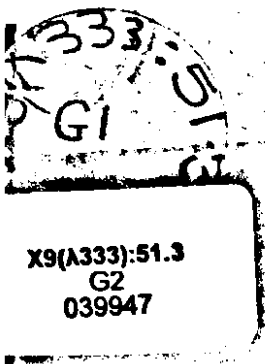


MINISTRY OF AGRICULTURE AND FISHERIES

Report on the Marketing of Sheep, Mutton

and Lamb in England and Wales





(For list of other Reports in
this Series see inside of cover.)

MINISTRY OF AGRICULTURE AND FISHERIES

Report on the
MARKETING OF SHEEP,
MUTTON AND LAMB
IN
ENGLAND AND WALES.

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TABLE OF CONTENTS.

	PAGE
Introduction	7
Note on Nomenclature	8

PART I.—A PRELIMINARY SURVEY.

Chapter

I.—The Raw Material of Mutton and Lamb Production ..	9
(i) Systems of Flock Management	9
(ii) Breeds and their General Characteristics	10
(a) Pure-bred Sheep	10
(b) Cross-bred Sheep	13
(iii) Types of Mutton and Lamb	15
(a) Lambs and Hoggets	15
(b) Yearling Sheep	16
(c) Old Wethers	16
(d) Ewes	16
(e) Rams	17
II.—Supplies	17
(i) Trend of World Production	17
(ii) Home Production	18
(a) Trend of Sheep Population	18
(b) Distribution	19
(c) Annual Output	19
(d) Seasonality	21
Store Sheep and Lambs	21
Fat Sheep and Lambs	24
Mutton and Lamb	24
(iii) Imports of Sheep	25
(a) Imports into the United Kingdom	25
(b) Imports from Ireland	26
(c) Supplies from Scotland	26
(iv) Imports of Mutton and Lamb	27
(a) Total Quantities	27
(b) Frozen Mutton and Lamb	27
(c) Fresh Mutton and Lamb	30
(d) Tinned or Canned Mutton and Lamb	30
(e) Offals	31
(f) Total Value of Imports	31
(v) Total Supplies	31
III.—Demand	32
(i) The Demand for Store Sheep	32
(ii) The Demand for Mutton and Lamb	32
(a) General	32
(b) Day-to-day Variations	33
(c) Seasonal Variations	34
(d) Variations according to Type	35
(e) Variations according to Carcase Weight	35
(f) Variations according to Finish	37
(g) Suitability of Supplies to Market Requirements	37

Chapter	PAGE
IV.—Prices	40
(i) Store Sheep	40
(a) Trend	43
(b) Seasonal and Local Variations	43
(ii) Fat Sheep, Mutton and Lamb	43
(a) General Trend	44
(b) Seasonal Variations	47
(c) Quality Differentials	49
(d) Local Variations	49
(e) Relationship between Fat Sheep and Mutton Prices	49
(iii) Retail Prices	50
(a) Seasonal Variations	50
(b) Prices of Different Cuts	51
(iv) Market Intelligence in this Country	52
(a) Store Sheep	52
(b) Fat Sheep and Lambs	54
(c) Mutton and Lamb	54
(v) Market Intelligence in other Countries	55
(a) The United States	55
(b) Germany	56

PART II.—THE TRADE IN SHEEP AND LAMBS.

V.—The Flow of Sheep and Lamb Supplies	57
(i) Store Stock	57
(ii) Fat Stock	59
(a) Smithfield Market, London	60
(b) Birmingham	61
(c) Manchester	62
(d) Leeds and Surrounding Area	63
(iii) Movements of Irish Fat Sheep and Lambs	63
VI.—Market Classes and Grades	64
(i) General	64
(ii) The Practice in the United States	65
(iii) Grading of Store Sheep in England and Wales	66
(iv) Grading of Fat Sheep and Lambs	67
(a) The Practice during the War	67
(b) Price Recording by Grade	67
(c) Suggested Schedule for Price Recording	68
Age	69
Weight	70
Quality	70
VII.—Sale by the Producer	71
(i) Store Sheep and Lambs	71
(ii) Fat Sheep and Lambs	72
(a) Method of Sale	72
On the Farm	72
At a Market	73
On Commission	75
Through a Farmers' Co-operative Slaughter-house	76
(b) Basis of Sale	76
By the Head	76
By Live Weight	76
By Dead Weight	77
By Dead Weight and Carcase Grade	77

Chapter	PAGE
VIII.—The Livestock Trader	79
(i) The Dealer in Store Sheep and Lambs	79
(ii) The Dealer in Fat Sheep and Lambs	81
(iii) The Dealer-Slaughterman	82
IX.—Organized Marketing by Producers	83
(i) General	83
(ii) Abroad	84
(a) In the United States	84
(b) In Canada	86
(c) In New Zealand	86
(iii) Possible Developments in this Country	89
(a) Store Sheep and Lambs	89
(b) Fat Sheep and Lambs	90
PART III.—THE TRADE IN MUTTON AND LAMB.	
X.—Slaughtering and Carcase Dressing	92
(i) Facilities	92
(ii) Note on Methods of Dressing Carcases	96
(iii) Note on Dressing Percentages	98
XI.—Carcase Quality	99
(i) Quality Factors	99
(a) Factors Denoting Eating Quality	99
Bone	99
Colour of Flesh	100
Texture of Meat	101
Colour and Appearance of "Bark"	101
(b) Conformation	101
(c) Finish	102
(ii) Examples	102
XII.—Carcase Grading	105
(i) General	105
(ii) Carcase Grading Abroad	106
(a) In New Zealand	106
(b) In Australia and South America	107
(c) In the United States	107
(iii) Suggestions for England and Wales	110
(a) Advantages of a National Mark Scheme	110
(b) Suggested Carcase Grades	112
Lamb Carcases	113
Mutton Carcases	115
(c) Suggested Weight Categories	118
(d) Application of the National Mark	120
XIII.—The Wholesale Meat Trade	123
(i) Importers	125
(ii) Commission Salesmen, Carcase Butchers and Jobbers	125
(iii) Note on Cutting for the Wholesale Trade	127
XIV.—The Retail Meat Trade	127
(i) General	127
(ii) Sources of Home Supplies	128
(iii) The Position of Imported Supplies	128
(iv) Classes of Retail Trade	129
(v) Retail Carcase Cuts	130
(vi) Effects of the "Quick Freezing" Process	135

Chapter PART IV.—TRANSPORTATION.

	PAGE
XV.—Carriage by Rail and Road	137
(i) Rail	137
(a) Extent of the Traffic	137
(b) Rates	137
(c) Conditions of Carriage	138
(d) Comparison of Rates for Live Sheep and Mutton	139
(ii) Road	140
(a) General	140
(b) Rates	142
(iii) Relative Advantages of Rail and Road Transport ..	143
(iv) Weight Shrinkage in Transit	143
(a) Live Sheep and Lambs	143
(b) Mutton and Lamb Carcases	144

PART V.—OFFALS AND BY-PRODUCTS.

XVI.—Offals and By-Products	146
(i) Edible Offals	146
(a) Supplies	146
(b) Uses	147
(c) Prices	147
(d) Marketing	147
(e) Preparation and Packing	148
(ii) Inedible Offals	149
(iii) Pharmaceutical Preparations	151
(iv) Relation of Slaughtering Facilities to By-Product Utilization	152

PART VI.

XVII.—Concluding Observations	155
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TABLES I TO XVII	161-181
APPENDIX	182

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39947

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FIG. 1.—Lambing Pens on the marshes at Walton-on-the-Naze.

THE MARKETING OF SHEEP, MUTTON AND LAMB IN ENGLAND AND WALES.

INTRODUCTION.

The following Report embodies the results of a detailed investigation of the marketing of sheep and lambs, both store and fat, and of mutton and lamb in England and Wales. Reports have been previously issued on the trade in other kinds of livestock and meat—viz., refrigerated beef, mutton and lamb (Economic Series No. 6), pigs (Economic Series No. 12), pork and bacon (Economic Series No. 17) and cattle and beef (Economic Series No. 20). The veal trade and the trade in hides and skins will be the subjects of separate reports.

The sheep industry is one of the most important branches of British agriculture. The value of the annual output of mutton and lamb in Great Britain in 1929 was almost £24 million; that of the wool, which in this country is a secondary product, is estimated in recent years at approximately a further £4 million.

The full importance of the industry cannot, however, be measured solely by the intrinsic value of its saleable products. Sheep, on farms where they are kept on arable land, are of great value in increasing the fertility and improving the texture of the soil. On many farms, indeed, this indirect value has, in the past, provided the main motive for the keeping of sheep at all. In some areas, notably in mountainous districts, the keeping of sheep is virtually the only kind of farming that can be practised.

It is unnecessary in these days to emphasize the fact that methods of marketing may make all the difference between profit and loss. In the case of livestock, moreover, although the producer's direct part in marketing generally ceases when the animal is sold, his returns are directly affected by the economy and efficiency of the methods subsequently used both in the slaughtering and dressing of his stock and in the distribution of the meat and offals. Indeed, the most important marketing improvements suggested in the following pages, viz., the improvement of slaughtering facilities and the establishment of a grading and marking scheme for mutton and lamb concern those operations which, under present conditions, take place after the stock has left the producer's hands.

This is not to say, however, that the producer cannot take any active part in the better marketing of mutton and lamb in this country. The Report discusses the possibility of the development of producers' livestock selling organizations. If this should prove to be the line of advance in sheep and lamb marketing,

such organizations could not only effect a better co-ordination of supply with demand as regards both quantity and quality, as well as carry out such essential work as publicity in favour of the home-killed product, but, if comprehensive, they would be in a position to encourage the adoption by the trade of a standardized system of carcase-grading and the provision of a more efficient and economic slaughtering system. It may, in short, be expected that, actuated by their own interests, producers of any commodity or group of related commodities, comprehensively organized for marketing purposes, will also give a definite urge to the progress of rationalization in the field of processing and distribution.

NOTE ON NOMENCLATURE.

In preparing this Report, some difficulty has been found in deciding upon the terms to be used to describe sheep of various ages and sexes, owing to the great variation in local usage throughout the country. As far as possible, terms having only a local or limited use have been avoided. The following is a brief explanation of certain of the terms adopted in this Report.

The word "lamb" has been defined as "a young ovine animal that has not acquired its first pair of permanent teeth," and this is broadly the sense in which the word is used in this Report. As is pointed out later, however, the limits of the lamb class are not clearly definable, and practice varies in different parts of the country, size being often the determining factor rather than age.

"Hogget" is used to describe a sheep that has passed the lamb stage but has not reached the period for clipping. A "wether hogget" is, of course, a castrated male, a "ewe hogget" a female. "Ewe hoggets" are described in some parts of the country as "theaves," "gimmers" or "chilvers." The words "teg" and "hogg" are often used in the same sense as "hogget," but are generally applied to somewhat older animals—i.e., to yearlings, or sheep from about 8 to 15 months old. The terms "teggings" and "hoggetting" both refer to the practice of folding "tegs" or "hoggets" on arable crops.

Castrated male sheep that have been clipped are described as "shearling wethers," and when wethers were formerly kept on for several years they were commonly referred to as "2-shear," "3-shear," and so on, according to the number of shearing periods which they had passed. Wether sheep, however, are nowadays rarely kept past the shearling stage.

An old ewe, past breeding, is sometimes referred to as a "crone."

PART I.—A PRELIMINARY SURVEY.

CHAPTER I.—THE RAW MATERIAL OF MUTTON AND LAMB PRODUCTION.

(i) Systems of Flock Management.

The place of sheep in agriculture in England and Wales is one of considerable importance. They can be used in most systems of farming and are equally suited to arable and grass land. They are more effective than any other kind of stock in maintaining the fertility of the land; they return a large quantity of fertilizing material to the soil and distribute their manure comparatively evenly. They are of great value in consolidating light, brashy or porous soils and are so used especially in upland chalk districts. Their wool, while no longer of primary importance, is a very valuable by-product.

Sheep in this country are kept mainly for mutton and lamb production, the type of sheep produced and the season of marketing varying according to the system of management, which again is determined in the main by local climatic and soil conditions, and on arable farms, to a large extent, by the necessity for adapting the flock management to the system of cropping.

The "range" system of management, which is mainly found in newly developed countries, such as the overseas Dominions and parts of North and South America, can hardly be said to exist in Great Britain, where flocks are comparatively small. The nearest approach to it is the system of hill flocks that spend most of the year in the uplands, and are only brought down to the middle lands for tugging, or for lambing, the ewe lambs being "tacked"* to more favoured lands for the winter months or, in some cases, being sold out in the autumn and the same or other sheep bought back in the spring.

The most common systems of sheep management in Great Britain are (1) the semi-range system of keeping mountain or moorland flocks, (2) the breeding-flock system practised at lower elevations, and (3) the feeding or "dry flock" system, in which sheep are bought to feed off arable crops at certain times of the year and are then sold. The last two systems may be practised on the same farm.

Under the semi-range and breeding-flock systems, there are considerable variations in method, depending on altitude, climate, locality, soil, and crop rotations. Thus, pure-bred ewe flocks kept in hill districts are usually put to a ram of their own breed and are regularly drafted after having had 3 or 4 crops of lambs, the wether

* The word "tacking" refers to the practice of putting sheep out to keep for the winter to more sheltered farms.

lambs being sold annually off their mothers as fat lambs or to go elsewhere for finishing. In some upland districts, however, as in the East Riding and the Cotswolds, the lambs may remain on the farm for fattening on winter feed.

In middle lands, notably in the North, ewe flocks are often made up by buying draft ewes and retaining them for a further 2 crops of lambs or so, the lambs being sold fat and the ewes eventually either drafted to go to other parts as "flying flocks" or sold-off fat. On lowland farms, the "flying flock" system is commonly found. Such flocks consist of ewes that have had several crops of lambs and are bought as draft ewes in the summer and autumn sales to go to lowland farms: here they are usually put to a ram of a different breed and are allowed to have one crop of lambs, which are sold fat off their mothers, the ewes being fattened-off and sold for slaughter soon after, the land thus remaining without sheep for 2 or 3 months of the year.

(ii) Breeds and their General Characteristics.

Mutton and lamb produced in Great Britain shows considerable variation. Its character is, in general, determined by the breed type, but the locality where the animal is finally fattened is also of some importance.

The wide variety of soil and climatic conditions and, to a less extent, the fact that this country has for years supplied pedigree sheep to many overseas countries, have resulted in the development and maintenance of a large number of breeds of sheep; there are at present nearly 40 distinct breeds in the British Isles, all possessing their special characteristics and well adapted to the districts where they are kept, but not all equally well suited to present-day consumer-demand. Besides the pure breeds, there are also, of course, a very large number of crosses.

Broadly, the type of sheep kept on a farm is determined by two considerations, which are at times conflicting—viz. the adaptability of the breed or cross to the conditions under which the flock will have to live, and the marketability of the finished article. The ideal sheep from the standpoint of the producer is not always the ideal in the opinion of the consumer.

(a) *Pure-bred Sheep*.—British breeds of sheep are usually divided into three main categories which bear a close relationship to environment—viz., hill or mountain breeds, Down breeds and long-woolled breeds.

Hill or Mountain Breeds.

Hill or mountain breeds of sheep are generally characterized by medium to long wool of medium texture, flesh of extremely good flavour and carcasses of a very handy size, varying in conformation from good to moderate. The pelt is thin and tough



FIG. 2.—Blackface Wethers.



FIG. 3.—Cheviot Ewe.

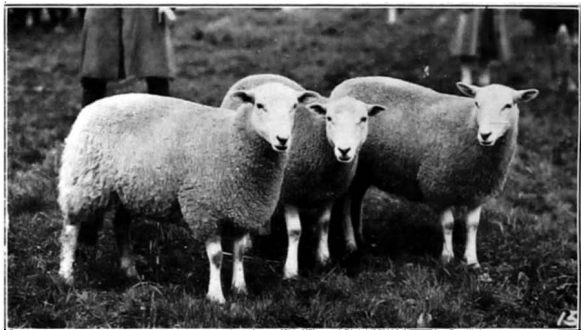


FIG. 4.—Welsh Mountain Yearling Ewes.

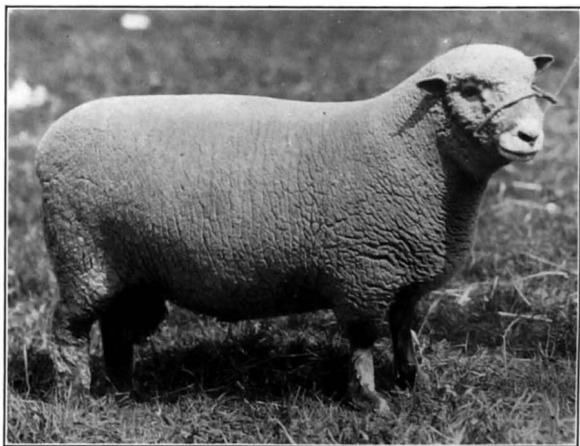


FIG. 5.—Southdown Shearling Ram.



FIG. 6.—Suffolk Ram Lamb.



FIG. 7.—Hampshire Down Ram Lamb.



FIG. 4.—Welsh Mountain Yearling Ewes.

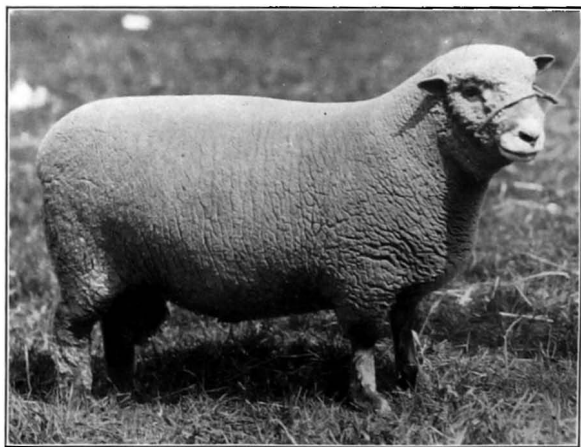


FIG. 5.—Southdown Shearling Ram.



FIG. 6.—Suffolk Ram Lamb.

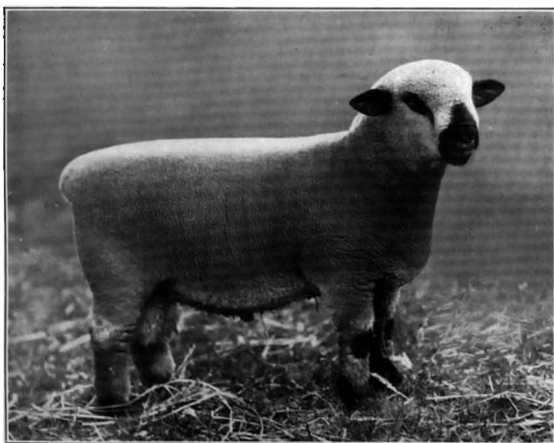


FIG. 7.—Hampshire Down Ram Lamb.



FIG. 8.—Border-Leicester Shearling Ram.

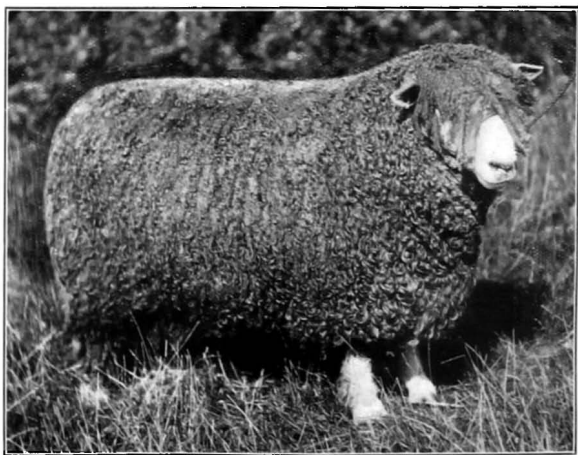


FIG. 9.—Lincoln Ram.

in "grain" and specially suited for the manufacture of certain articles.

One of the most important groups of mountain breeds is the Blackfaced. This group includes the *Scotch Blackface* (Fig. 2), of which breeding flocks are found mainly in Scotland and to some extent in the Fell districts of the northern counties of England, as well as here and there in other parts of England—e.g. on Dartmoor; the *Swaledale*, which has a wide distribution in the Fell and Moorland districts of Yorkshire, Lancashire and Westmorland; the *Rough Fell*, found in the neighbourhood of Kendal; the *Lonk*, mainly found in the Pendle Hill district on the borders of Lancashire and Yorkshire; the *Derbyshire Gritstone* found in the Peak district of Derbyshire, and the *Penistone*.

The *Cheviot* (Fig. 3), the old-established breed of the Cheviot Hills, has a wide range over Northumberland and the Scottish border counties of Roxburgh and Berwick; it is also found in other parts of Scotland. For breeding purposes, the ewes are drafted to various upland parts of England and Wales. The fat hogget produces high quality small mutton of good conformation.

The *Welsh Mountain* breed (Fig. 4) is widely kept at high elevations throughout the whole of Wales and Monmouthshire. It is small and hardy, and the ewe is an excellent mother, draft ewes being extensively used in lowland areas for mating with suitable rams of various breeds for the production of high quality fat lambs.

The *Radnor* is mainly bred in Breconshire and Radnorshire; it is a somewhat larger sheep than the Welsh Mountain, but not quite as hardy. It is a hill rather than a mountain breed. Draft ewes are used extensively in lowland areas for mating with rams of the Shropshire, Kerry, Ryeland and other breeds for producing fat lambs.

The *Herdwick* is a hardy breed, principally kept on the hills of Cumberland. It is a small sheep and the flesh is valued for its fine grain and flavour. The ewes, which have the reputation of being good mothers, are, when drafted, frequently mated to rams of the Border Leicester and other breeds for the production of high quality lambs.

The *Exmoor Horn*, a native of Exmoor and the Brendon Hills, is a thrifty and hardy breed. Draft ewes are commonly bought to go into the upland chalk districts of Dorsetshire and Wiltshire, where they are mated to rams of a different breed for the production of handy-weight fat hoggets. The pure-bred Exmoor, while valued in its native district for the fine flavour of its flesh, is not greatly favoured by the trade in large consuming areas such as London.

The *Kerry Hill* is the old-established breed of Montgomeryshire, and has spread to neighbouring counties. It is distinctly a hill type of sheep, hardy and carrying a fleece of fine wool of moderate length staple. While popular among farmers and with most butchers, it is said to develop a somewhat finty bone at an early age. The draft ewes are valuable for crossing for the production of fat lambs, being prolific breeders and excellent milkers.

Down Breeds.

The Down breeds are kept as regular breeding flocks in chalk-down areas and in brashy and sandy districts mainly in the southern half of England. In recent years, breeding flocks have also been established in the North, where there is a demand for rams for crossing. The Down breeds are all hornless and have fleeces of short to medium-length, fine, close wool. The carcass conformation is good and compact and the flesh and fat are of the finest quality.

The *South Down* (Fig. 5).—All the Down breeds have been more or less indebted in the past to an infusion of South Down blood. Among butchers, a good South Down carcase is generally accepted as ideal and commands the highest price. Not only is it very compact, with broad loins, an excellent back and short ribs, but the legs are particularly well fleshed and unusually short in the shank. Owing to their small size, fat lamb carcases of this breed suit the best class trade, the Easter fat lambs usually weighing about 32 lb., and those brought out at Whitsuntide about 40 lb.: the weight of a hogget carcase is usually from 48 to 56 lb. South Downs also clip the finest wool produced in this country.

The *Shropshire*, as the name implies, is found mainly in Shropshire and the adjacent counties; it is a symmetrical type of sheep that is much valued for its high quality lambs and hoggets; the rams are largely used for crossing.

The *Suffolk* (Fig. 6) is mainly bred in the heath districts of East Anglia. It is noted for the high percentage of fine quality lean meat yielded by the carcase. It is larger than the South Down and the limbs have more shank. The rams are widely used for crossing.

The *Hampshire Down* (Fig. 7) forms the principal folded flocks on Salisbury Plain, the Marlborough Downs and adjacent chalk areas. The breed is invaluable on the large holdings typical of the chalk uplands for close folding on roots and on autumn-sown forage crops. The lambs are readily fattened to a good weight at an early age, and meet an excellent trade in London and elsewhere. The fat hogget, while of excellent quality, is on the heavy side for present-day requirements.

The *Oxford Down* is the largest of the Down breeds and carries the heaviest fleece. The home of this breed is in the Cotswolds, where the country is bleak and exposed, where the soil is thin, brashy, of a hungry nature, and sticky in winter, and where crops are particularly liable to suffer from droughts in May. The Oxford Down and its cross with the Hampshire Down have been found to be the sheep best fitted to these climatic conditions. Though excellently suited to fat lamb production, the carcases of the fat hoggets, as in the case of the Hampshire Down, are somewhat large for present-day requirements.

The *Dorset Down* is found mainly on the Wimborne side of Dorset, and in parts of Wiltshire, especially on the Warminster Downs. It is somewhat similar to the Hampshire Down, but has finer bone and is on the whole a somewhat smaller sheep. It produces very fine quality flesh and is well suited to fat lamb and mutton production.

There are four other breeds which, though not strictly Down breeds, have many characteristics in common with the true Down breeds.

The *Dorset Horn* is found principally in the Dorchester area of Dorset, in parts of Somerset and in the Isle of Wight. Draft ewes frequently produce 2 quick crops of lambs within the year, but the breed is valued in the main for the production of early lambs that are marketed fat from the end of December until Easter. Isolated ewe flocks are kept in practically all parts of the country, including Scotland, for the special purpose of catering for the early lamb trade. The carcases of these lambs vary in weight from 35 to 50 lb., but, unless crossed by a ram of a suitable breed, tend to have too great a proportion of bone to flesh.

The *Ryeland* has its home mainly in Herefordshire and Breconshire. It is characterized by the excellent conformation of the carcase and the high quality of the flesh; it is highly valued for fat lamb production, and the ram for crossing purposes.

The *Clun Forest* is found mainly in the Clun district of Shropshire and in Radnorshire and Herefordshire. It is a popular sheep among butchers.

hoggets producing good quality, handy-weight carcasses. The breed is equally at home on roots or grass.

The value of the *Western or Wiltshire Horned* breed is now limited to the use of the ram for crossing purposes. Sheep of this breed carry little wool and stand high on the leg. Their flesh is of a high quality. Cross-bred lambs by rams of this breed—known to the trade as “peel-belly” lambs—have a special value.

Long-woolled Breeds.

The long-woolled breeds, which belong in the main to lowland areas, are the descendants of flocks formerly kept principally for the value of the fleece; the wool is long and sometimes lustrous. They are hornless sheep, growing to considerable carcass weights, are readily fattened and suitable for the production of fat lambs and early hoggets. As late-fed hoggets, the carcasses usually carry too much fat, which is inclined to be tallowy and rather unpalatable; the flesh is not as fine in grain or as good in flavour as that of, for example, the Down breeds.

The *Leicester* is found to-day mainly in the East Riding of Yorkshire. At one time or another, most of the long-woolled breeds have derived some benefit from the use of Leicester rams. It is noted for its symmetry and for the high quality of the lambs and hoggets.

The *Border Leicester* (Fig. 8) is found principally in Durham, Northumberland and the East Lowland counties of Scotland. The ram is much used for mating with the Cheviot and Blackfaced ewe, resulting in the “*Half-bred*” sheep which has a wide vogue at the present day for fattening either as lamb or hogget, or, in the case of the ewe, for crossing with a Down or other breed of ram.

The *Lincoln* (Fig. 9) is primarily an arable sheep that is used, as in the case of Down breeds, for consolidating the ground and for maintaining the fertility of the soil in upland districts. The rams of this breed and of the *Cotswold* breed are valued for fat lamb and hogget production, being freely mated with Suffolk ewes for this purpose in Norfolk and other parts of East Anglia.

The *Wensleydale* (Fig. 10) ram is used for mating with the Swaledale ewe in the Yorkshire Dales and in the Kirkby Lonsdale area or with the Rough Fell ewe in the Kendal area, the resulting progeny being known as a *Masham*.

Other long-woolled breeds include the *Kent or Romney Marsh*, the *South Devon*, the *Devon Longwool*, the *Dartmoor*, and in Ireland the *Roscommon* and *Galway* breeds. These are typically grass sheep, but are also suitable for folding on roots for fattening. The *Dartmoor* breed is a hardy moorland sheep of the longwool type.

(b) *Cross-bred Sheep*.—While a large number of sheep and lambs are fattened on the farms where they have been bred, a great number of lambs are moved from the principal upland breeding districts before they are 6 months old to more congenial surroundings for finishing, finding a ready sale to farmers desiring to stock their folds for winter hoggetting. A large proportion of the wether lambs so disposed of are cross-bred.

Throughout lowland districts, an important supply of cross-bred lambs is also contributed by flying flocks of ewes mated to rams of other breeds.

It is impossible to enumerate all the various methods of mating that are practised, but mention may be made of some of the more important crosses.

The Border counties of Scotland send a large number of lambs annually into England; the "Half-bred" (Border Leicester $\times$ Cheviot) (Fig. 11), the "Three-quarter-bred" (Border Leicester $\times$ Half-bred), the "Mule" (Border Leicester $\times$ Scotch Blackface) and the progeny of the Half-bred ewe mated with a ram of a Down breed are the commonest types of cross-bred lamb produced in these counties.

In the dale districts of Yorkshire and in middle lands of Lancashire, the draft or off-going Swaledale ewe is mated to a Wensleydale ram to produce the Masham, or the female progeny may be again crossed by a ram of similar breed. Masham and twice-crossed Masham lambs are sold to be fattened on the "foggage" in the Fylde district of Lancashire or sent to low-lying farms on the Yorkshire side—where they are usually fattened on roots—or further afield.

In the East Riding of Yorkshire, a heavy type of sheep is seen, the progeny of a Leicester ewe crossed by a Lincoln (or vice versa) or by an Oxford Down or other Down breed of ram.

Wales and certain of the hill districts of Herefordshire, Shropshire and Monmouthshire, which have a large surplus of store lambs to dispose of annually, furnish various types of cross-bred lambs that are valued for their comparatively light carcasses and for their eating quality when sold as fat hoggets. The principal cross-bred lambs are the progeny of Welsh Mountain ewes mated with Kerry Hill, Clun Forest and Radnor rams. Other cross-bred lambs include the progeny of Kerry Hill ewes crossed by Shropshire and Clun Forest rams, of Radnor ewes crossed usually by Kerry Hill or Shropshire rams, and of Welsh, Radnor and Kerry ewes mated with Suffolk and Ryeland rams.

In the Cotswolds, the progeny of the Oxford Down ewe mated with a Hampshire Down ram, or vice versa, are common and are usually fattened on the arable farms where they are bred.

On Salisbury Plain and the Marlborough and Berkshire Downs, the variety of crosses is considerable, but the Hampshire Down blood predominates in the cross-bred lambs marketed.

In East Anglia, the basis of the ewe flocks on the lighter land is the Suffolk breed. While a great many of the commercial flocks are bred pure, crossing is extensively practised, the Cotswold and the Lincoln ram being favoured for this purpose. Another popular cross is the progeny of a Cotswold $\times$ Suffolk ewe mated to an Oxford Down ram.

The South Down ram is extensively used for crossing in certain districts—in the Clwyd Valley for instance, where it is mated to Welsh Mountain ewes—for the production of some of the highest class lamb that comes on to the market. The Wiltshire or Western



FIG. 10.—Wensleydale Shearling Ram.



FIG. 11.—Half-bred Ewe Lambs.

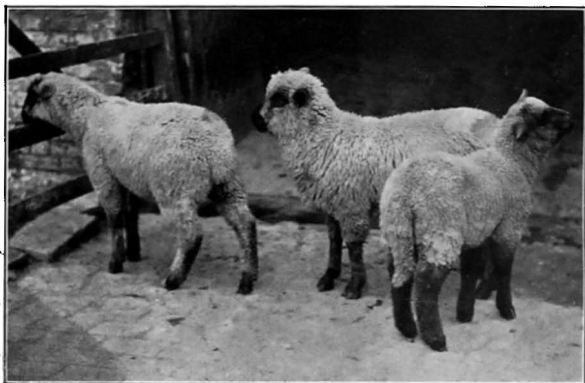


FIG. 12.—Lambs of Inferior Quality, corresponding to Carcase Grade *Common*. (See Figs. 42 and 43.)

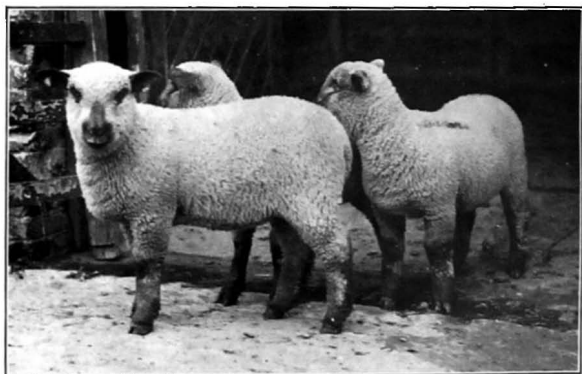


FIG. 13.—First Quality Lambs, corresponding to Carcase Grades *Select* and *Prime*. (See Figs. 36-39.)

Horn ram and the Border Leicester ram are used in various parts of North Wales, particularly in Anglesey, where they are mated to Welsh Mountain ewes. The Wiltshire ram is also used in some of the midland counties, where it may be mated to half-bred ewes brought from the Scottish Borders or to other types of ewes for the production of high quality lambs.

Dorset Horn ewes may be drafted to form flying flocks and may produce two quick crops of lambs before being fattened; they are crossed usually with a ram of a Down breed.

For flying flocks, other crosses suitable to market requirements for fat lamb are the progeny of the half-bred ewe crossed by a ram of Suffolk or other Down breed; of ewes of Welsh origin mated to a Shropshire or Ryeland; or of Hampshire, Dorset Down and Closewool* ewes mated to a South Down ram. Many other crosses could be cited—so many, indeed, that there is much to be said for more discriminate crossing with a view to securing greater uniformity of type, particularly in districts where conditions are more or less uniform.

(iii) Types of Mutton and Lamb.

Fat lambs and sheep ready for market may be classified as follows:—(a) lambs and hoggets, (b) yearling sheep, (c) old wethers, (d) ewes, (e) rams. In Chapter XI, the qualities that butchers look for in a carcass of a high-grade lamb or sheep are given at some length.

(a) *Lambs and Hoggets*.—There is no clearly defined line between “fed” lambs and young hoggets, weight being usually the deciding factor. “Milk-fed” lambs—i.e. lambs that are fatted off their mother without weaning—can be placed in a separate category. These constitute the most sought after article in this trade. To get the lambs well finished, however, especially in the early part of the season, they and their dams have to be well done. A good deal will depend upon the weather, a very wet season or a long period of exceptionally cold weather having a retarding effect on the fattening of early lambs.

The lamb or hogget that best suits the butcher's purpose is one that will yield a compact carcass cutting to the least amount of waste. The degree of finish required varies with the class of trade catered for, but it can be said that a well-finished sheep or lamb should have the fat evenly distributed and, for present-day requirements, not excessive. It should carry a short neck, should be short on the legs and not coarse or heavy in the fore-quarters, as this produces a heavy and wasteful “target” when the carcass is cut up. It should, on the contrary, be relatively heavy in the loins and buttocks.

Weight is a very important factor in price. It is therefore desirable that weight requirements for the particular class of

* The Closewool breed originated by crossing Devon Longwool rams on Exmoor Horn ewes; the breed has now a Flock Book.

trade supplied should be studied. Although this varies somewhat in different districts (see Chapter III), sheep dressing over 64 lb. are considered to be too heavy for the better class trade except in some midland districts.

Well-finished lambs of 28–45 lb. dead weight and hoggets of 44–60 lb. dead weight furnish the ideal joints for present-day use. The meat is tender, the colour relatively pale and the joints of a size that suits the needs of the small family. Almost any breed or cross of sheep will produce the type of lamb required, though some will naturally give better results than others: for the production of mutton to suit the trade some breeds are too heavy unless the progeny is marketed fat as young hoggets.

While many of the pure breeds produce the finest quality carcasses, the first cross is considered by many producers to be the most profitable, the progeny being, generally, ready for marketing at a somewhat earlier age than those of pure-bred flocks and yielding carcasses that are as well suited to trade requirements. Some producers, again, favour a second cross, and the progeny of a Half-bred ewe mated to a Down ram has been instanced as a popular type of fat lamb or sheep, particularly in the North.

(b) *Yearling Sheep*.—Some of the best mutton is derived from yearling sheep, including not only wethers but also a certain proportion of theaves or young barren ewes. Being fairly mature, it has on the whole a better flavour than hogget mutton, but usually requires longer hanging.

(c) *Old Wethers*.—Three and four-year-old wether mutton is tending to become rare but still comes on to the market from time to time: there appears to be no demand for it in London. It is mainly derived from flocks of wether sheep that are retained to graze mountain sheep walks which are too high to carry a ewe stock. The flesh is rather dark and inclined to be gristly, but has an exceptionally fine flavour. Joints require hanging for several days.

(d) *Ewes*.—As is shown later (see also Table III), a considerable amount of the mutton produced in this country is from ewes. While the range of ewe mutton is wide, varying from prime, young, well-finished ewes to the aged “crones” that are past breeding, a considerable quantity of it is of a very fair standard of quality. Ewe mutton is practically the only “old mutton” that is now readily obtainable and carries the full flavour of that article. Joints, however, tend to be on the big side and usually have to be trimmed of excessive fat before they can be retailed.

The meat from ewes varies largely according to the age at which they are killed. The meat of young ewes (Fig. 19) that have had, say, one crop of lambs, while somewhat darker in the flesh than that of yearling sheep and while the bones show the opaqueness characteristic of age, is of good eating quality when well finished.

The flesh of older ewes tends to become rather dark, coarse and less palatable, and joints require more hanging. Many mature ewes are marketed carrying a great deal of excessive fat (Figs. 20 and 50).

As a rule, however, ewes are not retained to any great age for breeding, being fattened off as soon as they begin losing their teeth; with ewes that are kept on roots, the loss of teeth usually starts after they have had three or four crops of lambs. Further, in most parts of the country, it is considered uneconomical to retain ewes until their carcasses become practically valueless. Generally speaking, therefore, the practice is to fatten off ewes after they have had from three to five crops of lambs, that is, at 5 to 7 years of age.

(e) *Rams*.—Ram carcasses (Figs. 21 and 22) are characterised by heavy forequarters and neck and relatively light hindquarters. The meat of a mature ram is strong in flavour, dark and rather coarse. Generally, there is little sale for it except in certain districts where its strong flavour appears to be relished. The trade in rams is mainly in the hands of traders who specialize in this class of business and know the best channels of disposal. The number slaughtered annually in Great Britain is small—in the neighbourhood of 49,000.

CHAPTER II.—SUPPLIES.

(i) Trend of World Production.

A study of the sheep population of the principal sheep-raising countries during the last four decades (see Table I) shows that, up to about 7 years ago, a considerable decrease had taken place. Numbers had fallen to a comparatively low level by 1913, but the decline continued and indeed was accentuated during the War and, in several important sheep-raising countries, for several years after.

Thus, the sheep population of Europe (excluding Russia) fell from 135 million head in 1890 to 124 million head in 1924, that of Australia from 98 to 84 million in the same period, that of Argentina from 74 to 36 million, that of Uruguay from 19 to 14 million and that of the United States from 47 to 37 million. The sheep population of the world in this period is estimated to have declined by over 70 million head. Since 1924, however, there has been a complete recovery in world sheep population. In a number of countries, in fact, particularly Australia, New Zealand, South Africa and Russia,* the numbers have reached a considerably higher level than in 1890. New Zealand, indeed, has experienced not a decline but an almost continuous increase in sheep population during the period under review, from 17 million head in 1890 to 29 million in 1929.

* In the case of Russia, however, there is reason to believe that the pre-War figures were considerably under-estimated.

The decline in world sheep population before the War was no doubt a consequence of the gradual encroachment of cultivation on the area devoted to sheep in the newer countries where sheep farming was largely conducted on the range system and wool was the primary product. Overseas farmers were slow to change over to the farm flock system with its higher cost of production, and thus the sheep population declined. With the attainment of more stable farming conditions and the fuller development of refrigeration, however, the farm flock system, with mutton as the primary product, has become more firmly established in many of these countries, and sheep have recovered much of their importance.

(ii) Home Production.

(a) *Trend of Sheep Population.*—Table II shows the estimated total sheep population of England and Wales in the years 1867 to 1931, distinguishing, where possible, the various classes of sheep.* Separate records of the numbers of ewes, however, were not made until 1893, and of the numbers of rams until 1919. The figures are based on returns made by farmers on the 4th June each year and do not, therefore, include those of each year's crop of lambs which are slaughtered previous to that date. It is important to bear this in mind when drawing conclusions from these figures, especially in view of the increased production of early fat lambs in recent years and the decrease in the total sheep population.

The figures shown in the column "Other Sheep—One Year and Above,"—which do not include ewes—show a continuous downward trend since 1893 from about 5 million in that year to 2½ million in 1930, with, however, some recovery in 1931. The life of the wether progeny is nowadays far shorter than formerly, and this would, in the main, account for the decline which, in particular, reflects the gradual disappearance of the practice of retaining wethers for several seasons and selling them as "old mutton." Since the War, with the exception of a certain number of Kent and mountain wethers, this practice has virtually died out.

All things considered, the ewe population is the safest guide to the trend of the sheep industry. From 1893 to the outbreak of the War, the ewe population remained fairly stable around 7 million, with the exception of two temporary increases about 1899 and from 1907–11, respectively. These increases appear to be a reflection of a more or less regular cyclical movement of sheep production, the period of which has been found, over the past 50 years, to occupy from 6 to 9 years.† From 1916 to 1920, the numbers declined rapidly to a little over 5 million. Since

* See also Diagram A, Economic Series No. 7.

† See "Factors Affecting the Prices of Livestock in Great Britain," pp. 79 and 80. K. A. H. Murray, University of Oxford, Agricultural Economics Research Institute.

that date, there has been a gradual recovery, and in 1930 the ewe population, at 6,800,000, was about equal to that of 1914. Provisional figures for 1931 show a remarkable increase to about 7½ million—the highest figure since 1911.

(b) *Distribution*.—The most important sheep-breeding areas are the hilly or mountainous districts where the proportion of rough grazing is highest, particularly Wales, Northumberland, Cumberland and Westmorland, in all of which the total sheep population on June 4th, 1930, was over 70 per 100 acres of crops, grass and rough grazings. Kent, where the breeding and feeding of sheep are a feature on the extensive marshes, is also among the most important sheep-producing areas. Devonshire, Yorkshire, Durham and Shropshire, in all of which there is a large proportion of hilly country, and Northamptonshire, where the high-class grazing land lends itself to the production of grass-fed mutton and lamb, are all counties with a sheep population of 50 or more per 100 acres of crops, grass and rough grazings.

In the Wolds of Lincolnshire and Yorkshire, the heath districts of East Anglia, the chalk areas of the southern counties, and the Cotswolds, where arable systems of sheep farming are extensively practised, sheep raising is of considerable importance.

There have been notable changes in the importance of sheep raising in different parts of the country since before the War. On the whole, it may be said that it has declined in districts where the system practised is that of folding on roots and forage crops, and has increased to about the same extent in grassland districts. Thus, between 1913 and 1929, the ewe population in eleven "arable sheep" counties* fell by over 25 per cent.—from 1,570,000 to 1,152,000. In the predominantly grassland or mountain areas,† on the other hand, the number of ewes increased by about 13 per cent.—from 3,687,000 to 4,200,000. The decline in sheep raising in the arable areas has accompanied a falling off in the acreage of arable land, the reduction in the area under the plough being met, in particular, by a reduction in the number of wether hoggets retained for winter folding.

(c) *Annual Output*.—Owing to movements of store sheep from Scotland into England, which are known to be considerable but of which there is no record, it is not possible to give a precise estimate of the annual production of mutton and lamb in England and Wales. Table III, however, shows the estimated average annual number of sheep and lambs slaughtered in Great Britain in each of the 7-year periods 1907–8 to 1913–4 and 1923–4 to 1929–30‡.

* Berks., Dorset, Gloucester, Hants., Lincoln, Norfolk, Oxford, Suffolk, Sussex, Wiltshire and the East Riding of Yorks.

† Wales, Cumberland, Devon, Hereford, Lancashire, Monmouth, Northampton, Northumberland, Somerset, Westmorland and the North and West Ridings of Yorkshire.

‡ Years ended June 4th in each case.

excluding fat sheep imported from Ireland or elsewhere and slaughtered in this country. The total slaughterings have been divided between the following classes* :—(1) Ewes ; (2) Hoggets and fed lambs ; (3) Milk-fed lambs ; (4) Other Sheep—i.e., rams and wethers of one year and over.

The total number of sheep and lambs slaughtered per annum was much less in the post-War than in the pre-War period, the average decreasing from 10,110,000—equivalent to about 5,397,000 cwt. of mutton and lamb—for the 7-year period 1907–8 to 1913–4, to 8,975,000—equivalent to about 4,529,000 cwt. of mutton and lamb—for the period 1923–4 to 1929–30. The production of mutton and lamb thus declined by over 16 per cent. during

* The following method of classifying home-killed sheep has been adopted :—

Ewes and Rams.—It is assumed that one-quarter of the ewe and ram population on June 4th (or one-fifth for Scotland) is drafted out during the following 12 months, being replaced by gimmers or ram lambs, which are included in the June 4th figures as “other sheep, one year and above.” A correction has been made for an increase or decrease in the ewe population from one year to another by assuming that either a greater or a less number of the sheep one year old and above are required for maintaining the breeding flocks. No allowance has been made for ram or ewe lambs drafted to the breeding flocks before they are one year old. From the figure of ewes and rams drafted out, obtained as above, a deduction is made to allow for natural deaths (see below) and the balance is regarded as having been slaughtered during the year.

Hoggets and Fed Lambs.—It has been assumed that lambs born prior to the 4th June of any year are slaughtered as fed lambs or hoggets during the following 12 months, unless they are included in the returns on the following 4th June as “other sheep one year and above.” The difference between the lamb population (sheep “under one year”) on 4th June in any year and the number of “other sheep, one year and above” on the subsequent 4th June, after allowing for natural deaths, thus gives the total available for slaughter during the year as hoggets and fed lambs.

Milk-fed Lambs.—The total number of lambs born in each year is calculated at the rate of 118 per 100 breeding ewes recorded on June 4th (or 102 for Scotland). From this, after allowing for deaths, is deducted the number of sheep under one year old on June 4th, and the resulting figure is assumed to be the number of lambs slaughtered prior to the 4th June.

Natural Death Rate.—The average death rate for all sheep in England and Wales is estimated as 7·5 per cent. per annum,† for Scotland as 5·9 per cent. It varies, however, according to the class of sheep ; for sheep under one year—hoggets and young lambs—it is taken at 10·3 per cent. per annum (or 6·8 per cent. for Scotland). In the case of young lambs, the average life is estimated to be only four months (two months in Scotland) and the death rate is therefore taken as one-third of 10·3—i.e. 3·4 (or, in Scotland, one-sixth of 6·8—i.e. 1·1). For sheep above one year, it is taken as 5·4 per cent. per annum (or 5·2 in Scotland).

It is realized that this method of classification cannot be used to arrive at the different types of sheep and lambs slaughtered in any single year, owing to the considerable variations from year to year in the birth rate of lambs, and the rate of replacement of ewes. Applied to 7-year periods, however, it may be regarded as giving a fairly reliable broad classification.

† Agricultural Output of England and Wales, 1925.

this period—a considerably greater drop than has taken place in the case of beef and pig-meat. Examination of the total annual figures (not shown in the Table) indicates that in 1923-4, only 7,546,000 sheep and lambs were slaughtered. There has been an increase since that date to almost the pre-War level. Indeed, the figure of 10,347,000 in 1927-8 was actually above the pre-War average. There has been a decrease, however, in slaughterings since that year.

The proportion of ewes to total slaughterings has varied less than that of any other class of sheep, being in the neighbourhood of 19 per cent., both in pre-War and post-War years. The falling off in the slaughterings of "other sheep, one year and over"—i.e., shearlings—is striking; from an average of 26 per cent. of all slaughterings in the pre-War years there has been a decline to only 9 per cent. in the post-War period. During the corresponding period, the proportion of hoggets and fed lambs (lambs killed after June 4th) increased from 46 per cent. to 64 per cent. The proportion of slaughterings of milk-fed lambs (lambs killed before June 4th) has remained at between 8 and 9 per cent.

(d) *Seasonality.*

Store Sheep and Lambs.

There are very definite seasonal variations in the marketing of store sheep and lambs in this country, as will be seen by reference to Diagram A, which gives the average numbers of store sheep, excluding ewes, offered each month at certain representative markets in England and Wales in the 7 years 1924-30. The fluctuation is actually even more marked than the Diagram indicates, owing to the large number of stores which do not enter the markets but are sold at special seasonal sales.

While there is a practically continuous movement of stores on to the market throughout the year, little business is done from Christmas until early in February, and it is not until the latter part of March that stores are marketed in considerable numbers. The majority of store sheep sold in spring are hoggets that have been wintered on grass or on roots and are sold, in the main, for early finishing. By the end of June, the most forward of the year's crop of store lambs start to be sold, and the marketing of these lambs continues into the beginning of November, being at its height during August and September. Diagram A takes no account of marketings of store and breeding ewes. Ewes are drafted out of the breeding flocks in the summer months and are sold either in markets or at the numerous special annual sales of store sheep and lambs (see Chapters V and VII). These sales commence in the middle of May—the first being held at Dorchester on the 3rd Thursday in May—and continue throughout the summer. The sale of draft ewes as well as store lambs in that period makes the months from June to October the heaviest season of marketing stores.

Fat Sheep and Lambs.

Diagram B shows the average monthly supply of fat sheep at certain representative markets in England and Wales for the periods 1907-13 and 1924-30. It will be seen that supplies were more evenly distributed throughout the year during the pre-War period than they have been since the War. In both cases, however, supplies were considerably higher during the summer than during the winter. In the 1907-13 period, supplies rose gradually from January to June; in the 1924-30 period, the general trend of supplies was roughly similar, but there was a marked falling off in February and again during April. Both before and since the War, supplies have reached a peak in June, and after falling off in July have again reached a peak in the late summer. This fluctuation of supplies during summer, however, has become more pronounced since the War. The June peak is due to the heavy marketing of lambs off arable farms and of ewes out of flying flocks, together with wintered hoggets finished off on grass in spring. That in September coincides with the flush of grass-fed lambs and hoggets, while September is also the period of heaviest supply of fat draft ewes. After September, a rather rapid decline takes place to the end of the year. A shortage of ewe mutton occurs during the breeding period in February and March.

The changes which have taken place in the seasonality of supplies are due to the increased marketing of fat lambs and the earlier marketing of fat sheep in post-War years. On many farms where lambs were previously winter-fattened on roots and marketed during the late winter or early spring, they are to-day sold as young hoggets or fat lambs, the change in favour of a leaner and smaller type of carcass having increased the demand for carcasses, particularly lamb, that in pre-War years would have been considered too lean or on the small side.

The additional cost of production of winter-fattened sheep, which were formerly and are still kept to prepare the ground for the following cereal crop, and the decrease in the arable area in recent years have tended to increase the number of grass sheep kept in many parts of the country, and this has probably helped to increase the marketing of fat lambs during the summer and hoggets in the late autumn.

Mutton and Lamb.

The seasonal fluctuations in the supplies of home-killed mutton and lamb throughout the country are naturally similar to those of fat sheep, in so far as numbers of carcasses are concerned. Owing to the fact, however, that the supplies at the peak period are predominantly lambs, the actual weight of supplies is less liable to seasonal fluctuation than the number of carcasses.

Economic Series No. 29.

Report on the
MARKETING OF SHEEP, MUTTON AND LAMB
in England and Wales.

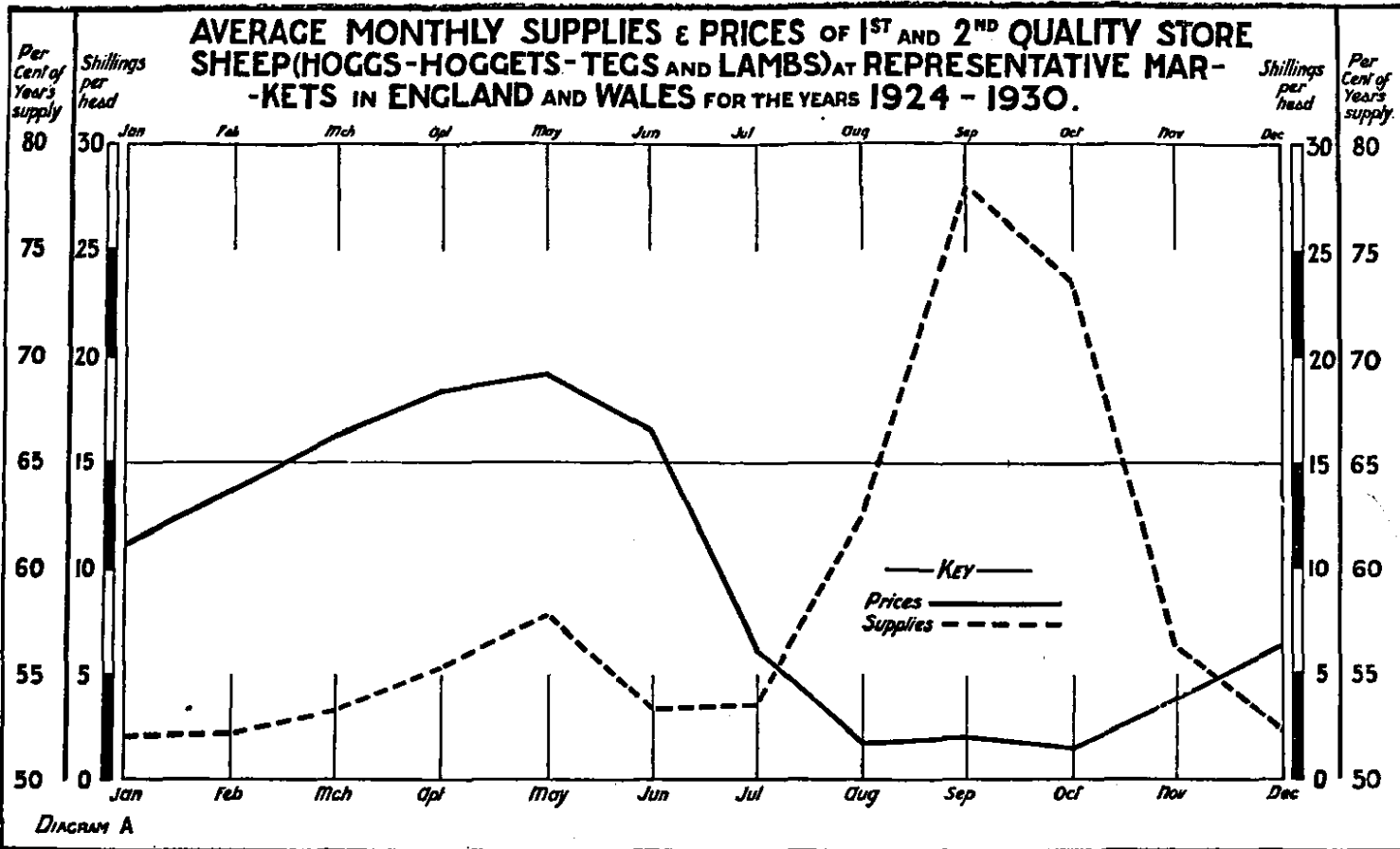
ERRATUM.

