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within a few years and thus add to the instability of incomes and land values; (c) increase Britain's difficulties as she is faced not only with a dollar-shortage, but also a general shortage of foreign exchange. An additional factor to be taken into account is that further price rises will inevitably add to the inflationary measures in our own economy.

These remarks should not be interpreted to mean that no price rises should be allowed to take place; there are certain anomalies in the primary production price structure which have arisen in the last few years which need adjustment, but *general* price rises are likely to lead to the undesirable results mentioned above.

WORLD MEAT PRODUCTION AND CONSUMPTION— SOME ECONOMIC CONSIDERATIONS.

By

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(This article is almost entirely a synthesis of material recently made available. Reference is made in particular to:—

'World Future of Meat After the Transition Period,' by L. Lorinez, Agricultural Economist, Department of Agriculture, Canada;

'World Food Situation, 1946,' U.S. Department of Agriculture; and

'Livestock Products Review,' 27th June, 1947, published by F.A.O.)

At the end of World War II it had become clear that the exigencies of total war often reversed normal economic trends. An example of such a change was the emphasis which was placed on production as an end in itself. All nations did their utmost to see that their industrial and agricultural production reached a maximum consistent with efficiency. This emphasis on productive activity, in addition to supplying war commitments, was also responsible for turning the attention of many countries to the great gap which had existed in pre-war days between world food consumption and world food needs. In May, 1943, the representatives of forty-four countries were invited, on the initiative of the late President Roosevelt, to the United States Conference on Food and Agriculture at Hot Springs, Virginia, U.S.A. The organisation thus created—F.A.O.—officially came into being with the signing of its constitution at Quebec on 16th October, 1945.

In the present instance it is proposed to discuss world consumption of meat with the resolutions of the Hot Springs Conference as a background, as well as the later pronouncements of F.A.O.

At its inception F.A.O. recommended that at least 90 lb. of meat be consumed in less prosperous countries, and 119 lb. per head by wealthier nations per year. It was found necessary to correlate the consumption of beef, pork and mutton with the ratio of cattle, swine and sheep to the human population in the most important meat-producing and consuming countries. This correlation, when performed, revealed that excessively high meat consumption occurs in countries where livestock is over-abundant, as compared with population; *e.g.*, Argentina, Australia and New Zealand, and ranges from 210 to 280 lb. per person. Where human population and livestock resources approximate one another more closely, as in Denmark and Canada, meat consumption is high but not excessive—between 120 and 130 lb. But the most important observation of all was found in countries where human population outstrips domestic resources. In countries where rural population is about equal to non-rural, an average consumption amounting to about 52 lb. and corresponding to existing resources prevails. Nations with large rural populations consumed only about 48 lb. of meat per head because lack of sufficient industrial output compelled them to export meat to the detriment of their own populations, in order to secure indispensable imports that might have been paid for with manufactures had industry been sufficiently developed.

It is interesting to observe the manner in which these basic results have been obtained. Various circumstances, such as excessive war-time demand for feeding large armed forces, losses of food at sea, increased domestic consumption, livestock losses due to drought in Australia, South America and South Africa during some war years, added to the destruction of animals and the disruption of feed supplies in Europe, all combined to make a drastically heavy demand on world livestock resources at the conclusion of the war. These requirements had to be met largely from American and South Pacific sources since European livestock had been generally depleted. The ultimate effect of these circumstances was a world-wide meat shortage which became acute with the liberation of Europe in 1945. In that year it is estimated that 32,826 million pounds of meat and bacon were available for allocation from current production, whereas requirements reach 36,312 million pounds. The world meat shortage was given considerable publicity, and the impression was created that the condition might be permanent. However, in actual fact, conditions were, and are, abnormal. Insufficient cargo space for lifting supplies and the disorganisation of transport by land have accentuated shortages in some countries. But all these conditions are temporary and, once they cease, a different set of world factors will determine international consumption and trade patterns. The question at issue concerns the length of time likely to elapse before these abnormal conditions lapse.

It is interesting to ask how soon livestock numbers recovered in Europe after World War I. The following table, covering some of the most important countries, shows that it took about seven years before complete recovery was obtained in Europe. In the meantime, an increase in cattle and hogs in most overseas countries had become noticeable. The ultimate result was that, three years after the end of World War I, a larger number of cattle was found in the fourteen most important livestock producing and consuming countries than in 1913.

