TRENDS IN THE PRODUCTION AND MARKETING OF BEEF AND VEAL.

by

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1. PRODUCTION.

Cattle raising is carried on in all States of Australia, the main object in some districts being the production of beef and veal, while in others dairying is of greater significance. Beef-producing cattle are the dominant types raised in Northern Australia, whereas dairying and beef raising are both important in the southern States. The dairy industry itself makes an important contribution to beef production through the sale of culled and aged dairy stock. Almost one-quarter of the total beef produced in Australia comes from culled dairy stock and more than half of Victorian production is derived from the dairying industry. Some veal is produced in south-eastern Queensland but, apart from this, practically all veal production occurs in the southern part of Australia, with a high proportion coming from the dairying industry.

Except for year-to-year fluctuations, there has been no perceptible change in the relative importance of each State in beef and veal production during the last thirty years. Over this period about 88 per cent. of production has come from Queensland (36 per cent.), New South Wales (32 per cent.) and Victoria (20 per cent.). Most of the remaining production (12 per cent.) occurs in Western Australia and South Australia. Slaughterings in the Northern Territory are negligible but this part of Australia is a major source of live cattle for Queensland and South Australia.

The significance of beef and veal production in Australia can be clearly seen by reference to Figure 1. It will be noted that there has been an upward trend in output since the end of World War II, whereas mutton and lamb production has declined slightly. In 1953-54 there was a total output of 664,000 tons of beef, 41,000 tons of veal, 236,000 tons of mutton and 131,000 tons of lamb.

Statistics of beef cattle numbers in each State since 1945-46 are given in Table I and these are shown graphically in Figure 2. The graphs reveal increasing trends in Queensland, New South Wales, Victoria, South Australia and Tasmania, while numbers have remained at fairly constant levels in the Northern Territory and Western Australia. The

most pronounced increases have occurred in Southern Australia, especially in Victoria and South Australia. Of the record total of 10.7 million beef cattle in March, 1954, 53 per cent. were in Queensland, 22 per cent. in New South Wales, 9 per cent. in the Northern Territory, 7 per cent. in Victoria, 6 per cent. in Western Australia, 2 per cent. in South Australia, and 1 per cent. in Tasmania.

TABLE I.

Beef Cattle Numbers—By States—1946 to 1954.

As at 31st March—	Qld.	N.S.W.*	N.T.	Vic.	W.A.	S.A.	Tas.	Aust.
	'000.	'000.	'000.	'000.	'000.	'000.	'000.	'000.
1946	5,100	1,845	960	527	604	143	90	9,269
1947	4,613	1,762	973	648	588	162	80	8,834
1948	4,593	1,896	991	698	590	170	100	9,038
1949	4,569	2,000	1,053	711	634	182	111	9,260
1950	4,872	2,175	1,049	706	638	193	117	9,750
1951	5,294	2,465	1,019	727	618	189	115	10,427
1952	5,138	2,423	1,058	776	621	201	110	10,327
1953	5,378	2,411	936	820	612	231	113	10,501
1954	5,703	2,322	966	809	600	230	121	10,751

* Including Australian Capital Territory.

Source: Commonwealth Bureau of Census and Statistics, *Production Bulletin.*

Nature of the Enterprise in New South Wales.

As can be seen from Figure 3, cattle are raised in all parts of New South Wales with the greatest intensity in the regions of Richmond-Tweed, Clarence, Oxley, New England, Upper Hunter, Southern Tablelands, Murrumbidgee and Upper Murray. Some properties are devoted entirely to beef cattle but the industry is more commonly carried on in association with other enterprises, such as wheat, sheep and dairying. Furthermore, the beef enterprise itself may be organized in many different ways and with varying degrees of concentration. For instance, beef production may be carried on in association with dairying by (*a*) fattening culled or aged dairy stock, (*b*) fattening store cattle when feed is available, (*c*) use of a beef-type bull with portion or all of the dairy herd, (*d*) carrying dual-purpose cows, and (*e*) having a beef herd in addition to a dairy herd. On mixed crop-and-grazing or purely grazing properties the beef enterprise may be based on breeding, fattening or a combination of both.

In addition to the wide range of methods of producing beef, varying degrees of emphasis may be given to the enterprise. For example, cattle fatteners can purchase many different classes of store stock at various ages and weights and there is an even wider choice in the methods of fattening cattle ranging from grazing on natural pastures to stall feeding. Within each of the types of farming outlined there is scope for greater beef production than has generally been achieved hitherto, and future

trends in the relative importance of the industry in the different parts of the State will be influenced by the development of pasture improvement techniques and the adoption of more intensive practices to increase carrying capacity and reduce stock losses.

Size of Herds.

A high proportion of cattle herds in New South Wales are relatively small. As indicated in Table II, about 58 per cent. of herds are smaller than 20 head, 77 per cent. less than 50 head and 87 per cent. less than 100 head. However, these small herds do not represent a very large

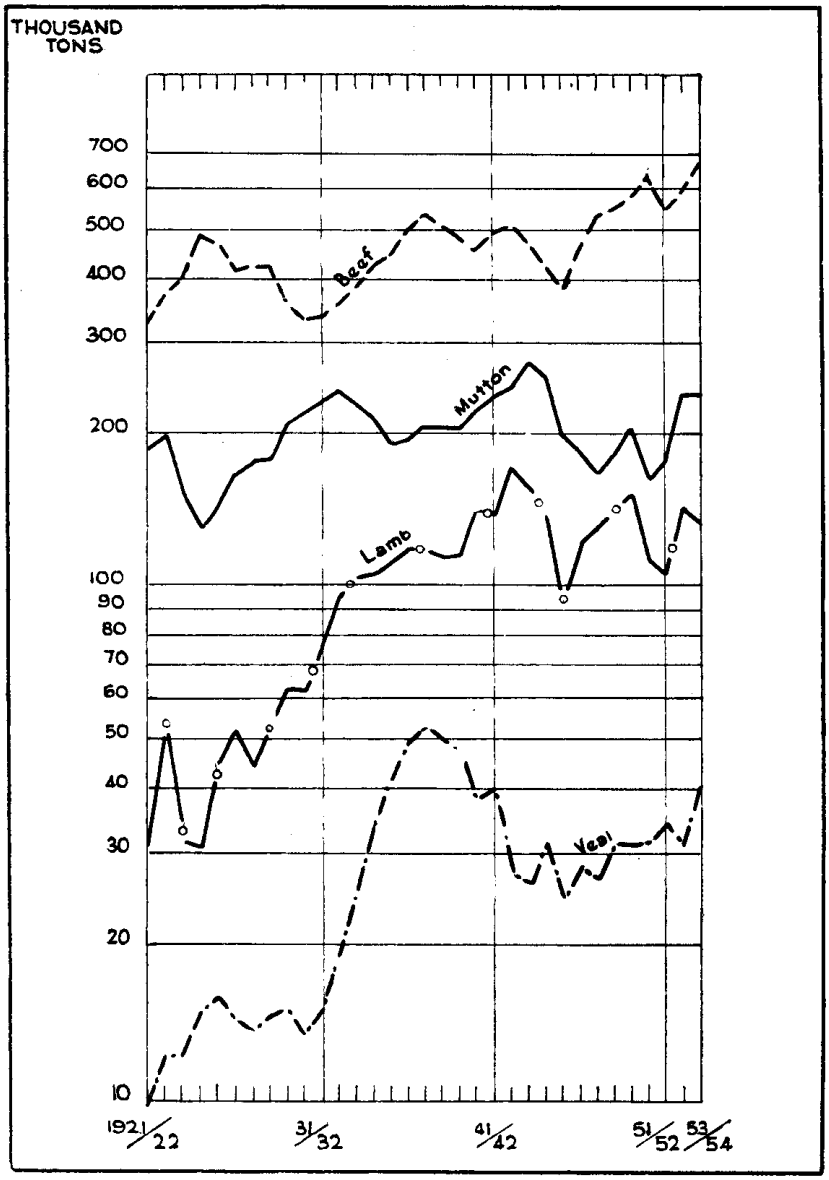

Fig. 1. Beef, Veal, Mutton and Lamb Production—Australia—1922 to 1954.

share of the total beef cattle population. Approximately 53 per cent. of the total number is made up of herds of 200 or more and 29 per cent. of the total are run on the small proportion of holdings (1.6 per cent.) which have over 500 head of cattle.