Diagram A (page 23).

Per cent. of Year's Supply should read Shillings per Head.

Shillings per Head should read Per cent. of Year's Supply.

AVERAGE MONTHLY SUPPLIES & PRICES OF 1ST AND 2ND QUALITY STORE SHEEP (HOGGS-HOGGETS-TEGS AND LAMBS) AT REPRESENTATIVE MARKETS IN ENGLAND AND WALES FOR THE YEARS 1924 - 1930.



AVERAGE MONTHLY SUPPLIES OF FAT SHEEP AT REPRESENTATIVE MARKETS IN ENGLAND AND WALES FOR THE PERIODS 1907-13 AND 1924-30.

Per Cent
of
Year's supply

Per Cent
of
Year's supply.

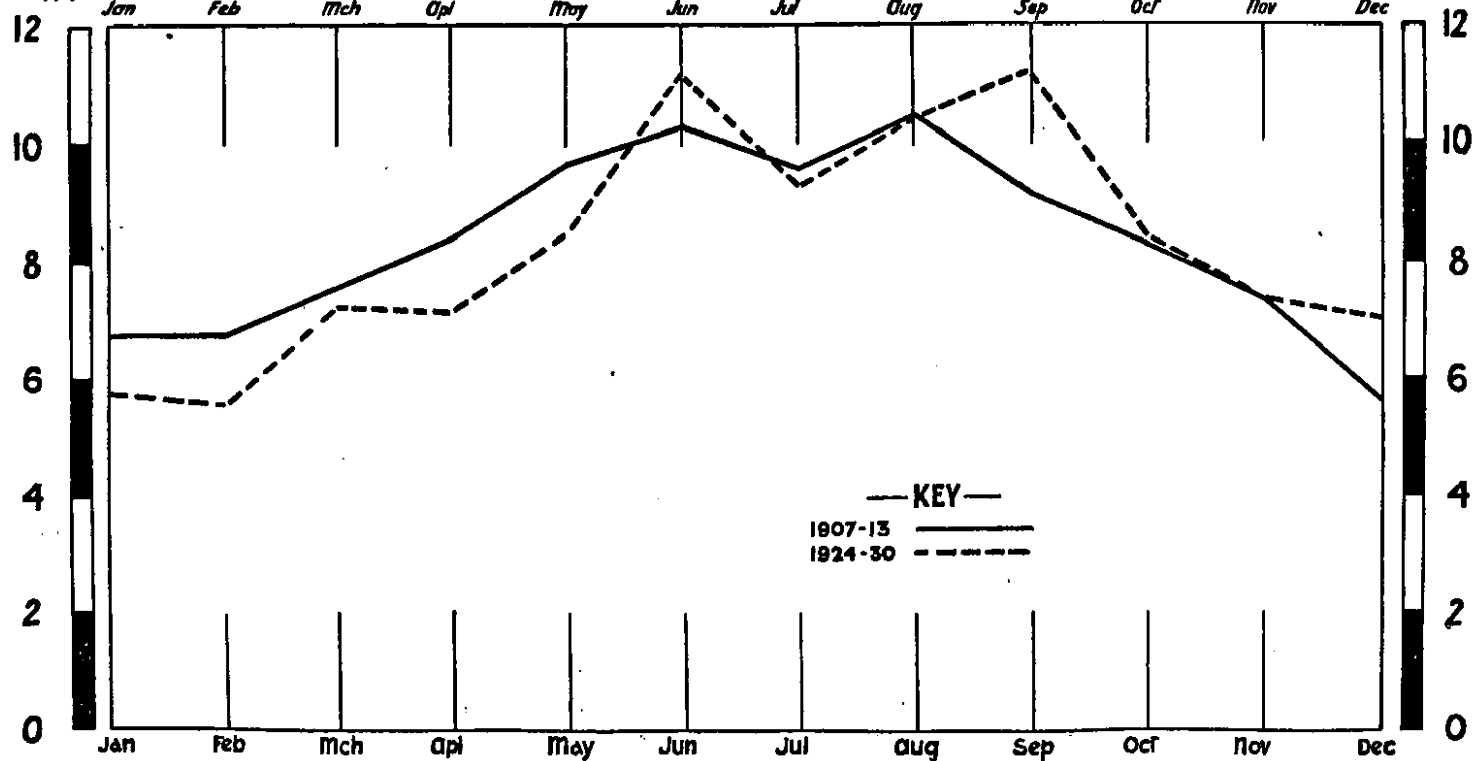


DIAGRAM B

The variation in the relative importance of different sources of supply in the more important consuming centres (see Chapter V) is such that it is not possible to obtain a clear idea from whole-sale meat market statistics of the seasonal fluctuations in the marketing of home-produced mutton and lamb over the whole country. The seasonality of supplies of home-killed mutton and lamb in the London area may be illustrated by the pitchings on Smithfield Market, London, during 1928, 1929 and 1930, shown in Diagram C and Table IV. The quantities pitched are greater during the autumn and winter periods than during the spring and summer. Thus, the average quantity sold from October to March, during the three years, was 18,400 tons as against 14,000 tons during the 6 months April to September. As is shown by the Diagram, the relatively low summer supply of the home-killed article is made up for by increased imports, particularly from New Zealand.

It will be seen, by comparing Diagrams B and C, that the seasonality of supply of home-killed mutton and lamb on Smithfield market measured by weight does not closely coincide with that of fat sheep and lambs in English and Welsh markets. This is due partly to the preponderance of small lamb carcasses in the summer months, partly to the fact that the Smithfield figures include Scotch and Irish supplies. There is a wide difference between the seasonality of supply of English and Welsh mutton and lamb on the one hand and that of Scotch on the other. During the years 1928 to 1930, English and Welsh supplies on Smithfield Market were highest from April to June and lowest from July to September. Scotch supplies, on the other hand, were greatest from October to December and lowest from April to June, and the fluctuations in the Scotch supplies were very much more pronounced than in those from England and Wales. Scotch supplies for the lowest quarter (April to June) were only 6.23 per cent. of the total Scotch supplies in the year 1928 and only 12.92 per cent. in 1929, while the supplies of English and Welsh mutton and lamb even in the lowest quarter (July to September), were 19.69 per cent. of the total English and Welsh supplies in the year 1928 and 19.57 per cent. in 1929. The seasonal fluctuations of Irish supplies are described below. The highest quarter is from July to September, the lowest from January to March.

(iii) Imports of Sheep.

(a) *Imports into the United Kingdom.*—Up to about 1865, imports of live sheep into the United Kingdom were considerable but highly variable. The million figure was exceeded in several years. During the 'eighties, Germany and the Netherlands were the biggest consignors; Canada, the United States and Denmark also sent considerable shipments. After 1889, there were no further

imports from Germany, and in 1892 importation was prohibited from Denmark and the Netherlands. During the 'nineties, Argentina became an important shipper of live sheep, supplies from that country increasing from 22,082 head in 1890 to 382,000 in 1899.

Imports of live sheep from 1892 onwards are shown in Table V. After 1895, when 1,065,000 head were imported, the live sheep imports gradually fell as those of frozen mutton and lamb increased. By 1900, they had declined to 383,000 head, and by 1907 to 106,000. By 1913, when the negligible quantity of 501 head were imported, the frozen carcase had virtually replaced the live animal in the import trade.

(b) *Imports from Ireland.*—There has long been an extensive trade in live sheep from Ireland. The bulk of the supplies consist of fat sheep and lambs, the imports of store sheep being negligible.

The numbers of live sheep imported fluctuate from year to year. The highest figure attained since 1900 was 1,055,802 head in 1902. During the period 1909–13, the annual import averaged some 700,000 head. The figure has been less since the War, the average during the 6 years 1925–30 having been nearly 600,000 head (Table VI). An important feature of the Irish trade is the change in the proportion of lambs to sheep during the last few years as compared with previous years. From 1906 to 1919, the numbers of sheep and lambs were more or less equal. In the 6-year period 1925–30, the proportion of lambs was 60 per cent. of the total.

Irish supplies increase rapidly from their lowest level about March to their peak in July, falling off again fairly rapidly after August. The fat lamb season lasts broadly from April to August. Little lamb is received during the remainder of the year although, in the trade, a large proportion of the supplies coming in from September to Christmas are referred to as lamb. Fat sheep arrive in considerable but declining quantities from September to January, and in small numbers during the remainder of the year.

(c) *Supplies from Scotland.*—There is an extensive trade in live sheep, both store and fat, from Scotland to England, but no figures are available to show the extent of this traffic. The border counties of Scotland are an important breeding area and large numbers of store lambs and young draft ewes are purchased at annual sales in those counties for transit to England. There is also an important trade in fat sheep and lambs from Scotland, mainly to northern and north-midland industrial areas. The trade in carcases to London and other centres is referred to later (pages 60–63).

(iv) Imports of Mutton and Lamb.

Imports of mutton, lamb and mutton and lamb products into the United Kingdom from 1926 to 1930, distinguishing the different countries of supply, are shown in Table VII. Imports are very largely received in the frozen state, though occasional chilled consignments have arrived. Until the embargo of 1926 on the importation of fresh meat from Europe, regular consignments of fresh mutton and lamb were also sent from the Continent. A small amount of the canned product is still imported, mainly from Argentina, Chile and the United States. An important feature of the import trade is the marked increase, in recent years, in the proportion of lamb to mutton (see below).

(a) *Total Quantities.*—In 1882, the first year for which figures are available, the imports of frozen mutton and lamb into the United Kingdom amounted to only 189,847 cwt., valued at £637,346, as compared with 1,124,391 head of live sheep, valued at approximately £2½ million. No figures are available, however, as to the quantities of preserved mutton and lamb (other than frozen) imported prior to 1892. During the '80's and '90's, the imports of mutton and lamb steadily grew; over a million cwt. were imported in 1889 and over 2 million cwt. in 1893. Figures showing the total annual imports of mutton and lamb of all kinds are available from 1892 onwards, and are shown in Table V. By the end of the century, 3½ million cwt. of mutton and lamb were being imported annually, and in 1913 imports stood at almost 5½ million cwt., the average for the five years 1909–13 being about 5,296,000 cwt. Imports fell during the War, but rapidly increased after the War to a considerably higher level than in pre-War years, amounting to 6,623,000 in 1920 and 6,960,000 cwt. in 1921. A gradual falling off then took place to 5,211,000 cwt. in 1924, followed by an almost continuous increase to 6,551,000 cwt. in 1930. The average for the 5 years 1926–30 was some 5,836,000 cwt.

(b) *Frozen Mutton and Lamb.**—Australia, New Zealand and Argentina were the first countries to consign frozen carcasses to Great Britain in the early '80's. As is shown by the following figures, these countries are still the largest contributors, New Zealand now being the most important, followed by Argentina and then Australia :—

* A detailed account of the development of the trade in frozen mutton and lamb in this country is given in the "Report on the Trade in Refrigerated Beef, Mutton and Lamb," Economic Series No. 6, Chapters I to III.

Imports of Frozen Mutton and Lamb from the Chief Exporting Countries as a Percentage of Total Imports of Frozen Mutton and Lamb in the Years 1909-13 and 1925-9.

Year.	Countries from which Exported.					
	New Zealand.	Argentina.	Australia.	Chile.	Uruguay.	Others.
	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.
1909	43.3	31.5	20.7	3.1	1.4	—
1910	40.0	27.0	29.0	2.3	1.7	—
1911	38.0	34.2	24.8	1.7	1.3	—
1912	44.6	32.7	20.1	1.6	1.0	—
1913	42.3	19.4	32.0	3.1	3.2	—
Av., 1909-13	41.6	28.8	25.6	2.3	1.7	—
1925	46.8	34.4	9.8	4.6	2.2	2.2
1926	50.2	23.8	14.1	4.9	6.0	1.0
1927	49.5	27.9	11.3	5.0	5.8	0.5
1928	49.7	26.9	9.7	6.3	7.2	0.2
1929	48.8	27.4	10.5	5.9	6.5	0.9
Av., 1925-9	49.0	28.1	11.1	5.3	5.5	1.0

In the 5 years 1925-9, these 3 countries supplied, on the average, 49 per cent., 28 per cent. and 11 per cent., respectively, of the annual imports of mutton and lamb. New Zealand imports have increased considerably both in actual quantity and relative importance since before the War, having constituted only 42 per cent. of the total in the 5 years 1909-13. Argentine supplies amount to about the same proportion as before the War, but Australian supplies, which fluctuate widely from year to year, have decreased considerably in importance since pre-War days, when they formed about 26 per cent. of the total. Of recent years, Uruguay and Chile have assumed a position of importance, supplies having increased in the former case from 1.7 per cent. of the total before the War to 5.5 per cent. in the period 1925-9, and in the latter case from 2.3 per cent. to 5.3 per cent. In the years 1925-9, 60 per cent. of the annual average imports came from British countries and 40 per cent. from foreign countries.

The following figures show the quantities and proportions of frozen lamb and mutton carcasses, respectively, imported from 1923, the last year in which mutton imports exceeded those of lamb, to 1929. The quantities of mutton have declined practically continuously while, at any rate since 1924, those of lamb have largely increased. As a result, whereas in 1923 the mutton imports slightly exceeded those of lamb, in 1929 lamb accounted for almost two-thirds of the imports.

Year.	Lamb.		Mutton.		Total.
	Cwt.	Per cent.	Cwt.	Per cent.	Cwt.
1923	2,825,667	49.1	2,925,688	50.9	5,751,355
1924	2,497,047	50.2	2,478,619	49.8	4,975,666
1925	2,828,490	52.9	2,521,704	47.1	5,350,194
1926	2,768,872	51.9	2,565,302	48.1	5,334,174
1927	3,087,736	56.0	2,421,281	44.0	5,509,017
1928	3,267,998	58.1	2,353,769	41.9	5,621,767
1929	3,544,161	62.9	2,086,747	37.1	5,630,908

A comparison of the average annual quantity and value of frozen mutton and lamb, respectively, received from the principal exporting countries for the period 1925-9 is given below. It will be seen that, in the supplies from New Zealand and Australia, lamb predominates, being about 63 per cent. of the total quantity in the former case, and 73 per cent. in the latter. Argentine supplies have been about equally divided between mutton and lamb. Since 1928, however, imports of lamb from Argentina have considerably exceeded those of mutton.

Country.	Mutton.			Lamb.		
	Quantity.	Per-centage of Total.	Value.	Quantity.	Per-centage of Total.	Value.
	Cwt.		£	Cwt.		£
New Zealand	1,005,175	37.3	2,840,426	1,684,982	62.7	7,396,224
Argentina ...	779,097	50.6	2,023,501	761,745	49.4	2,791,111
Australia ...	166,464	27.3	396,015	442,048	72.7	1,747,639
Uruguay ...	203,700	66.8	513,343	101,159	33.2	329,728
Chile ...	196,617	67.1	462,084	96,258	32.9	368,118
Other countries	38,707	74.7	105,956	13,101	25.3	50,962

Imports of lamb increased during the period 1925-9 from practically every exporting country. Thus, imports of New Zealand lamb increased by about 400,000 cwt. in the 5 years; Uruguay sent 11,532 cwt. of lamb in 1925 and 172,316 cwt. in 1929, while supplies from Chile more than doubled during the period.

Fluctuations in the supplies of mutton from various countries from year to year have been considerable. Thus, supplies of New Zealand mutton showed a big drop in 1923, those from Australia in the following year and those from Argentina in 1926. These drops were followed by a gradual rise in the case of New Zealand and Australian supplies and a sharper rise in the case of

Argentine supplies. Recently, except in the case of Uruguay and Chile, which have considerably increased their sendings of mutton, the tendency has been downward in all countries.

Imports of frozen mutton and lamb, as a whole, as is shown in Table VIII, vary considerably throughout the year, being highest during the period March to August—the short period for home-killed supplies. The monthly fluctuations are, however, by no means constant from year to year.

Monthly figures showing the sources of mutton and lamb imports respectively are not available. It may, however, be said that, while imports of mutton are fairly regular throughout the year, those of lamb show seasonal variations which reflect the maximum killing months in the various countries of origin. In general, the La Plata (Argentina) lamb-killing season starts in October, supplies being first forwarded to this country in November and heaviest during March and April; Patagonian lambs come in later. The Australian lamb season lasts from November until May. The New Zealand season starts about Christmas and is heaviest from March to July, though supplies are sent practically all the year round.

(c) *Fresh Mutton and Lamb*.—Previous to 1926, there was a considerable import trade in fresh mutton and lamb. By far the most important supply came from the Netherlands and was pitched, in the main, on Smithfield Market, London; about 122,000 cwt. were sent from that country in 1925, the average annual supply in the 5 years 1921–5 being 112,000 cwt. Approximately seven-eighths of the supplies consisted of mutton. These carcasses were shipped through Harwich, suspended in covered crates, and travelled well.

When the embargo was placed on Continental supplies of fresh meat in 1926, the trade in imported fresh mutton and lamb was practically stopped. Since the embargo, Ireland has attempted to develop a carcass trade with Smithfield, employing to some extent the crate system of consignment. Imports of mutton from the Irish Free State rose from 640 cwt. in 1924 to 1,056 cwt. in 1929, those of lamb from 197 cwt. to 21,961 cwt. It seems doubtful, however, if this trade is likely to compete successfully with the consignment of live animals owing, it is alleged, to its greater cost.

(d) *Tinned or Canned Mutton and Lamb*.—Imports of tinned or canned mutton and lamb are relatively of little importance, amounting on the average during the years 1926–30 to some 38,000 cwt. per annum. All those countries that export mutton and lamb to the United Kingdom also send the canned article in relatively small quantities. The United States is exceptional in that, in recent years, practically all the mutton exported to this country has arrived canned.

(e) *Offals*.—The annual quantity and value of mutton and lamb edible offals imported into the United Kingdom from 1925 to 1929 are given in Table IX. The average annual quantity for the period was approximately 76,000 cwt., valued at £249,000. The trade in imported offals is discussed in detail in Chapter XVI.

(f) *Total Value of Imports*.—From Table VII it may be calculated that the value of the total annual imports of mutton and lamb and mutton and lamb products for the years 1926–30 averaged about £19,134,000. Of this, about 97 per cent. represented frozen mutton and lamb.

(v) Total Supplies.

Table X shows the estimated total supplies of mutton and lamb, both home produced and imported*, in Great Britain each year from 1900–1 to 1913–4 and from 1923–4 to 1929–30.

Imports, including both live sheep and carcasses, showed an almost continuous increase from 1904–5 to the outbreak of the War. They dropped during the War and had not reached the pre-War level by 1923–4. Since that date, however, the pre-War figure has been exceeded and the import of 331,000 tons in 1929–30 is the highest figure so far attained.

Home supplies for the first 8 years of the present century exceeded imports, amounting in 1900 to 54·6 per cent. of the total and in 1907–8 to 50·4 per cent. A gradual decline was taking place, however, concurrently with the increase in imports, and though from 1908–12 there was a revival in home production, it was only temporary, and in 1913–4 only 44·6 per cent. of total supplies were of home origin.

By 1923–4, home production had fallen well below imports—it was only 41·3 per cent. of the total in that year—but up to 1927–8, output in this country increased more rapidly than imports and by the latter year it amounted to 47·1 per cent. of the total. Home production, however, has since decreased and, with imports meanwhile increasing, was in 1929–30 again only 41·9 per cent. of the total available supplies.

The total supplies of mutton and lamb in Great Britain in 1929–30 amounted to 570,000 tons, valued at over £45½ million. Of this, 239,000 tons, valued at about £23½ million, were home produced, 331,000 tons, valued at about £22 million, were imported.

The total supplies available for consumption have increased since 1923–4 relatively to the population. In 1929–30, the annual consumption was 28½ lb. per head of population, as against 23½ lb. in 1923–4. This, however, is a little less than in the 5 years just preceding the War, when it averaged 30½ lb.

* Fat sheep and lambs landed in Great Britain from Northern Ireland and the Irish Free State and slaughtered in this country are regarded as imports.

CHAPTER III.—DEMAND.

(i) The Demand for Store Sheep.

The seasonality of marketing of store sheep in livestock markets, shown in Diagram A, illustrates the known demand. In arable areas, the demand for forward store lambs starts at the end of June or beginning of July; the demand for store lambs in general, however, is strongest from August to October. The earlier lambs are often bought to feed off specially sown crops or seeds aftermath, and the demand will thus often vary according to whether the grass season has been favourable or not. The main crop of store lambs sold from August onwards are required to fatten, partly on aftermath but especially on roots, in other words, for "hoggetting" the land in preparation for the following cereal crop. In many parts, store lambs are also in request towards the end of the summer for wintering with a view to being resold in the following spring as wintered store hoggets or tegs. Some demand for wintered hoggets or tegs exists in arable areas during the latter part of the winter. This is especially the case when the season has been favourable and the root crop abundant, with the result that hoggets purchased in the autumn can be fattened and sold somewhat earlier than usual. The main demand for wintered hoggets, however, is for the purpose of stocking summer grass; it commences usually towards the end of March and is at its height during April and May.

The demand for breeding ewes varies according to the purpose and the type of farm for which they are intended. Dorset Horn ewes are in strong request for breeding specially early lambs, and early sales of ewes of this breed are held in Dorset in May. In the majority of cases, however, ewes are bought in the summer and early autumn to lamb at normal times. Ewes intended for arable farms are bought to lamb a month or two earlier than those bought for grass farms. Generally, young ewes and ewe lambs are in greater demand than "off-going" or draft ewes, but this depends to a considerable extent on the district and the purpose for which the flocks are kept. In the case of standing flocks, where a certain proportion of ewes are regularly drafted each year, they are replaced by ewe lambs and young ewes, which, though generally home-bred, are in some cases bought in. In the case of "flying flocks," which are entirely replaced every year, draft ewes that have had three or four crops of lambs or even more are required. "Semi-flying flocks" are also fairly common, in which only about half or a third of the ewes are sold off annually; the draft ewes are in this case replaced by young draft ewes off other farms.

(ii) The Demand for Mutton and Lamb.

(a) *General*.—The quantity of mutton and lamb consumed annually in Great Britain—28½ lb. per head of population—is

considerably less than half that of beef—which in 1928 was estimated at about 70 lb. per head *—and only about two-thirds that of pig-meat—which in 1924 was put at about 44 lb. per head.† The following Table, however, indicates that that it is relatively high compared with other countries :—

*Consumption per Head of Mutton and Lamb in Various Countries.**

Country.				Pre-War.	1928.
				lb.	lb.
Great Britain	...	...	...	29.3	28.0
France	...	...	...	9.5	6.8
Canada	...	...	...	9.1	6.5
U.S.A.	...	...	...	7.3	5.8
Germany	...	...	...	2.3	1.6
Belgium	...	...	...	2.0	1.3†

* Based on "Foreign Crops and Markets," Vol. XIX, No. 3, page 96. U.S. Dept. of Agriculture, July 15th, 1929.

† 1927.

These figures also show that, in contrast to the other countries referred to, where consumption has fallen by well over 20 per cent. in each case, there has been little change in the consumption of mutton and lamb in this country since before the War.

During the present century, there has been little change in the relative quantities of mutton and lamb as compared with beef consumed in Great Britain.‡

The better grades of home-killed mutton and lamb sell at higher wholesale prices than comparable grades of beef. Lamb is, in fact, to some extent a luxury article. Demand is therefore more elastic than in the case of beef. There are, however, considerable variations in the quality of home-killed mutton and lamb, reflecting the wide differences in type and finish of the raw material. As a result, the nature of demand also varies considerably.

(b) *Day-to-day Variations.*—Consumer-demand for mutton, like that for beef, increases as the week progresses. By Saturday night, a retailer in the poorer class districts has disposed of all his purchases for the current week, except in the few cases where Sunday trading is carried on; in the higher-class shops, owing to the extended use of refrigerators, retailers often carry over a few carcasses for Monday's and Tuesday's trade. The main demand in wholesale markets arises, therefore, early and in the middle of the week. The busiest day at Smithfield Market, London, is Monday; Tuesday is usually rather a slack day; supplies are again fairly abundant on Wednesday and Thursday; there is

* See Economic Series No. 20, page 15.

† " " " " No. 12, page 1.

‡ Cf. Table X and Economic Series No. 20, Table IX.

less demand on Friday, while Saturday is an off-day. Sheep intended for Monday's market at Smithfield are bought any day during the previous week, slaughtered on Saturday morning and consigned to London by rail to reach Smithfield early on Monday morning. If consigned to London alive, they are sent to Islington on Thursday or Friday for slaughter on Saturday or later according to the market demand.

Reflected back to the farmer, consumer-demand leads to most of the business in livestock markets being transacted early in the week,* sheep bought at such markets being slaughtered, after resting, and retailed within a few days of slaughtering.

(c) *Seasonal Variations.*—Mutton and lamb, in contrast to beef and pork, are considered as "light" meats, and the demand for them, particularly for lamb, is greater during the warm months of the year than during the cold months.

Demand, however, is very sensitive to price and during the spring it is the imported rather than the home-killed article that is bought. As the price of home-killed lamb gradually drops in May and as green peas and other fresh vegetables are in greater supply, demand increases, reaching its maximum from June to September, during which months lamb supplies reach their peak. The exodus from big cities during August, however, causes the demand to slacken in such centres at that time.

At certain special seasons, the demand for lamb is very marked, notably at Easter, when prices are above normal, and again at Whitsuntide, when lamb is in much larger supply. These occasions are well known to flockmasters, who in many cases make special efforts to meet the demand.

From October onwards, lamb decreases in supply and mutton gradually takes its place, while pork, beef, game, etc., are in request; by December, mutton has practically entirely replaced home-killed lamb, which from this month until March is a luxury article produced only in small quantities. The demand for home-killed mutton continues firm until the new lamb season opens at Easter.

The demand for mutton is fairly steady throughout the year, but is strongest, particularly in the case of handy weights, during the first 4 months. By about the middle or end of May—depending on the season—the demand for heavy mutton in all except the cheaper class trades practically ceases owing to the rapidly increasing supplies of lamb. Handy weight mutton, however, continues in request throughout the summer at somewhat reduced prices.

The demand for home-killed as against imported mutton and lamb is largely determined by their relative prices, though it also varies somewhat according to the time of year. The winter,

* See Reports on Markets and Fairs in England and Wales. Economic Series Nos. 13, 14, 19, 23 and 26.

when imported lamb, which practically all comes from the Southern Hemisphere, starts to reach this country, is a period of short supplies of home-killed lamb. Those traders who have a regular clientele for lamb or small mutton all the year round have therefore no alternative during the winter and early spring but to supply either small home-killed mutton, when obtainable, or the imported article.

The demand for cheap descriptions of home-killed mutton, such as ewe mutton, slackens during hot weather, even in districts where there is otherwise a steady sale for it, and imported lamb is preferred, there being little difference between the average wholesale prices of home-killed ewe mutton and frozen Argentine lamb. (See Chapter IV).

(d) *Variations according to Type.*—While wide local variations in the type of mutton in demand can still be observed, it is becoming more and more apparent that the influence of certain brands of imported mutton and lamb over a considerable number of years has modified consumer-demand in practically every part of the country.

Generally, so far as home produce is concerned, the various consuming districts depend on local supplies, and demand tends to favour the type of sheep predominating in the locality. Thus, Masham sheep are liked in Lancashire and Yorkshire, and Welsh sheep and lambs find a ready market in all parts of Wales and in consuming areas such as Birmingham and Manchester, which are no great distance away. The Exmoor Horn wether is popular in its own district of Devon and West Somerset, but may meet a poor trade if sent to London for sale. Small Scotch Blackface lambs, on the other hand, find a far readier sale in London than in the districts where they are mainly bred.

It is a well-known fact that butchers in most districts show a preference for hornless sheep, horns being sometimes said in the trade to indicate coarseness. This statement, if it is true at all, however, does not apply to certain breeds, such as the various Blackface breeds, and in any case relates to mutton and not to lamb.

Butchers in some parts, notably in the south-western counties, show a distinct preference for sheep with dark faces and legs: this is presumably based on the supposition that in a district where the dams are predominantly white-faced—as, for instance, in the Taunton Vale—a dark-faced sheep has been got by a ram of a Down breed and is therefore of extra quality. The high quality of carcasses of Down breeds and Down crosses explains the fact that carcasses showing signs of Down blood often have the feet and, in the case of mutton carcasses, a small piece of wool, left on to show the colour.

(e) *Variations According to Carcase Weight.*—In the last 30 years or so, the demand for a small joint has been in evidence

in the case of mutton and lamb as for all other kinds of meat. Since the War, this tendency has become much more marked. Exporting countries such as New Zealand, when studying the requirements of the English market, early noted and catered for the change which was taking place in demand. In fact, certain brands of New Zealand lamb which, before the War, had established a firm hold on the English market, largely helped to popularize the small joint and in this way accelerated the change. The limiting factor in the sale of the imported article is that, being frozen, it lacks the full flavour of home-killed, but, as regards carcase weight and finish, that sent from New Zealand, for instance, leaves little to be desired.

In general, the demand in England and Wales is for a small joint weighing from, say, $3\frac{1}{2}$ to 5 or 6 lb. In the case of hogget and shearling mutton, heavy weights can usually be bought at from 1d. to 3d. a lb. less than handy weights, while home-killed ewe mutton sells at about $\frac{3}{4}$ d. per lb. less than imported lamb (see page 49). Ewe mutton thus forms an important source of supply in some areas where comparatively cheap fresh mutton is required. This class of mutton, however, is tending to give place to the small imported kinds, which retailers find cut more nearly the size of joint usually required.

In the Kosher trade, where forequarters only are used, the demand is mainly for heavy mutton, which should be well finished. In general, heavy mutton also finds a sale for club, hotel and restaurant work, ewe mutton being frequently supplied for the staff. Hotels and restaurants mainly buy "chines" and "ends," the latter consisting of 10 bones, 6 being used for cutlets and the other 4 for stewing.

By far the most important local variations in demand are in respect of carcase weight. The ideal weight for a well-finished lamb carcase in London is approximately 32 lb.; for a mutton carcase not above 64 lb. In South Wales—at Cardiff, for instance—well-finished lamb carcasses of about the same weight or slightly lighter, and mutton carcasses not above 44 lb. are required for the best-class trade, although at Swansea mutton carcasses weighing 50 lb. are considered suitable.

In the South Coast trade, and generally for the best-class seaside trade, the demand is again for small carcasses, though large carcasses of mutton find a fairly good outlet in restaurants and boarding houses, particularly during the holiday season. For the family trade on the South Coast, a lamb carcase weighing 35–40 lb. is most in favour, and for the hotel trade one weighing about 45 lb.; hoggets are not required much above 60 lb.

In Manchester and the cotton mill country, where carcasses on the lean side are far more in request than well-finished carcasses and where the demand is for joints in the neighbourhood of $2\frac{1}{2}$ –4 lb., lamb carcasses are required that weigh from 28 to 40 lb.; there

is also a ready sale for the 24-lb. Scotch Blackface lamb which, when the price is fairly low, is stocked in preference to the imported article. The demand for ewe mutton is practically restricted to restaurants, etc. In the imported classes, preference is shown for the 28-lb. lamb.

Flockmasters in parts of North Wales, from which considerable supplies are sent to seaside resorts as well as to the Manchester area, may vary their breeding practice with a view to obtaining carcasses of weights suited to the particular trade supplied. Thus, if cross-bred fat lambs are required for seaside resorts, a South Down ram is usually used. If, on the other hand, the Manchester trade is being catered for, a Wiltshire or Border Leicester ram that will get bigger lambs, may be preferred.

Much of the mutton that is fed on the Wolds in the East Riding of Yorkshire and is on the heavy side finds a sale in Hull, Bradford, Leeds, Sheffield, Wakefield and neighbouring towns. There is also a ready sale in this area, particularly in Leeds, for large ewe-mutton carcasses; fresh meat is definitely preferred to frozen and this type of mutton is of the required cheapness. Unlike Lancashire, fat is not objected to, although, in the case of excessively fat carcasses, it is usually pared off either by the wholesaler where the carcass is broken up before sale to the retailer, or by the retailer before sale to the public.

In some of the Midland counties, notably Nottingham, Leicester, Derby and parts of Northampton, there is still a good demand for heavy carcasses of mutton weighing from 70 to 100 lb. In many towns which are residential rather than industrial—e.g. Lincoln, Oxford and Gloucester—rather large carcasses of mutton are also still fairly saleable. Generally, consumers in rural areas will accept bigger weights than in most urban areas.

(f) *Variations According to Finish.*—It may be said that excessive fat is universally objected to and is therefore usually removed before sale and sold separately to fat and tallow dealers. There are, however, local differences in demand in this respect. Reference has already been made to the marked difference in demand, as regards fat, between Lancashire and the West Riding of Yorkshire. Elsewhere, handy-weight, well-finished mutton and lamb are most in demand in the higher-class trade, while medium and plain lamb and mutton find their best markets in lower-class districts where cheap fresh meat is required.

(g) *Suitability of Supplies to Market Requirements.*—In the trade in home-killed beef,* a large proportion of the supplies passing to wholesalers in the large towns do not meet the requirements of the better-class trade. There are too many heavy cattle, too many half-finished beasts and too many rough sorts. Only to a certain extent is this the case with mutton and lamb. A large

* See Economic Series No. 20, p. 30.

proportion of the supplies of mutton and lamb in this country are of a very high standard of excellence, in spite of the fact that a good deal of the mutton, including some of the best of it, is virtually a by-product of arable farming. On the other hand, some of the highest quality mutton is much too heavy and too fat for present-day needs, and in most districts there is a definite scarcity of small hogget mutton from January to April.

Supplies of mutton and lamb can be divided, as regards their suitability to market requirements, into two categories. The long-woolled sheep, which are descended from breeds that were originally valued mainly for their heavy clip, reach comparatively heavy weights as hoggets or shearlings, and are inclined to develop too much fat and to be somewhat wasteful when cut up. The Down and the Mountain or Moorland breeds produce eminently suitable carcasses, though in the case of some of the Down breeds the hoggets are marketed on the heavy side. On the whole, the crosses between these several groups produce suitable carcasses, especially in the case of lamb, though the use of the heavy breeds of long-woolled and Down type in crossing tends to produce hoggets and shearlings that are on the heavy side for present-day requirements.

Inferior sorts of sheep and lambs are characterized by certain easily recognised defects, chiefly in conformation. The loin and legs are the most highly priced part of the carcass (see Chapter IV); a big and wasteful target—i.e., heavy forequarters with long ribs—is, therefore, a defect. This is a common, though by no means universal, fault in ewes. Big targets and relatively coarse meat, even in the young sheep, are also somewhat characteristic of certain breeds. The degree of development of the loin and legs varies with individual sheep, though some breeds and crosses may be better than others in these respects. A long shank with a moderate degree of fleshing is obviously less economical than a short shank with heavy fleshing carried well down towards the hock. The former is, to some extent, a breed characteristic, largely produced and perpetuated by the conditions under which the sheep are bred and reared. It is a defect in conformation and need in no way detract from the quality of the meat, some of the finest lamb and mutton being, in fact, derived from animals that show a little more shank than is desirable.

As regards finish, the supplies of home-killed lamb are good but somewhat uneven. There is rather too high a proportion of unfinished carcasses, though in this respect much depends on the season and the locality where the lambs are fed. This lack of finish is often due to economic causes or to the exigencies of the farming system rather than to lack of skill or knowledge on the part of the feeder. For instance, in the Holsworthy district of Devonshire, which is pre-eminently a breeding area, a large proportion of the lambs in some years, especially during the earlier

part of the lamb season, are marketed in little better than store condition, and are bought in many cases by dealer-slaughtermen, often at a low price, to kill and consign away. The lack of finish in such carcasses is due partly to some of the land being unsuitable for fattening sheep without a considerable amount of artificial feed, which would be costly and possibly unremunerative, and partly to lack of sufficient credit on the part of producers to enable them to hold their lambs until they reach a marketable age. It is, however, questionable if producers in this locality would materially benefit by holding their lambs over for the annual store sales in August and September, while in the case of "flying flocks," the farmer, by May, usually requires the land occupied by his ewes and lambs for other purposes and is therefore anxious to cash them whether they are ready for killing or not.

A proportion of home-killed sheep, on the other hand, still carry excessive fat. This also is often due to economic causes rather than to lack of knowledge of what the consumer requires. Thus, on upland arable farms where flocks are largely kept to consume the root crop, a heavy type of sheep may be preferred to a light type for consolidating the soil. Moreover, in many cases, in order to finish the root crop, sheep are retained for weeks or even months after they have reached the weight and degree of finish desired by the butcher. On the other hand, some flockmasters cash their sheep as soon as they are fat and buy stores to replace them. This, however, may present considerable difficulty, especially during January and February, as store sheep at this time of year are not easy to find and command a high price. It is, moreover, essential, if heavy mortality is to be avoided, that store sheep bought to go on to swedes should have been for at least a short time on rape, turnips or some other roots.

There are, however, certain districts where the demand for stores to replace sheep sold off roots early in the season is catered for by breeders. Thus, in Scotland, flockmasters may winter their lambs and start selling them as stores soon after the New Year. Many of these are purchased by East Lothian farmers to replace the sheep already sold fat and to finish off their swedes. Where this replacement of fat sheep off roots is practised and the sheep are drawn out of the flock as soon as they are fat, as in most parts of East Anglia, marketing is spread over a fairly long period and the trade is able to depend, throughout the winter, on a run of carcasses on the whole well suited to its needs, though somewhat heavy towards the end of the root season.

The sheep that are fattened on the Romney Marshes and in the orchards of Kent have shown considerable improvement in recent years, probably due to a more extended use of South Down rams for crossing on the native Kent or Romney marsh ewes. The heavier sheep, however, that come fat off the marshes about September as shearlings, or in many cases as 2-shear sheep weighing

from 9 to 12 stone live weight, are unsuited to present-day demand. Their carcasses are inclined to be coarse and too heavy in the fore-quarters and are considerably overweight.

In general, flockmasters in this country appear to be aware of the trend of public taste and many are changing their methods and their breeds to meet the changing conditions. Others, however, are not doing so in some cases because they prefer to keep a breed of sheep that they know by experience suits the conditions of their farms, in others because they are satisfied with the prices they receive and hold the view that at any rate some consuming areas will continue to require big mutton. It is true that there are channels of disposal for every type of mutton and lamb in this country at a price. The second quality home-killed product—most ewe-meat for example—suits certain classes of trade owing to the fact that it is fresh and cheap. The lower grades, however, find their principal market in the big towns and it is here that competition with frozen mutton and lamb is keenest. Thus, whereas the high-grade home-killed product which suits the best class trade sells at a differential price, misfits, whether overweight hoggets or plain lambs, strike a market where the price paid is directly related to the prices of imported descriptions. The suitability of the imported article to market requirements in respect of weight and finish and the ease with which the butcher can handle it give it an important advantage over those types of home-killed mutton and lamb with which it mainly competes.

CHAPTER IV.—PRICES.

(i) Store Sheep.

(a) *Trend*.—Diagram D, page 42, shows, for the period 1905–30, the average annual prices per head of first and second quality store sheep and lambs, other than ewes and shearling wethers, in representative markets in England and Wales.

The prices of store sheep over a long period have moved more or less consistently with those of fat sheep which are shown in the same Diagram. Prices remained fairly level until the War with the exception of the period 1909–12, when they fell somewhat. From 1914 onwards, they rose rapidly, reaching a peak in 1920, when the high average of 94s. 4d. per head was attained. This was followed by a sharp fall, the average price in 1922 being 67s. 6d. Prices recovered somewhat in the three following years, to fall again to 51s. 11d. in 1927. There has been some improvement since 1927, the 1930 average of 56s. 2d. being 56 per cent. above the average prices for the years 1911–3.

WEEKLY SUPPLIES OF MUTTON AND LAMB (TOTAL, HOME KILLED & IMPORTED) ON SMITHFIELD MARKET, LONDON FOR THE YEARS 1928 TO 1930.

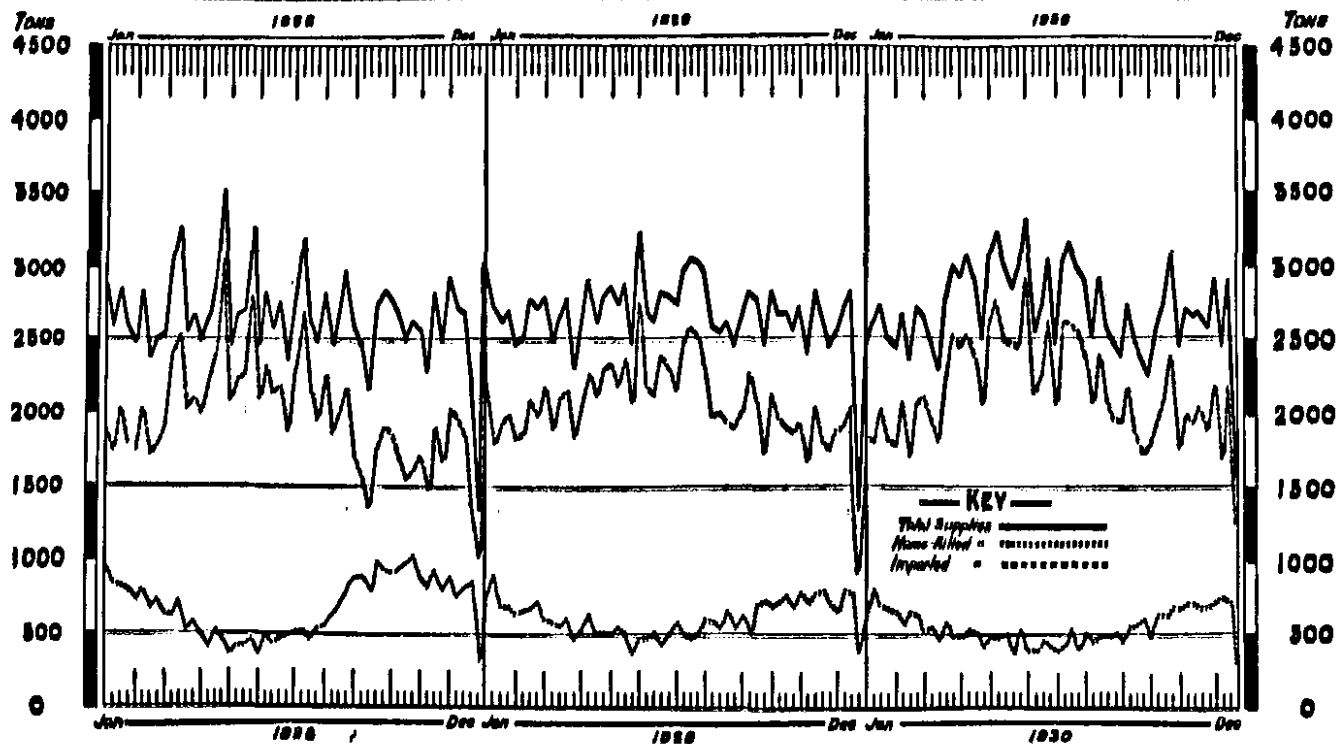


DIAGRAM C

FAT SHEEP	STORE SHEEP
PRICE PER LB	SHILLINGS PER HEAD
25	100

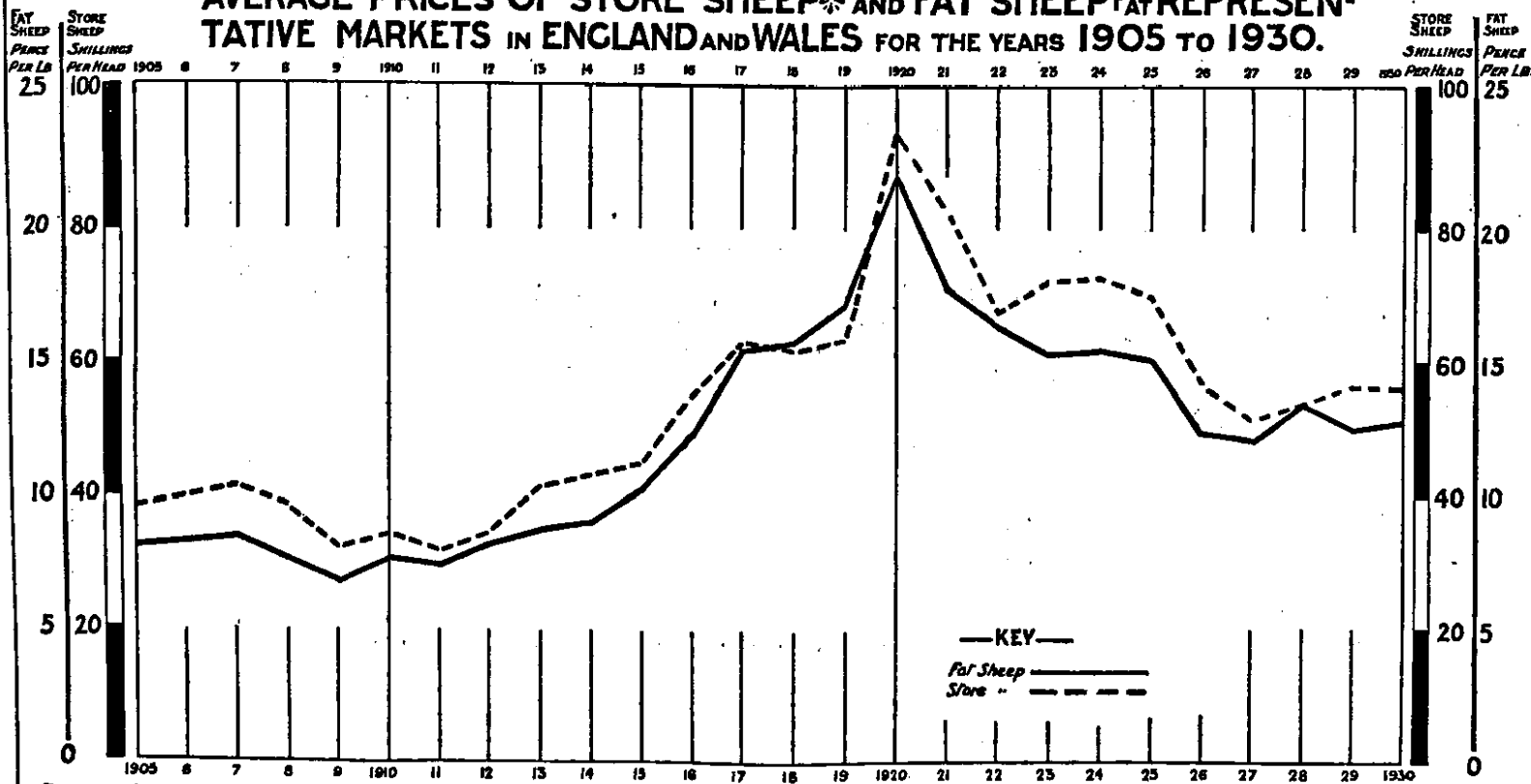


DIAGRAM D.

*Average of 1st & 2nd Quality, including EWES and SWERLING WETHERS
 " " " " " all classes.

(b) *Seasonal and Local Variations.*—Average monthly prices per head of 1st and 2nd quality store sheep, excluding ewes and shearling wethers, in a number of representative markets in England and Wales in the 7-year period 1924–30 are shown in Diagram A (page 23). It should be borne in mind that the prices include those both of hogs and hoggets and of lambs—i.e., of all sheep from the time of weaning until shearing. The price curve is therefore influenced by the relative proportions of lambs and adult sheep marketed at different seasons. The low level of prices during August, September and October, for instance, is probably due mainly to the fact that at that season the majority of stores are store lambs, whereas during the first half of the year they are mainly wintered hoggets and tegs. It will be observed that after January, when comparatively few store sheep are marketed, there is a steady rise in price until May; during this period, particularly during April and May, sheep that have been wintered change hands. The rise in price reflects the increase in average age and cost of store sheep as winter advances. After May, prices fall to a much lower level, reaching a low point in August, when the sale of the current year's crop of lambs is in full swing. This low level continues until October, by which time most of the store lambs have been disposed of. The price then rises again to the end of the year.

Prices, however, show considerable fluctuations from year to year and from district to district, according to weather conditions; for instance, in East Anglia, a dry summer, with consequently a poor growth of seeds aftermath, will adversely affect the price of store lambs sold in the early part of the summer; a wet summer will have the opposite effect. A dry summer again, with a poor root crop as a result, will reduce the winter feeding capacity of many farms, particularly in upland districts, and so depress the price of store lambs sold in August and September for hoggetting on roots.

Apart from variations in prices due to local differences in the weather, local variations in price occur according to the distance of the point of sale from a feeding area, since the buyer naturally allows for the cost of carriage in determining the price he is prepared to pay.

(ii) Fat Sheep, Mutton and Lamb.

(a) *General Trend.*—Diagram D shows the trend of average prices of 1st and 2nd quality fat sheep at representative markets in England and Wales during the period 1905–30. Mutton prices naturally follow closely those of fat sheep. From 1905–9, there was a slight downward tendency, followed by an upward trend from 1911–3 which became pronounced during the War and reached a peak in 1920. In that year, the average price of fat sheep (all classes) was 1s. 10d. per lb. estimated dead weight. A sharp fall in prices took place during 1921 and 1922, becoming less

acute during 1923 and 1924, and again more pronounced from 1925-7. In the latter year, the average price per lb. estimated dead weight of fat sheep reached the low level of $12\frac{1}{2}d.$ while that of English mutton reached $9\frac{1}{2}d.$ per lb. and that of New Zealand mutton $6d.$ per lb. The drop in prices was partly, but not entirely, a reflection of the general fall in commodity prices which was going on during that period. In part, it appears to have been due to the increasing supplies of mutton and lamb on the English market referred to in Chapter II, page 31. Moreover, during the latter part of the period, the so-called "meat war"—the campaign of price-cutting carried on by the principal firms importing South American beef—undoubtedly accentuated the downward tendency. Since 1927, concurrently with a decline in home-killed supplies, some recovery has been made in English prices, fat sheep in 1930 averaging $12\frac{1}{2}d.$ per lb. and English mutton $11\frac{1}{2}d.$ per lb. Supplies of imported mutton, on the other hand, have increased since 1927 and prices have slightly fallen.

Sheep prices since the War have compared favourably with general agricultural prices. The price of fat sheep during 1930 was 60 per cent. above the average for the three years 1911-3, while agricultural prices generally were only 34 per cent. and fat cattle prices only 33 per cent. above pre-War.

(b) *Seasonal Variations.*—Diagram E shows the average monthly wholesale prices at certain representative markets in England and Wales during the period 1927-30* of 1st and 2nd quality fat sheep and lambs, and Diagram F those of 1st quality† home-killed mutton and lamb and 1st quality New Zealand mutton and lamb, respectively, on representative wholesale meat markets during 1924-30. Seasonal variations in the prices of fat sheep and lambs and home-killed mutton and lamb are very similar, with the exception of a slight lag in the case of carcass prices. The prices of imported mutton and lamb, on the whole, show a remarkable uniformity throughout the year. Thus, the maximum monthly variation from the average annual price of 1st quality New Zealand lamb, on the average for the period 1924-30, amounted to less than $1d.$ per lb.

Prices of home-killed mutton and lamb are at their lowest from September to November, rising fairly rapidly throughout the winter owing to the short supply, particularly of ewes and lambs. The upward trend becomes pronounced, especially for lamb, in March and April, when the relatively small number of high quality Down and cross-bred lambs, produced mainly in the southern counties, meet a strong demand. The peak in price is reached

* Prices of fat sheep and fat lambs separately are not available previous to 1927.

† 2nd qualities are excluded from this Diagram owing to the fact that prices of 2nd quality New Zealand mutton and lamb are not available for the whole period.