CATTLE NUMBERS IN LEADING COUNTRIES, 1913 AND AFTER 1922.

Country.	1913	1922	1924	1926	1938	1944
Million head.						
A. Europe—						
United Kingdom ...	7.7	7.7	7.8	8.1	8.8	9.5
Germany ...	18.5	16.3	17.3	17.1	19.9	¹ ...
Belgium ...	1.8	1.5	1.6	1.7	1.7	² 1.5
France ...	15.3	13.6	14.0	14.5	15.6	² 15.8
Russia (Europe) ...	39.2	27.5	37.7	41.8	¹ ...	¹ ...
Denmark ...	2.3	2.5	2.7	2.8	3.2	3.0
Eire ...	4.1	4.4	4.3	3.9	4.1	4.2
7 countries ...	88.9	73.5	85.4	89.9	...	...
B. America, Oceania and Africa.						
Canada ...	6.7	9.7	9.5	9.2	8.5	10.3
United States ...	56.6	66.2	62.0	57.5	66.8	82.2
Argentina ...	³ 25.9	37.1	⁴ ...	⁴ ...	⁵ 33.2	⁶ 34.0
Brazil ...	⁷ 30.7	⁸ 34.3	⁴ ...	⁴ ...	40.9	¹ ...
Union of S. Africa ...	5.8	⁹ 8.6	9.6	9.7	11.6	¹ ...
Australia ...	¹⁰ 11.5	14.4	13.3	13.3	12.9	14.1
New Zealand ...	2.0	3.3	3.5	3.6	4.5	4.4
7 countries ...	139.2	173.6	...	...	...	...
14 countries ...	228.1	247.1	...	...	...	...

SOURCE:—

1913-1926.—International Yearbook of Agricultural Statistics, 1926-27.
1938 and 1944.—Official figures from miscellaneous sources, mainly
“Foreign Crops and Markets.”

NOTES:—

1. Not available. 2. 1943. 3. 1914. 4. No enumeration between 1920
and 1930. 5. 1937. 6. 1945. 7. 1912. 8. 1920. 9. 1921. 10. 1911.

This table shows that a similar trend appears to be indicated with World War II.

What are the Determinants of Meat Production and Consumption?

The first important factor is the density of human population and the density of livestock in relation to that population. There is abundant evidence to show the importance of industrialisation

in determining meat consumption levels. In the following tables this relationship is made clear, the main exceptions being Australia and New Zealand where the superabundance of animal resources is the main factor.

Country.	Date of most recent population census.	Cattle, pigs and sheep in terms of cattle per 1,000 humans.	Annual per capita meat consumption.	Non-rural population.
		<i>Cattle units.</i>	<i>lb.</i>	<i>per cent.</i>
New Zealand ...	1936	4,997	249	60
Australia ...	1933	3,808	212	80
Argentina ...	1934	2,946	266	?
Denmark ...	1938	1,056	124	69
Canada ...	1941	939	128	76
United States...	1940	686	141	83
Austria ...	1938	515	103	73
France ...	1931	435	96	65
Bulgaria ...	1938	419	45	28
Yugoslavia ...	1938	402	44	30
Germany ...	1932	400	112	67
Czechoslovakia	1938	398	63	63
Holland ...	1930	379	100	49
Poland ...	1938	377	50	40
Hungary ...	1938	322	57	48
Rumania ...	1938	319	55	32
Spain ...	1920	300	52	60
Greece ...	1938	271	34	53
United Kingdom.	1931	240	140	94

Country.	Actual consumption.	Per cent. non-rural in total population.	Year and source of non-rural population.
	<i>lb./head.</i>	<i>per cent.</i>	
I. Industrial Countries—			
U.K. ...	140	94	1931
France ...	96	65	1931
Austria ...	103	73	1935-38
Germany ...	112	67	1932
U.S. ...	141	83	1940
Average ...	118	76	
II. Agricultural Countries—			
Bulgaria ...	45	28	1935-38
Yugoslavia ...	44	30	id.
Poland ...	50	40	id.
Rumania ...	55	32	id.
Average ...	48	32	
III. Other Countries—			
Greece ...	34	53	1935-38
Spain ...	52	60	id.
Hungary ...	57	48	id.
Czechoslovakia	63	63	id.
Average ...	52	56	

These tables show clearly that urbanisation reduces meat consumption from excessive levels in a country with abundant livestock resources where previously too much meat had been eaten. The reduction is not immediate and a time lag is generally in evidence. On the other hand, where not enough meat is eaten due to inadequate livestock resources, industrial progress is followed by increased meat consumption. The factors thus far named, density of human population, density of livestock in relation to human population, and degree of economic development, influence both production and consumption.

