's risk.  
 Deld. = Delivered.

## APPENDIX XVI.

Notes on the Importation and Distribution of Vegetables (excluding potatoes, tomatoes, and cucumbers) at Ports of Entry in England and Wales.

There are approximately 30 English and Welsh ports at which vegetables are imported from overseas. Some receive unimportant arrivals of vegetables—only a few tons, chiefly onions—in a year. At others where heavy importations of French and Dutch vegetables and onions are received, the annual quantities may run into many thousands of tons.

The following list includes ports of material importance at which vegetables are imported into England and Wales from the Continent and elsewhere:—

Plymouth, Weymouth, Poole, Southampton, Newhaven, Folkestone, Dover, London, Harwich, Yarmouth, King's Lynn, Boston, Grimsby, Hull, Middlesbrough, Sunderland, Newcastle-on-Tyne, Liverpool, Manchester, Portmadoc, Milford Haven (including Neyland and Haverfordwest), Swansea, Cardiff, Newport (Mon.) and Bristol.

*Plymouth.*—Vegetables received at Plymouth are obtained from three main sources, Brest, Roscoff and Rotterdam. Brest sends fresh peas. The other French vegetables received from the Roscoff area, are onions (by far the most important), broccoli, carrots, parsnips and cabbage. Arrivals from Holland are smaller in quantity; they consist chiefly of onions, the remainder being carrots, parsnips and vegetables in brine. All these imports, except the peas from Brest, are largely for local consumption.

*Weymouth.*—Importations of broccoli into England and Wales from the Roscoff and St. Pol-de-Léon area of Finistère, France, arrive mainly at Weymouth, which also receives vegetables from the Channel Islands, Guernsey particularly.

*Poole (Dorset).*—Onions and sometimes carrots are received from Brittany and Normandy.

*Southampton.*—Southampton is one of the chief ports of entry for vegetables. The port is within easy rail distance of London (78 miles) and has excellent natural facilities and up-to-date unloading plant and rail connections for giving quick despatch. The Southern Railway Company carry vegetables on their own ships from St. Malo, Honfleur and Le Havre as well as from Guernsey and Jersey. (Vegetables are also carried by the steamers of other companies.) Of this traffic, cauliflowers from St. Malo and onions from French ports still represent a substantial tonnage. Other vegetable traffic which arrives at Southampton includes Spanish onions, onions from Bordeaux, produce from Rotterdam and Antwerp, including onions, carrots, parsnips, cabbage, lettuce, etc., fresh beans, marrows and green peas from Madeira, Spanish lettuce via Le Havre, Argentine and Californian asparagus, Italian peas and small quantities of spring cabbage from St. Malo.

Steamships on the homeward passage from South Africa call at Madeira and load beans and other vegetables for Southampton.

*Newhaven.*—Vegetables arriving at Newhaven consist mainly of French produce arriving via Dieppe, originating largely from the departments of the Bouches-du-Rhône and Vaucluse in the South of France, Nantes and Paris. This traffic comprises asparagus, peas, bunched carrots, lettuce and numerous kinds of "primeurs".

Two passenger boats arrive at Newhaven each day from Dieppe. Paris vegetables are usually carried on the boat arriving about 4 a.m. As much of the perishable produce as possible is unloaded from this boat in time to catch the boat train for London leaving soon after 6.30 a.m. This necessitates speedy unloading; up to 20 tons of produce can be unloaded and put on rail in two hours. In one day in March, 1931, 3,085 packages (about 26 tons) were dispatched by this train. Produce not loaded on the 6.30 is sent forward by two other trains, both leaving within 1½ hours of the first. Another passenger boat arriving at about 4.30 p.m. carries traffic from Nantes and the South of France and sometimes a small quantity from Paris. Finally, a cargo boat arriving early in the morning may also convey perishable traffic. The crossing occupies slightly over three hours by day and less than four by night. Vegetable traffic is chiefly received on Mondays, Wednesdays and Fridays.

*Folkestone.*—Vegetable traffic sent to Folkestone via Boulogne is similar to that received at Newhaven and almost entirely of Continental origin.

Two passenger boats and two cargo boats bring vegetables from Boulogne daily throughout the season. The bulk is carried on passenger boats. Vegetables can be discharged at any state of the tide at the pier landing stage. Approximately 2,500 packages can be discharged per hour. Most of the railway waggons used for vegetables are covered, ventilated and vacuum-fitted. Passenger traffic is classified as direct or local. The local traffic is invoiced at Boulogne; it is probably assembled from various parts of France, including the Paris market, by transitaires at Boulogne and then re-consigned in one shipment to London and elsewhere via Folkestone.

*Dover.*—Vegetable traffic received at Dover from the Continent is small. Vegetables received via Calais consist chiefly of lettuce, but include also carrots, turnips, radishes, endive, peas, beans and mushrooms. Those via Ostend which are for local consumption in Kent, consist largely of lettuce in April and May, followed by cauliflowers and carrots.

*London.*—There are upwards of thirty docks and wharves on the Thames at which vegetables are received from the Continent and, in much less quantities, from overseas. Several of the most important wharves for the unloading of vegetables are within a short distance of the Custom House and many are within 1½ miles of the Tower Bridge. A large proportion of fresh vegetables from France is received at other ports, to which it is sent as quickly as possible and then consigned by rail to London and elsewhere. Dutch vegetables are handled to some extent in similar fashion, but a heavy proportion intended for the London markets is shipped up the Thames and unloaded near the Custom House.

*Harwich and Parkeston Quay.*—Importations of vegetables at this port have been in excess of 13,000 tons per annum, of which more than 50 per cent. consists of Dutch onions. Produce from Dutch ports comes chiefly from Rotterdam and the Hook of Holland and to a smaller extent from Flushing. Italian and Belgian vegetables arrive by the train ferry from Zeebrugge and Belgian vegetables also via Antwerp.

The chief vegetables received from the Netherlands are onions, followed by lettuce, carrots and cauliflowers. Other vegetables received include brussels sprouts and radishes. Italian vegetables received at Harwich are chiefly cauliflowers, and the train ferry route is the main channel through which Italian cauliflowers enter this country.

Belgian vegetables arrive in relatively small quantities, consisting chiefly of onions, carrots, witloof chicory, cauliflowers and endive, with odd lots of peas and beans.

*Yarmouth.*—Imports consist chiefly of onions from Rotterdam, but some onions are received from Brittany.

*King's Lynn.*—Importations of vegetables from Rotterdam to this port have been substantial. Onions represent by far the greatest bulk. Other vegetables imported include parsnips, red cabbage, lettuce and odd lots of cauliflowers and carrots. There are also importations of vegetables in brine.

*Boston.*—The North Sea Steamship Company imports dried peas for local canning firms. The Anglo Shipping Agency imports onions, carrots and dried peas.

*Grimsby.*—There are sailings from Rotterdam once a week. Amongst the vegetables carried are lettuce, onions, carrots and turnips, cauliflowers and small lots of radishes and parsnips. Brittany onions arrive from Dieppe, whilst importations from Hamburg are practically limited to odd consignments of horseradish.

*Hull.*—The geographical situation of Hull, and its value as an economical distributing centre for a large and densely populated industrial area, make the port the chief natural gateway to the North, especially for vegetables from near Continental ports. The imports of fruit and vegetables into Hull reach 7,000,000 packages annually.

Continental vegetables are chiefly discharged at and dispatched from Riverside Quay. This quay, owned together with the other docks at Hull by the L.N.E.R., provides spacious accommodation for receiving, handling and storage (figure 51), and since vessels can discharge at any state of the tide, they can be rapidly unloaded and their cargoes immediately dispatched.

Frequent and regular services are maintained with the ports of Rotterdam, Amsterdam, Harlingen, Hamburg, Boulogne, Antwerp and Ghent. Approximately half the fruit and vegetables dealt with by the London and North Eastern Railway are discharged at Riverside Quay. Under the system adopted, over 1,000 tons of produce have been dealt with in one day.

Imports of onions are received in considerable volume, vessels specially chartered by brokers in the fruit trade bringing onions from Valencia during the season. Generally two steamers a week are expected, but the service depends on the season and the crops. Similarly, one or two steamers a week arrive in the Egyptian onion season from Alexandria.

Apart from supplies of onions from Spain and Egypt, the chief importations of vegetables at Hull are from Holland, only relatively small quantities arriving from France and Belgium. Imports from Germany are mainly onions and horseradish.

The soft fruit and vegetable traffic is disposed of by auction on the quayside or, except during the season June to October, by private treaty or auction at the merchants' premises in Humber Street and adjoining thoroughfares, to which samples are taken. The bulk is loaded direct from berth to railway vehicles in each case. The trains are so marshalled on the quayside that there is no delay in departure. Collection of produce from importers and loading into covered and well-ventilated railway waggons is facilitated by a number of rulleys or electrically-driven barrows, owned by the railway company and driven by a staff trained to work at high speed. Waggons are available for practically every important consuming centre north of Birmingham, and produce is received at its destination usually the morning following arrival at Hull, even though first consigned by Continental shippers to importers at Hull and sold by them to inland buyers. Produce is thus received at the consuming point two days after leaving the field—an important consideration for the highly perishable produce, such as lettuce, which is handled at the port. The table on p. 231 shows the number of packages of vegetables imported into Hull in the years 1927-34.\*

\* Particulars of imports of fruit, vegetables and nuts into Hull, compiled by the Secretary, Hull Incorporated Chamber of Commerce and Shipping.