**AVERAGE MONTHLY PRICES OF FAT SHEEP (AVERAGE OF 1ST AND 2ND QUALITY)
AND OF FAT LAMBS (AVERAGE OF 1ST AND 2ND QUALITY) AT REPRESENTATIVE
MARKETS IN ENGLAND AND WALES IN THE YEARS 1927 TO 1930.**

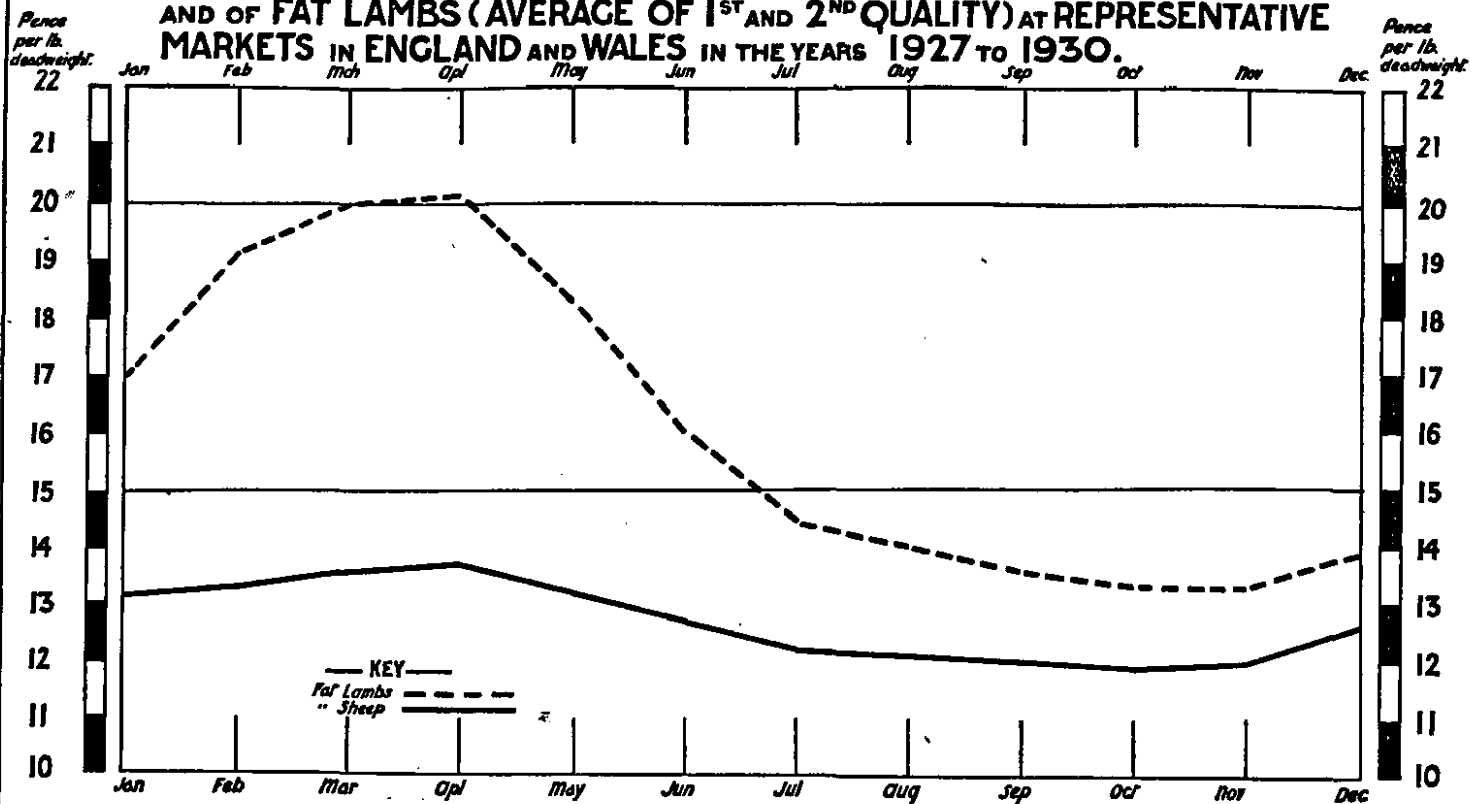


DIAGRAM E

AVERAGE MONTHLY WHOLESALE PRICES OF FIRST QUALITY HOME KILLED AND NEW ZEALAND MUTTON AND LAMB ON REPRESENTATIVE MARKETS IN ENGLAND AND WALES IN THE YEARS 1924-30.

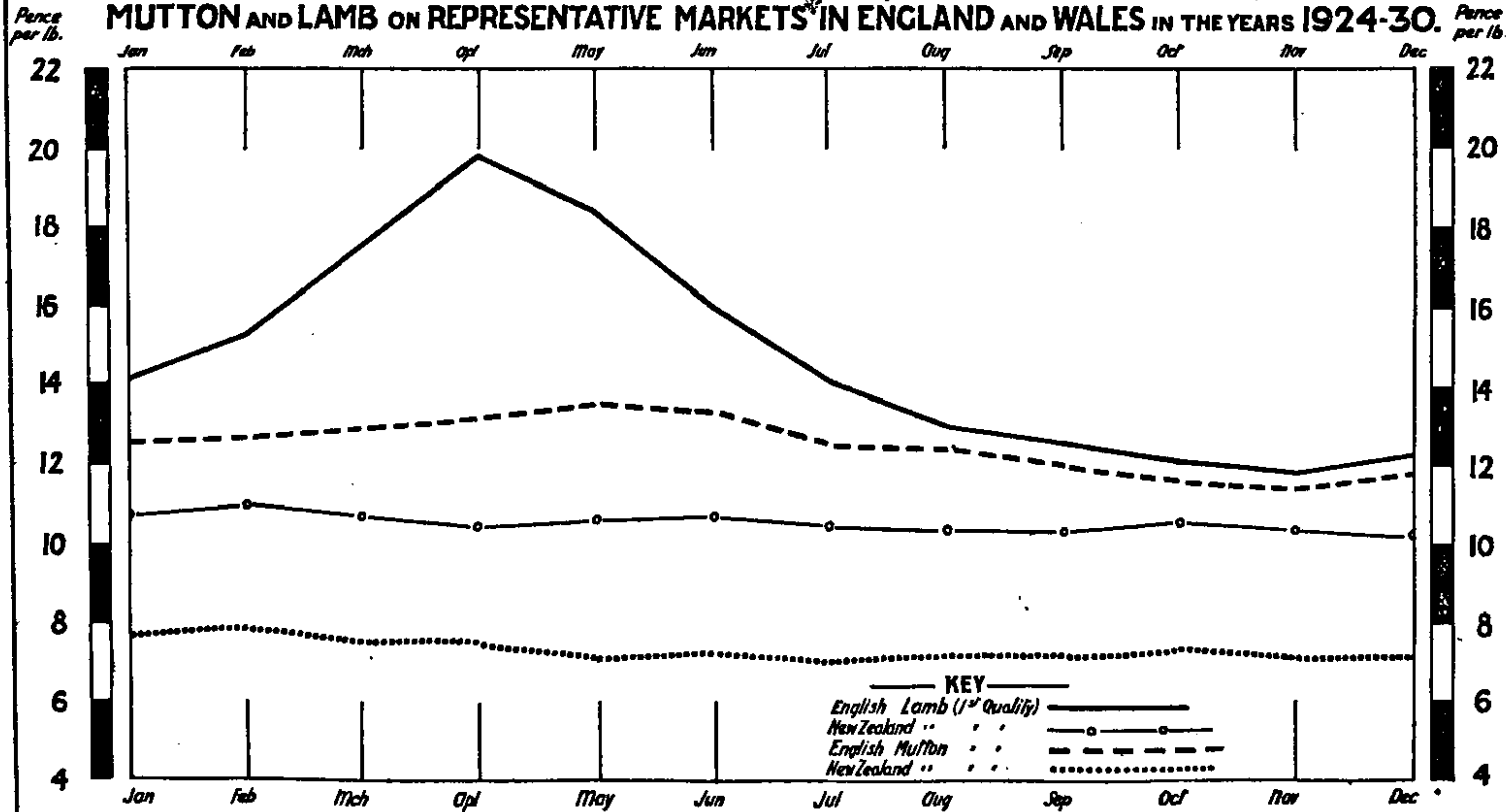


DIAGRAM F

* The Markets included are London, Birmingham, Leeds & Manchester.

generally in the first week in May in the case of mutton and at Easter in the case of lamb. From May onwards, the supply increases, milk-fed lambs being marketed largely in May and June, followed by fed lambs and fat ewes off grassland later in the summer; in consequence, prices of both mutton and lamb drop from May to November. In the case of lamb, the demand is sufficiently keen to keep prices at a comparatively high level throughout May, the demand at Whitsuntide being particularly strong. The increase of supplies of Hill lamb, particularly from Scotland in August and September, however, depresses the price of that commodity in the autumn. The drop in price of mutton during early summer is due largely to the reduced demand resulting from the large supply of lamb rather than to increased supplies of mutton. The drop in price of fat sheep is accentuated to some extent by the fact that from about the end of May or beginning of June they are reported clipped.

A peculiarity of the lamb trade is that the Dorset Horn lambs produced early in the lamb season—January and February—do not sell so well as home-killed lambs marketed later in the season, partly because at that time small hogget mutton is better value for money, but also partly because the demand for home-killed lamb at this time of the year, when heavy meat is most in request, is not sufficiently keen to enable it to sell at the high prices realized later. There is, however, a ready sale for imported lamb at this period, but at a price below that of 1st quality English mutton.

Seasonal price variations are much greater for lamb than for mutton. This is due in part to the greater seasonal fluctuations in the supply of lamb, which is very scarce during the winter months and abundant during the summer, and in part to the fact that as the summer advances much of the grass-fed lamb has many of the characteristics of young mutton and thus drops in price almost to the level of mutton. If a comparison is made between the high and low points in average monthly lamb and mutton prices during the period 1924–30 (Diagram F), it will be seen that lamb varied from 19½d. to 11½d. per lb.—i.e., the maximum price was 67 per cent. above the minimum price—while in the case of mutton the maximum variation was from 13½d. to 11½d. per lb.—a margin of only 20 per cent. The average price of 1st quality home-killed lamb in April was about 6½d. per lb. above that of home-killed mutton and 9½d. above that of New Zealand lamb, whereas in November the differences in prices were only ½d. and 1½d. per lb. respectively. During the autumn, in fact, Scotch Hill supplies can often be bought at prices equal to or even below those of imported lamb.

(c) *Quality Differentials.*—Differences in price occur in fat sheep and lambs according to breed type, long-woolled breeds realising from ½d. to 1d. per lb. less than Downs and Cross-breeds.

The margins between the average annual prices of 1st and 2nd quality home-killed mutton and 1st and 2nd quality home-killed lamb during the years 1905-30, expressed as percentages of the annual average prices, are shown in Table XI. Before the War (1912-4), the margin between the annual average prices of 1st and 2nd quality home-killed mutton was only about 8 per cent. of the average price. Since the War, however, the margin has been wider, amounting to over 24 per cent. in 1927 and almost 11 per cent. in 1930. This would appear to reflect an increased preference for imported descriptions of mutton of suitable type as compared with 2nd quality home-killed.

As regards home-killed lamb, the percentage margin between the average annual prices of 1st and 2nd qualities since the War has been smaller than for mutton, no doubt owing to the fact that the range of quality and weight, and therefore of size of joint, is wider in mutton than in lamb. In the case of lamb, the margin is widest in March and April, practically coinciding with the period of highest prices, and is lowest in August and September, when prices have fallen almost to the minimum. This may be accounted for by the fact that, round about Easter, lamb commands a high price, provided it is of high quality, but there is little demand for 2nd quality sorts. When the lamb season, however, is in full swing, the demand is at its strongest and this prevents the price of 2nd quality lamb from being unduly depressed. In other words, consumers at Easter show greater discrimination than those who buy later on.

In regard to the differences in price between home-killed mutton and home-killed lamb, it may be said that despite the increased demand for lamb in recent years, the margin between the prices of mutton and lamb has tended to decline as compared with the years preceding the War, the decline being relatively greater in the case of 2nd quality than of 1st quality lamb. The margin now varies from 2d. to 3d. per lb. on the average throughout the year. It is difficult to state the causes of this decline, but it may be due to the great increase in the quantity of lamb on the market as compared with mutton.

The annual average prices of English mutton and lamb during the period 1924-30 are compared in Table XII with those of various descriptions of imported during the same period. This Table, together with Diagram F, indicates that home-killed mutton always commands a higher average price than comparable qualities of New Zealand mutton, which may be regarded as the best type of imported. Owing to fluctuations in the price of the former, as is shown by Diagram F, the margin varies with the season. Thus, during the period 1924-30, the widest margin in prices between 1st quality home-killed and New Zealand mutton, which occurred in the period from March to July when home-killed prices were at

the peak, averaged about $5\frac{1}{2}d.$ per lb. as compared with only $4\frac{1}{2}d.$ in November.

Apart from a short period from March to June, the price of 1st quality New Zealand lamb is always above that of 2nd quality home-killed mutton, in some months by more than $1d.$ per lb. This seems to indicate that consumers prefer imported lamb to 2nd quality home-killed mutton, largely because of its tenderness and small joints.

Comparing home-killed and imported lamb, Table XII shows that the prices of 1st quality home-killed lamb during the period 1924-30 have exceeded those of 1st quality New Zealand lamb by a considerable margin. Diagram F shows, however, that this margin varies widely according to the season; it is widest about April, when the home-killed supplies are scarce and the imported abundant. During the months September to November, the price of 1st quality New Zealand lamb frequently exceeds the prices of the lower qualities of home-killed. Many consumers take the home-killed article only for about four months in the year—i.e., from July to October, when it is comparatively cheap—and for the other eight months buy the imported article.

The margin in price between home-killed and New Zealand mutton and lamb is now considerably less, on the average, than before the War, no doubt on account of the material improvement in quality of the New Zealand product.

Table XII also illustrates the relative prices of the chief descriptions of imported mutton and lamb. The New Zealand article is higher in price than other imported kinds, Australian mutton and lamb being from $\frac{1}{2}d.$ to $1\frac{1}{2}d.$ per lb. below the price of New Zealand. Argentine lamb realises from $\frac{1}{2}d.$ to $1d.$ per lb. below Australian, but, with mutton, the position is reversed, Argentine prices for comparable qualities being a fraction of a penny above Australian.

(d) *Local Variations.*—Considerable differences exist in the prices obtained for fat sheep on different markets in this country. This is partly accounted for by the relative distance of markets from consuming areas and partly by variations in the type of fat sheep offered for sale at various markets combined with differences in local consumer-demand. As a result of these differences in local preference, 1st quality in one market may be only 2nd quality in another; the recorded prices in different markets do not necessarily refer to the same things. In the absence of a uniform system of reporting based on well-defined grade standards (see Chapter VI), prices in different markets are never completely comparable.

(e) *Relationship between Fat Sheep and Mutton Prices.*—Over a long period, the average monthly prices of fat sheep at country markets move with those of mutton at wholesale meat markets, though the margin varies with the price obtainable

for the edible and inedible offals. Considerable day-to-day fluctuations occur, however, which are not reflected in the average monthly prices. These fluctuations are, in the main, due to variations in consumer-demand, an influence to which wholesale markets are exceedingly sensitive, on account of differences in the weather and even in the prices of suitable green vegetables, particularly as regards lamb.

Diagrams E and F and Table XIII show that, during the years 1924-30, the price of fat sheep estimated dead weight (sinking the offals)* has been, on the average, about 2d. per lb. above that of mutton. As stated above, this margin depends largely upon the price obtained for the offals, and it has tended to widen slightly—from 2d. per lb. in 1925 to 2½d. in 1928. It decreased in 1929 and 1930, however, owing, presumably, to the fall in the value of skins, including the wool.

Table XIII shows the seasonal trend in the margin between mutton and sheep prices during the seven year period 1924-30. After remaining fairly constant for the first four months of the year, the margin decreases in May and becomes still smaller in June, subsequently rising gradually to the winter level in December. This variation in the relative value of fat sheep and mutton in summer and winter is due partly to the fact that, from the end of May, fat sheep are marketed shorn, with a consequent reduction in the value of the skin, and partly to the fact that edible offals on the whole command a better price during the winter than during the summer.

(iii) Retail Prices.

(a) *Seasonal Variations.*—Retail prices tend to lag considerably behind those of fat sheep or wholesale prices of mutton and lamb. Fluctuations in the prices of the raw material and in wholesale meat prices are to a considerable extent smoothed out in the price paid by the consumer.

Little seasonal movement is apparent in the retail price of mutton, particularly in the family trade. In the case of lamb, however, more than in any other meat, the price of the raw material is reflected in retail prices; this is partly due to the marked seasonality of supply, and partly to the fact that lamb has to compete with other comparatively high-priced foods such as veal and chicken. There is, however, a decided lag in the retail price at two distinct periods. The first is at Easter, when the demand is keen and prices of the raw material are high; at this period, retail prices rarely rise to the same extent as those of the live animals, lamb being stocked at Easter to retain customers

* That is to say, taking the estimated dead weight on which the price of the live sheep is based as the weight of the carcass excluding the offals, although the offals are taken by the buyer. The offals, of course, are taken into account in arriving at the price per lb. of the carcass.

rather than to show the maximum profit. The second period is in August and September, when supplies of lamb are greatest and prices are at their lowest point. At this season, except in the cutting trade, retail lamb prices seldom fall in keeping with those at wholesale markets.

In recent years, the seasonal course of retail prices in the family trade has been somewhat as follows:—In the spring, small mutton is retailed at an average of about 1s. 8d. per lb. for the best cuts. At Easter, milk-fed lamb is procurable in most parts and is retailed by the quarter or by the joint at prices varying up to 2s. 6d. a lb. for the best joints. The limited supply of lamb continues to be retailed at about these prices until the new spring lamb is in good supply—during the second or third week in May—when lamb in many shops largely takes the place of mutton and the price of the best joints falls to an average of about 1s. 8d. By August, the price of these joints would average about 1s. 6d. per lb.; lamb and small mutton remain at about this price until the following spring.

These prices may be compared with the seasonal variations in wholesale prices shown in Diagram F. Wholesale market prices, however, do not always refer to the same article as retail prices. As the distinction between fed lamb and young hogget is not rigid, so in the eyes of many consumers the distinction between lamb and young mutton is of small account provided the joint shows certain characteristics, such as small size and rather light-coloured, tender flesh. Many young hoggets, particularly during the autumn, may therefore be retailed as lamb with every satisfaction to the consumer. In this connection, it may be noted that there is little, if any, difference between the retail price of lamb in, say, September and the price of young hogget mutton in, say, October and November, the two products being, in fact, practically identical.

(b) *Prices of Different Cuts.*—The retail prices of the principal cuts of mutton and lamb are illustrated by the following figures, which give average prices per lb. on St. John's Retail Market, Liverpool, during June and July, 1930:—

				<i>British.</i>		<i>Frozen.</i>	
<i>Lamb :</i>				<i>s.</i>	<i>d.</i>	<i>s.</i>	<i>d.</i>
Leg	...	...	...	1	6½	...	1 0
Loin	...	...	...	1	6½	...	1 0
Shoulder	...	...	...	1	6½	...	1 0
Neck: Best End	...	...	...	1	3½	...	1 0
Scrag	...	...	...	...	8	...	4
Breast	...	...	...	11½	...	...	5½
<i>Mutton :</i>							
Leg	...	...	...	1	2½	...	7½
Loin	...	...	...	1	3½	...	7½
Shoulder	...	...	...	1	2½	...	7
Neck: Best End	...	...	...	1	3½	...	8
Scrag	...	...	...	...	8	...	4
Breast	...	...	...	...	8	...	5

The loin is the highest-priced cut, legs and shoulders realizing $\frac{1}{2}d.$ to $1d.$ per lb. less. The neck averages a few pence less than these cuts, though the "best end" of mutton fetches as much or even a penny or so more than legs and shoulders; the scrag, however, is one of the cheapest parts of the carcass. The breast is also a low-priced cut, realizing from $6d.$ to $7d.$ per lb. less than legs and shoulders in the case of British mutton and lamb and frozen lamb, and $2d.$ to $3d.$ less in the case of frozen mutton. The figures given above cannot be taken as an accurate guide to the general level of retail prices of mutton and lamb or of British and frozen joints, since, as has been shown, the margin varies considerably according to the time of year.

The Ministry of Labour's published monthly average retail prices of the principal foodstuffs, which include prices of both British and frozen legs and breasts of mutton, show that the percentage increase in prices since the War has been greater in the case of legs than of breasts. The following figures* show that, on the average, during the period 1928-30, the retail price of home-killed legs was 72.6 per cent. above pre-War, that of breasts only 53.8 per cent.; similarly, the retail price of frozen legs was 71.8 per cent. above pre-War, that of breasts only 28.1 per cent. This appears to indicate a relative increase in demand for the higher-priced cuts.

	Average Price per lb.					Increase over July, 1914, Price.
	July, 1914.	1928.	1929.	1930.	1928-30.	Average 1928-30.
	d.	d.	d.	d.	d.	Per cent.
British : Legs	10 $\frac{1}{2}$	18 $\frac{1}{2}$	18 $\frac{1}{2}$	18	18 $\frac{1}{2}$	72.6
Breast	6 $\frac{1}{2}$	10	10	9 $\frac{7}{8}$	10	53.8
Frozen : Legs	6 $\frac{1}{2}$	11 $\frac{1}{2}$	11 $\frac{1}{2}$	11 $\frac{1}{2}$	11 $\frac{1}{2}$	71.8
Breast	4	5	5 $\frac{1}{2}$	5 $\frac{1}{2}$	5 $\frac{1}{2}$	28.1

(iv) Market Intelligence in this Country.

Prices and general market information regarding store and fat sheep and lambs and dead mutton and lamb are reported weekly in the *Agricultural Market Report*, issued by the Ministry of Agriculture and Fisheries, in *The Farmer and Stockbreeder* and other agricultural papers and in meat trade periodicals, as well as daily in local newspapers.

(a) *Store Sheep*.—The *Agricultural Market Report* gives market information for store sheep in from 35 to 40 representative

* Ministry of Labour Gazette.

markets in England and Wales. Special sales are also reported. In addition to giving general market information, including, in many cases, the numbers pitched, a summary is given of the average prices realised per head at each market by store sheep (hoggs, hoggets, tegs and lambs) of Down or Longwool type, distinguishing between 1st and 2nd quality animals. The actual breed or cross referred to is often indicated by a footnote.

Reports in the local press usually quote rather a wide range of prices and rarely relate these prices to the various qualities and types of sheep sold.

A system of reporting sheep prices according to closely defined and generally understood types and grades would be helpful to the farmer. It is not, however, a simple matter to define grade categories for store sheep which would be capable of embracing the very large assortment of breeds and crosses of sheep found in this country. Careful distinction would have to be made by reporters between grades and considerably more space would have to be devoted to the reports by the Press. Even under existing circumstances, however, there appears to be room for better classification of prices on a quality basis in Press reports. As is pointed out in Chapter VI, in many centres store sheep are carefully graded for sale by farmers, especially at the summer and autumn store lamb sales in the North, East Anglia and other districts. In such cases, it should be a fairly easy matter to report average prices paid for 1st, 2nd and 3rd grade lambs, and this is frequently done by market reporters. It should, however, be borne in mind that even where the farmer grades his sheep for sale, first draft lambs from one farm may be no better than second draft lambs from another. Where the lambs are not carefully drafted and graded for sale, reporting according to grade obviously becomes impracticable.

At first sight, the multitude of existing breeds, types and individual and local preferences suggests that any attempt to define grades to fit all types of store sheep would be futile. Provided, however, the method of distinguishing between breeds or crosses in market reports by means of footnotes were preserved, a fairly accurate record of prices based on grades could be returned in a great number of instances. The question is more fully discussed in Chapter VI.

The desirability of distinguishing the prices of store lambs according to sex depends mainly on local conditions. Formerly, ewe lambs were worth more than wether lambs, but in some counties, such as Norfolk and Suffolk, this price differentiation has, at any rate for the moment, disappeared, and in some parts lambs of both sexes may be sold penned together. Where, however, ewe lambs are in strong request for breeding—as, for example, in the Lowlands of Scotland and in Wales—a definite price margin between ewe and wether lambs still exists and is worth recording.

Prices of ewes are often reported according to whether they are bought for breeding or for grazing and sometimes according to age, quality and breed. The usual categories of breeding ewes recognised by market reporters are young, 1st quality ewes in good condition and of good type that have had, say, one to three crops of lambs and older sheep or sheep of poorer type which are described as 2nd or 3rd quality. Grazing ewes usually include young barren sheep, ewes that have had several crops of lambs, and "crones." It is seldom, however, that these categories are distinguished in market reports, the usual practice being to give the range of prices for all ewes.

(b) *Fat Sheep and Lambs.*—The system of reporting fat sheep and lamb prices in the *Agricultural Market Report* is outlined in Chapter VI. In addition, prices of fat sheep and lambs at a large number of livestock markets are broadcast every Thursday under the auspices of the Ministry of Agriculture and Fisheries.

In most market reports, the prices returned are per lb. estimated dressed carcase weight, sinking the offals. In some cases, however, the price per stone is given, and in others the price per head. It would be an advantage to have a standard unit for price recording. In the case of pigs in the Ministry's official price reports, the score live weight has been adopted as the standard unit on the recommendation of the Pig Industry Council. In the case of sheep the unit should be, for preference, the lb. estimated dead weight, sinking the offals.

There is a lack of uniformity in the methods of quoting prices of various qualities of fat sheep and lambs as in the case of stores. While the prices quoted are usually related to quality, as in the *Agricultural Market Report*, in some agricultural papers merely a range of prices is given.

The chief defect inherent in the present system of price recording for fat sheep, however, is the fact that the published returns do not emphasize sufficiently the influence of carcase weight irrespective of quality grade on the price per lb. In view of the desirability of a uniform method of price reporting under which a distinction is drawn between the influence of weight and quality respectively, suggestions for the establishment of market classes and grades for fat sheep are put forward in Chapter VI.

(c) *Mutton and Lamb.*—Prices of mutton and lamb, in season on Smithfield Market, London, are broadcast every Monday and Thursday under the auspices of the Ministry of Agriculture and Fisheries.

Published reports of mutton and lamb prices, both home and imported, in agricultural papers are usually restricted to a few centres. Thus, the *Agricultural Market Report* quotes prices in 4 centres—viz. London, Birmingham, Manchester and Leeds, the *Farmer and Stockbreeder* only in one—viz., Smithfield Market,

London. The kinds of mutton and lamb regularly quoted in the *Agricultural Market Report* include Scotch, English—distinguishing ewes—Argentine, Australian, and New Zealand—distinguishing ewes. Prices of 1st and 2nd quality are reported separately. Meat-trade papers devote considerable space to prices of both home-killed and imported descriptions of mutton and lamb. Information as to weekly shipments of carcasses from overseas countries or, in the case of the New Zealand trade, killings and stocks on hand in that country, as well as summaries of the Board of Trade monthly returns of meat imports, are also included. The *Agricultural Market Report* gives the weekly shipments of carcasses of mutton and lamb from Argentina, together with statistics of monthly packing-house killings. In addition, informative articles relating to the production of mutton and lamb at home and abroad are frequently published in that Report.

(v) Market Intelligence in Other Countries.

(a) *The United States*.—Several methods of obtaining market information for livestock and meat in common with other agricultural produce are available to the American farmer. Weekly reviews of market conditions are issued by the Department of Agriculture dealing with prices and market conditions for agricultural produce, including livestock and meat, at all the important markets in the United States. Special articles are included, dealing with conditions of supply and demand, transport, marketing credit and other matters. Weekly or monthly summaries of movements and prices of various commodities are also given. The Department of Agriculture also publishes a monthly report—*Crops and Markets*—which gives a summary of market conditions and prices, including the numbers and weights of the various classes and grades of livestock, during the previous month, at the most important markets in the United States; the numbers of stock sold for slaughter and for feeding purposes respectively are distinguished; comparisons are also made with prices and numbers offered for sale in past years.

Foreign Crops and Markets is another publication of the Department of Agriculture, issued weekly, dealing with agricultural conditions, supplies, prices and prospects abroad.

A telegraphic service of market intelligence is also maintained by the Department of Agriculture over leased telegraph wires to market news offices in certain centres in large important agricultural districts. This consists of daily *Marketgrams* or short reports on prices, supplies and general market conditions of all agricultural produce at the chief markets in the United States during the previous week. This leased wire service is continually being extended to new centres. The information is released by the local offices to local farm newspapers and other publications.

Some of the States issue their own market reports, in which they incorporate the news received from Washington.

A daily radio market intelligence service is also provided by the Department of Agriculture in co-operation with broadcasting stations. These reports, broadcast after the close of the markets, give a brief account of conditions and prices of agricultural products at the chief markets during the day. Farmers may obtain this information direct or through newspapers or from co-operative organizations.

Apart from official market intelligence services, certain commercial telegraph companies provide for producers, upon payment of a fee, a telegraphic service of market news at stated intervals during the day on the basis of information supplied by the Department of Agriculture's Bureau of Agricultural Economics.

Monthly summaries of cold-storage holdings of mutton and lamb, as well as other meats, are issued by the Department of Agriculture.

(b) *Germany.*—The German National Council of Agriculture, as a part of its extensive system of market reports, publishes weekly a comprehensive summary of market information, in particular of prices of livestock and meat, in the more important markets throughout Germany, distinguishing between various qualities. A feature of these reports is that the information is to some extent interpreted for the reader by means of short surveys of market conditions and tendencies.

PART II.—THE TRADE IN SHEEP AND LAMBS.

CHAPTER V.—THE FLOW OF SHEEP AND LAMB SUPPLIES.

(i) Store Stock.

The trade in store sheep and lambs is both a short and a long distance one. In many cases, lambs marketed at the end of June or in July, if not fit to kill, are bought to be finished in or near the locality where they have been bred. On the other hand, a great number of the store lambs sold during the summer and autumn have been bred on the hills or in upland areas and are purchased by dealers and farmers to be sent a considerable distance for fattening or wintering. In most mountain and moorland districts, again, lambs and, in some cases, ewes are "tacked" down for the winter months to lowland farms. Wintered hoggets are often sold in the spring of the year to go to other farms for fattening, and draft ewes are sold in the summer to go often a considerable distance afield for further breeding or for feeding. The most important seasonal movements of store sheep are described below.

From the *Cheviot Hills*, there is a movement of draft and young breeding ewes—sold at regular sales in the summer and autumn, chiefly at Hawick, St. Boswells, Lockerbie and New Castleton—to such districts as Yorkshire, Lancashire, the Midlands, East Anglia and even Kent. Many store lambs are also purchased by farmers and dealers to be finished in Yorkshire, the Midlands or further afield.

There is both a short and long distance trade in store sheep off hill farms on the *Pennines*, where one of the commonest crosses is the "Masham." Both lambs and draft ewes of the various breeds and crosses kept are sold during August and September to go on to middle and low lands in the neighbourhood. The ewes are bought either for breeding or "flying flocks," the lambs to fatten on roots or seeds. Lambs and ewes are also sent to various midland counties, such as Leicester and Nottingham, and even further afield.

There is an annual eastward movement at the same period—i.e., during August and September—of lambs and draft ewes, particularly the latter, from the *Welsh counties* of Brecon, Radnor, Montgomery and Cardigan, principally to west-midland counties of England, such as Hereford, Shropshire, Gloucester, Worcester and even further east. They are purchased either by dealers, on farms or in markets, or more often at the special sales* held in all

* See Economic Series No. 26.

the principal market centres in the main producing districts or in the English border counties. The lowland areas of Wales generally obtain store sheep from adjoining upland areas. For instance, Pembrokeshire imports sheep from Cardiganshire and Carmarthenshire; Glamorganshire and Monmouthshire, in addition to the sheep bred in their own uplands, import store sheep from Breconshire, Radnorshire, Montgomeryshire and Cardiganshire.

In *North Wales*, the movement is largely from one district or county to another, relatively small numbers of stores going to the English midland counties. Thus, stores bred in Flintshire and the Denbighshire hills are purchased for crossing for fat lamb production in the Vale of Clwyd. The Merionethshire and Caernarvonshire uplands meet the requirements of the lowland farmers along the coastal belt of Caernarvonshire and throughout the greater part of Anglesey, where the production of fat lambs for the coastal towns of North Wales and for Lancashire is of great importance.

In the *south-western counties*, there is no long-distance movement of sheep comparable with those obtaining in Scotland or Wales. There is, however, a marked seasonal movement of lambs bred on Exmoor and Dartmoor and sold or "tacked" off the moors in autumn to be finished or wintered on the lower-lying land in the vicinity. Draft ewes from these areas are also purchased to go to upland farms in Dorsetshire, Wiltshire and Somersetshire. As in other store-raising areas, this trade is principally carried on at seasonal fairs and sales.*

A similar movement of store lambs takes place in autumn from the *Kentish Marshes*—Romney Marsh, Pevensey Level and the low-lying grazing lands at the mouth of the Thames, Medway and Stour. These lambs are largely sent to farms in Buckinghamshire, Oxfordshire, Northamptonshire and Leicestershire, as well as nearer home to various parts of the Weald and Surrey. Here again, the principal means of disposal are the autumn fairs and sales in various market centres.* While many of these lambs are sold outright, a large number are put out to keep and are returned to their owners in the following spring. Special sales of sheep are also held in Kent in February and March and are attended by farmers desiring to stock their orchards.

In the *southern chalk areas*—Salisbury Plain and the Marlborough and Berkshire Downs—a number of old-established fairs and sales* are held from May to October for the disposal of lambs, ewes and tegs. The lambs are distributed locally to lowland farms and to Somerset and the Midlands for fattening; the ewes are generally bought by farmers in the vicinity to rear another crop or two of lambs. The majority of lambs are sold before

* See Economic Series No. 23.

October, the rotation of crops being designed to give the maximum amount of summer feed.

In *East Anglia*, there is an important though localized movement of store lambs from the end of June onwards from the heath or light lands to farms in the more fertile districts for winter folding. The disposal of these lambs takes place at markets and at such regular annual sales as are held at Diss, Ipswich, Stowmarket and other centres.* Some of these sales have lost much of their pre-War importance, partly because a larger proportion of lambs appears to be sold in routine markets than previously, but mainly on account of the post-War depletion of the ewe flocks kept on the light lands of *East Anglia*.

(ii) **Fat Stock.**

The seasonality of production and marketing of mutton and lamb in England and Wales as a whole has been shown in Chapter II. The seasonality of marketing is even more marked in each of the various producing districts regarded singly.

Broadly, mutton and lamb supplies can be divided into two categories, grass-fed supplies marketed in the summer and root-fed supplies marketed in the winter.

Grass-fed sheep and lambs come from all parts, but particularly from areas where rough grazing or pasture predominates, such as the mountain and moorland districts, the purely grass districts found in certain Midland counties, and the marshes of Kent, as well as off upland farms where seeds leys, sainfoin and clover are grown to supplement the summer feed. Winter-fed sheep and lambs, on the other hand, are produced mainly in arable districts where the supply of winter feed, such as rape, turnips, swedes, and kale, usually exceeds the summer supply. It is, therefore, clear that, in urban markets, wholesalers, to maintain regular supplies of fat sheep as of fat cattle, must look to certain districts at one time of the year, to other districts at other times.

Though the majority of livestock markets draw their supplies from within a radius of from 15 to 20 miles, large central markets, such as Islington, Manchester, Leeds or Birmingham, depend on supplies sent in many cases from a considerable distance, usually by dealers.

Taken over a long period, the origin of supplies to large wholesale meat markets may show some variation. This may be due to gradual changes in production methods in certain supplying districts; thus, earlier marketing of fat hoggets in any district may cause a shortage later in the season and the deficiency may have to be made good by obtaining supplies from another locality. A period of trade depression, again, may lead to a transference of demand to cheaper types of mutton and lamb. The influence of

* See Economic Series No. 23.

the individual livestock trader in determining the flow of supplies to urban markets is also important. Numerous instances are known where, on a dealer retiring from business, supplies which he had been in the habit of taking to certain towns have had to find new outlets.

Although the movement of supplies is thus continually on the change, a study of the sources of home-killed supplies received at certain important wholesale meat markets at different seasons gives a broad view of the monthly flow of mutton and lamb supplies at present prevailing in this country.

The following is a brief account of the supplies arriving at various seasons at London, Birmingham, and Manchester wholesale markets and in Leeds and the surrounding area. No attempt is made to distinguish between supplies arriving dead and on the hoof.

(a) *Smithfield Market, London.*—Of the home-killed mutton and lamb supplies on Smithfield Market, London, in 1930, 57 per cent. by weight were Scotch, 38 per cent. English or Welsh and 5 per cent. Irish.

The main season for English fat lambs opens at Easter and, after a temporary set-back immediately after Easter, is in full swing from May till August, the most desired carcase weights ranging from 32 to 45 lb. Irish lambs, landed and killed mostly at Birkenhead, swell the supply from April until September, the heaviest sendings being during July and August: Scotch hill lambs start arriving at the end of July and are in supply until Christmas. The late summer-born Dorset Horn lamb first reaches the market in only very limited quantities at Christmas time. These and, late in February, the early Dorset Down fat lamb, complete the cycle of the fat lamb trade of the year.

The main sources of supply of home-killed lamb at Smithfield throughout a normal year may be summarized as follows:—

<i>Season.</i>				<i>Supply.</i>
Christmas	...	...	...	{ Dorset Horn milk-fed lamb from the west of England.
January—March	...	...	...	{ Dorset Horn and later Dorset Down, Hampshire Down and other breeds from Dorsetshire, Somersetshire, Isle of Wight, Hampshire and Sussex.
Easter	...	...	...	{ Various Down and Down × Longwool lambs from southern and south-western counties and from Oxfordshire, Suffolk and Cambridgeshire. Milk-fed lambs from Ireland.
April—September	...	...	...	{ The regular run of fat lambs from the southern and south-western counties. Supplies from Devon and west Somerset after July are, however, largely diverted to the South Coast.

<i>Season.</i>				<i>Supply.</i>
April—September	...	...	...	Grass-fed lambs from Ireland.
July—December	...	...	...	{ Scotch Hill or Border County lambs, mainly Blackface, "Half-bred" and "Cross-bred."

The mutton season starts with the approach of cool weather, when the English lamb season is going off—i.e., at about the end of September or the beginning of October. By this time, fat Down lambs have passed the weight of lamb, though many of the late born, cross-bred lambs off the Down grasslands will not exceed 40–50 lb. dressed carcase weight.

The number of hoggets arriving at Smithfield does not become appreciably large before November, handy-weight mutton remaining in good supply from this month up to February. It is not until February or March that the bulk of the root-fed sheep from upland areas begin to be marketed. These yield somewhat heavier carcasses and are mainly sold fat during March and April, the drawing period lasting from February until the beginning of June. During the summer months, supplies consist of grass-fed sheep from various districts.

Mutton supplies at Smithfield may be summarized as follows :—

<i>Season.</i>				<i>Supply.</i>
November—May	...	...	...	{ Root-fed sheep from upland areas mainly in the south and east of England. The bulk are sold during the months February to April.
October—June	...	...	...	{ Scotch hoggets (especially from Ross and Cromarty from January to April) and supplies from the north of England.
Christmas—May	...	...	...	{ A relatively small proportion of Irish supplies from Birkenhead.
June	...	...	...	{ Grass-fed tegs from south-western counties.
June—August	...	...	...	{ Grass-fed Lincolnshire and Yorkshire tegs.
June—September	...	...	...	{ Kentish tegs off the Romney and Pevensey marshes.

(b) *Birmingham.*—Two of the main sources of supply to Birmingham meat market are Rugby and Oswestry livestock markets. The supplies of lambs from the latter market include not only local sendings but considerable numbers from neighbouring Welsh districts; they are received from April to October and are at their peak during August.

Supplies to Birmingham Wholesale Meat Market may be summarized as follows:—

Lamb.

February—April	...	...	Dorset lambs.
Easter—end of May	...	...	{ Lambs from Oswestry Market, Oxfordshire, Worcestershire and Herefordshire and a few Down × Welsh Mountain from Wrexham Market.
Whitsuntide	...	...	{ Lambs from Oswestry, Welshpool and Wrexham Markets and some Hampshire Downs from Hampshire and Wiltshire.
Whitsun—October	...	...	Local and Welsh supplies.
June—September	...	...	Irish grass-fed lambs.
August—Christmas	...	...	{ Supplies from Scotland and from Midland grass areas—e.g. Northamptonshire, Leicestershire, Warwickshire and Oxfordshire.

Mutton.

Supplies of mutton are received throughout the year, but the main seasons and principal sources of supply are as follows:—

September—Christmas	...	...	Largely Devon sendings.
January—May	...	...	{ Root-fed supplies from the counties of Oxford, Lincoln, Gloucester, Warwick and Northampton, and a few heavyweights from Yorkshire.

(c) *Manchester.*—Manchester is largely dependent on Wales and Ireland for lamb and mutton. Comparatively little fattened in Lancashire finds its way into Manchester, there being a readier market for it in other Lancashire towns. The following is a summary of the main supplies:—

Lamb.

Christmas—March	...	...	Dorset lambs in limited quantities.
April—November	...	...	{ Irish supplies, mainly bought in Ireland by Manchester dealers and shipped direct to Manchester or via Birkenhead or Preston. The peak period is during July and August.
End of April—November	...	...	{ Welsh lambs, of which a large proportion come from Anglesey and the Vale of Clwyd. The peak period is again in July and August.
August—March	...	...	{ Scotch supplies. A few sheep and lambs are also sent in from the Clitheroe and Fell districts on the Lancashire-Yorkshire border.

Mutton supplies are received from more or less the same districts as lamb, the main season lasting roughly from November to May.

(d) *Leeds and Surrounding Area*.—Traders in the Leeds Wholesale Meat Market cater for a big area around Leeds. Supplies are mainly bought in Leeds cattle market, where they are largely pitched by dealers. In addition, supplies are bought at other markets and to a limited extent direct off farms.

From Christmas until about the middle of March, Leeds depends for lambs on Dorchester Market. The demand, however, is a special one, Harrogate taking a large proportion from the Leeds Wholesale Meat Market. From April onwards, the Market depends for lambs mainly on Yorkshire; very few Scotch Blackface lambs are sent to Leeds.

Bradford, Leeds, Hull, Sheffield and neighbouring towns accept big sheep. The main mutton season is from Christmas to July, though the East Riding and Scotland send hoggets all the year round.

Ewes also arrive all the year round from the East Riding and, to some extent, from Lincolnshire; Scotch ewes are received from September until about February, and a few Norfolk ewes, to make up deficiencies from other districts, during February and March.

(iii) Movements of Irish Fat Sheep and Lambs.

In contrast to the cattle trade, the numbers of store sheep and lambs received in this country from Ireland are insignificant. The numbers of Irish fat sheep and lambs consigned from Irish ports and landed at ports in Great Britain in 1930 are shown in Table XIV. It will be seen that by far the larger number—378,000 out of a total of about 650,000—were sent from Dublin, Belfast being next in importance with a total of about 71,000 head. Greenore, Dundalk, Waterford and Londonderry also send fair quantities. Liverpool is the most important port of landing, receiving 310,000 head in 1930; here, sheep and lambs are in the main pitched for sale by private treaty in the lairages at Wallasey landing-place.* About two-fifths of those landed at Wallasey are slaughtered there for consignment to various consuming centres. Sheep and lambs are also licensed out for slaughter in Liverpool and east Lancashire towns as well as to London, North Wales and the Isle of Man. Sheep are also licensed out for pitching at such markets as Manchester (Mode Wheel) and also occasionally at Huddersfield and Leeds.

Holyhead, with 175,000 head landed in 1930, is next in importance to Liverpool as a port of landing for Irish sheep, most of the supplies being sent to Manchester. A considerable number of fat sheep and lambs are also landed at Heysham and Preston. A quantity—almost 17,000 head in 1930—are sent direct from Ireland to Manchester (see above).

* A detailed description of the Wallasey landing place is given in Economic Series No. 14, pp. 101-103.

The seasonal variation in arrival of Irish supplies is shown in Table VI, which gives the monthly exports from Ireland to Great Britain of sheep and lambs in the years 1925-30.

Practically no lambs arrive until April, after which supplies increase to a maximum during July and the first part of August; they then decrease and fall away practically to vanishing point about Christmas. Milk-fed lambs arrive from the end of March until the end of May. Grass-fed lambs, as understood in the trade, start late in May and continue practically until Christmas.

The season for hoggets, which are mainly grass-fed, starts just before Christmas and continues into May, when the lamb trade depresses the price of mutton generally and, indeed, kills the trade in big mutton.

The sheep and lambs brought over from Ireland are mainly crossbreds. Longwools and mountain breeds prevail, Down crosses being comparatively scarce. The best of the fat lambs are those weighing 36-44 lb. dead weight. When less than this, they are usually too lean and are then best suited to the Lancashire trade.

The best-finished carcasses of lambs slaughtered at Wallasey are sent to Smithfield, London, from which a proportion is re-consigned to the provinces. The leaner stuff is sent to industrial towns in Lancashire and to Birmingham.

CHAPTER VI.—MARKET CLASSES AND GRADES.

(i) General.

Sheep, both store and fat, are commonly sold at markets and sales in pens, rarely singly. It is, therefore, a help to the buyer if sheep are offered by the vendor in lots consisting of animals all of the same type and of approximately even quality and weight. The buyer can thus more easily assess the value of each pen or lot and is more likely to obtain sheep of the kind he requires. Sheep are, in fact, commonly sorted by farmers into type, quality and weight categories before sale in markets and seasonal sales. In each case, however, the farmer uses his own judgment, influenced largely by local custom, as to the classes and grades he adopts. The logical outcome of such a form of grouping sheep for sale is the definition, so far as is practicable, of standard market classes and grades for sheep, which would be generally recognized throughout the country.

One of the chief advantages of such a course would be the increased value which it would give to published market reports. It has been pointed out in Chapter IV that prices of store and fat sheep in this country are not reported according to generally accepted classes based on quality or weight. Some sub-division

may be made according to what is loosely known as "type," and in some cases 1st, 2nd or even 3rd quality are distinguished, but, where this is so, the conception of the different qualities is not necessarily the same from one market to another or even from one individual to another. No classification by weight is attempted. The value of market reports to the farmer should be to act as a guide to the relative advantages of individual markets for certain classes of sheep, as well as to enable him to form an idea of the type of animal required by the trade and of the value of his own stock and so strengthen his position as a seller. It is obvious, therefore, that the reports lose much of their value unless they are based on some generally accepted, quickly recognizable and easily reported categories and grades, based on trade requirements.

Apart from the advantages of standard market classes and grades for price-reporting, it is possible to envisage the development of the practice of actually buying and selling sheep by description on the basis of such grades. A farmer, for instance, might commission a dealer to buy for him, say, 1st quality store sheep of a certain type and age. This would not, of course, obviate the necessity for the dealer himself visiting farms and markets for the purpose of finding sheep of the required type, but it might reduce to some extent the speculative element in the existing dealer system which is seen, in many instances, in the pitching and repitching of store sheep at markets by dealers until a buyer is found whom they suit. The possibilities of a more organized system of store sheep marketing on the basis of grades through farmers' livestock buying and selling associations are discussed in Chapter IX. The difficulty of defining grades for store sheep with any exactitude, however, is a serious obstacle, and for the farmer who can sufficiently rely on his own judgment, personal inspection seems likely to remain for some time the most satisfactory means of obtaining his requirements. For fat sheep, sale on the basis of carcase rather than live animal grades is the most promising line of development (see Chapter VII).

(ii) The Practice in the United States.

Considerable progress has been made in the United States in the use of market classes and grades for livestock, including sheep, which have been defined by the Department of Agriculture and have been adopted to a varying extent in commercial practice.

The United States' system of classification and grading, though considerably more complicated than appears to be necessary or practicable in this country, embodies certain principles which would have to enter into the determination of standards for use here. The full schedule of grades in use in the United States for live sheep is given in the Appendix. Sheep are classified first

into ewes, wethers, rams and lambs, each of these terms being defined. These are then sub-divided according to the purpose for which they are intended—slaughter, feeding or breeding. In the case of ewes and wethers, a further sub-division is then made on the basis of age. In the case of fat animals and breeding ewes, each age-group is classed into three or four weight categories; no weight categories are employed for store sheep for feeding, but store lambs are also classed into three weight categories. Six quality grades of fat sheep (Prime, Choice, Good, Medium, Common and Cull), and five grades of store and breeding sheep (Fancy, Choice, Good, Medium and Common) are recognized. In the case of certain types of sheep, however, one or more grades may be omitted as being inapplicable. Thus, for fat rams, there are no Prime or Choice grades, while for breeding ewes, 5 years old and over, there is no Fancy grade.

(iii) Grading of Store Sheep in England and Wales.

The main value of grades for store sheep in this country would probably be that of affording a basis for an informative system of price recording. The use of generally accepted grades should also have material advantages in the actual buying and selling of store sheep. Even now the grading of store sheep for sale is frequently carried out in practice, though not to any definite standards. In selling store lambs at the summer sales, for instance, vendors usually market their "top" lambs first. These are referred to as the "first drafts" or "draws" and comprise the most forward lambs on the farm: the later-born and less forward lambs are marketed later. Alternatively, a farmer may market most of his lambs at one sale; he then usually pens them according to his particular method of grading, in numbers varying, say, from 10 to 100, or even occasionally 150 or 200. Thus, a farmer may send in six lots of lambs; each lot may average 25 in number and be penned separately; the first two lots to be sold may represent the "first draws," the next three lots the "mids" or "second draws," and the last lot the late-born or inferior lambs. Occasionally, a few lambs of one grade will be put into a pen of lambs of another grade to make up their numbers.

This method of sorting has the advantage that the buyer can more readily assess the value of each lot and is more likely to obtain stock suited to his requirements than if no such classification were carried out. The seller, is therefore, likely to receive a better price. There is, however, no uniform basis, as yet, for grading stores throughout the country, and the various "grades" of lambs vary widely from farm to farm. The amount of attention devoted to grading varies considerably; it is well done in some parts of the country and neglected in others.

The establishment of standard market classes and grades for store sheep which will convey anything like exact information

to the buyer or seller presents almost insuperable difficulties owing, largely, to the great variety of breeds and crosses in this country. The United States' system outlined above indicates the factors which must be taken into account. Vendors practically always catalogue store sheep and lambs for sale under sex, age and breed or crossbreed categories, and this in itself gives buyers a fairly clear idea of the type of sheep on offer, though in some parts of the country there is room for greater accuracy in classifying sheep according to breed or cross. Provided age and breed or cross are stated, it appears to be unnecessary to provide weight categories for store sheep and lambs, particularly as sheep, whether store or fat, are practically never weighed before sale in markets in this country. A further sub-division might be made into 1st and 2nd qualities, inferior qualities being omitted from market reports.

It is in the definition of quality grades that difficulty arises. Such definitions can only be in very general terms. Thus, a 1st quality store lamb or sheep intended for fattening might be described as one of a level pen of well-grown young animals typical in appearance of its breed or cross, sound, healthy, and active. 2nd quality would include sound, healthy sheep somewhat less true to type than 1st quality and showing certain defects of conformation, but well above the low-grade animals regarded as of inferior quality.

(iv) Grading of Fat Sheep and Lambs.

(a) *The Practice during the War.*—During the War, when it was found necessary to fix maximum prices for fat sheep and lambs sold in open market in this country, they were first graded by local grading committees on the basis solely of the estimated dead-weight yield of the dressed carcass together with the current market value of the skin. The quality and finish of the meat were not taken into account. Such a system could only be justified by the exceptional circumstances prevailing during the War, and even then complaints were made that the selling of fat sheep under grades which disregarded quality tended to force ewes into the fat stock markets. An alternative system was later adopted by the Ministry of Food whereby sheep were sold on a dead-weight basis at slaughter-houses.

(b) *Price Recording by Grade.*—An example of the existing methods of classification of fat sheep and lambs in this country for price-recording purposes is afforded by the *Agricultural Market Report*, in which prices are quoted under the following headings :—

Sheep.

Downs and Cross-breeds.			Other Breeds.		
1st Quality.	2nd Quality.	3rd Quality.	1st Quality.	2nd Quality.	3rd Quality.

Lambs.

1st Quality.	2nd Quality.
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The broad division of sheep into two categories based on breed allows for variations in the weight and value of the wool and in the quality of the mutton as between the groups quoted. When clipping starts, a distinction is drawn between prices of clipped and unclipped sheep by reference to a footnote, and the same method is used, where desirable, to indicate the actual breed. Well-finished, light-weight sheep are normally classed as 1st quality; heavy-weights and animals less finished are classified as 2nd quality and inferior animals as 3rd.

The principal defect of the classification is that quality grades and weight categories are merged, masking the separate effect of each of these important factors on price. In the absence of any generally accepted weight classification this is, of course, inevitable. Weight is not a quality factor, but it has just as important an influence on price as quality. The importance of weight as a price factor may be judged from the fact that it is not unusual for handy-weight and heavy mutton of similar quality to show a difference of from 2*d.* to 3*d.* per lb. in favour of the former in the same market on the same day. Recent developments in live sheep grading in the United States, as has been shown, have taken the form of distinguishing uniform grades for weight and quality separately in order to reflect the due significance of each factor in price.

(c) *Suggested Schedule for Price Recording.*—The introduction of a standard system of market classes and grades which takes account of all factors influencing price would greatly increase the value of market reports in this country. The three essential factors on which such a system should be based are age, weight and quality. Any further differentiation into breed categories would make it unwieldy. Where desirable, the existing method of indicating the breed by footnotes might be retained. A

suggested schedule for reporting prices of live sheep and lambs on this basis is given below :—

Wether and Ewe Hoggets and Shearlings.

Light Weights.		Medium Weights.		Heavy Weights.	
1st Quality.	2nd Quality.	1st Quality.	2nd Quality.	1st Quality.	2nd Quality.

Ewes.

Light Weights.		Medium Weights.		Heavy Weights.	
1st Quality.	2nd Quality.	1st Quality.	2nd Quality.	1st Quality.	2nd Quality.

Lambs.

Light Weights.		Medium Weights.	
1st Quality.	2nd Quality.	1st Quality.	2nd Quality.

The broadcasting of prices of fat sheep and lambs at a few selected markets in England, on the lines of the above schedule, has recently been commenced experimentally under the Ministry's auspices.

It will be noted that the schedule takes account of 3 factors—age, weight and quality.