There is a series of other factors which influence production alone. In the first place, climate is important in deciding livestock numbers. Even in those tropical and warm regions of the earth where food resources are plentiful, comparatively little livestock can be found. This is due to the difficulty of maintaining stock in healthy condition, due to the fact that the prevailing high temperature and humidity favour the development of parasites and bacteria. Another drawback is the poor nutritive quality of tropical feed. The result is that cattle expansion in the tropics is unlikely to meet with success even if it were attempted.

What are some of the other factors influencing production? In the first place, the size of the holding is important because it directly affects the physical volume and profitableness of livestock output. When population outstrips land resources individual holdings may become too small for keeping a large number of livestock. In extreme cases available land must be used for direct crops, and livestock becomes a luxury. This is the case in many Asiatic countries. Improved methods of farm management may aid considerably in increasing meat output. Of course, it is necessary to remember the more obvious productive factors, *e.g.*, soil and soil conservation, the use of fertilisers, etc. The improvement of breeds has contributed considerably to meat output. Taking European examples, in Germany from 1800 to 1903 the slaughter weight of steers increased about 85 per cent. In France, the market age of cattle was reduced from six to eight years to three to five years, and the slaughter weight of steers rose by 38 per cent. These trends apply to other livestock. Canada and America have published the following table giving the average dressed weight of beef cattle between the years 1919 and 1944.

Year.	Canada.	United States.
	lb.	lb.
1919-23	511	529
1924-28	512	509
1929-33	508	524
1934-38	487	486
1939-43	494	516

This table shows that for these two countries only slight fluctuations have occurred since 1919.

Factors Influencing Consumption.

The relative size of income on the national or individual level is one of the most important determinants of meat consumption. Meat is an expensive source of energy and is thus available only in limited quantities to people on low incomes. The following table, relative to six South Eastern European countries, illustrates the relationship between national income and meat consumption.

NATIONAL INCOME AND ANNUAL PER CAPITA MEAT CONSUMPTION IN SIX SOUTH-EASTERN EUROPEAN COUNTRIES, SPECIFIED PERIODS.

Country.	Approximate national income per head.	Meat consumption "before World War II."
	U.S. \$	lb.
Austria	155 (1935)	103
Czechoslovakia	155 (1937)	63
Hungary	95 (1937)	57
Poland	95 (1937)	50
Rumania	65 (1937)	55
Yugoslavia	60 (1937)	44

There is a direct relationship between family income and meat consumption in rural as well as urban families. Higher family income is reflected in increased meat consumption. The following American table is an interesting example of this fact:—

MEAT (EXCEPT POULTRY AND FISH) : CONSUMPTION PER PERSON PER WEEK IN THE UNITED STATES, BY FAMILY INCOME CLASSES (HOUSEKEEPING FAMILIES AND SINGLE PERSONS), SPRING, 1942.

Annual net money income.	Urban.	Rural, non-farm.	Rural, farm.
U.S. \$	lb.	lb.	lb.
0- 499	1.25	0.79	1.00
1,000-1,499	1.69	1.25	1.63
2,000-2,999	2.30	1.69	1.82
3,000-4,999	2.40	2.00	1.96
5,000-9,999	2.46	...	...

Distribution of income also has to be considered. There is a limit to any individual's capacity to absorb food and, when an income level is reached which is sufficient to cover the cost of all meat that is needed by a normal family, little increase in meat consumption can be expected at higher income levels. Therefore, no great increase in meat consumption will occur if a nation's income is increased in such a way that a small section of the population earns high incomes and the majority does not reach a satisfactory income level. On the other hand, with a relatively low national income, which is evenly distributed, the individual's share may not be high enough to allow for adequate meat consumption.

In some countries there are ample supplies of fish at moderate cost; in some sections of undeveloped countries, eggs are plentiful and difficult to market. In these cases, substitution of these high protein foods for meat is quite extensive. The comparative cost of meat and other foods is a consideration that has to be reckoned with. The social structure of a nation also has an effect on meat consumption. In most progressive countries an ever-increasing proportion of the population is living in cities or manufacturing settlements, and they are becoming more sedentary in their way of life. The faster pace of living in cities requires greater alertness that can best be obtained from animal proteins. City dwellers must, therefore, eat more meat to equip themselves for the faster movement of urban life.

