THE STATE OF FOOD AND AGRICULTURE 1955

Review of a Decade and Outlook

FOOD AND AGRICULTURE ORGANIZATION
OF THE UNITED NATIONS

Rome, Italy
September 1955

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PART TWO

FOREWORD

The year 1955 marks the tenth anniversary of the foundation of FAO. It marks also the end of the first decade of agricultural recovery and expansion after the second world war. These have been crowded and eventful years in the history of the world's agriculture. They have seen a dramatic transformation from the devastation and threat of famine of the immediate postwar years to a situation when agricultural surpluses in some countries are once more causing anxiety, even though millions of the world's people still remain inadequately fed, clothed and housed.

The same years have seen more rapid and widespread advances in the technical methods of agriculture, forestry and fisheries than in any previous decade. They have seen also remarkable changes in the social and economic approach to agriculture. Large-scale schemes of land reform have been carried through. A beginning has been made in many countries towards the co-ordinated planning and programming of agricultural development and of forest policy. Extensive attempts have been made to limit the fluctuations of farm prices and to give the cultivator a measure of economic security he has never before enjoyed. The findings of nutritional science have been more widely applied, particularly to secure minimum levels of nutrition for children and mothers. International schemes of investment and technical assistance have been put in hand, aimed primarily in the agricultural field at tackling the deep-seated problems of low productivity, undernourishment and rural poverty in the less developed countries of the world. These are only a few of the striking developments of the past decade.

It seemed fitting on this occasion to depart from the customary form of the annual report on the state of food and agriculture. Unlike its predecessors, this issue does not deal mainly with the current situation and short-term outlook, but instead reviews the progress and experiences of the whole decade. The treatment of this theme has been analytic rather than purely descriptive. An attempt has been made to bring out the underlying causes of the main postwar developments, and to make some appraisal of the results achieved. Finally, in the last chapter of Part One of this report, some of the main issues and problems which lie ahead are discussed in the light of experience during this first postwar decade, in the hope that the lessons gained in some countries may be useful to other countries faced with similar problems.

P.V. CARDON
Director-General

PART ONE

Chapter I - SUMMARY

Part One of this report examines the recovery of agriculture, forestry and fisheries after the second world war, the way in which resources were mobilized to that end, the principle difficulties overcome, and the guidance which the developments of the last ten years can give in dealing with some of the problems which lie ahead. Part Two discusses postwar developments and the future outlook for individual commodities. It is already highly condensed and is not summarized below.

Chapter II. The Situation at the End of the War and Some Main Factors Influencing Postwar Developments

Production at the end of the war. The impact of the war on agricultural production was very uneven. For the world as a whole, production in 1946/47 was only about 5 percent less than in 1934-1938. In Europe, the U.S.S.R., and North Africa, however, production had fallen by one-quarter to one-third and in the Far East by over 10 percent, whereas in North America it had risen by about one-third. Elsewhere changes were relatively small.

Per caput production. Postwar shortages were intensified by the continuing growth of world population which in 1946/47 was some 10 percent greater than in 1934-38. Although total agricultural production fell by only 5 percent, per caput production fell by no less than 15 percent.

Food consumption levels. Although the physical destruction was more serious and widespread than after World War I, actual famines were this time avoided by the international allocation of food supplies, international help through UNRRA, and by more effective systems of rationing.

Forestry. Direct war damage to forestry was serious in Central and Eastern Europe, including the western areas of the U.S.S.R., and in some Asian countries. Indirect damage was widespread through over-cutting, particularly in Northern Europe and the United States, and insufficient attention to good forest management. In North America pulp and paper production expanded remarkably.

Fisheries. Fish production was severely reduced through the destruction and requisition of fishing craft and equipment and by manpower losses ; the decline was greatest in North-West Europe and in the Far East.

Factors influencing postwar development. Postwar agricultural policies have been largely shaped by a number of economic and social factors, among which may be mentioned :

Population. The accelerated growth of population as a result of high birth rates and improved medical services led to a corresponding growth of demand for agricultural products. This was especially marked in some under-developed regions, notably Latin America, where population is now nearly 50 percent above the prewar level.

Full employment and welfare policies. Implementation of such policies increased the per caput demand for agricultural products, especially of the more expensive types. They partly account for the widespread adoption since the war of price supports and other measures for stabilizing farm income.

Economic development of under-developed regions. This has led to a more rapid and better balanced development of the land and water resources of the under-developed countries and to major schemes of international, technical and financial assistance. Their growing industrialization has been another factor in increasing and diversifying the demand for agricultural products.

Economic and political groupings. The emergence of new groupings such as the communist bloc and the OEEC area has had some influence on the pattern of world trade and resulted in some regional co-ordination of agricultural policies. But

their influence so far has probably been less than those of the older groupings, such as the Commonwealth and the French Union.

The dollar gap. War-time changes in the pattern of agricultural production and trade, in particular the increased reliance of food importing countries on North-American supplies, intensified postwar payment difficulties, and may have accounted for as much as one-third of the dollar gap. In their turn, payments difficulties have been a main cause of the trend towards greater agricultural self-sufficiency and have contributed to the emergence of agricultural surpluses in North America. The Marshall Plan and other loans and grants to war devastated areas, however, contributed to the rapid restoration of agriculture.

Chapter III. The Mobilization of Resources for Agricultural Development

Plans and programs. The urgent need to expand production led to the establishment in many countries of plans and programs of agricultural development and to a larger measure of international consultation and co-operation. Programs developed in earlier years were concerned primarily with production. In many countries greater attention to distribution and marketing now seems necessary.

Investment. The normal sources of capital were inadequate for the postwar expansion of agriculture, which necessitated a large investment of public funds. Public financing was particularly important in under-developed countries. Although by far the largest part of the investment funds came from domestic resources, international and foreign funds were important for some purposes, e.g. purchase of imported equipment.

Credit. In spite of considerable progress since the war, inadequacies of short and medium term credit at reasonable interest rates are still a serious handicap to agriculture, especially in under-developed countries. In India, for instance, a recent report shows that moneylenders supply about 90 percent of the agricultural credit, usually at high interest rates.

Land reform and taxation. Institutional obstacles to a more efficient use of land have been lessened by the consolidation of fragmented holdings and by the transfer of ownership to cultivators. The scope of such recent legislation in the Far East has been striking. There has also been a general trend towards a system of registration of title in place of one of registering deeds. In several countries systems of land taxation have been rationalized.

Price supports. The additional security provided by price supports encouraged farmers to increase their output. Where price support levels were linked with production costs or parity formulae, they tended to make agricultural production less flexible. In other countries changes in price support levels were used to influence the direction of production.

Price stability on international markets. Long-term intergovernmental contracts became a feature of international trade during the period of shortage and gave some measure of price stability ; latterly their importance has declined. Efforts to improve price stability through international commodity agreements were successful only for wheat and sugar.

Marketing. With the passing of the period of shortage, increased attention is being given to the improvement of marketing methods. For example, state and co-operative marketing agencies are being established or strengthened in many less developed countries to improve the situation of the peasant farmer.

Extension services. Strengthening farm advisory or extension services in many countries was a vital factor in postwar expansion. A significant development, primarily in the Far East, has been the broadening of extension services into a system of " community development " covering also education, health and other services to rural people. Extension services for marketing and economic problems, hitherto largely confined to North America, are being more widely adopted in Western Europe.

Agricultural research. Progress has been rapid since the war. Shortages of research staff and equipment in under-developed countries are being overcome by increased facilities for the exchange of information and for training abroad. Co-ordinated research between countries is being developed, e. g. on the hybridization of maize in Europe and of rice in the Far East.

Chapter IV. Progress in Technology and in the Utilization of Physical Resources

Water use and control. Programs for better use and control of water have been of major importance in several regions. Most progress has been

made in the Far East, particularly in India, Pakistan, and Thailand, and in Latin America, especially in Mexico. It is also likely that substantial progress has been made in the U.S.S.R. and China. In many parts of the world, however, the systematic survey of water resources is only now beginning.

Soil fertility. World consumption of commercial fertilizers has almost doubled since before the war, but consumption remains very uneven. Europe accounts for one-half of the world total, North America for one-third, and the under-developed regions for only 14 percent. Consumption in North America and in the under-developed regions has risen more than fourfold since the prewar period. Progress has also been made in the use of animal manures, composts, etc., and in basic soil surveys, but is less easy to measure.

Agricultural machinery. World tractor numbers show a threefold increase over the prewar level, thus releasing much land from growing feed for draught animals. Here too, however, development has been very uneven and machinery is still very little used in Africa and also in Asia where they are used mainly in government tractor pools. Little has been done in the less spectacular but important field of improving animal-drawn implements and hand tools.

Plant breeding. Much progress, aided by intensified international co-operation, has been made, though in many countries work on the multiplication and distribution of seeds still lags behind the breeding of new varieties. Hybrid maize is giving greatly increased yields in parts of Europe. In the under-developed countries a notable development is the increased attention to basic food crops.

Control of plant diseases and pests. International co-operation in locust control and other aspects of plant protection has been an important postwar development. New synthetic pesticides and selective weed-killers have made a considerable contribution to maintaining and increasing yields.

Grassland and fodder improvement. In the temperate zones there has been substantial improvement in the management of grassland and fodder crops. In other regions a beginning has been made in surveys and investigations.

Livestock husbandry. Considerable progress has been made in the control of animal diseases, through new drugs and vaccines, and in many under-developed countries through the establishment of state veterinary services. Governments are co-operating in the regional control of epizootic diseases. In the developed countries there has been much progress in the science of animal feeding, resulting in more rational feeding practices. Other outstanding developments have been the spread of the recording of animal yields and artificial insemination. In countries with unfavorable climates, greater attention is being given to the improvement of indigenous breeds.

Technical developments and agricultural productivity. Improvements in technology, reflected in increased yields per hectare and per animal, have played the major part in the postwar expansion of production in Europe, North America and Oceania. In the United States, for example, production per acre of cropland and per breeding unit of livestock are both about 30 percent above the 1925-39 average. The developed regions are now reaping the benefit of a long period of sustained efforts in research, extension and resource development. In many under-developed countries such efforts are only beginning and results, in terms of increased productivity, will come later. Programs for expanding the area under cultivation or irrigation, however, have already yielded results.

Forestry. Notable progress has been made in forest exploitation and wood utilization. More forests have been rendered accessible, the range of commercial species has been widened and more efficient exploitation has reduced waste and lowered costs. Wood utilization has improved by reducing the proportion of the forest crop burnt as fuel and by the development of new products, many of which use wood formerly classified as waste.

Fisheries. The major development has been in research and in the systematic appraisal of fishery resources. Improvement has also been made in fisheries equipment, in the preservation of catches and in the production and utilization of fish meal.

Chapter V. The Course of Production and Supplies

Agricultural production. As a result of the various economic, social and technical measures adopted, world production, excluding the communist bloc of countries, was rather over 25 percent greater in 1954 than in both 1946/47 and 1934/38, and on a per caput basis was somewhat above the prewar average. Including tentative estimates

for the communist countries, world production in 1954 was about 30 percent greater than in 1946/47 and about 20 percent greater than before the war. Rapid as it was, agricultural expansion lagged far behind industrial development.

Measures to restore agriculture were particularly successful in Western Europe where recovery was considerably faster than after World War I. In Eastern Europe and the U.S.S.R. progress was slower, largely because of the priority given to industrialization. In the Far East recovery was delayed by continuing war and unrest, and by lack of capital and technical knowledge ; production has not yet caught up with the growth of population. There has been a rapid expansion in the Near East and Africa and somewhat slower progress in Latin America and Oceania. In North America the remarkable war-time growth of production was followed by a quieter period, mainly because of lack of outlets and resulting production controls.

There has been a trend towards relatively greater livestock production in higher income areas, while elsewhere crop production has risen faster. For the world as a whole, food production has increased more than that of raw materials of agricultural origin.

Fisheries. Production is now some 20 percent greater than before the war. Most of the increase has occurred in the well-established fisheries of Europe, North America, Japan and the U.S.S.R., South and South-West Africa, Angola, Peru and Chile have emerged as significant producers and exporters since the war.

Forestry. Production of roundwood has increased by some 15 percent since 1946, the largest increases being made in the U.S.S.R. The production of wood for industrial use has increased by over one-third, but the output of fuelwood has declined.

Trade in agricultural products. The postwar expansion in the volume of international trade (some 55 percent greater in 1954 than before the war) did not extend to the trade in agricultural products, which regained its prewar level in 1950, but has since shown little change. Trade in forest products in recent years has been some 10 percent greater than before the war.

Pattern of world trade. Changes in the balance of world production have been reflected in striking changes in the pattern of world trade in foodstuffs. Food exports from North America were maintained at 3-4 times their prewar level until 1952 when they began to decline with the recovery of production elsewhere.

At the other extreme, food exports from the Far East, largely to other countries in the region, are still less than half their prewar volume and the region has become a net importer of foodstuffs. Exports from the Communist countries have been small and the U.S.S.R. has recently become a large importer of livestock products and sugar.

European food imports seem to have been stabilized at some 10 percent less than before the war. Food imports into North America show a slowly rising trend, while those into Latin America and other less-developed regions have increased sharply but remain relatively small.

North American imports of agricultural raw materials, beverages and tobacco have increased substantially, but Western European imports have not greatly exceeded their prewar level.

Agricultural surpluses. The main accumulation of surplus stocks has been in the dollar area. Current stock levels of wheat are higher than ever before in peace time, but stocks of cotton and sugar are no larger than in the nineteen-thirties. United States stocks continued to grow in the first half of 1955, but appreciably slower than before. Because the main surplus stocks are held by governments, who have followed cautious disposal policies, they have not so far led to any marked break in world prices.

Food consumption levels. Food consumption levels recovered quickly after the war in Western Europe and some Latin-American countries, and this improvement has since been well maintained. Where initial progress had been slow, e.g. the Far East, the Near East and Eastern Europe, there has since been a marked improvement in calorie levels. Nevertheless, per caput food consumption in many Far-Eastern and in some Latin-American countries still remains below prewar levels.

In North America and in a few European countries rising incomes have been reflected in an increased consumption of livestock products, and there are indications of some increase in the very small consumption of such foods in under-developed countries. There has been a partial substitution of wheat for rice in the Far East, and a marked swing from butter to margarine in North America and some European countries, largely reflecting price relations.

The demand for agricultural raw materials. Industrial consumption of raw materials of agricultural and forest origin, although reduced by the greater

use of substitutes such as man-made fibers and synthetic rubber, has been kept above prewar levels by the greater expansion of manufacturing and building industries.