*The North East Coast Ports.*—The three centres on the North East Coast of England at which imported vegetable supplies are received are the Tyne, Wear and Tees, represented by Newcastle-on-Tyne, Sunderland, twelve miles to the south, and Middlesbrough, twenty-eight miles south of Sunderland. The areas of distribution cover 15-20 miles from each port, but overlap. Durham is served both from Sunderland and from Newcastle-on-Tyne. Only small quantities go to the areas north and west of Newcastle-on-Tyne, whilst the area to the south covers part of the Sunderland district. Similarly the area to the west of Sunderland receives only small quantities, whilst the northern part of the Middlesbrough area overlaps the southern part of the Sunderland area. The southern and western parts of the Middlesbrough area are agricultural.

*Middlesbrough.*—Onions and carrots and very small quantities of shallots, cabbage, parsnips, lettuce and cauliflowers are imported from Rotterdam, and onions from Roscoff.

*Sunderland.*—Here again onions and carrots are imported from Rotterdam and French onions from Roscoff. Small quantities of other vegetables received from Rotterdam include beet, parsnips, red cabbage, cauliflowers, shallots and brussels sprouts. In addition, vegetables in brine are received from Holland. These consist of cauliflowers, gherkins and a proportion of onions.

*Newcastle-on-Tyne.*—Onions represent the bulk of the fresh vegetables imported at Newcastle-on-Tyne. They are received in large quantities from both Spain and Holland. Some are imported from France and Belgium, whilst a few tons are received from Germany via Hamburg. Other fresh vegetables imported from Holland include carrots, lettuce, cauliflowers, also some beet, parsnips, cabbage, turnips, brussels sprouts, radishes and beans.

*Liverpool.*—In 1933 Liverpool imported about 52,200 tons of onions, of which about 38,000 tons were from Spain, 10,750 from Egypt, 2,200 from the Netherlands and 650 from other countries. Liverpool thus took over a quarter of all imports of onions into the United Kingdom. Other vegetables imported from the Netherlands via Rotterdam and Amsterdam include red cabbage, parsnips and beetroot. Dried peas are imported from Japan. Small consignments of fresh vegetables, including cabbage, celery and asparagus, have been received from time to time from the United States.

*Manchester.*—Onions from Spain and Egypt are the chief vegetable imports.

*Portmadoc and Milford Haven (including Neyland and Haverfordwest).*—Brittany onions are received.

*Swansea.*—Supplies of onions from Roscoff represent about 90 per cent. of the vegetable imports but a few carrots and parsnips from Roscoff are also received. Vegetables imported from Holland via Rotterdam and Amsterdam include onions, carrots and dried peas. Dried peas also come from Hamburg and dried beans from Danzig.

*Cardiff.*—Shipments of onions are received at Cardiff from Spain, Holland, Egypt and Portugal. In addition carrots are received from Holland, together with small lots of cabbage and parsnips. Dried peas are imported from Holland. There are frequent arrivals during the season of ships from Valencia carrying Spanish onions. Vessels from Rotterdam arrive on the average about once a week with Dutch vegetables.

Excellent accommodation is provided by the railway company for quick despatch and economic handling of traffic.

*Newport (Mon.).*—Vegetables imported at Newport include onions from Brittany, vegetables in brine from Holland and a few dried peas.

*Bristol.*—Onions are imported from Spain, Belgium, Egypt, the Netherlands and Germany.

*Packages of vegetables imported into Hull, 1927-34.*

Year Jan.— Dec.	Cabbage.	Carrots.	Cauli- flowers.	Horse- radish.	Lettuce.	Onions.	Radishes.	Rhubarb.	Brussels Sprouts.	Various.	Total Vegetables including potatoes and cucumbers but excluding tomatoes.
1927	14,135	52,840	50,889	1,556	338,659	547,250	13,085	14	13,267	6,053	1,541,935
1928	13,114	66,129	81,194	2,721	244,326	625,317	15,679	33	10,443	8,957	2,126,594
1929	18,408	44,493	50,217	3,078	303,152	613,943	9,804	745	12,233	11,558	1,635,978
1930	19,539	48,116	103,908	3,577	484,261	597,877	23,869	301	57,728	3,769	1,915,845
1931	16,822	49,419	122,905	2,146	433,299	641,024	23,233	863	42,419	6,295	3,830,805
1932	11,914	41,983	70,546	2,705	410,124	660,852	24,503	814	12,395	5,869	3,499,784
1933	10,109	55,725	39,976	3,242	424,069	653,492	22,163	16	1,968	3,099	1,592,556
1934	11,478	41,108	33,845	2,364	378,326	714,012	19,922	343	34	8,203	1,471,854

## APPENDIX XVII.

### Examples of Freight Rates on Continental Produce.

#### I.—IMPORTS.

(GV=Fast traffic. PV=Slow traffic.)

Vegetables.	From.	To.	Freight Rate per metric ton.*		Remarks.
			s.	d.	
Cauliflower or Broccoli	Roscoff	London ... ..	57	6	Lots of less than 3 tons.
		Weymouth ... ..	45	0	
		Manchester ... ..	70	6	Lots of over 2 tons.
		Sheffield ... ..	69	3 †	
		Newcastle-on-Tyne ...	86	9	
Cabbage	Cherbourg	Leicester ... ..	62	9	2 ton lots.
		London ... ..	50	4	
		Manchester ... ..	63	7	
			Francs.	Equivalent in Sterling.	
				s. d.	
Onions	Dieppe	Grimsby	150	39 0	Freight rate quotation by a firm of shipping agents.
Heavy Vegetables	Paris	London	437·15	114 0	Min. 1 Cwt.
			419·85	109 5	
Others	Paris	London	454·55	118 5	Min. 1 Cwt.
			446·85	116 7	
					} GV via Dieppe. Newhaven.

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\* Except where otherwise stated, rates are per metric ton of 2,205 lb. and came into operation in 1934. † December, 1932.

		Grimsby.						
10982	Radishes and new carrots	...	...	..	..	37	0	On contract.
	Cauliflower (packed) ...	...	...	..	..	40	0	On contract.
	Cauliflower ... ..	...	...	Grimsby	...	65	3	Forward agents.
	Cabbages (other than red)	Rotterdam*	...	..	..	27	6	Humber contract.
			...	..	..	41	6	Forward agents.
	Red cabbage (in bags)...	...	...	..	..	22	6	Humber contract.
			...	..	..	33	9	Forward agents.
	Onions ... ..	...	...	..	..	11	0	Humber contract.
			...	..	..	21	9	Forward agents.
	Onions and cabbages ...	Rotterdam*	...	Yarmouth	...	s. d.		
						18	0	
						14	0	} + 10 per cent.
						11	6	
						10	6	
						10	0	
						53	4	
	Lettuce ... ..	Rotterdam* ...	...	Gloucester (via Harwich).	...	39	10	Small lots.
	Onions (in bags) ...	Amsterdam*	...	Gloucester	...	31	6	2-ton lots. Minimum.
	Cabbages (in bags) ...					31	3	4-ton lots.
	Cauliflowers (in bags)					43	9	2-ton lots.
						43	10	2-ton lots.

\* Per 1,015 kg = 2,238 lb.

Note.—Rates originally quoted in foreign currency have been converted into English units at the average daily exchange rate for 1934.

**II.—Between Continental Points.**  
(GV = fast traffic. PV = slow traffic.)

Vegetables.	From.	To.	Freight Rate.		Remarks.	Approx. rail distance in miles.
			Francs.	Equivalent in Sterling.		
Various ... ..	Perpignan ...	Boulogne... ..	417.25	s. d. 108 10	Cwt lots } 5-ton trucks } Tonnage in excess of 5 tons } Cwt. lots } 5-ton trucks } Tonnage in excess of 5 tons } GV GV at certain times of year only. End of period Nov. 30 in each case.	} 650
			336.60	87 7		
			305.60	79 7		
			361.40	94 2		
			292.25	76 2		
			262.65	69 2		
Cauliflower and Broccoli.	St. Pol-de-Léon ...	Cologne ...	310.45 Florins.	80 10 Per 100 Kg. (2 Cwt. approx.)	GV; minimum quantities of 6 tons	700
Onions ... ..	Broek-op-Langedijk.	Rotterdam ...	0.30	9		60
		Amsterdam ...	0.20	6		30
Cabbages, onions and carrots.	Broek-op-Langedijk (N. Holland).	Nymegen (German-Dutch frontier).	1.10	2 11	Part waggon loads } 5-ton loads } 10-ton loads } Over 10 tons } Additional rate from Broek-o-L to Alkmaar ½d. per cwt., with minimum charge of 9s. 4d. per waggon.	} PV
			0.61	1 7		
			0.405	1 1		
			0.345	0 11		
Cabbages and onions. Carrots (new) ...	Cranenburg. (Ger. frontier).	Cologne ... ..	Reichs-marks. 0.84	1 5	Minimum 2 tons } " 10 " } " 15 " } " 2 " } PV	} 190
			0.76	1 2		
			0.69	1 1		
			0.84	1 5		

Onions*	...	Krabbedijke ...	Oldenzaal (Dutch frontier) ...	{ 1.44 0.72 0.48 0.40 Reichs- marks.	owt. approx.) 3 10 1 10 1 3 1 0	Part waggon loads 5-ton loads 10-ton loads 15-ton loads	} PV	460
Asparagus* Spinach and Lettuce.	...	Bergen-op-Zoom ... (N. Brabant, Holland).	Venlo (Dutch frontier).	Florins. { 1.46 0.81 Reichs- marks.	s. d. 3 11 2 2	Part waggon loads Minimum 5 tons	} GV	250

## APPENDIX XVIII.

## Horticultural Produce (Sales on Commission) Act, 1926.

*Form of "Contracting-out" Agreement adopted by certain salesmen.*

Memorandum of Agreement made this                      day of  
 19    between  
 of    of the one part and  
 of    carrying on business under the style or name  
 of    called "the firm" of the other part.