A feature of the growing industrial organisation of modern society is the emergence of feeding centres as against eating in families. In 1770 there was only one restaurant in Paris; by 1804 there were about 600. In World War II an increasing number of "factory canteens" were opened. The British Food Ministry maintained more than 2,017 restaurants in 1944, which served 559,000 meals in August of that year. A possible effect of these large-scale collective feeding establishments is that increasingly large numbers of people may eat moderate but sufficient quantities of meat.

Another factor influencing consumption is the age composition of the population. Advanced civilisations usually show a larger proportion of adults in the population. Adults being the larger consumers of meat, nations with a large proportion of infants, *i.e.*, the less advanced nations, cannot eat as much meat as those which are composed of a greater number of adults.

Prospective Changes in Factors Influencing Production and Consumption.

Let us now examine the likely effects of certain trends which are expected to influence the course of meat production and consumption.

Considering, firstly, the density of human population, according to studies made by the League of Nations and other authorities, most nations of Europe have now reached a more or less stable level of population and further rates of increases are not expected to be high. For example, in ten years the population of England and Wales increased only by 5 per cent. from 43,000,000 in 1920 to 45,000,000 in 1930. On the other hand, in India there was an increment of 60,000,000 people during the twelve years prior to 1943, in a nation which counted 350,000,000 in 1930. China swelled its population by 70,000,000 from 1910 to 1940, Japan by 25,000,000 from 1900 to 1935. Little increase in population may, therefore, be expected in the most important meat consuming markets of the world. On the other hand, the population of already over-crowded Asiatic countries may be further increased. The density of population and limited land resources may compel these nations to depend on direct crops to an even greater extent than has so far been the case. That may well mean a reduction in their present exceedingly low annual meat consumption. The population

of Argentina, Brazil, Australia and New Zealand may increase relatively fast, but increases in these countries are not likely to result in an expansion of world markets for meat, but may mean an addition to available supplies. In North America, the United States' population is expanding, but livestock numbers have also advanced rapidly due to war-time demands. Once this abnormal situation disappears supplies may prove more than sufficient even for a greater consumption per head.

What are the likely prospects of industrial expansion? The most important countries now expecting expansion are the Soviet Union, Argentina, Brazil, Chile, Australia, the Balkans, Poland, India and China. Greatest progress is expected in South America and Australia, but, as already mentioned, this is not likely to increase the already high meat consumption figure. On the other hand, the industrialisation of Poland and the Balkans should eventually increase meat consumption. Further, an increase in livestock numbers in these areas may be sufficient to meet all local demands. Industrial progress in India has been considerable during World War II and will continue, but religious factors may interfere with a large increase in meat consumption. In China and other Asiatic countries, low wages may be the principle obstacle. It may, therefore, be said that post-war industrial progress is unlikely to provide an outlet for greatly increased production levels unless such surpluses are made available to underfed areas which are not always in a position to pay for them.

Changes are expected in the size of holdings and in farm practices. Radical land reform has been carried out in Poland, Hungary, Rumania, Yugoslavia, and is being undertaken even in Great Britain. Soil conservation is receiving considerable attention in most countries and will provide further resources for increasing livestock. There is an increasing emphasis on the use of fertilisers in the Soviet Union and the Danube Basin countries. Artificial insemination is expected to result in greater productivity of livestock, thus contributing to larger meat supplies.

The other main trends have occurred in the distribution of income. World War II increased the national income of most nations to high levels but this income is expressed in more or less inflated currency values. It was secured by the mobilisation of reserves or by the undertaking of enormous debts that must eventually be paid. Unless the ideal of an "expanding world economy" is achieved, the existence of such debts will adversely affect both national and individual incomes. Recent trends in social policy presuppose increasing tax burden on incomes at the higher levels where meat consumption is largest. World meat prices have shown a general trend upwards.

Recent and Expected Movements.

Production of meat in 1945 in the major supplying countries dropped sharply from the very high levels of the previous year, whereas military demands continued to be heavy during much of the year. At the same time, production in Europe continued to decline and dropped to levels that were only about 56 per cent. of pre-war. There were reduced shipments from North and

South America. The outlook for post-war years is necessarily linked with the critical world shortage of feed grains. This fact has a limiting effect on the restoration of meat production, especially of pork, in Europe, and tends to restrict production in the U.S.A., Canada and Argentina.