Chapter VI. Price Movements, Farm Incomes and Consumer Purchases

Price levels on international markets. Prices of agricultural products on world markets (as measured by an index of average unit export values) have kept in line with prices generally during the postwar period, but have shown a larger rise in comparison with the immediate prewar years, when agricultural prices were particularly depressed. Prices of agricultural raw materials and forest products have fluctuated more sharply than those of foodstuffs, notably during the Korean war.

Because of more effective measures of price control, agricultural prices rose more gradually than after World War I; neither reaching the dizzy heights of 1919 and 1920, nor falling catastrophically as in 1920 and 1921. From 1948 to 1954 (i.e. from three to nine years after the end of World War II) price levels have been remarkably close to those at the same interval after World War I from 1921 to 1927.

Farm prices. In spite of price controls, farm prices in nearly all countries rose more sharply during the war than prices generally, but much of these relative gains have since been lost and in a few countries the price ratio is now almost as unfavorable to farmers as in the late nineteen-thirties. The ratio of prices received by farmers to those they pay for production requisites, etc., has generally followed a similar course.

Farm incomes and expenses. Modernization has greatly increased the expenses of agriculture for machinery, fertilizers, etc. In the United States production expenses (at constant prices) were twice as high in 1953 as before the war, and other countries show a similar though less marked trend.

Because of the increased output and generally more favorable price ratios, the real income of agriculture has been substantially higher since the war than during the late nineteen-thirties. The increase is still greater on a per caput basis because of the fall in the farm population. These higher earnings provided much of the capital for postwar expansion.

In many European countries and in Oceania, farm incomes have been fairly well maintained since the war, but in North America they have fallen considerably in the last few years, mainly owing to lower prices; this has been reflected in a sharp fall in the production and sales of agricultural machinery.

Incomes in agriculture in relation to other occupations. Agricultural incomes in most countries are well below the average in other occupations, often less than half. Among the few exceptions are New Zealand, where farm incomes are higher than average, and the United Kingdom, Denmark and Western Germany where there is almost parity. Agriculture has not as a rule shared in the general rise in real incomes since the war and in most countries the relative position of the farmer has recently tended to deteriorate.

Marketing margins. During the last few years of falling farm prices the cost of processing and distributing food in the United States has risen absolutely as well as proportionately, chiefly because of higher labor costs and more elaborate processing. Marketing margins represented 57 percent of retail food prices in 1954, compared with 47 percent in 1945. More limited data for several other countries also suggest a recent tendency for marketing costs to rise.

Retail food prices. During the postwar shortage price controls, and in some countries food subsidies, limited the rise in retail food prices, though even so they usually increased more than retail prices generally. As supplies became more abundant controls were relaxed and subsidies reduced, and in many countries the paradoxical result was a rise in prices just as supplies became more plentiful. Again, where farm prices have fallen retail prices have often shown little response, mainly because of inflexible marketing costs. Data on retail food sales and on consumer expenditure indicate that even in the wealthier countries high retail food prices reduce sales, though the effect is partly offset by the gradual rise in real incomes. The movement of retail food prices has thus tended to restrict food consumption levels.

Chapter VII. Issues Ahead

Among the main weaknesses in the agricultural situation at the present time are the failure of consumption to increase with production leading to the emergence of surpluses; rigidity in production patterns by comparison with shifts in demand, intensified by some systems of price support; the stagnation of world trade in agricultural products; and the low level of farm incomes in relation to incomes in other occupations,

in part the result of low labor productivity in agriculture.

Raising consumption levels. Growth in population and in real incomes per caput might lead to an increase in the volume of world food consumption of the order of 14 to 22 percent over the next ten years, assuming that price relations do not alter. But these estimates would be substantially modified by price changes, as price elasticity for food appears to be greater than income elasticity. Measures to reduce retail prices through more efficient methods of production or marketing could therefore lead to larger increases in food consumption. There is also scope for more action through special distribution schemes. For industrial raw materials expansion depends on the growth of industrial activity and success in competing with substitutes.

The rigidity of production patterns. Many governments are seeking improved methods of price support which will permit lower prices to consumers and greater flexibility in adjusting production to consumer demand in order to prevent further accumulations of surplus stocks, and which at the same time will check uneconomic production, be less costly to the state, and interfere as little as possible with the operation of domestic markets and international trade. Tentative conclusions from experience to date are that systems aimed at maintaining farm incomes as a whole give greater production flexibility than price supports to individual commodities based on cost of production or parity formulae; that measures to reduce the costs of specific production requisites or farm operations and to encourage more efficient production may result in a net economy to the state and also benefit consumers by permitting lower levels of price support; that the stabilization of farm incomes by deficiency payments, equalization funds, or other measures which do not preclude the operation of the free market reduce the danger of surpluses; and that for commodities with low price elasticities special disposal measures may be necessary to avoid an excessive increase in stocks after bumper crops.

Trade problems. The stagnation of world trade in agricultural products arises largely from the drive for greater agricultural self-sufficiency, the preference given to imports of capital goods for economic development, and the use of substitutes for agricultural raw materials in industry. Some obstacles to trade would be reduced with the relaxation of world tension and the easing of international payments difficulties.

Trade in some commodities has expanded and in others could be expanded if more supplies were available. Exporting countries might do much to expand sales by shaping their production to the trends of world demand, and by reducing costs through improved methods of production and marketing. International consultations, and where possible agreed measures to reduce the extreme instability of prices of agricultural products on world markets, could also assist in the expansion of trade. Such consultations are particularly important on the disposal of surplus stocks which hold the greatest threat to price stability.

Labor productivity and farm incomes. Farm incomes depend to a considerable extent on labor productivity which can now be rapidly raised by improved technical methods. In the more advanced countries agriculture does not appear to be lagging behind other industries in raising productivity. In less developed countries ceilings on labor productivity are imposed by the relatively small non-agricultural population, which limits the market for sales off farms (apart from export outlets), and also by the density of the rural population on the land, which restricts the size of farms. In such countries further economic development and industrialization is a pre-requisite for any substantial increase in agricultural labor productivity and farm incomes. The larger supplies of food now available, including surplus stocks, may make possible increased rates of investment and economic development with less danger of inflation.

Chapter II - THE SITUATION AT THE END OF THE WAR AND SOME MAIN FACTORS INFLUENCING POSTWAR DEVELOPMENTS

The main subject of this report is the recovery of world agriculture after the second war, the way in which resources were mobilized to that end, the principal difficulties which had to be overcome, and the lessons which may be drawn from the remarkable experiences of the last ten years for guidance in dealing with the very different problems which now lie ahead. This chapter summarizes the food and agricultural situation when the world emerged from six years of global war and sketches the general social, economic and political background during the period in which the recovery took place.

AGRICULTURAL PRODUCTION AFTER THE WAR

The impact of the war on agriculture was strikingly varied in different parts of the world. Over large areas of Europe, the U.S.S.R., the Far East and North Africa, where actual warfare occurred, production decreased very considerably from its prewar level. The effect of destruction and requisition on fish production was even greater; this had a severe impact on world fish supplies, four-fifths of which were produced in these areas before the war. Drought intensified the effects of war, striking the Danubian countries and the U.S.S.R. in 1946 and Western Europe in 1947; there were also a succession of droughts towards the end of the war in North Africa and later drought retarded recovery over large areas of the Far East.

In the countries of the above regions where there was no fighting on land and no enemy occupation, and in the areas of Latin America, Africa, the Near East and Oceania which suffered only from the indirect effects of war (e.g. shortage of manpower and production requisites, or loss of import supplies or export markets), production was maintained or showed modest advances, though seldom enough to keep pace with the growth of population. Finally in North America, by raising production to satisfy the greatly increased domestic demand and that of the allies, agriculture experienced a period of unexampled technical advance, expansion and prosperity. Although the number of people engaged in agriculture declined sharply, the annual production in North America increased by more than 30 percent over the prewar average (compared with an increase of about 10 percent in the first world war), an expansion almost one-fifth faster than its growth in population.

The uneven impact of the war on agriculture may be seen from the maps in Figures II - 1, 2 and 3, showing for each country the percentage changes in cereal production and livestock numbers during the war period. Seen in retrospect, this distortion of the world balance of agricultural production seems to have given rise to problems scarcely less formidable than those resulting from the devastation itself.

Although the data for the war-torn areas are less reliable during the immediate postwar years than they were before the war or are now, it appears that world agricultural production outside the U.S.S.R., Eastern Europe and China was on balance probably somewhat greater at the end of the war than in the immediate prewar years. But despite military and civilian casualties, population in this area kept on increasing during the war, and both agricultural and food production per caput declined by nearly 10 percent. Estimates for the world as a whole, including the U.S.S.R., Eastern Europe and China, for which available data are much less complete, show an even darker picture. Just after the war the total quantity of world agricultural production was about 5 percent less, and per caput production