In consideration of the firm agreeing to purchase, accept, or otherwise dispose of such horticultural produce as may be agreed from time to time between the parties hereto, it is hereby agreed as follows:—

(1) All horticultural produce consigned by the said to the firm shall be deemed to be sold to the firm absolutely and the said                      hereby agrees to accept for such produce the price which shall be fixed by the firm and shown in the accounts to be rendered by the firm, such accounts simply showing the price to be paid by the firm for such produce.

(2) The produce to be consigned by the said as aforesaid shall not be deemed to be consigned for sale on commission, and it is expressly agreed that the provisions of the Horticultural Produce (Sales on Commission) Act, 1926, shall not apply to any transaction between the parties hereto.

(3) This agreement shall apply generally to all transactions between the parties, and may be terminated by either party giving to the other seven days' previous notice in writing.

## APPENDIX XIX.

### Examples of Variations in salesmen's charges at Wholesale Markets.

(No charges for the use of empties, except where mentioned, were made on the sales accounts, appertaining to recent years, from which the following extracts have been taken.)

#### 1. Broccoli and Cauliflower.

Market	Gross wholesale price realised	Commission charge	Market tolls	Porterage	Remarks
Bradford ... ..	8d. to 2s. per doz. ... ..	10 per cent. ... ..			Market expenses, etc., 2d. per package.
Birmingham ... ..	1s. per pot ... ..	7½ per cent. ... ..			
Spitalfields ... ..	3s. to 4s. per bag ... ..	4d. per bag ... ..			
Stratford ... ..	1s. 2d. per mat ... ..	5 per cent. plus 4d. per mat			
Covent Garden ... ..	Up to 3s. per mat ... ..	4d. per mat ... ..	Inclusive charge of 2d. per package		Porterage included with transport charge.
Manchester ... ..	2s. to 2s. 6d. per doz. ... ..	3d. per doz. ... ..			
Spitalfields ... ..	3s. to 7s. per bag ... ..	6d. per bag ... ..			
Leicester ... ..	4s. 6d. to 5s. per hamper ... ..	10 per cent. ... ..			
Covent Garden ... ..	3s. to 6s. per bag ... ..	5 per cent. ... ..	Inclusive charge of 5d. per bag		Tolls included with rail cartage.
Borough ... ..	2s. to 4s. per bag ... ..	8d. per bag ... ..			
Stratford ... ..	2s. 6d. to 4s. per bag ... ..		Inclusive charge of 5d. per bag		3d. per bag charged for use of empties. Market expenses 2d. per bag.
Covent Garden ... ..	2s. 6d. to 4s. per bag ... ..	6d. per bag ... ..			



2. Peas.

Market	Gross wholesale price realised	Commission charge	Market tolls	Porterage	Remarks
Covent Garden ...	1s. 6d. to 2s. 6d. per half bag	3d. per half bag	1d. per half bag		Market expenses, etc., 2d. per package. Inclusive charge of 6d. per half bag. Inclusive charge of 6d. per half bag. Empties charge approximately 1s. per 100 bags. Telegrams and tolls 1d. per package.
Sheffield ...	3s. 3d. per package ...	10 per cent. ...			
Birmingham ...	4s. per pot ...	7½ per cent. ...			
Stratford ...	3s. per half bag ...				
Manchester ...	3s. to 9s. 6d. per half bag ...				
Sheffield ...	5s. to 7s. per half bag ...	7½ per cent. ...			
Leeds ...	4s. 6d. to 6s. per package ...	7½ per cent. ...			
Spitalfields ...	1s. 9d. to 8s. 6d. per half bag	6d. per half bag	½d. per half bag		
Covent Garden ...	1s. 6d. to 9s. 6d. per half bag	6d. per half bag	Inclusive charge of 1d. per half bag		
Spitalfields ...	4s. to 4s. 6d. per half bag ...	7½d. per half bag			
Borough ...	5s. to 9s. per half bag ...				
Spitalfields ...	9s. per half bag ...	5 per cent. plus 3d. per package			
Covent Garden ...	20s. to 25s. per bushel ...	10 per cent. ...			Toll and pitching 1d. per package.

3. Lettuce.

Manchester ...	2s. per crate ...	7½ per cent. ...			Handling charges 1d. per crate. Market expenses 2d. per package. Commission and expenses 10 per cent.
Birmingham ...	1s. 9d. to 3s. per crate or box	7½ per cent. ...			
Spitalfields ...	1s. 10d. to 5s. 6d. per package				
Manchester ...	2s. 6d. to 4s. per pot...	10 per cent. ...		2d. per pot ...	
Newcastle-on-Tyne	3s. to 6s. per crate ...	10 per cent. ...	Inclusive charge of 2d. per package		

Newcastle-on-Tyne	3s. 6d. to 4s. 6d. per box ...	10 per cent. ...	Inclusive charge of 2d. per package
Manchester	5s. per pot ... ..	10 per cent. ...	—   1d. per pot ...

4. Cabbage and Cabbage Greens.

Brentford ...	1s. 5d. to 1s. 7d. per half bag	3d. per half bag			
Spitalfields ...	1s. to 2s. per half bag	5 per cent. plus 3d. per half bag			
Sheffield ...	2s. to 3s. 6d. per package	7½ per cent. ...		½d. per package	
Borough ...	1s. to 1s. 9d. per bag...				Inclusive charge of 4d. per bag.
Leeds ...	5s. 6d. per bag ...	7½ per cent. ...			
Covent Garden ...	2s. to 3s. per half bag				Toll and Commission 6d. per half bag.
Covent Garden ...	3s. 6d. to 4s. per crate	10 per cent. ...	2d. per crate ...		
Covent Garden ...	2s. to 2s. 6d. per half bag	6d. per half bag			Toll and market expenses 1d. per half bag.
Covent Garden ...	4s. to 6s. per bag ...	6d. per bag ...		Inclusive charge of 1½d. per bag	
Birmingham ...	4s. 6d. per pot ...	7½ per cent. ...		—	3d. per pot ...
Newcastle-on-Tyne	2s. 6d. to 6s. 6d. per crate	10 per cent. ...	2d. per crate ...		
Manchester ...	3s. 6d. to 6s. 6d. per pot	10 per cent. ...			2d. per pot ...
Covent Garden ...	5s. 6d. to 6s. 6d. per half bag	10 per cent. ...			
Manchester ...	7s. 6d. per pot ...	7½ per cent. ...			Market expenses 1d. per half bag. Handling charge 2d. per package.

**APPENDIX XX.**

**Type of Form (translated) used to Record Wholesale Sales of Fruit and Vegetables by Mandataires in Halles Centrales, Paris.**

*(Retained in Mandataire's book.)*

Book No.

Sale No. ....19 .

Sender.....

Number of Packages.	Nature of goods.	Weight.			Method of sale.	Price.	Total Price.
		Gross.	Tare.	Net.			

Buyer .....

*(Sent to Grower by Mandataire.)*

Book No.

Method of sale

Sale No.

Date.....19 . Sender.....

Number of Packages.	Nature of goods.	Weight.			Price.	Gross Proceeds.
		Gross.	Tare.	Net.		
						Transport... Lorry..... Customs ... Tolls ..... Weight ..... Storage ..... Telegrams Postage ... Portorage ... Commission  Net amount payable

Buyer .....

(For Buyer.)

Mandataire.

	Frs.	Centimes.
Charge .....	0	25
.....Consignment .....		
.....		
.....		
.....		
.....		
.....		
.....		
Note to be delivered to the buyer.	Total	

(For Porter.)

Book No.

Sale No.

Date .....19 ..

Sender.....

Price .....

PAVILION 6—MARKET ANNEXE.

## APPENDIX XXI.

## Distribution of Vegetables from Wholesale Markets.

(i) **London.**—Most of the vegetables bought at Covent Garden are consumed in the Greater London area. Buyers at Spitalfields come chiefly from the northern and eastern sides of London, e.g., Stamford Hill, Stoke Newington, Clapton, Tottenham and Edmonton, Barking, Plaistow, East and West Ham and Stepney.