TABLE II.

Size of Beef Herds—New South Wales—31st March, 1950.

Size of Herd.	Proportion of Herds in Group.	Proportion of Total Beef Numbers in Group.
	Per cent.	Per cent.
Under 20	58·4	6·8
20– 49	18·4	10·3
50– 99	10·3	12·8
100–149	4·1	8·9
150–199	2·6	7·8
200–299	2·6	11·0
300–499	2·0	13·2
Over 500	1·6	29·2

Source: New South Wales *Statistical Register* for 1949-50.

In some parts of New South Wales evidence of a tendency to give more attention to beef raising can be seen by comparing the number of holdings with beef cattle herds in 1948 with the number in 1954. Table III clearly reveals an increase in the last six years in the proportion of properties with herds of 20 or more beef stock. In most cases the increase has been small but it is of some significance that the proportion rose by 10 to 13 per cent. on the Central and Southern Tablelands, the Western Slopes and the North Central Plain. In other words the greatest increase in the number of beef cattle herds of 20 head or more has occurred throughout the wheat/sheep belt. This is doubtless due largely to higher beef prices and to a greater appreciation of the place of cattle on mixed crop-and-livestock properties. High prices for other products, especially wool, have also enabled farmers and graziers to finance improvements designed to increase livestock numbers. In some cases the current period of high incomes has provided an opportunity to implement changes in farming methods in order to combat erosion and restore soil fertility lost as a result of heavy cropping in earlier years. In many cases this work has involved an expansion of the area under sown pastures and fodder crops, thus facilitating greater livestock production. An excellent example of such a programme has been reported in the Central West where a farmer has reduced his wheat acreage and is now growing more oats and lucerne for grazing and conservation. The crops and pastures have helped in rehabilitating the wheat land and, in addition, have been profitably utilized by grazing a larger number of beef cattle.[1]

[1] *The Land* newspaper, Sydney, 13th May, 1955, p. 31.

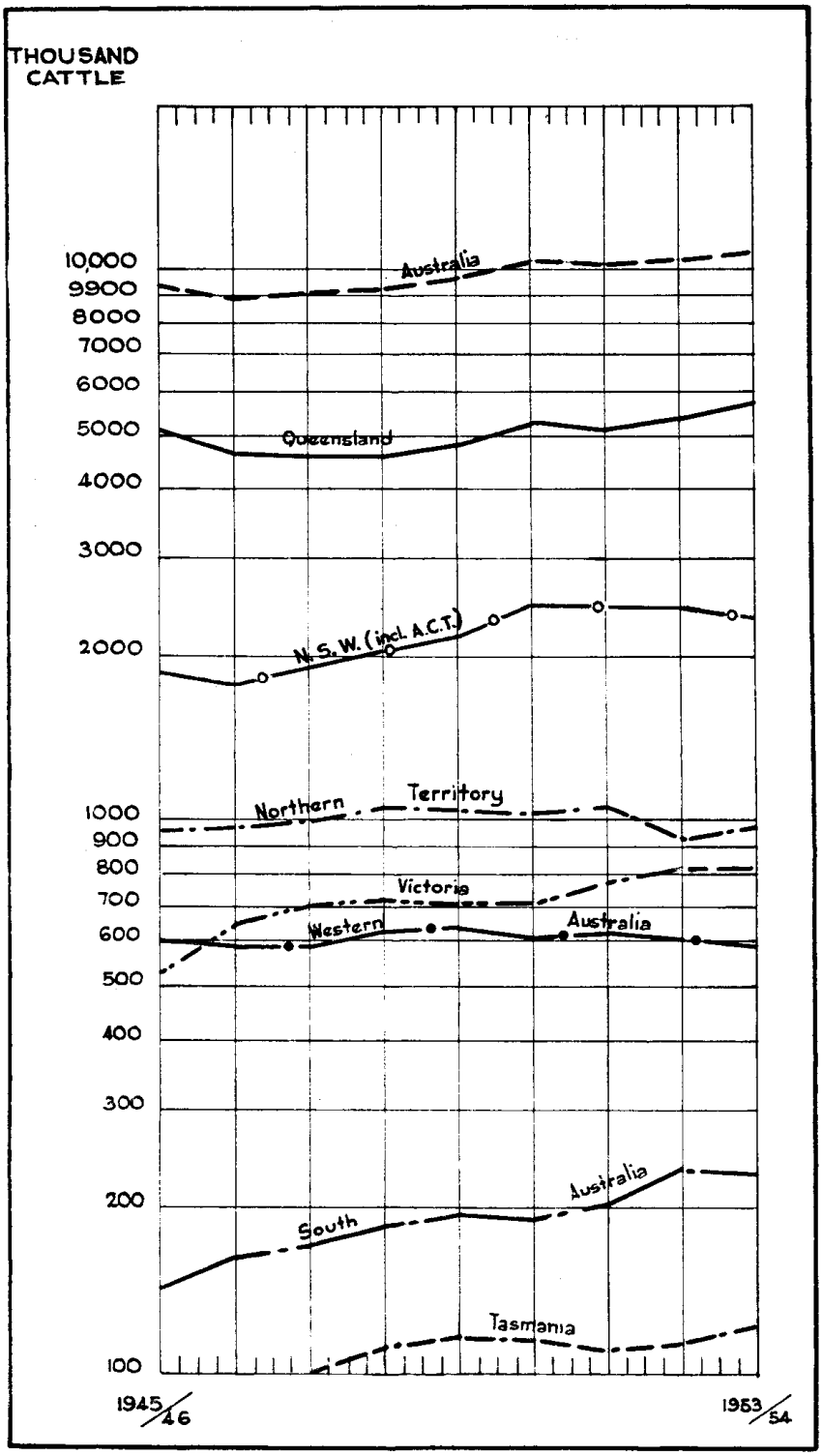

Fig. 2. Beef Cattle Numbers by States—1946 to 1954.

TABLE III.

N.S.W. Rural Holdings Exceeding 25 Acres with Herds of 20 or more Beef Cattle—By Divisions—1948 to 1954.

Division.	As at 31st March, 1948.		As at 31st March, 1954.	
	Number of Herds.	Proportion of Holdings with Beef Herds.	Number of Herds.	Proportion of Holdings with Beef Herds.
	Number.	Per cent.	Number.	Per cent.
Coastal—				
North Coast	1,705	16	1,925	18
Hunter and Manning	1,729	22	1,939	25
Cumberland	84	5	109	8
South Coast	561	14	780	21
Total	4,079	17	4,753	20
Tableland—				
Northern	1,541	45	1,669	50
Central	1,169	18	1,794	28
Southern	829	28	1,245	41
Total	3,539	27	4,708	37
Western Slope—				
North	1,470	37	1,993	49
Central	635	15	932	27
South	1,287	18	2,047	28
Total	3,392	22	4,972	32
Central Plains and Riverina—				
North Central ...	884	48	1,144	58
Central	661	30	858	38
Riverina	613	9	1,022	16
Total	2,158	21	3,024	29
Western Division ...	521	30	623	31
Total, New South Wales...	13,689	21	18,080	29

Source: New South Wales *Statistical Register* and Bureau of Statistics and Economics, Sydney.

Thus the tendency for beef cattle herds to become larger throughout the wheat/sheep areas seems to be associated with increased sowings of improved pasture and fodder crops and the adoption of more intensive farming methods. An important additional factor on the North-Western Slope is that new areas of highly fertile land are still being cleared for the production of crops and livestock.[2]

[2] The prospects of future increases in cattle production in this section of the State have been discussed in a previous issue of this journal. See G. C. McFarlane, "Beef Production in North-Western New South Wales", *Review of Marketing and Agricultural Economics*, Vol. 22, No. 4 (December 1954), pp. 270-286.

Regional Trends in Numbers.

As already indicated the current rising trend in the Australian cattle population has been most pronounced in Victoria and South Australia. Further evidence of the greater contribution of southern Australia to this development can be seen from Figure 4 which consists of graphs of beef cattle numbers in New South Wales, by regions, since 1945-46. Regional statistics for the same period are given in Table IV. Over the period beef cattle numbers increased in all areas except the Central Darling. Of greater significance, however, is the apparent persistence of the increase in certain of the southern districts, corresponding approximately to the more reliable rainfall area and the part of the State for which successful methods of pasture improvement have been evolved. Although numbers stabilized or declined slightly after 1950-51 in most of the northern districts, the growing importance of cattle continued in the southern regions of Lachlan, Murray-Darling, Murrumbidgee, Southern Tablelands, Upper Murray, Central Murray and Monaro-South Coast.