FIGURE II-1. Per Caput Cereal Production after World War II Compared with Prewar

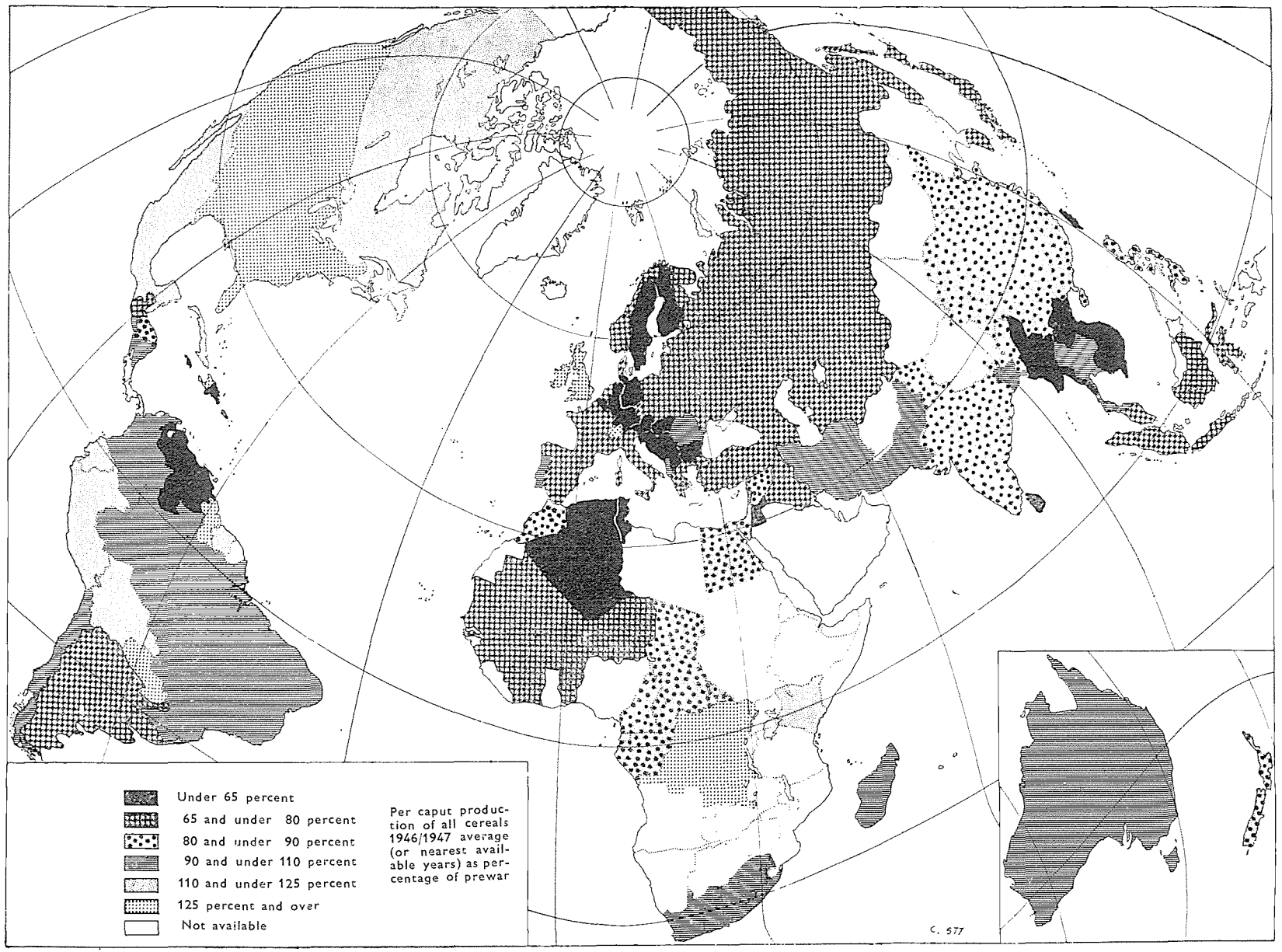


Figure II-2. Cattle Numbers after World War II Compared with Prewar

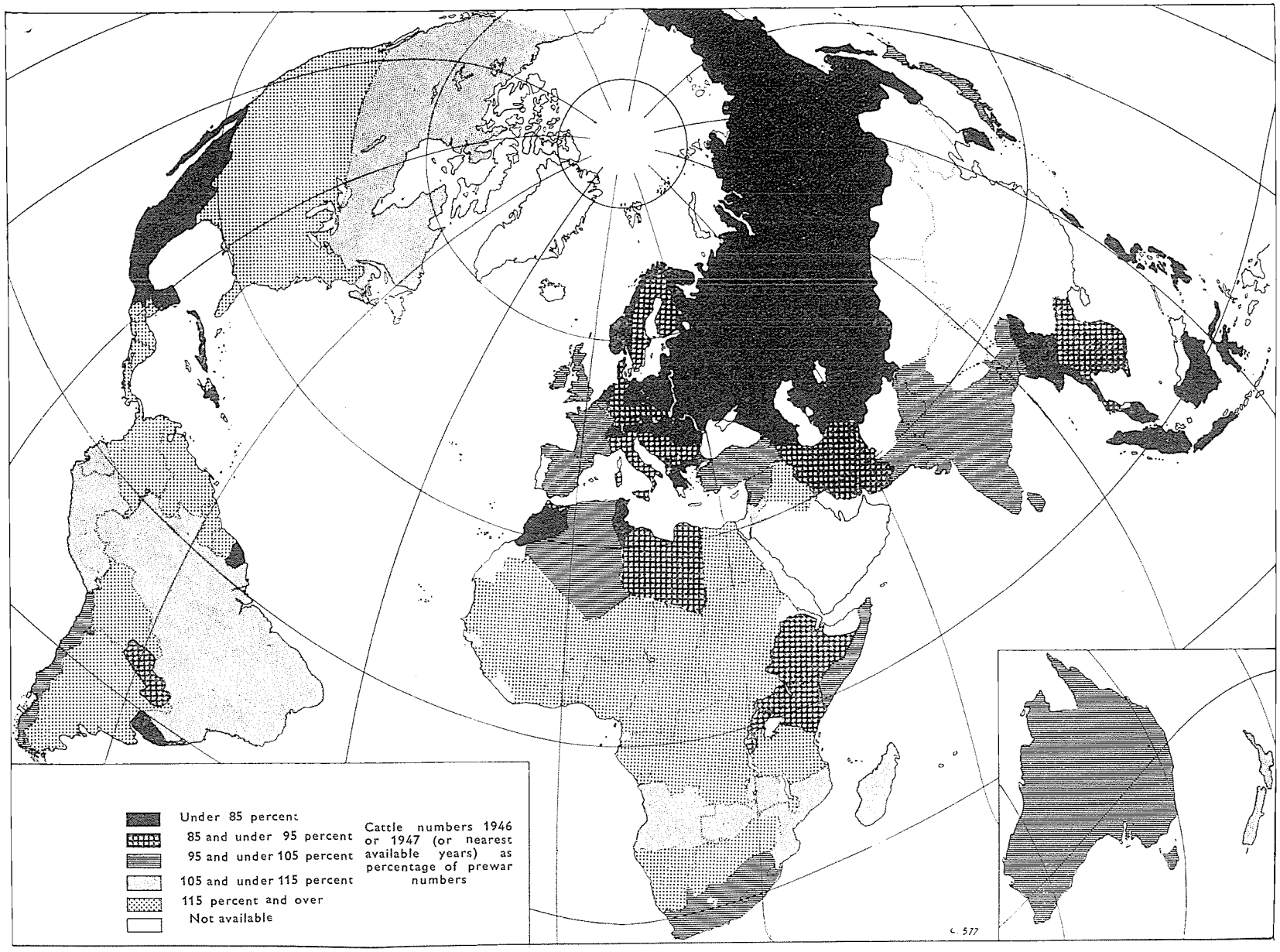


Figure II-3. Pig Numbers after World War II Compared with Prewar

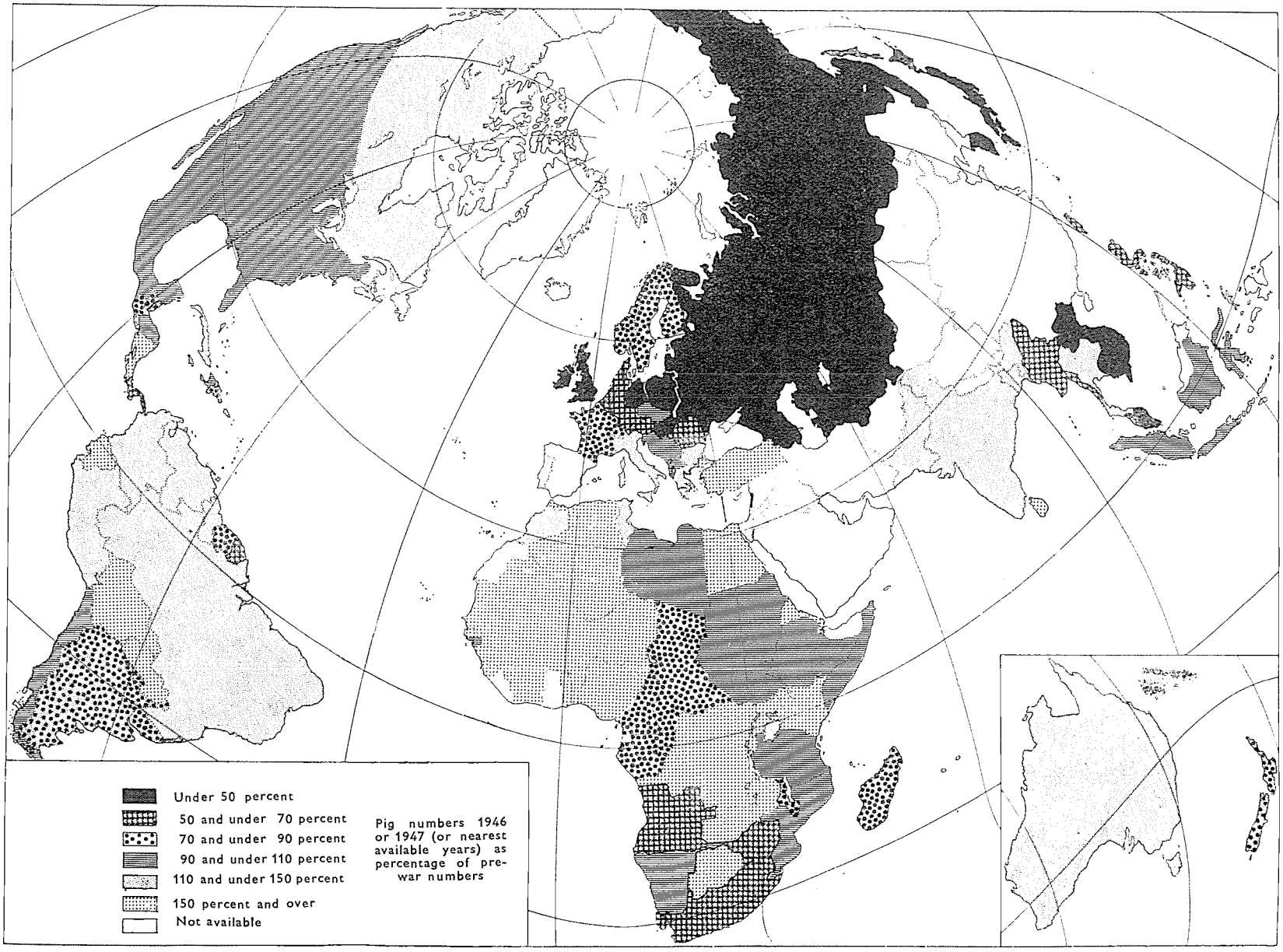


TABLE II-1. — TOTAL AND PER CAPUT AGRICULTURAL PRODUCTION AND PER CAPUT FOOD PRODUCTION IN THE IMMEDIATE POSTWAR YEARS; AVERAGE OF 1946/47 AND 1947/48

REGION	Total Agricultural Production	Per Caput Agricultural Production	Per Caput Food Production
	.. *1934-38 average = 100* ..		
North America	132	118	122
Latin America	112	91	95
Africa	110	95	94
Oceania	101	92	91
Near East	101	89	90
Far East (excluding China mainland)	90	78	81
Western Europe	81	76	76
ALL ABOVE REGIONS	103	91	92
WORLD (including estimates for U.S.S.R., E. Europe and China mainland)	94	86	87

about 15 percent less, than before the war. This indicates the over-all base-line from which efforts towards postwar rehabilitation began.

For the world as a whole the postwar shortages were due as much to the increased requirements of a larger population as to the lower agricultural production in the areas of combat.

This broad picture inevitably conceals important distinctions within the wider regions. In Europe, for example, Germany maintained its level of output until shortly before the collapse. France was mainly hit through the mass removal of agricultural workers. The highly intensive agriculture of the Netherlands and Belgium suffered most from a lack of manure and fertilizers, and from the shortage of feed and therefore of livestock. Direct physical damage was worst in Eastern European countries, and the forced mass migrations of population and the transfers of territories brought further disorder to the agriculture of these countries. In Southern Europe destruction was worst in Yugoslavia and later in Greece which suffered the ravages of civil war. On the other hand a few countries, Sweden, Switzerland and the United Kingdom, with better access to the means of production, were able to achieve appreciable increases in total production.

Changes in the Pattern of Agricultural Production

Not only the level but also the pattern of agricultural production was affected by the war (Table II-2). With the drying up of many of the main streams of world trade, most countries and regions were forced to become more self-sufficient. In Europe, there was a sharp decline in livestock production, partially offset by greater dependence

TABLE II-2. — WARTIME CHANGES IN THE COMPOSITION OF TOTAL AGRICULTURAL AND FISH PRODUCTION, BY REGIONS; AVERAGE DATA FOR 1946/47 AND 1947/48, OR NEAREST AVAILABLE YEARS, IN RELATION TO PREWAR

REGION	Net Agricultural Output[1]	Gross Crop Production			Gross Livestock Production	Area under Cereals	Gross Production of Cereals	Average Yield of Cereals	Area under Potatoes and other Root Crops	Nos. of Cattle[2]	Nos. of Pigs	Total Fish Production	Total Food Fish Production	Total Non-food Fish Production
		All Crops	Food Crops	Non-Food Crops										
	..... *Prewar = 100*													
North America	132	126	131	98	133	107	141	132	74	117	100	114	115	103
Latin America	112	110	119	89	115	97	103	106	145	116	109	214	...	...
Africa	110	111	108	148	107	91	92	102	...	112	97	193	156	506
Oceania	101	102	101	—	101	107	115	107	111	104	103	126	126	...
Near East	101	100	102	87	106	108	91	84	121	106	100	...	...	...
Far East	90	92	94	80	82	101	90	90	106	96	66	61	66	22
Western Europe	81	87	87	—	72	89	72	81	95	93	58	108	109	92
Eastern Europe and U.S.S.R.	[3]56	[3]64	[3]64	[3]90	[3]50	77	71	92	93	77	40	...	...	...

[1] Except for Africa, for which data are lacking, the estimates of net output in the first column discount quantities utilized for further agricultural production, e.g. for seed or for feeding livestock, and are thus not comparable with the gross production figures in the four succeeding columns.
[2] Including buffaloes.
[3] Eastern Europe only. — None or negligible. ... Not available.

on crops for direct human consumption, especially cereals and potatoes. The output of livestock products in 1946/47 - 1947/48 in Western Europe was 30 percent below the prewar level, while crop production fell by only 10 to 15 percent. The fall in numbers was particularly drastic for pigs and poultry, which compete directly with the human population for supplies of cereals and roots, and which in some countries had depended largely on imported feedingstuffs. For cattle and sheep, which can be fed mainly on pasture and roughages, the use of which became more scientific and intensive, the reduction was less severe. The decline in the output of livestock products was even greater than the decrease in animal numbers because of lower yields per head, reflecting the generally inferior level of feeding. In many European countries, however, special efforts were made to maintain milk production for nutritional reasons. Military operations confined fishing to coastal areas and prevented fishermen from reaching most of the principal fishing grounds.

In the Far East, livestock husbandry, far less developed than in Europe, was also greatly curtailed. Livestock numbers, including draft cattle, fell particularly sharply in Burma and the Philippines which greatly hindered postwar recovery. There was general diversion of land from industrial and export crops (including sugar) to the production of basic foods. The area under jute in India at the end of the war was thus only 68 percent of its prewar level, while the total area under cereals increased slightly, despite heavy war damage to paddy land in Burma, Java and the countries of Indo-China. The cultivation of root crops for human food, including cassava, potatoes and sweet potatoes, also increased markedly. The great fishing industries of Southeast Asia suffered disastrous destruction of fishing craft and serious loss of manpower.

Changes toward direct food crops also occurred outside the main theaters of war. In the Near East the area cultivated increased by nearly one million hectares, but the area under cotton declined by more than one-half to make way for cereals. In spite of the increased international demand for oilseeds after the Japanese occupation of Far-Eastern exporting countries, their production in West Africa fell, mainly owing to a lack of "incentive goods", and a transfer of land to food crops. Basic food production in Africa increased substantially in response to a strengthened demand, but in contrast with other regions, industrial crops, notably cotton, sisal and tobacco, increased faster than food crops.

In Latin America the output of maize, wheat and linseed declined in Argentina, where production was largely for export, but continued to expand in most other countries. There was also a marked increase in the production of such foods as rice, bananas and milk for domestic consumption. Fish production increased sharply in Chile and Peru. Sugar production in the Caribbean islands expanded considerably to offset losses of production in Europe and the Far East.

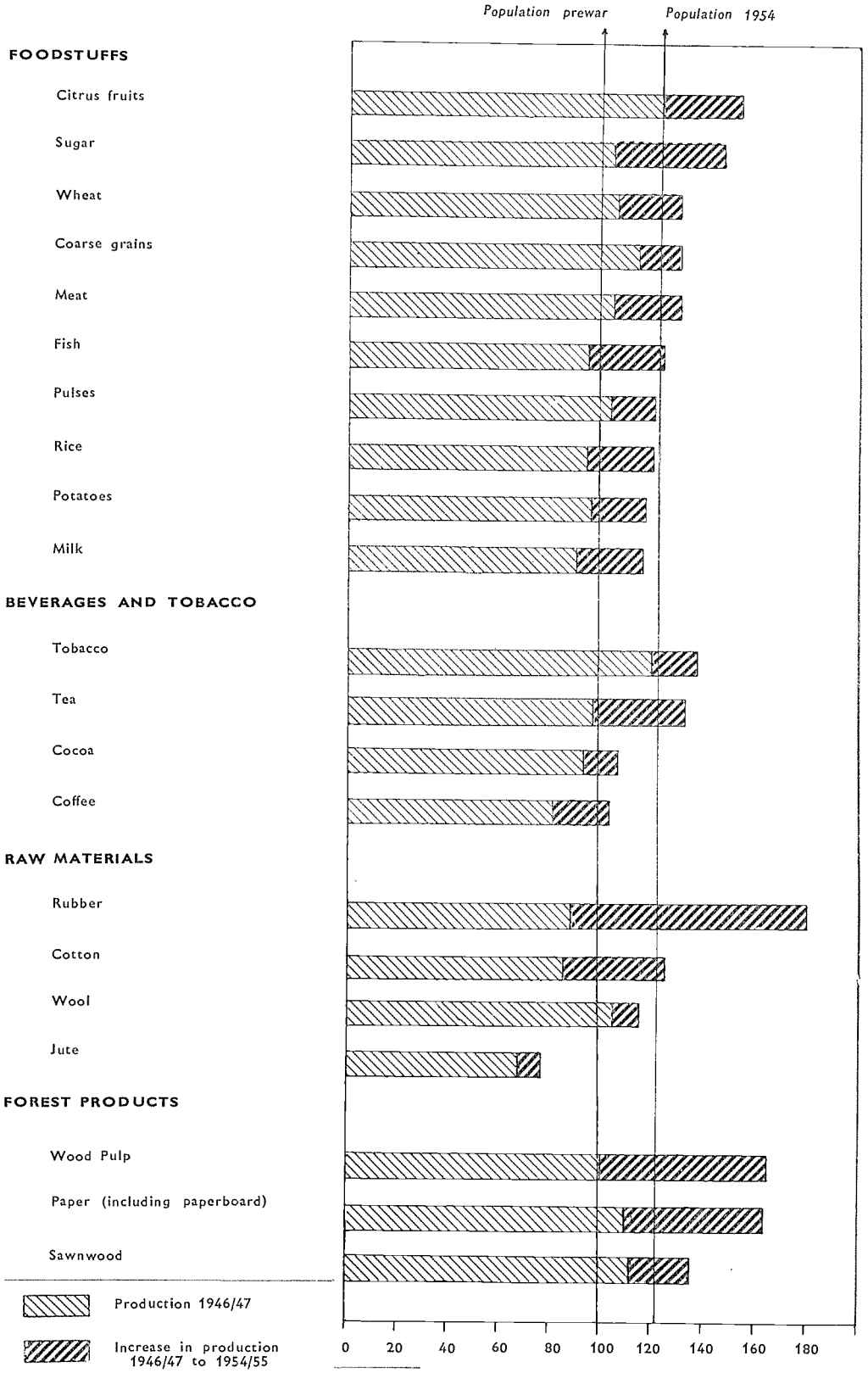
In North America too, strenuous and successful efforts were made both to replace agricultural products no longer available from abroad, either by increased farm production as in the case of oilseeds, or by developing synthetic substitutes, e.g. for rubber, and to increase greatly the total output of food for the increased needs abroad. In general, however, the composition of production in North America showed no major change, with both food crop and livestock production expanding by one-third. In Oceania the total output fluctuated, although there was little change in the pattern of production, there was some small shift towards a larger production of arable crops in New Zealand.