Both Covent Garden, however, and to a smaller extent Spitalfields and the Borough, distribute vegetables to provincial towns. During the period June to October many towns in England and Wales obtain about 80 per cent. of their requirements from near at hand. Outside the Greater London area, it is the chief industrial centres furthest removed from production points to which the greatest quantity is despatched from London markets. Imported and early vegetables are included amongst the consignments. No figures are available to show the actual extent of the trade, but the quantity of vegetables distributed, although representing only a small percentage of the total sold in the London wholesale markets, nevertheless amounts to thousands of tons in the course of a year. These are distributed to many different areas throughout the country, as the following examples will show:—

Leeks and lettuce are sent to Manchester, and lettuce is also sent to Chesterfield, Sheffield and Liverpool. Beans, peas and cauliflowers are sent to Glasgow, Manchester, Birmingham, Liverpool, Sheffield, Chesterfield, Leicester, Dumfries, Nottingham, Leeds and Bradford. A salesman at Bradford may receive in one consignment early in the season a truckload of peas or a ton of lettuce. Miscellaneous vegetables, including asparagus, carrots, onions and endive, are also sent to Manchester, Liverpool and Sheffield. During the season several tons per day of asparagus may be re-consigned by rail from one London station. Vegetables are also distributed by rail to Coventry, Wolverhampton and towns in Lancashire and on the Cumberland and North Wales coasts.

In the winter months such vegetables as carrots, onions, parsnips and celery are sent to South Wales. Beans are forwarded in August, and other consignments include rhubarb, lettuce, mustard-and-ress, mint, cauliflowers, mushrooms, asparagus, peas and turnips.

Peas, beans, beetroot, radishes, onions, cauliflowers, spinach, marrows, lettuce and other vegetables are distributed in westerly or south-westerly directions, e.g., Bath, Chippenham and Penzance. Similar kinds are also sent to Oxford and Reading.

Brussels sprouts and celery, as well as mixed consignments, including greenstuff and carrots, are sent to stations in the south such as Brighton, Eastbourne and Bexhill, as well as to places near at hand such as Bromley (Kent) and Orpington. Relatively small quantities of beans, peas, celery, brussels sprouts, carrots, cauliflowers and mushrooms and larger quantities of ripe onions are sent to coast and other towns in Kent such as Dover, Ramsgate, Sittingbourne and Faversham and also to Hastings.

(ii) Other districts.—Examples of the areas over which vegetables are distributed from various markets other than London are given below:—

Market.	Areas or Towns to which vegetables are distributed.
Birkenhead ... ..	Within about 10 miles (West Kirby, Hoylake, etc.).
Blackburn ... ..	Burnley, Accrington, Nelson, Colne, Haslingden, Darwen, Blackpool.
Darlington ... ..	Spennymoor, Richmond, West Auckland.
Liverpool ... ..	North Wales; also as far east as Warrington.
Manchester (Smithfield) ... ..	Mainly within a radius of about 20 miles (Rochdale, Bolton, Stockport, etc.); some go to Blackpool, Barrow-in-Furness, the Potteries and Derby.
Swansea ... ..	Within about 10-20 miles.
Wigan ... ..	Ashton-in-Makerfield, Newton-in-Makerfield, Earlestown.
Wrexham ... ..	Within about 15 miles.

## APPENDIX XXII.

### Sources of Supply of Sixteen Consuming Centres in England and Wales.

#### Southern England.

*Bristol.*—(Population about 397,000.) Local production extends in certain directions about 12 miles from the city and covers hundreds of acres of market gardens. The area under salads is said to have doubled itself since 1918. Celery is an important crop in the district. Among local supplies radishes and lettuce may be mentioned. The Vale of Evesham is within easy reach and sends spring cabbage and savoys, brussels sprouts, peas, cauliflowers, carrots, parsnips and beans. Carrots and parsnips come from Wiltshire, broccoli and early spring cabbage from Cornwall, peas from the Bridgwater district and other areas nearby, late peas from Yorkshire savoys from Lancashire, watercress from Berkshire and Wiltshire and small quantities of vegetables, including peas and beans, from the Cheddar district. Supplies of lettuce are received at intervals from London. Ripe onions are imported direct from Egypt, Spain, Holland, France, Germany, and other countries; consumption is said to be heaviest from January to March and lightest from May to August. Some French cauliflowers and other imported vegetables are obtained via Southampton. Among distant supplies, the weekly tonnage of spring cabbage may amount to 100 at certain periods; brussels sprouts probably do not exceed an average of 30 tons; fresh green peas may sometimes equal or exceed this amount; supplies of broad and runner beans are sometimes heavy; consignments of savoys and parsnips are relatively small; watercress would be measured in cwt. rather than tons.

*Bournemouth.*—(Normal population about 117,000, or with Boscombe and Poole nearly 250,000; variations owing to seasonal influx. Area of distribution includes Christchurch, Ringwood, Wimborne, Blandford, Lymington, and Swanage, though some of these places also draw supplies from

Southampton.) There is local production at Wareham and Wimborne, Broadstone and West Moors, on the west and at Sopley, Holdenhurst and Lymington on the east. Requirements of natural rhubarb are filled from these sources; beetroot, carrots and salads are also grown locally. Vegetables from London include at various times of the year lettuce, forced rhubarb, seakale, peas, onions, carrots, cauliflowers, cabbage, asparagus and chicory. The Vale of Evesham sends spring cabbage, brussels sprouts, asparagus, parsley, mint, spinach and radishes. Onions, carrots, cauliflowers, and some English celery are obtained from Southampton. Direct consignments of celery are received from the Isles of Ely and Axholme, and the Holland division of Lincolnshire. Onions, cauliflowers and celery received by rail each exceed 20 tons per month at certain times. Vegetables come by road from as far away as Evesham. French ripe onions and carrots come via Poole; imported onions are also received from Bristol.

#### Midlands and West.

*Coventry.*—(Population about 170,000.) There is a strong allotment movement, but commercial supplies are not abundant near the city. Possibly 60 per cent. of total supplies other than onions are brought by road from the Vale of Evesham. Vegetables from other home sources include forced rhubarb from the Leeds area, carrots from the Chatterley area, celery from Shippea Hill and the locality, peas from Cambridgeshire and Lincolnshire, early peas from Bridgwater, savoy from the Ormakirk district of Lancashire, radishes from Sandy, broccoli from Cornwall, lettuce from Terrington in Norfolk, small quantities of mustard-and-cress from Lincolnshire, seakale from Worthing, forced mint from Middlesex, and mushrooms from Hertfordshire. Substantial quantities of watercress are received from Dorset, Hampshire, Hertfordshire, Buckinghamshire, etc.; the average weekly quantity during the season is in the neighbourhood of 6 tons, largely consigned in chips. Imported ripe onions are bought at Birmingham and elsewhere and are also received direct from Holland via King's Lynn and Hull. Dutch lettuce arrives via Hull. Small quantities of Guernsey radishes, and direct consignments of French cauliflower and broccoli, come via Southampton and Weymouth. Miscellaneous early French vegetables or "primeurs" are bought in London. The rarer and more expensive vegetables are not in great demand. Average weekly sales of vegetables have been estimated at 125 tons.

*Birmingham.*—(Population slightly over 1,000,000.) Vegetables are brought into the market by road from Tamworth, Bromsgrove, and the districts of Bearley and Henley-in-Arden. Towards the middle of September about 95 per cent. of cabbage and cauliflower supplies are obtained locally. Local vegetable supplies include most kinds, but probably do not exceed 10 per cent. of the total annual supplies. Only a few of the supplying areas can be mentioned here; the most prominent are Cornwall (broccoli and spring cabbage), the Worcestershire area (brussels sprouts, peas, runner and broad beans, spring cabbage, radishes, asparagus, marrows, leeks and beet), Huntingdonshire (celery), Bedfordshire (parsnips, brussels sprouts, marrows, peas, beans, carrots, onions, beet and parsley), Cambridgeshire and the Isle of Ely (celery, carrots, peas and beans) Somerset (early peas), Berkshire; Buckinghamshire, Oxfordshire, Hampshire, etc. (watercress) and Wiltshire and Somerset (parsnips). Heavy supplies of Dutch onions are received from Parkeston Quay, King's Lynn, Hull and Grimsby. Case and bag onions come from Liverpool and to some extent from Bristol. Of French produce, onions arrive via Cardiff, cauliflower and broccoli via Weymouth and Southampton, peas via Plymouth. Dutch red cabbage and cauliflowers are conveyed via Parkeston Quay and other places on the East Coast. Some French lettuce is re-consigned from London, whilst Dutch lettuce is received via Hull, Grimsby and Parkeston Quay. French asparagus, Dutch and French

carrots and fairly heavy supplies of radishes from the Channel Islands are also received. Railed supplies of some vegetables are very large; the weekly tonnage of Cornish broccoli probably reaches 100 at times during the season, and the average for ripe onions may approach the same figure. At one station alone the quantity of watercress received in a peak month was between 60 and 70 tons. From 20 to 30 per cent. of vegetable supplies arrive by road.