TABLE IV.

Beef Cattle Numbers—By Regions—New South Wales—1947 to 1954.

Region.	1946–47.	1947–48.	1948–49.	1949–50.	1950–51.	1951–52.	1952–53.	1953–54.
	'000.	'000.	'000.	'000.	'000.	'000.	'000.	'000.
Richmond–Tweed ...	97·7	92·1	95·3	101·0	116·8	121·3	122·6	121·8
Clarence	146·1	146·9	151·0	154·1	163·1	157·1	158·7	155·3
Oxley	179·8	180·8	181·0	190·5	201·6	196·9	191·7	181·9
Newcastle	17·8	19·2	19·8	21·7	23·3	22·4	22·7	21·5
Sydney	28·4	28·2	30·9	35·6	42·3	46·0	42·9	37·9
Illawarra	5·2	5·3	5·6	5·6	6·5	7·4	6·3	6·7
Monaro and South Coast...	67·4	71·2	76·7	87·0	98·9	106·3	102·8	107·0
New England	354·6	358·0	375·4	368·3	400·8	416·5	399·4	386·4
Upper Hunter	125·0	139·9	163·0	190·4	214·1	191·2	186·1	189·4
Mitchell	55·1	60·9	69·2	73·8	88·2	82·2	83·4	86·4
Southern Tablelands ...	59·5	62·0	72·6	81·2	93·3	94·7	98·0	95·6
Namoi	176·6	204·7	219·7	274·7	338·8	328·1	302·9	282·6
Macquarie	95·8	107·4	120·3	134·9	168·6	156·5	153·8	135·4
Lachlan	72·2	84·8	92·6	94·6	110·9	109·3	117·2	107·0
Murrumbidgee	96·8	113·9	112·1	118·7	140·3	137·8	152·2	149·3
Upper Murray	57·9	65·3	65·1	63·9	68·7	72·6	82·3	83·4
Central Murray	27·0	32·4	29·8	37·0	41·0	45·6	53·6	47·4
Western Division—								
Upper Darling ...	23·5	39·4	40·8	15·9	64·6	53·7	46·4	41·8
Central Darling ...	15·2	13·6	9·4	16·4	12·4	10·0	14·2	11·7
Murray Darling ...	9·8	15·7	12·3	13·5	14·6	14·4	19·7	19·3
Total, New South Wales ...	1,711·8	1,841·7	1,942·5	2,114·7	2,408·9	2,369·9	2,357·0	2,267·8

Source : New South Wales *Statistical Register* and Bureau of Statistics and Economics, Sydney.

Cyclical Pattern of Beef and Veal Production.

An analysis of the statistics of Australian beef and veal production since 1907-08 reveals a long-term upward movement with a fairly regular cyclical pattern. It will be noted from Figure 5 that peaks in production have occurred about every thirteen years. The explanation of this phenomenon is thought to be found mainly in terms of the time taken for farmers' decisions in response to changes in prices to be reflected in changes in production.[3] For instance, the full effects of

[3] See G. O. Gutman: "The Cattle Cycle," *Quarterly Review of Agricultural Economics*, Bureau of Agricultural Economics, Canberra, Vol. III, No. 1 (January, 1950), pp. 23-28.

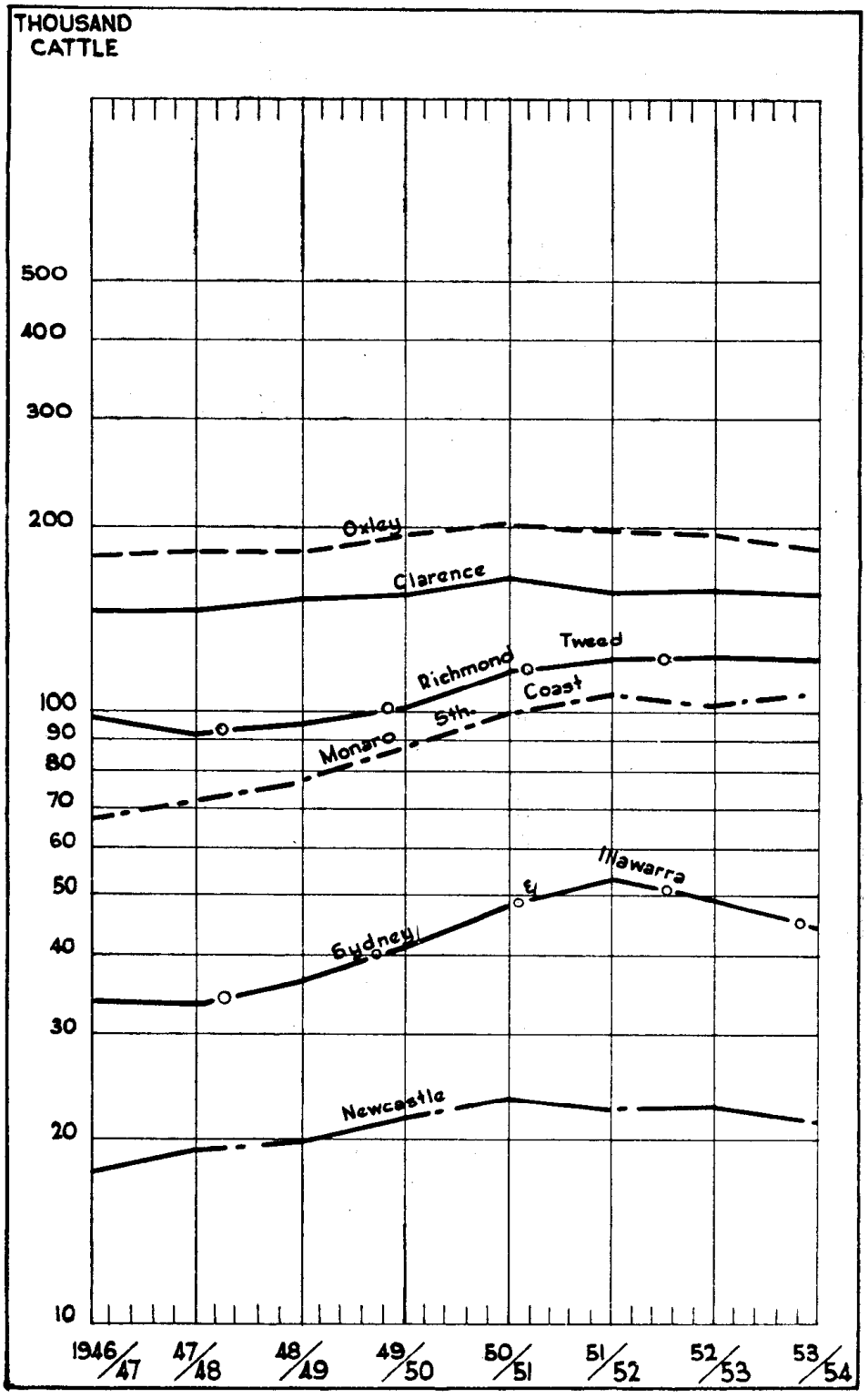

Fig. 4a. Recent Trends in Beef Cattle Numbers by Regions (New South Wales).