Age.

Age has an important bearing on quality ; the public nowadays prefers its mutton young, and this factor must, therefore, be taken into account in market classification. The division between mature ewes, on the one hand, and wether and ewe hoggets and shearlings, on the other, is an obvious one. What constitutes a lamb, and what a young sheep or hogget, however, is a debatable point. In trade practice, there is no rigid dividing line, weight and general appearance being the deciding factors. Thus, Hampshire Down lambs are often sold as sheep when seven or eight months old, whereas Scotch Blackface lambs are often sold as lambs until eight or nine months old. As regards ewes, there is a wide range of quality according to age, for which allowance should

be made in grading according to quality (see later). The first grade would include young, well-finished ewes of good conformation; the second, the older well-finished sorts; old, badly finished ewes would be omitted.

Weight.

For the purpose of the schedule above, it is suggested that the weight categories (estimated dead weight) for the various types of sheep and lambs should be as follows:—

Wether and Ewe Hoggets and Shearlings.

Light Weights.	Medium Weights.	Heavy Weights.
48 lb. and under.	49-64 lb.	65 lb. and over.

Ewes.

Light Weights.	Medium Weights.	Heavy Weights.
48 lb. and under.	49-72 lb.	73 lb. and over.

Lambs.

Light Weights.	Medium Weights.
24-36 lb.	37-50 lb.

Quality.

Standard grades for fat sheep should naturally be closely related to standard carcass grades where these are in use. Standard carcass grades for use in this country are suggested in Chapter XII. Grades for fat sheep, however, are bound to be less detailed and comprehensive than carcass grades, since only external characters can be taken into account. Nevertheless, external characters can be and are, in practice, used with a fair degree of accuracy to determine the carcass quality of live animals when slaughtered. The factors which should form the basis of grading fat sheep and lambs are conformation, finish and quality (see Chapter XI). Conformation largely depends on breed. Thus, there is considerable difference in conformation between hill or mountain breeds and lowland breeds. The degree and evenness of finish are determined in the live animal by touch. Quality may be defined as certain indications in the live sheep of the eating quality of the carcass. It is to some extent determined by the feel of the live animal, and to some extent, subject to breed variations, by the fineness or otherwise of the wool and skin. The three factors of conformation, finish and quality are closely related. Thus, the

eating quality of the carcase is also, to some extent, indicated by the conformation and finish of the animal.

The large number of breeds and crosses which exist in this country considerably increase the difficulties of defining grades which should give uniform results throughout. Provided, however, the relative value of the various breeds and crosses is recognized, the difficulties should not be insuperable.

As suggested in the schedule above, two quality grades for each class and weight group should be sufficient for market reports, inferior sorts (Fig. 12) being ignored. The following are the definitions of the quality grades suggested for live sheep and lambs for price-recording purposes.

First Quality should include only choice and prime sheep and lambs (corresponding to the *Select* and *Prime* carcase grades suggested in Chapter XII) showing the usual characteristics associated with good conformation and suitable finish and quality (Fig. 13). What constitutes a prime fat sheep is best seen in the carcase. It is sufficient to say that a sheep suited to the best class trade should be typical of its breed or cross, the loins and buttocks should be well developed and carry plenty of firm meat and should be relatively heavy compared with the forequarters. The ribs should be well sprung, the shoulders covered with firm flesh and rounded rather than arched, with an absence of spyness along the back. As regards finish, too much fat would be an objection. There should be a sufficient deposit of fat on the tail.

Second Quality (Fig. 14.) should include sheep and lambs whose carcasses would be graded *Good* or *Medium*. As regards conformation, they might show certain defects, such as excessive shankiness of the limbs or too high a proportion of fore to hind quarters. As regards finish, there might be either a slight lack or a slight excess of fat.

It should be noted that the shape of the shoulder and the degree of shankiness of the leg are very largely questions of breed and habitat and can only be modified to a limited extent by breeding without loss of constitution. Defects in these features, unless they are extreme, do not indicate any shortcoming in quality, some of the best-eating lambs showing them to a greater or less extent.

CHAPTER VII.—SALE BY THE PRODUCER.

(i) Store Sheep and Lambs.

Considerable numbers of store sheep and lambs are disposed of by farmers by private treaty direct off farms to other farmers or to livestock traders. This takes place mainly at certain times of the year; lambs, for instance, are thus disposed of in the summer and autumn. Farmers occupying lowland farms and requiring ewes

for their flying or semi-flying flocks often prefer to obtain them direct off certain farms in elevated districts, frequently buying year after year from the same farms where they know by experience they can obtain ewes which will give good results.

Alternatively, store sheep may be sold either by private treaty or auction at weekly markets or at the numerous seasonal fairs and sales (Fig. 15) held in all the principal breeding areas. The sale of sheep by private treaty at fairs is, however, more common in Wales than in England. Details of special store sheep sales are given in the *Report on Markets and Fairs in England and Wales*, Parts II to V*. In addition to these sales, a number of auction sales of store sheep are held at certain seasons on farms; these take place mainly in hill districts where flocks are comparatively large. Store lambs sold by auction at special sales may be sold in pens or passed through a sale ring (Fig. 16). They are put up in lots of up to 200, though a lot of 50 is the commonest unit.

Rams may be sold or hired out for the season by private treaty direct off the farm, but many are disposed of in special ram sales in many parts of the country towards the end of the summer.

(ii) Fat Sheep and Lambs.

(a) *Method of Sale.*—Fat sheep and lambs are disposed of by the producer in the following ways :—

- (i) on the farm, to livestock traders and wholesale and retail butchers ;
- (ii) at a market, by auction or private treaty ;
- (iii) by consignment to a salesman in a consuming area for sale on commission, the sheep being either sent alive for slaughter by the town salesman or consigned in carcass form through a dealer-slaughterman in the producing area ; or
- (iv) through a farmers' co-operative slaughter-house.

On the Farm.

Large numbers of fat sheep and lambs are annually sold on the farm direct to butchers and livestock traders, usually by the head, but occasionally on a dead-weight basis. In some cases, also, farmers weigh a few sheep, representative of the lot to be sold, in order to arrive at some basis for the price to be demanded. The practice of selling on the farm is perhaps more common on a rising market than on a falling one.

In many districts, retail butchers prefer to buy on the farm. They know under what conditions the flock is kept and can, therefore, rely on the quality of the product. They can usually

* Economic Series Nos. 14, 19, 23 and 26.

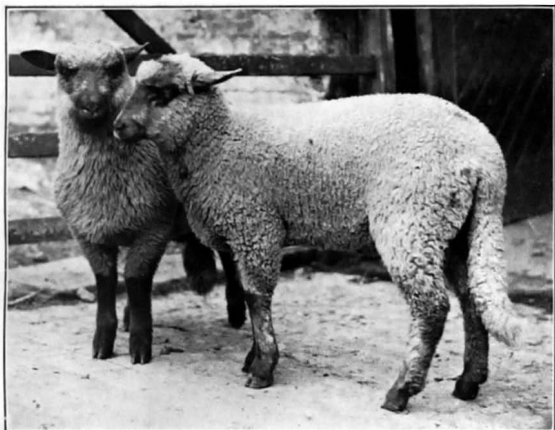


FIG. 14.—Second Quality Lambs, corresponding to Carcase Grades *Good* and *Medium*. (See Figs. 40 and 41.)

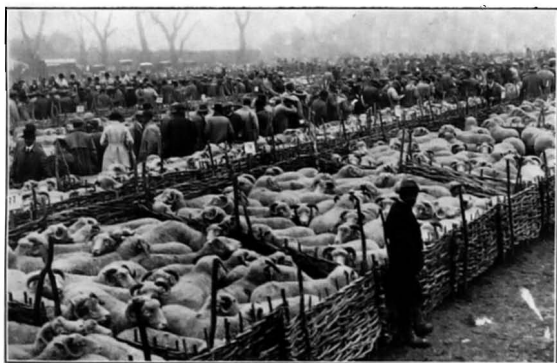


FIG. 15.—Annual Show and Sale of Dorset Horn Sheep at Dorchester.

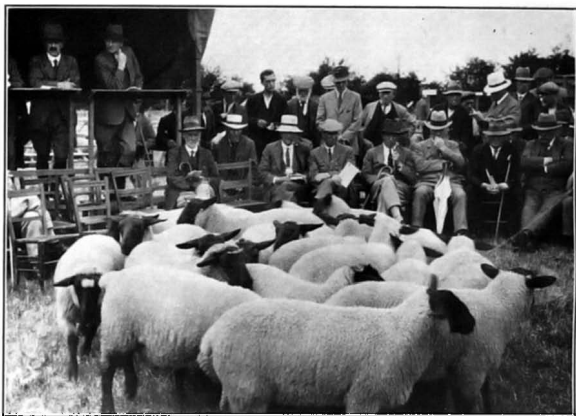


FIG. 16.—Sale of Lambs in a Ring at an East Anglian Auction.



FIG. 17.—Sale of Fat Sheep in Pens.

draw their supplies as required ; thus it is a fairly common practice in some parts of the country for a farmer to sell, say, from 60 to 80 fat lambs to a retail butcher for delivery over an agreed period.

Wholesale carcase butchers in urban areas also buy, directly or through representatives, a certain proportion of their supplies on the farm, particularly at certain times of the year, as, for instance, when fat hoggets are being drawn off the roots in the late winter or early spring.

Livestock traders also buy extensively on the farm, especially those who consign to wholesale markets for sale on commission. They are in close touch with flockmasters and thus usually know where and when considerable quantities of fat sheep and lambs can be bought, and they can inspect the sheep when ready for sale.

Sale on the farm, as compared with selling in a market, avoids market charges, economizes in transport costs, and saves much handling and wear and tear on the animals. Nevertheless, every transaction that takes place on the farm must correspondingly reduce the amount of stock sold in other ways, and the tendency of this method of sale is thus to weaken somewhat the position of the livestock markets. Many markets already fail to draw sufficient regular supplies of fat sheep to ensure the keenest competition among buyers or stability of supply and demand.

At a Market.

Fat sheep are sold by producers in livestock markets either by auction or private treaty. Several of these markets are owned by farmers' co-operative associations. Apart from stock sent in by producers, a considerable proportion of the pitchings in livestock markets are dealers' stock. Certain markets, indeed, have the reputation of being largely dealers' markets. In some cases, farmers engage dealers to sell their stock for them on commission at distant livestock markets in consuming centres.

Private-treaty markets for the sale of fat stock have been largely superseded by auction sales, those still remaining being mainly dealers' markets, in which both seller and buyer are fully accustomed to valuing live animals. Private-treaty markets are still common in remote areas, notably in Pembrokeshire. In many markets, where the bulk of the stock goes through the "ring," there is also a little private-treaty selling.

The lay-out and equipment of cattle markets, both auction and private treaty, their location, the position regarding market rights, ownership and control and the reaction of these conditions on administration and procedure, the practice regarding selling times and methods of selling, the number of stock handled, the effect of transport developments, and other factors bearing on market efficiency, are examined in detail in the *Report on Markets and Fairs in England and Wales*.* This Report also deals with

* Economic Series Nos. 13, 14, 19, 23 and 26.

the nature and incidence of tolls and selling charges. It provides a basis for judging the efficiency of the livestock markets of the country in relation to their economic environment. The subject need not, therefore, be re-discussed here.

While it is true that many farmers still prefer to sell their produce direct off the farm and hardly ever use the auction market from choice, the majority of farmers prefer the auction, with the keen competition between buyers which, in the main, it affords. Moreover, the farmer is generally less skilled than the butcher or dealer as a valuer of stock, and is thus more likely to realise the full value of his animals by putting them up to be bid for by a number of buyers than by selling them privately.

The livestock market has many advantages—(i) It acts as an alternative outlet in districts situated some distance from consuming areas, where the producer might otherwise have to rely on the visits of dealers or butchers. (ii) It provides a collecting centre to which both small and large consignments from individual farms can be assembled for sale, thus giving purchasers a wide choice. The large auction market which attracts both supplies and customers from a wide radius is especially valuable to the farmer as a keen competitive sales centre and to the buyer as a place where he can consistently rely upon adequate supplies. Small markets, on the other hand, of which there are so many throughout the country, particularly in the south-western counties and in Wales, necessarily divide buyers and thus limit competition. Indeed, so as to avoid unnecessary competition, local dealers frequently arrange not to attend the same markets. The small market, moreover, dependent as it is on a comparatively small number of sellers and buyers, is highly susceptible to fluctuations in supply and demand. With the extended use of motor transport for conveying livestock considerable distances, the use of the large market and its value are tending to increase. (iii) The market acts as a price-recording station and thus provides guidance to farmers in their private transactions with buyers on the farms. (iv) It is of value to the producer to be able to employ as a salesman or as an adviser in sales, an auctioneer or a dealer who is constantly in touch with current values and with the general and individual needs of the trade, though this, of course, equally applies to the practice of consigning sheep and lambs to distant consuming centres for slaughter and sale on commission. (v) In auction markets, at any rate, sales are on a cash basis so far as the producer is concerned. There are times when the trade cannot immediately pay cash for purchases, and it is an open secret that firms of auctioneers, in order to retain valuable custom, will allow produce to be purchased on a short credit basis. The farmer, however, is invariably paid cash. (iv) The large market is particularly convenient as an assembling point for material not easily disposed of to local buyers. This is notably the case in

the disposal of fat ewes. Ewes are more easily disposed of through some channels than others. There is a considerable trade in this type of mutton in working-class districts where cheap home-killed mutton is in demand. Thus, ewes killed at Birkenhead are sent to Birmingham, Wigan and various towns in industrial Lancashire; only occasionally are they sent to London. Similarly, ewes bought in Devon and west Somerset may be consigned to Plymouth and Birmingham rather than to London. The supply for this trade is usually collected at markets by wholesale butchers and dealer-slaughtermen.

Fat sheep and lambs are sold by auction usually in pens of 4, 6, 8 or possibly more, the auctioneer, in selling, passing from pen to pen followed by a group of buyers (Fig. 17). In some markets in the North, the supplies are occasionally passed through a ring. The former method of sale is probably the quicker, the latter entailing a certain amount of extra droving. Where sold in the pens, the animals can be readily handled prior to sale, but at the time of sale it is often difficult for the buyer to get a good view of them or to get near enough to handle them.

Farmers could assist auctioneers and improve the value of their markets by notifying auctioneers in advance of the supplies they intend sending. This would allow the auctioneer to advertise entries and circularise likely buyers beforehand. Where this practice of prior notification obtains, it is said to be of considerable value to the auction.

On Commission.

The consignment of sheep and lambs to a salesman for slaughter and sale on commission in a consuming centre is not very often done by farmers. The farmer is rarely conversant with the state of trade at central markets and, therefore, prefers to sell at country auctions or privately to dealers or dealer-slaughtermen (see Chapter VIII) whose business is to keep in touch with those markets. In the north of England and the Scottish border counties, however, fat sheep are largely consigned by the farmer to dealer-slaughtermen who sell them in carcase form in London and other wholesale meat-markets and return to the farmer the price realized less commission charges and expenses.*

Were farmers represented by a selling agency on the central markets (see Chapter IX), they could presumably be kept informed as to the day-to-day state of trade and some measure of control over the flow of supplies could also be secured. In any case, if a system of grading and marking mutton were introduced and widely adopted, the sale of sheep and lambs by farmers direct to carcase butchers on central markets on a dead-weight and grade system would present possibilities. This suggestion is elaborated below.

* Linlithgow Committee, Interim Report on Meat, Poultry and Eggs. Cmd. 1927/1923, p. 21.

Through a Farmers' Co-operative Slaughter-house.

There are a small number of farmers' co-operative societies in various parts of the country, in particular the south-western counties of England, which receive farmers' livestock—especially sheep, lambs and pigs—slaughter, dress and consign away to wholesalers in large towns for sale usually on commission. The operations of these societies are referred to again in Chapter VIII (page 83).

(b) *Basis of Sale.*—Fat sheep and lambs are mostly sold by the producer on a "per head" basis. In a few instances, however, the live animals are weighed before sale, while sale by dead weight is a fairly common practice, especially in direct transactions between farmers and butchers. A probable development is the sale of live sheep and lambs by producers on a dead-weight and carcase-grade basis.

By the Head.

The usual basis of sale of sheep by the producer is by the head, the buyer forming his own estimate of the dead weight at which the animal is likely to kill out. Although this method has its obvious limitations, a considerable degree of accuracy is attained by those who are constantly buying live sheep to sell again on an actual dead-weight basis.

By Live Weight.

There is no legal obligation, as there is with fat cattle, for fat sheep offered for sale by auction to be weighed beforehand, nor is the weighing of sheep for sale much practised. The only part of the country where the practice exists to any extent is the Wolds of the East Riding of Yorkshire, and even here it is less common than formerly.

Weighing fat sheep prior to sale by auction is indeed only practicable where they are sold in the ring: they might in such cases be first passed over the weighbridge, as in the case of fat cattle. This, however, would entail a considerable amount of droving, which might unnecessarily fatigue the animals and delay the market, and would also probably cause a certain amount of bruising, to which fat sheep are already too much subjected.

Moreover, the live weight of fat sheep is in any case of somewhat doubtful utility as a basis of sale owing to variations in the weight of the wool according to type, season and condition—whether dry or wet—at the time of sale. The weight of wool is more or less constant only in the case of spring lambs (see Chapter X.)

The use of the scale would not eliminate the difficulty of appraising the value of the carcase, which depends not only on the weight but also on the conformation and finish. It might,

on the other hand, assist vendors, who have not had the advantage of seeing the carcasses of their own sheep weighed, to arrive at a rough estimate of their value.

By Dead Weight.

A number of farmers who supply butchers or dealer-slaughtermen direct sell their sheep on a dead-weight basis, the agreed price being usually based on local market prices. The unit of sale is generally the lb. ascertained dressed carcass weight, sinking the offals. Where confidence exists, this is a satisfactory method of sale. It is, in fact, the only way by which the price received by the farmer can be related with accuracy to the weight of the animal when slaughtered; for where live sheep are bought by the head, the buyer, however skilled he may be in judging the probable carcass weight of a live animal, must necessarily allow himself a small margin for error. Moreover, the educational value to the farmer of selling by dead weight is considerable; he has the opportunity of seeing how sheep of his own feeding and, possibly, of his own breeding kill out, and he can obtain first-hand knowledge of the degree of finish required by the trade or, at any rate, by his particular customer. Producers, however, rarely enter a slaughter-house to see their own sheep killed. In this connection, greater development of carcass classes at Christmas fat stock shows would go a long way towards interesting producers in trade requirements.

By Dead Weight and Carcass Grade.

An experiment now in course of being carried out in London, under the auspices of the Ministry of Agriculture and Fisheries, has already done much to demonstrate that, on the basis of standard carcass grades, fat cattle can satisfactorily be bought alive by dead weight by meat wholesalers from producers without prior inspection. The procedure adopted is fully set out in the Ministry's Marketing Leaflet No. 27,* and may be briefly summarized as follows. A farmer desiring to test this method of sale is invited to state the number, general description and approximate weights of the cattle which he is prepared to offer. On receiving this information, the Ministry's Grading Officers obtain quotations for the cattle from a number of wholesale carcass butchers at Smithfield Market, London. These quotations are based on National Mark beef grades and are per 8-lb. stone dead weight (sinking the offals). The quotations are then forwarded to the farmer, who, if he decides to accept a quotation, consigns the cattle to Islington, where they are slaughtered by the carcass

* Obtainable, free of charge, from the Ministry of Agriculture and Fisheries, 10, Whitehall Place, London, S.W.1.

butcher concerned and weighed and graded by the Ministry's Officers. A certificate stating the carcass grade and dead weight is forwarded by the Ministry to the consignor, who receives payment from the carcass butcher on the basis of this certificate. Under arrangements made with the wholesale carcass butchers and the National Farmers' Union Mutual Insurance Society, all cattle (except cows) of gradable quality sent in are insured by the butcher against the risk of total or partial condemnation at a charge of 2s. per head, of which 1s. is recovered from the sender. From March 28, 1930, to July 31, 1931, 395 head of fat cattle in 48 consignments, valued at over £9,941, were sold by this method. Although the experiment is still in its infancy, it is to be noted that wholesalers have been glad to give quotations and that farmers who have sent well-finished cattle appear to have been satisfied with the results.

The establishment of standard carcass grades for mutton and lamb, discussed in Chapter XII, would open the way for the development of a similar system for the sale of live sheep and lambs. In point of fact, it is already common for dealers to sell to wholesalers and retailers on a dead-weight basis, and even farmers, at times, sell sheep in this way direct to butchers or dealer-slaughtermen. The introduction of standard carcass grades would enable a dead-weight price to be quoted in advance without prior inspection of the sheep, and should prove of distinct value to both producer and buyer.

Were the slaughtering of sheep in Great Britain concentrated in the hands of comparatively few slaughtering concerns, as in New Zealand or the Argentine, or, in the case of cattle, in the United States (where most of the killing is done in packing-houses running at full capacity during practically the whole year), it would be a simple matter for such firms to buy their requirements direct from farmers on a certified carcass-grade and weight basis. As things are, however, sale according to certified carcass grade and dead weight could only be arranged in those areas where the Ministry has found it feasible to maintain a grading staff. At present, a staff of graders is maintained in certain consuming centres—London, Birmingham, Leeds, Bradford and Halifax—for the grading and marking of beef killed in those centres; for the grading and marking of fresh beef sent to those centres, chiefly London, graders are maintained at Birkenhead and also in the north-east of Scotland, where they visit slaughter-houses scattered over a wide area.

As in the case of fat cattle, the problem of the sale by farmers of fat sheep by dead weight and carcass grade resolves itself mainly into the question of at what point the grading should take place. So far, no arrangements have been made to use the official grading and marking facilities in the north-east of Scotland for the purpose of certifying dead weights and carcass grades on local sales of cattle by farmers to slaughterers; but, in any dispatching area,

facilities of this nature clearly could be so used if administrative difficulties could be overcome. In any case, as is pointed out later (page 121), the slaughter-house is the only place where, in practice, mutton and lamb carcasses can be graded and marked at all. The congestion at a large wholesale meat market is such as to preclude grading and marking on market premises. Naturally, the procedure would depend on that adopted for the grading and marking service, and it would be a question whether farmers would be prepared to accept, as a basis for payment, the certification of carcass grade and weight by dealer-slaughtermen, in the event of it being decided, in the case of mutton and lamb, that grading and marking at dispatching points could safely be left to senders, subject to checks and controls—a question which is discussed in Chapter XII. In this respect, useful work might be done by farmers' livestock agencies such as are suggested in Chapter IX.

Experience alone would show the most workable method of quoting prices on a grade and weight basis for mutton and lamb killed in country districts. It is certainly important that local dealers should be in a position to quote the farmer a price according to grade and weight before the sheep leave the farm. It might be doubted if they would do this when they are selling in a distant market on a purely speculative basis and are unable to hold their supplies when the market is unfavourable, as town carcass-butchers can and frequently do. In some instances, however, dealer-slaughtermen even now quote day-to-day prices for sheep and lambs. There seems no reason why, with the development of standard grades, town wholesalers should not quote to country slaughterers by carcass grade, and they, in turn, quote to farmers on the same basis after allowing a margin for their charges. If the method of sale by carcass grade and weight proved a success in connection with a large consuming area such as London, it is almost certain that, within a reasonably short time, a price differentiation according to carcass grade would make itself felt at the sources of supply.

CHAPTER VIII.—THE LIVESTOCK TRADER.

(i) The Dealer in Store Sheep and Lambs.

In the trade in store sheep, the livestock trader acts as an intermediary between farmer and farmer, in particular between the sheep breeder and the fattener.

Broadly, two types of dealer can be distinguished—those who operate on a big scale and those who work on a small scale. A small-scale dealer, making his purchases on a "per head" basis at markets or on the farm, does mainly a local business between farmer and farmer and between the farmer and the large-scale dealer. The large-scale dealer, who generally operates over a

wide area, performs functions of considerable importance. He plays a necessary part in the distribution of store sheep and lambs from breeding districts to fattening areas or to districts where flying or semi-flying flocks are kept. He knows from experience what type of sheep do best when brought from the district where they are bred to fresh ground. He also knows where and when store sheep surplus to local requirements will be on offer and will be in demand for fattening or for breeding. In this respect, his usefulness is particularly evident between November and the beginning of March, when store sheep are generally difficult to find in most parts of the country. If he knows his business, the dealer is usually able to obtain what is required.

Although in some cases a livestock trader deals in cattle, sheep and calves, as a rule the large-scale dealer in sheep does little business in other kinds of stock. While preferring to do business on a commission basis (page 73), he mostly takes a merchant's risk and is satisfied on the whole with a comparatively small profit. He may assume the responsibility of financing farmers' purchases, and may even find a market for them when ready for killing.

While the dealer thus performs highly valuable functions, there is a certain lack of economy in the dealer system under existing conditions. That it should be necessary for him, as it frequently is, to buy sheep as a speculation and to pitch and often re-pitch them until they find an ultimate purchaser has obvious objections. It results in loading unnecessary overhead charges on to the costs of selling sheep, for the dealer must presumably obtain a margin sufficient to cover the extra trucking, droving, maintenance and market charges involved in re-pitching. It also entails avoidable wear and tear on the sheep themselves. The difficulties of ascertaining beforehand the needs of a district for store sheep are certainly great and may be insuperable, and purchasing sheep on order and not by inspection may have its objections; but it is, at least, possible that a more rational system of marketing store sheep, through farmers' livestock agencies, could be devised (see Chapter IX), under which the knowledge and experience of the livestock trader could be used to better advantage.

With the advent of motor transport, the dealer in store sheep has lost a certain amount of ground, and markets like York, where, until fairly recently, sheep used to be marketed by dealers in very large quantities during the autumn months, no longer attract the same numbers. The summer and autumn store sheep sales are still largely attended both by farmers and, as formerly, by dealers, but it would appear that nowadays farmers do their own purchasing, often direct from other farms, to a far greater extent than before and are prepared to travel considerable distances for the purpose.

(ii) The Dealer in Fat Sheep and Lambs.

The dealer in fat sheep and lambs usually devotes his time very largely to attending fat stock markets and visiting farms for the purpose of buying sheep and lambs to supply retail and, in some cases, wholesale butchers and dealer-slaughtermen (see below). In some instances, he may himself be a retail butcher and, in any case, he usually has land where he can accommodate and rest his purchases and thus always have stock on hand to offer to his customers.

The store sheep dealer may also trade in fat sheep; thus it is a fairly common practice for the dealer who has regular contracts with retailers or a good wholesale connection at a central meat market to buy store lambs in one area, sell them in another and buy them back when fat from the farmer to whom he has sold them.

Retailers in towns of some size but not sufficiently large to provide scope for a wholesale butcher are, for the greater part of the year, dependent to a considerable extent on dealers' supplies, often from one part of the country during certain months and from other parts at other seasons. The dealer buys generally on a "per head" basis and may sell either at so much per head or at a flat rate of so much per lb. dead weight for all stock delivered over a specified period. In many cases, again, fat sheep and lambs are bought by the dealer on order for wholesalers or retailers and consigned alive, the dealer being paid a commission of approximately 1s. 0d. per head and the purchaser bearing transport and other charges. Thus, while the larger firms of wholesale butchers usually employ their own salaried buyers, smaller wholesale firms usually depend for their supplies on dealers acting as their agents or representatives. In such cases, the wholesaler does not normally quote buying prices from day to day but relies on his representative to buy "right."

Fat sheep and lambs brought from Ireland are generally collected in that country by small dealers at markets and direct from farms and are pitched in Dublin Market, where they are bought by larger dealers trading in this country. Alternatively, these latter dealers may themselves buy at fairs or off farms in the producing districts and consign their purchases direct to England. On this side, the sheep and lambs are offered for sale by private treaty to English buyers in the lairages at the landing place. Irish dealers also sell sheep at the lairages on commission for other Irish consignors, whom they charge with expenses and a commission of about 1s. 0d. a head for their trouble. In some cases, English wholesale commission firms dispose of Irish dealers' consignments in London, the dealer paying a commission charge of 1s. 0d. per animal plus the cost of slaughtering, dock dues and rail charges.

There is considerable competition and no co-ordination between the various Irish dealers. They appear to be uninformed as to

what sort of trade their consignments are likely to meet and often experience gluts, especially in the autumn, when the Scotch lamb season is in full swing.

(iii) The Dealer-Slaughterman.

The dealer-slaughterman buys direct off farms and at country markets and conveys his purchases, generally by motor-lorry, to a local slaughter-house, which is often situated on a railway and may have its own siding (Fig. 18). A number of these country slaughter-houses, in fact, belong to the railway companies and are rented by dealer-slaughtermen. Supplies are drawn from within a radius of 20 miles or so from the slaughter-house which is situated in a surplus-producing district. In some cases, however, material is drawn from considerably further afield, especially where the dealer-slaughterman relies not only on his own purchases but also on consignments sent in by other dealers. The dealer-slaughterman buys usually on a "per head" basis. In some cases, mainly where a trader kills for an order trade, he may buy on a dead-weight and quality basis at prices quoted beforehand. He may also slaughter and sell for farmers through a commission salesman in a wholesale meat market, returning the price realized less commission and expenses.

The dressed carcasses are dispatched either for sale on commission at a central meat market or, in some cases, on order to big wholesale firms with multiple retail shops. At certain seasons, regular or occasional consignments may be sent to individual retail butchers. Thus, while the bulk of the surplus from Devon goes to London, a considerable quantity is diverted to retailers in South Coast towns during the summer. Both carcasses and edible offals are generally consigned to the same place, the pelts being collected by local fellmongers.

The dealer-slaughterman usually operates in areas 100 miles or more from the consuming market to which the bulk of the produce is sent. Thus, while produce sent to London from neighbouring counties arrives for the most part alive and is slaughtered at Islington, much of that sent from Dorset, Somerset, Devon and Cornwall, and some from Wiltshire, is killed in the producing areas and is sent to London dead. It is estimated that 50 or more dealer-slaughtermen operate in these five counties. Mutton and lamb sent from Lincolnshire and Scotland for sale at Smithfield also largely arrive dead. Similarly, a large proportion of Irish lambs landed at Wallasey and consigned to London are sent dead, only a small proportion being sent to Islington for slaughter.

The number of sheep and lambs killed annually by a dealer-slaughterman varies considerably. In England, it ranges from several hundreds in the case of the small man to as many as 25,000 in the case of those operating on a big scale. In Scotland, where the dealer-slaughterman is more in evidence, it is said that some



FIG. 18.—Country Slaughterhouse, with Railway Siding adjacent.



FIG. 19.—Prime Young Ewe Carcase.



FIG. 20.—Ewe Carcase showing excessive fat and large barrel.

few kill and consign away upwards of 80,000 sheep and lambs a year.

The functions of the dealer-slaughterman are also performed by a limited number of farmers' co-operative livestock societies in various parts of the country, which receive stock—mainly sheep, lambs, pigs and calves—from their members, slaughter and consign away to consuming centres. Dealers' stock are generally also handled, sometimes in greater numbers than supplies sent in by farmers.

The Tweedside Farmers' Co-operative Slaughterhouse at Tweedmouth is an example of this type of society. This society slaughters about 30,000 sheep annually. Some are bought outright on a dead-weight basis or at markets, others are slaughtered for members and mostly railed on commission to wholesalers in London. The commission charged to members is at the rate of 3d. in the £, to non-members 1s. per sheep. Slaughtering and rail charges and wholesalers' commissions are charged in addition.

Among societies operating on similar lines are the West Devon and North Cornwall Farmers,* with slaughter-houses at Holsworthy and Halwill, and North Devon Farmers, with slaughtering premises at Barnstaple.

CHAPTER IX.—ORGANISED MARKETING BY PRODUCERS.

(i) General.

A study of the prices of imported and home-killed mutton and lamb brings out the comparative steadiness of those of the imported article throughout the year. This is rendered possible by the fact that, except for insignificant quantities from the Irish Free State, imported mutton and lamb are frozen and can therefore be kept in store for considerable periods, thus enabling the market to be fed according to demand. Even so, however, the existing degree of price stability could not be attained if it were not for the fact that the control of imported supplies is in relatively few hands.

Exports from New Zealand, from which country almost half of the total imports into the United Kingdom are derived, are regulated by a Board controlling the whole of the supplies consigned from that country. The operations of this Board are described below. While there is no similar unified control in the South American trade, the number of packing and shipping companies is comparatively small, and the flow of supplies to market can be and is, in practice, fairly carefully regulated in accordance with demand, control of total shipments being effected thr

* The livestock trading operations of this Society are described in Economic Series No. 1 (pp. 113-117), where the business aspects in general of co-operative slaughter-houses are also discussed (pp. 118-121).

freight committee, representing the companies, that agrees from time to time on the allocation of shipping space.

In the marketing of home-killed supplies, on the other hand, there is practically no co-ordination of any kind. Supplies reach the market largely as dictated by the season and the market knowledge of individual producers. As a result, periods of glut and shortage are apt to occur, though many producers are aware of the glut periods that recur regularly—particularly, in the case of English lamb, soon after Whitsuntide and again during September or October, when the supply of Scotch hill lamb is at its height—and so far as possible avoid marketing their stock at those times. The problem of the home producer, however, is different from that faced by the importer. His product is marketed fresh; he cannot, therefore, make use of long-period cold-storage to regulate the flow of supplies. Any system of adjusting supply to demand would, therefore, have to operate at the point of sale of the live animal. Moreover, in the case of home-killed lamb, at any rate, production is necessarily so largely a seasonal matter that it is inconceivable that any system could be devised which would secure anything approaching uniformity of supply throughout the year. Nevertheless, it is likely that some organized control by producers of the marketing machinery with a view to more regular feeding of the market, though it might not eliminate seasonal price fluctuations, would be beneficial when the market tended to become overloaded and prices to fall to an uneconomic level. Before discussing the lines on which such organized control might be developed, an outline is given below of the systems of organized marketing in the livestock industry in certain other countries.

(ii) Abroad.

(a) *In the United States.*—Recent developments in the United States demonstrate the possibilities of comprehensive organization of livestock marketing by producers when the objective is chiefly internal and not export trade. Livestock marketing associations have been in existence in the United States for some years, but it was not until 1929 that these organizations were welded together for the purpose of co-ordinating action on a national scale. In that year, the Federal Farm Board called a conference in Chicago of representatives of all co-operative livestock marketing associations and other leading farmers' organizations to discuss ways and means of organizing a national marketing agency for livestock. As a result of this conference, the National Livestock Marketing Association, with headquarters at Chicago, came into being the following year. This organization is a federation of producer-owned and controlled livestock marketing associations. At present, 18 co-operative livestock marketing associations, practically all of which have had many years of successful experience and include in their membership a large number of small associations,

are members and stock-holders of the National Association. The total annual turnover of these 18 associations during 1929 was valued at almost 200 million dollars out of a total of 300 million dollars' worth of business handled by all livestock marketing associations in the United States.

The associations of which the National Association is constituted are of three types—viz, terminal sales agencies, regional or district sales agencies and the National Order Buying Company. The terminal sales agencies operate on central livestock markets, mainly in feeding areas. Their members include both individual farmers and local shipping associations. Their functions consist of receiving, sorting, grading and selling members' livestock and remitting proceeds to senders. They also purchase store stock for members and in most cases maintain a claim and transport service.

The regional sales agencies are mainly confined to the range areas in the west and south. In some cases, they act as agents for members in the sale of stock direct to processor or packer. In such cases, they keep in touch, through field agents, with farmers wishing to sell stock, receiving notification from their agents as to stock ready for market. Packers place their orders with the association and the field-men are notified when and where to send. Field-men also grade stock and supervise dispatch. In the case of some associations, stock may be sent to co-operative concentration yards organized on a county or district basis. Here the stock are sorted, graded and sold by district salesmen on a live grade and weight basis direct to packers or on terminal markets, sometimes through terminal sales agencies. In some cases, regional agencies have organized regional credit corporations for the purpose of financing members in the feeding of stock.

The National Order Buying Company was developed, with livestock sales agencies as its members, for the purpose of establishing contacts with packers and thus providing its members with outlets for their surplus stock.

The aim of the National Association is to market livestock in an orderly manner, taking into consideration consumption and demand. To a considerable extent, it is possible for the Association to hold stock back on farms or at local concentration points and to direct it to different markets as required, thus helping to avoid local or temporary gluts and shortages and tending to stabilize market prices and to assure to packers and other buyers a more uniform supply. The Association aims at eliminating wasteful and speculative methods of livestock distribution and, so far as possible, maintaining some degree of co-ordination between demand and production by keeping members and their agencies closely informed regarding changes in market demand. It also aims at standardizing livestock grades and selling on the basis of such grades. Another of its functions is to stimulate consump-

tion of meats by co-operating with packers and others in large-scale advertising and educational campaigns.

Associated with the National Association are two subsidiary associations—the National Feeder and Finance Corporation and the National Livestock Publishing Association.

The functions of the former are (1) to set up regional livestock credit corporations which will make loans to farmers to finance the feeding of livestock and (2) to move store stock as efficiently and economically as possible from production to feeding areas. The 5-million dollar capital of the Corporation is all owned by the National Association, which has received a loan from the revolving fund at the disposal of the Federal Farm Board. With its own capital, the Corporation provides a portion of the capital for regional livestock credit corporations, which, through the intermediate credit banks, make short-period loans on chattel mortgages to livestock feeders.

The National Livestock Publishing Association functions mainly as the producers' intelligence service, keeping members in close touch with market conditions and tendencies in the livestock industry and informing them as to the operations of the National Association and its member agencies.

(b) *In Canada.*—Co-operative livestock marketing in Canada has not yet reached the stage of unification attained in the United States. Until recently, it has been, in the main, confined to local organizations, collecting and shipping stock to the primary market; these have been in some cases federated to form provincial associations. There is now, however, a movement towards centralization, provincial associations having in some cases combined to form selling agencies on the central markets. Thus, the Central Canadian Livestock Producers' Association was formed in 1928 as a selling agency in Winnipeg for the Alberta, Saskatchewan and Manitoba Livestock Producers' Associations, each of which in its turn is an organization of local co-operatives. In 1929, this association handled one-fifth of all sales on the Winnipeg markets. In 1929, again, the Canadian Livestock Producers was formed as a selling agency on the Montreal market for all the provincial livestock co-operatives, thus relieving pressure on the western markets.

(c) *In New Zealand.*—The control of marketing in New Zealand by organized producers takes a somewhat different form from that found in the United States and Canada; it is applied to the finished and frozen carcasses at the point of export and not to the internal trade in live animals.

The existing system of control of export of meat was instituted in New Zealand by the Meat Export Control Act, 1921-2. This Act established a Board—the New Zealand Meat Producers' Board—with a London Agency, to control the export of all meat from New Zealand. The Board consists of 8 persons, 5 elected by live-

stock producers, 2 appointed by the Government, and 1 appointed as a representative of stock and station agents. Provision is made in the Act for the constitution of an Electoral Committee, consisting of delegates from the various producing districts, for the purpose of electing the producers' representatives on the Board. Every sheep owner having 100 sheep or over is entitled to vote for delegates to the Electoral Committee.

The Board is empowered to assume complete or limited control over all meat exported, complete control extending to the point of actually selling the meat. It may regulate the quality, quantity and destination of meat exported and may control shipping arrangements, prices, methods of sale and methods of grading and packing. The Board actually takes no part in the buying and selling of meat; the New Zealand Government grants yearly licences to export meat on the recommendation of the Board and on conditions defined by it, and no meat may be exported without such licence.

The Board is financed by a compulsory levy on all exports of meat from New Zealand amounting in the past to 1d. per carcase.* In the 12 months ended June 30th, 1930, this levy brought in an income of over £36,000.

Before the Board was established, shipments of meat to England had been made in a haphazard way, resulting in periodic glutting of the market and considerable price fluctuations. The main function of the Board has, therefore, been to stabilize the market by the regulation of shipments so as to avoid gluts as far as possible and so as to prevent big accumulations of meat getting into the hands of holders and speculators. For this purpose, its London representative keeps the Board informed by cablegram of market conditions and prospects in the United Kingdom, the chief market for New Zealand mutton and lamb. The quantities likely to be consigned from competing countries are also taken into consideration by the Board in determining the quantity of carcasses to be shipped from time to time to the United Kingdom market. The regulation of shipments is carried out by means of a Shipping Allotment Committee, on which the Board and the shipping companies are represented, the Meat Export Control Act stipulating that no freight agreement for carriage of meat shall be valid unless made by the Board.

The success of the Board in securing the orderly marketing of New Zealand meat was referred to by the Imperial Economic Committee in its Second Report,† the Committee remarking that a feature of the New Zealand meat trade was its regularity and continuity of supply.

The Board has also undertaken the important function of establishing uniformity in grading. Formerly, the various freezing companies had their own grade marks and brands for various

* Reduced in 1931 to ½d. per carcase.

† Cmd. 2499/1925.

qualities of mutton and lamb. The Board therefore laid down a uniform system of grade marks applicable to all meat for export (see Chapter XII) and appointed four inspectors to supervise the grading at freezing works, in order to secure uniformity of method. The aim was "to give an unchallengeable guarantee that the whole of the huge quantity of frozen meat sold by New Zealand in the world's markets is strictly according to grade specified and thus inspire confidence in the buyer."* It was felt that this confidence would "enable the meat to be sold in advance and not after inspection and delivery of documents with the accompanying possibility of a quality claim with its many abuses."* It is part of the duties of the Board's inspectors to supervise the loading of the carcasses, while an officer appointed by the Board also supervises unloading in the United Kingdom. The reports of these officers show that a steady improvement has taken place in the grading and condition of the carcasses.

Another direction in which the Board has effected improvement has been in the elimination of small parcels from the export trade. A case was instanced, previous to the Board taking action, of a vessel carrying 145,000 carcasses for which there were no less than 217 bills of lading and 915 different grade marks and numbers; 106 lots contained 5 carcasses and under, and, of these, 21 lots contained only 3 carcasses, 24 lots only 2 carcasses and 33 lots only 1 carcass each. Only 77 lots contained between 50 and 100 carcasses. This state of affairs was typical of the existing system of shipping and led to a great deal of extra work and loss of time in sorting out consignments, especially in transit through the freezing chambers at the selling end. As a result of a conference with the various interests concerned, it was agreed to establish a minimum of 250 carcasses for one parcel.

Controlling, as it does, the entire meat export trade from New Zealand, the Board has obviously great bargaining power *vis-à-vis* the various intermediary agencies that render marketing services—for example, transport and cold-storage firms. At the same time, by its rationalization of the trade, it offers them scope for economies in handling meat. It can offer the shipping companies, for example, long-term contracts and advance planning of shipments which enable them to make the most economical use of their vessels.

The reductions in freight rates effected by the Board from its establishment up to June, 1930, represent savings of 3s. 8d. on a 60-lb. sheep, 2s. 1d. on a 35-lb. lamb and proportionate amounts on cattle and pigs. While part of this saving is certainly due to the general decline in freight rates during recent years, it can be safely assumed that it is, in part, due to the influence of the Board. Since the Board's announcement that it might be forced to build a cold-store in London, cold-storage rates have also been reduced.

* New Zealand Meat Producers' Board First Annual Report, 1923, p. 4.

Propaganda in favour of New Zealand mutton and lamb forms an increasingly important branch of the Board's work, over £13,000 having been spent on advertising in the year ended June 30th, 1930. Readers of meat trade journals published in Great Britain must be familiar with the Board's advertisements of New Zealand lamb during the last year or two. During the 1929 season, the Board distributed free to retail shops in the United Kingdom 34,750 streamers, 105,500 showcards, 70,500 window discs, 5,000 van discs and over 3 million copies of the Board's booklet, *New Zealand Meat, the Best in the World*. The Board also employs a travelling representative in this country to act as a connecting link between retail butchers' shops and its London office with a view to extending the trade in New Zealand mutton and lamb. Additional publicity is also afforded by displays at trade exhibitions, such as the British Industries Fair and the Grocers' Exhibition. The window displays at the High Commissioner's Office in the Strand are a familiar sight to Londoners. Any changes in public taste are carefully observed, the Board bringing its influence to bear upon producers to secure corresponding changes in production. The Board is also constantly on the watch for possible new markets, organizing trial shipments from time to time.

The Board publishes regular communiqués relating to prices offered for fat stock for export, current Smithfield prices, statistics of killings, shipments, stocks and other information, all of which is of value to producers and the trade in New Zealand. The Board also promotes research into matters relative to the efficient handling of meat and, in particular, into the technique of refrigeration.

(iii) Possible Developments in this Country.

(a) *Store Sheep and Lambs*.—There is probably less to criticize in the existing methods of marketing store sheep in this country than in the case of store cattle. As has been shown, farmers nowadays do more of their own buying at markets, fairs and seasonal sales, and rely less on dealers than formerly. Where dealers are employed, they perform on the whole a valuable service, especially when sheep are purchased on order for farmers. It is still, however, the case, though less so than formerly, that a fair proportion of store sheep and lambs are bought by dealers speculatively and pitched and even re-pitched at markets until clients are found. Where this occurs, extra selling expenses are incurred, which have to be borne by the industry. Moreover, store sheep that change hands, or are offered for sale several times within a short period, tend to deteriorate.

In the *Report on the Marketing of Cattle and Beef*,* the possibility of marketing store cattle through farmers' livestock marketing associations is discussed. The system visualized is briefly the inter-trading of buying agencies in feeding areas with

* Economic Series No. 20, pp. 78-80.

selling agencies in breeding areas, the cattle offered on behalf of their members by the selling agencies being bought by the buying agencies on a live-weight and grade basis to the order of farmers at prices arranged between representatives of both organizations. The essential factor in the success of such a scheme is the possibility of buying and selling store stock by description on a grade basis. With store cattle, this presents comparatively little difficulty in this country. With sheep, on the other hand, as has been shown, the definition of quality grades that would be applicable to the numerous breeds and crosses and sufficiently precise to enable business to be done solely on description is a peculiarly difficult problem, and on its solution depends the question whether co-operative agencies for the sale or purchase of store sheep in this country would be able to effect a better co-ordination of supply and demand than is at present obtained.

(b) *Fat Sheep and Lambs*.—The example of the United States indicates what can be done by producers' organizations in the direction of securing the orderly marketing of fat sheep and lambs and, indeed, of fat stock generally. Although conditions are not entirely similar, there seems to be scope for developments on somewhat similar lines in this country, with a view to eliminating the losses which occur through the glutting of local markets and to securing more economic handling and processing. Regional dispatching and selling agencies, linked together in one central organization, and furnished with information from producers as to supplies coming forward and from representatives in the consuming centres as to the state of the market, should be in a position to regulate the flow of available supplies to accord as far as possible with market demand.

The question arises whether farmers' organizations of this character should merely handle live animals or go a stage further and themselves undertake the slaughtering process. This is already done on a comparatively small scale by several farmers' co-operative societies (see page 83). The suggestion that fat stock should be slaughtered in farmer-owned abattoirs in producing districts and the meat distributed to the consuming centres as and when required is discussed in the *Report on the Marketing of Cattle and Beef*.^{*} Advocates of this procedure claim that the meat could be uniformly graded so as to facilitate buying by urban distributors who could be guaranteed regular supplies, that important savings in handling, processing, selling and transport costs could be effected, and that producers would receive a price more nearly related to the value of their product, in that the speculative element which is always present in the buying of live animals would be eliminated.

Alternatively, in view of the possibility that, at no distant date, consuming areas generally will be served with central abattoirs, a possible line of development is the formation of producers'

^{*} Economic Series No. 20, pp. 82-84.

selling organizations to use and trade from these centralized establishments. Such organizations might themselves undertake the slaughtering and supply meat to the distributors. Slaughtering is a specialized business, however, and there is no reason to believe that farmers' organizations would carry it out more efficiently than other agencies, whatever system may be devised for the better organization and more economical working of the slaughtering process (see Chapter X).

Moreover, the seller of meat is not in so strong a bargaining position as the seller of livestock. He has less latitude as to the time within which he must market his product. Meat being perishable can only be held, against a glut, for a comparatively short time except by cold-storing it and thus sacrificing its differential value as fresh meat. Livestock, on the other hand, can be retained on the farm to await a favourable market, though even here the questions of available supplies of feed and the deterioration in value of the finished animal, particularly in the case of lamb, have to be taken into account.

All things considered, the most promising line of development in the provisioning of large towns and cities with home-killed supplies would seem to be the sale, by producer-controlled selling agencies, of live sheep and lambs to wholesale butchers in the consuming areas, the basis of sale being dead weight and standard carcase grade, as suggested in Chapter VII. A check on the weighing and grading and on the identity of each producer's stock would be kept by the agency. It is possible that unified control of the supplies of sheep and lambs would also lead to the centralization of slaughtering in those country districts from which mutton and lamb carcasses are customarily consigned, in fair quantities, to central meat markets and large urban buyers.

Producers' selling agencies operating on these lines might secure lower freight rates by bulking supplies. They might also undertake large-scale publicity for home-killed mutton and lamb after the fashion of the New Zealand Meat Producers' Board or the German "Reichsverband für Deutsche Schafzucht."* Up to the present, the home product has received virtually no advertising. Not only is it the producer who is primarily interested in the expansion of demand but every producer would derive benefit from it. If, therefore, the home product is to receive publicity on the scale that is needed, the urge must come from producers, who must organize comprehensively for the purpose so that the cost is spread equitably over all.

* This organization has recently circulated to German housewives, eating-houses, hotels and institutions, and to the Army, 300,000 copies of a publicity leaflet ("Werbe Merkblatt,"). The leaflet, besides calling attention to the food and health values of mutton and lamb in general and to the excellent quality of German mutton and lamb in particular, contains a number of recipes for mutton and lamb dishes and general information on the keeping and preparation of the meat.

PART III.—THE TRADE IN MUTTON AND LAMB.

CHAPTER X.—SLAUGHTERING AND CARCASE DRESSING.

(i) Facilities.

The system of slaughtering livestock in this country is in process of developing from that of a large number of private slaughter-houses to a more concentrated organization in public abattoirs. This development is due, in the main, to a general realization of the need for a more uniform and efficient system of official inspection than is possible where slaughtering is mainly done on private premises. In consequence, in the construction of public abattoirs in the past, considerations of public health have tended to obscure the equally important factor of economy of working.

A large number of towns have, or are in course of constructing, public abattoirs. Complete figures are not available as to the number of sheep and lambs slaughtered annually in public abattoirs in Great Britain, but returns obtained from the majority of local authorities controlling abattoirs indicate that it is in the neighbourhood of 4 million out of total slaughterings of sheep and lambs amounting to approximately 9 million (see Table III). The use of public abattoirs is far more widespread in Scotland and the north of England than in the rest of England and Wales.

It is estimated that there are still about 16,000 private slaughter-houses in England and Wales. Private slaughter-houses vary widely in efficiency of lay-out and equipment and in sanitary condition. They are mostly occupied by wholesale or retail butchers. A number of consumers' co-operative societies, with a butchery department, also have their own slaughter-houses, which often have a considerable throughput and are in some cases laid out and operated on meat-works lines.

Apart from slaughterings in public abattoirs and those of consumers' co-operative societies, from which meat is distributed throughout the urban areas in which they are situated, a considerable number of sheep and lambs are slaughtered by dealers in privately owned slaughter-houses in producing areas, notably the south-western counties and Scotland, from which they are "exported" as carcases to consuming centres, especially London.* The relative importance of country-killed mutton and lamb in London may be roughly gauged by a comparison of the quantities killed in the public abattoir at Islington with the total supplies of English and Welsh mutton and lamb offered in the wholesale meat market at Smithfield, where most of the sheep and lambs killed at Islington are sold. In 1928, about 129,000 sheep and

* See Chapter VIII.

lambs were killed at Islington as against some 285,000 cwt.—representing nearly 600,000 carcasses—of English and Welsh mutton and lamb sold in Smithfield Market. On the basis of these figures, less than a quarter of London's supplies are killed at the consumption point, and, if Scotch and Irish supplies are taken into account, less than one-tenth, though some allowance must be made for slaughterings on private premises in the London area. With beef, on the other hand, it is estimated, on the same basis, that over two-thirds of the English and Welsh supplies are slaughtered in London.

Certain kinds of livestock, particularly lambs and veal calves, are best killed as soon after purchase as possible. Provided that cattle are properly rested afterwards, long journeys do not appear to have ill effects on them, but with lambs, especially milk-fed lambs, deterioration and, in particular, loss of bloom, rapidly set in when they are removed from their homes and kept for any considerable time under new and unfavourable conditions prior to slaughter (see Chapter XV). Allowance is made for this fact at Wallasey lairages, where milk-fed lambs are not required to be detained for the customary 10 hours before slaughter and are in practice killed as soon as possible after landing. It is largely to avoid the loss of condition which would arise from transit of live animals to Islington that the dealer in districts beyond a certain radius—say, 100 miles—of London kills as near as possible to the point of production.

Moreover, it is alleged that the combined costs of transit, and of droving, lairage and slaughter, as well as of the conveyance of carcasses in London, are generally greater than those involved in country slaughtering and direct consignment to Smithfield Market. As is shown in Chapter XV, the cost of conveying live sheep and lambs by rail, particularly for long distances, is much higher than that of the equivalent in carcase form. Country slaughtering, again, permits fuller use to be made of road transport, which, for long distances, is better suited to the conveyance of dead meat than of live animals. The advantages of road transport in respect of convenience, elimination of handling, and so on, appear to be leading to an extension of country slaughtering in some parts, such as Dorsetshire and Wiltshire.