*Burton-on-Trent.*—(Population about 50,000; market appreciably overshadowed by Birmingham; vegetables distributed to Measham, 11 miles S.E., and Uttoxeter, 14 miles N.W.) Vegetables are brought by road from Birmingham market and also from Derby. Blackfordby and Castle Gresley, with about 100 acres of general market garden crops, are the chief local producing areas. Direct supplies come from the Evesham district, particularly from April to June. Occasional direct consignments of Cornish broccoli are also received. Some imported onions are obtained from Liverpool and King's Lynn.

*Newport, Mon.*—(Population about 89,000; area of distribution covers the Eastern, Western and Sirhowy valleys, including Pontypool, Crumlin, Pontllanfraith and Llanbradach.) Substantial quantities are grown, largely by smallholders, at such places as Langstone and Penhow, between the Rivers Usk at Newport and Wye at Chepstow. Supplies are also obtained further east, e.g., from Woolston, and from nearer Newport on the northern and western sides. Local production, although including very few brussels sprouts and practically no celery, may account for 20 per cent. of the total commercial supplies. The Vale of Evesham supplies some of the rest, including spring cabbage, beans and brussels sprouts. Onions, celery, carrots, parsnips and lettuce come from London, spring cabbage and broccoli from Cornwall, forced rhubarb from the Leeds area, celery from the Isle of Ely, Bristol, etc.; savoy from the Ormskirk district, carrots from Cambridgeshire and Wiltshire, peas from Somerset, and watercress from Wiltshire and Dorset. Continental lettuces are imported. Some French cauliflower and broccoli is received via Southampton and Weymouth. Several hundred tons a year of ripe onions arrive via Cardiff (chiefly by road), Bristol and Liverpool.

*Cardiff.*—(Population about 224,000; area of distribution includes Monmouth, Rhymney, Ugmere valley, Aberdare, Bridgend, Maesteg; total population catered for may be 300,000, though most is probably consumed in the neighbourhood of Cardiff itself.) There are 35 wholesale vegetable salesmen in the town. Local production is of some importance and is said to have increased 50 to 60 per cent. in the last 15 or 20 years. Cabbages, savoy and swedes are grown in quantity, and other kinds are produced, chiefly in the neighbourhood of Rumney, Whitchurch and Llanishen. These local supplies, although formerly handled by Cardiff wholesalers, tend to be marketed by growers to distributors in the Rhondda and other valleys. Vegetables from other home producing areas include celery, cabbage, loose savoy, roots (in bags) and mixed loads from the Evesham district. Vegetables from London are noteworthy: during May a Cardiff merchant received from London nearly six tons of broccoli, over a ton of parsnips, about a ton of peas, and nearly half a ton of asparagus, as well as smaller lots of beetroot, radishes and lettuce, whilst in August another received 4½ tons of peas, nearly 3½ tons of carrots, over 1½ tons of celery, ½ ton of beans and nearly another ton of miscellaneous vegetables, including marrows. Vegetables from the Bristol area include rhubarb, lettuce, spring onions, radishes, celery and autumn cabbage. About three tons a week of watercress are received by rail at Cardiff, principally on Tuesdays, Thursdays and Fridays. Salads enjoy a good sale. Supplies of mushrooms are relatively heavy in the short autumn season from Herefordshire, Monmouthshire and Gloucestershire; from 50 to 60 chips a day may be received from these areas. Asparagus sells fairly well in the season, weekly quantities



from Worcestershire in the peak period amounting to some 200 pots. Good leeks are usually in demand and are looked for by ships' buyers. Forced rhubarb sells well. Sales of seakale, spinach and artichokes are small, and there is practically no demand for turnip tops, sprouting broccoli or similar greens.

Hundreds of tons a year of Dutch dried peas are received via Rotterdam. Dutch and Spanish onions are imported at Cardiff and the weekly demand for both together approaches 35 tons. The large four-tier Spanish onions are popular. Egyptian and Portuguese onions are also imported direct. Dutch lettuce arrives via Parkeston Quay. Before the introduction of tariffs, between 100 and 150 crates of French asparagus were received in certain weeks. Other imports include horseradish, Guernsey radishes and French peas; the last-named generally arrive via Plymouth, but are sometimes re-consigned from London.

*Swansea*.—(Population about 165,000; no wholesale market; area of distribution includes Lampeter, Haverfordwest, Neath, Ammanford, and Builth Wells; surrounding country hilly with scattered villages, perhaps hindering regular attendance of buyers; conveyance of fruit and vegetables by merchants to retail premises 10 or 20 miles away is a feature of the trade.) Local production is largely centred in the Gower Peninsula. Swedes are important. Other crops are cabbages, savoys, runner and broad beans, peas, spring onions, lettuce, cauliflowers, herbs, and watercress. Practically no celery and very few carrots are grown. Broccoli comes from Cornwall, savoys from Ormskirk, celery from the Isles of Ely and Axholme, miscellaneous vegetables including celery and onions from Bristol, root vegetables from Somerset and Wiltshire, and lettuce, rhubarb, radishes, mint, broccoli, mushrooms, turnips, beans, peas and asparagus are included in consignments from London. Dried peas are sent via the Dutch ports and Hamburg, dried beans via Danzig, cauliflowers from France, and onions via Cardiff, Liverpool and Bristol; French onions, however, are imported direct from Roscoff. Spanish onions are very popular.

*Aberystwyth*.—(Population normally between 11,000 and 12,000, but approaching 20,000 in the height of the seasonal influx.) The chief crops grown in the locality are carrots, peas, lettuce, turnips, natural rhubarb and beetroot, but these supply only a small proportion of the requirements. Mixed vanloads of vegetables, which in a week in August might total 10 tons (excluding potatoes), are received almost daily from Worcestershire. Additional supplies are obtained through a wholesale firm in the town. Representatives of another firm at Wrexham and Shrewsbury visit Aberystwyth at intervals. Onions and small quantities of celery and savoys are obtained from Liverpool. French onions are received via Cardiff, Swansea and Bristol. Produce received from London in June includes lettuce, peas, beans and carrots, and in the same month odd lots of lettuce and cauliflowers are received from Hull and Birmingham. Much of the railed produce arrives by passenger train.

#### Northern England.

*Newcastle-on-Tyne*.—(Population about 283,000, but total served about 500,000; area of distribution includes Gateshead, Gosforth and Wallsend, all three more or less dependent on Newcastle for supplies, Sunderland, Durham, South Shields, Whitley Bay, Monkseaton, and districts to the west.) Important local supplies, grown largely in the neighbourhood of Morpeth, North Wylam and Hexham, arrive fresh on the market, and some local buyers now look for and rely on them more than formerly, requiring, in consequence, less of certain kinds from other home areas. Supplies are, however, drawn from most of the main producing areas of England. The Biggleswade and Evesham districts both send substantial contributions. Cabbage is received from Boston, celery from the Isle of Axholme and further south, broccoli from Cornwall, peas from Yorkshire, and watercress from Dorset, Hampshire and Hertfordshire. Facilities for

obtaining onions, lettuce, carrots, cauliflowers, &c., direct from overseas have been good. Distribution of these is largely confined to various places in Northumberland, Durham and Cumberland. Egyptian onions are usually purchased from the port auctions of Hull, Liverpool and Glasgow. French cauliflowers and broccoli are received via Southampton and Weymouth. Swedes and celery are popular. There is also a good sale for leeks, rhubarb, dwarf or kidney beans, brussels sprouts and cabbage. The long variety of radish is favoured by the wage-earning population. Sales of salads are reported to be on the increase, and the demand for watercress is stated to have trebled itself in 5 years. Runner beans, turnip-tops, spring greens, marrows and parsnips do not sell so well.

*Sunderland.*—(Population about 186,000, but total served about 250,000.) Local production especially at Silksworth and Southwick-on-Wear, is of some importance, and the town is said to be well supplied with locally-grown green vegetables all the year round. Some vegetables are bought or re-consigned from other centres of consumption, e.g., Newcastle-on-Tyne, which sends a quantity by road. Home-grown supplies from a distance include Yorkshire peas, Yorkshire and Cambridgeshire carrots, mixed truck-loads of vegetables from the Evesham area, and a few cwts. of watercress per week from Pickering. Some two tons a week of celery are received from the Isle of Axholme, and additional supplies from the Isle of Ely. Substantial imports direct from Holland include onions, carrots, lettuce, beetroot, red cabbage, parsnips and cauliflowers. Imported ripe onions also come via Newcastle-on-Tyne, Glasgow, Liverpool and London. French onions are imported direct. Certain other vegetables are received from Hull and London. Amongst the more popular vegetables may be mentioned onions, cabbages, turnips, carrots, cauliflowers and brussels sprouts. Vegetables are wanted more particularly for sale on Thursdays.

*Hull.*—(Population about 313,000.) Of locally-grown vegetables, the Cottingham area produces broccoli, savoys, brussels sprouts, celery, radishes, lettuce, spring cabbage, peas, beans, bunched onions and cauliflowers, whilst carrots are drawn from North and South Cave. The bulk of this produce is marketed loose, and a surplus is consigned to more distant towns in the West Riding, such as Bradford, Dewsbury, Halifax, Huddersfield and Leeds. Home supplies from a distance include miscellaneous vegetables from the Evesham district, forced rhubarb from the Leeds district (more than a ton a week in February) and carrots from the important area round Market Weighton, about 18 miles to the north-west. The importance of the trade in produce from other countries has already been made clear.