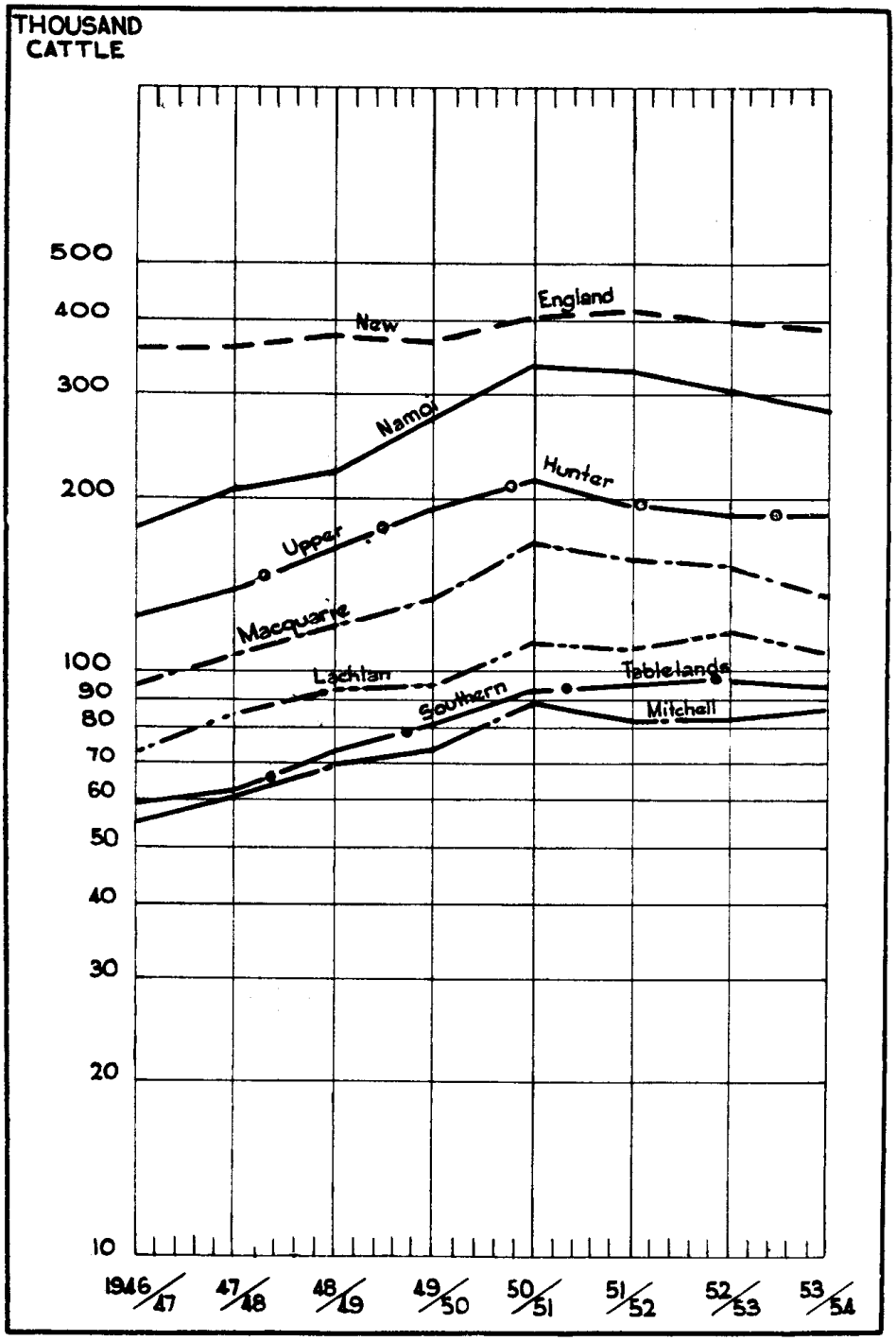

Fig. 4b. Recent Trends in Beef Cattle Numbers by Regions (New South Wales).

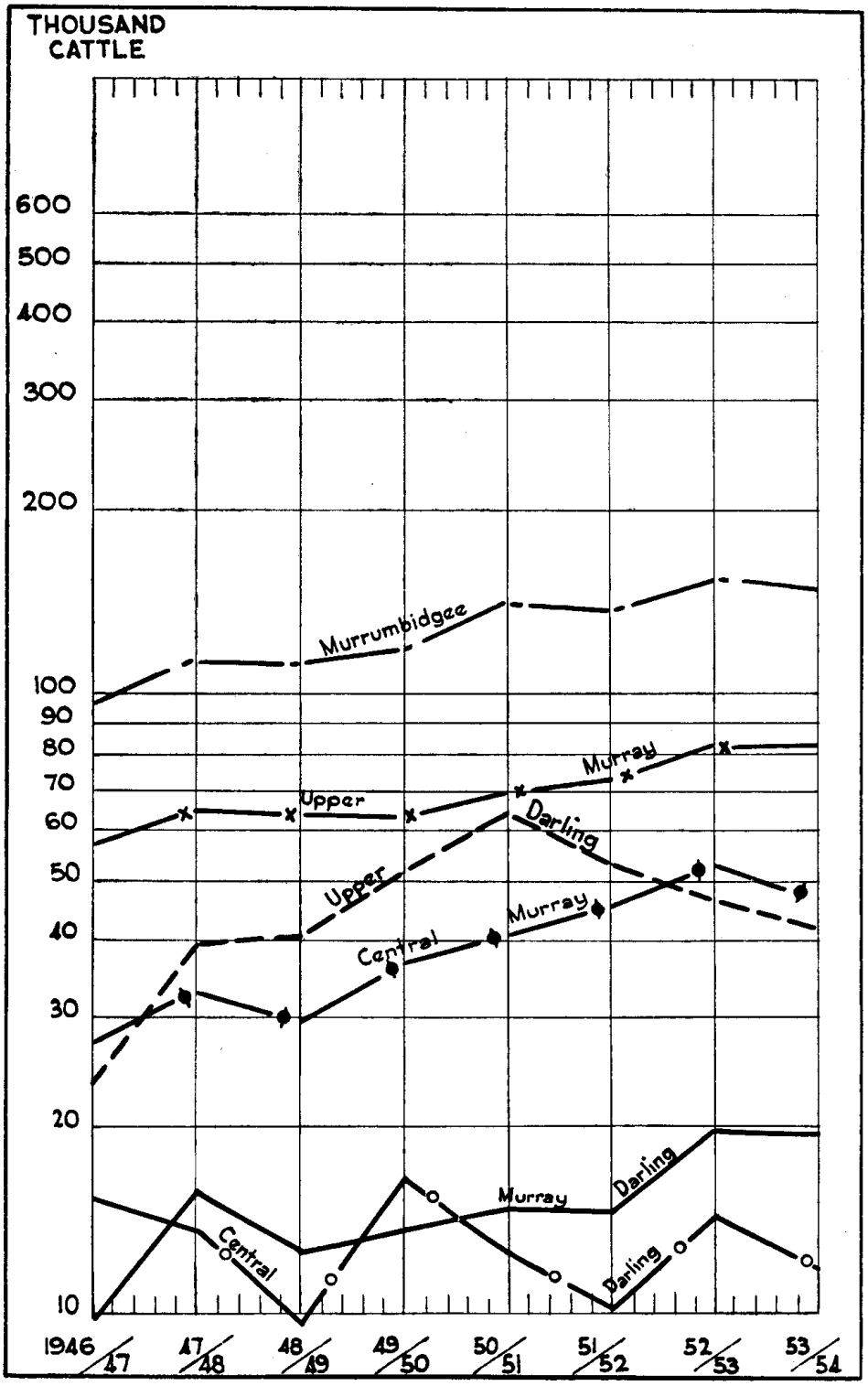

Fig. 4c. Recent Trends in Beef Cattle Numbers by Regions (New South Wales).

a farmer's decision to increase beef production would not be felt until about six years later when the breeding herd would be enlarged and additional fat stock from the larger herd would be ready for market. On the basis of past fluctuations, as shown in Figure 5, the peak in production in 1953-54 seems to mark a new critical point. However, the existence of an assured market in the United Kingdom for the export surplus is a new circumstance and one which may sustain the confidence of producers and delay the downward phase of the cycle.

Future trends in production may be estimated more precisely by looking at the nature of the cycle itself. In Figure 6 the statistics of beef and veal production for the period 1908 to 1954 have been divided into four clearly defined cycles and plotted on the same scale. From this graph it is clear that the downward phase in production is due to commence if the cycle is to follow the same pattern as the three preceding it. However, when factors which usually signify the commencement of a decline in cattle numbers are considered some doubt arises as to whether a fall is imminent.