The wartime changes in the structure of agriculture have had lasting effects on postwar agricultural development and also on the pattern of world trade. Figure II-4 reflects their influence on world production of some major agricultural products in relation to the growth of world population.

Comparison with the Situation after World War I

There were some striking similarities between the situation at the end of the second world war and at the end of World War I (Table II-3). In North America both wars stimulated an increase in cereal and livestock production. The expansion in cereals, however, was substantially greater during the second than during the first war. In Europe crop and livestock production declined sharply in both wars, with the reductions of output and the destruction of physical capital far greater in World War II. In both wars the damage was greater and recovery, except for cereals, slower in Eastern than in Western Europe; and both times recovery in Eastern Europe was further delayed by the dislocation following land reforms and major political changes.

FIGURE II-4. — Level of World[1] Production of Certain Commodities; 1946/47 to 1954/55 (Prewar average = 100)



[1] Excluding U.S.S.R., China and Eastern Europe.

TABLE II-3. — CEREAL PRODUCTION, LIVESTOCK NUMBERS IN NORTH AMERICA AND CONTINENTAL EUROPE AFTER WORLD WARS I AND II, IN PROPORTION TO PRODUCTION BEFORE EACH WAR

ITEM	North America		Continental Europe	
	1920-21 average	1946-47 average	1920-21 average	1946-47 average
	Percent of prewar			
Cereal Production	118	141	75	66
Bread Grain Production	128	163	77	65
Numbers of Cattle	117	123	90	83
Numbers of Pigs.	111	118	72	57

Fisheries after World War II

In the immediate postwar period the technically advanced fishery industries were expanding freely with much of the extra production going to the markets of North America and Europe, while only localized progress was being made by the under-developed fishery industries in many parts of the Far East, Africa, the Near East and Latin America.

Forestry at the End of the War

In forestry too, the effects of the war were uneven. But although some regions fared better than others, the postwar position was nowhere wholly satisfactory. Direct damage, both to forest industries and to the forests themselves, was most serious in Central and Eastern Europe, including the western parts of the U.S.S.R. Similar destruction occurred also in some Asian countries, e.g. the Philippines. Indirect damage was much more widespread. The cessation of coal imports led to localized overcutting for fuel near population centers in Northern Europe, overcutting and forest destruction in parts of the United States, and generally less concern for good forest management. In North America, production of pulp and paper expanded remarkably. In other regions the forests were not affected, but forest exploitation continued on primitive lines.

The needs were greatest in Europe, and the means of satisfying them most impaired; overcutting therefore continued at an average rate of some 30 million cubic meters per year. The tremendous destruction wrought in Eastern Europe and the U.S.S.R. made it impossible for this area to resume the important flow of timber to Western Europe, amounting before the war to over 20 million cubic meters annually. With surprisingly little delay, however, exports from Northern Europe were resumed in 1945/46, but it took four years for shipments of sawn softwood to reach the scale of 1938. Under the pressure of the occupying powers, Germany, never a net exporter before the war, made useful contributions to the needs of the rest of Europe in the early postwar years, with a net export equivalent to about 7 million cubic meters of roundwood. North America, despite its own great domestic needs, shipped the equivalent of 7 to 11 million cubic meters roundwood annually to Europe for several years.

There was localized overcutting in North America during the war, but for the region as a whole, fellings remained below capabilities. Forest industries expanded after the war to meet the demand for construction timber, and in some areas the establishment of small sawmills made inroads into farm forests. Though sawnwood consumption continued to rise, the higher prices led increasingly to replacement of wood by other materials. The wartime expansion of the North American pulp and paper industry continued unabated in the postwar years, and by 1950 the region's pulp output, 21 million tons, was twice the prewar level. Throughout the period Canada accounted for over half the total world newsprint output, and the new sulphate pulp industry in the south of the United States expanded rapidly.

Elsewhere, the rising demand for forest products and shortage of supplies from traditional sources led to greater efforts to develop indigenous supplies, but even so all the less developed regions remained, on balance, net importers of forest products despite immense resources. Shipments of tropical hardwoods to Europe and North America were resumed, but were offset in value and volume by the counter-flow of pulp and its products and, in some cases, of sawnwood.

FOOD CONSUMPTION LEVELS DURING THE EARLY POSTWAR PERIOD

For the world as a whole, the year or two immediately following the cessation of war was a period of serious food shortages, uneven distribution and widespread hunger. Some countries, although not actual battlegrounds, suffered almost as serious privations as those which had been engaged in total warfare (see Annex Table 3).

Food consumption levels had been maintained or improved during the war in North America and parts of Latin America. In North America, despite some rationing, consumption of animal products, chiefly meat, increased by about 15 percent owing to strong demand generated by high incomes, and continued to increase after the war. In most Latin American countries, in spite of rapidly expanding population, there were substantial increases in per caput consumption of cereals, starchy roots and sugar.

In Europe low wartime birth rates and the heavy loss of life had kept the population increase to a relatively modest dimension. Partial restoration of agricultural production in the first few postwar years, plus the heavy food imports from the Western Hemisphere, brought calorie intake in most Western European countries close to prewar levels, and was accompanied by a steep rise in birth-rates. Cereal consumption continued on the whole to be higher than prewar, and the high wartime levels of consumption of starchy roots was reduced. Meat and animal fats, however, continued in short supply for a longer period. Consumption of milk and cheese was kept above prewar levels largely by a sharp reduction in butter consumption. Throughout the early postwar period prices of animal products (other than fluid milk) in relation to other foods were markedly higher than prewar, except where they were officially controlled. In Central, South and Eastern Europe improvement was much slower. Consumption of cereals remained lower in a number of countries, livestock products continued very short and in some instances, for example Germany, Austria and Greece, high consumption of potatoes continued for a longer period. The situation was similar in many countries in the Near East.

In the Far East, where there had been a relatively large expansion in population, the improvement in food supplies was even slower. Rice, the staple food, remained in short supply for a long period. Consumption of milk, meat and eggs fell further from the very low levels prevailing before the war. In some countries the declines were partly compensated by higher consumption of starchy roots and vegetables, but in general both the quantity and quality of the diet remained markedly worse than in prewar years.

The early postwar years thus witnessed a further widening of the gap between the consumption levels of the advanced and less developed countries (see Annex Table 3).

Rationing and Food Control during and after the War

Almost all countries short of supplies retained or strengthened the rationing systems and price controls introduced during the war years to bring about fairer distribution and to keep prices within reach of the mass of the population. The various national systems of food control and rationing varied widely in scope and effectiveness. A substantial part of the total calorie intake was covered in some countries with comprehensive rationing systems, such as the Netherlands, while in others far fewer items were covered. In Burma, for example, only sugar and cooking oil were rationed. Food rationing did prevent widespread hunger and famine in many countries. In some countries rationing systems gave priorities to special population groups. Thus in the United Kingdom protective foods were supplied particularly to children and pregnant women. In several other countries manual workers received special attention, but the vulnerable groups frequently did not fare so well and the rationing systems were less effective from the point of view of good nutrition.

Rationing necessitated not only the control of prices and distribution but also an effective system of procurement, the distribution of available supplies through controlled channels, and sometimes also complicated systems of production controls, price incentives or producer or consumer subsidies. Control was relatively simple for imported supplies or for foods processed at a few central points like margarine or sugar. But when foodstuffs such as meat, eggs or rice, which could be consumed without further processing, had to be assembled from thousands of farms for rationed distribution, procurement became far more difficult. Although many varieties of penalties and incentives were tried, no method of procurement was watertight in times of serious shortage.

The disorganization of administrative services and the reluctance of farmers to part with their products at low officially controlled prices intensified the distribution problems. Black markets at exorbitant prices became widespread in Europe, Latin America and some countries in the Far East. Distribution became seriously unequal not only between farm and country population, but between various groups of the urban population. In Europe and the Far East, conditions became especially stringent when supplies were exhausted before the new harvest. The diet of many

people fell so far below the already low average that not even the minimum levels of nutrition could be maintained. However, chiefly because of the larger volume of North American food supplies made available for relief purposes, through UNRRA and other agencies, there were no famines after the war on the scale comparable to those in Central Europe and Russia after the 1914-1918 war.

Despite the substantial aid received from North America, food deficit countries were extremely vulnerable to the threat of crop failures, such as those in many parts of Europe and the Near East in 1947 and in India in 1950. The acute balance of payments position of many countries and the shortage of dollars made the situation still more precarious. In the early postwar years the food deficit countries continued the wartime policies of concentrating on expanding the output of foodstuffs of high calorie content, especially cereals, and ensuring that a maximum amount of these were used for direct human consumption. The use of breadgrains for feeding animals was generally prohibited, though not always effectively, the high flour extraction rates were further raised, and coarse grains were extensively milled for human food. Great efforts were made to increase fish production, especially in Europe, to relieve meat shortages and in Japan to meet basic needs.

The device of producer or consumer subsidies on food was adopted widely during the war in Europe and less widely in the Far East. This served to encourage an expansion in farm output without pricing foods out of the reach of many consumers, but in many countries they imposed heavy strains on national budgets (see Chapter III). With the gradual progress of recovery, controls over production and collection were relaxed, rationing eased or abolished and subsidies to producers or consumers lowered. Only in the recent postwar years, however, did many countries seriously affected by the war attain a nutritional level fully comparable with prewar and some changes in consumption habits still remain.

ECONOMIC AND SOCIAL FACTORS AFFECTING POSTWAR DEVELOPMENT

In contrast to the corresponding period after World War I, the recovery after World War II was speeded by the adoption and continued evolution of more effective national policies for full employment, maintenance of farm prosperity, social welfare and the economic development of the less developed countries. The creation of new bilateral and international machinery to deal with these and other problems such as relief, reconstruction, economic and financial stability, reduction of trade barriers and international finance also contributed largely. While these hopeful measures were partially offset by new international tensions, local hostilities and upheavals, extraordinarily heavy peacetime expenditures on defence, and an increasing trend towards splitting the world into two political and economic groupings, the first postwar decade was marked by more economic and agricultural progress than the corresponding decade after World War I, and no worldwide setbacks occurred such as the sharp recession of 1920-22 or the subsequent chronic unemployment in Europe.

War Damage

The effect of war damage and neglect on the world's productive resources has often been overstressed. Western Europe as a whole emerged from the war with an increased industrial capacity and the prewar level of industrial production was passed by 1949. Moreover, the rate of agricultural recovery in Western Europe was only slightly less than that of industrial recovery (Figure V-4). In Eastern Europe and the U.S.S.R. the damage was more severe and recovery considerably slower. Here too, however, industrial production rapidly regained its prewar level, and while agricultural recovery was slower this must be partly attributed to the primary emphasis given to heavy industry, and the comparative neglect and reduced incentives to agriculture, coupled with the inevitable dislocations arising from political changes and land reform. In the Far East, war damage to industrial equipment was largely concentrated in Japan, the region's only extensively industrialized country, and was therefore relatively more serious. Continuing conditions of war or civil disturbance in several countries of Southeast Asia, together with the great changes in the political geography of the region, also slowed down reconstruction. With direct help from UNRRA in many countries, plus unprecedented financial aid from the allied powers to speed reconstruction, war damage in the non-agricultural sectors of the economy was rapidly overcome. Agricultural reconstruction, including the rehabilitation of the soil and the replacement of agricultural capital (livestock, structures, implements) was more protracted, except in Western Europe; reasons other than war

damage, and in some cases unfavorable weather, as already mentioned, were also responsible. On the other hand, in many cases, e.g. Australia and countries in Latin America and Africa, secondary industries grew substantially during the war and have continued to expand since then, generally in order to replace imports; in some cases, such as oilseeds processing in French West Africa, the aim was originally to save shipping space.

Inflationary Pressures

In nearly all countries difficulties arose from the inflationary situation which seems to follow all wars because of the strong demand arising from high earnings coupled with the shortage of consumer goods. During the war price controls, rationing, and the general acceptance of common sacrifice made it possible to keep inflation within bounds. After the war, however, the accumulated backlog of demand and the end of the emergency threatened to release the suppressed inflationary pressures. Most countries, especially those directly affected by destruction, therefore, maintained wartime controls for some years after the end of hostilities. Nevertheless runaway inflations occurred in Greece and Hungary and in some countries of Asia, and severe inflations in other countries, e.g. France and Italy. Less marked inflationary trends were noticeable in a number of countries in Europe, Latin America and Asia, where the cost of living had by 1948 risen to something like three to five times the prewar level. In North America, Oceania, the United Kingdom and many other countries, however, inflation was kept fairly well under control. In several countries, strong measures were eventually taken to check inflation; these included the introduction of entirely new currency units, or the revaluation of old ones, both with varying degrees of success.

Where inflation was uncontrolled, reconstruction was retarded by the misallocation of economic resources and a slowing down of capital formation. While decimating fixed incomes and reducing the real income of wage earners, encouraging hoarding and curtailing consumption, inflation has on the whole affected agricultural producers to a less marked extent. All over the world, moreover, it reduced appreciably the real indebtedness of farmers and to that extent strengthened their economic position.