The *Report on the Marketing of Cattle and Beef** emphasized the disadvantage which home-killed meat suffers, as compared with imported, from the fact that slaughtering in this country is largely carried out in numerous small units. Apart from questions of public health, small-scale slaughtering reacts adversely both upon the condition in which the meat is presented to the consumer and upon the economy with which it can be processed and handled and the by-products disposed of (see Chapter XVI). While

* Economic Series No. 20, p. 90.

it may be true that much of the meat slaughtered and dressed by butchers on their own premises yields nothing in appearance and condition to the best imported, and while, under existing conditions, the edible offals derived from public abattoirs often compare unfavourably with those from private slaughter-houses, it is, nevertheless, a fact that, apart from freshness, the product turned out in many of the smaller slaughter-houses in this country by men with whom slaughtering is only a part-time job does not compare favourably with the product of overseas meat-works with their specialised killing and dressing staffs. The meat-works, too, with its up-to-date plant and continuous and large-scale operations, should be in a better position to secure the maximum economy of working and to eliminate waste of all kinds than a large number of individual butchers each with his own premises and operators.

The factor which appears mainly to militate against greater centralization of slaughtering in this country is that the meat consuming centres are in comparatively close touch with the producing areas. There is thus scope for a large number of individual traders to purchase livestock and slaughter for their own needs. In exporting countries, like New Zealand, Argentina and Australia, and, to a less extent, in the United States where stock has to be transported long distances from producing areas to consuming centres, the wholesale meat trade is necessarily in the hands of comparatively few large firms whose throughput is sufficiently large to enable them to slaughter on factory lines. The individualistic system obtaining in this country is reflected even in the public abattoirs where extensive duplication of space, equipment and labour is generally involved, because of the necessity for providing facilities for each butcher to slaughter his own stock independently at his own time. Moreover, as there is no unified ownership of offals, facilities for treating them at public abattoirs are generally either deficient or non-existent, and inedible offals have therefore largely to be collected for treatment by independent firms, often with resultant waste and increased expense (see also Chapter XVI). Apart from a few bacon factories, the only parallel in this country to the meat packing-houses overseas are the comparatively few large abattoirs mentioned above belonging to consumers' co-operative societies.

One method of securing a greater centralization of slaughtering would be to establish farmer-owned abattoirs in producing districts (see pages 90 and 91, where the objections to slaughtering by the livestock producer are mentioned). In actual fact, a number of farmers' co-operative abattoirs exist or have operated in the past, generally in producing districts but in some instances in large towns. With a very few exceptions, they have not met with much success and, though small, they have often had to depend largely for their business on dealers' supplies.

The difficulty of reconciling the principle of centralized slaughtering, dressing and by-product treatment with that of multiple ownership of the livestock and meat has been successfully overcome in Adelaide, South Australia. The system of municipal slaughter adopted there is fully described in the *Report on the Marketing of Cattle and Beef*.^{*} Briefly, it is this. The abattoir is owned by the municipality and is run by a Meat Board representing the butchers and the municipality. This Board controls the whole process from the receipt of the stock into the abattoir to the delivery of the meat to the premises of its owners, and makes an inclusive charge for its services. Inedible offals, including fats and intestines, are purchased by the Board from the butchers and treated on the premises. This system secures all the advantages of factory methods; the abattoir is enabled to run at reasonably near full capacity throughout the week, gang working is in operation, and the best condition of the meat on delivery as well as the most economical utilization of by-products are ensured. At the same time, there is an efficient system by which the identity of carcasses and offals belonging to individual butchers is maintained.

It is conceivable that some such solution of the problem may eventually be found in this country as regards slaughtering in the large towns. It would not, however, touch the problem as it affects those producing areas where most of the fat sheep and lambs are killed by dealer-slaughtermen. Some 50 or more dealer-slaughtermen are estimated to operate in the counties of Devon, Cornwall, Somerset, Dorset and Wiltshire alone. Here, undoubtedly, economies could be secured and efficiency gained by concentrating the slaughtering at a comparatively few centres, conveniently situated both as regards supply areas and dispatch of produce, and in up-to-date slaughter-houses run on meat-works lines. In the south-western counties—the most important country-slaughtering area in England and Wales—such establishments would not meet with the objection that has been raised against the slaughtering of beef in producing areas—i.e., that of shortage of supplies at certain seasons. Not only is there, in those counties, a fairly abundant supply of sheep throughout the year, but, if cattle, calves and porkers were also handled, the possibility of a large proportion of the plant being idle for a part of the year would be remote.

Farmers' regional livestock agencies controlling the flow of sheep and lamb supplies from any producing district, such as are visualized in Chapter IX, by encouraging the more efficient slaughtering units would be in a strong tactical position to bring about the concentration of slaughtering in country districts.

The whole question of the centralization of slaughtering in Great Britain is at present being considered by an official committee.

^{*} Economic Series No. 20, pp. 92-95.



FIG. 21.—Well-finished ram carcass.



FIG. 22.—Typical ram carcass.

(ii) Note on Methods of Dressing Carcases.

At such centres as Smithfield Market, London, considerable importance is attached to the manner in which the carcase and the offals arrive dressed, as incorrect dressing may entail considerable loss of selling value. At the Wallasey Lairages, from which carcases are sent to many centres, care is taken that the method of dressing is that required in the particular centre supplied. Country slaughterers, on the other hand, are still inclined to ignore the importance attached in most meat markets to the methods of dressing, as regards both carcases and edible offals (see pages 148 and 149).

Methods of dressing should vary according to the markets supplied; the weather and the time of year also have an influence. The main differences in dressing are as to whether the caul is placed on the carcase (Fig. 36), as is often the case with lambs and small sheep, or packed separately, whether the carcase is dressed plain (Fig. 23) or with one horizontal or two diagonal back-sets (Fig. 36) in the case of lambs and small sheep (which are sometimes dressed in the same way as lambs), whether the forearm is left hanging down, or tied or skewered up (Fig. 23), whether the head is left on and whether the plucks remain in the carcase.

The methods of dressing for particular markets are illustrated by the practice at the Wallasey Lairages.

If intended for London, sheep and lamb carcases are plain-dressed and not back-setted. The carcases are hung on gambles and the forearm is sometimes strung back with a fine piece of looped string placed round the shoulders and neck (Fig. 24). This has the effect of contracting the shoulder muscles and so thickening the joint for carving. It also gives the carcase a neat, rectangular appearance. A few firms sending to Smithfield allow the forearm to hang down in a natural extended position. The fore and hind shanks are generally removed, but some firms leave on the hind shanks or, in the case of a Down type of sheep, a tuft of wool. The breastbone is not broken nor is the caul left on the carcase. The heads and plucks are removed immediately after slaughter.

If intended for Birmingham and the Midlands, lambs are back-setted and the caul is usually placed on the carcase throughout the year. In both mutton and lamb carcases, the breast is broken, the foreshanks are left on and the forearm is brought up and skewered into the breast; the kidney fat is also skewered up. Skewering the forearm into the breast has the effect of thickening the shoulder muscles and particularly improves the appearance of lean animals.

For Lancashire towns, such as Manchester, Blackburn, Bolton, Wigan and Blackpool, the dressing of carcases resembles that for Birmingham. The breast is broken well back, as in these towns retail butchers do a big cutting trade and prefer to have



FIG. 21.—Well-finished ram carcass.

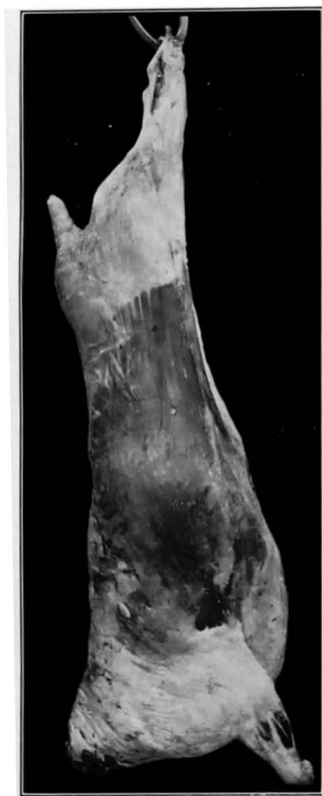


FIG. 22.—Typical ram carcass.

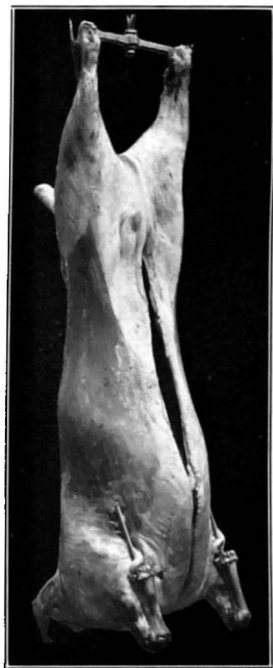


FIG. 23.—Carcass, Devon-killed and dressed, showing fore-arm skewered up for London trade.



FIG. 24.—Birkenhead-killed Irish lamb, plain-dressed, with fore-arm strung back.



FIG. 25.—Down and Hill lamb carcasses showing differences in conformation.



FIG. 26.—Same carcasses, side-view.

the carcasses with the breast broken. The caul is generally spread evenly on lamb carcasses; for Liverpool, however, the caul is wrapped round the back of the legs, retail butchers hanging the caul separately in their shops and selling part of it with the joints to assist in the cooking.

Carcasses of mutton and lamb when exposed for sale at Wallasey are hung up on cooling hooks with heads and plucks on. This is to give, *inter alia*, a guarantee of age to purchasers. The heads and plucks are not removed until after sale.

Methods of dressing carcasses for Smithfield Market, London, vary with the killing centre. Those practised at Wallasey lairages have already been given. Sheep killed at Islington are plain-dressed, the forearm hanging down. Up to Whitsuntide, lambs are dressed with a double diagonal back-set, as shown in Figure 36; the head, plucks and feet are left on and the caul is spread over the legs. The West Country method of dressing sheep for London is to skewer up the foreleg into the breast and remove the feet; spring lamb carcasses are back-setted, the feet are left on and the caul is spread round the legs. In the Scotch method, the shanks are removed and the carcasses are dressed plain or with one horizontal back-set; the breast is not broken and the caul is sent separately; the caul is generally placed on lamb carcasses for Birmingham and the Midlands but, for London, this is done practically only in the case of milk-fed lamb.

Each method of dressing has its advocates, butchers in various centres favouring one method as against another. In Smithfield Market, which may be taken as an instance of a market where numerous methods of dressing can be seen, a tendency towards simplification has been noticeable in recent years. Thus, the method of back-setting with the caul spread over the legs, which was common for most lambs and small hoggets for Smithfield not many years ago, is nowadays employed practically only for milk-fed lambs and some grass-fed lambs and small hoggets. It has been found that the caul, which is a valuable part of the offals, is liable to get spoilt if left on the carcase and is best sent separately packed (see Chapter XVI). It is reasonable to suppose that, at no distant date, even milk-fed lamb carcasses will be dressed like those of sheep, for it can hardly be considered economical to send lamb carcasses from Islington with plucks, heads and cauls attached. In time, also, shanks will probably be removed from all carcasses and no longer left on lamb carcasses as at present. It would probably be an advantage if carcasses were universally dressed so as to display the break-joint character of the shank or foreleg, as a guide to age (see Chapter XI).

The persistence of differences in methods of dressing is probably largely due to the conservatism of the buying public and a certain excusable pandering on the part of the retailer to consumers'

prejudices. These prejudices, however, have weakened in recent years, especially in the large towns, with the result that carcase dressing and the proper conservation of edible offals are receiving the attention which they deserve. It may be anticipated that, in time, methods of carcase dressing will become standardized throughout the country.

(iii) Note on Dressing Percentages.

Lambs are commonly believed to give a higher percentage of dressed-carcase to live weight than sheep.* This, however, cannot be taken as universally true, since the dressing percentage depends largely on the weight of wool and its condition—whether wet and dirty or dry and clean. On the whole, mature sheep, breed for breed, carry proportionately more wool and more dirt and moisture than lambs. Towards the end of the year, however, lambs tend to carry a relatively greater growth of wool than mature sheep which have been shorn during the summer.

The dressing percentages of sheep and lambs exhibited at the Smithfield Show, London, and at other fat-stock shows, gives some guide to the average percentages obtained, though they are obviously not strictly comparable with results obtained with commercial stock; in show stock about Christmas time, sheep, having been shorn in the summer, give a higher proportion of carcase to live weight than lambs, which are not shorn. An analysis of the Smithfield Show figures for the years 1928 and 1929 enables the percentage both of dressed-carcase and of skin to live weight to be calculated. In the case of sheep, on the average of all animals competing in the carcase classes in the two years, the proportion of carcase to live weight was 56·2 per cent., varying from 42·6 per cent. to 64 per cent.; in the case of lambs, the average was 53·9 per cent., varying from 46·9 per cent. to 67·1 per cent.; the latter figure was exceptional, only two entries exceeding 60 per cent.

The skin constituted about 10 per cent. of the live weight in the case of sheep and 10½ per cent. in the case of lambs which had not been shorn and therefore carried nearly a year's growth of wool.

Important as is the weight of wool in determining the loss in dressing, the finish of the animals also plays a very important part. Commercial sheep that, if finished, might normally dress 45 per cent. or more, may, if killed in poor condition, dress little more than 30 per cent.

Skill in judging the probable dressing percentage from the size, general appearance and touch of fat sheep and lambs—which are generally bought alive by hand without weighing—is a very important qualification for the buyer of live sheep and lambs.

* Armour's "Progressive Sheep Farming," p. 49.

The acquisition of a high degree of skill does not usually present any great difficulty to those constantly handling and killing sheep, though absolute accuracy may be unattainable.

CHAPTER XI.—CARCASE QUALITY.

The selling value of a carcase of mutton or lamb is determined by two factors—quality and weight. Each of these factors exercises an important but independent effect on price. Thus, a carcase may be ideal in respect of quality and at the same time fail to realise top price because it is too heavy for consumer-demand. The approximate weights in demand vary from one district to another and according to the class of trade; the requirements of the principal consuming areas have been indicated in Chapter III.

(i) Quality Factors.

The factors which determine the quality of a mutton or lamb carcase are (a) eating-quality, in so far as that can be determined by external indications, (b) conformation and (c) finish or degree of fat.

(a) *Factors Denoting Eating Quality.*—The eating quality of a carcase is difficult to define. The term refers to the effect of the flesh, fat and meat juices, when cooked, on the normal palate. It includes both tenderness and flavour. Eating quality is determined by age, by breed or type and by the method of feeding. It can be judged to a large extent by certain visible characteristics, such as the condition of the bone, the colour of the flesh, the texture of the meat and the colour of the “bark.”* It is closely linked with and dependent on conformation and finish.

Bone.

The mere size or weight of a carcase is no guide to its age, since breeds of sheep differ considerably in size, lambs of some breeds being as large as hoggets or shearlings of other breeds. The chief indication of age, when the head and shanks have been removed, is the degree of ossification of the bone, and in buying lamb and mutton a butcher will usually examine the bone first of all for the presence or absence of cartilage.

Examination for ossification is usually done by inspecting the ribs and the knuckles. In the case of a lamb of, say, a Down breed, the rib has what is termed a “blue” colour; in point of fact, it is reddish or pink as well as blue and is semi-translucent. In fairly young sheep of a few breeds, and in old sheep of most breeds, the bone will be white and opaque. When quartered at

* The outer covering of the flesh, which resembles thin tough parchment.

the "best end"* the severed edges of the vertebrae will have a smooth touch in lambs or young sheep of most breeds, a sharp flinty touch in older sheep and also in lambs of certain breeds.

In the United States' system of carcass grading (see Chapter XII), great importance is attached to the "break joint"—the joint at the lower end of the forearm of sheep and lamb carcasses—as a criterion of age, and it is considered by many who have given the subject special study that the nature of the break joint is probably the best test of age. The joint is broken by starting a cut with a knife from behind so as to free the tendons and then breaking the joint back with the hands. In lamb, the joint breaks in four well-defined ridges, somewhat resembling the teeth of a saw; these ridges are smooth, moist and red with blood. As lambs approach the yearling stage, the bones become harder and whiter; the joint then usually breaks in ridges similar in shape to a lamb joint, but the surface is rough, dry, porous and lacking in redness. In old sheep, owing to the ossification and hardness of the knuckle, it fails to break and is revealed whole or "round," white, hard and with sharp edges. It is a little surprising to find that in England and Wales this test is practically never applied. At Smithfield, for instance, a young sheep may be considered to have been badly dressed if the knuckle is broken at the break joint. Either the forearm is cut off altogether when the carcass is dressed plain or, when the forearm is skewered up, the knuckle of the forearm is considered best left unbroken (see Fig. 23). Before Whitsuntide, however, a large number of lamb carcasses are sent to Smithfield with the feet attached to the forearm by the tendon and the break joint usually displayed.

If not broken at the break joint, the knuckle in a lamb or young sheep will have a smooth, rounded feel; in an old sheep, it will have a sharp, knife-like edge.

The edge of the shoulder blade in a lamb or young sheep will be cartilaginous and will have a smooth, pearly touch; that of an old sheep—e.g., a ewe—will have a rather rough, gritty feel due to ossification.

Colour of Flesh. —

Another indication of age and eating quality is the colour and appearance of the flesh. The flesh should be of a lightish-pink hue, not too red and not too slaty. A dry, harsh, dark flesh is strongly objected to in the trade, although the flesh of carcasses with these faults may have excellent flavour. A dark, especially a dark mottled flesh, as often seen, for example, in the "best end," denotes tough meat. Usually this is the result of age, but it may also be a breed characteristic. Some breeds of sheep appear to kill dark and to reach a fairly advanced stage of ossification of bone

* The "best end" consists of the first 6 ribs from the loin end of the neck (see Chapter XIV and Figure 54).

at a comparatively early age, so much so that, in the absence of the head, carcasses of hoggets no more than 11 or 12 months old may be mistaken for those of older sheep.

Dark-coloured flesh may also be due to killing without sufficient resting, or, in the case of ewe lambs or ewe hoggets slaughtered round about November, to killing when on heat.

In the case of certain breeds that tend to kill dark, sufficient hanging will often overcome toughness, but the average town butcher has not nowadays the accommodation for hanging carcasses for 10 days or so and prefers those breeds that will give him a quicker turnover and less trouble.

Further, mutton and lamb shrink in weight when hung for any length of time. It is commonly said in the trade that if a dozen sheep carcasses are hung for a week outside the shop, there will be one less in weight at the end of the week. This is rather an exaggeration, for under normal hanging conditions a sheep carcass weighing 56 lb. will only lose about 3 lb. in a week. In any case, however, butchers are shy of buying sheep that will obviously require long hanging as consumers nowadays appear to attach more importance to tenderness than to flavour.

Texture of Meat.

The meat should be firm and fine in grain, not coarse or stringy. It should have a smooth, velvety touch and should be full of sap. The fat should be well distributed. There should be a minimum of gristle and bone. Gristle invariably develops with age. The presence of an undue amount of gristle can be readily seen over the "eye" of the meat in the "best end."

Colour and Appearance of "Bark."

A well-finished sheep should be evenly covered with a layer of fat that should barely exceed $\frac{1}{2}$ in. in thickness at the "best end." The flap of the breast and flank, however, is coloured, and the colour is a guide to its eating qualities. What is called in the trade a "cherry coloured bark"—actually bright red—denotes tough meat; it will often be found that a cherry coloured bark, a hard, flinty bone, and a dark, dry flesh go together and indicate a tough-eating article. A very pale colour, on the other hand, is said to indicate a flukey liver. The ideal colour lies somewhere between these two and may be described as a pale, shrimpy hue.

(b) *Conformation.*—From the butcher's point of view, next in importance to age and tenderness comes conformation. The ideal carcass should be relatively heavy in the hindquarter—from which the highest-priced retail cuts are obtained—and so conformed as to cut up with the minimum amount of waste—i.e., with the minimum proportion of bone, coarse meat, and waste fat. It should, therefore, be very compact and well-fleshed, as in the case of

a typical South Down or of the progeny of a Cheviot or Half-bred ewe crossed by a Down breed of ram. Length is desirable, but compactness without too much "breediness" is perhaps the most important point in conformation.

A short, thick neck is naturally preferable to a long, thin and wasty one. The shoulders should be broad, well-rounded and smooth. Shoulders brought to a sharp arch are objectionable. The breast should be thick. The ribs should be short and well sprung. Well-sprung ribs carry a good broad back. Short ribs mean that the breast, when severed from the "best end," is not too large and the "best end" is cut with comparatively little bone. With a long rib, the "best end" cuts to waste. The loin should be broad and well developed. The leg should be well developed and the meat carried as far down towards the hock as possible. A long shank is wasteful and therefore objectionable.

(c) *Finish*.—Consumers to-day demand lamb and mutton with a minimum of waste fat. As indicated above, $\frac{1}{2}$ in. of fat over the "eye" of the meat at the "best end" is sufficient for to-day's requirements. In many classes of trade, even less than this is preferred. Sufficient fat must be carried, however, both in lamb and mutton, otherwise a dry-eating and tasteless meat will result. In a typical well-finished hogget, the outer surface of the carcass is evenly covered with a layer of fat. The kidneys should not show excessive fat. The fat should be firm and white or cream coloured, not soft, flabby and yellow.

To sum up, it may be said that in a lamb or young mutton carcass of high quality, the bone should be fairly soft, the flesh light in colour, fine in grain, firm, well developed and full of sap, the fat of a correct colour and well distributed and the conformation good. The ratio of muscle to gristle and bone should be relatively high. As eating quality is closely linked with and dependent on conformation, finish and certain external features to which reference has been made, it is possible to determine the quality of a carcass without the necessity for inspecting a cut surface.

(ii) Examples.

What constitutes good quality can only be properly demonstrated by reference to actual carcasses, but some practical illustrations may be given by means of photographs.

Photographs of two carcasses showing wide variation in conformation are given in Figures 25 and 26.

That on the left is of a pure-bred South Down lamb about eleven months old. The dressed carcass weighed 56 lb. with a dressing percentage of 55. The bone was soft and of a good colour.

In conformation, the carcass was very good; it was compact, had a short shank and fairly broad, smooth and well-rounded shoulders and was broad and full in the loin and "best end."

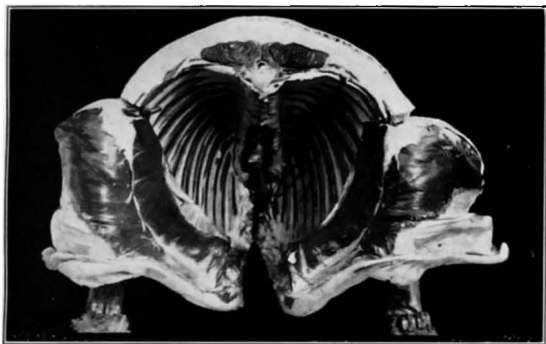


FIG. 27.—Carcass quartered, showing over-development of fat.

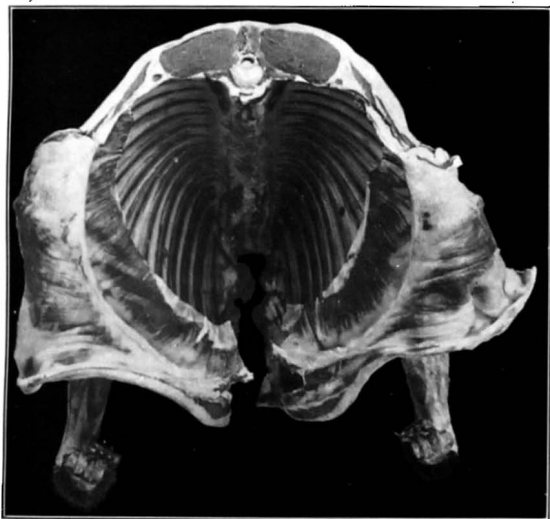


FIG. 28.—Carcass quartered, showing good development of lean meat.

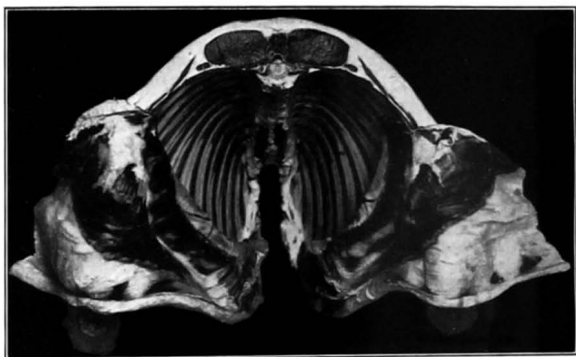


FIG. 29.—An excellent butcher's carcass showing well-sprung ribs and full development of the eye of the meat.

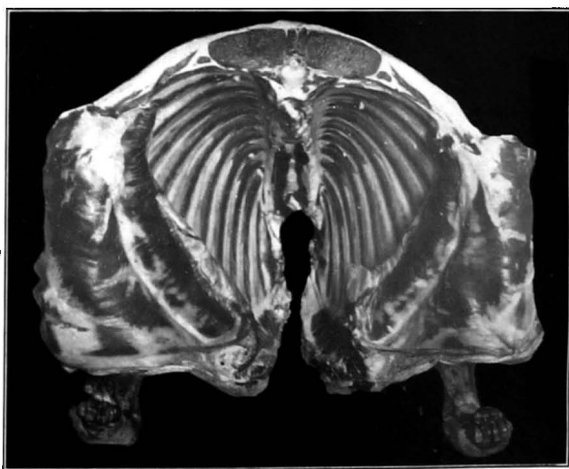


FIG. 30.—Handy-weight Scotch hogget, suited to present-day requirements for lean meat.

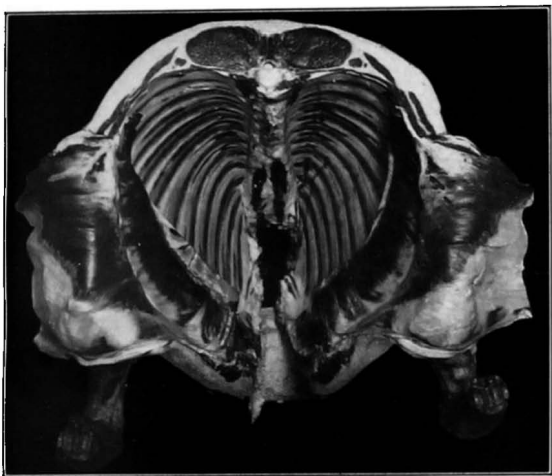


FIG. 31.—Carcase quartered showing sufficient finish for best-class trade, ribs short and well sprung.

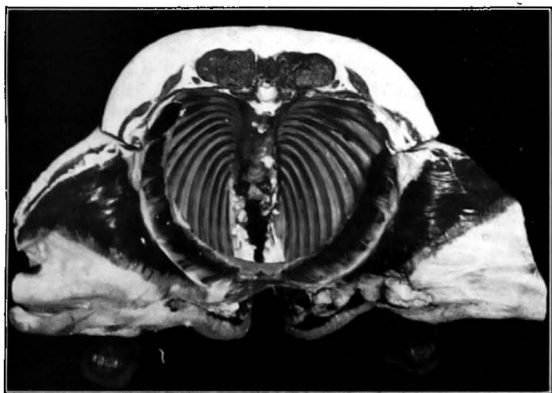


FIG. 32.—Carcase quartered illustrating waste fat.

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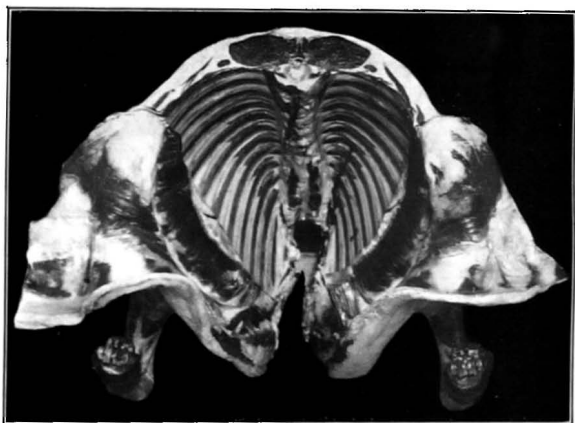


FIG. 33.—Ideal cross-bred carcass. This carcass won First Prize in its class, Cup and Champion at Smithfield Show in 1929.

The breast flap was thick, the neck short and thick, showing no waste. The ribs were well sprung and sufficiently short.

The carcase was well and evenly covered with fat of the correct colour and had the correct amount of kidney fat. It was full of firm flesh, the "best end" being particularly good in this respect with a well-developed "eye." Sufficient fat was present for commercial purposes.

The colour of the breast flap was shrimpy and not too bright. The flesh was sappy and of good colour, giving a velvety touch.

The carcase shown on the right of the figure was that of a mountain-bred lamb about eleven months old. Its dressed carcase weight was 39 lb., with a dressing percentage of 49·4. Although a fairly good sample of its breed and a useful butcher's carcase for a certain class of trade, it showed several defects. The bone was opaque, hard and flinty. The leg was inclined to be shanky; the shoulders narrow, light and steeply arched. The loin and "best end" were insufficiently developed. The breast and neck were thin, the latter being long and wasteful. The ribs, though fairly well sprung, were also long and wasteful.

Generally, the finish was inadequate and uneven. There was a sufficient covering of external fat but too much kidney fat. The carcase was rather short of flesh, especially at the "best end." The colour of the breast flap was too bright, the flesh too red and dark and inclined to touch dry. The bark was rather "riny."*

In comparing the probable eating qualities of the two carcases, it may be said that the first carcase described needed little hanging; as it was full of sap, it should have eaten well and the flavour should have been good. The second carcase required about a week or 10 days' hanging and would accordingly shrink proportionately in weight. While it may have eaten rather dry or a little tough if not sufficiently hung, the flavour should have been excellent and would have been preferred by many to that of the other carcase.

Photographs of various entries in the Carcase Classes† at the Smithfield Club Show in 1929 are reproduced in Figures 27 to 33. The photographs are of cross sections of carcases "quartered" for the wholesale trade (see page 127). The standards which form the basis of judging at this Show conform closely to trade requirements.

The following are brief notes on the carcases illustrated:—

Figure 27.—*Wether hogget*, born in 1929.

Breed	..	..	..	Leicester: ex East Riding.
Live weight	..	..	..	143 lb.
Dressed carcase weight	..	..	..	75 lb.
Dressing percentage	..	..	..	52·5

This carcase is probably fairly typical of many produced in the Wolds of the East Riding of Yorkshire. While the lean meat was of good quality

* A trade term indicating an oily, tough "bark" somewhat resembling greasy vellum.

† Classes 129-132.

and full of sap, with a good touch, there was a great over-development of fat. There was also too much kidney fat. In other respects the carcass was good, though heavy for present-day trade.

Figure 28.—Wether hogget, born in 1929.

Breed	..	..	..	..	Swaledale: ex Darlington.
Live weight	..	..	..	..	81 lb.
Dressed carcass weight	..	..	..	..	38 lb.
Dressing percentage	..	..	..	..	46.9

This carcass was of a very suitable weight and full of lean meat of good quality. The "eye" in the "best end" was outstandingly well developed, the bone a good colour and not too ossified, the colour of the breast flap fair. It was, however, a little short of finish about the shoulder and, as might have been expected of a mountain breed, the leg was a little shanky.

Figure 29.—Wether hogget, born in 1929.

Breed	..	..	..	..	Southdown: ex Watford.
Live weight	..	..	..	..	100 lb.
Dressed carcass weight	..	..	..	..	55 lb.
Dressing percentage	..	..	..	..	55.

This carcass was placed first in its class. It was an ideal butcher's type; the finish was very good and there was no waste. It carried all the good features of conformation and quality associated with the breed. There was no wasty length of ribs, which were well sprung. The "eye" of the "best end" was fully developed and full of sap. The leg was particularly well developed and very short in the shank.

Figure 30.—Wether hogget, born in 1929.

Breed	..	..	..	..	Cheviot: ex Peebles.
Live weight	..	..	..	..	108 lb.
Dressed carcass weight	..	..	..	..	55 lb.
Dressing percentage	..	..	..	..	50.9

A good type of carcass of excellent quality, but on the lean side. Suitable for present-day requirements. Typical of a good type of lean, handy-weight, Scotch hogget mutton.

Figure 31.—Wether hogget, born in 1929.

Breed	..	..	..	..	Dorset Down: ex Southampton.
Live weight	..	..	..	..	128 lb.
Dressed carcass weight	..	..	..	..	70 lb.
Dressing percentage	..	..	..	..	54.7

The "eye" in the "best end" was well developed; there was sufficient finish for present-day trade requirements; there was no waste and the rib was short and well sprung. The leg, though good, was a trifle on the shanky side.

Figure 32.—Wether sheep, born in 1928.

Breed	..	..	..	..	Southdown: ex Cambridge.
Live weight	..	..	..	..	153 lb.
Dressed carcass weight	..	..	..	..	98 lb.
Dressing percentage	..	..	..	..	64.

This carcass illustrates two defects as judged by present-day consumer requirements—(1) waste fat and (2) overweight. The high killing percentage is noteworthy. The very short shank to this carcass was also an outstanding feature.

Figure 33.—Wether sheep, born in 1928.

Cross-bred. Suffolk ram x Cheviot ewe.*

* An excellent cross for present-day requirements, producing a well-meated, fairly lean carcass of good quality and handy weight.

Live weight	..	..	108 lb.
Dressed carcase weight	..	..	57 lb.
Dressing percentage	..	..	52.8.

This carcase won First Prize in its class, Cup and Champion. The good development of the "eye" and the short well-sprung rib are well seen in the photograph. The noteworthy features are the large ratio of lean to fat and the degree of finish which is typical of that nowadays considered sufficient for consumers' demand.

CHAPTER XII.—CARCASE GRADING.

(i) General.

The use of standards of quality and weight as a basis for the grading of mutton and lamb before sale has long been a feature of the trade in imported mutton and lamb and is a recent development of some importance in the domestic trade of the United States. It is a development which has obvious business advantages both to buyer and seller. It greatly simplifies and accelerates the work of distribution and selection of supplies. The buyer, whether wholesaler or retailer, is in a position to buy carcasses on description alone and can rely on obtaining uniform supplies of the required quality and weight. Standard grades and weight categories are essential to a uniform and accurate system of price recording; without them, comparisons between prices on different markets or at different seasons may be misleading since they may not refer to comparable produce. Standardization of quality grades is, moreover, essential to efficient advertising; money spent in advertising an article of unreliable quality is largely wasted.

In the trade in home-killed mutton and lamb, there is no uniform system of grading carcasses before sale. Some country dealer-slaughtermen distinguish between their first and second quality lambs by different methods of packing, and commission salesmen and wholesalers at meat markets usually grade their consignments to suit their customers. At wholesale meat markets, again, prices are commonly reported on the basis of 1st and 2nd qualities. There is, however, no precise or uniform definition of these terms, the basis of classification being simply general suitability to trade demand. The factors of quality and carcase weight are confused, as in the case of live sheep and lambs (see page 68), and the utility of price reports is in consequence doubtful.

In contrast to the lack of uniformity prevailing in this country, the bulk of the supplies of frozen mutton and lamb arrive graded, either, as in the case of Argentine supplies, to the private standards of individual packing firms, or, as in the case of New Zealand supplies, to national standards applicable to all meat exported. The effect of these methods is to give the buyer the advantages of convenience of handling and confidence in the goods purchased. The wholesaler in this country is able to buy frozen

carcases forward on description and the retailer also buys a considerable quantity from the wholesaler on the basis of grades or factory brands. The result of these advantages is that many distributors are led to handle the imported rather than the home-killed article. Quite apart, therefore, from its advantages to the home-killed trade as such, a standard grading system is becoming a matter of urgent necessity, if only to meet the competition of imported supplies. As a preliminary to a discussion of the possibilities of a grading scheme for home-killed mutton and lamb, a brief description is given below of the methods of grading in use in overseas countries.

(ii) Carcase Grading Abroad.

(a) *In New Zealand.*—Under the Meat Export Control Act, 1921–2, all meat exported from New Zealand must be graded as directed by the Meat Producers' Board set up under that Act. Carcase grading had been carried out for many years previous to this by the various freezing works, but there was no guarantee of uniformity of grading as between different works. Moreover, each firm had its own grade marks and brand names for its various qualities.

With a view to securing as complete uniformity as possible, the Board appointed inspectors to supervise grading at the freezing works and established standard grade marks for use throughout the country. Three classes of carcases are recognised—namely, (i) lamb, (ii) wethers and maiden ewes, and (iii) ewes. Two quality grades are provided for in each class. These quality grades, however, are not verbally defined, the judgment of the grader, subject to the supervision of the Board's inspector, being relied upon to make a proper distinction. This method of controlling grading has succeeded in securing a large measure of uniformity throughout the New Zealand trade, although some slight variation still exists according to the quality of sheep and lambs produced in the locality of each freezing works. These differences are well known to buyers in this country, who show a preference for the product of certain works as compared with others.

First grade lambs are divided into five weight categories, first-grade wethers and maiden ewes and ewes into six. Second quality carcases are not classed according to weight. The following is a summary of the New Zealand grades and grade marks for lamb and mutton carcases :—

	Grade.	Weight.	Grade Mark.
LAMB:			
Prime Lambs		28 lb. and under ..	D (optional).
		29–36 lb. ..	2
		37–42 lb. ..	3
		43–50 lb. ..	4
		51 lb. and over ..	T
Second Quality Lambs	..	All weights..	Y

	<i>Grade.</i>	<i>Weight.</i>	<i>Grade Mark.</i>
MUTTON:			
Prime Wethers and Maiden Ewes.		48 lb. and under ..	1
		49-56 lb. ..	7
		57-64 lb. ..	3
		65-72 lb. ..	9
		73-80 lb. ..	5
		81 lb. and over ..	O
Second Quality Wethers and Maiden Ewes.		All weights ..	X
Ewes		48 lb. and under ..	1E
		49-56 lb. ..	7E
		57-64 lb. ..	3E
		65-72 lb. ..	9E
		73-80 lb. ..	5E
		81 lb. and over ..	OE
Second Quality Ewes ..		All weights ..	XE

A feature of the New Zealand weight classification—and, indeed, of that prevailing throughout the import trade, since the same weight classes are used in all the chief exporting countries—is that where lamb and mutton classes overlap, the weight limits for each are not identical. Thus, Grade Mark 4 for prime lambs includes carcasses of from 43 to 50 lb. weight, while Grade Mark 1 for prime wethers and maiden ewes includes those weighing 48 lb. and under.

The grade mark is generally printed on a label tied or sealed on to the carcass; it may also be stamped on the stockinette wrapping and, in some cases, on the carcass itself. In addition to the official grade mark, the freezing works continue to label carcasses with their own brand names and grade marks.

(b) *In Australia and South America.*—In Australia and South America, grading is carried out by the freezing works, the grading methods and weight classes adopted being similar to those obtaining in New Zealand. Some variation exists in quality grading between different works, some firms grading more closely than others. In Australia, a considerable degree of uniformity is secured through the supervision of grading by State veterinary inspectors.

(c) *In the United States.*—Packing houses in the United States have long had their own private systems of meat grading. Carcasses are classified as (i) lamb and (ii) wether and ewe mutton, and each class is divided into weight categories, lamb into handy and heavy weights, wethers and ewes into handy, medium and heavy weights. Each of these weight categories is then graded according to quality; weight, however, is allowed to play an important part in determining the quality grade in which a carcass is placed.

Thus, one firm states* that handy-weight lambs might be graded as follows :—

<i>Grade.</i>	<i>Spring Lambs.</i>	<i>Fed Lambs.</i>
Choice	28-42 lb. ..	Up to 45 lb.
Good	28-45 lb. ..	Up to 50 lb.
Medium	25-40 lb. ..	30-50 lb.
Common	20-35 lb. ..	25-45 lb.

and adds that the majority of handy-weight lambs are found in the Choice and Good grades. This firm states that lamb carcasses weighing between 45 and 50 lb., which would otherwise grade as Choice, are always thrown into the Good grade because of overweight, and that lambs producing heavier carcasses than 50 lb. are placed in the heavy weight category, lamb in this category being seldom graded according to quality.

Packers' grades are not standard, each packer establishing his own grades according to the requirements of his trade and giving his own code letter or name to each grade.

The United States Department of Agriculture has long advocated the adoption of standard class and grade descriptions and specifications for mutton and lamb. Tentative grades were first issued by the Department in November, 1925, and official United States grades have recently been established for voluntary use. Grades are defined for lamb, yearling mutton and mature mutton, the three types being distinguished by age, hardness and colour of bones and the nature of the break-joint of the foreleg, together with the conformation of the carcass and the colour and texture of the flesh.

The age at which lamb changes into yearling mutton is reckoned at approximately 12 months, size of carcass, colour of flesh, break joint and degree of hardness of bone being the main determining factors. The change from yearling to mature mutton is reckoned as occurring when a sheep is from 20 to 24 months old, allowing for sex, as wethers mature somewhat more slowly than ewes.

Lamb is distinguished from mutton by its smaller and softer bones, lighter-coloured flesh, softer and whiter external fats, and small size, and by the break-joints of the forearm breaking in four well-defined ridges which are smooth, moist and red with blood. Apart from "fed" (i.e., grass-fed) lambs, two other lamb categories, namely, "spring" and "hothouse" lambs, are recognized. Spring lambs are what are usually termed in this country milk-fed or milk lambs, and are marketed direct off their mothers. The flesh is tender and slightly lighter in colour than that of "fed" lambs; the fats lack brittleness and possess to a greater or lesser degree the softness and sheen which are charac-

* "Progressive Sheep Raising" (p. 50). Armour's Livestock Bureau, Chicago, 1925.

teristic of milk fat. "Hothouse" lambs are animals fed usually under artificial conditions during the winter and early spring months, their carcasses weighing from 15 to 30 lb.; these lambs usually show uniform finish and a high quality of flesh.

Yearling Mutton is distinguished from lamb by harder and whiter bones, darker and somewhat coarser flesh, firmer and somewhat thicker exterior fats, and greater abundance of interior fats, grade for grade. The exterior and interior fats lack the resiliency and milky tinge so pronounced in the fats of lamb carcasses, but they do not possess that degree of hardness or brittleness usually found in mature mutton carcasses. The abdominal cavity is larger and the body longer in mutton than in lamb. Particular stress is laid on the break-joint of the forearm, the break ridges being rough, porous, dry and lacking redness. The failure of the leg to break at this joint is an indication that the carcass is mature mutton.

Mature Mutton.—The ribs in mature mutton show a much more pronounced spring than is usually found in yearling mutton or lamb, giving the side a barrel-like appearance, particularly in ewes, and the general outline is less even. The colour of the flesh is darker than in yearling mutton. In the break joints of the forearms, the saw-tooth effect is absent, the cartilage having become ossified; the knuckle no longer breaks off at the end of the bone, the end of the knuckle forming a hard, shiny surface with sharp, prominent ridges.

Wether mutton is distinguished from ewe mutton by the presence of cod fat, by a more even conformation, by a somewhat higher percentage of lean flesh to bone, by less fat and by relatively smaller forequarters in proportion to hindquarters. Exterior and interior fats are generally less wasty and more evenly distributed. Ewe mutton is regarded as being from animals 20 months of age or older. Ewe carcasses have relatively larger abdominal cavities than those of wethers, larger bungs and pelvic arches, smaller necks and shanks. The presence of the udder is a distinguishing feature. The bones are usually harder than in wether mutton of similar age. Only a small proportion of ewe-mutton carcasses possess the conformation required in the higher grades. Buck mutton is from mature, uncastrated rams, usually at least 2 years of age. Carcasses are short; necks, shoulders and breasts are thick, hindquarters relatively small compared with forequarters, bones larger and coarser, flesh dark and "bark" thick and oily. When well finished, they have usually only a moderate supply of internal fats but a thick wasty covering of external fats.

Six quality grades are laid down for both lamb and mutton carcasses—viz:—Prime or A.1., Choice or No. 1, Good or No. 2, Medium or No. 3, Common or No. 4, and Cull or No. 5, which are

elaborately defined in respect of conformation, finish and quality.* Weight categories are not, as yet, provided for in the United States' grading system.

A service of Government graders is provided in 5 centres in the United States and is available, on request, to the trade elsewhere. A charge is made for grading at the rate of 2 dollars per hour.

Carcases of the first 3 grades (Prime, Choice and Good) are marked, on request, by a Government official by means of a roller stamp apparatus (Fig. 34) similar to that used for beef†. A carcass marked with this apparatus is illustrated in Fig. 35.

As stated above, the grades were promulgated several years before being eventually established as official U.S. grades. They have thus become generally familiar to the trade and have been tested in a practical manner at large markets as well as being largely used by public institutions in buying. It is believed that they will eventually be widely adopted in all branches of the trade.

(iii) Suggestions for England and Wales.

(a) *Advantages of a National Mark Scheme.*—In the mutton and lamb trade, conditions in New Zealand, South America and the United States differ in certain important respects from those in this country. In the United States, where production is mainly for the home market, marketing and slaughtering are highly centralized, retailers chiefly drawing their supplies from packing houses which have for long had their own systems of grading as an essential feature of their business organization. Exporting countries, selling as they do under highly competitive conditions and carrying on a long-distance trade in which forward buying is a common practice, have been virtually forced to adopt grading systems. Here again, the centralization of the export trade has greatly facilitated uniformity of grading. In England and Wales, the channels of wholesale trade are much more numerous and the development of a uniform system of carcass grading is, therefore, less easy. It is, however, none the less desirable.

The machinery for the establishment of standard grades in this country now exists under the Agricultural Produce (Grading and Marking) Acts, 1928 and 1931. These empower the Minister of Agriculture and Fisheries to establish and define statutory grades of quality for agricultural produce. The Minister is also empowered to prescribe grade designation marks which, when applied to any agricultural produce, indicate that such produce complies with the statutory requirements for the particular grade concerned.

* A full account of U.S. mutton and lamb carcass grades is given in the U.S. Department of Agriculture Service and Regulatory Announcement No. 123, "Official United States Standards for Grades of Lamb Carcasses, Yearling Mutton and Mutton Carcasses."

† Economic Series No. 20, p. 110, and Fig. 22.

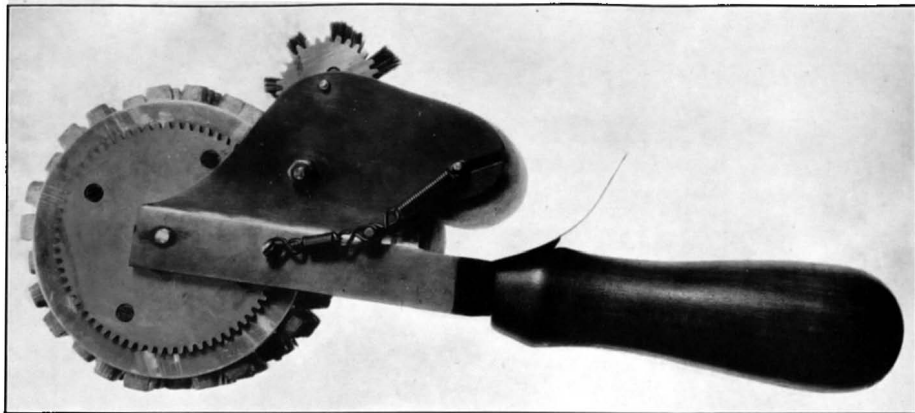
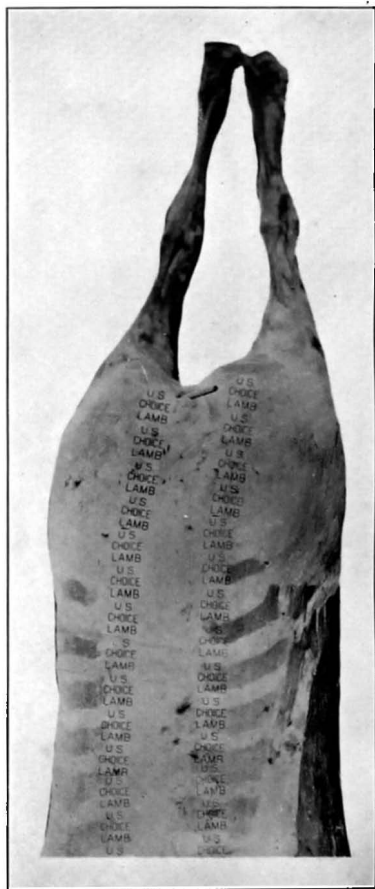


FIG. 34.—Roller Stamp as used in the U.S.A. for the official marking of graded meat.

[By courtesy of U.S. Dept. of Agriculture.]



[By courtesy of U.S. Dept. of Agriculture.
FIG. 35.—Carcase showing U.S. official grade-marks.

For this purpose, under the Acts referred to, the National Mark has been prescribed by the Minister for use in conjunction with any statutory grade name as a grade designation mark on certain kinds of agricultural produce. Grade designation marks may only be applied by authorized persons.

Among the commodities for which National Mark Schemes have been launched is beef; in this case, and in this case only, the grading and marking are done directly by the Ministry's Officers. Home-killed beef is now being graded and marked with the National Mark in a number of large consuming centres, namely, London, Birmingham, Leeds, Bradford and Halifax. The benefits which were found to have accrued to the producer, the distributor and the consumer from the National Mark Scheme during the relatively short period in which it had then been operating were recorded in the Report of an Inter-Departmental Committee set up in 1930 by the Minister of Agriculture and Fisheries and the Secretary of State for Scotland.* Although there would be difficulties, there is no reason why the advantages of a similar scheme should not be secured for home-killed mutton and lamb.

One of the first effects of a grading and marking scheme should be to stimulate and regularize consumer-demand. It would put before the consumer a guaranteed supply of home-killed mutton and lamb of excellent quality. This should tend to develop among consumers a habit of ordering the graded and marked article just as is done in the case of other branded articles. The stabilization of demand would greatly simplify for the distributor the problem of ordering his supplies.

It is particularly in the large towns that a grading and marking scheme would be of advantage to the trade. The country butcher still mainly buys livestock in markets or on farms and does his own slaughtering. In large consuming centres, on the other hand, the wholesale meat market is nowadays of great significance as a source of supply to retailers and is tending to grow in importance. If a grading and marking scheme were in operation, those retailers who rely on the wholesale meat market would, for the first time, be able to buy home-killed mutton and lamb graded as accurately as imported meat is graded. The buying of home-killed supplies would thus tend to become more and more a matter of routine, and many retailers who at present kill in their own slaughter-houses would probably find it better business to go to the meat market for their home-killed supplies.

The grading and marking of mutton and lamb would, moreover, afford a protection to the retailer who stocks a high-class article. In the absence of some visible guarantee of the superior excellence of the product he sells, he is at present at a disadvantage in competing with the butcher who retails an inferior article at a somewhat lower price. Thus, it has been found that the National

* Cmd. 3648/1930.

Mark Beef Scheme has obtained the support of those traders who have everything to gain and nothing to lose by declaring the true quality of their wares.

It is often maintained that butchers can best grade for themselves. The butcher knows the requirements of his customers and can select accordingly. While some retailers may always want to make their own selection before buying, the use of standard grades would undoubtedly help the majority of butchers to obtain supplies of the type required.

The stimulation and stabilization of demand resulting from a grading and marking scheme would be reflected back through the distributor to the producer, in particular to the producer of the high-quality article. Not only would a more regular demand arise in livestock markets for the type of animal suitable for grading and marking, but, as has already been suggested (Chapter IX), it is probable that consignment, by producers, of sheep and lambs to wholesale meat markets for sale on the basis of dead weight and carcase grade would develop as the outcome of a grading and marking system, as has happened in the case of beef. Increased production of the best type of stock would almost certainly follow the knowledge that there was a ready market for the right class of animal. In the absence of standard quality and weight categories and of a system of price-recording based on such standards, the producer is not encouraged to the fullest extent to turn out the kind of article most in demand.

Lastly, the grading and marking of mutton and lamb would make it possible to advertise effectively the home-produced article. So long as the housewife has no absolute guarantee as to either the quality or the origin* of the supplies she is getting, it is obvious that home-killed mutton and lamb cannot be successfully advertised.

(b) *Suggested Carcase Grades.*—In the case of existing National Mark schemes, the grade standards have mostly been suggested by the Ministry of Agriculture and Fisheries and, after practical test and demonstration at Agricultural Shows and elsewhere, have been placed before committees or organizations of producers and distributors for consideration with a view to adoption.

It is suggested that 5 statutory grades should be established for both mutton and lamb carcasses, to be designated as follows :—

1. Select.
2. Prime.
3. Good.
4. Medium.
5. Common.

* See Chapter XIV, pages 128 and 129.