What is the current situation? For the world as a whole, the volume of meat produced in 1947 is not likely to differ materially from the 1946 volume. Adverse weather conditions and continued lack of feed will not permit much increase in the quantities produced in Europe. Continental Europe will produce about 60 per cent. of the pre-war volume, with France making the largest gain. It appears that the major exporting countries of the Western Hemisphere and Oceania will produce about the same quantity of meat in 1947 as in 1946. In the United States and Canada, 1947 production will be about 140 per cent. of the pre-war level. Data concerning Asia is almost entirely lacking, but it is general knowledge that the consumption of animal products in Asia is at a very low level and no great changes are expected.

The production of meat in 1948 in the principal exporting countries is not likely to be very different from 1947 unless there are major crop failures. In Canada and the United States, cattle numbers are being reduced by increased slaughter, but hog numbers are expected to increase. Both these factors will result in slight increases in meat production for 1948. Livestock numbers will continue to increase in most European countries during 1948. However, the feed supply is likely to continue to be critical, and the holding back of large numbers of animals for breeding purposes will be limited by the availability of feed supplies, and by the attraction of high slaughter prices. Consumption of meat in Europe in 1947 is running at about 39 per cent. to 40 per cent. below pre-war average and no material increase in supplies during 1948 seems likely. However, pork production will increase if more feed becomes available, either from imported sources or from home produced feeds. Exports of meat in 1947 will be about 15 per cent. to 20 per cent. below those for 1946. Restrictions on exports and lack of exchange to finance imports in many countries will mean that the slight improvement in production in Continental Europe will be offset by decreased supplies from abroad. Foreign trade in livestock products is largely dominated by the imports of the United Kingdom which, to a great extent, are covered by long-term contracts. These agreements cover the bulk of the exportable surplus through 1948 and, in many cases into 1950, and, as a result, there would be little opportunity for the Continental European countries to obtain increased supplies of meat through imports, even if they had the purchasing power.

Livestock products are extremely important items in the consumption pattern in many parts of the world, and the demand for these foods is high. The importance of livestock varies widely

over the world. The following table shows, by broad areas, the numbers of livestock, the production in meat and milk, and livestock products as a percentage of total calorie intake:—

Area.	Numbers.			Production.		Estimated Calorie Intake Derived from Livestock Products. per cent.
	Cattle (Mil. head.)	Sheep (Mil. head.)	Hogs (Mil. head.)	Meat (Mil. Metric Tons.)	Milk (Mil. Metric Tons.)	
N. America ...	96.6	59.6	61.3	8.4	54.8	30-35
S. America ...	105.6	101.0	31.3	3.7	6.3	20-30
Europe ...	110.2	130.8	81.9	12.2	105.1	20-25
Soviet Union ...	48.5	79.7	23.9	3.3	23.3	...
Asia (excluding Soviet Union) ...	283.4	141.7	82.7	...	...	5-8
Oceania ...	18.1	144.0	2.1	1.4	9.8	40-50
Africa ...	61.4	99.5	3.3	...	0.9	10

Livestock numbers in the principal importing and exporting countries were variously affected during World War II. Numbers increased in the Western Hemisphere and decreased substantially in Europe. Cattle numbers, in the main beef-exporting countries, at the beginning of 1947 were about 10 per cent. above the pre-war level, the major increases occurring in Canada and the United States. In Europe, cattle numbers were maintained at a surprisingly high level during the war, the decrease amounting to only 10 per cent. to 12 per cent. World hog numbers, at the close of World War II, were estimated at 225,000,000 head, a decline of 19 per cent. below the 1935-39 average. In European countries the reduction of hog numbers during the war was severe. In 1947 most of the principal pork-producing countries of Europe showed improvement in numbers. This also applies to the Western Hemisphere. World sheep numbers were estimated at 714,000,000 head in 1946, about 5 per cent. below the 1935-39 average. Unfavourable weather conditions were responsible for decreases in Australia and New Zealand, while in the United States, reduction was caused by labour shortage and changes in the price structure for sheep products. For Europe as a whole, numbers in 1947 were about 80 per cent. of pre-war.