The Growth of Population

The accelerated growth of the world's population and its implications need only be briefly mentioned here. It arose from the sharp postwar increase in births in the more developed countries — a trend which still persists except in some Western European countries — and from the steady fall in death rates accompanying the spread of medical science and some improvement in social conditions. The latter development seems likely to be a persistent trend and to necessitate a continuing expansion of world agriculture. This is particularly important in the less developed parts of the world, where death rates are still much higher than in the more advanced countries.

In spite of wartime casualties, the number of mouths to be fed in 1946 was over 10 percent greater than before the war. By 1954 the increase for the world as a whole was nearly 25 percent; in Latin America, the region of most rapid growth, it was approaching 50 percent (Table II-4).

TABLE II-4. — GROWTH OF POPULATION BY REGIONS AND FOR THE WORLD AS A WHOLE

REGION	1946	1954
	... 1934-38 average = 100 ...	
Latin America	122	147
Oceania	109	133
Africa	115	131
Near East	114	130
North America	111	128
Far East (excluding China mainland)	114	127
U.S.S.R.	105	118
Western Europe	106	114
Eastern Europe	94	98
WORLD (excluding China mainland)	111	124

Full Employment and Welfare Policies

A major influence since the war has been the changed conception of the economic and social responsibilities of governments. The maintenance of economic stability has become a main objective of government policy. Attempts to safeguard the position of the poorest sections of the community by establishing minimum wage levels or by schemes of social insurance are now widespread, and income differences are further reduced by the increased use of differential taxation. As additional income of lower income families is largely spent on food, clothes and housing, these developments have contributed considerably to the sustained demand for most agricultural products during the postwar period. The same change in economic thinking has also had a direct influence on agriculture through national schemes,

almost universally adopted, for stabilizing farm incomes or for supporting farm prices, for economic progress in the under-developed countries, and for aiding the development of other countries.

Postwar efforts to maintain economic stability and progress have been successful on the whole. Except for the short and relatively mild recessions of 1948/49 and 1953/54, there has been a steady expansion of world production and no mass unemployment such as followed the demobilization of armies after the first world war, though there were some limited exceptions, e.g. in Germany and Italy. After the first period of reconstruction, the pent-up demand for consumer goods, the need to modernize and renew capital equipment, and the accumulated wartime earnings of the less developed countries combined to maintain a continuing high level of economic activity. These forces lost momentum towards the end of 1948, when the expansion of production was halted and unemployment increased somewhat in many parts of the world. In North America, government action and built-in stabilizers quickly checked the downward trend, but the short recession had far-reaching consequences for the rest of the world. Raw material exporting countries, particularly in the sterling area, suffered a sharp fall in dollar earnings. This, coupled with widespread speculation against sterling, contributed to the devaluation of the pound in September 1949, followed immediately by most other non-dollar currencies.

The subsequent recovery in world economic activity was intensified by the outbreak of the Korean war in mid-1950. Stockpiling and speculative buying led to a sharp rise in prices of agricultural and other raw materials, including forest products. Food prices showed much more modest increases. The following period of rearmament maintained a high level of economic activity in the industrialized countries, with a gradual rise in prices of manufactured goods. The economies of the under-developed countries and other exporters of primary products, however, were severely affected by the precipitate fall in raw material prices from boom levels which began in late 1951. During the boom, capital goods fell short of demand and a large part of the high earnings from exports were spent on luxuries or saved. By the time industrial goods again became plentiful, terms of trade had turned sharply against primary exporters.

Economic conditions have been relatively stable subsequently. In Europe some industries, e.g. textiles, suffered a temporary setback in 1952. In North America reduced government spending and the liquidation of stocks led to a short-lived recession in 1954. This time, however, the American recession did not affect other regions or the volume of world trade, and by the spring of 1955 the level of economic activity of 1953 had been regained or surpassed.

In recent years the net income of the agricultural industry has been affected, on the one hand, by the squeeze between farm prices and the prices of farm requisites, and on the other by the slowing down of the rate of increase in production in some countries. In North America these two factors have operated longest and gone furthest, resulting in an actual reduction in output, so that net money incomes, and real incomes even more, have declined each year since 1951. In most other parts of the world it seems likely that, at least until fairly recently, the price squeeze was not enough to counter-balance the continuing rise in production; in these regions there was consequently no general tendency for farmers' money net income to decline, though there may have been some fall in real incomes. Farm incomes have hardly anywhere, however, kept pace with the general rise in national incomes. Judging from countries for which data are available, the share of agricultural income accruing to wage earners has been fairly consistent and, on a per caput basis, farm laborers, even recently, have maintained their improved position.

The decline would have been greater but for various measures of farm price and income support. First developed in North America and the United Kingdom after the depression of the 'thirties, these policies have since become widespread and may be considered the characteristic form in which postwar ideas of economic stability and welfare have been applied to agriculture. Their spread was hastened by the wartime need to give incentives to farmers to expand production while at the same time controlling prices to avoid inflation. In manufacturing industries, sharp reductions in demand are met by reduced production and unemployment. In agriculture, still largely based on family labor and with little possibility of any rapid readjustment in production levels, the result (in the absence of governmental supports) is a sharp fall in prices. Supports for farm prices are therefore somewhat analogous to unemployment insurance for industrial workers.

The operation and effectiveness of various methods of price support are discussed later. While

the need for some stabilizing influence on farm incomes is now widely accepted, it may be noted here that they have imposed a certain rigidity on postwar agriculture. Moreover, unlike other measures of social welfare, they have tended sometimes to limit rather than to increase the consumption of agricultural products. In free market conditions a bumper crop is likely to be followed by a fall in price and a temporary increase in consumption, varying in extent with the price-elasticity of demand for the particular product. Some forms of price support bar this possibility and at the same time reduce farmers' incentives to adjust production to demand, and thus increase the risk of the accumulation of surplus stocks of agricultural products.

During the first part of the postwar decade, low food production and high import demand in the war-damaged countries stimulated continued increases in production in the exporting countries, just as after World War I, and this demand was largely met by continued expansion in North America. Later production in the importing countries began to recover, and imports to decrease, just as in the comparable period after World War I. But whereas in the earlier period this had led to expanding stocks and a world-wide and long-continued decline in farm prices, which ultimately contributed to the great depression of 1929, the results this time were far less disastrous to the general world economy. Government price supports and storage policies balanced the declining import requirements by increasing stocks, without drastic declines in farm incomes. When the surplus accumulations continued, some steps were taken in the United States to encourage expanded consumption; production restrictions are being applied where the excess of production above market demand was the greatest, and measures are being taken to dispose of the surpluses in ways that would be most helpful and least upsetting to the world economy. Stocks are still accumulating, though more slowly than before, and so far their disposal has caused no disastrous consequences either for agriculture or industry, but the problem is still far from solved.

Agriculture in the Under-developed Countries

Another potent and continuing influence on world agriculture in the past decade has been the new attitude towards the problems of the under-developed countries and the greatly increased attention to building up their economic resources. The growth of towns and the gradual establishment of industry in earlier periods are beginning to show a cumulative effect. Still more important, the people of the less developed countries themselves have begun to realize that better material standards are possible, but can be achieved only through an expanding economy. In countries with newly secured independence there was a natural eagerness for accelerated economic and social progress. There was a growing awareness among the governments both of the under-developed and the wealthier countries of the possible social and political consequences of a failure to raise economic and cultural standards. The realization by industrial countries of the growing opportunities for trade with the under-developed areas also played a part. Although it originated from the aspirations of the peoples of the less developed countries for higher standards of living, an almost world-wide effort is beginning to develop, to which the wealthier countries are increasingly contributing funds for investment and technical knowledge, both directly and through such international activities as the International Bank and the United Nations Expanded Technical Assistance Program.

In most of the under-developed countries the first emphasis in this new phase was placed on power, industries and communications, as well as on social services. While this primary emphasis is likely to remain, food shortages and rising prices, and the necessity to meet recurrent charges on non-revenue earning investments, soon showed that rapid advances in these sectors would be impossible if agriculture were left to stagnate; now agriculture has an important part in nearly all development programs. The methods followed and the results achieved will be discussed in some following chapters.

Because it sprang primarily from the needs of the under-developed countries themselves, the postwar expansion has resulted in an increasing emphasis on food production for domestic consumption, in contrast to their major agricultural advances before the war, which were more concerned with production for export. Export crops have not been neglected, however, and now that the more serious food shortages have been overcome, they are receiving renewed attention.

The main contributions of the more developed countries in the agricultural sector has been in technical aid, through the United Nations Expanded Technical Assistance Program, the Colombo Plan and various bilateral programs, of which

by far the largest is the Point IV program of the United States; and through supplying capital funds, both directly and through the International Bank. The use of foreign capital for agricultural development has been relatively small, however, and in the private sector almost negligible, though agriculture has benefited indirectly from the much larger investments of capital from abroad in the transport, power and related sectors. Dependent territories, however, have been provided with relatively large funds for agricultural development, though in many cases largely for export crops. In the main, however, the solid agricultural progress achieved has come from the domestic capital resources and labor of the less developed countries themselves.

Effects of Economic and Political Groupings on Agriculture

The postwar trend towards groupings of countries on a political, monetary or regional basis has led to shifts in the pattern of international trade in agricultural products, which in turn have had repercussions on farm production. This influence is difficult to assess, since various groupings overlap and there is little information on trade between the countries of the communist bloc, perhaps the most closely integrated of all. These countries have placed a good deal of emphasis on expanding trade between themselves, though the results are difficult to assess from the data available. That expansion may have contributed to the decline in their shipments of grain and other agricultural products to Central and Western Europe. Recent grain shortages and the vigorous efforts now being made in the U.S.S.R. to increase cereal production suggest, however, that lack of exportable supplies may have been a still more important factor. Moreover, earlier exports of grain and timber from the U.S.S.R. and of bacon from Poland, the sharp increase in the U.S.S.R.'s imports of livestock products and sugar in 1953-54, as well as imports of livestock products and cereals by other Eastern European countries, show that extensive "East-West" trade is entirely possible if it is to the mutual advantage of both sides.

Elsewhere the most advanced example of regional economic integration is the OEEC group of countries, which have made strenuous efforts to promote "intra-regional" trade through the removal of import quotas ("liberalization") and the European Payments Union which makes the currencies of the member countries and their dependent and affiliated currency areas virtually convertible for current transactions. Liberalization has been more difficult for agricultural than for other products, but at the end of 1954 it covered some 79 percent of the total agricultural trade on private account, even though tariffs and some other obstacles remain. The OEEC countries also hold regular consultations on economic policy, including agricultural policy, and co-operate in improving technical methods through the European Productivity Agency. Far-reaching proposals for a European "Green Pool" along the lines of the Coal and Steel Community were not accepted, but the OEEC countries did establish a Ministerial Committee for Agriculture and Food for the joint consideration of all aspects of European agricultural development. These activities have assisted in increasing the spread of agricultural development and in raising the volume of intra-regional trade in agricultural products without much change in its earlier pattern.

Some other groupings may be mentioned in Western Europe, such as the Benelux system and the Economic Committee of the Nordic Council. Outside Europe, the Organization of American States and the Arab League, though originally mainly political in concept, are giving increasing attention to co-operation in economic and financial matters, which interest also a number of smaller groupings.

The United Nations and the specialized agencies have fostered consultation on general economic problems on a world basis by the Economic and Social Council, and on a regional basis by the economic commissions for Europe, Latin America and the Far East. FAO fills the same role for food and agriculture on a world basis, and on a regional basis through its co-operation on agricultural matters with the United Nations regional economic commissions, and the recurring FAO regional meetings on agricultural readjustments, and through such bodies as the regional forestry commissions in Asia, Europe, Latin America and the Near East, the regional fisheries councils in the Indo-Pacific and the Mediterranean, and the joint FAO/WHO nutritional committees.

Along with the expansion of these newer international and regional influences, the long established political and monetary groupings such as the Commonwealth, the still wider sterling area, and the French Union, which had been major factors in world agricultural development during the past century, continued to exert a powerful influence generally in the direction of comple-

mentary developments, e.g. the United Kingdom long-term contracts, and the subsequent looser arrangements, e.g. for Australian meat. The efforts of metropolitan countries to step up agricultural and forestry development in their overseas territories were also important. On the whole, the influence of the newer country groupings on the world food and agricultural situation has so far been less marked than the influence of these older associations, and perhaps less than might have been expected. Their main effect may well lie in the future.

Postwar Difficulties in the World Payments System

Before the war the supply of dollars from exports of goods and services to the dollar area and from the export of capital from dollar countries was insufficient to finance the purchases in the dollar area by the rest of the world. The gap was closed, however, by the increasing production of gold in non-dollar countries (at an enhanced value after the devaluation of the US dollar in 1934) and the shipment of gold to North America.

After the war the inability of European countries and Japan to re-establish their export trade, particularly of capital goods, until reconstruction was well under way (by which time dollar exporters had established a firm hold in many of their former markets) and the marked rise in the import requirements of the non-dollar countries caused a sharp widening of the dollar gap. Meantime the wartime expansion had made the dollar countries much more self-sufficient for certain raw materials as well as for many manufactured products, so that their import purchases did not rise in proportion to their exports. In addition, shipping losses and the shift of banking and insurance towards the dollar area further reduced the dollar earnings of non-dollar countries and increased their dollar requirements. The sales of their investments in the dollar area during the war had greatly reduced their income from this source. Gold production had declined and the price of gold, unlike all other prices, had not changed since 1934. Finally, unsettled political and economic conditions abroad and attractive opportunities for investment in the dollar area itself contributed to a drying up of the flow of private capital.

These factors would have led inevitably to a sharp contraction of trade between the rest of the world and the dollar area, a more severe devaluation of non-dollar currencies, and a slower rate of reconstruction, had there not been unprecedented inter-governmental loans and grants and active participation by the new international financing institutions. Beginning with UNRRA and the great postwar loan to the United Kingdom, the United States and Canada have advanced since the war under various schemes some $50,000 million to non-dollar countries, and the International Monetary Fund and the International Bank of Reconstruction and Development have provided (up to the end of 1954) an additional $2,500 million. Expenditures of United States military personnel abroad and off-shore purchases added to these totals.

In view of the magnitude of the gap, the depletion of the gold reserves of the non-dollar countries, and the level of the debts they had incurred during and after the war, there was no possibility of even considering returning to an automatically functioning gold standard as was attempted after the first world war. Even the 1947 attempt to restore convertibility of sterling proved premature. A certain freedom in exchange rates was widely conceded to be necessary for the defence of domestic economies, and the International Monetary Fund was designed to assist international monetary transactions in a world without the gold standard, and to help countries in temporary balance-of-payments difficulties, to avoid excessive fluctuations in exchange rates. Import restrictions, exchange controls, bilateral trade and payment agreements, and foreign aid provided crutches to keep the international exchange of goods going until eventual economic recovery and some international agreements permitted a gradual relaxation. Special arrangements like the European Payments Union, the development of large non-dollar monetary areas, and again dollar aid have made the financing of an international exchange of goods and services possible in spite of the inconvertibility of most currencies.