*Leeds.*—With the vast West Riding industrial area on the one side and large, important vegetable-growing areas on the other, Leeds, with a population of about 483,000, is a vegetable market of considerable importance. The centre of the forced rhubarb industry is at its doors. Supplies of mushrooms are obtainable locally. Some market-garden produce is also obtained near at hand, e.g. at Morley and Pontefract. The Selby area to the east sends mid-season and late supplies of green peas, also beetroot, turnips, swedes, celery, cauliflower and cabbage. Further still to the east is the large carrot-growing area of Market Weighton and Pocklington, which also sends beetroot, turnips and swedes. Celery is obtained from the Isle of Axholme to the south-east. More distant centres of production contribute heavy supplies. 40 tons a week of Cornish broccoli may be received at certain times during the season. In the autumn heavy supplies of brussels sprouts arrive from the Biggleswade district, which also sends in their different seasons peas, beans, beetroot, marrows and parsley. At certain periods, London vegetable growers have a share in the lettuce trade. Brussels sprouts, leeks, marrows, beetroot, beans, asparagus, spring onions and radishes, &c., are drawn from Worcestershire, spring cabbages from places near Chester, savoys and cabbages from the

Ormskirk area, cabbage and broccoli from places in Lincolnshire, carrots from the Chatteris area, peas from London and Essex, salads from the Blackpool area, watercress from the South of England and seakale from Covent Garden. It has been estimated that 2,000 tons of onions are received during the year from Hull alone, and annual supplies from Liverpool and Manchester also probably run into four figures. Several thousand crates of Dutch lettuce are received weekly via Hull during the season. French cauliflowers and broccoli arrive in quantity via Southampton and Weymouth. Marrows and broad beans do not sell very well. Large quantities of lettuce are required. Carrots are fairly popular. Peas meet a keen demand and are required over a long season, e.g. by buyers from Harrogate.

*Bradford.* (Population nearly 300,000; area of distribution includes Skipton, Keighley, Colne and Burnley; buyers attend St. James' Market from distances of 20 or even 60 miles.) Locally-grown vegetables offered for sale in the growers' section of the market include rhubarb, cabbage, cauliflowers and broccoli, savoys, lettuce, turnips, radishes and green bunched onions. Many of the distant supplying areas are the same as those sending to Leeds. Peas, brussels sprouts, carrots and certain other vegetables, are sold in large quantities during their seasons. Demand for watercress about Easter-time is said to reach 1,000 chips a week. Sales of mustard-and-cress are less than one-tenth those of watercress. Three hundred pots a week of green bunched onions are sold. Total annual sales of vegetables in the wholesale market have been estimated at 10,000 tons; the quantity sold loose is said to be decreasing.

*Sheffield.* (Population about 512,000; retailers attend the wholesale market from such places as Retford, Barnsley and Mexborough; practically all vegetables received pass through the wholesale market, and are mainly distributed locally.) A small percentage of commercial supplies required is grown at Totley, Dronfield, Rotherham and Tickhill. Locally produced swedes cover the requirements of about 75 per cent. of the population. Other kinds produced locally are cabbage (drawn largely from local sources after the end of May), cauliflowers, beet and carrots. Important areas of production to the east are within easy reach by road and include the Isle of Axholme, from which large quantities of celery are received. Supplies of this vegetable are estimated to amount to about 40 tons a week. Cauliflowers, cabbages, green peas, radishes, etc., are supplied by growers near East Retford, Ranskill and Bawtry. Among supplying areas further afield, Bedfordshire is a heavy contributor and the Boston area sends large supplies of spring cabbages. Two-ton consignments of vegetables in season from Worcestershire include radishes, green bunched onions, lettuces, asparagus, spinach and herbs. The Wisbech area supplies asparagus. Average weekly supplies of watercress from January to the end of May have been estimated at slightly over two tons. Dutch lettuce is received via Hull, and ripe onions are received by road in quantity from Hull, Manchester and Liverpool. Demand for onions amounts at times to 100 tons a week, but drops to a low figure in June, July and August. Bulky vegetables are chiefly required by the industrial population and the demand for the choicer vegetables is strictly limited.

*Manchester.* (Population about 766,000, or within a radius of 25 miles 4,000,000 and within 50 miles about 10,000,000; retailers come from such places as Bolton, Bury, Burnley, Rochdale, Glossop, Stockport, Northwich and Warrington, but limited quantities of vegetables are distributed as far afield as Barrow-in-Furness, North Wales and the Potteries.) Large supplies, e.g., of cauliflowers, cabbages, beet, carrots and celery, are brought in by road, notably from Irlam, Carrington Moss, Ashton, Sale and Baguley in the south and from the Ormskirk area in the west. From the last-named district, probably as many cabbages and savoys come by rail as by road, the total amount varying somewhat according to the supplies available

nearer at hand. Local cabbage is also drawn from Wilmslow and Alderley. Leeks are grown at Baguley. Many truckloads of cos lettuce are drawn from Rixton and Glazebrook during the season. Turnips arrive from places near Warrington and beyond Whitegate and Delamere, but demand for swedes and turnips seems to have decreased in recent years and a relatively small quantity of turnips is consumed. The proportion of the total sales of vegetables in Manchester represented by locally-grown produce is substantial. From other home sources, heavy supplies of cabbages are drawn from Norfolk and the Cheshire area. Green peas from Essex alone may exceed fifty trucks on a market day. Over 100 tons a week of carrots may be received from the Chatteris and Market Weighton areas, apart from supplies drawn from Kirton-in-Lindsey, Collingham, Newark, etc. Brussels sprouts and ripe onions are received in substantial quantities from Bedfordshire, and spring cabbages, brussels sprouts and asparagus are sent from Worcestershire. Sales of watercress probably exceed 45 tons a week in the chief season of supply. Several tons a week of wild mushrooms in their season arrive from the Hereford, Mendip Hills and Cheddar Valley areas. Egyptian onions arrive for sale at the auctions every 10-14 days during the season and Spanish onions about once a week. Supplies of onions are also drawn from Liverpool by road. Dutch onions and lettuces arrive chiefly via Hull and Grimsby.

## APPENDIX XXIII.

### Accommodation for Wholesale Sales by Growers in Various Towns.

The following notes cover most of the principal towns in consuming areas at which growers sell wholesale in the market accommodation provided.

#### Northern England.

*Sheffield.*—A few growers sell wholesale in the Sheaf Market, the main retail market, which is situated in Broad Street and close to Castlefields Market.

*Leeds.*—At Kirkgate Market, Leeds, the growers' section is immediately outside the main market building, and certain growers are allotted space for which they pay a weekly rent.\* Most of the locally grown vegetables for consumption in Leeds are offered for sale at the wholesale market.

*Hull.*—From 60 to 80 growers attend the wholesale market in Corporation Field, part of which is covered. The chief market days are Tuesdays and Fridays. The quantities of vegetables available increase when supplies of cauliflowers and green peas are plentiful. Growers attend the market from Beverley, Cottingham, North and South Cave and Little Weighton.

*Middlesbrough.*—The growers' market is situated on the south-east side of the Market Place. Sales take place between 6 and 9 a.m. On Saturdays up to 20 carts of vegetables may be brought in.

*Stockton-on-Tees.*—Some 20 growers sell produce wholesale on stands provided on Wednesdays and Saturdays.

*Darlington.*—Producers sell small quantities of vegetables wholesale in bulk in a corner of the market on Monday mornings.

*Newcastle-on-Tyne.*—Growers rent stalls in the Green Market.

*Bradford.*†—Facilities are provided on a piece of ground set aside in St. James' Market. About 3,000 tons of vegetables are sold in the course of a year.

\* For further information see Economic Series, No. 19, p. 91.

† Economic Series, No. 19, p. 79.

*Halifax.*—12 open spaces in the market are normally occupied by local growers\*, one or two of whom have a substantial acreage of vegetables.

*Manchester.*—Growers sell vegetables at the wholesale market chiefly on Tuesdays, Thursdays and Fridays. About 200 are given accommodation in and around the market, e.g., in C. and D. blocks, Scholes Street, Oak Street, Green Street, and New Cross in Oldham Road. These growers sell large quantities of vegetables, including cauliflowers, cabbage, celery, beet and lettuces, in the loose state from stand or lorry. Many of the growers in the Sale, Timperley and Baguley districts of Cheshire sell wholesale in the "Cheshire Side" section of the market.

*Bolton.*—Farmers, chiefly from the Ormskirk and Preston districts, sell produce on Thursdays, Fridays and Saturdays. At times vehicles carrying locally-grown produce total about 50 a week.

*Blackburn.*—Growers and dealers are given accommodation in the growers' section, and sales take place between 6.30 and 10 a.m., particularly on Tuesdays, Thursdays and Fridays; a few growers also attend on Wednesdays. Since 1929-30 the number of growers selling in the winter has been about 100, whereas previously it was about 70. The average annual quantity of vegetables sold in this section has been estimated at 4,000 tons.