One indicator of changes in production is the proportion of each class of cattle in the total. For example, an increasing percentage of calves is an early sign of an upward trend in cattle numbers. In the U.S.A. it has been found that the lowest percentage of calves commonly occurs before the low point in total cattle numbers and the proportion of calves rises rather steeply in the early

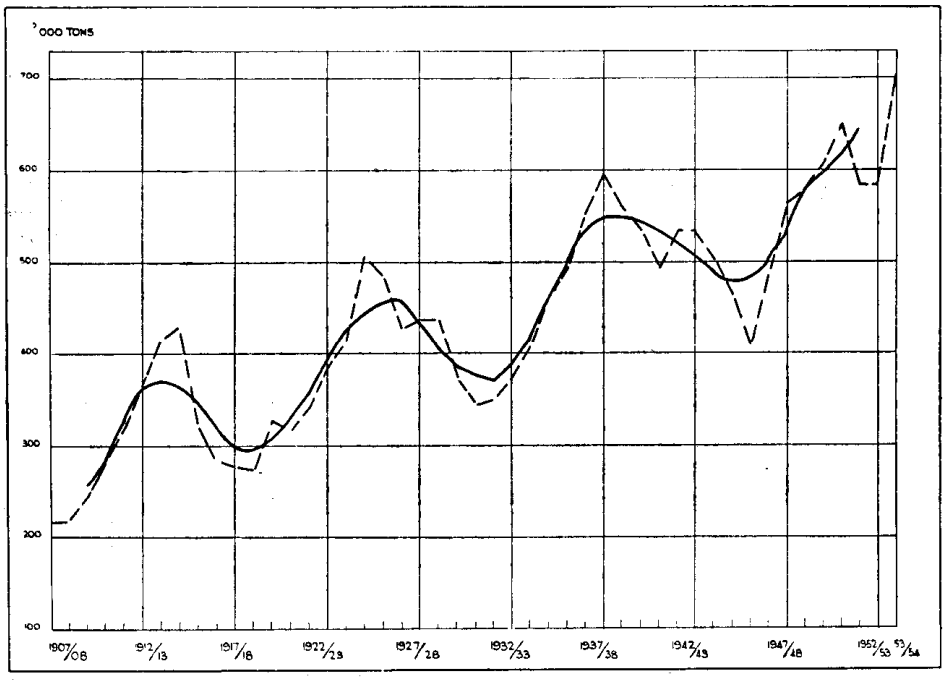

Fig. 5. Beef and Veal Production—Australia—1908 to 1954 and 5-year Moving Average showing Cyclical Variations in Production.

stages of expansion. The proportion of cows is much slower to increase due to the time lag before the additional heifers retained reach calving age. On the other hand cow numbers stay high through much of the declining phase of the cattle cycle. Cows are the foundation of the herd and they are held the longest, the first stages of reduction being to sell slaughter stock at younger ages and reduce the proportion of them in the total.[4]

Tables V and VI show the proportion of cows, calves and other beef cattle in the total for New South Wales and Australia from 1943 to 1954. In New South Wales the beef cattle population has remained at a relatively high level since the record of 2.4 million head was reached in 1950 and, on the basis of the proportion of cows, heifers and calves in March, 1954, it would seem that graziers were, at that time, planning to maintain or further increase their cattle numbers. As shown in Table V the proportion of calves reached a new high level in 1954. This suggests that in this State there may be a further increase rather than a decline in beef production. The same is true for Australia as a whole (see Table VI) and the possibility of a continuation of the rising trend in production is further strengthened by the fact that the proportion of cows and heifers has also remained high.

TABLE V.

*Proportion of Cows, Heifers, Calves and other Cattle in the Total Beef Cattle Population—New South Wales—*1943 *to* 1954.

As at 31st March—	Cows (including heifers one year and over).	Calves under one year.	Bulls.	Other cattle (bullocks, steers, speyed cows).
	Per cent.	Per cent.	Per cent.	Per cent.
1943	47·2	21·8	1·9	29·1
1944	45·4	23·8	1·9	28·9
1945	45·3	22·8	1·9	30·0
1946	45·8	20·6	1·9	31·7
1947	45·8	23·9	1·9	28·4
1948	45·8	22·9	1·9	29·4
1949	46·0	25·1	1·9	27·0
1950	46·7	24·2	1·9	27·2
1951	47·0	24·5	1·8	26·7
1952	47·4	24·4	1·9	26·3
1953	47·7	23·1	2·0	27·2
1954	47·1	27·3	2·1	23·5

[4]See: Harold F. Breimyer, "Observations on the Cattle Cycle", *Agricultural Economics Research*, United States Department of Agriculture, Washington, Vol. VII, No. 1 (January, 1955), pp. 1-11.

TABLE VI.

Proportion of Cows and Heifers, Calves and other Cattle in the Total Beef Cattle Population—Australia—1943 to 1954.

As at 31st March—	Cows (including heifers one year and over).	Calves under one year.	Bulls.	Other cattle (bullocks, steers, speyed cows).
	Per cent.	Per cent.	Per cent.	Per cent.
1943	45·8	17·6	1·4	35·2
1944	44·3	18·1	1·5	36·1
1945	44·3	17·0	1·5	37·2
1946	43·9	16·4	1·5	38·2
1947	43·6	16·1	1·5	38·8
1948	44·1	17·6	1·5	36·8
1949	45·1	19·0	1·5	34·4
1950	45·8	19·3	1·5	33·4
1951	46·4	20·4	1·5	31·7
1952	46·7	19·2	1·6	32·5
1953	47·1	18·9	1·6	32·4
1954	45·3	21·0	1·6	32·1

An analysis of the classes of livestock slaughtered is also useful in estimating future trends in cattle numbers. At the commencement of the upward phase of the cycle, when graziers are attempting to build up their breeding herds, the slaughter of calves, cows and heifers is a low proportion of total slaughterings and when cattle numbers are being expanded most rapidly producers are more willing to release steers than breeding cows or young stock for slaughter. Although separate statistics of beef cattle slaughterings are not available, figures for total cattle, including dairy stock, may be used as a basis for estimating future trends in the output of beef and veal. If it were found, for example, that a sharp increase in the slaughtering of calves, cows and heifers occurred in 1954, a fall in production in the next few years could be anticipated. However, there is currently no indication of an increase in the proportion of these stock slaughtered and this fact supports the suggestion that a further increase in production may occur.

It is not suggested that an accurate forecast of future movements in the cattle cycle can be given simply on the basis of the existing composition of cattle numbers and slaughterings. Other factors such as seasonal conditions, prices and the returns available from alternative enterprises are clearly of great importance. Nevertheless, the statistics are useful in estimating production levels in the immediate future. As suggested above the composition of slaughterings and cattle numbers in 1954 indicates a further increase in production rather than the decline which would appear likely in view of the historical cyclical pattern of production. Subsequent events such as a drought or a fall in beef prices could cause a decline but the main effects of such circumstances would not be felt immediately and the level of production achieved in 1954 should be at least maintained in 1955 and 1956.