In recent years the situation has visibly improved and for a time a return to a limited convertibility (on current account only) seemed imminent. Much of the improvement was due, however, not to a genuine balance in commercial transactions, but to the continued extraordinary flow of dollars from the United States, which although it may well continue is never secured beyond the current fiscal year. The dollar gap, therefore, remains a major problem for many countries of the world.

The postwar food situation and the dollar gap reacted strongly upon each other. The change in the balance of world agricultural production, discussed earlier in this chapter, was one of the main

reasons for the increased requirements of the rest of the world from the dollar area. In their turn, the efforts of the non-dollar countries to close the gap have materially influenced their agricultural policies.

Agricultural Shortages as a Factor in Widening the Dollar Gap

Supplies of agricultural products available to Western Europe, the main importing area, from non-dollar sources at the end of the war were sharply reduced[1]. Food supplies could no longer be imported from the devastated agricultural regions of the U.S.S.R. and Eastern Europe, and the whole of the reduced output of timber was needed for reconstruction. The same was true of the Far East, which became on balance a net importer of foodstuffs, though rubber and other raw materials grown primarily for foreign markets were still exported. Supplies of agricultural products from Latin America, the Near East and Africa were also smaller because production in these regions had not kept pace with population, while per caput consumption levels in some countries were beginning to creep upwards. The only source from which western Europe could draw larger supplies to replace losses elsewhere was the dollar area.

The trend in some other regions was similar. Before the war the Far East (excluding China) was a net exporter of nearly 3 million tons of cereals annually. By 1951 and 1952 this region had become a net importer of some 8 million tons, mainly from the dollar area, and also a substantial importer of several other products. In 1951-1953 imports of basic agricultural products into Far-Eastern countries averaged some $2,500 million of which over 40 percent came from the dollar area. There were also sharp rises, though on a smaller scale, in shipments of dollar grain and other agricultural products to Latin America and other regions.

Wartime efforts in North America to replace agricultural products no longer available from abroad also contributed to the widening of the gap. For example, net imports of oilseeds and vegetable oils fell from 900 thousand tons (oil equivalent) in 1934-38 to 150 thousand tons in 1948-50, a decline equal to some 30 percent of total world shipments in the latter period. Again, although world production of natural rubber was some 75 percent greater in 1953 than before the war, world consumption of rubber had increased 150 percent, the difference being accounted for by synthetic production, mainly in the United States. The almost complete substitution of artificial fibers for silk was a further contributing factor.

While no precise estimate is possible, some indication may be given of the order of magnitude of these developments on international payments. The increase in net exports of grains, fats and oils and sugar to all destinations from the dollar area in 1948 compared with prewar was about $2,050 million in 1948 prices. At the same time, however, the dollar area's net earnings from agricultural exports were reduced by nearly $600 million of exports of other agricultural products (mainly cotton) and by increased imports, mainly of coffee and rubber, of rather over $300 million. Deducting this $900 million from the $2,050 million increase leaves a net increase of $1,150 million (in 1948 prices) in the world's net agricultural imports from the dollar area.

The trade situation is somewhat different, however, for the commodities tending to widen the dollar gap and those tending to narrow it. Both the decline in world trade in cotton fiber and silk and the growth of dollar area imports of coffee and rubber have been long-term trends which would almost certainly have continued even if there had been no second world war. For cotton and coffee the trend may have been accelerated by the war, but for rubber the expansion of dollar imports was greatly restricted, at least temporarily, by synthetic production. These trends may be regarded as part of the normal evolution of world trade.

On the other hand the sharp increases in net exports of grain, fats and oils, and sugar from the dollar area were due primarily to wartime dislocations of agriculture, reflecting both the increased import requirements and the diminished exportable supplies of some non-dollar countries. When allowance is made for increased dollar exports of some other commodities, and for the likelihood that world prices of special types of fats and oils and of rubber would have been higher but for the reduced import requirement of the dollar area, the earlier estimate of $2,050 million may not exaggerate the extent to which the dollar requirements of the rest of the world were inflated in 1948 by the dislocations and shifts in agriculture resulting from the war. This figure may be compared with the total dollar gap in the same year 1948, which without allowing for special dollar

[1] See the special analysis of postwar shifts in the pattern of world trade in agricultural products in the *State of Food and Agriculture, 1953*, pp. 23-30.

aid, amounted to about $6,000 million (U.S. and Canada only). It thus appears that in that year about one-third of the dollar shortage arose from changes in the world's agricultural situation.

No precise estimate is possible and the above figures are quoted only by way of illustration. They indicate, however, that the shift in the balance of agricultural production was one important factor in the difficulties of the world payments system.

The world dollar gap is of course a somewhat generalized concept. In practice there is not one large, but many smaller dollar gaps for individual countries or monetary areas. Most countries ran into payments difficulties for very concrete reasons, e.g. because among other things they had to import more wheat from dollar sources or earned fewer dollars from their exports of vegetable oils. The repercussions of the dollar gap on postwar agricultural policies arose from attempts to overcome these concrete difficulties.

Repercussions of the Dollar Gap on Agricultural Production

In war-damaged and in food-deficit countries the dollar gap became a powerful additional motive for hastening the progress of agricultural recovery. This accounts for some of the much greater interest in agricultural development by governments in the period since 1945 than after the first world war. As an indirect effect, the counterpart funds from United States economic aid made available to offset the dollar gap were sometimes an important source of capital for agricultural development.

Additional agricultural imports put a heavy burden on the dollar resources of many countries. These imports, mainly of essential products such as grain and cotton, could not be foregone and could not be obtained outside the dollar area. Special attention was therefore paid, particularly in Western Europe, to the encouragement of the domestic production of grain. Similarly, the dollar gap lay behind many schemes fostered by European capital and technical knowledge for expanding the production of e.g. cotton, rubber, tobacco, oilseeds and forest products in overseas countries and dependent territories, and in such cases reinforced the drive for more rapid economic progress in the less developed countries. In Latin America and Asia, many governments took active steps to encourage agriculture, partly because mounting food imports were a drain on their currency reserves. A secondary effect may also be noted. Many countries were compelled to limit their dollar expenditures to the more essential agricultural products, and to eliminate dollar imports of less essential foods such as fresh fruit, dairy products and canned fruit and fish. Such selective cuts sometimes encouraged a larger production of these foods elsewhere, e.g. of fruit in Western Europe and North Africa. In all these ways the dollar gap in the non-dollar areas acted as a stimulus to agricultural production, which tended to redress the geographical imbalance of production which had been intensified by the war. Increased fish production in Europe helped to offset the reduction in traditionally heavy imports of meat and fish from dollar areas; in countries like Norway, Denmark and Iceland fish exports made a valuable contribution to dollar earnings.

There were other and less favorable aspects, however, of the gap's influence on agriculture. Many governments tried to increase production through higher yields and greater efficiency, but where expansion was pressed forward under an umbrella of high incentive prices and protection there was inevitably some tendency to uneconomic and high cost production. There were cases, though this was by no means general, where this tended to encourage the production of crops in areas not well suited to them. Attempts to increase production in dependent territories in some cases led to misdirected investment and substantial losses of capital. Thus, if the dollar gap stimulated production in deficit areas where larger supplies were badly needed, it not infrequently tended to perpetuate price subsidies and trade restrictions.

The effect on agricultural producers in the dollar area itself was for a considerable time obscured by governmental measures for maintaining prices, encouraging exports and keeping production on a generally high level. While the dollar gap certainly is not the only or even the most important reason for the growth of surplus stocks, its effects worked in that direction, and also have restricted outlets for less essential dollar commodities, including relatively high-priced perishable foodstuffs such as fresh fruits. The recent increased intensity of efforts to restrict production and to lower support prices in some exporting countries, however, seem to mark a new stage in the process of adjustment.

The Broad Lines of Postwar Agricultural Policies

The developments discussed in the preceding sections were the main determinants of postwar

agricultural policies. War and postwar experience of inflation and actual food shortages had forced all governments to recognize the vital importance of adequate supplies of food and agricultural raw materials at more or less stable prices, and had compelled most of them to take control of the production and distribution of agricultural products. Until the more acute shortages had been overcome there could be no question of abandoning these controls. Balance of payments difficulties beset the countries outside the dollar area and reinforced this conclusion. Moreover, the new concepts of full employment and social welfare inevitably made the maintenance of a reasonable level of farm incomes a matter of public policy. It is not surprising therefore that governments began to concern themselves with food and agricultural problems more than ever before.

The directions in which food and agricultural policies developed under these influences varied widely from country to country. In North America the main objective was naturally to maintain the improved economic position of the agricultural sector by protecting farm prices and incomes, and to retain or extend the wider markets which had been gained. Elsewhere the main emphasis had to be given to expanding agricultural production, first to avoid actual hunger or runaway inflation, but later for a greater variety of reasons, e.g. to reduce agricultural imports because of the dollar gap, as in many countries of Western Europe, or in order to maximize the foreign exchange available for the import of capital goods as in many of the under-developed countries of Latin America, the Near East and the Far East, sometimes with the ultimate goal of more or less complete self-sufficiency. Many traditional exporting countries in the non-dollar areas were anxious to regain lost markets or to develop new ones.

Later still, as supplies became more abundant and prices lower, greater attention was given, especially in Western Europe but also in some non-European countries such as Japan, to improving and safeguarding the economic position of farmers, often handicapped in competition with producers in exporting countries by lack of capital, inadequate technical knowledge or uneconomically small and scattered holdings. Such objectives often implied protection, various measures of price and income supports, and in time subsidized exports of agricultural products which could not be sold on domestic markets at support prices. These various aims of the different countries were evidently not always compatible, and the international effects of national policies became a more and more important aspect of the postwar situation.

In fisheries there were similar developments. Over-all food shortages, and the increasing recognition of nutritional standards led to increased attention to the fuller exploitation of the seas and inland waters. They were specially significant in areas such as Southeast Asia and the Far East where fish is the main source of animal protein. As in agriculture, governments became concerned to provide active support for production and trade.

Following shortages of the war and postwar years, forest consciousness and awareness of the need for proper management became more widespread than ever before. If it is in Europe and North America that practice comes nearest to precept, this is partly the consequence of anxieties generated during the war and postwar period. An undoubted stimulus has been given to the development of indigenous forest industries in the less developed regions, and the coming years are likely to see a slow but steady move towards decentralization of the world forest products industries, especially pulp and paper. But there is reason to believe that as these immense reserves of forest wealth are brought into effective use in the coming decades, this process will be relatively free from the reckless devastation which has characterized pioneer forest exploitation in the past.

Chapter III - THE MOBILIZATION OF RESOURCES FOR AGRICULTURAL DEVELOPMENT

The postwar recovery and expansion of agriculture had two main aspects, on the one hand technical and on the other economic and social.

On the technical side, the improved methods of farming opened up by advances in agricultural science and engineering were put into practice on a scale never before attempted. In the more industrialized countries, the increased agricultural output resulted primarily from the greater productivity per man and per hectare made possible in this way, and only to a limited degree from an extension of the area cultivated. Substantial progress was also made in many of the less developed regions in introducing and extending improved methods, notably by the better use of water resources.

Unless economic and social conditions had been favorable, however, such rapid technical progress would have been impossible. Government action was concerned, therefore, not only to make available the necessary supplies of agricultural machinery, fertilizers and other requisites, but also to provide the necessary conditions for their use. A considerable degree of planning became necessary in order to make the best use of the limited resources available, to achieve a reasonable balance between agriculture and other industries and to steer agricultural production into the directions necessitated by the general economic circumstances of each country. Larger supplies of capital had to be provided for investment in agriculture, and often in transport and other ancillary services as well. Agricultural expansion implied also the removal of such obstacles to increased production as antiquated systems of land tenure or inequitable forms of land taxation. A highly important factor, especially in countries where farmers still had vivid recollections of the depression and unsaleable surpluses of the nineteen-thirties, was the assurance of outlets at remunerative prices for the additional quantities they produced. The provision of strengthened extension services was also important, not only to pass on to farmers the practical teachings of agricultural research, but also to point out the directions in which further efforts were needed and advise them of the requirements of the market.

The main economic and social measures adopted to implement the various plans and programs for agricultural expansion are reviewed in the present Chapter. Chapter IV discusses the progress made in agricultural technology and the application of these advances together with an appraisal of the results achieved.

NATIONAL AND WORLD PROGRAMMING OF AGRICULTURAL DEVELOPMENT

After the first world war, supervision of production and distribution was dropped almost as soon as hostilities ended. Agricultural reconstruction and recovery were left to individual farmers and local communities with very little planning on the national level. On the international level the only action was some efforts through the International Red Cross to deal with the immediate famine situations. The concern of governments for agriculture as a rule extended little further than the occasional provision of funds for research and extension work, until the catastrophic depression of the 'thirties compelled the general abandonment of "laissez-faire." Tariff barriers were built up and in some countries a beginning made with price support schemes. Internationally, attempts were made to regulate the market for certain commodities, e.g. sugar. But most of these measures were piecemeal and on an ad hoc basis. Over-all national planning of agriculture, often in the context of general economic planning, with long-term and integrated objectives, was a concept which first became widespread during the last war when combatant countries planned the mobilization of all their

resources towards the winning of the war. These experiences and lessons were available for use in overcoming the food shortages and other problems that followed in the postwar period.

The Beginnings of International Action

International planning on food and agricultural questions also really began during the war, when the Combined Food Board was established to allocate supplies from Canada, the United Kingdom and the United States. Even long-term international food problems were thrust into prominence before the end of the war, when in 1943 President Roosevelt summoned the allied nations to a Food and Agricultural Conference at Hot Springs, Virginia. As a result of this conference, a world organization to deal with food and agricultural problems, FAO, was promptly set up when the war was over. During the immediate postwar period, the wartime machinery for allocating food supplies through the Combined Food Board was enlarged into the International Emergency Food Council, which operated under the general auspices of FAO. At the same time the United Nations Relief and Rehabilitation Administration (UNRRA) gave direct physical help in war-devastated countries for the relief of famine and the reconstruction of agriculture and industry.