The meat production of the world is made up roughly of 48 per cent. to 50 per cent. beef, 40 per cent. to 42 per cent. pork, and 8 per cent. to 10 per cent. lamb and mutton. Because the purposes for which animals are kept vary from nation to nation and from time to time, meat production in some areas may be very small compared with livestock numbers but, generally, changes in livestock numbers are related closely to changes in meat production. In spite of the severe losses in European livestock during the war, world production of meat in 1945 was only about 8 per cent. below the 1934-38 average. World production in 1946 was about the same as in 1945, Europe producing about 5 per cent. more.

Estimates based on the information available for 1947 indicate that the chief exporting countries of the Western Hemisphere will produce about the same amount of meat as in 1946. Overall production of meat for Europe in 1947 is not likely to exceed the 1946 figures.

Because imports or exports constitute a relatively small proportion of production and because ability to buy expensive meat supplies is limited, fluctuations in consumption tend to be very closely related to changes in indigenous production. In Canada and the United States both production and consumption are larger. Consumption of meat has always varied widely between countries. In the heavy meat-producing nations, Argentina, Australia and New Zealand, consumption of meat was at the rate of about 130 kg. per head per year. In contrast with this, the consumption in the United Kingdom and the United States was at about 86, in Greece and Italy 32, in China 40, and in India and Java only 8.

International trade in meat prior to the war was largely a movement from Argentina, New Zealand, Denmark and Australia to the United Kingdom. During the war, the United States and Canada became important suppliers of meat, the former outranking all countries in volume of meat exported. Since the war these two countries have continued to ship large quantities, although shipments from the U.S.A. in 1947 are expected to be only about half of 1946 shipments, and Canada two-thirds. Shipments from the United Nations Relief and Rehabilitation Administration figure prominently in the imports from many European countries. During the period of U.N.R.R.A. assistance from 1945 to April, 1947, relief aid in the form of meat amounted to the totals shown below, and constituted almost the entire imports of meat into this group of countries during the period of U.N.R.R.A. aid.

Total Meat (Product Weight) Delivered from Beginning of Programme through April, 1947. (1,000 metric tons.)

Ukrainian S.S.R. and Bylorussian S.S.R.	56.7
Poland	52.2
Yugoslavia	24.9
Czechoslovakia	22.8
Greece	20.8
Austria	20.2
Italy	12.7
Others	5.1

In addition to the United Kingdom agreements with Australia, New Zealand, Argentina, Canada and Denmark, other bilateral movements have been arranged. Denmark has undertaken extensive commitments and agreements have been reached among some of the other European countries.

TABLE A.
Numbers of livestock in various countries, prewar, 1946 and 1947, with percentage change in 1946.
(thousands of head)

	Cattle and calves.				Hogs.				Sheep.			
	Prewar.	1946.	1947.	1946 as % of prewar.	Prewar.	1946.	1947.	1946 as % of prewar.	Prewar.	1946.	1947.	1946 as % of prewar.
United Kingdom	8,712	9,629	...	111	4,468	1,959	1,950	44	26,226	20,358	...	78
Ireland	4,020	4,146	...	103	986	477	...	48	3,070	2,423	...	79
France...	15,713	14,273	15,129	91	7,084	4,384	4,852	62	9,761	6,632	7,160	68
Belgium	1,772	1,539	1,652	87	1,266	735	700	58	187	177	144	94
Netherlands	2,683	2,410	...	90	1,540	1,040	1,000	67	658	558	575	85
Switzerland	1,641	1,418	1,423	90	941	654	650	69	177	195	...	110
Norway	1,375	1,267	1,270	92	411	257	300	62	1,750	1,707	...	98
Sweden	2,968	2,900	2,928	98	1,425	1,120	1,100	77	411	516	...	125
Finland	1,893	1,673	1,670	88	501	254	...	51	1,048	1,099	1,110	105
Denmark	3,112	3,041	3,003	97	3,080	1,781	1,704	57	165	178	...	108
Germany	19,860	13,694	14,020	86	24,010	7,145	8,453	40	4,251	4,603	5,079	77
U.S. Zone	5,363	5,168	5,246	96	4,016	2,211	2,602	55	1,614	1,552	1,573	96
U.K. Zone	4,914	4,476	4,275	91	6,768	3,125	3,066	46	1,345	1,341	1,353	100
French Zone	1,923	1,649	1,736	86	1,539	630	818	41	556	438	507	79
U.S.S.R. Zone	3,645	2,401	2,793	66	5,701	1,179	1,967	21	2,438	1,272	1,646	52
Austria	2,596	2,187	2,206	85	2,872	1,930	1,493	36	313	391	399	125
Poland	10,280	3,910	4,300	38	7,251	2,895	3,750	40	3,200	727	...	23
Czechoslovakia	4,305	4,144	4,650	96	2,943	2,700	2,950	92	570	...	...	...
Italy	7,571	6,300	7,100	83	3,095	3,000	3,100	97	9,453	7,300	7,900	77
Greece	1,034	625	656	60	542	376	410	69	8,219	5,600	6,000	68
Yugoslavia	4,125	2,451	...	59	3,096	2,733	...	88	9,539	6,355	...	66
U.S.S.R.	48,000	41,500	41,400	86	23,900	8,700	7,200	31	79,680	72,000	...	81
United States	67,275	82,434	81,950	122	48,047	61,301	56,901	128	53,090	42,436	38,571	80
Canada	8,246	9,961	9,747	121	4,076	5,853	5,972	144	41,828	2,456	2,186	93
Argentina	33,207	34,000	34,200	102	3,966	5,000	4,500	126	12,771	53,000	54,000	127
Brazil	40,687	42,000	42,200	103	23,608	...	25,000	...	12,771	12,500	12,700	98
Uruguay	8,297	...	6,500	...	346	...	265	...	17,931	25,000	26,000	139
Australia	13,287	13,874	13,800	104	1,182	1,426	1,375	121	111,320	96,396	93,500	87
New Zealand	4,402	4,704	...	107	763	555	...	73	30,955	33,000	32,500	107