*Wigan.*—Growers sell produce wholesale in the Market Square, mainly on Tuesdays and Fridays. From April to August an average of about 50 tons, excluding potatoes, is sold on Fridays, but only about one-third of this quantity on Tuesdays. In the other months of the year sales are practically nil on Tuesdays and about the same on Fridays as they are on Tuesdays in the busy season.

*Warrington.*—The growers' market held on the Fair Ground (uncovered) occupies about 3,000 square yards. The streets nearby are also used. Produce is chiefly sold on Saturdays from 6 to 11 a.m. (except in winter) and is drawn from a wide area, including the nearby Risley and Rixton districts, noted for celery and cos lettuce.

*St. Helens.*—A few cart-loads of vegetables such as turnips, peas, carrots and cabbage are sold weekly on an open square in the town, chiefly on Saturdays.

*Liverpool.*—The chief days of sale at the North Market are Tuesdays and Fridays. The market opens at 5 a.m. and closes about 10 a.m.; growers are allowed to sell vegetables in the street outside for a short time afterwards. Most of the vendors in the vegetable section are growers, of whom many are smallholders. About half the remainder represent dealers who sell local produce, and the others are largely fruit and vegetable merchants. The quantity passing through the vegetable section of the North Market was estimated at 46,000 tons in 1930. Produce is drawn to a large extent from the Ormskirk area, but a proportion is contributed by Wallasey growers, for whose use one of the six avenues in the market is reserved.

*Birkenhead.*—Produce offered for sale is largely drawn from the Wallasey area, but some comes also from Chester.

*Preston.*—Growers from the area between Preston and Hesketh Bank sell wholesale every weekday, except Mondays, between 7 and 10 a.m.

*Barrow-in-Furness.*—A few farmers occasionally sell vegetables wholesale in the market; the number increases in the summer time. Sales are, however, usually direct to the consumer.

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\* Economic Series No. 19, p. 83.

## West and Midland.

*Derby.*—Growers occupy space in the covered wholesale market and sell vegetables chiefly on Fridays, but also on Tuesdays, Thursdays and Saturdays. A large proportion of the vegetables sold in Derby passes through the wholesale market. Growers are not allowed to sell from vehicles to shopkeepers, although produce may be delivered against previous orders.

*Nottingham.*—Vegetables are sold by growers wholesale on several days a week on a piece of ground not far from the Sneinton Wholesale Market.

*Hanley.*—The number of growers selling produce wholesale on Wednesdays and Saturdays varies from 20 to 60.

*Birmingham.*—Sales take place in a section of Smithfield Market, set aside for the purpose, and also in adjoining streets. Growers are drawn from a wide area, extending to the Vale of Evesham to the south, some 20-30 miles away. At certain times loose loads of cauliflowers and broccoli from the Lichfield and Tamworth areas are a feature of the market. The chief market days are Tuesdays, Thursdays, Fridays and Saturdays.

*Coventry.*—Growers Sales, Ltd. (Chapter V) sell produce in the wholesale market at Barrack Square on behalf of members, many of whom are smallholders sending produce by road from the Vale of Evesham.

*Wolverhampton.*—The Open Market Square, covering an area of about two acres, is within easy reach of the fertile Severn Valley. Produce is largely drawn from the Hartlebury district and to some extent from Lichfield. The quantity of vegetables (excluding savoy) sold annually in this section of the market on market days (Tuesdays, Wednesdays, Fridays and Saturdays) has been estimated at 12,000 tons.

*Wrexham.*—Sales by growers are estimated at 5 to 6 tons a week, excluding carrots and potatoes. The market is held on Thursdays on a square in the centre of the town. Certain growers from the Chester area sell produce in the market.

*Newport (Mon.).*—A few smallholders sell vegetables wholesale in the Market Square in Dock Street, chiefly on Fridays, but also on Tuesdays and Wednesdays. Lock-up stalls are provided; vegetables are sold both from these and direct from vehicles. A few growers with retail stalls in the Market Hall also sell wholesale in the market on Friday mornings.

*Swansea.*—There is no wholesale market at Swansea, but growers from the Bishopston area in the Gower Peninsula sell produce wholesale in the retail market in Oxford Street early on Saturday mornings.

## London and Other Areas.

*Covent Garden.*—The chief market days for growers are Tuesdays, Thursdays and Saturdays, although any day may be a good market day for salads.\* Growers regularly using the market for direct sale number about 110 and come mainly from Essex, Kent, Bedfordshire, Middlesex and Surrey. These growers are remarkable for the large scale of their operations, and the loads brought in are large compared with those taken, e.g., to Brentford Market. A number of growers also carry on a commission business.

*Spitalfields Market.*—Friday is the best market day. Although there are now probably as many growers wholesaling their own produce as there were ten years ago, the number has not increased in proportion to the extension of the market.

*Borough Market.*—See Economic Series No. 26, p. 141.

*Brentford.*†—Much of the uncovered market enclosure is occupied by growers for wagon and pitching stands. 250 growers regularly bring in

\* See also Economic Series No. 26, p. 146.

† See also Economic Series No. 23, p. 140.

produce from market garden areas west of London. Sufficient parking accommodation for buyers' vehicles is provided on the enclosed land of the market. The portage charge for carrying packages from the stands of vendors to buyers' vehicles is 1d. to 2d. per package. Fridays and Mondays are considered to be the best market days for vegetables. A grower who pays a daily toll for his stand in the market must attend by 6 a.m. to secure it.

*Greenwich.*—About 20 growers occupy space in this market. A number of waggon stands are provided under cover. Vegetables are sold from 4.30 to 10 a.m., the busy period being between 5 and 7.30.

*Stratford Market.*—A few stands in this market are occupied by growers.\* The chief market days are Tuesdays, Thursdays and Fridays.

*Norwich.*—Most kinds of vegetables are sold on the wholesale market by about 300 growers, most of whom attend from an area of 12 to 14 miles on the east and south-west sides of Norwich. Markets are held daily, the more important being on Tuesdays, Wednesdays, Fridays and Saturdays. Within the last few years producers from South Lincolnshire have attended the market regularly with celery, peas and other vegetables.

*Dover.*—Growers sell in the market square from 5 a.m. onwards on Tuesdays, Thursdays and Saturdays. Saturday is the chief market day.

*Brighton.*—Growers are permitted to occupy space both in the covered and uncovered parts of the wholesale market. The covered part extends from Market Street to Black Lion Street, and the uncovered includes several other streets. On one day in August, out of 87 who paid tolls for selling produce in the market 73 were growers. Growers attend the market in the greatest numbers during the summer.

*Portsmouth.*—A large number of growers sell vegetables wholesale in Commercial Road on Tuesdays, Thursdays and Saturdays.

*Bristol.*—The number of growers with stalls in the Nicholas Street Market is about 40. The size of a market gardeners' stand is about 10 feet by 7 feet. Accommodation is restricted. The market opens about 7 a.m.

*Devonport.*—Growers sell their produce under cover in the market building and also from carts in Market Street, Duke Street and Cumberland Street. Though produce is sold on Tuesdays and Thursdays, Saturday is the most important day. The busy time is between 6.30 and 7.30 a.m.

\* See also Economic Series No. 23, pp. 146-8.

## APPENDIX XXIV.

### Examples of Charges at Wholesale Markets\*.

A.—Examples of rentals charged at wholesale markets for loads of vegetables sold from farm carts, lorries, etc.

Place.	Type of Vehicle.	Charge.	
		s.	d.
Barrow-in-Furness	Farmer's Cart (Wednesday) ...	1	0
Middlesbrough ...	Cart ... ..	1	0
Stockton-on-Tees	Vehicle ... ..	1	3
Hull ... ..	Vehicle (in open) ... ..	1	3
	„ (under cover) ... ..	1	6 to 2s. 6d.
Barrow-in-Furness	Farmer's cart (Saturday) ...	1	6
Dover ... ..	Lorry ... ..	1	6
Greenwich ... ..	„ ... ..	1	6
St. Helens ... ..	Four-wheeled vehicle ... ..	1	6

\* See Ch. XVII(3) and Econ. Series No. 13 for rent charges paid in the merchants' section of wholesale markets.