Since the First Conference at Quebec in 1945, the recurring meetings of FAO have provided a forum for nations to discuss their policies in the production and utilization of food and agricultural products, while such issues as the maintenance of a high level of economic activity have been discussed at the Economic and Social Council (ECOSOC) and other bodies of the United Nations. As the more immediate postwar problems were overcome, attention began to be focussed on the slow rate of progress in the less developed parts of the world. In 1947, the FAO Preparatory Commission on World Food Proposals had already recommended, particularly for the under-developed countries, the early formulation of development programs and the establishment of suitable administrative machinery. In 1951 the Sixth Session of the FAO Conference urged the necessity for a well-balanced increase in world agricultural production of at least one to two percent per year in excess of the rate of population growth, and recommended that " all Member Countries should co-operate in the effort to achieve this over-all objective by preparing and carrying out forward agricultural development plans suited to their own circumstances and conditions, covering the next five years and designed to provide their contribution to the achievement of the objective. "

The co-ordination of planning has also been considered on a regional basis by the various groupings such as OEEC and the Colombo Plan countries and by the regional organizations of the United Nations and the specialized agencies. An additional example of attempted regional co-ordination is the Central American Integration Program.

Many countries have received assistance from United Nations agencies in the formulation or revision of their development plans. Missions from the International Bank have visited some twenty countries to prepare proposals for development plans and there have been many similar missions arranged on a bilateral basis. FAO and other agencies have provided experts to assist in programming and have conducted seminars and training centers on the formulation and appraisal of development projects. One of the major difficulties in the implementation of plans and programs in under-developed countries is their shortage of skilled technicians. Since 1951 the Expanded Technical Assistance Program of the United Nations has helped to provide trained personnel.

National Plans and Programs

International discussions and assistance have been an important stimulus to the national planning of agriculture. However, the main stimulus naturally came from within the individual countries themselves. At the end of the war each country was faced with a particular set of problems and, in most cases, wartime experience made some element of planning an obvious ingredient in any policy for attacking these problems.

In the initial postwar phase of acute food shortages and inflation, most countries continued measures in force during the war, such as grow-more-food campaigns, import control, rationing, the regulation of farm and retail prices and the allocation of means of production. In the war-damaged countries, first-aid measures of rehabilitation were instituted. Later the more rigid of the wartime controls began generally to be relaxed and consideration was given, in both war-torn and relatively undamaged countries, to the broader and longer-term aspects of planning. Within a few years of the end of the war, a large majority of countries had established or were preparing some form of plan for agriculture. These plans naturally varied greatly from country to country, not only in objectives but also in the general ap-

proach to planning and in methods of implementation. Each country has had to learn, often by trial and error, the type and extent of peace-time planning best suited to its own economy.

The degree to which agriculture is the subject of planning has varied from complete supervision of production and distribution in all its stages to the establishment, without any direct control, of broad objectives such as the expansion of production, and the provision of conditions favorable to their achievement. Examples of completely planned economies are the U.S.S.R. and the countries of Eastern Europe, where the primary aim is to raise productivity in agriculture by means of collectivization and mechanization in order to release rural manpower for the program of rapid industrialization. Agriculture was more completely devastated in this region than in any other and, although recently relaxed, compulsory deliveries are still in force to provide adequate supplies of food for the towns. Compulsory delivery was also continued in a number of other countries, especially in the Far East, for some time after the war, but has now generally been abandoned in favor of price incentives.

In the majority of countries, planning implies much less direct control and intervention. At the other extreme from the totally planned economies are the countries of North America, Oceania and many of those of Western Europe. The fact that formal planning and supervision is not marked, however, does not imply that the concern of governments with agriculture is any less. Here the general aim is to encourage and aid farmers to expand production by establishing suitable economic and other conditions and especially by maintaining their incomes relative to the rest of the population. The measures employed are very wide in scope, not only the specific measures of price and income supports, subsidies, marketing reforms, provision of farm requisites at low prices, taxation relief, credit, research and the dissemination of its results, discussed in later sections of this report, but also measures of wider impact to maintain domestic economic activity and demand for agricultural products. Adjustments in production in these countries are generally secured through the price mechanism. Extensive use is also made of consultations between governments and producers' organizations, as for example in Canada. In the United States, although there is no specific long-term planning, the future problems and prospects of agriculture receive much consideration, as in the annual Outlook Reports of the USDA and the annual Production Goal Programs prepared for the guidance of farmers and the government; excess output of particular crops is controlled directly through acreage allotments and marketing quotas. Sometimes these measures have taken their place in a formal plan, though this was rarely more definite than, for example, the United Kingdom's broad program for an over-all expansion of output of 60 percent over the prewar level. Goals are generally expressed rather broadly, but the OEEC countries prepared quantitative targets for production and consumption, import and export forecasts and estimates of their requirements of machinery and other imports. Examples of more formal planning in Western Europe are the French Monnet Plan and the new *Vanoni Plan for Italy*.

The large majority of countries in the underdeveloped regions of the Far East, Near East, Latin America and Africa have established specific development programs for agriculture. In some cases, however, the implementation of plans has begun only recently because of the necessity for preliminary surveys, while in some countries political disturbances or fluctuations in the availability of funds have hindered long-term planning. Actual production targets and goals are a frequent feature of plans in these areas. Governments employ many of the methods mentioned above as used in the more developed countries. Price control measures are used as guides for production. However, a somewhat greater degree of intervention is implied by the necessity to use public investment to a considerable extent to make up for the inability of farmers to invest out of their own savings. Planning therefore consists largely in the establishment of priorities for, and the planned use of, public investment. In many cases, export taxes and other levies are used as a means of raising funds for public investment in agriculture, while, as described later in this Chapter, these and other local resources are supplemented by other funds raised in many different ways.

Most development programs cover the entire agricultural industry, attempting to strike a balance between the different sectors. Often, in fact, a major aim is to diversify an economy too heavily dependent on one principal crop. Some programs, however, are limited in their coverage to a particular problem or area, or to a single commodity or group of commodities. Some examples are the anti-erosion program in the Union of South Africa; a number of programs in different countries dealing with the resettlement of the surplus population of a particular rural area, or with a region whose productivity can be greatly increased by

reclamation or irrigation; the programs for increasing food production operated in several Latin-American countries; the programs in Egypt and Turkey to increase grain production; and Uruguay's plan for the development of the livestock industry. In many cases, separate projects of this nature have later been integrated within a plan for agriculture as a whole.

Food and agricultural planning is not only concerned with production, but also with the consumption of the products of the agricultural industry. The marketing of export products is already fairly well organized in most countries, but in many of the plans little attention has been paid to internal marketing. Most countries, however, have employed measures to maintain the level of domestic demand, both by attempting to keep employment at high levels and by price controls and other anti-inflationary measures. In fact, fully developed planning takes into account and integrates all aspects of the economy. Planning does not, however, often reach this stage, and in many countries there are only semi-related and autonomous plans in each sector. Apart from the communist countries, planning is most comprehensive in some of the under-developed countries. Here all sectors need developing and it is essential to preserve a reasonable balance between agriculture and industry and to establish priorities for the use of limited capital resources. Often agriculture and industry cannot go forward until an "infra-structure" of basic services has been provided, but this can only be undertaken at a rate compatible with the capacity of the revenue derived from agricultural and industrial production to pay the recurrent charges on it. Many such plans, therefore, especially in the Near and Far East, in the dependent territories in Africa and in some Latin American countries, cover all aspects of the economy. The French Monnet Plan is in some respects the most comprehensive of all, in that it covers the entire economy of the French Union including the overseas territories.

In the dependent territories of Africa, the major share of capital invested under these plans has generally gone to the provision of the basic services such as transport, which are particularly badly needed in this region; in Near and Far Eastern countries agriculture has generally received the major emphasis. Under India's first comprehensive Five Year Plan, now nearing completion, two-fifths of total investment went to agriculture, irrigation and commnnity development; the Second Five Year Plan will give greater emphasis to industrial development. Pakistan's plan aimed initially at semi-industrialization, but crop failures enforced its revision towards increased attention to cereal production. Argentina's first plan also concentrated mainly on industry but the second plan, initiated in 1953, gives greater emphasis to agriculture. In Iraq as much as three-quarters of total investment under the development plan is for agriculture, irrigation and drainage.

Related to the coverage of the programs is the degree of centralization practised in their formulation and in directing their execution. While execution is usually left in the hands of the government departments most directly concerned, there has been an increasing tendency to establish central organizations responsible for the co-ordination and over-all direction of the plans for different industries. European examples are the *Commissariat au Plan* in France and the Central Planning Office in the Netherlands. In the Far East, the Indian Planning Commission, for instance, was set up in 1950 to integrate and complete the separate plans already in operation in some of the States. In addition to such central organizations, there are also many cases of development boards charged with the direction of specific projects.

While many agricultural programs, especially the earlier ones, have been on an annual or bi-annual basis, and still are in e.g. the United States, the United Kingdom and Sweden, a majority now cover longer periods of up to five and occasionally ten years. Sometimes, as in Japan, annual programs have later been replaced by a longer-term plan. In nearly all countries, however, programs required fairly frequent revisions in the light of changing circumstances, especially in prices, revenue, and availability of capital and technicians. There has therefore been some tendency away from plans covering very long periods, to allow greater flexibility and avoid the necessity for frequent revisions.

Fisheries Planning

Fisheries and forests have also figured in the greatly increased degree of planning in the post-war period. Government planning in fisheries has been directed towards two main objectives, i. e. the conservation of fishery resources and the maintenance or achievement of a level of production and trade consistent with over-all social and economic policies. Governments have become increasingly aware of the need to define their fishery policies towards specific objectives and to integrate fisheries industries more closely into their national economies. Food shortages and increasing

recognition of the importance of adequate nutritional standards have led to growing attention to the fuller exploitation of the seas and inland waters, especially in those countries of Asia where fish is the main source of animal protein. Fish production has also been stimulated for balance of payment reasons, both to reduce expensive imports of livestock products and, as in Norway, Denmark and Iceland, to earn dollars. As in agriculture, governments became concerned to provide more active support for fish production and trade. Measures of stabilization and price support have been widely adopted, especially in Europe, North America and Japan, and there has been increased attention to marketing problems. Another trend has been the widespread growth of consultative arrangements to bring governments in closer touch with commercial interests. International co-ordination has been fostered by FAO through the establishment of regional fisheries commissions.

Forestry Planning

The need for the development of systematic forest policies was apparent before the war, but with the end of the war it became imperative. In Europe, postwar requirements were clearly going to tax the region's forest resources. By contrast, the rich forests in many countries, e.g. in Latin America, were continuing to be exploited by destructive methods without any regard for conservation. At the same time, in countries poor in forests, as in the Near East, there was little effective endeavor to protect the sparse remnants of forests, and still less to re-establish the tree cover desirable for future agricultural and industrial development.

The basis of over-all future planning in forestry was established following the first postwar World Forestry Conference when a declaration of the Principles of Forest Policy was adopted and subsequently approved at the 1951 Session of the FAO Conference. At the regional level, forestry conferences convened on the initiative of FAO have discussed the main problems confronting the regions and Regional Forestry Commissions have been set up. Legislation is the chief means of putting forest policy into effect. Many countries, however, have intricate forest laws which do not take into account the basic principles of forest management. In several cases ETAP experts have submitted alternative draft laws, but except in countries where forestry matters are widely appreciated, it has been found very difficult to have the improved legislation adopted or put into effect.

In Europe the main problem was how to ensure the adaptation of forest production in quantity and quality to rising and changing needs. A study of European Timber Trends and Prospects, carried out by the joint secretariat of the European Forestry Commission of FAO and the Timber Committee of ECE, provided the European Forestry Commission and its member countries with an economic background against which forest policies could better be defined and co-ordinated. Conditions in other regions are different, but the need for a careful orientation of forest policies is no less great. In the Far East, especially, timber needs are likely to rise rapidly in the coming years. Certain countries possess resources as yet hardly exploited, and these resources, as well as the nature and extent of future needs, must be studied and assessed. In the under-developed regions effective national forest policies are in general still in the formative stage.

Recent Developments in Planning

The government plans and programs, whose characteristics have been outlined above, were devised mainly in the early postwar period of food shortages. In recent years, however, the problems to be faced have become less straightforward. Now that some commodities are in surplus, it is no longer a question simply of an over-all expansion of agricultural production, but a more selective approach has become necessary and increased attention has to be given to the international implications of national policies. Moreover, positive steps have become necessary to expand consumption as well as production, and to adjust the output of individual products to bring them more closely into line with market demands and nutritional needs.

This new development has emphasized the urgency of the intergovernmental co-ordination of national programs. In the light of the changing situation many countries are now considering adjustments in their programs and the re-orientation of their food and agricultural policies, and have discussed them at regional consultations sponsored by FAO. The changed situation also makes it urgent to integrate national agricultural programs with the over-all economic programs, so that measures to encourage production are planned side by side with measures to expand domestic markets.

FINANCING OF AGRICULTURAL DEVELOPMENT

The implementation of agricultural development programs needed a considerable amount of finance. New development projects like land reclamation, irrigation, hydro-electric and multi-purpose schemes require large capital investments maturing over a long period. Intermediate finance, on the other hand, was required for rehabilitation and reconstruction of war damages, for expansion and modernization of existing farms, etc., while short-term finance was needed to enable farmers to carry on their current operations with efficiency.

In the developed countries the main sources of these funds have been the farmers' own savings, together with borrowings from commercial or specialized agricultural banks, supplemented by short-term credits from merchants and other agencies. One of the most significant developments of the postwar financing of agriculture, however, has been the large-scale use of public funds, both from domestic and international sources, often as part of an over-all national development program. Public funds have played an important part in financing agriculture in many of the developed countries, but they have been of even greater significance in the less developed regions of the world. Although farm incomes in these areas are usually considerably higher than before the war, farmers' savings are too small and the sources of credit available to them too inadequate to play any important part in financing agricultural development, though the contribution of unpaid family labor should not be overlooked. Moreover, various institutional defects, such as the system of land tenure, have often stood in the way of substantial investments even by farmers who have had some surplus income. Consequently the main burden of financing agricultural expansion in these countries has rested with governments, drawing their funds through normal budgetary sources and in some cases through special forms of taxation, or by borrowing or deficit financing. Since, however, the governments of under-developed countries have also had to bear the major burden of financing the "infra-structure" (transportation, communication, and public services) as well as industrial development, their resources have usually proved to be insufficient. Domestic public funds have been frequently supplemented by grants and loans from public international agencies or from other governments, another significant postwar development. Such non-domestic sources of finance have usually represented only a small part of the total investment in agriculture, but they have sometimes been of special importance, e.g. in providing the necessary foreign exchange for the purchase of equipment from abroad.