TABLE B.

Meat: Estimates of production of beef and veal, pork, mutton and lamb, in specified countries, pre-war, 1945, and 1946, as reported by the United States Department of Agriculture.

(Thousand Metric Tons.)

Country.	Beef and Veal.			Pork (excluding Lard).			Mutton and Lamb.		
	Average 1934-38.	1945.	1946.	Average 1934-38.	1945.	1946.	Average 1934-38.	1945.	1946.
United Kingdom	626	553	590	404	191	168	206	136	150
Ireland	47	98	86	89	49	61	17	26	25
France	883	577	700	644	385	475	99	57	56
Belgium	138	63	69	166	55	70	3	...	5
Netherlands	140	...	85	249	...	70	9	...	3
Switzerland	98	70	69	86	44	39	2	2	1
Norway	43	32	36	40	20	25	15	11	14
Sweden	132	115	116	148	130	127	4	4	4
Finland	63	43	39	47	23	25	5	4	5
Denmark	143	130	170	306	171	195	3	5	5
Germany	1,179	...	...	2,130	...	...	40	...	...
Austria	105	...	...	163	...	...	8	...	...
Poland	239	...	...	468	...	...	10	...	12
Czechoslovakia	203	...	...	182	...	...	5	...	2
Italy	332	176	215	306	193	218	49	31	36
Greece	15	9	11	12	9	11	62	43	48
Yugoslavia	97	...	32	114	...	80	50	...	...
U.S.S.R.	1,295	...	...	1,569	...	...	444	...	...
United States	3,617	5,349	4,808	3,328	4,557	4,672	395	478	445
Canada	333	569	545	282	404	358	28	31	31
Argentina	1,741	1,515	1,565	110	320	209	171	324	313
Brazil	826	750	775	221	220	210	7	15	14
Uruguay	225	172	181	6	12	13	28	37	37
Australia	540	455	457	88	121	112	322	328	346
New Zealand	206	187	187	44	42	39	261	303	321

Because of bilateral trade agreements, export restrictions, internal subsidy and support programmes, etc., export prices for meat products vary widely. Although full facts are not available on international contracts, information at hand shows that at June, 1947, the United Kingdom is paying approximately the following prices for beef, bacon and mutton, f.o.b. the export country, for medium-quality beef carcasses, good quality mutton, and first-quality bacon.

Country.	Beef.	Bacon. (Wiltshire Sides.)	Mutton.
	Pence stg. per lb.	Pence stg. per lb.	Pence stg. per lb.
Argentina	6.2 (a)	...	...
Australia	4 to 4.5	10.0	4.4
New Zealand (b)	4 to 4.5	8.5	4.8
Denmark	14.2	17.3	...
Canada	12.7	16.2	10.7
United States	21 to 23	...	9.8

(a) Market prices for medium-grade beef as reported effective at markets, 27th December, 1946 (Office of Foreign Agricultural Relations, U.S.D.A.). Contract price with United Kingdom not available.