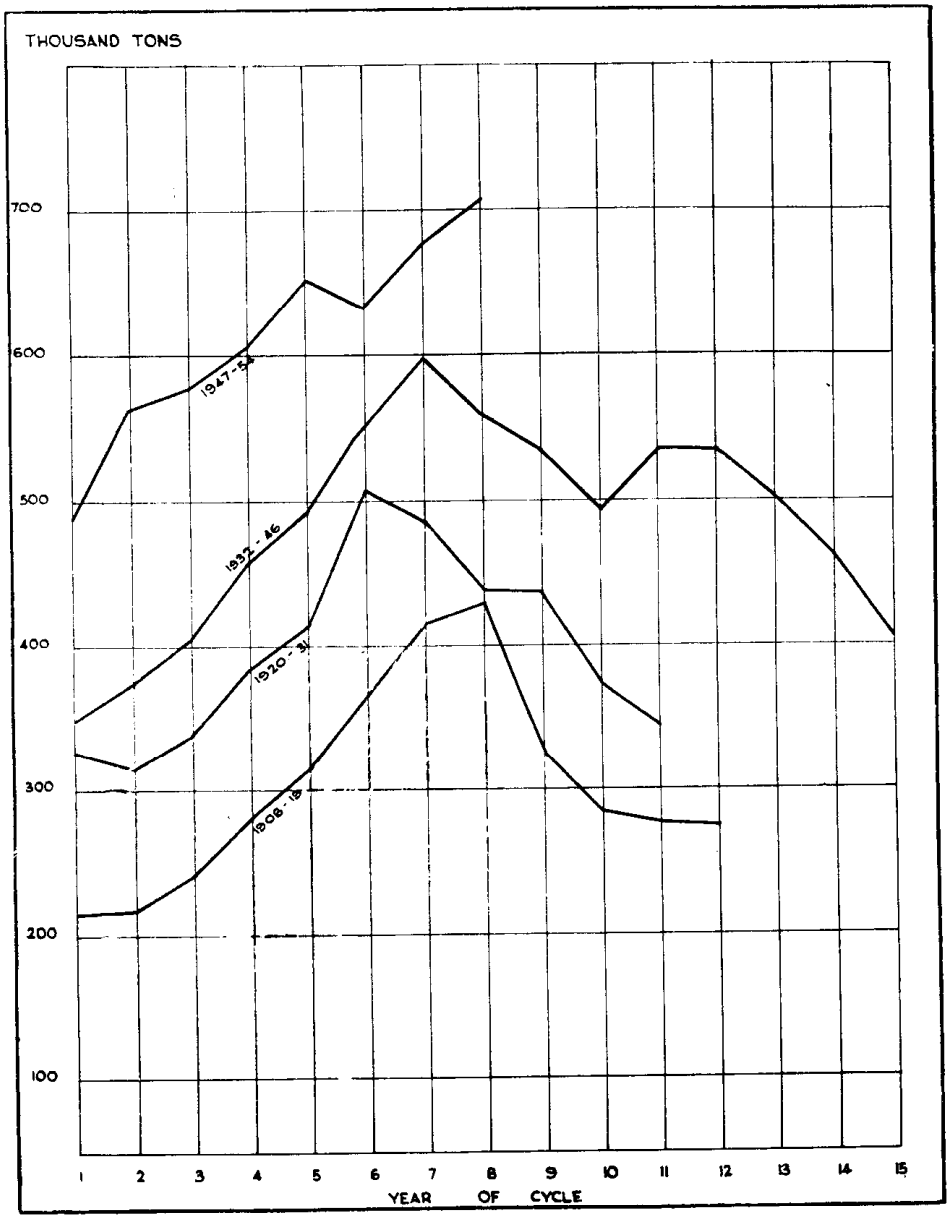

Fig. 6. Cycles in Beef and Veal Production—Australia—1908 to 1954.

2. ESTIMATES OF FUTURE BEEF AND VEAL REQUIREMENTS.

Home Consumption.

As approximately 80 per cent. of beef and veal produced in Australia is consumed locally, future requirements will be closely related to population trends. The average per capita consumption in the three years before World War II was 144.1 pounds and the total beef and veal consumed was 442,000 tons (bone-in weight) per annum. Since the war the annual consumption has been mainly about 120 lb. per head, the highest level being 131.6 lb. in 1950-51.

If an average annual consumption of 120 lb. per head is assumed, domestic requirements of carcase beef and veal for a population of 9,000,000 would be 482,000 tons and an additional 55,000 tons would be needed for each additional million people. Thus, by 1970 when the population may be 12,000,000 if the present rate of increase is maintained it would take approximately 643,000 tons of carcase beef and veal to supply the home market. For this to be achieved without causing a decline in exports, production would need to be raised to 875,000 tons. In other words, without considering the possibility of increasing the quantity exported, or the quantity set aside for canning, production would need to be about 24 per cent. greater than the record level of 706,300 tons achieved in 1953-54. If an annual per capita consumption of 125 pounds or 130 pounds were assumed, instead of 120 pounds, increases of 27 per cent. and 31 per cent. respectively would be necessary.

The Overseas Market.

For Australia as a whole, less than 20 per cent. of the total beef and veal output is exported, the quantity available depending upon seasonal conditions. Furthermore, as the more profitable home market is supplied first, fluctuations in production are reflected mainly in variations in exports. For example, since the end of World War II exports have varied between 6.7 per cent. and 19.4 per cent. of total production.

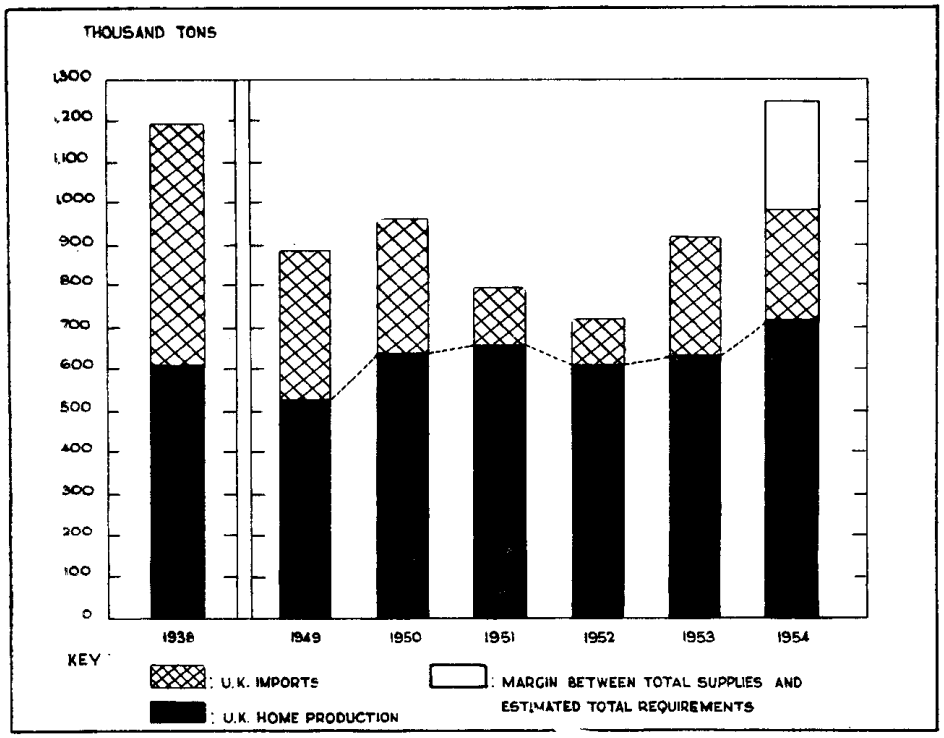

Fig. 7. Estimated Beef and Veal Supplies in the United Kingdom. It will be noted that in 1954 there was a gap between total supplies and estimated total requirements. On the basis of the consumption per head in 1938 the deficiency amounted to approximately 265,000 tons.

The proportion of beef and veal exported by each State in recent years is shown in Tables VII and VIII. Queensland is clearly the largest beef-exporting State, contributing an average of 82 per cent. of total shipments from Australia since 1945-46. Owing to the smaller local demand in Brisbane, compared with Sydney and Melbourne, the Brisbane market relies to a greater extent on export outlets. Queensland also exports a higher share of its production than do the other States, the proportion normally being between 30 and 40 per cent. whereas shipments from Western Australia are usually about 20 per cent. of production and the proportion exported from other States is very small. An example of the fluctuations that occur in exports is provided by the sharp increase in shipments from New South Wales in the last two years, the export portion of the State's output rising from an average of less than 4 per cent. between 1946 and 1952 to 16.8 per cent. and 14.5 per cent., respectively, in 1952-53 and 1953-54. Here the increase was due to higher production and to a narrowing of the margin between local and export returns.

TABLE VII.

Beef and Veal Exports—Proportion from each State—1946 to 1954.

Year ended June—	N.S.W.	Vic.	Qld.	S.A.	W.A.	Tas.
	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.
1946 ...	7·8	2·2	83·9	...	6·1	...
1947 ...	5·8	9·4	76·3	1·8	6·7	...
1948 ...	3·3	1·7	89·2	0·3	5·5	...
1949 ...	4·6	1·7	84·0	0·1	9·6	...
1950 ...	1·9	1·3	86·3	0·3	10·1	...
1951 ...	1·3	1·4	88·8	...	8·4	...
1952 ...	2·2	4·5	75·2	...	18·1	...
1953 ...	16·8	2·1	78·7	0·3	2·7	...
1954 ...	14·5	2·9	77·3	0·7	4·5	...

TABLE VIII.

Beef and Veal Exports as a Percentage of Production—By States—1946 to 1954.

Year ended June—	N.S.W.	Vic.	Qld.	S.A.	W.A.	Tas.	Aust.
	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.
1946	2·4	1·2	25·0	...	10·5	...	10·0
1947	3·3	7·7	31·6	5·7	20·2	...	16·1
1948	2·2	1·7	42·8	1·3	20·2	...	19·4
1949	2·0	1·2	32·7	0·4	23·0	...	13·6
1950	0·9	0·9	34·6	0·7	24·1	...	13·9
1951	0·5	0·7	26·2	...	17·0	...	10·5
1952	0·5	1·3	16·5	...	21·9	...	6·7
1953	7·3	1·7	30·7	1·0	8·5	...	14·6
1954	8·5	2·7	38·7	2·8	16·5	...	18·4

Source: Nineteenth Annual Report of the Australian Meat Board, 1954, p. 126.