Place.	Type of Vehicle.	Charge.
		s. d.
Lough Market ...	Horse waggon ... ..	1 8*
Birmingham ...	Lorry (horse) ... ..	2 0
West Garden ...	Small lorry ... ..	2 0
Widley ...	Lorry ... ..	2 0
Widdlesbrough ...	" ... ..	2 0
Warrington ...	Level load (estimated 28 cwt.)	2 0
Widkenhead ...	Waggon-load ... ..	2 6
Birmingham ...	Waggon ... ..	2 6
Widburn ...	1-ton lorry ... ..	2 6
Widpool ...	One waggon with loose load ...	2 6
Widport (Mon.) ...	Cartload ... ..	2 6
Widston ...	4-ton lorry ... ..	2 6
Warrington ...	Full load (35 cwt.) ... ..	2 6
Widpool ...	{ 1-horse waggon with mixed load	3 0
	{ 2-horse waggon (av. 60 cwt.) ...	3 6
Lough Market ...	Motor vehicle not exceeding	
	3 tons ... ..	3 2*
Birmingham ...	30-cwt. lorry ... ..	3 6
Widburn ...	3-ton lorry ... ..	3 6
West Garden ...	Large lorry ... ..	4 0
Widkenhead ...	2-horse load ... ..	up to 4 0
Birmingham ...	5-ton lorry ... ..	5 0
Widburn ...	4-ton lorry ... ..	5 0
Widton ...	4-ton lorry (Saturday) ...	5 0
Widpool ...	Motor waggon under 2 tons ...	5 0
Lough Market ...	Lorry exceeding 3 tons ...	5 8*
Widpool ...	Motor waggon over 2 tons ...	7 0
Widburn (summer)	4-ton lorry (Fridays) ...	7 6
Birmingham ...	Lorry exceeding 5 tons... ..	10 0

\* Includes toll and portorage, but excludes annual standing charge of £1 1s. 0d.

B.—Examples of market charges per package or bundle, etc.

Market.	Kinds of Vegetables.	Charge per package, etc.
Birmingham ...	Watercress ... ..	2d. per flat.
" ...	" ... ..	1d. per half-flat.
Widtingham ...	Miscellaneous Vegetables ...	1d. to 6d. per package (Stands 20 ft. × 10 ft. can be reserved on pay- ment of 2s. 6d. per week).
Widchester... ..	" " ... ..	½d. per bushel.
" ...	Celery ... ..	1s. 8d. per 100 bundles.
" ...	Miscellaneous Vegetables ...	½d. per bag.
" ...	" " ... ..	1d. per cwt. hamper.
" ...	" " ... ..	½d. per pot.
" ...	{ Carrots ... ..	} 1d. per cwt. bag or hamper.
	{ Turnips ... ..	
	{ Dried onions ... ..	



C.—Examples of rent for growers' stand accommod

Market.	Space.	Rate & Charge.
Bradford ... ..	20 ft. × 10 ft. ... ..	9s. 6d. per week.
Brentford ... ..	Waggon stand in uncovered market approx. 12 ft. × 8 ft.	£4 12s. 6d. per quarter.
Bristol ... ..	7 ft. × 10 ft. ... ..	7s. to 9s. per week (according to position).
Derby ... ..	10 ft. × 10 ft. ... ..	8s. per week.
Leeds ... ..	21 ft. × 14 ft. ... ..	£70 per annum.

\* These charges specifically refer to stands such as may be occupied by the producers themselves and not to the permanent stands occupied by recognised wholesale merchants or commission salesmen.

## APPENDIX XXV.

### Advertising Material as Distributed by a Continental Exporter of Vegetables.

#### EAT MORE VEGETABLES.

The GOOD HOUSEWIFE always provides in season:—

Cabbage	Brussels Sprouts	Artichokes	Tomatoes
Carrots	Beetroot	Lettuce	Vegetable Marrows
Turnips	Rhubarb	Mushrooms	Celery
Leeks	Onions	Peas	Watercress, etc.
Cauliflowers	Parsnips	Spinach	

#### BECAUSE

1. They supply, at a minimum cost, nutriment essential to the body.
2. They render meat more appetising and give variety to diet.
3. They purify the blood, strengthen the body and clarify the brain.
4. They possess different saline elements, all needed by the system.
5. Their consumption is a direct stimulus to home industries and increased employment in the cultivation of the land.

*Are you aware many vegetables have specific medical properties?*

Thus:—

Beetroot is cooling and slightly laxative. Carrots and parsnips purify the blood.

Peas and beans are especially nutritious for those who lead an outdoor life.

Cabbage, cauliflower, kale, brussels sprouts, greens, &c., possess blood purifying properties, are anti-scorbutic, mildly laxative and have an indirect action on the liver.

Lettuce is soothing to the nerves and may be taken to induce sleep.

Onions and leeks are good for colds and slight congestions of the air passages. They also stimulate the bowels and kidneys.

Parsley—good for indigestion and purifies blood. Spinach is laxative and highly diuretic.

Rhubarb and celery purify and cool the blood, aid digestion, are good for rheumatism and are beneficial laxatives.

Tomatoes are beneficial in affections of the liver and are good for indigestion.

Turnips are valuable for their soothing qualities. Watercress acts as a valuable tonic.

Therefore—TO KEEP THE BODY IN TRIM EAT MORE VEGETABLES.

## APPENDIX XXVI.

## Notes on Vegetable Cookery.

The view has been expressed by the Council of Agriculture for England that the demand for fresh vegetables would be stimulated if the public could be educated as to the best means of cooking them. The following notes are designed to show how vegetables should be treated if their full dietetic value is to be gained.

Careful preparation, cooking and serving of vegetables will aid in the retention of their nutritive value and preserve their colour and appearance.

## PREPARATION OF VEGETABLES.

*Green Salads.*

Damaged leaves and roots must be removed. The salad should be washed in gently-running water to remove grit, etc., and wrapped in a damp cloth till required. The salad should be made as dry as possible by shaking in a wire basket or colander. It may be cut with sharp scissors or a stainless knife, or delicate leaves may be torn with the fingers.

*Other Vegetables.*

Woody stalks and coarse, damaged leaves must be removed. When limp, vegetables may be revived by soaking them in cold water for half-an-hour. Foreign matter can be removed from close-headed vegetables, such as cabbages, brussels sprouts (with closely enfolded leaves) or cauliflowers, before being cooked, by the addition of vinegar to the water (one teaspoonful to one pint). Salt will not answer the same purpose and moreover it hardens the fibres. Large cabbages require shredding to reduce the time for cooking. Root vegetables such as carrots require scraping, and those with thick skins, such as turnips and artichokes, must be peeled. It is important that root vegetables should be prepared just before cooking, as whilst standing in cold water helps to maintain the colour it diminishes the nutritive value. Similarly, to promote freshness and tenderness, and to prevent drying and hardening, peas and beans should be shelled or cut, as the case may be, *just before* cooking. Dried vegetables such as peas and haricot beans must be washed and soaked in cold or boiling water overnight.

*Cooking.*

Boiled vegetables are often overcooked, served in a sodden condition, untidily dished and lacking in flavour. All vegetables should be cooked as quickly as possible and served at once. Brussels sprouts can be cooked properly in about six minutes and yet be superior to those cooked for twenty minutes. There are various methods of cooking, and it is well for the housewife to study the more up-to-date methods. Although vegetables can be cooked more quickly by pressure steam cookers than by boiling, it is true, nevertheless, that in the normal course of domestic cookery steaming occupies from one-third to one-half more time than boiling. On the other hand, to ensure an adequate supply of boiled vegetables, the requirements of a family at a meal would probably be met only by the use of several saucepans and gas rings, instead of one steamer and one gas ring. The water in which vegetables are boiled can be turned into soup and the liquid from vegetables which are steamed can be used as a sauce, so that the goodness in either case can be retained, but properly prepared steamed vegetables are more appetising and have a better flavour.

After steaming, the vegetables may be mixed with a little melted margarine or butter (half an ounce to 1 lb. of vegetables), coated with white, brown, or tomato sauce, or mixed with a little cream. All vegetables can be steamed. Many hospitals and canteens now use steam ovens and the

advantages of steaming are being more uniform. Steaming of  
 flavours may be removed from leafy vegetables. Coarse celery, and  
 these are plunged into boiling water and squeezed well before steaming. To keep the colour of green vegetables, a  
 and squeezed well before steaming. To keep the colour of green vegetables, a  
 ½ of a teaspoonful of ammonium carbonate should be added to a quart of  
 water immediately the vegetables are placed in the steamer. An even better  
 flavour is imparted to the vegetables by braising or by cooking in their  
 own juices. Other methods of cooking\* include stewing, soup-making and  
 frying. There are many delightful recipes. Some uses of cooked vegetables  
 are as follows.

- (1) Coated with cheese sauce and grilled.
- (2) Sieved and purée seasoned and flavoured, made into croquettes, sandwiches, fillings for omelettes, savoury pancakes or scallops.
- (3) Utilised in a salad.
- (4) Made into a vegetable pie or pasties.
- (5) Made into vegetable curry.
- (6) Sprinkled with flour, dipped into batter or coated with egg and breadcrumbs, with or without the addition of cheese, and fried.
- (7) Covered with custard made from one egg, quarter pint of milk and three tablespoonsful of breadcrumbs and one ounce of butter, and baked.
- (8) Used for flavouring or garnishing other dishes.

Iron pans and spoons should not be used for cooking.

The finest flavours are obtained by the use of properly prepared fresh vegetables.

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\* Reference may be made to the following publications for details of recipes:—

“Cookery for Every Household,” by Florence B. Jack, published by T. C. and E. C. Jack, Ltd., 35, Paternoster Row, E.C., 1931. 7s. 6d. net.

“What every cook should know,” by Jesse Lindsay and Helen M. Tress, of Kings College of Household and Social Service. 5s. net.

The A.T.D.S. Cookery Book (4th Edition), issued by the Publications Committee of the Association of Teachers of Domestic Subjects, 29-30, Gordon Square, London, W.C.1. 1s. net.