(b) Does not include payments made by the United Kingdom to the New Zealand stabilisation fund.

Contracts specifying specific prices are in effect between the United Kingdom and each of these countries, except the United States. Prices for beef in the above tabulation are given in a range because of quality variations. The variation in prices charged different countries is indicated in the Danish export prices; for example, during May, 1946, the price of bacon to the United Kingdom was 2.66 Danish kroner per kg. as compared with an average price to other countries of 4.33 kroner.

As background material to the information obtained in the above paragraphs, Table A below provides a summary of the numbers of livestock in various countries pre-war, 1946 and 1947. Table B gives a similar production summary.

Australia and Meat.

The production side of the Australian beef industry is at a low point. The governing factors in this situation include some which are of a passing or cyclical character, such as the exigencies of war-time conditions and adverse seasonal conditions. Others go more deeply involving problems of industry economics, stock nutrition, water supply and herd management. A sound future will involve the maintenance of stable prices at payable levels. Current beef prices are relatively good, though production costs are trending upward. The question facing the industry is what will happen on the conclusion of the current Meat Export Agreement with the United Kingdom. A new agreement may be reached between the two countries, or Government buying in both countries may cease, leaving the world export surplus to find its price level under competition. The industry could prepare for such situations by improving quality standards and working for price stability.

Within the next year or two it may be expected that lamb production will recover from the effects of the recent years of drought, and, with normal seasons, accompanied by the incentive to open up new farm land and a higher standard of husbandry, expansion of the industry beyond the peak of the middle war years is a possibility. However, there may be some doubt as to whether the exportable surplus will regain its former high proportion, with increased population and continued full employment. As with beef, mutton and lamb exports are linked with the future position of the United Kingdom. Even with a return to normal conditions, the export market will have its limits. The United Kingdom remains the main perceivable market, and, apart from the increased capacity of New Zealand and Argentina to supply that market, it has been declared as part of the agricultural policy of the present United Kingdom Government to increase the country's proportion of home produced meat. These factors will involve the possibility of quantitative restriction and may also heighten the competition which the Australian product will meet. As with beef, emphasis on quality of mutton and lamb production is desirable.

The elements of uncertainty in the future of Australian meat exports need not have a retarding effect on the expansion of the meat industry. Such expansion may be necessary to keep pace with increased home consumption, both industrial and domestic.

Summary and Conclusion.

The equilibrium between demand and increased production outside Europe, which may be further added to by advances in output planned in many countries, is not likely to be attained until world-wide industrial development has made considerable progress. This is a process which takes many years to accomplish and, in the meantime, active research and encouragement will be required if meat consumption is to be increased. Even when industrialisation is in full progress, markets may not provide a sufficient outlet for the anticipated large output because population growth is slow, and industrial development is already high in the traditional markets. The extent to which industrial progress can bring about an increase in consumption is complicated by such factors as national income, individual real income, comparative costs of meat and other foods, social structure, race and religion, age composition of populations, etc.

The countries contemplating increased meat production will be competing for a larger share of a shrunken world cash market. One of the methods advocated for securing such shares is the reduced cost of production through increased efficiency. Another method is the signing of direct bulk purchase agreements. If these practices become generally effective, the gap between the price of plant food and meat may be narrowed and meat may become more readily available, thus expanding its consumption. But the problem may arise of a two-price arrangement with products being sold abroad at lower than domestic prices. It seems that the balance between demand and production of meat cannot be restored unless dietary levels are radically increased in countries where they are inadequate. This can be accomplished even if the relative cost of plant foods, compared with that of meat, further decreases due to technical progress in handling crops, provided that an increasingly large number of bread-winners will earn larger wages in under-developed countries. Expanding world economy depends upon high employment but, even when this is attained, systems of distribution in adequate real wages and the complications of international trade and exchange may interfere with an overall increase in meat consumption.

It seems necessary, therefore, in the first instance, to collect and disseminate information with regard to conditions that are likely to cause people to consume more meat. By this method it should be possible to arrive at an adequate picture of potential needs, and measures might be taken to transform potential into actual needs and, finally, to adjust production to demand on world markets. It seems certain that this work must become the burden of F.A.O., aided by other international agencies. It is a task, therefore, for F.A.O. to apply itself to this enormous project in order that a return to the pre-war situation of confusion may be avoided.