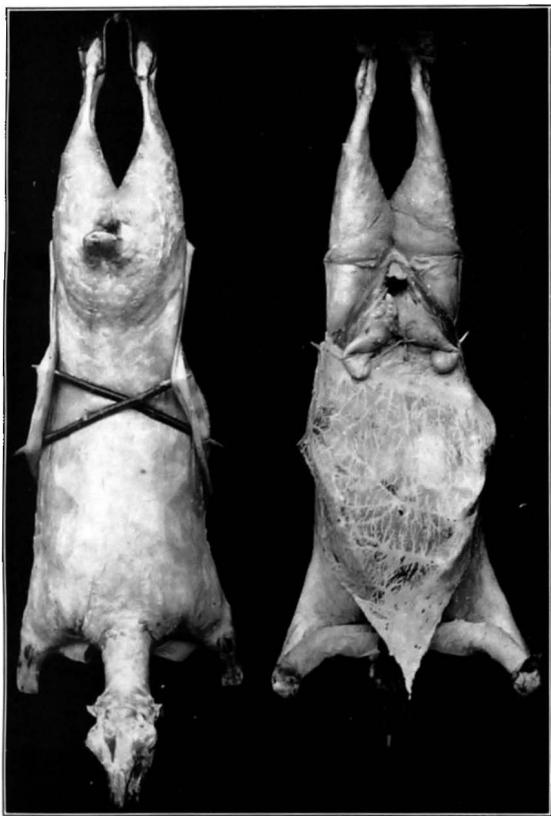


FIG. 36.—*Select grade spring lamb carcasses, double back-setted, with caul spread on the carcase.*



FIG. 37.—*Select grade lamb carcass plain-dressed.*

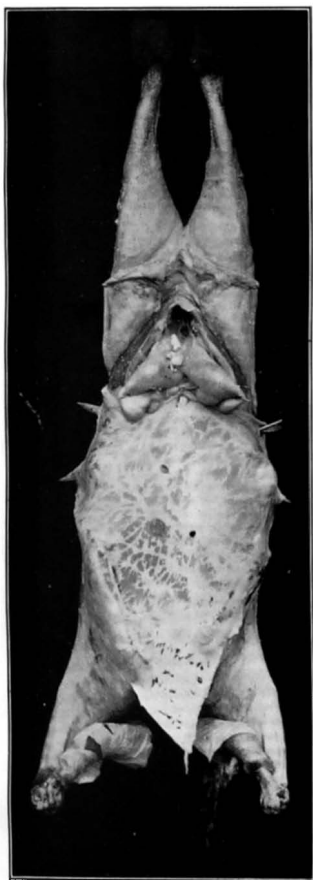


FIG. 38.—*Prime grade lamb carcass dressed at Islington—head left on.*

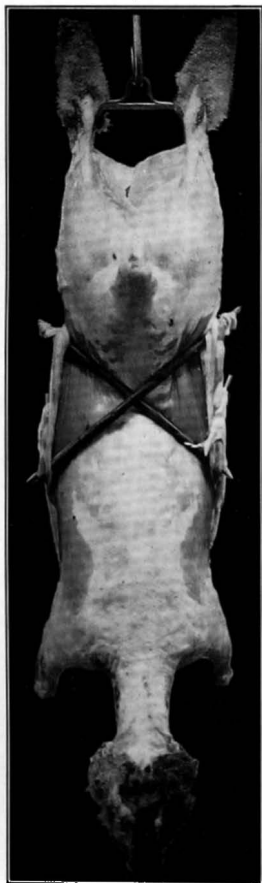


FIG. 39.—*Prime grade early milk-fed cross-bred lamb carcass—head left on.*

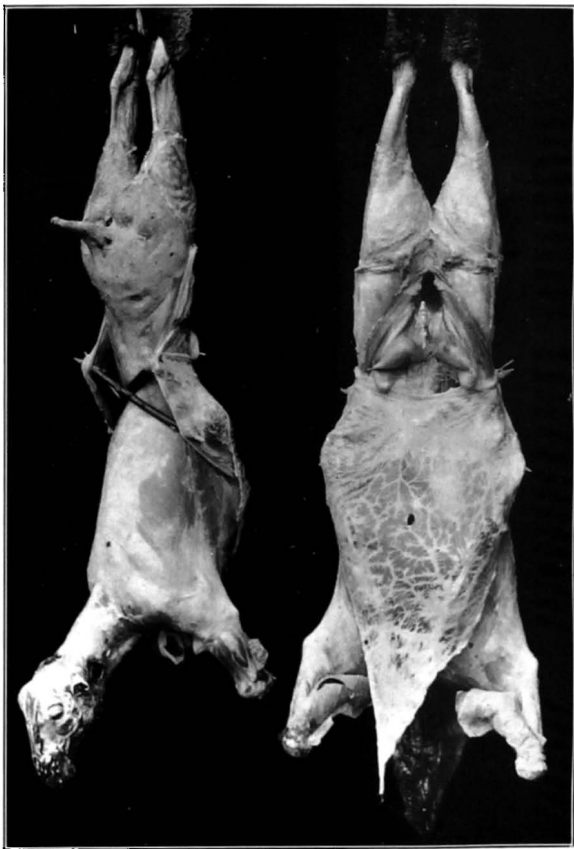


FIG. 40.—*Good grade spring lamb carcass.*

It is not, however, suggested that the National Mark should be applied to all 5 grades (see below). The following are suggested definitions of the various grades :—

LAMB CARCASSES.

*Select.**

Conformation.—This should be ideal, that is to say, the carcass should be relatively heavy in the hindquarters and so conformed as to cut to the minimum amount of waste. It should, therefore, be compact, length, however, being a desirable feature. The loins should be broad and well developed. The legs should be well developed and the meat carried well down towards the hocks ; long shanks are objectionable. The shoulders should be moderately broad, well rounded and smooth. The ribs should be well sprung, short and not too bowed ; the neck should be moderately short and thick. The carcass should show a heavy degree of fleshing throughout, giving it a markedly symmetrical and rounded rather than angular outline.

Finish.—The outer covering of fat should be even, smooth and of moderate depth over the back ; the interior fats should be sufficiently developed, as indicated by a full, but not excessive, even covering over the kidneys : the interior fats should be white or creamy and firm without being brittle.

Quality.—The flesh should be fine in grain, with a minimum amount of gristle, the cut surfaces, as for example at the “best end,” feeling smooth, velvety and sappy to the touch. The colour should be a light pink. The bones, as instanced by the ribs, should be relatively soft, blue and tinged with blood, the knuckles of the foreleg smooth and rounded. The break joints should show four well-defined, relatively soft, spongy, red ridges. The backbone, if severed at the “best end,” should be relatively soft to the touch, not flinty. The bark should lack any signs of “rineness” and its colour on the flanks should be a fairly pale, shrimpy hue.

Prime.†

Prime lamb might not in all cases possess the perfection of conformation, finish and quality characteristic of *Select*. Thus, a slight lack of finish or excessive fat might place a carcass in this class even though its conformation might be almost ideal. Similarly, as may frequently happen in certain common breeds and crosses, while the finish and quality might be excellent, some defect of conformation, such as a certain degree of

* See Figures 36 and 37.

† See Figures 38 and 39.

shankiness or a somewhat arched back, might place a carcass in this category. It is essential, however, that lambs of this grade should have a good bark and should show no ossification of the bones. The break joint of the foreleg should be similar to that of the *Select* grade. Carcasses should be heavily fleshed and compact and should show well-developed loins and legs, and an outer covering of fat which should be reasonably well distributed.

*Good.**

It is essential that lambs in this grade should show the type of bone characteristic of young animals as described for the *Select* grade. They should also show light pink flesh. They should be reasonably well fleshed and well finished but would differ from the *Prime* grade mainly in lacking compactness, and showing a tendency towards shankiness and somewhat insufficient development of loins and buttocks, or arched rather than rounded shoulders. The ribs and neck might be relatively long and wasty.

Medium.†

In *Medium* lamb carcasses, the bone might show a higher degree of ossification and might be of a more or less flinty character than in higher grades. The flesh might be relatively poorly developed, thin at the "plates" and somewhat dark, gristly and lacking in sap. The bark might be inclined to "rinyess," and of a bright cherry colour, indicating hard eating properties. The proportion of bone to flesh might be relatively high. Carcasses in this class might be often angular in conformation and relatively narrow across the loins and buttocks, and might show a certain degree of spinyness along the back. The break joints in the forearms should show four well-defined ridges but might lack redness.

Many carcasses might be placed in this class solely owing to insufficient finish. The outer covering of fat might be thin and unevenly distributed, and the kidneys might be only partly or in some cases excessively covered, the rest of the carcass being largely deficient in fat.

Common.‡

The conformation in this grade would be extremely poor. Carcasses would be disproportionately long and narrow, would show marked angularity and very poor finish, and would lack quality. The bones would be prominent, the back showing a

* See Figure 40.

† See Figure 41:

‡ See Figures 42 and 43.



FIG. 41.--*Medium* grade lamb carcass showing shanky legs and lack of finish.

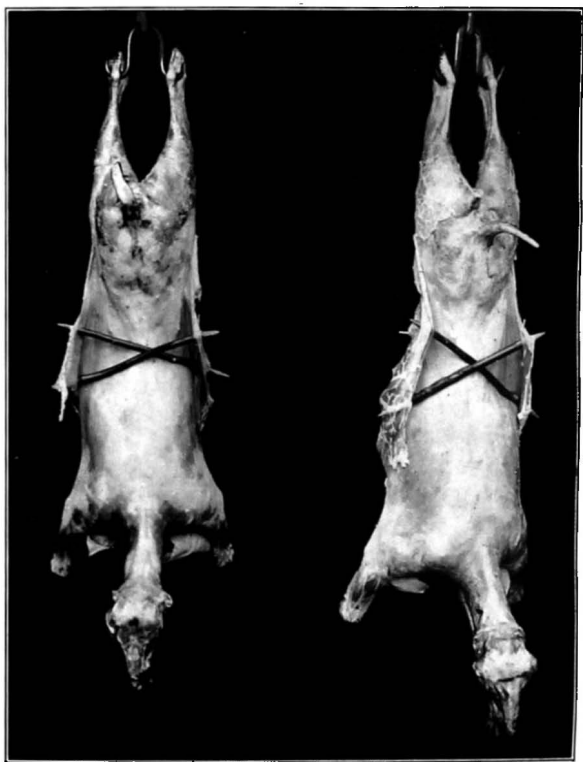


FIG. 42.—*Common grade spring lamb carcasses.*

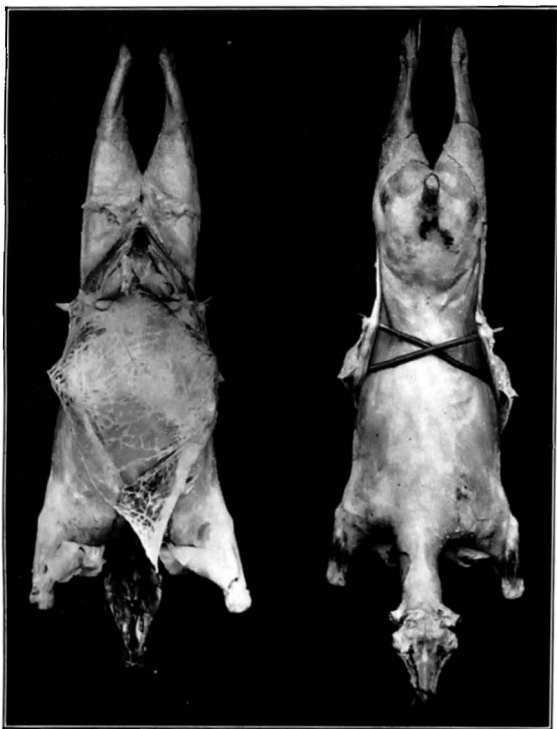


FIG. 43.—*Common grade lamb carcasses, back showing marked spinyness.*



FIG. 44.—*Select grade cross-bred hogget carcase.*

marked spinyness. The fleshing throughout would be thin and badly developed, and fat would be practically absent. While the bones might be soft, they would lack redness. The flesh, owing to the poor condition of the lamb when killed, would be soft, watery and coarse, and might be dark in colour or have a brownish tinge. The proportion of bone to meat would be high. Carcases of "fed" lambs coming into this grade might dress as low as 30 per cent. of the live weight. What are known as "cull" lambs would fall into this grade. "Cull" lambs might be described as emaciated lambs; the flesh is dark and coarse, and visible fat is absent; the proportion of bone to meat is very high.

MUTTON CARCASSES.

In view of the fact that the public prefers young to aged mutton, grade definitions for mutton must take into account the factor of age. In the United States' grading system described above, mutton is classified into yearling and mature mutton. It is not considered, however, that such a distinction would serve any useful purpose in this country, and the grades here suggested refer, therefore, to all categories of mutton. In consequence, mutton that shows signs of age has been excluded from the highest grades. In practice, the best-finished range of old mutton in this country is nowadays derived practically entirely from ewes, such aged wethers as still come on to the market being few and often of indifferent finish or quality. A limited number of wethers of certain hill breeds are, however, outstanding for the excellent flavour of their flesh.

*Select.**

Conformation.—This should be ideal, that is to say, the carcase should be symmetrical and heavily fleshed: while having sufficient length, it should be very compact without looking too "breedy." It should be relatively heavy in the hindquarters, the loins being broad, the legs very well developed, and the meat carried well down towards the hocks. The "eye" of the meat at the "best end" should be very well developed (see Fig. 33). Long shanks would be an objection. The shoulders should be moderately broad, well rounded and smooth, the ribs well sprung, short and not too bowed—though more so than in lamb—and the breast thick.

Finish.—This should be neither excessive nor deficient. The outer covering of fat should be smooth, even and moderately thick. The thickness of the fat at the "best end" should not exceed on an average $\frac{1}{2}$ in. for a carcase

* See Figure 44.

weighing (say) 64 lb. The interior fats should be sufficient as shown by an even and full, but not excessive, covering over the kidneys.

Quality.—The flesh should be fine in grain with a minimum amount of gristle and no stringiness, the cut surfaces, as for example at the “best end,” feeling smooth, velvety and sappy to the touch. The colour, though it might be slightly duller than in lamb, should be a light pink; it should not be inclined to slatiness or markedly brown, nor should it be dark or red.

The bones should be “blue,” relatively soft and free from flintiness, though they would show a greater degree of ossification than in lamb. The knuckles of the forearm should be smooth and rounded, the break joints showing four well-defined, rough ridges, porous, dry and somewhat lacking in redness. The shoulder blade should have a smooth, pearly edge. The backbone, when severed at the “best end,” should be relatively soft to the touch, more ossified than in lamb but not flinty.

The bark should not show signs of “rinyess” and its colour on the flanks should be a fairly pale and shrimp hue. The fats should be firm and white or slightly creamy.

*Prime.**

Prime mutton carcasses might be slightly deficient in conformation or finish. In all cases, however, they should show high quality. Carcasses in this class should be compact, symmetrical and well rounded in outline. They should have a good bark, relatively soft bones, relatively heavy legs and loins, heavy fleshing throughout, a good finish and firm white fats. The break joint in the foreleg should show either as four clearly defined ridges, or, in the case of slightly older mutton, as a jagged or rough surface. The flesh should be of a light pink colour as in the *Select* grade.

Good.†

Carcasses in this grade should be reasonably well finished, the bark free from “rinyess” and not too bright or cherry-coloured. The bones should be relatively soft and the break joint in the foreleg should be exposed. Moderate defects in conformation would be permissible, such as a tendency to shankiness in the limbs or an arched back; a fairly long, thin neck would not be a bar to this grade. The hindquarters might be relatively lighter than in the previous grades. The carcass should be moderately heavily fleshed, and the flesh should be of a good

* See Figures 45 and 46.

† See Figure 47.



FIG. 45.—*Prime grade hogget carcass.*



FIG. 46.—*Prime grade young ewe carcass showing good finish suitable for the London trade.*



FIG. 47.—*Good grade heavy class*
hogget carcass.



FIG. 48.—*Medium grade* hogget
carcass.



FIG. 49.—Common grade ewe carcass showing badly fleshed bones and spiny back.



FIG. 50.—Excessively fat ewe carcass.



FIG. 51.—“Cull” ewe carcass, falling into *Common* grade, showing complete absence of fat.



FIG. 52.—Same carcass, side-view.

colour and sappy; dry flesh would be a disqualification for this grade. In addition to hoggets and tegs, this grade would include a proportion of theaves.

*Medium.**

Medium grade might include several classes of mutton:— (1) Ewe mutton showing good, and even in a large number of cases excessive, finish, but a somewhat angular conformation, white, hard bones characteristic of age, and ribs relatively long and bowed, resulting in a relatively wide abdominal cavity. This class of ewe mutton carcasses would include sheep that have had not more than four or five crops of lambs. (2) Young mutton, too short of finish or too badly conformed to be included in previous grades. Such carcasses would be only moderately well-fleshed, relatively narrow in the loins, long and angular, especially over the shoulders, with the vertebrae rather prominent. The breast would be thin and the flesh somewhat coarse-grained. (3) Tough young mutton, which, in the absence of the head, would be mistaken for older mutton on account of the white flinty bones and other defects denoting inferior quality (see Chapter XI). Such mutton may be well flavoured, but, even after much hanging, is tough and rather dry to the palate. (4) Young, well-finished rams (Fig. 21).

These four categories are not in any way comparable except perhaps as to price. They are grouped under *Medium* grade for convenience only.

Common.†

As in lamb, the conformation in this grade would be extremely poor. Carcasses would be disproportionately long and narrow, and show very marked angularity, very poor finish and lack of quality. Bones would be prominent, the back showing marked spinyness. The fleshing would be thin and usually very dark; fat would be largely absent. The bark would usually be discoloured—i.e., of a brownish hue except on the flanks, where it would be often bright cherry colour—and of a tough, oily consistency like greasy vellum. The percentage of dressed carcass to live weight in such sheep is extremely low.

Ewes falling into this grade would be mainly worn out breeders—known in the trade as “cull” ewes (Figs. 51 and 52)—whose carcasses carry coarse, dark, inferior flesh and whose bones are white, hard and flinty.

* See Figure 48.

† See Figure 49.

The comparatively few "buck wethers"* that are sold off mountain pastures would also fall into this grade. They show every appearance of age and their flesh is coarse, dark and tough, and sells at a very low price, being mainly used in the chopping trade in large industrial centres where there is a sale for cheap, lean, small joints of meat. Samples of such sheep can usually be seen at Wallasey lairages among consignments from western Ireland towards the end of the fat-lamb season.

Aged ram carcasses would also fall into this grade. These carry coarse, dark, strongly flavoured meat and, when well finished, a wasteful, uneven covering of fat with a low percentage of interior fats. Such carcasses are characterized by relatively light hindquarters and coarse, heavy, thick forequarters and neck.

(c) *Suggested Weight Categories.*—Apart from grading for quality, it would be a great advantage to retailers if carcasses of home-killed mutton and lamb were classed before sale into standardized weight categories. The influence of weight on the price of sheep and lamb carcasses is highly important (see page 168) and is quite independent of that of quality. It cannot be said that, taking the country as a whole, choicest sheep or lambs fall into any particular weight category; certain breeds and crosses of lambs do not reach their best until they are considerably heavier than other breeds, and a good deal depends on climate, food and handling. The most that can be said is that, with the exception of a certain number of mountain black-faced lambs, the lowest-weight, high-class lambs would scale 24 lb. dressed carcase weight and the highest would rarely exceed 56 lb. The choicest mutton carcasses probably range from 40 to 80 lb., the lighter carcasses being on the whole worth considerably more per lb. than those, say, over 64 lb. Weight is often confused with quality in existing market classifications, and this confusion has led to great difficulty in obtaining precise information as to market prices. So important as a price factor is the average weight of any fairly well-matched consignment of mutton, particularly at certain times of the year, and of lamb at almost any time, that it is practically impossible to report market prices in an informative way unless the weight category into which the sheep fall is also stated.

Apart from its advantages from the price-recording standpoint, the adoption of standard weight categories, like that of standard quality grades, should prove of great value to the trade in facilita-

* Rams that have been castrated when no longer required for breeding.

ting and accelerating buying and selling. The standard weight classes in use in the New Zealand trade have been described above.

Standard weight categories, to be generally applicable in the home-killed trade, must be sufficiently comprehensive to embrace the whole range of weights required in the trade in all parts of the country.

The following Table indicates a range of suggested weight categories for home-killed lamb and mutton, indicating in each case the type of lamb or sheep most likely to be included. As there is no clear dividing line between lamb and mutton, separate categories are not given for lamb and mutton respectively.

Class Designation.*	Weight Range (dressed carcass weight).	Type of Lamb or Mutton included.		Remarks.
		Lamb.	Mutton.	
L.†	lb. 27 and under	Very light	—	This class would include a proportion of hill lambs and is especially applicable to the 24-lb. Scotch Blackfaced lambs. The small number of Paschal lambs† produced in this country would also be included.
4	28-36	Light	—	The majority of the best hill lambs and lambs of small breeds and crosses—the most popular article in London, South Wales and the south-coast summer trade—fall into this class.
5	37-44	Medium	Light	Includes some of the finest lamb as well as a class of light hogget.
6	45-52	Medium	Light handy weight.	Includes most of the Dorset Horn winter-fattened lambs as well as a large proportion of lambs of heavier breeds. This is a popular weight for hogget mutton of the smaller breeds.

* Based on average weight of each category in 8-lb. stones.

† L = Light.

‡ Paschal lamb is a luxury article in very limited demand about Easter. A few farmers and dealers lay themselves out to meet this demand. A shoulder or leg is served as a course for 2 or 3 persons and is considered a great delicacy.

Class Designation.	Weight Range (dressed carcass weight).	Type of Lamb or Mutton included.		Remarks.
		Lamb.	Mutton.	
7	lb. 53-60	Heavy	Medium handy weight	A high proportion of "fed" lambs from the heavier breeds marketed during the summer months fall into this class. Generally this is the most saleable weight for hogget mutton.
8	61-68	—	Heavy handy weight	A great deal of the finest quality mutton comes into this category.
9	69-76	—	Heavy	Except in some country districts and certain Midland urban areas, such as Derby, Nottingham and Leicester, and the West Riding, this class is too heavy for the best trade, owing to the size of the joints. It is suitable, however, for hotel and restaurant trade.
10	77-84	—	Heavy	Suitable for hotel, restaurant and catering trade, but too heavy for other classes of trade, except in some country districts and in certain Northern and East Midland areas.
H*	85 and over	—	Over-weight	The production of hoggets and shearlings of these weights is to-day limited mainly to certain districts where heavy breeds of sheep are taken late off the roots or grass or pass 2 summers on the grass. There is a sale for such sheep at a price in a few country districts and in Midland industrial areas as well as for hotel trade. With the exception of ewe mutton, neither the production of nor demand for this class is of great importance.

* H = heavy.

The relation of the suggested weight categories to the various quality grades would be a matter for consideration. Thus, heavy lamb carcasses falling into Weight Class 7 would never be graded *Select*.

(d) *Application of the National Mark.*—It is not suggested that the National Mark should be applied to all the grades outlined above, but only to the *Select*, *Prime* and *Good* grades. The National

Mark is designed to give the consumer, *inter alia*, an indication of the quality of the article marked, and the principle so far adopted has been to confine its use to produce of the higher qualities. While it may be valuable to the trader with a poor-class trade to be able to order low as well as high quality meat by grade description, no retailer would wish to display meat bearing a description implying mediocrity or even inferiority. The appeal of such low grade meat to the consumer is, of course, its price.

The application of the National Mark to mutton and lamb would present certain difficulties which are also met with, but not to the same degree, in the case of beef. In the first place, it is essential that grading and marking should be done at the slaughter-house, since the congestion at wholesale meat markets makes it difficult for grading to take place there. In the present experimental stage of the National Mark Beef Scheme, the grading is carried out by Government graders at public abattoirs and private slaughter-houses in the consuming centres where the scheme operates, or in the case of Irish supplies, at the landing place, and, in the case of Scotch supplies, in the area of production. With beef, however, the work of grading is simplified by the fact that, as regards supplies for London, slaughtering is more centralized than in the case of sheep. In England and Wales, cattle are generally slaughtered in the centres where the meat will be retailed, with the important exceptions of the Birkenhead lairages, from which beef is sent to many centres. It is true that Scotland sends practically all of its beef in carcase form to London, but the slaughter-houses from which the bulk of the Scotch beef comes are less scattered than the numerous establishments used for sheep and lambs in that country and in certain parts of England.

In the case of mutton and lamb, as has been shown (Chapter X), while practically all supplies handled in provincial meat markets are killed in the consuming centres, often at public abattoirs, most of the mutton and lamb which is sent to London from the south-western counties, some of that sent from the Midlands, and all sent from Scotland, is killed in the country and dispatched in carcase form.

In urban areas possessing public abattoirs or large co-operative slaughter-houses, there seems to be no reason why a grading and marking experiment should not be carried out on similar lines to those of beef, the grading being performed by Government graders. It is desirable, however, that any scheme that might be devised should provide for the grading and marking of the large proportion of supplies which are sent in to the London area from the country in carcase form. It is here that difficulty would arise in attempting to use the same administrative machinery as is employed for beef. It is true that it has been found practicable for the supplies of beef sent to London in carcase form from the north-

east of Scotland—the main district supplying home-killed carcasses to London—to be graded and marked in the producing area by Government graders, who visit the premises of the various butchers for the purpose. The area covered by the dealer-slaughtermen in the south-western counties of England and in those Scottish districts from which London obtains mutton and lamb carcasses, however, is relatively so wide that this method would probably be impracticable.

It would be, therefore, a matter for consideration whether, under a National Mark scheme for mutton and lamb, dealer-slaughtermen should be authorized to do the grading and marking for themselves, subject to the supervision of district inspectors employed either by the State or by some organization set up for the purpose, the State in the latter instance exercising an over-riding supervision. It is probable that firms operating under a National Mark scheme would employ an experienced slaughterman to carry out the grading among his other duties. If carcasses were, in the first place, roughly sorted on the cooling hooks into grade lots, the subsequent grading and marking of individual carcasses by an experienced slaughterman should take but a short time once a regular routine had been established.

Although such a plan may have certain obvious objections, grading by meat packers themselves can be paralleled in overseas experience. Thus, in Australia and New Zealand, carcasses of beef, mutton and lamb are satisfactorily graded by employees of freezing firms subject to the supervision of a Government inspector (see above). There is, however, this important difference between conditions here and in the Dominions, that in the latter case the killing stations are meat-works handling large numbers annually; the employee who acts as grader has this duty specially assigned to him and is, therefore, an expert. Moreover, the large bulk of New Zealand supplies are exported and thus pass through comparatively few outlets, where a check can be kept on the grading by the Meat Producers' Board. Under a National Mark mutton and lamb scheme, the requisite skill in grading might be ensured by restricting authorization to apply the Mark to traders with a fairly high minimum annual turnover of carcasses.

Each district inspector would be responsible for seeing that the grading in his district was uniform and up to standard and that the marking was done satisfactorily. It would, however, be impossible for district inspectors to see the whole of the graded supplies. But, in so far as mutton and lamb killed in country slaughter-houses are largely sold in wholesale meat markets in the towns, there would be a double check on grading, since the Ministry's Grading Officers could inspect all marked meat consigned dead to such markets. It is, therefore, reasonable to suppose that there would be little chance of wrongly graded carcasses sent to wholesale meat markets getting through to the retailer.

By incorporating in the Mark the code number or initials of the firm applying the Mark, a still further check would be obtained by enabling complaints from retailers to be followed up. Any firm of slaughterers who failed to maintain the required standard of grading would not only soon forfeit the confidence of the trade but would be deprived of authorization under the scheme.

The grade designation mark would incorporate an outline map of England and Wales and the grade designation—*Select*, *Prime* or *Good*. It would be a question for consideration whether and, if so, how to distinguish in the Mark between mutton and lamb. The code number or initials of the firm applying the Mark might be incorporated in the die bearing the National Mark. The weight category into which each carcass fell, on the basis of the weight classification outlined above, might be indicated by means of an inked rubber stamp applied to the inside of the leg.

The method of applying the Mark itself would have to be one which would lend itself to use by dealer-slaughtermen in country districts. Experiments made by the Ministry show that mutton and lamb carcasses can be suitably marked, either by means of a marking machine similar to but smaller than that used for marking beef—i.e., a roller stamp drawn down the carcass and passing over most of the joints—or by means of a stamp applied successively to the most valuable portions of the carcass. A difficulty arises in devising a satisfactory method of marking mutton and lamb with a mark that can be seen and appreciated by the consumer, from the fact that, in a number of carcasses, certain parts, such as the chumps and loins, are frequently pared of excessive external fat before sale, with the consequence that the mark would be removed. Only a proportion of carcasses, however, are so trimmed and then only as regards certain joints.

Figure 53 illustrates diagrammatically a carcass marked with a roller stamp machine indicating approximately the course which the mark might take. It is suggested that the marking on each side should commence on the outside muscle of the leg and then run down the carcass to the scrag, parallel to and within about an inch or two of the vertebrae (according to the weight of the carcass); another mark would run from the flap end of the breast diagonally to the point of the shoulder.

CHAPTER XIII.—THE WHOLESALE MEAT TRADE.

The meat trade in this country has been exhaustively reviewed in recent years, in particular in the Reports of the Linlithgow Committee* and of the Royal Commission on Food Prices,†

* Cmd. 1927/1923.

† Cmd. 2390/1925.

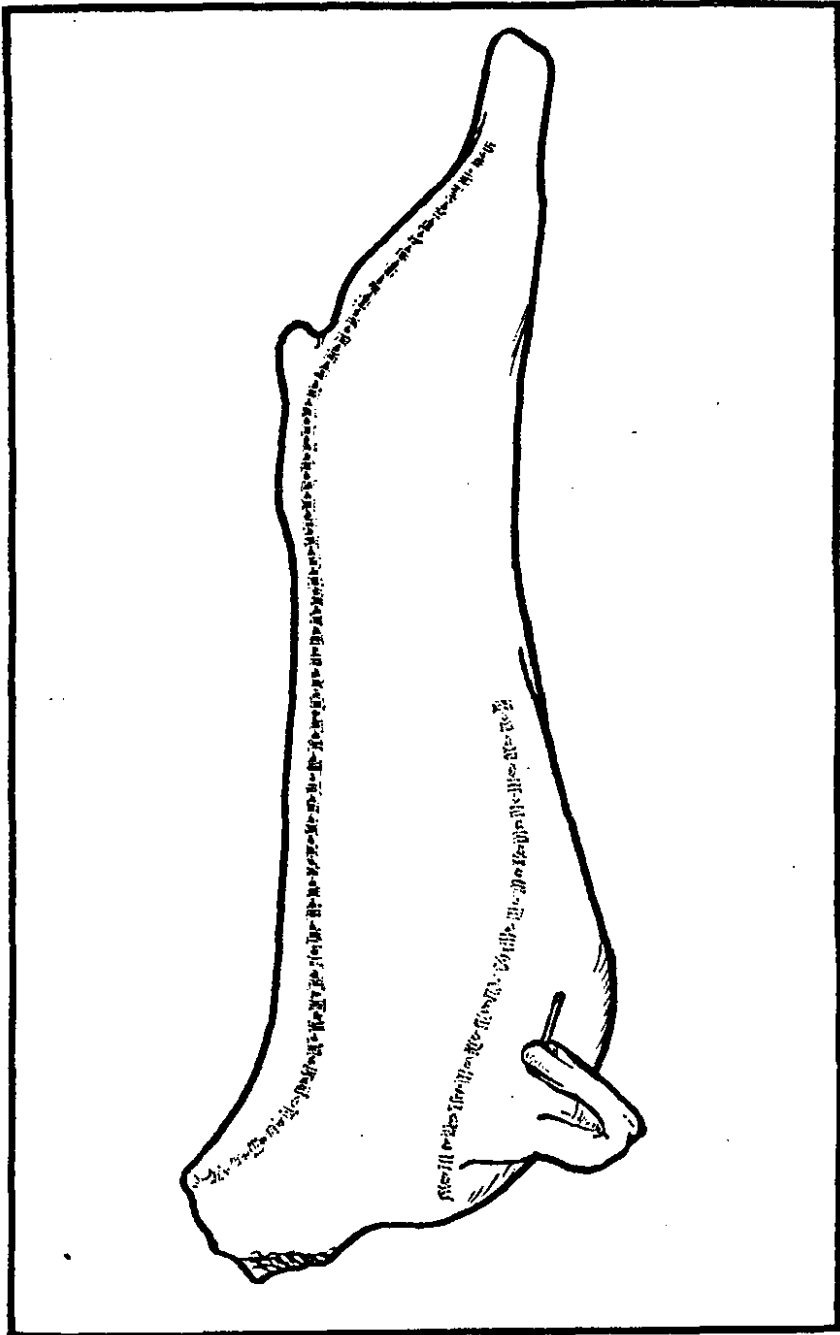


FIG. 53.—Position of proposed Grading Mark.

both of which were mainly concerned with the margin between producers' and consumers' prices. Much information regarding the numerous wholesale meat markets throughout the country is given in the *Report on Markets and Fairs in England and Wales*, Parts I to VII.* Part I discusses the requirements of such markets in respect of facilities and lay-out, while in the remaining Parts of the Report particulars of all of them are given and most of the principal markets are described in some detail.

As in the case of beef,† wholesalers of mutton and lamb can be classified into importers, commission salesmen, carcass butchers and jobbers. Commission salesmen and jobbers deal in imported as well as home-killed mutton and lamb; carcass butchers, in the main, depend on home-killed supplies.

(i) Importers.

A detailed description of the wholesale trade in refrigerated meat in this country is given in the *Report on the Trade in Refrigerated Beef, Mutton and Lamb*‡. In the imported trade, the freezing companies in exporting countries may either have their own sale depots in the United Kingdom or may sell through agents. There is a considerable difference in this respect between the Dominion and the South American trade. Thus, most of the New Zealand freezing firms sell through agents in this country and only a few have branches on the large wholesale meat markets in conjunction with their own cold-storage depots. Most South American freezing works, on the other hand, have their own wholesale depots in various towns and occupy space in the principal wholesale markets; they are thus in direct touch with the retailer. Some of the South American firms are also important buyers of Dominion produce. One firm, with large South American meat packing interests, also has freezing works in Dominion countries as well as controlling a considerable amount of cold-storage capacity in the United Kingdom and owning, in addition to wholesale depots, between 3,000 and 4,000 retail shops in this country.

Importers of mutton and lamb confine their trade practically entirely to that produce, although the firm alluded to above also sells a certain amount of fresh meat in its retail shops.

(ii) Commission Salesmen, Carcass Butchers and Jobbers.

The commission salesman receives sheep and lambs, alive or dead, in the main from country dealers and dealer-slaughtermen and, to a much smaller extent, direct from farmers. He returns to the consignor an average price realised for the carcass, minus

* Economic Series Nos. 13, 14, 19, 23 and 26.

† Economic Series No. 20, Chapter XII.

‡ Economic Series No. 6.

his expenses and commission, the latter usually at the rate of 4*d.* per stone of 8 lb.

The wholesale carcase butcher buys his supplies through his own representatives or employees at livestock markets and occasionally off farms. Many firms, particularly those in a smaller way of business, buy from dealers or agents in country districts on a commission basis, usually fixed at 1*s.* 0*d.* per head, the carcase butcher paying droving and transport expenses. Some of the expenses involved in the existing method of getting supplies from the producer to the wholesale butcher might be saved by the adoption of a system of sale on the basis of carcase grade and weight, such as is suggested in Chapter IX.

The mutton and lamb handled by commission salesmen and carcase butchers is usually pitched in wholesale meat markets and sold to retailers. A certain proportion is sold to large-scale consumers, such as public institutions or hotels. In some wholesale meat markets, such as those at Manchester and Leeds, the large majority of traders are carcase butchers, only a few making a speciality of the commission trade. In others, such as London, the majority of the traders do both a commission and a merchanting business.

A jobber is a wholesaler who buys from another wholesaler and sells to retailers. At certain times, supplies from one district may tend to fall away and wholesalers are then forced to do a jobbing trade—that is, to buy from other wholesalers or commission agents, whose supplies are abundant, in order to keep their retail customers supplied. This, however, is not an important feature of the trade in mutton and lamb.

Meat wholesalers who buy Irish supplies at Birkenhead may represent large wholesale firms in consuming centres throughout England and Wales, or they may be independent traders who buy and consign away for sale on a commission basis.

One of the chief difficulties in the wholesale trade is to secure continuity of supplies as regards both quantity and quality. To overcome this difficulty, some wholesalers have built up a close connection with traders in the districts on which they depend. Thus, in some cases, country dealers and dealer-slaughtermen are more or less tied to certain wholesalers through whom they pass the bulk of their supplies. Occasionally, sheep or lambs are secured as stores, sold to farmers, re-purchased when fat from the farmers, and consigned to the wholesaler; the wholesaler has a financial interest in each transaction from the time the animal is bought as a store to the time when it is sold as a carcase to the retailer. This, of course, tends to eliminate competition and may explain why it is that mutton can at times be purchased at a slightly cheaper rate at wholesale meat markets than in the country, where the competition of the retail butcher has to be met.

(iii) Note on Cutting for the Wholesale Trade.

In the wholesale trade, carcasses may be sold whole, halved* at the "best end" into "hinds" and "fores," or broken up into shoulders, legs, chines (or saddles), etc. In breaking up carcasses, considerable skill is essential; whether a profit or loss is made often depends on the way in which carcasses are broken up for disposal.

Mutton and lamb carcasses are both cut in the same way in the wholesale trade. In London (Fig. 54), when the carcass is "quartered," one rib is usually left on the loin. This rib is referred to as the rib-end chop and is generally recognized as one of the finest pieces of meat, especially in big sheep. When the carcass is broken up, the legs are removed at the chump—i.e., at a point in the thigh bone just above the articulation. The saddle or chine which remains is sold whole and generally used for chops; the flaps, tails and kidneys are left on the saddles, although, at the time of dressing, the kidneys are often removed from sheep carcasses. Restaurants, however, buying saddles for use as chops, usually specify loins ex-flaps, tails and suet: these pieces are then disposed of by the wholesaler to fat and tallow merchants. Fores are generally sold in pairs or the shoulders are removed and sold separately, leaving the ribs or targets. Targets may be sold whole, but are generally cut up; the breasts and scrags are then sold together and are known as "sets," the scrag being the neck with the first rib; this leaves a long "best end" of 12 ribs, which is sold by the retailer for outlets.

CHAPTER XIV.—THE RETAIL MEAT TRADE.†

(i) General.

¶ The number of retail butchers' shops in Great Britain has been estimated at about 45,000. The bulk of these shops are individual businesses worked by the proprietor. The butchery departments of consumers' co-operative societies are also of considerable importance; these societies usually do their own butchering for their retail shops. There are, in addition, a number of very large multiple-shop companies, most of whom mainly distribute imported meat obtained from their own wholesale depots. Retail butchers generally deal in both home-killed and imported meat; a few deal exclusively in home-killed, while others sell mainly home-killed meat, merely stocking imported to satisfy certain customers at certain times of the year; others sell only imported meat.

* Referred to in the trade as "quartering."

† See also Economic Series No. 20, Chapter XIV.

A number of retail butchers in country districts act also as livestock dealers, supplying live sheep and lambs both to carcass men and retail butchers in urban areas temporarily short of supplies. Thus, Leeds receives supplies in this way from the East Riding of Yorkshire all the year round, and towns in Gloucestershire may similarly get supplies from East Anglian retailers during January and February, when supplies in East Anglia exceed demand and can be more profitably disposed of elsewhere.

(ii) Sources of Home Supplies.

Butchers stocking home-killed mutton and lamb in the smaller towns and villages and in towns of moderate size where there is no wholesale meat market, buy on the hoof either at markets or direct from farms. It is probable that the bulk of the supplies are bought by retailers in livestock markets either by auction or, in some cases, by private treaty. In large towns, also, many retail butchers still buy their supplies on the hoof; as in the case of cattle, the slaughtering and dressing of the sheep may be carried out by the retail butcher or his assistants either at a public abattoir or in a private slaughter-house. In large urban areas, the tendency nowadays, however, is for the retailer to buy dead meat on the wholesale market. In London and other large centres, the bulk of the mutton and lamb are thus bought, retailers from a wide area obtaining supplies from the wholesale meat market serving the centre concerned.

The purchase of dead meat on the wholesale meat market saves the retailer time and trouble and he is, moreover, able to buy only those parts of the carcass and offals that he requires for his trade. The introduction of a grading and marking system should lead to an increase in this method of obtaining supplies. The retailer would then be able to order from the wholesaler by grade description, as is the common practice in the imported trade. On the other hand, many butchers still prefer to buy their requirements on the hoof, because they claim that the meat, especially in lambs, retains its bloom better and that the offals are fresher and more attractive looking when the animal is killed on the spot than when the carcass is passed through intermediate hands.

(iii) The Position of Imported Supplies.

As already stated, few retailers handle home-killed mutton and lamb exclusively. Imported varieties have a ready sale in all districts, partly because of their lower prices and partly because of the suitability of the carcass weights. Moreover, owing to the seasonality of production of home-killed lamb, it is impossible for the retailer to keep up a supply of lamb all the year round if he relies solely on home-killed. Many consumers, unaware of this, may continue to order home-killed lamb at all

times of the year, and it is difficult to avoid the conclusion that retailers sometimes use their own discretion as to what they supply. Consumers certainly appear to be surprisingly ill-informed regarding the origin of the meat they buy. To quote a leading member of the trade, many of the housewives of London, in buying Canterbury lamb, still imagine they are buying lamb of Kentish origin. Nor are many consumers aware that much of the imported lamb and mutton is of South American and not of Empire origin. That substitution of one kind of lamb for another takes place is clearly shown by the frequent prosecutions instigated by the representative of the New Zealand Meat Producers' Board, where an inferior foreign article has been sold as Canterbury or as New Zealand lamb. One result of substitution, so far as the home-killed trade is concerned, is that consumers often prefer definitely to order imported rather than home-killed meat owing to the uncertainty of what would otherwise be supplied at the price of the home-killed article. The Sale of Food Order, 1921, Part III, provides that any imported meat offered for retail sale must be clearly labelled as such, or, alternatively, where all the meat on sale is imported meat, a notice must be exhibited to that effect. It is generally admitted, however, that the Order has failed to put an end to substitution. The remedy seems to be in the use of some mark which the retailer would have every incentive to retain on the meat and display. For this reason, the grading and marking of home-killed mutton and lamb, in addition to its larger purposes—for example, in stimulating improved production and providing a basis for advertising—seems to offer the best solution so far as home produce is concerned.

(iv) Classes of Retail Trade.

Retail butchers carry on either a booking or "family" trade, a ready-money or "cutting" trade, or both.

In the family trade, handy-weight carcasses are generally preferred, the joints cut varying, according to the district, from $2\frac{1}{2}$ to 6 lb. or more, a $3\frac{1}{2}$ -lb. joint being an average for many districts in London. Very small lamb carcasses that cut legs and shoulders from $2\frac{1}{2}$ to 4 lb. are practically all sold to the "cutting" trade. Generally, the better the class of trade the greater the maximum weight of joint saleable, a limit of about 6 lb. being fairly common for a joint under such circumstances. Joints over 8 lb. are comparatively rarely asked for, except for big houses, hotels, restaurants and clubs, and are generally sold halved. All parts of the carcass are easy to dispose of except the middle neck, scrag and breast (see below). The middle neck and scrag are principally used for stewing and have generally a ready sale only in winter when stews and similar dishes are relished. They are difficult to dispose of during the summer, except for a short period when green

peas are plentiful; English scrags and breasts then sell well, particularly in the poorer districts.

In the ready-money or cutting trade, much of the lower quality mutton and lamb finds its most convenient market. It is a highly competitive trade in which "value for money" may be said to be the ruling principle. While, in many cases, excellent meat from young animals is sold at ready-money shops, these shops are the main channel of disposal for ewes and overweight sheep in some big industrial areas, and for small lean lambs in others.

Apart from the counter trade, there is a small retail trade in mutton and lamb by rail and by post. This trade is mainly confined to the disposal of high-grade produce to large-scale consumers who are prepared to give standing orders for goods of guaranteed quality. Its success depends on the possibility of supplying, regularly and promptly, joints of varying size, of especially high and reliable quality. Orders are received by post; the joints are packed in returnable hampers and dispatched by mail train or post, so as to ensure the earliest possible delivery. While the prices charged are normally current retail prices, deductions are made for customers taking a quantity, as, for instance, a quarter or a carcase; this may occur where several customers combine in ordering. Cash is generally required with order for the first few transactions. When confidence has become established payment is usually made on a three-monthly account. The cash-on-delivery system is not generally used. Though this class of trade is in its infancy, there are distinct possibilities of its being further developed; it is evident, however, that it will always remain more or less limited to institutions and private houses that require a regular supply from week to week.

(v) Retail Carcase Cuts.

The cutting up of mutton and lamb carcases for retail sale varies according to local custom and, to some extent, according to the type of trade. The method here described and illustrated in Figs. 54 and 55, is that of a retail butcher who does both a family and a cutting trade in London.

The carcase is first "quartered"—divided transversely between the 12th and 13th ribs, one rib on each side thus being left on the hindquarters and, in the case of mutton, the flap or plate—i.e., the hindpart of the breast—being left on the forequarters. The quarters are then divided as follows:—

Forequarters.—The shoulders are removed and are sold either whole, in halves or, in the case of very large sheep, divided into 3 pieces. When halved, one piece (the lower) is known as the "knuckle end" and the other as the "blade" or "fillet" end. The breast is next removed and the "neck" is cut into 3 pieces, namely, the "best-end" or "best neck" (adjoining the loin)

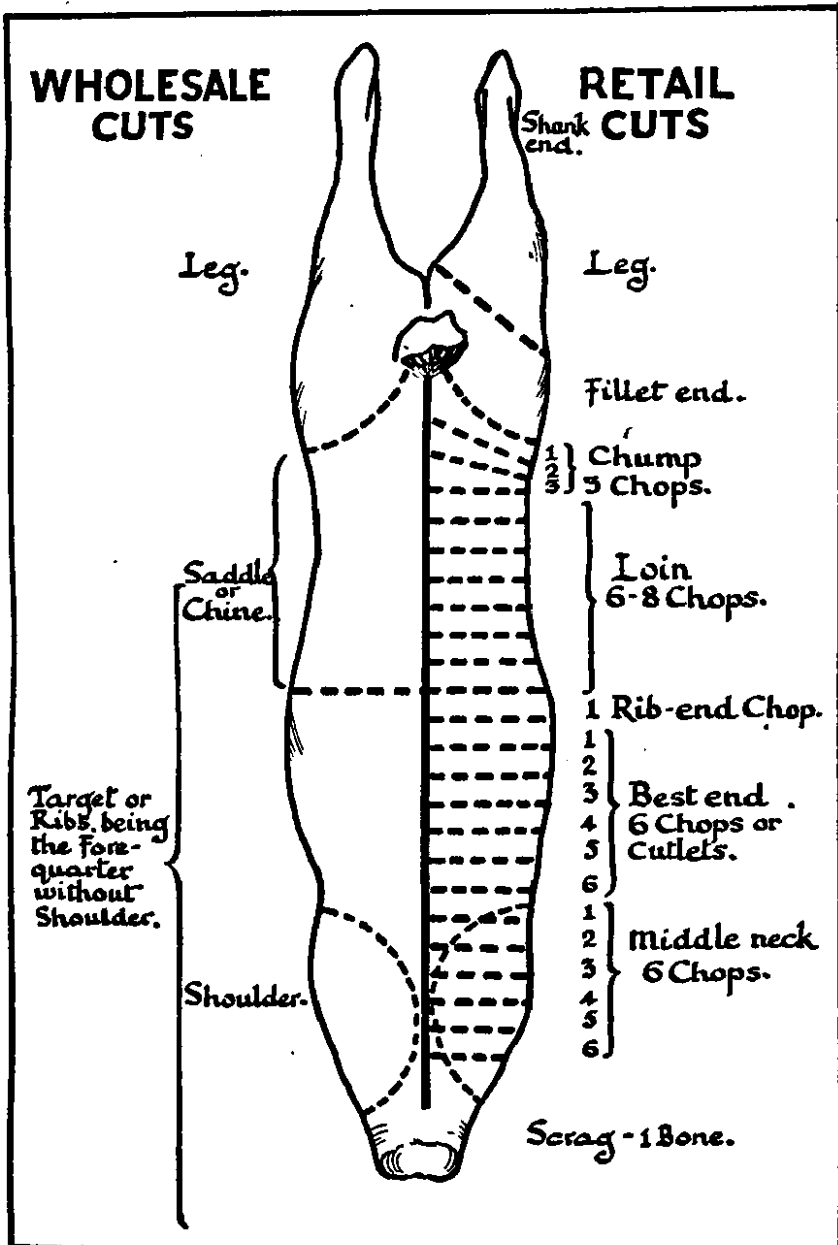


FIG. 54.—Diagram of Mutton carcass, illustrating Wholesale (left) and Retail (right) cuts in London.

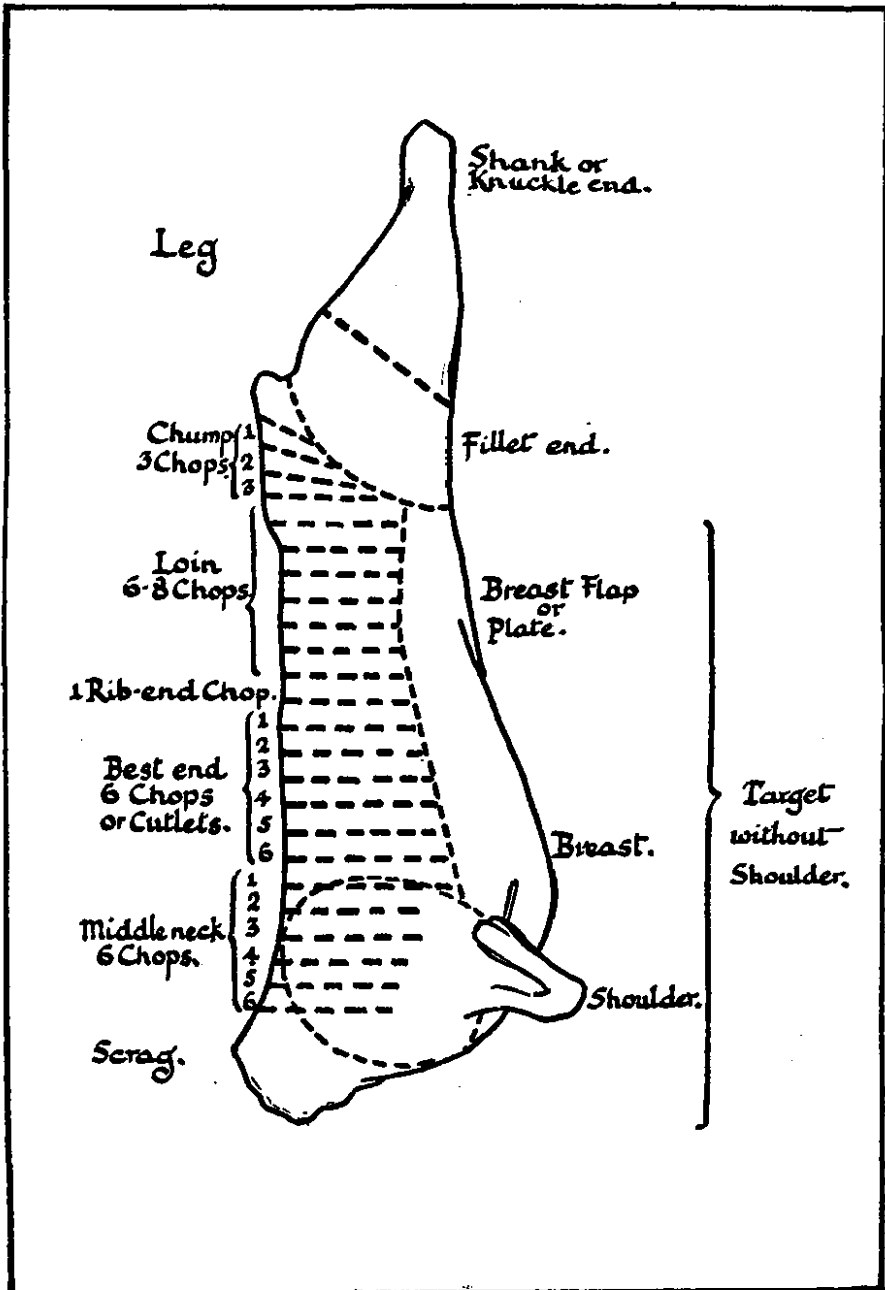


FIG. 55.—Diagram of Mutton carcass, illustrating Retail cuts in London.

consisting of 6 ribs on each side, the "middle neck," containing also 6 ribs, and the "scrag," which has usually only one rib. The "best end" is usually chopped into cutlets or sold as a small roasting joint, or, when specially ordered, sold boned and rolled; the other two joints are generally used for stews, though the "middle neck" may be used for roasting.

Hindquarters.—The leg is divided from the loins by a cut across the chump. It can be cut with more or less chump left, according to the weight of joint required. The leg, like the shoulder, can be halved, or, if very large, cut into 3 portions. When halved, it consists, like the shoulder, of the fillet and the knuckle or shank ends.

The loins, if not required to be sold whole, as saddle or chine, are cut down into chops, which consist of loin and chump chops, in addition to the rib-end chop.

The method of cutting ewe carcasses differs in some localities from that of other kinds of mutton. In England, generally, the carcass is cut in the usual way—i.e., the legs and shoulders removed, and the "best ends" and loins sold as chops. In some parts of the north of Scotland, the chump and chops, after being trimmed of excessive fat, may be cut into very thin joints weighing about $\frac{1}{4}$ -lb. each. The flank, breast and shanks are sold for boiling or mince. The shoulder is chopped and sold for stewing; in some cases, it may be chopped up to the neck.

Certain parts of the carcass of little value to the consumer are still left on joints by retailers. Thus, the tail is left on the chine or on the leg and the shanks are usually left on the shoulder and leg in the case of lamb, but not in the case of mutton. The tail, no doubt, assists somewhat in the cooking, as it carries a fair amount of fat, but the shank can be of little use to the housewife.

The following figures show the weights of the joints of a well-finished lamb (Down $\times$ Half-bred) when killed and cut up:—

				lb. oz.	<i>One.</i>	<i>Halved.</i>
					lb. oz.	lb. oz.
Saddle or Chine ...	...	...	...	8 7		
Shoulders ...	...	...	...	9 8	4 12	2 6
Breast ...	...	...	...	3 10		
Neck ...	...	...	...	8 4		
Legs ...	...	...	...	11 9	5 12 $\frac{1}{2}$	2 14 $\frac{1}{2}$
Total ...	...	...	...	41 6		

In a 32-lb. lamb, the joints would be roughly in the same proportion, the shoulder weighing about $\frac{1}{4}$ th and the leg between $\frac{1}{4}$ th and $\frac{1}{3}$ th of the carcass weight—i.e., about 3 $\frac{1}{2}$ and 4 $\frac{1}{2}$ lb., respectively, the joints being retailed whole and closely meeting present-day demands in the higher-class family trade.

In an 8-stone sheep, the joints usually weigh out about as follows :—

		lb.	One. lb.	Halved. lb.
Saddle or Chine ...	...	14		
Shoulders ...	...	13-14	6½ to 7	3½ to 3½
Breast and Scrag ...	...	9		
Neck ...	...	10-11		
Legs ...	...	16	8	4
		<u>62-64</u>		

The greatest variation occurs in the "ribs" or "target" owing to differences in the degree of bowing or length of the ribs.