Importance of the United Kingdom Market.

As the United Kingdom is by far the largest importer of meat, fluctuations in world supplies affect the level of United Kingdom imports.[5] Since 1945, total supplies of beef and veal in the United Kingdom have been below the pre-war level and rationing, which was introduced during the war years, was continued until the end of June, 1954.

The shortage was mainly due to a decline in exports from the Argentine which supplied 354,000 tons of beef and veal in 1938, compared with 91,000 tons in 1954. As indicated in Figure 7, production within the United Kingdom has recovered to the prewar level and has remained remarkably stable. However, it is estimated that total supplies in 1954, including imports, were approximately 265,000 tons below the quantity needed to meet requirements on the basis of the average pre-war consumption (54.9 lb. per head per annum).

The United Kingdom has always been the main overseas market for Australian beef and veal. In the five years before World War II, 91 per cent. of our exports went to the United Kingdom and 86 per cent. of the total went to that market in 1953-54.[6] The security of this market has been strengthened by a fifteen-year agreement which runs until 30th September, 1967. The purpose of this agreement is, broadly, "to develop further the production of meat in Australia, to increase the export of meat to the United Kingdom and to provide a satisfactory market in the United Kingdom for the whole of the exportable surplus of meat from Australia during the term of the agreement". The agreement, if it proves effective, will give Australia a guarantee of minimum prices which will bear a relationship to profitability of production. If prices of Australian supplies sold on the United Kingdom market fall below the minimum prices arranged under the agreement, the United Kingdom Government has undertaken to make deficiency payments which will be passed on to graziers through the Australian Meat Board. Thus, in addition to the firm demand for beef and veal that may be anticipated in the home market, due to the rising population, there should be an assured market for the exportable surplus. However, unless Australian farmers and graziers are able to stabilize production at a higher level it will be difficult to maintain, let alone improve upon, the record quantity exported in 1953.

From a longer term view some further factors should be considered. One possible marketing problem arises from the fact that Australian exports arrive in the United Kingdom at a time when United Kingdom

[5] For the five years ended 1953 the United Kingdom accounted for an average of about 70 per cent. of the total quantity of beef and veal entering the chief importing countries.

[6] The remainder went principally to Egypt, Singapore, Hong Kong, Malta, Japan and the Philippines. At the conclusion of the system of bulk purchasing by the United Kingdom Government on 30th June, 1954, Australia was obliged to restrict exports of beef, veal, mutton and lamb to markets other than the United Kingdom and British colonies and dependencies to 3 per cent. of exports to the United Kingdom or of such other quantity as is agreed annually. Early in 1955 the United Kingdom Government agreed to an increase in the free quota and a total of 19,000 tons of meat may now be exported to markets other than the United Kingdom.

home supplies are greatest. Phillips has pointed out that imports from Australia arrive mainly in the second half of the year, especially during July, August and September, which are the months of increasing home production and declining fat cattle prices in the United Kingdom.[7]

In addition, the seasonality of Australian shipments coincides to some extent with supplies from New Zealand, the greatest quantities of which arrive during June, July and August. Imports from Argentine have no marked seasonal pattern but, as Phillips suggests, if Argentine should resume shipments to the United Kingdom at the pre-war level, and supplies from Australia and New Zealand increase, an annual depression in beef prices should result when United Kingdom home production is at its seasonal peak. Also, as United Kingdom production expands, the output during the flush months (August to November) may approach total requirements. Although it is difficult to predict whether beef supplies from Argentine will again become as important as in pre-war years, there are some indications of a possible increase in output. In the first place, the fact that sales of cows, heifers and calves have declined in the last three years suggests that there may be a new attempt to build up cattle numbers. Furthermore, the recent announcement by the Argentine Ministry of Trade that bonuses would be paid for steers exceeding 660 lb. delivered to the markets or processing plants during the off season (16th May to 31st October) should tend to stimulate production.

A further factor likely to influence *prices* for Australian beef and veal as United Kingdom total supplies increase relates to the quality of supplies from other sources. Traditionally, fresh meat from home producers, or from the Irish Republic, and good-quality chilled beef from the Argentine have commanded higher prices than supplies of frozen meat.

The techniques of preparing and transporting chilled beef were introduced in Australia in 1934 and by 1939 about 30 per cent. of total exports were in the chilled form. The outbreak of war in 1939 and consequent shipping delays interrupted this development and its resumption after the war was precluded by the continuance of meat rationing in the United Kingdom. While rationing continued it was necessary to hold considerable reserves of frozen meat to even out fluctuations in supplies and chilled beef could not be held as part of the reserve as it must be disposed of within a few days of discharge from the ship.

With the return of more competitive conditions on the United Kingdom market, Australia is again faced with the problem of raising the quality of her beef exports and a return to marketing in the chilled form seems inevitable. Experience during the years 1934 to 1939 suggests that for this to be successful it will be necessary to give greater attention to the quality of stock marketed as profitability of returns depends upon ability to produce young beef of first quality.

[7] T. L. Phillips: "Seasonal Nature of Australian Beef Production", *Quarterly Review of Agricultural Economics*, Bureau of Agricultural Economics, Canberra, Vol. VI, No. 4 (October, 1953), Pp. 136-8.

The advantages of chilled beef exports for Australian producers will, of course, depend upon the margin of profit in that form compared with returns for frozen beef. This applies particularly to those farmers and graziers who have difficulty in producing high-quality beef. Further improvements in pasture management and animal husbandry will undoubtedly result in the marketing of greater numbers of cattle of "chiller" quality but, as in pre-war years, it is likely that the major portion of our beef exports will be in the frozen form, at least for several years. It is difficult to estimate the extent to which the chilled beef trade would have expanded if the war had not intervened but, in 1939, several authorities in the trade believed that the proportion of chilled to total exports would never rise beyond 40 per cent. Their reasons for this belief were:—

> "1. For the export of chilled beef to be profitable, the trade required young, or comparatively young, beef of first quality, preferably within the weight range of 480-760 lb. per carcase. The proportion of beef meeting these requirements of quality was not large. The quality standards adopted therefore restricted the quantities which could be forwarded in each shipment.
>
> "2. The maximum period for which chilled beef can be held in the meat-works pending shipment is about one week. For all ports, except perhaps Brisbane, the frequency of the shipping service was far less than one vessel per week. Therefore, in the intervening period between arrival of ships, only frozen beef could be prepared at the majority of the beef exporting works."[8]

This may be a pessimistic estimate in view of the quicker rate of improvement of properties since the war but it does draw attention to the scope for improvement in the quality of beef produced. Improvements in station management and animal husbandry currently taking place in the north may, it is hoped, lead to better-quality beef production and a continuation of the upward trend in production in the south should likewise help increase the exportable surplus of beef of "chiller" quality.

Nevertheless, whether adequate facilities for chilled beef exports become available or not, the proportion of beef which can be profitably exported only in the frozen form will remain high for some years. In view of this the Commonwealth Scientific and Industrial Research Organziation is carrying out further research designed to effect improvements in freezing, storage and transport. If this work leads to a higher standard in the frozen product it could be just as important to the Australian industry as an improvement in facilities for marketing chilled beef.

In discussing the work being carried out by the C.S.I.R.O., Dr. J. R. Vickery has indicated that one problem associated with chilled beef is that it has a maximum storage life of about nine weeks and it must be consumed within a few days of discharge from the ship. Frozen beef on the other hand is much less exacting at each stage of preparation, cooling, storage and transport. Moreover, frozen beef is not so dependent on the maintenance of strict and frequent schedules by refrigerated cargo ships. "The major defect of frozen beef," states Dr.

[8]J. R. Vickery, "The Export of Meat from Australia", *The Meat Producer and Exporter*, Journal of the Australian Meat Board, Sydney, Vol. 8, No. 5 (May, 1954), p. 9.