The relative values of the various joints have been indicated in Chapter IV (page 51). The relative weights and values of the joints and the effect of correct cutting on returns are further illustrated by the following figures, which refer to a New Zealand lamb carcase weighing about 30 lb. :—

<i>One side :—</i>				Weight. lb. oz.	Price per lb.* s. d.	Selling Value s. d.
Leg ...	...	...	...	4 1	1 2	4 9
Shoulder ...	...	...	...	3 6	1 2	3 11½
Loin ...	...	...	...	3 8	1 1	3 9½
Target ...	...	...	...	4 0	5½	1 10
				<u>14 15</u>		<u>14 4</u>

The other side, cut differently :—

Leg ...	...	...	...	3 15	1 2	4 7
Shoulder ...	...	...	...	3 4	1 2	3 9½
Best-end loin ...	...	...	...	1 11	1 3	2 1½
Chump-end loin ...	...	...	...	1 13	1 1	1 11½
Best-end neck ...	...	...	...	1 4	1 2	1 5½
Scrag and middle neck ...	...	...	...	1 12	5	9
Breast ...	...	...	...	1 4	5	6
				<u>14 15</u>		<u>15 2</u>

* On the basis of 1930 prices.

The problem of disposing of the cheaper cuts* is less acute for mutton and lamb than for beef. Reference, however, has been made above to the comparative difficulty of disposing of the stewing joints—viz., the middle neck and scrag—in mutton, but this difficulty is experienced practically only during the warmer months of the year. The low price of breast is attributable partly to the large proportion of bone and fat and partly to the fact that a little extra trouble has to be taken in cooking, especially when

* For details as to methods of preparing some of the cheaper joints for sale, see "Cashing in on the Breast of Lamb," by D. W. Hartzell, distributed through the National Live Stock and Meat Board, 407, S. Dearborn St., Chicago.

serving it boned, rolled and stuffed. The tendency is for housewives to buy food that requires the minimum amount of time to prepare.

(vi) Effects of the "Quick-Freezing" Process.

Practically all imported mutton and lamb, except from the Irish Free State, is sent to this country frozen, only a few isolated consignments of the chilled article coming in from time to time from South America.

Meat preserved by the old method is slowly frozen by exposure to air kept at a low temperature. This results not only in loss of weight through evaporation—calculated at $4\frac{1}{2}$ per cent., more or less—but also in the partial breaking down of the cells of the muscle tissue, resulting in a loss of meat juices on defrosting, commonly known as "dripping." This, no doubt, accounts for the partial loss of flavour and, in many cases, the change of colour of meat frozen by this method.

A method of freezing which has recently been introduced—known as the "quick-freezing" method—involves direct or indirect contact with a brine solution; this is a far better conductor of heat than air, and the freezing process therefore takes a far shorter time by this process. As, however, the freezing effect extends to a depth of only a few inches, this method is not applicable to large pieces of meat, such as whole sides of beef or whole carcasses of mutton or lamb, and the practice is, therefore, to cut up meat into joints and to remove waste and, in some cases, bone before freezing. It is claimed that by this method the tissues are not damaged and there is no drip on thawing; discolouration and loss of weight are greatly reduced or even eliminated.

This method of freezing has made possible, at any rate in the United States, the distribution of frozen joints, pre-packed in sealed cartons or wrapped in transparent cellulose paper. The meat, being cut up and pre-packed, can be sold equally well by chain stores and retail provision merchants as by butchers, given the necessary shop equipment in the form of refrigeration facilities.

This method of selling meat has not been sufficiently tried out in practice to enable its possibilities in this country to be judged. Moreover, apart from matters of technique, there are one or two difficulties in the way of the sale of pre-packed, quick-frozen meat in this country. In the first place, there is the difficulty of adequate inspection. It is desirable, in the interests of public health, that every carcass exposed for sale should have been inspected. In the case of meat imported pre-packed, however, it is obviously only possible in this country for sample packages to be unpacked, thawed out and inspected. Apart from this, the inspection of isolated cuts gives no indication of the condition of the whole carcass from which they have been obtained. The development of this trade would,

therefore, appear to depend partly on the possibility of satisfactory official guarantees in respect of the hygienic condition of the carcasses at the exporting end.

In the second place, unless and until pre-packed meat is added to the list of pre-packed articles contained in Schedule I of the Sale of Food (Weights and Measures) Act, 1926, it would seem to be necessary, in view of Section 5 (2) of that Act, for a legible statement of the net weight to be given to the purchaser at the time of sale. This might present a certain amount of difficulty in view of the fact that such meat is subject to evaporation between the time of packing and the time of sale.

The development of the trade, in any case, appears to depend on an abundant and cheap supply of "dry ice" in this country, since the use of ordinary ice to keep down the temperature of the product in transit is impracticable, owing to the extremely low temperature required. The "dry ice" industry in this country is, at present, in its infancy.

These difficulties, however, are by no means insuperable, and, in the event of this method of sale developing in this country, the home producer would have to face a new and severe form of competition. While it may be true that, however perfect the method of freezing may be, the consumer will never pay as much for a frozen article as for the fresh home-killed product, yet the excellence claimed for the "quick-frozen" product as compared with that frozen by the old methods, and the convenient and attractive way in which it can be presented to the public, would be likely, in some degree, to deprive the fresh article of its differential advantage.

Moreover, a considerable change would undoubtedly take place in methods of retail distribution. Already the increase in the use of the wholesale meat market has meant that skill in slaughtering and dressing is no longer an essential qualification for the meat retailer. The sale of pre-packed joints would obviate the need for skill in cutting up and the sale of meat would become a routine matter possible for a much greater number of individual retailers, including grocers, fishmongers and poulterers and, possibly, dairy-men as well. The retailer exercises a highly important influence on consumer-demand and a sudden multiplication of the number of shop-keepers pushing the sale of imported meat could not fail to react adversely on the sale of home-killed, in the absence of some incentive to the retail butcher to favour the home-killed article. This again emphasizes the need for standardizing the home product by a grading and marking system which, if genuinely supported by the trade, would quickly establish the product in popular favour and simplify the task of the retailer in its distribution.

PART IV.—TRANSPORTATION.

CHAPTER XV.—CARRIAGE BY RAIL AND ROAD.

(i) Rail.

(a) *Extent of the Traffic.*—Table XV gives the number of sheep and lambs of all classes transported monthly by rail in Great Britain during the years 1926–30. It will be seen from this Table that there has been no marked change in recent years in the number of sheep so transported, which has amounted, on the average, to about 12½ million per annum. It should, of course, be borne in mind that many sheep undergo more than one rail journey in a year.

The Table also indicates that there is a marked seasonality in the traffic, the peak movement being in the late summer and autumn months and reaching its highest point in September. The three months August, September and October account for almost half the year's traffic. At this time of the year, the principal movements of store sheep, particularly ewes and lambs, from breeding areas to other districts for fattening or wintering, take place (see Chapters II and V). There is a rapid fall in traffic from October to December, after which, until the autumn peak, the numbers transported remain fairly constant apart from a small increase in March and April, accounted for by the sale of ewes and lambs as "couples" and the return of sheep that were sent to other districts or "tacked" during the winter months.

(b) *Rates.*—The standard rates for the conveyance of live sheep and lambs and of carcasses by merchandise train at company's risk, which are similar to those for cattle and beef, are given in the following schedule :—

	Rate for Conveyance per Mile.				Station Terminal at each end.	Service Terminals.	
	First 20 miles or any part of such distance.	Next 30 miles or any part of such distance.	Next 50 miles or any part of such distance.	Remainder of distance.		Loading.	Unloading.
	d. (per truck).	d. (per truck).	d. (per truck).	d. (per truck).	s. d. (per truck).	s. d. (per truck).	s. d. (per truck).
Live Sheep :—							
Part truck-load	7-10	6-75	5-50	4-25		8	8
Small truck-load	9-30	8-80	7-20	5-60		10	10
Medium truck-load	10-65	10-15	8-25	6-40	1 7	1 0	1 0
Large truck-load	12-25	11-65	9-50	7-35		1 2	1 2
	(per ton per mile)	(per ton per mile)	(per ton per mile)	(per ton per mile)	(per ton)	(per ton)	(per ton)
Sheep & Lamb Carcasses. (Class 19)	6-40	5-15	4-25	3-50	2 5	2 2 Covering 5	2 2 Un- covering 5

The average capacity of trucks is as follows :

Small Truck	...	...	25 fat or 30 store sheep or 35 lambs.
Medium Truck	...	...	30 fat or 35 store sheep or 40 lambs.
Large Truck	...	...	35 fat or 40 store sheep or 45 lambs.

A Part-truck permits a maximum of 20 sheep or lambs.

Exceptional rates at company's or owner's risk are usually quoted by the railway companies both for sheep and lambs and for meat where the consignments are sufficiently large and regular to justify their introduction. In the case of livestock, the owner sometimes guarantees a fixed minimum number per consignment during a certain period. Examples of rail transport charges from various places to London and Leeds at ordinary and exceptional rates are given in Tables XVI and XVII. Exceptional rates for meat generally include collection and delivery, although in some cases collection is not included, while in others the rates are "station to station."

The Railway Freight Rebates Scheme provides for a rebate on the carriage charges for live sheep and lambs, whether carried at company's or owner's risk. At the present time (July 1931), the allowance is 12½ per cent.

(c) *Conditions of Carriage.*—If the journey occupies longer than 36 hours, live sheep carried by rail must be fed and watered. This is done by the railway company at the owner's cost.

The railway company is liable for injury to animals during transit, but only where it is proved to be due to negligence on the part of the company or its servants. In every case, whether sheep are carried at company's or owner's risk, the maximum liability of a railway company is £5 per head, except where a higher value has been declared by the sender at the time of delivery to the company and an increased charge for carriage, to compensate for the greater risk, has been paid.

It is stated by the railway companies that almost all livestock vehicles provided by them are equipped with screw or instantan couplings, and oil-box fittings. These improvements should go far towards mitigating damage to sheep during transit, particularly during shunting.

Special trains are frequently run for large numbers of sheep for London or provincial markets, and also from markets and fairs after sale. Should circumstances demand it, consignments are loaded into "fitted stock"* and conveyed a portion of the journey by passenger train to enable a satisfactory service to be given.

* Stock fitted with vacuum or Westinghouse brakes, suitable for running on passenger trains.

Sheep carcasses are carried in "perishable" ventilated and dust-proof vans, which are equipped with hooks so that the carcasses can be suspended (Fig. 56). The average numbers of sheep and lamb carcasses that can be carried in these vehicles are as follows :—

		<i>Single-hooked vans.</i>	<i>Double-hooked vans.</i>
Sheep Carcasses	..	60	120
Lamb	,, ..	80	160

The carcasses are usually sent unwrapped ; sometimes, though rarely, they may be sent wrapped in stockinette. It is generally agreed that mutton and lamb carcasses travel best when hung from the roof, without wrappings, handled as little as possible, and kept cool by special ventilators.

On arrival at the terminal railhead, carcasses are conveyed to the meat markets in ordinary cartage vehicles covered in accordance with the provisions of the Public Health Meat Regulations. They are not hung but laid flat on one another.

The companies make a practice of providing regular fast services for fresh meat between London and large provincial towns, and also between any other places where and when the traffic justifies a special working. These trains are run at express speeds and give an early morning delivery in the markets.

(d) *Comparison of Rates for Live Sheep and Mutton.*—In the Table given below, a comparison is made between the rates charged for conveyance of small, medium and large trucks of fat sheep and the equivalent weight of carcasses, between certain stations and London and Leeds, respectively. The carcass weight of each sheep is estimated at 56 lb. Where carcasses are sent, the cost of conveyance of edible offals is additional to the charge for the meat, and the shipper has also to dispose of the inedible offals such as skins and intestines, which may in some cases involve transport costs higher than would be incurred if the stock were slaughtered in the consuming centre. It will be seen that, generally, the cost of conveying live animals is much higher than that of the equivalent in carcasses. If, in the case of carcasses, a deduction from the rate quoted is made for collection and delivery and the resulting figure compared with a station-to-station rate for live sheep, for which those services are not undertaken, the difference in cost is even more striking.

LIVE SHEEP.				DEAD MEAT EQUIVALENT.*			
Truck.		Rate per Truck.					
To London from—							
		s.	d.			s.	d.
Aberdeen ...	Small ...	180	5	} Ex. O.R.		70	6
	Medium ...	183	1			84	7
	Large ...	209	10			98	8
Leicester ...	Small ...	62	2	} Ex. C.R.		34	2
	„ (2) ...	124	4			62	11
	Medium ...	70	6			41	0
	„ (2) ...	141	0			75	6
	Large ...	79	3			47	10
Menai Bridge	„ (2) ...	158	6	} Standard Rates.		88	1
	Small ...	139	2			65	10
	Medium ...	158	10			78	11
Shrewsbury...	Large ...	181	11	} Standard Rates.		91	11
	Small ...	98	1			49	11
	Medium ...	111	11			59	11
	Large ...	128	0			69	10
To Leeds from—							
Newcastle ...	Small ...	72	0	} Standard Rates.		36	8
	Medium ...	82	1			44	0
	Large ...	93	9			51	4
Spalding ...	Small ...	75	8	} Standard Rates.		38	0
	Medium ...	86	4			45	7
	Large ...	98	7			53	2
Norwich ...	Small ...	109	9	} Standard Rates.		51	4
	Medium ...	125	3			61	7
	Large ...	143	3			71	10
Aberdeen ...	Small ...	191	0	} Standard Rates.		82	1
	Medium ...	218	0			98	6
	Large ...	249	10			114	11
Leicester ...	Small ...	71	5	} Standard Rates.		36	5
	Medium ...	81	5			43	8
	Large ...	93	0			50	11

* At 56 lb. per carcase.

Ex. O.R. = Exceptional rate, owner's risk.

Ex. C.R. = Exceptional rate, company's risk.

(ii) Road.

(a) *General.*—The old-time custom of sending sheep on foot from farm to market obtains in all parts of the country, and store sheep and lambs are often driven considerable distances. Owing, however, to the increase of motor transport and the consequent danger to sheep on the road, the traffic congestion they cause, and the loss of time in driving them any distance, this method of transit is gradually becoming obsolete except for short distances. It is being generally replaced by the more expeditious method of conveyance by rail or motor transport, especially in the case of fat animals sent any distance for sale.

No information is available regarding the numbers of sheep and lambs annually conveyed by motor transport, but the use of this means of conveyance is undoubtedly increasing rapidly.

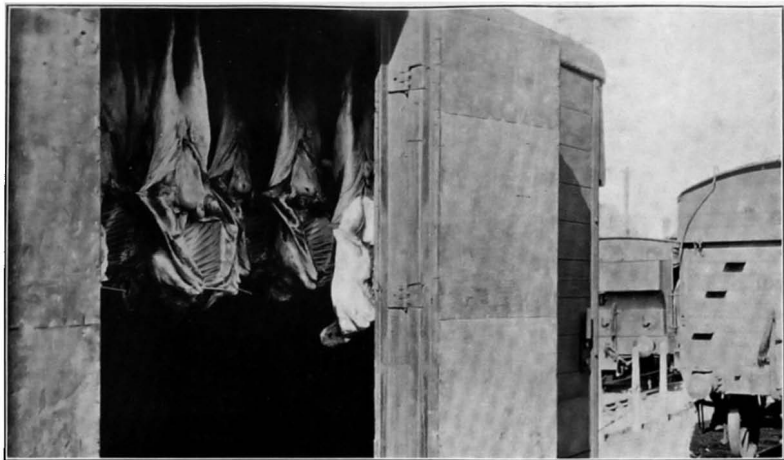


FIG. 56.—Lamb carcasses loaded in railway van.



FIG. 57.—Methods of motor transport used for sheep.



FIG. 58.—Double-decked motor lorries and trailer loaded with sheep.

Some farmers have their own light lorries that have been fitted up for the conveyance of smaller kinds of livestock, but more frequently they contract with road haulage firms to take their sheep and lambs to market. A large number of such firms now specialize in the transport of livestock to and from markets. Contractors are often able to make up a full load by picking up consignments from several farms. Butchers and livestock traders also make considerable use of motor-lorries for the conveyance of sheep and lambs. Railway companies also, in some instances, provide a service of road transport of livestock to and from markets.

In some districts, double-decked lorries, specially fitted up for the conveyance of the smaller kinds of livestock and capable of holding up to 100 sheep or 150 lambs, are used for transporting sheep. A collapsible ramp is carried for loading and unloading purposes. In some cases, these lorries draw double-decked trailers. Lorries with three tiers are also in use. (See Figs. 57 and 58.)

The extended use of road lorries in recent years has given farmers a far greater measure of independence in the disposal of the smaller kinds of livestock and appears to be leading to more centralized methods of sale. Greater mobility frees producers from dependence on the market nearest home, and allows stock to be sent to any market, within reasonable range, that offers the best selling prospects. Since road transport has become fairly widely used, many of the more important livestock markets regularly receive supplies from much further afield than used to be the case a few years ago. The customary radius of operation of many of the lorries fitted up to convey the smaller kinds of livestock is up to about 25 miles from the market.

In the conveyance of sheep for distances of, say, 50 miles and over, while the railways still carry the major proportion of the trade, road transport is coming into wide use, and it is safe to say that stock can be conveyed economically by road up to 100 miles. The possibilities of this method of transport are being explored, especially by dealers and carcass butchers, for conveying bulk purchases of live sheep to consuming centres.

Road transport is also beginning to play an important part in the conveyance of mutton and lamb carcasses. Many country dealers who kill sheep in the producing districts convey the produce direct to Smithfield market by road. Where, however, the railway companies specially cater for the London dead-meat trade and in many cases have built slaughter-houses by the railway line, which they let out to dealer-slaughtermen, they carry the bulk of the business.

Specialist road transport firms, operating ventilated lorries designed for the purpose, now cater for the conveyance of carcasses direct from country slaughter-houses to dead-meat markets and assure delivery in the best condition at scheduled times.

(b) *Rates.*—There are no standard rates for the conveyance of live sheep or carcasses by road. Rates are generally based on mileage and in the large majority of cases have to allow for an empty return journey. In many instances the rates are largely governed by the corresponding railway rate. They would appear to be, however, on the whole, a little higher than railway charges for long distances, but, as is shown below, the higher freight charges must be set off against advantages in other directions.

The following figures are examples of approximate road transport charges for livestock and meat between certain points as made by certain well-known firms of contractors :—

LIVE SHEEP AND LAMBS.

—	Distance.	Rate.		Rate per mile.	
		Single Load.*	Double Load.*	Single Load.	Double Load.
	Miles.	s. d.	s. d.	s. d.	s. d.
From Swindon to :—					
London ...	82	121 6	161 6	1 6	2 0
Cardiff ...	90	132 0	172 0	1 6	1 11
Swansea ...	136	201 0	241 0	1 6	1 9½
Bristol ...	38	69 0	109 0	1 10	2 10½
Birmingham ...	76	112 6	152 6	1 6	2 0
Gloucester ...	34	48 0	88 0	1 5	2 7
Liverpool ...	168	252 0	294 0	1 6	1 9
Manchester ...	157	230 0	270 0	1 5½	1 8½

* The capacity of loads is as follows :—

		Single.	Double.
Fat Sheep ...	...	35-40	65-70
Store Sheep ...	...	35-40	70-75
Lambs ...	...	45-50	90-100

MEAT.

—	Distance.	Rate per ton.*	Rate per ton-mile.
	Miles.	s. d.	d.
To London from :—			
Bristol ...	114	45 0	4½
Cardiff ...	160	52 6	4
Liverpool ...	202	40 0	2½
Newcastle ...	273	75 0	3½

* On loads of 8-10 tons.

(iii) Relative Advantages of Rail and Road Transport.

For long-distance haulage, either of live sheep or carcasses, rail transport still holds the field. It is quicker than road transport and the freight charge is usually slightly lower. For short distances of, say, under 50 miles, road transport is probably on the whole the quicker, and, in addition, gives a door-to-door delivery, thus avoiding repeated handling and, in the case of live animals, droving charges at each end of the journey.

Motor transport is favoured for carcasses by many dealer-slaughtermen, because of the more punctual delivery generally afforded than in the case of rail transport, though the risks of delay through mechanical breakdown, fog or snow are admittedly greater. An essential feature of any service that caters for the conveyance of produce to Smithfield market is the delivery of carcasses in time for sale. It is well known on the market that a half hour's delay may make all the difference to the sale price. Prices vary according to the demand and the visible supply, and will often show considerable fluctuations on the same day, according to the hour at which the sale is effected. Trade may be brisk early in the morning and fall away within an hour or two, and the late arrival of carcasses may thus seriously affect their value.

(iv) Weight Shrinkage in Transit.

The importance of prompt delivery of live sheep or mutton or lamb carcasses arises partly from the weight shrinkage to which these products are subject during a long journey.

Data as to the rate of shrinkage are difficult to obtain, but some general idea can be gained, in the case of live lambs, from experience in the United States and, in the case of carcasses, from trade experience in this country.

(a) *Live Sheep and Lambs.*—The extent of shrinkage in transit of live sheep and lambs is illustrated by the following Table, which shows the losses through shrinkage in shipments of sheep by certain United States co-operative associations in 1921. The shrinkage represents the difference between shipping-point weight and terminal weight, the latter including the weight of crippled and dead animals. Hence the shrinkage figure is over and above losses due to crippled and dead. It will be noted that the shrinkage was from 5 to over 10 per cent. according to transport distance and season, and was consistently greater during the summer than during the winter months.

<i>Distance Shipped.</i>				<i>No. of Sheep on which figures are based.</i>	<i>Shrinkage as a percentage of weight shipped.</i>
Less than 100 miles	...	...	...	2,479	8.90
100-150 miles	...	...	...	6,472	7.10
150-200 "	...	...	...	5,139	7.02
200-250 "	...	...	...	1,978	7.22
250-300 "	...	...	...	860	8.65
300-350 "	...	...	...	1,026	9.92
350-400 "	...	...	...	2,237	10.40
<i>Month when shipped.</i>					
January	...	...	...	1,922	5.20
February	...	...	...	567	5.88
March	...	...	...	1,736	6.95
April	...	...	...	1,013	8.55
May	...	...	...	1,060	9.20
June	...	...	...	1,723	10.13
July	...	...	...	1,873	8.32
August	...	...	...	3,285	8.90
September	...	...	...	3,098	8.11
October	...	...	...	2,983	7.79
November	...	...	...	3,349	7.93
December	...	...	...	1,489	7.60

Under certain conditions, the detention of live sheep in lairages before slaughter may also result in shrinkage. Sheep intended for slaughter are housed under conditions that are strange to them and apt to make them nervous and upset. They may fail to thrive and, if lairaged for too long, say for three days or more, they shrink in weight, drawing nourishment from their livers and internal fats and particularly from their kidney fats. It is, however, very seldom that sheep and lambs lose weight in lairage when well housed, kept quiet, and killed within a reasonable time, say after twenty-four hours rest.

(b) *Mutton and Lamb Carcases.*—The extent of shrinkage of carcases depends largely on the state of the weather and the period from time of slaughter to time of sale. Hot weather, or a strong, drying breeze passing through a slaughter-house, will naturally promote evaporation; in cold, still weather the shrinkage will be less.

In the trade, an allowance for shrinkage is invariably made in the selling price when sheep are killed and sent to a distant market, as for instance from Devonshire or Wallasey to London. In Devonshire, when carcases have been weighed soon after slaughter, they are invoiced less 2 lb. per animal, which is considered sufficient to allow for shrinkage by evaporation. This allowance only relates to bulk quantities sent from year to year and not to individual carcases of varying size: in any system of weight grading, a percentage figure would have to be substituted. On average weight mutton and lamb carcases sent from Devonshire, shrinkage amounts to about 4 per cent., which is roughly

equivalent to the allowance of $4\frac{1}{2}$ per cent. made by New Zealand freezing firms for loss by freezing.

At Wallasey, sheep carcasses remain on the cooling hooks until the time for dispatch, and are then weighed just prior to loading ; considerable evaporation thus takes place before weighing ; this explains why, in this case, when invoiced, only 1 lb. is allowed for shrinkage on rail.

In Scotland, where lambs are usually loaded warm in the van, dealer-slaughtermen, when consigning to London, allow 3 lb. per pair of lambs for shrinkage.

PART V.—OFFALS AND BY-PRODUCTS.

CHAPTER XVI.—OFFALS AND BY-PRODUCTS.

The offals and by-products from the mutton and lamb trade include all products obtained from the sheep when slaughtered except the dressed and trimmed carcase. They comprise both edible and inedible products. The edible offals include the head and tongue, which are usually sold together in the wholesale trade, the kidneys, the plucks (heart, liver, lungs, melt*, skirt† and trachea), the sweetbreads, the fries and the caul. The inedible offals include the skin, horns (in horned breeds), intestines and the contents of the stomach and guts. Blood, trimmings and scraps of meat may be used for edible or other purposes according to circumstances. Thus the rough fat which is trimmed off the carcase may be used either for dripping or tallow. Certain offals have a special use in the manufacture of pharmaceutical products.

(i) Edible Offals.

(a) *Supplies.*—Assuming that the value of the edible offals of home-produced sheep and lambs amounts to roughly 10 per cent. of the total value of mutton and lamb produced (see below), and taking the average annual value of home-produced mutton and lamb in Great Britain in recent years as being in the neighbourhood of £24 million, the total annual value of the edible offals produced in Great Britain may be estimated at a little under £2½ million per annum. On the basis of the average value of live sheep and lambs imported from Ireland in recent years, offals to the value of about £150,000 are also obtained from Irish stock slaughtered in this country.

Previous to the embargo placed on Continental supplies of fresh meat in 1926, sheep's livers, kidneys and other edible offals were received in a fresh state from the Netherlands; in 1925, 20,297 cwt., valued at £66,872, were received from this source (Table IX). Small quantities were also received from Belgium and Denmark.

With the exception of small quantities from the Irish Free State, practically the only importations of edible mutton and lamb offals to-day are those received in a frozen state from those overseas countries that send mutton and lamb carcasses. This is a long-established trade.

* The spleen.

† In the Scotch method of dressing carcasses, the melt and skirt are left in the bodies.

Table IX gives the quantities and values of edible mutton and lamb offals imported annually into the United Kingdom from 1925 to 1929. It will be seen that the supply dropped somewhat, from 85,415 cwt. valued at £268,191 in 1925, to 78,801 cwt. valued at £284,803 in 1929. In 1929, Argentina supplied 26,845 cwt. or about one third of the total, valued at £105,217, New Zealand 16,706 cwt. or about one-fifth, valued at £66,300, Uruguay and Chile between them 18,741 cwt., valued at £63,820. The total importations in 1930 amounted to 95,439 cwt., valued at £326,512.

(b) *Uses*.—The kidneys, liver, heart, sweetbread, brains and tongue are common articles of food. Kidneys are sold with the carcase in lambs, but are usually removed from sheep and sold separately. The caul is used to assist in the cooking of the joint and generally to make the meat more juicy and palatable. In some cases, joints of imported lamb are delivered wrapped in fresh caul, no mutton or lamb caul being imported into Great Britain.

The melts are mainly used in cooking to make gravy and to add to the flavour; these and the "lights" (lungs) are also sold as oat's meat.

Tripe derived from the stomach of sheep is not much used in the south of England. It is a little more popular in the north; in Scotland it is used for making haggis. There is a limited trade in the fries, mainly those of tup lambs two or three months old.

(c) *Prices*.—The following figures give the estimated value of the edible offals of a sheep and its relation to that of the live sheep. The figures refer to a live sheep of 60 lb. estimated dressed carcase weight (sinking the offals) and the prices are an average of those ruling at Smithfield Market during 1930:—

						s.	d.
Head	..	..	..	..	..	0	6
Pluck, average weight 3 lb. at 11d. per lb.	..	..	..	..	..	2	9
Caul, ...	..	..	3 lb. at 8d.	..	..	2	0
Rough Fat	..	..	2 lb. at 2d.	..	..	0	4
Sweetbreads	..	..	2-3 oz.	..	..	1	0
						6	7

Value of live sheep at 1s. 1d. per lb. estimated
dressed carcase weight, sinking the offals ..£3 5 0

Approximate ratio of value of edible offal to
value of sheep 1/6

The edible offals are worth more in the winter than in the summer, except in the case of caul, which is much in demand during the lamb season.

(d) *Marketing*.—In this country, the edible offals from sheep and lambs killed by retail butchers are mostly sold by them direct

to consumers. Those from animals killed by dealer-slaughtermen, or by carcase butchers in smaller towns, are usually consigned to offal merchants or to meat salesmen operating in big towns. As in the case of beef offals, London receives surplus supplies from such places as Birmingham and Birkenhead and from Scotland and the west of England.

(e) *Preparation and Packing.*—In order that edible sheep offals may retain their brightness and keep well, it is essential that they should be hung up separately on cooling hooks immediately on being removed from the body. Delay in this respect, or the hanging of bunches of plucks together, may result in quick deterioration and loss of value. After being removed from the body, they can, if necessary, be dipped once in clean, cold water, but this practice is not advisable if it can be avoided as it reduces their keeping quality.

Considerable variation obtains in the trimming of offals. Offal merchants state that it would be to the interest of carcase butchers to study the needs of the trade in this respect more closely than they do. Offals received in saleable condition and requiring little or no trimming are proportionately of greater value than those that arrive badly or insufficiently trimmed. Hearts are best sent trimmed of their fat, and offals generally should have waste material removed before dispatch. Thus, to leave the root of the tongue on the trachea adds to the weight of the plucks and, therefore, to the freight-charge and causes the offal merchant unnecessary trouble and loss of time in removing it before sale.

For consignment in cool weather, plucks are usually packed in hampers after the animal heat has been allowed to escape; these hampers contain, on an average, 60 plucks. If the weather is warm, they can be placed for a short time on the cooling hooks and then packed with chipped ice in the hampers; the animal heat is absorbed by the ice and the plucks generally travel well. It seems, however, to be the general view in trade circles that the use of ice, though unavoidable in hot weather, is detrimental to the product.

It seems to be the case that offals of the various kinds travel best when not allowed to touch one another. Thus, in the case of plucks, when the livers touch one another they are liable to deteriorate, but if they are packed so that livers lie next to lights, the livers are not spoilt.

Sheep's livers from Ireland are often sent in non-returnable, watertight, 12-gallon chip kegs. This method is greatly in favour at Smithfield Market.

Plucks consigned by rail to Smithfield Market are sometimes spread out evenly on the floor of the railway-van without packing. They keep cool in this way and it is said that they keep fairly

clean and in any case can be washed if they arrive dirty. This, however, is an unsatisfactory practice. It is difficult to see how the plucks can be kept clean during loading and unloading, owing to the constant treading over the floor of the van, and there is always a risk of their becoming contaminated by dust while in transit.

Heads are usually packed in sacks for dispatch by rail, although in some cases they are also sent loose in the van. Losses sometimes occur in hot weather owing to sweating and rapid deterioration. It is worth considering whether it would not pay to pack heads according to size in non-returnable partitioned cases; the extra cost of such cases might well be more than saved by the elimination of loss through deterioration and of the cost of sorting out and handling at the purchaser's end.

Kidneys, sweetbreads and fries are generally wrapped in stockinette and sent away in hampers of mixed consignments of edible offals, chipped ice being added if required. It is especially important that sweetbreads should be wrapped, as otherwise they become stained and lose much of their value.

The sheep's caul has a considerable value, especially during the lamb season, that of a lamb being worth more per lb. than that of a mature sheep. It is essential that the caul should be properly set before packing, or the layers will tend to stick together. To obtain the best results, a certain amount of space in the slaughter-house is, therefore, required for hanging, so that the caul can set and dry, a process which takes about half an hour in normal weather. For this purpose, a device similar to a 3-ribbed laundry rail that can be raised or lowered by means of a pulley and cord is sometimes used; in this way, a large number of cauls can be hung up and dried in the minimum of space and time. Various methods of packing are practised; the best appears to be that of packing in flat layers in $3\frac{1}{2}$ -stone non-returnable cases, about the size of ordinary wine cases. They can also be sent in hampers. The former package has the advantage that retailers will often buy a whole case. It would be an advantage, however, if consignments were packed under recognized grades, so that cases could be sold by description.

Methods of packing offals vary widely and it would be in the interest of the trade if more attention were paid to securing uniformity. The variety of methods adopted is in marked contrast to the uniform practices of exporters of offals, who exercise great care in handling, dressing and packing at the freezing stations. For this reason, imported kidneys that arrive neatly packed in cardboard cartons, and also sweetbreads, have a ready sale in the home market.

(ii) Inedible Offals.

The most valuable of the inedible offals of sheep are the skins. These are salted at the slaughter-house as soon as possible after

the animals have been flayed, and are disposed of to fellmongers, whose function it is to de-wool the skin and to dispose of the wool to wool merchants and the pelts to tanners. Sometimes, skins are consigned direct from slaughter-houses to hide and skin markets for disposal; in such cases, particularly during the winter, the skins may not be salted until they reach the hide markets. At the hide markets, they are graded and sold either by private treaty or by auction.*

The trade in hide and skins is a specialized subject and will be dealt with at greater length in a subsequent Report in the Economic Series. It is sufficient to say here that, under existing slaughtering methods, considerable losses occur owing to carelessness or lack of skill in flaying and lack of facilities for treating skins promptly and efficiently after flaying. In too many slaughter-houses, skins are allowed to lie about on the floor, where they become dirty and may, if left too long, lose much of their value. Bad flaying results in scoring and cutting, causing avoidable losses, particularly in the case of "chamois" leather which is derived from the flesh side of the split sheep-skin.

Some of the most valuable by-products derived from sheep are the greases and fats, which are used for a great variety of purposes. They include both fresh edible fat or dripping and inedible fat—i.e., tallow. Mutton tallow is harder than beef tallow and has a more limited use, as it is more liable to rancidity and is, therefore, unsuitable for the manufacture of butter substitutes and high-class soap. Its main uses are in mixed greases for making soap, glycerine and various commercial greases.

Fats are rendered down by offal merchants and others, the dripping being disposed of at a wholesale meat market or elsewhere for human consumption, the tallow being usually sold direct to brokers or merchants.

From a manufacturing point of view, the intestines, though they form only a fractional part of the value of the whole sheep, are of some importance. They are used for sausage casings, surgical ligatures and strings for musical instruments and tennis racquets.

In big central slaughter-houses they may be collected by local firms, or they may be packed in salt and sent away, preferably daily, in air-tight tins supplied by casing buyers. Large manufacturing firms frequently have their own agents at public abattoirs who collect daily and dispatch to the manufacturing centre.

In small country slaughter-houses, it is very doubtful if casings of sheep can be fully utilized. Unless promptly and efficiently dealt with, they have little value. They should be as long as possible, consistent with good quality, of an attractive colour and free from sourness or discolouration due to bad preservation.

* See Economic Series No. 13, pp. 65-67.

In England, casings are manufactured by specialist firms; in the United States, meat packers have established their own fully equipped casing departments as integral parts of their businesses.

Before the War, the music-string industry was mainly centred in Germany and Italy, whereas England was the most important producer of tennis-racquet strings. In the United States, these industries were in their infancy before 1914, but the cessation of importation of string into the United States during the War forced the American product into great prominence, many of the big meat packers going into the business themselves.*

Intestines used for tennis racquets must be from strong, healthy lambs, as these alone have the required resistance. It is stated† that the guts from eleven lambs are required to string a racquet.

Cat-gut is made from the sheep's narrow intestine, and has to be of the highest quality; owing, however, to the method of preserving the guts that prevails in this country, it is stated that comparatively little cat-gut is made here, the bulk being imported from the United States.

Further uses for sheep intestines are in making gold beaters for producing gold leaf, and caps for perfume bottles. They are also used by brewers to line metal pipes.

Other inedible offals are the trimmings of pelts, which are used to obtain glue, the bones, which are manufactured into bone-meal, scraps of meat from trimming, which are reduced to meat-meal, and tankage and blood, which may be used in the manufacture of blood-meal. In this country, however, the blood of sheep is largely lost.

(iii) Pharmaceutical Preparations.

Certain glands of sheep, known as the endocrine glands, are used in the preparation of pharmaceutical materials. Thus, the thyroid is used in the preparation of thyroid extract, and the suprarenal glands are used to produce suprarenalin—a powerful astringent and heart stimulant. The pituitary, thymus and prostate glands are also utilized in the preparation of pharmaceutical products.

The manufacture of pharmaceutical preparations is a profitable side to the packing industry in the United States, which, in the aggregate, spends considerable sums annually on research into the value of by-products. Although the volume of production is comparatively small, its intrinsic value is high. The output, too, is stated to be increasing year by year as the demand from the medical profession grows.

It is quite evident that the endocrine glands cannot be fully utilized under the system of slaughtering which exists in this

* "By-products in the Packing Industry," Clemen. Chicago, 1927. p. 275.

† Ibid., p. 276.

country, even in public abattoirs. The manufacturing chemist requires these glands absolutely fresh and, under the conditions prevailing in this country, the requisite freshness cannot be ensured. Great Britain is, in consequence, not in a position to compete in the preparation of gland extracts with countries where livestock slaughtering and processing are carried out in large establishments operated under unified direction on meat-works lines.

In answer to an enquiry, a leading firm of chemical manufacturers in this country wrote as follows:—"From the point of view of the chemical manufacturer who is concerned with the collection of animal glands in a very fresh condition within a short time of the slaughtering of the animal, this country is in a very unsatisfactory condition to compete with not only North and South America, but also with Denmark and most countries on the Continent." The firm then instanced the case of a recently erected municipal abattoir in this country, where, even though modern machinery has been installed, the full benefit of modern slaughtering methods has not been obtained, because each butcher has his separate slaughter hall and employs his own team of slaughtermen. As a result, delays inevitably occur in the collection of offals which could be avoided if slaughtering was under unified control. The firm points out that "In the big abattoirs (i.e., packing houses) in America, in the case of sheep, the animals come in, are hooked on a wheel and are passed on moving chains through the slaughtering and subsequent operations at a regular speed and nothing interferes with the time that elapses between the different operations. If it is decided to take out pancreas glands within 15 minutes of the animals being slaughtered, then the job is organized so that this operation can be carried out at the appropriate stage It becomes easy under these circumstances to guarantee that the glands have, in fact, all been removed within 15 minutes of the animals being slaughtered. Even in the most modern slaughtering houses in this country, it is extremely difficult to give any such guarantee."

(iv) Relation of Slaughtering Facilities to By-Product Utilization.

The question of economic utilization of by-products is closely related to that of the efficiency of slaughtering facilities. The efficiency of the slaughtering facilities in this country has been briefly discussed (Chapter X), and it has been pointed out that the diffusion of slaughtering over a large number of individual units has several disadvantages, one of which is to prevent the most economic use of many of the offals of sheep and lambs, as of other stock.

So far as edible offals are concerned, it is claimed (see page 94) that the killing of stock in the private slaughter-houses of retail butchers enables these offals to be sold in a fresher and more

attractive condition than where they have to be taken from an abattoir or wholesale meat market to a retailer's shop. While this may be true, it has to be borne in mind that certain kinds of offals imported from distant countries, such as South America and New Zealand, arrive in good condition and have a ready sale.

It is mainly in the utilization of inedible offals that loss arises under the existing methods. The skins are a good case in point. It is not to be expected that flaying can be carried out as efficiently by a man with whom it is only a part-time job—as is frequently the case in the existing system of slaughter in public abattoirs and private slaughter-houses—as by a meat-works employee, who has that task specially assigned to him. As has been shown above, skins—and, indeed, hides also—are frequently damaged and lose a large part of their value through careless and unskilful flaying. Moreover, the slaughter of stock in private slaughter-houses not only involves the collection of hides and skins by hide merchants and fellmongers from a large number of premises, with consequent increased expense, but also puts upon the retail butcher the responsibility of preserving these products in good condition until collected. In many instances, proper precautions are not taken and the loss sustained annually through the consequent deterioration of hides and skins amounts to a considerable sum*.

It is not only in the case of hides and skins, however, that loss occurs. Few public abattoirs are equipped for the purpose of treating offals, such as intestines, fat, blood, bones or trimmings, on the premises. As a result, not only is there apt to be considerable deterioration in the case of, for example, intestines, owing to delay in collection, but much material—e.g., blood and the contents of stomach and guts—that could be utilized is frequently entirely wasted. In private slaughter-houses, loss from these causes tends to be accentuated; not only are facilities for cleaning and properly conserving these offals even less adequate than in public abattoirs, but the quantities available at each slaughter-house are often too small to be worth the trouble and cost of collecting.

Attention has been drawn above to the impracticability of securing the endocrine glands in this country in the condition of absolute freshness required by the manufacturing chemist. This, no doubt, reacts more seriously against the chemical manufacturing industry than against the livestock industry, since the intrinsic value of these glands forms a relatively small proportion of that of the carcase as a whole. Nevertheless, the waste incurred helps to swell the loss sustained, ultimately by the producer of livestock, through the inefficient handling of offals in general.

Under a system of centralized management of slaughtering in public abattoirs, such as that obtaining in Adelaide (South

* See also Sixteenth Report of the Imperial Economic Committee—Hides and Skins, 1930.

Australia), for example (see Chapter X), it would be possible for all offals not required by butchers for their own purposes to be taken over by the abattoir authority, either for manufacture on the premises or for proper treatment with a view to rendering them merchantable. The position would, in fact, be parallel to that obtaining in the big meat-works in North and South America, where the utilization of livestock by-products, especially the inedible supplies, is carried much further than here.

How to secure more satisfactory arrangements in this country is a problem of some complexity which, as stated in Chapter X, is at present engaging the attention of an official committee.

PART VI.

CHAPTER XVII.—CONCLUDING OBSERVATIONS.

The best class trade in mutton and lamb is met by home-killed supplies. A significant fact, however, is the gradual encroachment of the imported frozen article upon the home market during the present century. While it is true that home production has gone ahead during the past decade and has made up some of the ground lost during the War, imports, over the last 30 years, have expanded rapidly, while home supplies have somewhat fallen, so that the proportion of all United Kingdom supplies that is provided by overseas producers now amounts to nearly 60 per cent. compared with only about 45 per cent. 30 years ago. This is perhaps the natural outcome of the gradual transfer of emphasis from wool to meat as the primary product in certain important sheep-raising countries—e.g., Australia. The improvements made in refrigeration technique in recent years have no doubt been largely responsible for this change. There are, at the moment, indications that further developments, in the form of the "quick freezing" process (Chapter XIV), which is at present being perfected, may intensify the competition of the frozen article with the home product.

The home product has, of course, the great advantage of being fresh. Since the embargo was placed on the importation of fresh meat from the Continent in 1926, it has, in fact, been the only fresh mutton and lamb, with the exception of Irish, on the market. Even so, however, as is pointed out in Chapter IV, the best quality New Zealand product generally sells at a higher price than the lowest qualities of English and the margin by which the price of the best English product exceeds that of the best New Zealand is less now than before the War. Where the imported product, particularly the New Zealand article, excels is in the suitability of the carcase weights to the modern demand for small, comparatively lean joints. The tendency in recent years has, moreover, been for exporting countries to send more lamb and less mutton (Chapter II); the general level of quality of imports is thus tending upwards from this cause alone, since lamb meets, on the whole, a higher-class demand than mutton.

The proportion of inferior kinds of mutton and lamb produced in this country is, however, commendably low—lower, for example, than in the case of beef. This is in spite of the fact that the home producer is faced with certain difficulties which militate against the production of an article ideally suited to demand. The type of sheep which suits the conditions of production in any particular district or on any particular farm may not be equally suited to consumers' requirements. There are a great number of breeds and crosses of sheep in this country, most of which have developed

in response to farming conditions in the districts where they are chiefly kept, and therefore, from the standpoint of production, may be presumed to fill a definite need. Wide diversity of types, however, tends to make it difficult for the trade to secure uniform supplies and, while it may not be desirable from the production aspect that there should be any reduction in the number of breeds kept throughout the country as a whole, there is much to be said, from the standpoint of marketing, for an endeavour to secure greater uniformity of type within each breed. The Ministry's Livestock Improvement Scheme, which provides facilities for the use by breeders of high-class pedigree stock at a low cost, should assist in the attainment of this end provided that farmers take full advantage of it. Moreover, in districts where conditions are more or less uniform, there is much to be said for a reduction in the number of breeds and, more particularly, of crosses. The Midland grazing counties and certain parts of Wales such as Anglesey, where 30 or 40 different breeds and crosses of sheep can be found, might be mentioned as cases in point.

Apart from the suitability of the various types of sheep, another difficulty arising from the exigencies of the farming system is that it is sometimes difficult for the home producer to market his product either in an orderly manner or in the condition exactly suited to the consumer's needs. This is particularly the case on arable farms, where sheep form part of a complex farming organization and the time of marketing is, in consequence, dictated largely by the planning and condition of arable crops and not altogether by the degree of finish of the animal or the opportunity of meeting a favourable market.

One reform which would greatly assist the home producer to obtain a correct idea of the requirements of the market and should therefore promote the adaptation of supplies to market demand, would be an improved system of price recording for live sheep and lambs, in which due emphasis was given to the separate influence on price of the two factors of quality and weight. It cannot be too strongly emphasized that carcass weight is a price determinant equal in importance to quality and quite independent of it. Existing price-recording systems in this country (Chapter IV) have not, however, in the past distinguished the separate effect of these factors. Moreover, in those cases where prices are quoted on the basis of quality categories, there has been no clear and generally accepted definition of the various qualities. A series of quality grades and weight categories for fat sheep and lambs is, therefore, suggested in the Report (Chapter VI) which, it is hoped, may serve as a basis for a more informative system of market intelligence. Fat sheep and lamb prices in certain markets in England have, since the beginning of August, been broadcast weekly under the Ministry's auspices on the lines of the grades and categories here suggested.

On the subject of the marketing machinery, it may be said that the existing methods of marketing store sheep and lambs—in which, particularly in long distance trade, the dealer fulfils a valuable function—though somewhat speculative and therefore liable to involve superfluous expense, appear to meet the needs of the case fairly well. It is suggested, however (Chapter X), that the extensive knowledge which dealers possess of local conditions of supply and demand might be put to a better use under a system of inter-trading by producers' selling agencies in breeding areas with buying agencies in feeding areas. These agencies, aided possibly by the formulation of standard grades for stores, so far as this is practicable, should be able to co-ordinate the demand for stores with the supplies available and thus eliminate the re-pitching of stock at different markets.

Similar co-ordination might be achieved by producers' selling agencies for fat sheep and lambs. Attention is drawn in the Report (Chapter IX) to the success of the New Zealand Meat Producers' Board in regulating exports in accordance with demand on the markets supplied, particularly on the United Kingdom market. Conditions are different and more difficult in this country. Supplies come to market through a much greater number of channels. The home-killed article is sold fresh and, unless its differential advantage of freshness is to be sacrificed, refrigeration cannot be called in, as it is in exporting countries, to assist in maintaining an even flow of supplies to market. The seasonal nature of production must, therefore, continue to be reflected in the supply of home-killed produce reaching the consumer, but some attempt could be made to prevent temporary or local gluts and shortages.

The establishment of standard carcase grades for home-killed mutton and lamb might well form a basis for the organization of livestock producers for marketing purposes. The suggestion is discussed in Chapter IX that stock might be consigned alive by selling agencies to the order of wholesale butchers, for slaughter and sale on the basis of dead-weight and standard carcase-grade, at prices quoted by the butcher in advance. The official grading machinery in the National Mark Beef Scheme is, in fact, at present being used to certify weights and grades as the basis for the voluntary sale of cattle on these lines by individual farmers to wholesale butchers. The producer of good stock is thus directly rewarded according to the quality of his product.

The difficulty of turning out a uniform product in the mutton and lamb industry, as in any branch of agriculture, emphasizes what is perhaps the most important conclusion reached in this Report—the need for the use of standard carcase grades and weight categories to which reference has been made above. This is a matter of direct interest to the home producer. Although, in general, the producer's part in the marketing process ceases with the sale of the live animal, he is as much concerned as the

meat distributor or the consumer with any measure which would tend to stimulate the demand for home-killed meat and to reduce the costs of its distribution. The suggested National Mark grading and marking scheme for home-killed mutton and lamb, which is outlined and discussed in Chapter XII, deserves, therefore, the fullest consideration by all producers, for its effects should be reflected, through the distributor, in an increased demand for home-produced sheep and lambs and an increased return to the producer. Moreover, with such a scheme in operation, the producer's return would tend to vary in direct proportion to the quality of his product, for the creation of a consumer-demand for graded and marked mutton and lamb would be reflected in an increased demand on the part of butchers for stock of good quality.

The increasing intensity of the competition of imported mutton and lamb makes it essential that the home product should enjoy the full benefit of those advantages which it undoubtedly possesses. It cannot compete with the frozen article in price, but it can compete in quality, always provided that it is made a simple matter for the buyer to recognize the high-quality article. This would be made possible by a National Mark scheme, providing as it would, right through to the consumer, a visible guarantee of both origin and quality. It would, further, provide the essential basis for the stimulation of demand by large-scale publicity such as has been carried out in this country on behalf of the New Zealand product (Chapter IX). Home-killed mutton and lamb has so far received no publicity of any kind; indeed, until the home industry can put before the public a reliable standard article identifiable as such, it would be wasteful to spend money on advertising it.

It should be remembered, in this connection, that in the imported mutton and lamb trade, everything is done to simplify the task of the wholesaler, the retailer and the consumer in ordering supplies and to inspire confidence in the quality of the product. In these days, when retailers in the large urban areas obtain most of their supplies in the wholesale meat markets, and when many housewives order the week-end joint by post or over the telephone, the inevitable tendency, in the absence of any measure of standardization of the home-killed article, is for the demand of the masses of the population to be gradually transferred to the imported product.

The results of the experimental National Mark beef scheme initiated in 1929 affords a practical demonstration of the possibilities of standardization as applied to British beef and of the benefits likely to accrue from a similar measure for home-killed mutton and lamb.

Given standardization of the home product and a better co-ordination of supply and demand, the home industry would still be in one important respect at a disadvantage in competing with overseas supplies. The facilities for the slaughtering and dressing

of livestock in this country, as compared with those in countries from which the United Kingdom obtains most of its imported mutton and lamb, on the whole leave much to be desired. In New Zealand, Australia and South America, slaughtering is carried out for the export trade in large freezing works which enjoy all the advantages and economies which are made possible by large-scale operations. In this country, slaughtering is done partly in private slaughter-houses owned by butchers and dealer-slaughtermen, partly in public abattoirs, to a limited extent in abattoirs owned by consumers' co-operative societies and to a still more limited extent in farmers' co-operative abattoirs (Chapter X). Only the consumers' co-operative abattoirs—and then only the largest of them—can be regarded as at all comparable in method with the overseas meat-works. The public abattoirs are, practically without exception, planned and conducted on the principle of each butcher controlling his own slaughtering operations. As a result of the lack of a rational slaughtering system, not only are the costs of processing home-killed meat greatly increased, but the meat is not obtained in the best possible condition, while the by-products suffer deterioration or, in many instances, are entirely wasted. Here again, although, in general, the producer has no direct part in the slaughtering process or in the treatment of by-products, he is directly concerned that they should be carried out with the maximum economy and efficiency, since any waste which is incurred is ultimately reflected in the price he receives for his stock.

The concentration of slaughtering into fewer and better-equipped units should not only secure for the home industry the economies and efficiency enjoyed by its overseas competitors, but it should also facilitate the work of producers' selling agencies, if this should prove to be the most promising line of development in fat-stock marketing. The sale of fat stock by such agencies would obviously be an easier matter the smaller the number of market centres, particularly where the basis of sale was that of dead weight and carcass grade and where, in consequence, some impartial certification of these factors was desirable. Especially in those producing districts where sheep and lambs are now slaughtered for export to London, it should be possible to concentrate operations and develop slaughtering concerns somewhat on the lines of the American meat-works. Supplies in those areas, especially if pigs, calves and fat cattle were handled as well as sheep and lambs, would appear to be sufficiently steady throughout the year to enable such concerns to keep their plant working reasonably continuously. It may be that farmers' selling organizations in those districts, by deliberately feeding the more efficient slaughtering units—that is, generally, the larger units—would be in a position to help forward the required concentration. The whole question of the desirability of centralization of slaughtering facilities and of organizing the operative work under

unified direction and control, is at present under consideration. Whatever changes may be necessary in this direction or in that of more rational marketing can only come about as a result of careful planning. It is certain that the marketing problems of the livestock industry cannot be completely solved until livestock producers, as such, are organized for marketing purposes. Producers would, therefore, be well advised to consider how best to make use of the facilities which Parliament has now placed at their disposal in the Agricultural Marketing Act, 1931 (see Economic Series No. 33). Meanwhile, a task of immediate urgency is that of standardizing the home product, and there seems to be no reason why a movement should not be made at once to prepare for an experiment, under the Agricultural Produce (Grading and Marking) Acts, 1928 and 1931, in the grading and marking of home-killed mutton and lamb, on somewhat similar lines to that which is operating successfully for beef.

Markets Division,
Ministry of Agriculture & Fisheries.
July, 1931.

NOTE.—For a list of other Reports in this Series, see
inside of front cover.

TABLE I.—*Estimated Sheep Population of Principal Sheep-Raising Countries circ. 1890, 1900, 1913, 1924 and 1929.*†*

Country.	1890.	1900.	1913.	1924.	1929.
	'000.	'000.	'000.	'000.	'000.
British Isles ...	31,667	31,055	27,629	24,964	27,720
France ...	21,116	20,180	16,213	9,925	10,415
Germany ...	13,590	9,693	5,521	6,105	3,630
Spain ...	13,359	13,481	16,441	18,550	20,529
Italy ...	8,596	11,163	11,754	12,000	12,500
Bulgaria ...	6,868	7,015	8,632	7,450	7,986
Hungary ...	7,527	6,843	6,560	1,814	1,573
Rumania ...	5,002	5,655	5,269	12,481	12,801
Europe† ...	135,000	130,000	120,000	124,000	127,000
U.S.S.R. ...	86,158	87,734	80,122	79,847	123,810
Canada ...	2,564	2,510	2,129	2,685	3,728
U.S.A. ...	47,000	48,100	41,038	37,289	47,699
Argentina ...	74,380	67,384	81,485	36,209	38,000
Brazil ...	\$	\$	10,653	7,933	\$
Uruguay ...	18,609	18,609	11,473	14,443	19,358
Chile ...	\$	\$	4,567	4,094	\$
Bolivia ...	\$	\$	1,499	3,436	4,152
Peru ...	\$	\$	\$	11,363	\$
Union of S. Africa ...	30,000	30,000	35,711	32,198	42,662
Australia ...	97,881	70,603	85,057	84,011	106,000
New Zealand ...	16,754	19,355	24,192	23,776	29,051

* From U.S. Dept. of Agriculture Year-book.

† The figures are for the nearest years to the years mentioned for which data are available.

‡ Excluding Russia.

\$ No figures available.

|| There is reason to believe that the figures for Russia before 1929 are considerably under-estimated.

TABLE II.—*Numbers of Sheep, according to Class, in England and Wales from 1867 to 1931.*

Year.	Ewes for Breeding.	Rams and Ram Lambs to be used for Service.	Other Sheep.		Total Sheep.
			1 Year and Above.	Under 1 Year.	
1867			13,897,219	8,128,279	22,025,498
1868			15,047,071	8,552,213	23,599,284
1869			14,382,015	8,160,789	22,542,704
1870			13,894,856	7,751,879	21,646,735
1871			13,030,366	7,206,456	20,236,822
1872			13,261,394	7,518,654	20,780,048
1873			13,958,658	8,178,025	22,136,713
1874			14,552,863	8,371,591	22,924,454
1875			14,053,387	8,011,057	22,066,444
1876			13,588,278	7,604,954	21,193,232
1877			13,456,258	7,736,132	21,192,390
1878			13,407,917	7,961,893	21,369,810
1879			13,532,814	7,786,168	21,318,982
1880			12,534,895	7,012,067	19,546,962
1881			11,590,065	6,259,736	17,849,801
1882			11,058,097	6,407,811	17,465,908
1883			11,395,600	6,780,310	18,175,910
1884			11,795,396	7,289,665	19,085,061
1885			11,977,171	7,600,266	19,577,437
1886			11,781,214	7,135,893	18,917,107
1887			11,735,184	7,457,683	19,192,867
1888			11,295,412	7,231,170	18,526,582
1889			11,407,761	7,272,810	18,680,571
1890			12,042,239	7,868,759	19,910,998
1891			12,922,575	8,186,083	21,108,658
1892			13,074,941	8,116,316	21,191,257
1893	7,289,394		5,039,450	7,578,326	19,907,170
1894	6,857,028		4,520,605	7,211,003	18,588,636
1895	6,830,516		4,558,890	7,169,006	18,558,412
1896	7,038,983		4,624,985	7,574,942	19,238,910
1897	7,090,285		4,395,434	7,430,853	18,916,572
1898	7,151,121		4,436,347	7,567,778	19,155,246
1899	7,428,924		4,344,034	7,904,816	19,677,774
1900	7,372,063		4,328,816	7,576,350	19,277,229
1901	7,209,485		4,266,175	7,500,131	18,975,791
1902	7,052,468		3,970,149	7,474,560	18,497,177
1903	6,942,446		3,977,691	7,492,265	18,412,402
1904	6,986,044		3,899,184	7,353,419	18,238,647
1905	7,017,222		3,764,317	7,451,446	18,232,985
1906	7,125,909		3,763,054	7,537,059	18,426,022
1907	7,263,015		3,816,441	7,722,844	18,802,300
1908	7,525,632		4,183,742	7,970,861	19,680,235
1909	7,773,712		4,417,365	8,090,077	20,290,154
1910	7,677,803		4,152,193	8,128,303	19,958,299
1911	7,470,075		4,155,393	7,705,182	19,330,650

TABLE II—*continued.*

Year.	Ewes for Breeding.	Rams and Ram Lambs to be used for Service.	Other Sheep.		Total Sheep.
			1 Year and Above.	Under 1 Year.	
1912	7,148,109		3,644,711	7,260,545	18,053,365
1913	6,699,291		3,420,605	7,010,390	17,130,286
1914	6,838,334		3,151,551	7,269,809	17,259,694
1915	6,871,738		3,481,647	7,169,192	17,522,577
1916	7,047,107		3,596,961	7,307,055	17,951,123
1917	6,872,029		3,563,520	6,734,308	17,169,857
1918	6,486,775		3,160,717	6,827,683	16,475,175
1919	5,764,300	156,747	3,411,297	5,791,969	15,124,313
1920	5,108,452	156,106	2,848,743	5,269,372	13,382,673
1921	5,336,536	165,829	2,685,058	5,644,090	13,831,513
1922	5,428,146	152,189	2,137,705	5,719,980	13,438,020
1923	5,505,245	155,456	2,369,228	5,805,604	13,835,533
1924	5,993,581	173,577	2,384,203	6,291,834	14,843,195
1925	6,397,091	180,624	2,691,691	6,705,388	15,974,794
1926	6,754,836	190,295	2,700,394	7,213,160	16,858,685
1927	6,962,142	196,351	2,625,282	7,288,500	17,072,275
1928	6,846,912	191,491	2,379,277	6,981,930	16,399,610
1929	6,717,258	187,209	2,266,762	6,934,224	16,105,453
1930	6,810,727	192,163	2,213,668	7,099,285	16,315,843
1931*	7,255,700	2,797,000		7,692,700	17,745,400

* Provisional.

TABLE III.—*Estimated Average Annual Number of Sheep and Lambs Slaughtered in Great Britain* in the 7-year Periods† 1907-8 to 1913-4 and 1923-4 to 1929-30.*
(Numbers are in Thousands.)

Period.	Ewes.		Hoggets and Fed Lambs.		Milk-fed Lambs.		Rams.†		Other Sheep.		Total Number.
	No.	Per cent.	No.	Per cent.	No.	Per cent.	No.	Per cent.	No.	Per cent.	
1907-8 to 1913-4 ...	1,887	18·7	4,689	46·4	871	8·6	—	—	2,663	26·3	10,110
1923-4 to 1929-30 ...	1,726	19·2	5,735	63·9	727	8·2	49	0·5	738	8·2	8,975

* Excluding Irish sheep and lambs slaughtered in this country.

† Years ending June 4 in each case.

‡ Rams are included in "Other Sheep" from 1907-8 to 1913-4.

TABLE IV.—*Quarterly and Annual Quantities of Home-Killed and Imported Mutton and Lamb, offered for Sale on Smithfield Market, London, during the Years 1928-30.*

Year.	Home-killed.		Imported.		Total Quantity.
	Quantity.	Percent. of Total Supplies.	Quantity.	Percent. of Total Supplies.	
1928:	Tons.		Tons.		Tons.
1st Quarter ...	9,411	26.7	25,798	73.3	35,209
2nd „ ...	5,815	16.3	29,787	83.7	35,602
3rd „ ...	9,255	26.5	25,721	73.5	34,976
4th „ ...	11,179	33.4	22,379	66.6	33,558
Total ...	35,660	25.6	103,685	74.4	139,345
1929:					
1st Quarter ...	8,316	24.5	25,568	75.5	33,884
2nd „ ...	6,538	18.1	29,583	81.9	36,121
3rd „ ...	7,821	21.6	28,446	78.4	36,267
4th „ ...	9,533	28.3	24,161	71.7	33,694
Total ...	32,208	23.0	107,758	77.0	139,966
1930:					
1st Quarter ...	7,912	23.4	25,854	76.6	33,766
2nd „ ...	6,024	15.7	32,236	84.3	38,260
3rd „ ...	6,651	18.6	29,095	81.4	35,746
4th „ ...	8,847	25.4	26,006	74.6	34,853
Total ...	29,434	28.3	113,191	71.7	142,625
Average, 1928-30:					
1st Quarter ...	8,546	24.9	25,740	75.1	34,286
2nd „ ...	6,126	16.7	30,535	83.3	36,661
3rd „ ...	7,909	22.2	27,754	77.8	35,663
4th „ ...	9,853	28.5	24,182	71.5	34,035
Total ...	32,434	23.0	108,211	77.0	140,645

TABLE V.—*Annual Imports of Mutton and Lamb and of Live Sheep and Lambs into the United Kingdom* from 1892 to 1930.*

Year.	Mutton and Lamb.		Live Sheep.†	
	Quantity.	Value.	Number.	Value.
	'000 cwt.	£ '000.	'000 head.	£ '000.
1892 ...	1,768	3,586	79	126
1893 ...	2,055	4,022	63	89
1894 ...	2,408	4,536	485	805
1895 ...	2,812	4,930	1,065	1,783
1896 ...	3,018	4,920	769	1,134
1897 ...	3,292	4,989	612	919
1898 ...	3,432	5,097	664	985
1899 ...	3,533	5,595	608	943
1900 ...	3,457	5,993	383	610
1901 ...	3,673	6,766	384	586
1902 ...	3,745	7,121	293	454
1903 ...	4,066	7,932	354	546
1904 ...	3,531	6,947	382	592
1905 ...	3,841	7,413	183	279
1906 ...	4,131	7,772	103	157
1907 ...	4,618	8,773	106	169
1908 ...	4,451	8,295	79	123
1909 ...	4,887	8,141	8	13
1910 ...	5,556	10,163	0.4	0.7
1911 ...	5,475	9,916	48	74
1912 ...	5,144	9,965	15	24
1913 ...	5,417	11,112	0.5	0.8
1914 ...	5,261	11,594	2	3
1915 ...	4,767	14,113	—	—
1916 ...	3,680	13,692	—	—
1917 ...	2,620	10,736	—	—
1918 ...	2,126	9,566	—	—
1919 ...	4,277	19,509	—	—
1920 ...	6,623	28,075	—	—
1921 ...	6,960	29,655	—	—
1922 ...	5,994	22,928	—	—
1923 ...	5,965	23,135	—	—
1924 ...	5,211	20,080	—	—
1925 ...	5,583	22,784	—	—
1926 ...	5,495	18,207	—	—
1927 ...	5,632	17,880	—	—
1928 ...	5,735	19,799	—	—
1929 ...	5,768	19,481	—	—
1930 ...	6,551	20,303	—	—

* After April 1st, 1923, United Kingdom means Great Britain and Northern Ireland.

† Imports of live sheep from the Irish Free State to Great Britain and Northern Ireland are not shown.

TABLE VI.—Numbers of Sheep and Lambs Exported Monthly from Ireland* to Great Britain and the Isle of Man during the Years 1925–30.

Month.	1925.				1926.				1927.				1928.			
	Sheep.		Fat Lambs.	Total.	Sheep.		Fat Lambs.	Total.	Sheep.		Fat Lambs.	Total.	Sheep.		Fat Lambs.	Total.
	Fat.	Store.			Fat.	Store.			Fat.	Store.			Fat.	Store.		
January ...	28,182	57	—	28,239	16,586	1	28	16,615	22,121	11	30	22,162	27,089	—	—	27,089
February ...	11,650	—	2	11,652	13,833	—	—	13,833	13,967	—	2	13,969	14,249	—	50	14,299
March ...	6,697	—	43	6,740	10,865	—	592	11,457	11,273	43	71	11,387	11,303	—	280	11,583
April ...	3,806	50	4,283	8,139	8,524	—	4,175	12,699	8,008	—	5,077	13,085	10,415	30	6,233	16,678
May ...	1,846	28	30,070	31,944	4,023	—	28,137	32,160	4,223	134	48,406	52,763	6,822	579	60,495	67,896
June ...	2,427	448	70,557	73,432	1,989	40	71,046	73,075	2,613	118	84,312	87,043	4,098	223	97,369	101,690
July ...	1,721	193	85,751	87,665	1,701	157	93,945	95,803	2,264	75	116,934	119,273	2,402	89	113,619	116,110
August ...	1,150	408	73,122	74,680	3,626	315	91,450	95,391	3,434	119	102,616	106,169	2,407	656	107,165	110,228
September ...	42,454	815	5,075	48,344	61,154	364	12,996	74,514	66,565	338	8,203	75,104	73,005	1,045	10,795	84,845
October ...	28,387	—	2,768	31,155	40,763	160	4,257	45,180	56,744	113	1,653	58,510	44,792	326	2,889	48,007
November ...	20,656	—	816	21,472	27,468	—	58	27,526	44,412	—	504	44,916	39,580	44	960	40,584
December ...	16,869	—	276	17,145	25,003	—	177	25,180	36,996	—	—	36,996	30,301	231	1,207	31,739
Total ...	165,845	1,999	272,763	440,607	215,535	1,037	306,861	523,433	272,620	949	367,808	641,377	266,463	3,223	401,062	670,748

* Including both Northern Ireland and the Irish Free State.

TABLE VI.—continued.

Month.	1929.				1930.				Average for 1925-30.			
	Sheep.		Fat Lambs.	Total.	Sheep.		Fat Lambs.	Total.	Sheep.		Fat Lambs.	Total.
	Fat.	Store.			Fat.	Store.			Fat.	Store.		
January ...	26,687	—	—	26,687	22,203	—	2	22,205	23,811	11	10	25,833
February ...	15,526	45	1	15,572	13,445	—	—	13,445	13,778	8	9	13,795
March ...	13,074	113	640	13,827	10,551	—	106	10,657	10,627	26	289	10,942
April ...	8,310	164	5,773	14,247	6,216	112	4,203	10,531	7,547	59	4,957	12,563
May ...	4,472	369	56,652	61,493	5,395	409	49,797	55,601	4,464	253	45,593	50,309
June ...	2,501	247	103,770	106,518	4,025	1,142	97,740	102,907	2,942	370	87,466	90,778
July ...	3,325	73	127,699	131,067	5,909	765	122,787	129,461	2,887	225	110,117	113,230
August ...	4,044	1,193	104,351	109,588	4,629	1,656	93,752	100,037	3,215	725	95,409	99,349
September ...	64,586	2,345	9,412	76,343	63,218	1,175	13,816	78,209	61,830	1,013	10,050	72,893
October ...	44,745	1,045	2,276	48,066	52,437	312	4,601	57,350	44,645	326	3,074	48,045
November ...	32,461	28	897	33,386	40,474	247	1,372	42,093	34,175	53	768	34,996
December ...	24,984	—	1,015	25,999	26,335	86	1,270	27,691	26,748	53	657	27,458
Total ...	244,715	5,622	412,456	662,793	254,837	5,904	389,446	650,187	236,669	3,122	358,399	598,191

TABLE VII.—Imports of Mutton & Lamb and Mutton & Lamb Products into the United Kingdom in the Years 1926-30.

Country of Origin.	Frozen.						Fresh.		Tinned, Canned and Offals.		Total Mutton.		Total Lamb.		Grand Total.	
	Mutton.		Lamb.		Total.		Mutton and Lamb.		Mutton and Lamb.							
	Quantity	Value.	Quantity	Value.	Quantity	Value.	Quantity	Value.	Quantity	Value.	Quantity	Value.	Quantity	Value.	Quantity	Value.
1926.	Cwt.	£	Cwt.	£	Cwt.	£	Cwt.	£	Cwt.	£	Cwt.	£	Cwt.	£	Cwt.	£
Netherlands ..	—	—	—	—	8,822	20,192	33,221	171,477	8,621	22,453	35,895	162,345	5,947	31,585	41,842	193,930
Russia ..	8,822	20,192	—	—	8,822	20,192	—	—	—	—	8,822	20,192	—	—	8,822	20,192
China ..	26,385	67,483	—	—	26,385	67,483	—	—	—	—	26,385	67,483	—	—	26,385	67,483
U.S.A. ..	—	—	2,001	7,239	2,091	7,239	—	—	8,800	31,244	2,427	10,342	7,964	28,141	10,391	38,483
Iceland ..	—	—	8,594	15,324	8,594	15,324	—	—	—	—	—	—	8,594	15,324	8,594	15,324
Chile ..	203,440	415,088	58,314	214,382	261,754	629,470	—	—	6,706	21,109	209,338	434,021	59,127	216,558	268,460	650,570
Brazil ..	481	1,078	822	1,208	803	2,286	—	—	—	—	481	1,078	822	1,208	803	2,286
Uruguay ..	277,777	702,864	40,592	135,598	318,369	838,462	—	—	10,142	39,099	287,007	739,002	41,504	138,559	328,511	877,561
Argentina ..	735,508	1,766,546	534,035	1,371,716	1,269,543	3,638,362	—	—	51,830	157,443	780,391	1,902,991	540,982	1,892,814	1,321,378	3,795,805
Other Foreign Countries ..	8,511	18,979	1,567	6,360	10,078	25,339	655	2,924	2,655	6,021	11,320	25,891	2,068	8,393	13,388	34,284
Total from Foreign Countries	1,260,924	2,992,380	640,615	2,251,827	1,901,439	5,244,157	33,376	174,401	38,254	277,369	1,362,061	3,863,345	661,508	2,332,582	2,023,569	5,695,927
Australia ..	214,379	481,418	536,495	2,040,476	750,874	2,521,889	—	—	19,289	73,254	233,107	552,901	587,056	2,042,242	770,163	2,505,143
New Zealand ..	1,089,986	2,954,885	1,591,000	6,875,094	2,680,992	9,329,979	—	—	17,472	78,664	1,106,115	3,027,657	1,592,349	5,880,986	2,698,464	9,908,643
Irish Free State ..	—	—	—	—	—	—	598	3,000	—	—	550	2,724	48	276	598	3,000
Other British Countries ..	13	11	856	3,261	869	3,272	2	8	1,357	1,247	1,239	891	989	3,686	2,228	4,527
Total from British Countries	1,304,378	3,436,309	2,128,357	8,918,831	3,432,735	12,355,140	600	3,008	38,118	153,165	1,341,011	3,584,178	2,130,442	8,927,140	3,471,453	12,511,313
Total ..	2,565,302	6,428,689	2,768,972	11,170,658	5,334,174	17,599,297	34,476	177,409	126,872	430,584	2,703,072	6,947,518	2,791,950	11,259,722	5,495,022	18,207,204
1927.	Cwt.	£	Cwt.	£	Cwt.	£	Cwt.	£	Cwt.	£	Cwt.	£	Cwt.	£	Cwt.	£
Netherlands ..	—	—	—	—	—	—	—	—	262	535	262	535	—	—	262	535
Iceland ..	—	—	6,775	24,632	6,775	24,632	—	—	—	—	—	—	6,775	24,632	6,775	24,632
China ..	13,869	29,587	—	—	13,869	29,587	—	—	—	—	13,869	29,587	—	—	13,869	29,587
U.S.A. ..	—	—	2,154	7,320	2,154	7,320	—	—	8,569	46,410	3,787	27,075	6,986	26,655	10,723	53,780
Chile ..	182,742	389,778	92,723	324,430	275,465	714,208	—	—	11,114	36,050	193,227	423,967	98,352	320,291	296,579	750,258
Brazil ..	1,690	3,405	2,994	8,722	4,684	12,127	—	—	—	—	1,690	3,405	2,994	8,722	4,684	12,127
Uruguay ..	193,719	434,338	123,533	376,436	317,252	811,274	—	—	10,802	38,260	201,687	460,042	126,367	384,492	328,054	844,584
Argentina ..	788,681	1,760,080	747,802	2,475,284	1,536,483	4,235,364	—	—	38,260	108,463	814,768	1,847,658	754,975	2,496,174	1,569,743	4,348,827
Other Foreign Countries ..	952	2,046	—	—	952	2,046	—	—	1,427	4,958	1,947	3,954	432	3,059	2,379	7,013
Total from Foreign Countries	1,181,153	2,610,733	975,981	3,216,324	2,157,134	5,336,557	—	—	65,484	229,686	1,230,787	2,796,218	991,831	3,270,025	2,222,568	6,066,243

TABLE VII.—continued.

Country of Origin.	Frozen.						Fresh.		Tinned, Canned and Offals.		Total Mutton.		Total Lamb.		Grand Total.	
	Mutton.		Lamb.		Total.		Mutton and Lamb.		Mutton and Lamb.							
	Quantity	Value.	Quantity	Value.	Quantity	Value.	Quantity	Value.	Quantity	Value.	Quantity	Value.	Quantity	Value.	Quantity	Value.
1927—contd.	Cwt.	£	Cwt.	£	Cwt.	£	Cwt.	£	Cwt.	£	Cwt.	£	Cwt.	£	Cwt.	£
Irish Free State	—	—	—	—	—	—	18,542	67,770	—	—	—	—	—	—	—	—
Australia ..	192,440	402,108	432,877	1,556,658	624,817	1,958,766	—	—	21,928	78,185	4,288	19,912	9,274	47,858	18,542	67,770
New Zealand ..	1,047,682	2,727,274	1,679,290	6,904,046	2,726,972	9,631,320	—	—	19,298	78,800	1,065,481	2,801,157	1,680,787	6,908,763	2,746,268	9,709,920
Other British Countries ..	6	8	88	426	94	484	—	—	2,880	8,770	2,287	2,008	637	2,202	2,924	4,205
Total from British Countries	1,240,128	3,129,390	2,111,755	8,461,180	3,351,888	11,590,520	18,542	67,770	44,054	155,555	1,286,170	3,297,755	2,123,309	8,516,091	3,409,479	11,813,846
Total ..	2,421,261	5,749,123	3,087,786	11,677,954	5,509,017	17,427,077	18,542	67,770	109,488	385,241	2,516,907	6,098,973	3,115,140	11,786,116	5,682,047	17,880,089
1928.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Netherlands ..	—	—	—	—	—	—	—	—	411	1,128	411	1,128	—	—	411	1,128
Russia ..	1,152	2,690	—	—	1,152	2,690	—	—	—	—	1,152	2,690	—	—	1,152	2,690
Iceland ..	—	—	8,888	34,864	8,888	34,864	—	—	—	—	—	—	8,888	34,864	8,888	34,864
U.S.A. ..	—	—	208	1,046	208	1,046	—	—	5,757	34,968	1,834	18,899	4,131	22,110	5,966	30,009
Chile ..	228,093	555,282	128,526	488,993	352,221	1,044,275	—	—	6,711	26,388	228,619	574,541	130,318	496,122	358,932	1,070,663
Brazil ..	1,421	3,941	723	2,392	2,144	6,383	—	—	—	—	1,421	3,941	723	2,392	2,144	6,383
Uruguay ..	245,578	590,242	157,823	511,805	403,396	1,102,047	—	—	7,768	28,911	250,505	609,797	160,659	521,161	411,164	1,130,958
Argentina ..	706,145	1,838,381	805,323	2,834,450	1,511,468	4,672,781	—	—	46,224	159,945	742,791	1,965,293	814,901	2,867,433	1,557,692	4,832,726
Other Foreign Countries ..	902	2,504	14	125	916	2,629	—	—	883	5,861	1,128	3,880	671	4,110	1,799	7,990
Total from Foreign Countries	1,178,886	2,992,990	1,101,002	3,878,675	2,279,888	6,866,665	—	—	67,754	256,691	1,227,861	3,175,164	1,119,781	3,948,192	2,347,642	7,128,366
Irish Free State	—	—	—	—	—	—	21,725	117,808	—	—	8,477	15,908	18,248	101,900	21,725	117,808
Australia ..	211,681	530,911	334,346	1,284,660	546,527	1,815,571	—	—	8,121	11,853	214,730	542,561	334,918	1,284,863	549,648	1,827,424
New Zealand ..	962,691	2,708,136	1,831,914	7,950,598	2,794,805	10,658,734	—	—	16,561	64,081	977,404	2,766,421	1,833,962	7,966,344	2,811,866	10,722,765
Other British Countries ..	811	721	236	737	547	1,458	—	—	4,147	6,602	3,382	4,207	1,812	3,853	4,694	8,060
Total from British Countries	1,174,888	3,239,768	2,166,996	9,235,995	3,341,879	12,476,763	21,725	117,808	23,829	82,486	1,198,993	3,329,092	2,188,440	9,346,960	3,887,433	12,676,052
Total ..	2,353,769	5,232,758	3,267,998	13,109,670	5,621,767	19,342,428	21,725	117,808	91,583	339,177	2,426,854	6,504,256	3,808,221	13,295,152	5,735,075	19,799,408

Country of Origin.	Frozen.						Fresh.		Tinned, Canned and Offals.		Total Mutton.		Total Lamb.		Grand Total.	
	Mutton.		Lamb.		Total.		Mutton and Lamb		Mutton and Lamb						Mutton and Lamb	
	Quantity	Value.	Quantity	Value.	Quantity	Value.	Quantity	Value.	Quantity	Value.	Quantity	Value.	Quantity	Value.	Quantity	Value.
1929.	Cwt.	£	Cwt.	£	Cwt.	£	Cwt.	£	Cwt.	£	Cwt.	£	Cwt.	£	Cwt.	£
Netherlands ..	—	—	—	—	—	—	—	—	316	899	316	899	—	—	316	899
Iceland ..	—	—	10,980	31,026	10,980	31,026	—	—	—	—	—	—	10,980	31,026	10,980	31,026
China ..	4,681	10,922	—	—	4,681	10,922	—	—	—	—	4,681	10,922	—	—	4,681	10,922
U.S.A. ..	—	—	1,595	5,317	1,595	5,317	—	—	7,478	37,899	2,733	15,287	6,385	27,929	9,068	45,216
Chile ..	192,017	440,917	139,151	510,295	331,168	951,212	—	—	12,716	38,124	202,809	472,531	141,075	516,805	343,884	959,336
Brazil ..	26,168	56,985	1,002	3,429	27,170	60,414	—	—	—	—	26,168	56,985	1,002	3,429	27,170	60,414
Uruguay ..	194,441	486,818	172,316	573,966	366,757	1,060,784	—	—	14,596	52,764	205,962	528,125	175,391	585,423	381,358	1,118,548
Argentina ..	654,865	1,692,863	890,297	3,077,313	1,546,162	4,771,176	—	—	46,828	168,810	689,505	1,811,147	902,485	3,123,889	1,691,990	4,934,986
Other Foreign Countries ..	1,803	4,536	1,105	5,194	2,908	9,730	—	—	8,074	9,076	4,419	12,204	1,563	6,602	5,982	18,806
Total from Foreign Countries	1,078,975	2,694,041	1,216,446	4,206,540	2,290,421	6,900,581	—	—	86,003	302,572	1,136,593	2,908,100	1,238,831	4,295,053	2,375,424	7,203,153
Irish Free State ..	—	—	—	—	—	—	23,017	131,480	—	—	1,056	4,817	21,961	126,603	23,017	131,480
Australia ..	128,858	293,478	464,682	1,725,152	593,490	2,018,630	—	—	3,669	13,585	132,082	304,962	465,077	1,727,253	597,159	2,032,215
New Zealand ..	833,789	2,360,940	1,862,298	7,664,459	2,740,087	10,025,399	—	—	19,615	76,926	896,737	2,415,285	1,868,065	7,687,040	2,765,702	10,102,325
Other British Countries ..	125	347	785	4,007	910	4,354	—	—	5,755	7,519	4,111	3,641	2,554	8,232	6,665	11,873
Total from British Countries	1,012,772	2,654,765	2,827,715	9,393,618	3,340,487	12,048,388	23,017	131,480	29,089	98,030	1,033,936	2,728,705	2,858,557	9,549,188	3,392,548	12,277,893
Total ..	2,086,747	5,348,806	3,544,161	13,600,158	5,630,908	18,948,964	23,017	131,480	114,042	400,602	2,170,579	5,636,805	3,597,388	13,844,241	5,767,967	19,481,046
1930.																
Uruguay ..	—	—	—	—	422,668	1,185,334	—	—	—	—	—	—	—	—	422,668	1,185,334
Argentina ..	—	—	—	—	1,452,411	4,115,597	—	—	—	—	—	—	—	—	1,452,411	4,115,597
Irish Free State ..	No separate figures available.	No separate figures available.	No separate figures available.	No separate figures available.	811,266	2,487,542	19,547	106,768	—	—	No separate figures available.	No separate figures available.	No separate figures available.	No separate figures available.	811,266	2,487,542
Australia ..	—	—	—	—	3,293,430	10,934,279	—	—	—	—	—	—	—	—	3,293,430	10,934,279
New Zealand ..	—	—	—	—	406,526	938,329	—	—	—	—	—	—	—	—	551,792	1,473,495
Other Countries ..	—	—	—	—	—	—	—	—	145,266	540,166	—	—	—	—	—	—
Total ..	—	—	—	—	6,886,301	19,656,081	19,547	106,768	145,266	540,166	—	—	—	—	6,551,114	20,803,016

TABLE VIII.—*Monthly Imports of Frozen Mutton and Lamb into the United Kingdom each Year from 1926 to 1930 with the Average for the 5-year Period.*

Month.	1926.		1927.		1928.		1929.		1930.		Average 1926-30.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	Cwt.	£	Cwt.	£	Cwt.	£	Cwt.	£	Cwt.	£	Cwt.	£
January ...	554,199	1,923,009	379,001	1,169,917	451,275	1,351,639	358,704	1,228,420	311,358	1,001,368	410,907	1,814,871
February ...	298,650	987,496	372,739	1,113,799	315,279	1,069,801	420,387	1,483,578	417,019	1,536,371	364,815	1,234,607
March ...	467,211	1,562,170	691,426	2,268,759	540,538	1,964,120	483,693	1,750,822	643,505	2,270,312	565,275	1,963,236
April ...	532,473	1,760,436	476,588	1,509,273	536,665	1,809,955	673,830	2,372,082	825,802	2,653,009	609,072	2,020,951
May ...	543,782	1,815,960	633,650	1,941,784	639,035	2,124,809	585,177	1,928,142	863,879	2,410,733	653,105	2,044,285
June ...	609,394	2,114,372	576,093	1,851,218	529,923	1,877,554	449,652	1,554,007	579,874	1,763,766	548,987	1,832,183
July ...	605,628	2,106,284	539,458	1,757,778	530,459	1,992,415	657,034	2,275,428	688,644	2,049,959	604,245	2,036,378
August ...	384,470	1,267,272	419,402	1,326,234	550,830	1,966,671	524,583	1,802,461	536,552	1,649,984	483,167	1,602,544
September	297,916	870,016	421,149	1,292,760	408,085	1,443,228	443,760	1,349,137	362,856	1,056,827	386,753	1,202,393
October ...	371,121	1,092,087	429,903	1,376,248	411,151	1,416,229	330,544	1,045,458	299,715	863,796	368,487	1,158,763
November	336,769	1,063,987	304,497	984,441	385,357	1,277,266	386,093	1,200,429	364,800	1,019,647	355,503	1,109,154
December ...	334,047	1,058,518	279,450	880,184	325,561	1,056,775	317,505	964,299	492,297	1,380,309	349,772	1,068,017

TABLE IX.—Imports of Mutton and Lamb Edible Offals—Tongues, Hearts, Livers, Kidneys, etc.,—into the United Kingdom in the years 1925–9.

Country.	1925.		1926.		1927.		1928.		1929.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	Cwt.	£	Cwt.	£	Cwt.	£	Cwt.	£	Cwt.	£
Netherlands	20,297	66,872	8,621	22,453	271	555	420	1,141	321	913
U.S.A.	3,668	14,692	6,540	19,169	5,793	20,243	3,705	16,494	5,947	25,543
Chile	9,555	28,850	4,584	12,805	2,848	8,702	4,783	19,702	9,375	29,474
Uruguay	5,736	17,946	7,917	28,650	9,914	29,598	7,761	28,891	9,366	34,346
Argentina	32,728	99,133	39,048	100,997	24,006	74,839	35,369	126,788	26,845	105,217
Other Foreign Countries	2,892	7,026	2,105	3,434	1,039	1,992	647	2,728	2,991	7,932
Total Foreign Countries	74,876	234,519	68,815	187,508	43,871	135,929	52,685	195,739	54,845	203,425
Australia	1,998	5,589	5,191	19,120	2,437	8,252	2,287	8,857	1,518	7,749
New Zealand	6,360	25,164	10,688	40,500	11,799	42,602	11,890	42,238	16,706	66,300
Other British Countries	2,181	2,919	1,335	1,184	2,601	2,400	4,095	6,182	5,732	7,329
Total from British Countries	10,539	33,672	17,214	60,804	16,837	53,254	18,272	57,277	23,956	81,378
TOTAL	85,415	268,191	86,029	248,312	60,708	189,183	70,957	253,016	78,801	284,803

TABLE X.—*Estimated Home Production of Mutton and Lamb in Great Britain together with the Net Imports* for the years 1900–1 to 1913–4 and 1923–4 to 1929–30, and the Consumption per Head.*

Year (June to May.)	Home Production.	Net* Imports.	Total Supplies.	Proportion of Home to Total Supplies.	Con- sumption per Head.
	000 tons.	000 tons.	000 tons.	Per cent.	lb.
1900–1 ...	265	220	485	54·6	29·5
1901–2 ...	270	211	481	56·1	28·9
1902–3 ...	254	235	489	51·9	29·1
1903–4 ...	263	222	485	54·2	28·6
1904–5 ...	252	216	468	53·8	27·3
1905–6 ...	253	219	472	53·6	27·3
1906–7 ...	245	238	483	50·7	27·6
1907–8 ...	243	239	482	50·4	27·3
1908–9 ...	263	270	533	49·3	29·9
1909–10 ...	286	258	544	52·6	30·2
1910–1 ...	283	319	602	47·0	33·1
1911–2 ...	297	272	569	52·2	31·1
1912–3 ...	275	276	551	49·9	30·0
1913–4 ...	242	301	543	44·6	29·3
1923–4 ...	190	270	460	41·3	23·7
1924–5 ...	195	270	465	41·9	23·8
1925–6 ...	215	287	502	42·8	25·6
1926–7 ...	234	294	528	44·3	26·8
1927–8 ...	261	293	554	47·1	28·0
1928–9 ...	251	304	555	45·2	28·0
1929–30† ...	239	331	570	41·9	28·6

* The first four years include small quantities actually imported into Ireland for which no separate figures are available. During each of the pre-War years, the figures exclude hearts, livers, tongues, etc., which in those years were included under "meat unenumerated." Fat sheep and lambs from the Irish Free State and Northern Ireland, slaughtered in Great Britain, are included in "Net Imports."

† Provisional figures.

TABLE XI.—*Margins between the Average Annual Prices of 1st and 2nd Quality Fat Sheep and Home-killed Mutton and Lamb, calculated as Percentages of the Average Annual Prices for the years 1905-17 and 1921-30.*

Year.			Fat Sheep.	Mutton.	Lamb.
1905	...	...	8.24	11.58	11.46
1906	...	...	8.00	10.37	9.69
1907	...	...	8.86	11.15	10.14
1908	...	...	10.74	9.88	11.01
1909	...	...	12.34	8.77	15.68
1910	...	...	12.02	8.69	10.27
1911	...	...	8.45	8.91	11.18
1912	...	...	10.20	8.30	13.73
1913	...	...	9.52	7.71	12.27
1914	...	...	11.00	8.10	8.79
1915	...	...	9.60	7.05	7.21
1916	...	...	9.45	6.09	8.06
1917	...	...	9.16	7.01	6.54
1921	...	...	14.01	16.84	11.52
1922	...	...	15.77	13.43	11.00
1923	...	...	14.20	17.14	12.30
1924	...	...	14.71	16.98	11.97
1925	...	...	14.95	14.34	11.47
1926	...	...	14.47	20.40	13.09
1927	...	...	14.50	24.68	12.80
1928	...	...	13.61	20.21	13.12
1929	...	...	13.20	13.64	13.08
1930	...	...	10.78	10.87	12.04

TABLE XII.—*Annual Average Wholesale Prices per lb. on certain representative Wholesale Meat Markets* of Home-killed and Imported Descriptions of Mutton and Lamb in England and Wales during the years 1924–30.*

Description.	Quality.	1924.	1925.	1926.	1927.	1928.	1929.	1930.	Average 1924–30
		d.	d.	d.	d.	d.	d.	d.	d.
MUTTON.									
Scotch ...	1 2	14½ 13	14½ 13	12½ 11	11½ 10½	12½ 11½	12½ 10½	12½ 11	13 11½
English ...	1 2	14½ 12½	14 12½	11½ 9½	10½ 8½	12½ 10	11½ 10½	12½ 10½	12½ 10½
New Zealand (Frozen)	1 2†	8½ —	8½ —	7 —	6½ 5½	7½ 6½	7½ 5½	6½ 5½	7½ 5½
Australian... (Frozen)	1 2†	7½ —	7½ —	5½ —	5½ 4½	6½ 5½	5½ 5½	5½ 4½	6½ 5
Argentine (Frozen)	1 2†	7½ —	7½ —	5½ —	5½ 4½	6½ 5½	6½ 5½	5½ 4½	6½ 5½
LAMB.									
British ...	1 2	16½ 14½	16½ 14½	14½ 12½	13½ 11½	14½ 12½	14½ 12½	14½ 12½	14½ 13½
New Zealand (Frozen)...	1 2†	12 —	12½ —	10½ —	9½ 8½	10½ 9½	9½ 8½	9½ 8½	10½ 8½
Australian (Frozen)	1 2†	11½ —	11½ —	8½ —	8½ 7½	9 8½	8½ 8	8 7½	9½ 7½
Argentine (Frozen)	1 2†	10½ —	11 —	8½ —	8½ 7	8½ 7½	8½ 7½	7½ 6½	9 7½

* London, Birmingham, Leeds and Manchester.

† No separate prices for 2nd quality imported mutton and lamb were officially quoted previous to 1927.

TABLE XIII.—*Margins between prices* per lb. of Fat Sheep and Home-killed Mutton in England and Wales in pence per lb. for each month during the years 1924–1930.*

—	1924.	1925.	1926.	1927.	1928.	1929.	1930.	Average.
	d.	d.	d.	d.	d.	d.	d.	d.
January ...	2½	3	2½	2½	2½	2½	2	2½
February ...	2½	2½	2	2½	3	2½	1½	2½
March ...	2½	2½	2½	2½	2½	2½	1½	2½
April ...	3½	2½	1½	3	2½	1½	1½	2½
May ...	2	1½	1½	2½	1½	1½	1	1½
June ...	1½	1	1½	1½	1½	7½	7½	1½
July ...	1½	1½	1½	2	2½	1½	1½	1½
August ...	1½	1½	1½	2½	2½	1½	1½	1½
September ...	1½	2	1½	2	2½	1½	7½	1½
October ...	1½	1½	1½	2½	2½	1½	1½	1½
November ...	2½	2½	2½	2½	2½	1½	1½	2½
December ...	3	2	3	3	2½	2	1½	2½
	2½	2	2	2½	2½	1½	1½	2

* Average of 1st and 2nd Quality in each case.

TABLE XIV.—Numbers of Sheep and Lambs Exported to Great Britain from Ireland* during 1930, showing the Ports of Embarkation in Ireland and the Ports of Debarkation in Great Britain.

Ports of Ireland.	Exports.				Ports of Great Britain.	Imports.			
	Sheep.		Fat Lambs.	Total.		Sheep.		Fat Lambs.	Total.
	Fat.	Store.				Fat.	Store.		
<i>Irish Free State :</i>					<i>England and Wales :</i>				
Ballina	631	—	11,797	12,428	Bristol	626	—	336	962
Cork	1,173	1,500	5,446	8,119	Fishguard	2,971	843	2,489	6,303
Drogheda	6,105	—	21,881	27,986	Heysham	30,514	4,181	47,971	82,666
Dublin	173,512	—	204,544	378,056	Holyhead	78,939	—	96,386	175,325
Dundalk	8,144	—	10,314	18,458	Liverpool	114,920	864	194,372	310,156
Galway	2,318	120	3,996	6,434	Manchester	9,688	—	7,144	16,832
Greenore	9,373	—	27,685	37,058	Preston	15,518	—	26,865	42,383
Limerick	35	87	255	377	Total	253,176	5,888	375,563	634,627
Sligo	499	—	13,607	14,106	<i>Scotland :</i>				
Waterford	11,441	—	12,271	23,712	Ayr	80	8	172	260
Wexford	795	—	7,323	8,118	Glasgow	1,000	3	4,476	5,479
Total	214,026	1,707	319,119	534,852	Greenock	—	—	93	93
<i>Northern Ireland :</i>					Silloth	36	—	—	36
Belfast	28,843	288	42,300	71,431	Stranraer	515	5	9,142	9,662
Larne	515	5	9,142	9,662	Total	1,631	16	13,883	15,530
Londonderry	11,090	3,904	17,713	32,707					
Newry	333	—	1,172	1,505					
Total	40,781	4,197	70,327	115,305					
All Irish Ports ...	254,807	5,904	389,446	650,157	Total Great Britain	254,807	5,904	389,446	650,157

* Northern Ireland and Irish Free State.

TABLE XV.—*Numbers of Sheep and Lambs conveyed on the Railways of Great Britain each Month during the Years 1926–30.*

Month.	1926.	1927.	1928.	1929.	1930.	Average 1926–30.	% of Total.
January ...	596,715	710,745	657,468	639,442	585,707	638,015	5.2
February	521,109	615,682	665,017	516,429	507,495	565,140	4.6
March ...	934,570	897,720	883,716	753,244	701,044	834,059	6.8
April ...	939,393	986,491	877,214	979,016	801,782	916,779	7.5
May ...	491,506	908,497	702,807	713,061	660,443	695,262	5.7
June ...	668,338	666,057	621,919	574,383	513,173	608,774	5.0
July ...	755,395	777,147	776,787	733,012	627,520	733,973	6.0
August ...	2,041,791	2,223,240	2,123,058	2,010,398	1,773,960	2,034,490	16.6
September	2,284,620	2,403,290	2,428,126	2,163,266	2,030,927	2,262,046	18.4
October ...	1,794,033	1,764,515	1,774,936	1,550,359	1,459,667	1,668,702	13.6
November	862,387	932,085	781,154	680,730	535,643	758,400	6.2
December	584,562	625,158	558,890	513,627	421,482	540,744	4.4
Total ...	12,474,419	13,510,627	12,851,092	11,826,967	10,618,843	12,256,384	—

TABLE XVI.—Standard and Exceptional Rates for Conveyance of Live Sheep, Carcases and Offals by Goods Train between certain Stations and London.

From.	Rate.	Sheep and Lambs.				Fresh Meat (per ton).				Offals in Cases, Casks, Hampers, Sacks or Canvas Wrappers (per ton).			
		Part Truck Rate 20 animals (per truck).	Small Truck Rate (per truck).	Medium Truck Rate (per truck).	Large Truck Rate (per truck).	Any Quantity less than 1 ton. C. & D.	1 ton C. & D.	2 tons C. & D.	3 tons C. & D.	Any Quantity less than 1 ton. C. & D.	1 ton Packed C. & D.	2 tons C. & D.	3 tons C. & D.
		<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>
Aberdeen ... (535 mls.)	Standard	211 8	276 10	316 2	362 7	—	—	—	—	—	—	—	—
	Ex. C.R.	—	—	—	—	125 4	—	—	—	—	—	—	—
	Ex. O.R.	4 11	160 5	183 1	209 10	112 9	—	—	—	86 6O.R.	—	—	—
		per head. Min.	200 lots and upwards to										
		174 5	30th June, 1931.										
		per truck.											
Leicester ... (97 mls.)	Standard	56 3	72 0	82 1	93 9	—	—	—	—	—	—	—	—
	Ex. C.R.	38 6	62 2	70 6	79 3	54 8	50 4	46 3	45 2	42 30.R.	—	—	—
Birkenhead... (194 mls.)	Standard	90 11	117 8	134 4	153 8	—	—	—	—	—	—	—	—
	Ex C.R.	—	—	—	—	67 0	—	—	42 1	44 11O.R.	53 2	—	42 1
Ipswich ... (167 mls.)	Standard	42 6	54 0	61 6	70 0	—	—	—	—	—	—	—	—
	Ex C.R.	37 3	—	—	—	46 3	42 1	36 6	—	20 0	—	—	—
Menai Bridge (240 mls.)	Standard	107 3	139 2	158 10	181 11	105 2	—	—	—	—	—	—	—
Shrewsbury (152 mls.)	Standard	76 1	98 1	111 11	128 0	79 9	—	—	—	55 2	—	—	—
Dorchester ... (142 mls.)	Standard	72 6	93 5	106 7	121 10	—	Carted in London	—	—	52 5	—	—	—
	Ex C.R.	—	—	—	—	67 0	60 9	—	—	—	—	—	—
Taunton ... (145 mls.)	Standard	73 7	94 10	108 2	123 8	Carted in London	Carted in London	Carted in London	Carted in London	53 3	—	—	Carted in London
	Ex. C.R.	—	—	—	—	61 10	56 6	51 2	45 10	—	—	—	45 10
Barnstaple ... (190 mls.)	Standard	89 6	115 10	132 2	151 3	—	—	—	—	—	—	—	—
	Ex. C.R.	—	—	—	—	76 9	68 6	61 7	52 4	61 8 O.R. Carted in London only	—	—	—
										56 0 O.R.			

"C. & D." = Rate including Collection and Delivery.

"Ex. C.R." = Exceptional Rate—Company's Risk.

"Ex. O.R." = Exceptional Rate—Owner's Risk.

TABLE XVII.—*Standard and Exceptional Rates for Conveyance of Live Sheep, Carcases and Offals by Goods Train between certain Stations and Leeds.*

From.	Rate.	Sheep and Lambs.				Fresh Meat per ton.	Offals in Cases, Casks, Hampers, Sacks or Canvas Wrappers (per ton.)
		Part-Truck Rate, 20 animals (per truck).	Small Truck Rate (per truck).	Medium Truck Rate (per truck).	Large Truck Rate. (per truck).	Any Quantity C. & D.	Any Quantity C. & D.
Aberdeen ... (351 miles)	Standard	s. d. 146 6	s. d. 191 0	s. d. 218 0	s. d. 249 10	s. d. 131 4	s. d. 87 4
Newcastle ... (97 miles)	Standard	56 3	72 0	82 1	93 9	58 6	
	Ex. C.R.	53 4	68 2	77 10	88 11	—	40 6
	Ex. O.R.	—	—	—	—	48 6 (2 tons)	
Leicester ... (96 miles)	Standard	55 10	71 5	81 5	93 0	58 2	40 0
Spalding ... (104 miles)	Standard	59 1	75 8	86 4	98 7	61 1	42 2
Norwich ... (177 miles)	Standard	84 11	109 9	126 3	143 3	82 4	55 10

"C. & D." = Rate including Collection and Delivery.

"Ex. C.R." = Exceptional Rate—Company's Risk.

"Ex. O.R." = Exceptional Rate—Owner's Risk.

APPENDIX.

UNITED STATES MARKET CLASSES AND GRADES OF
SHEEP AND LAMBS.

Class.	Sub-class.	Age Selection.	Weight Selection.	Grade.
<i>SHEEP.</i>				
<i>Ewes ... Slaughter</i>	Yearling	...	Light weight and Handy weight—90 lb. down	Prime or No. A Choice or No. 1 Good or No. 2 Medium or No. 3 Common or No. 4 Cull or No. 5
			Medium weight—90–100 lb.	Prime or No. A Choice or No. 1 Good or No. 2 Medium or No. 3 Common or No. 4 Cull or No. 5
			Heavy weight—100 lb. up	Prime or No. A Choice or No. 1 Good or No. 2 Medium or No. 3 Common or No. 4 Cull or No. 5
	2 years old and over.		Light weight—100 lb. down	Choice or No. 1 Good or No. 2 Medium or No. 3 Common or No. 4 Cull or No. 5
			Handy weight—100–120 lb.	Prime or No. A Choice or No. 1 Good or No. 2 Medium or No. 3 Common or No. 4 Cull or No. 5
			Medium weight—120–140 lb.	Prime or No. A Choice or No. 1 Good or No. 2 Medium or No. 3 Common or No. 4 Cull or No. 5
			Heavy weight—140 lb. up	Prime or No. A Choice or No. 1 Good or No. 2 Medium or No. 3 Common or No. 4

Class.	Sub-class.	Age Selection.	Weight Selection.	Grade
Ewes	Feeder	All ages	All weights	Choice or No. 1
				Good or No. 2
				Medium or No. 3
				Common or No. 4
				Inferior or No. 5
	Breeder	Yearling	Light weight 90 lb. down	Fancy or No. A1
				Choice or No. 1
				Good or No. 2
				Medium or No. 3
				Common or No. 4
			Medium weight 90-100 lb.	Fancy or No. A1
				Choice or No. 1
				Good or No. 2
				Medium or No. 3
				Common or No. 4
			Heavy weight 100 lb. up	Fancy or No. A1
				Choice or No. 1
				Good or No. 2
				Medium or No. 3
				Common or No. 4
		2 and 3 years old	Light weight 100 lb. down	Fancy or No. A1
				Choice or No. 1
				Good or No. 2
				Medium or No. 3
				Common or No. 4
			Medium weight 100-125 lb.	Fancy or No. A1
				Choice or No. 1
				Good or No. 2
				Medium or No. 3
				Common or No. 4
			Heavy weight 125 lb up	Fancy or No. A1
				Choice or No. 1
				Good or No. 2
				Medium or No. 3
				Common or No. 4
		1 year old	Light weight 100 lb. down	Fancy or No. A1
				Choice or No. 1
				Good or No. 2
				Medium or No. 3
				Common or No. 4
			Medium weight 100-125 lb.	Fancy or No. A1
				Choice or No. 1
				Good or No. 2
				Medium or No. 3
				Common or No. 4

Class.	Sub-class.	Age Selection.	Weight Selection.	Grade.
Slaughter	5 years old and over.		Heavy weight — 125 lb. up	{ Fancy or No. A1 Choice or No. 1 Good or No. 2 Medium or No. 3 Common or No. 4
			Light weight — 100 lb. down	{ Choice or No. 1 Good or No. 2 Medium or No. 3 Common or No. 4
			Medium weight — 100-125 lb.	{ Choice or No. 1 Good or No. 2 Medium or No. 3 Common or No. 4
			Heavy weight — 125 lb. up	{ Choice or No. 1 Good or No. 2 Medium or No. 3 Common or No. 4
		Yearling ...	Light weight — 90 lb. down	{ Prime or No. A1 Choice or No. 1 Good or No. 2 Medium or No. 3 Common or No. 4 Cull or No. 5
			Handy weight — 90-100 lb.	{ Prime or No. A1 Choice or No. 1 Good or No. 2 Medium or No. 3 Common or No. 4 Cull or No. 5
			Medium weight — 100-110 lb.	{ Prime or No. A1 Choice or No. 1 Good or No. 2 Medium or No. 3 Common or No. 4
			Heavy weight — 110 lb. up	{ Prime or No. A1 Choice or No. 1 Good or No. 2 Medium or No. 3 Common or No. 4
			Light weight — 100 lb. down	{ Prime or No. A1 Choice or No. 1 Good or No. 2 Medium or No. 3 Common or No. 4 Cull or No. 5

Class.	Sub-class.	Age Selection.	Weight Selection.	Grade.
Wethers		2 years old and over ...	Handy weight — 100–115 lb.	Prime or No. A1 Choice or No. 1 Good or No. 2 Medium or No. 3 Common or No. 4 Cull or No. 5
			Medium weight— 115–130 lb.	Prime or No. A1 Choice or No. 1 Good or No. 2 Medium or No. 3 Common or No. 4
			Heavy weight — 130 lb. up	Prime or No. A1 Choice or No. 1 Good or No. 2 Medium or No. 3 Common or No. 4
	Feeder ...	Yearling ...	All weights ...	Fancy or No. A1 Choice or No. 1 Good or No. 2 Medium or No. 3 Common or No. 4
		2 years old and over	All weights ...	Fancy or No. A1 Choice or No. 1 Good or No. 2 Medium or No. 3 Common or No. 4
	Rams ... Slaughter	Yearling ...	All weights ...	Good or No. 2 Medium or No. 3 Common or No. 4
2 years old and over.		All weights ...	Good or No. 2 Medium or No. 3 Common or No. 4	
LAMBS.				
	Slaughter	Spring ...	All weights	Prime or No. A1 Choice or No. 1 Good or No. 2 Medium or No. 3 Common or No. 4 Cull or No. 5
			Light weight — 70 lb. down	Prime or No. A1 Choice or No. 1 Good or No. 2 Medium or No. 3 Common or No. 4 Cull or No. 5

CHECKED
2003-04

186

Class.	Sub-class.	Age Selection.	Weight Selection.	Grade.
Lambs	Lamb	...	Handy weight — 70-80 lb.	{ Prime or No. A1 Choice or No. 1 Good or No. 2 Medium or No. 3 Common or No. 4 Cull or No. 5
			Medium weight — 80-90 lb.	{ Prime or No. A1 Choice or No. 1 Good or No. 2 Medium or No. 3 Common or No. 4 Cull or No. 5
			Heavy weight — 90 lb. up	{ Prime or No. A1 Choice or No. 1 Good or No. 2 Medium or No. 3 Common or No. 4 Cull or No. 5
	Feeder ...	All ages	Light weight — 60 lb. down	{ Fancy or No. A1 Choice or No. 1 Good or No. 2 Medium or No. 3 Common or No. 4 Inferior or No. 5
			Medium weight — 60-70 lb.	{ Fancy or No. A1 Choice or No. 1 Good or No. 2 Medium or No. 3 Common or No. 4
			Heavy weight — 70 lb. up	{ Fancy or No. A1 Choice or No. 1 Good or No. 2 Medium or No. 3 Common or No. 4
	Shearer ...	All ages	Light weight — 70 lb. down	{ Choice or No. 1 Good or No. 2 Medium or No. 3
			Medium weight — 70-80 lb.	{ Choice or No. 1 Good or No. 2 Medium or No. 3
			Heavy weight — 80 lb. up	{ Choice or No. 1 Good or No. 2 Medium or No. 3