Vickery, "is that it is subject to exudation of a red, viscous fluid from all cut muscle surfaces during thawing. The extent of this exudate, called 'drip', is usually insufficient to materially lower the nutritive value of the meat, since the total loss of fluid during normal butchering operations seldom exceeds 2 per cent. of the weight of the meat. The main objection to the presence of 'drip' is the rather unpleasant appearance which it gives to the meat, creating in the mind of the consumer a prejudice against frozen beef . . . Until methods are available for the elimination of 'drip' from beef during thawing, the export of chilled beef must be encouraged despite the fact that there are no strong reasons for believing that it will be much more profitable to export beef in this form rather than in the frozen state . . . In view of the rather precarious benefits of the chilled beef trade, there are cogent reasons for pursuing an extensive programme of scientific research work into the nature of the changes occurring in muscle immediately post-mortem and on the cause of, and preventive measures for, drip. Even if chilled beef exports continue, at least 60 per cent. of the export surplus

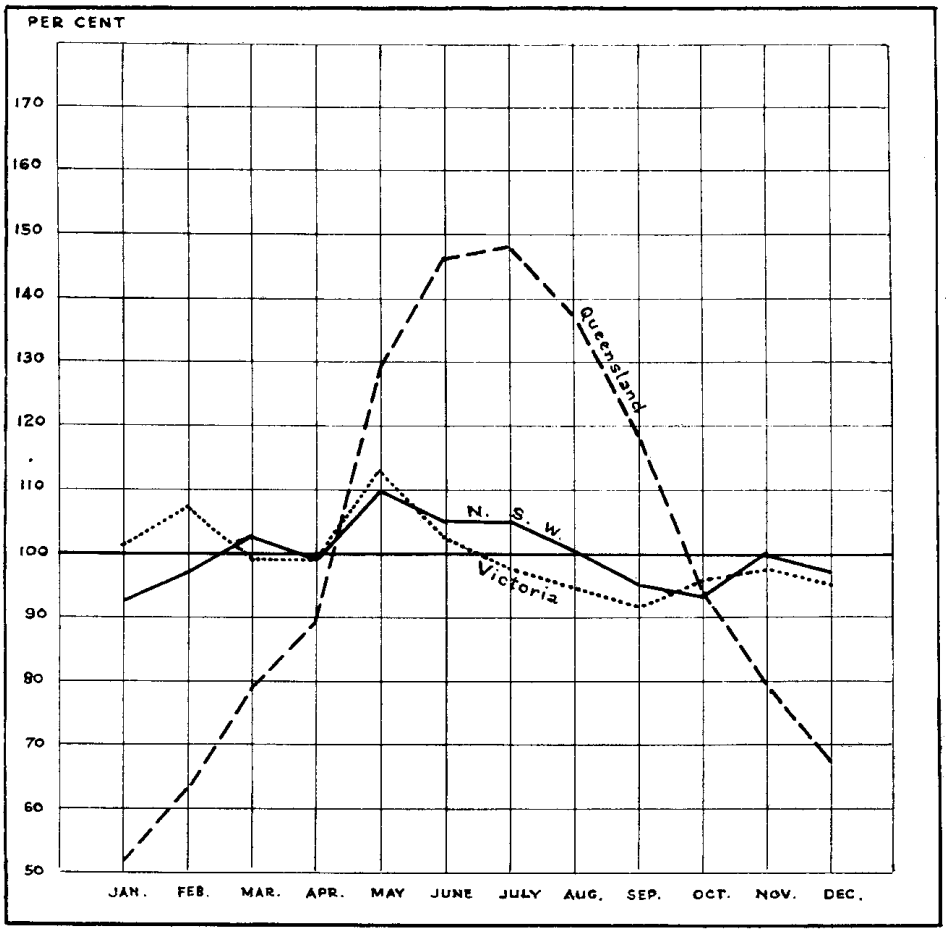

Fig. 8. Seasonal Pattern of Beef Production in Queensland, New South Wales and Victoria, based on statistics for the years 1943 to 1953.

must be exported as frozen quarters. It would be a wise policy, therefore, to continue research studies aimed at effecting improvements in each stage of the preparation, freezing, storage and transport."[9]

Another consideration for the Australian industry is that the seasonality of production is more pronounced in Queensland, the principal exporting State, than in the southern States. As shown in Figure 8, beef production in New South Wales and Victoria is at its highest level in May but the seasonal variation in production in these States is much less conspicuous than in Queensland where production is low in the summer months and rises to high levels in June, July and August. It would, therefore, benefit Australian producers if the seasonal nature of beef production could be modified. As has been frequently suggested in the past, one way of doing this would be to change the emphasis in the system of cattle raising in the north from the fattening of stock for direct export after slaughter to the supply of stores for southern areas.[10] A continuation of the current trend for greater attention to pasture improvement would form a basis for increased cattle fattening in the south and the fact that peak production occurs earlier in the southern States than in Queensland would tend to reduce the seasonality of production for Australia as a whole. Such a development would also enable overseas shipments to be made earlier, to arrive in the United Kingdom slightly before the months of greatest home production.

3. SUMMARY.

1. Since the end of World War II there has been a rising trend in beef cattle numbers in each State except Western Australia and the Northern Territory where numbers have remained at fairly constant levels. In 1954 the beef cattle population reached a record total of 10.7 million, of which 53 per cent. were in Queensland, 22 per cent. in New South Wales, 9 per cent. in the Northern Territory, 7 per cent. in Victoria, 6 per cent. in Western Australia, 2 per cent. in South Australia and 1 per cent. in Tasmania.

2. The most pronounced increases in recent years have occurred in the southern part of Australia, especially in Victoria and South Australia. A closer analysis of trends within New South Wales since 1946 reveals that there has been a continuous increase in numbers in the southern districts where pasture improvement has been successful. On the other hand, numbers stabilized or declined slightly in most northern districts of New South Wales after 1950-51.

3. To date there has been a long-term upward movement in Australian beef and veal production despite a fairly regular pattern of rises and falls in output. The record output achieved in 1954 marks the peak of the fourth cycle in production since 1908 and is therefore a critical

[9] J. R. Vickery, "The Export of Beef from Australia", *The Meat Producer and Exporter,* Journal of the Australian Meat Board, Sydney, Vol. 8, Nos. 5 and 6 (May and June, 1954).

[10] Some of these recommendations have been cited in an earlier article. See G. C. McFarlane, op. cit., pp. 270-272. See also an article by F. D. Gillies in *Economic News,* Queensland Bureau of Industry, Brisbane, Vol. 23, No. 8, (August, 1954).

point. As each of the previous high levels was followed by a declining phase in the cycle, it would seem that another decline is due to commence. However, the composition of cattle numbers and slaughterings (which are indicators of changes in the level of production) does not suggest that a decline in production is imminent. Whether a decline will in fact occur will depend mainly upon the confidence of graziers in market prospects.

4. The home market, which accounts for about 80 per cent. of production, is expanding as population increases and the existence of a reasonably assured market in the United Kingdom is likely to help sustain the confidence of producers.

5. In view of the rising population in Australia, further increases in beef and veal production will be necessary to maintain the present level of consumption. If the present rate of increase in the population is maintained production will need to reach 875,000 tons by 1970 in order to supply the home market without causing a decline in exports from the 1954 level. This would necessitate a 24 per cent. increase on present production.

6. The main overseas market for Australian beef and veal is the United Kingdom which takes 80 to 90 per cent. of the export surplus and, under the terms of a long-term agreement expiring in 1967, the United Kingdom Government has undertaken to purchase the whole of Australia's exportable surplus. However, conditions on the United Kingdom market are rapidly becoming more competitive due to a return to the chilled beef trade by some countries and increasing supplies of fresh meat from producers in the United Kingdom and the Irish Republic.

7. One way of meeting this competition would be a return to marketing chilled beef, the techniques of which were successfully developed just prior to World War II. This seems an inevitable development although the extent to which it will benefit Australian producers will depend upon the margin of profit for chilled beef exports compared with returns for frozen beef.

8. At present it seems unlikely that the proportion of export beef of "chiller" quality will rise beyond about 40 per cent. for some years. Therefore, work designed to improve the quality of the frozen product could be of great importance to the Australian industry.

9. A further factor likely to improve the overseas marketing arrangements for Australian beef would be a reduction in the seasonality of production. The seasonal variation is greatest in Queensland, the main exporting State, and the heaviest shipments to the United Kingdom arrive during the months when total supplies there are greatest and fat cattle prices are declining. If more cattle from the north were fattened in the southern States, where the peak production is in May, compared with June-July-August in Queensland, seasonality of exports would be reduced and this would probably result in better prices for Australian supplies, especially during the months from August to November.

Sydney: A. H. Pettifer, Government Printer—1955