The unusual hazards inherent in fishery undertakings have normally deterred investment except in certain highly specialized and industrialized undertakings, e.g. whaling, distant water trawling, tuna catching, etc. In the postwar period the reconstruction and development of fishery industries have exposed chronic and in many cases acute shortages of capital. To remedy these there has been a widespread increase in government credit schemes in the developed as well as the under-developed fishery industries, often coupled with some form of subsidy, especially for the purchase of craft and engines. National and bilateral aid programs have provided substantial capital for investment in fishing, processing and transport equipment, while the reconstruction or improvement of docks, harbors, market premises, roads and railways have also depended on public funds in most countries.

Public funds have also played an important part in promoting improved silviculture and in developing forest industries. International grants and loans in the postwar years have enabled many countries whose domestic financial resources were insufficient to progress toward a more rational silviculture and to expand their forest industries. But international aid in the main has only supplemented vigorous efforts, public and private, at the national level. Most countries in Europe, Asia, North and Latin America now have government or privately sponsored schemes for afforestation and for developing forest industries. These measures were most universally applied and were most varied in character in Europe, where the stringency of resources in relation to needs was most apparent. Assistance was forthcoming not only for silviculture, but also for forest utilization (forest roads, increased mechanization of logging and transport) and for the modernization and expansion of forest industries. Financial and other assistance assured the collaboration of forest owners in carrying out national afforestation plans.

Domestic Private Investments

Relatively few countries have statistical data on the magnitude of private domestic investment in agriculture though this clearly has been the major source of funds. In Canada, for example,

new investment in agriculture, fishing and forestry since 1945 has averaged 480 million dollars a year and much of it came from the current earnings of farmers. In the United States private expenditure on durable equipment and construction in agriculture was roughly $ 3,000 million per annum (at 1947-49 prices) during 1948-1953. In Western Germany during the four and a half years since the currency reform nearly DM 6,800 ($ 1,619) million has been invested in the farming sector, of which DM 4,300 ($ 1,024) million was provided by farmers from current savings while the balance was met by borrowing. In the United Kingdom the annual average of gross fixed capital investment in agriculture, forestry and fishing, during 1949-1954, amounted to £ 87 ($ 243.6) million at current market prices, and in Denmark gross investment in agriculture between 1946-1954 totalled 4,101 ($ 594.3) million Danish crowns.

The position has been very different in under-developed countries. Farmers' earnings being generally extremely low, their own investments are restricted to relatively smaller items on the farm like purchase of cattle, implements, etc. In many instances, governments have taken the initiative in mobilizing idle or under-employed resources, especially in the rural areas, and in applying them co-operatively on a larger scale. The Community Projects and Development Blocks in India are specific examples; from their inception in October 1952 to the end of 1954 voluntary contributions in cash, land, labor, materials, etc. were valued at Rs. 47.7 ($ 10) million or about 47 percent of the total government expenditure incurred. This is only the beginning of a very substantial program expected to gain momentum in the future. Similar programs are already under way in other countries, particularly in the Far East.

Domestic Public Funds

In the more developed countries public funds have been made available to farmers generally through measures such as subsidies and special grants (e.g. direct subsidies on animal feeding-stuffs, fertilizers and white fish, and plowing grants and payments under the attested herds scheme in the United Kingdom), which either by providing an additional income to farmers or by cheapening their means of production have promoted additional investment on the farm level. Direct public investment usually is confined to major projects like irrigation, drainage or other water control projects, local roads, soil conservation and other public facilities. In under-developed countries, on the other hand, direct investment from public funds has been relatively more widespread. Funds for major development projects are provided directly by public bodies or through special development institutions, being allocated either from regular budgets — central, state, local — or from special development budgets. Funds from the surpluses of the statutory export monopolies, such as the State Agricultural Marketing Boards in Burma and Marketing Boards in British African territories, have also been used for development purposes.

India, under its First Five Year Plan ending in 1955, has planned to spend Rs. 4,030 ($ 838) million directly on agriculture and community development and a further aggregate sum of Rs. 15,948 ($ 3,317) million on irrigation and power, transportation and communications, and social services, which are directly or indirectly benefitting agriculture. During the first three years of the Plan, India actually spent Rs. 1,076 million on the former and a total of Rs. 7,228 million on the latter projects. Similarly, Ceylon has been spending one-fourth of her public investment on agriculture in recent years and another 40 percent on multi-purpose projects, transportation and communications. The five members of the Colombo Plan spent collectively during 1952/53 and 1953/54 an average of 13 percent of their public development expenditure on agriculture, community development and resettlement, 28 percent on irrigation, power and multi-purpose projects, 24 percent on transport and communications, and another 24 percent on social welfare. In Japan public financial investment in agriculture, forestry and fisheries over 1948-52 amounted to 141,000 ($ 392) million yen, of which direct government investment was 35,333 ($ 98) million yen, the balance being governmental subsidies and loans to farmers. Argentina, under its 1953-57 Five Year Plan, has provided for an expenditure of nearly 1,287 ($ 172) million pesos for the agricultural sector and 560 ($ 75) million pesos for forestry. In Brazil, besides the federal investment program for agricultural development, the State of São Paulo (a major agricultural State) has a four year agricultural plan under way with an investment program of 212.8 million cruzeiros (approximately $ 11 million at the official rate). The Plan of Economic Development of the Amazon Valley provides for the spending of 19.5 million cruzeiros (approximately $ 1 million) in 1955 and 1956 for forest development. Considerable investment expenditures are reported by

other Latin American countries. In Egypt planned expenditures for agriculture during 1952/53-1955/56 amounted to approximately £E 4 ($ 11.4) million out of a grand total of £E 21.6 ($ 61.8) million. Jordan's Five Year Plan for economic development devotes some $ 2 million to afforestation and improvement in forest industries and Iraq spends yearly over half a million dollars for the development of forestry. There have been similar plans for financing land reclamation, irrigation and general agricultural development and forestry in most other countries of the Near East.

Public domestic funds have also been the primary source for financing development programs in many colonial areas, e.g. approximately 50 percent in the British dependent territories as a whole. Surpluses of statutory export monopolies, though primarily meant for stabilization of prices paid to farmers, have been either consolidated with the general revenue of governments and then reinvested for agricultural and general economic development, or granted for specific development projects. For example, the contributions from the State Agricultural Marketing Board and the State Timber Board in Burma from 1947/48 to 1954/55 averaged 286 ($ 60) million kyats or 42 percent of the annual revenue of the government. In Thailand the Rice Bureau contributed more than 10 percent of the annual revenue, while the West African marketing boards had at the end of 1952 invested more than 25 million pounds sterling locally and had spent another £ 5 million on research and education, in addition to holding £ 125 million in stabilization reserves.

In spite of this spurt in public domestic investment, a great many countries have realized that internal resources alone would not enable them to reach even relatively moderate targets for development. Considerable expectation was therefore held of possible funds from international sources. But the immediate postwar conditions in most countries were not very conducive to large-scale foreign investments. Various restrictions on capital movements combined with political and economic instability in many countries proved a serious handicap to the flow of private capital. With the return of more normal conditions in an increasing number of countries the situation eased up somewhat toward the second half of the period. Restrictions on movements of funds were relaxed and facilities for foreign capital, such as guarantees of repatriation of interest and capital sums, were provided, and double taxation removed.

Private International Investment in Agriculture

This type of investment has been relatively insignificant except that of certain United States' concerns in plantation crops like sugar, bananas, etc. in Central America and the Caribbean Area and of some of the more industrially advanced European countries in overseas countries, including their dependent territories. Of the aggregate net outflow of private capital of $ 5,081 million from the United States for direct investment abroad during 1946-1953, barely $ 42 million (net) or less than one percent, went to agriculture. Of this amount $ 36 million (net) was invested in Latin American countries alone. Of the capital outstanding (direct investment only) at the end of 1953 of $ 16,304 million only $ 658 million or 4 percent was invested in agriculture, of which $ 548 million or 83 percent in Latin America.

Identifiable outstanding private investment of the United Kingdom in overseas agriculture (rubber, tea and coffee) rose from £ 117.6 million in 1946 to £ 119.2 million in 1952 or from about eight to ten percent of total private foreign investment. There has since been a further flow, especially of private long-term capital, but the share of agriculture is unlikely to have increased.

The main reason for the lack of interest of private capital in the field of agriculture is the less remunerative character of the agricultural enterprises compared with other economic activities. Any large additions to direct private international investment in agriculture in the near future are thus unlikely, except perhaps by metropolitan countries in overseas territories. However, private investment funds might find their way into agriculture and allied enterprises through borrowing by public bodies in foreign or metropolitan capital markets. Private investment may further be encouraged by export guarantees such as granted by the U.S. Export-Import Bank or the Export Credit Guarantee Department (ECGD) of the Bank of England.

Public International Funds

The increasing role of public international funds in financing investment has been another major development of the postwar era. The most important institutional source of such funds is the International Bank for Reconstruction and Development, but funds have also been obtained through intergovernmental grants and loans, and partly also from special national financial institutions like

the Export-Import Bank of the United States or the various colonial development funds in the United Kingdom and France.

Up to 30 June 1955 the International Bank had made loans totalling $ 2,274 million of which $ 233 million or more than 10 percent were directly aiding agriculture (Table III-1). Agriculture also benefited indirectly from the loans of $ 1,126 million granted for transport and electric power, and from loans given for reconstruction and general development. The largest amount directly aiding agriculture was made available to Australia ($ 91 million), and the second biggest amount ($ 53 million) to Western Europe (mainly Italy).

Intergovernmental grants and loans have also aided investment in many countries during the postwar years. Agriculture received a relatively minor share, however. Of the over $ 14,000 million disbursed under the Marshall Plan to European countries only some $ 200 million in form of tractors and agricultural machines can be clearly identified as investment in agriculture. The latter benefited, of course, considerably from investments in power and transportation. Another indirect benefit came from the amounts made available from the counterpart funds, about 10 percent of which were allocated to agricultural, fishery and forestry projects. Similarly the entire Rs. 900 million of the counterpart funds from wheat loans granted to India were utilized in partially financing the Five Year Plan during its first three years (1951/1952-1953/1954). Grants under the Colombo Plan have increased the financial resources of the recipient countries. The U. S. Export-Import Bank provided up to the end of 1954 a total of $ 261 million to different countries (including $ 116 million to Latin America) for purchase of agricultural equipment, irrigation and general agricultural development. This represents, however, only about 4 percent of all credits authorized by the Export-Import Bank up to that date.

The overseas territories of certain Western European countries form a rather special case and in recent years large grants in aid and loans have gone to them from the metropolitan countries The United Kingdom has made available £140 million under the Colonial Development and Welfare Acts of 1945 and 1950 and a further £80 million under the Act of 1955. Apart from some provision for research and other central schemes, these funds are allocated as grants to individual territories for their development plans, of which

TABLE III-1. INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT; LOANS GRANTED AS OF 30 JUNE 1955[1]

ITEM	Total	Far East	Near East[2]	Africa	Australia	Europe	Western Hemisphere
	Million U.S dollars						
Grand Total	2 274	304	75	223	259	818	595
Reconstruction Loans	497	—	—	—	—	497	—
General Development	135	—	20	40	—	75	—
Directly Aiding Agriculture	233	34	7	—	91	53	48
Machinery and spare parts	104	—	—	—	78	2	24
Irrigation and flood control	86	24	3	—	6	33	20
Land improvement	22	10	—	—	7	3	2
Grain storage	6	—	4	—	—	—	2
Timber equipment	15	—	—	—	—	15	—
Indirectly Aiding Agriculture	1 126	194	46	183	107	96	500
Transport	508	67	21	95	74	60	191
Power	618	127	25	88	33	36	309
Other	283	76	2	—	61	97	47
	Percent						
Percentage directly aiding agriculture	10.4	12.6	9.3	0	35.1	6.2	8.3

[1] Loans granted mean loans authorized ($2,325 million) less cancellations.
[2] Including Turkey.

TABLE III-2. INDICES OF FIXED CAPITAL FORMATION AT CONSTANT PRICES [1]

TERRITORY	1948	1949	1950	1951	1952	1953[2]
United Kingdom Territories. . .	100	107	113	121	142	145
French Territories	...	100	123	117	126	111
Belgian Congo.	...	...	100	...	...	180
Portuguese Territories	...	100		...	...	160

[1] In most cases figures are very rudimentary. The above figures for investment in the various territories are not comparable, as they differ widely in content and methods of computation.
[2] Provisional figures.
... Not available.
Source: OEEC 6th Report Vol. II, March, 1955.

they have provided about one-sixth of the total finance. Annual expenditure of Colonial Development and Welfare Funds has recently been about £14 million and in the period 1955-60 should average about £24 million. In addition to these direct grants there have been substantial investments by the Overseas Food Corporation (now taken over by the Tanganyika Agricultural Corporation) and the Colonial Development Corporation.

The development plans of the French overseas territories are almost entirely financed by the metropolitan country. In principle the *Fonds d'Investissements pour le Développement Economique et Social* (FIDES) are supplied by grants from France and by contributions from the territories themselves, but the latter have been almost completely in the form of long-term loans from the French Treasury. The Belgian Congo's development plan is financed from local resources supplemented by loans raised in the Belgian and foreign capital markets, though Ruanda Urundi received a long-term loan from the Belgian government.

These funds and borrowings have helped to accelerate the rate of capital formation in the overseas territories, especially as compared with the position immediately after the war. Total investments, on the other hand, in all overseas territories are financed to a great extent from public and private domestic sources.

Domestic Credit

Domestic credit is a source as well as an instrument of financing development of agriculture, fisheries, and forestry. In the postwar period the existing credit institutions in many countries were found to be unable to meet the expanding needs of agriculture. A liberal use of public funds has, therefore, been made to finance smaller investment needs, and often also current operating expenditures of farmers, fishermen and foresters through existing or specially constituted public credit institutions and also through financial assistance to co-operative credit societies.

In the more developed countries, which generally already had extended credit organizations, the problem has been relatively simpler as public funds could be channelled through such organizations. However, even in the most advanced of these countries, including the United Kingdom and the United States of America[1], existing credit facilities did not quite meet the requirements of the low-income farmers especially with regard to intermediate and long-term credit. Special arrangements were therefore made in many instances to help such farmers.

In under-developed countries the scarcity of suitable credit institutions proved to be as serious a handicap as the lack of funds for supplying adequate credit to agriculture. In most countries of the Far East virtually the only institution that provided credit to agriculture until before the war was the co-operative credit system. But, as a recent survey of agricultural credit in India has

[1] In the United Kingdom recent investigations by the Horace Plunkett Foundation have shown that a small producer rarely makes use of the Agricultural Mortgage Corporation or of the loans offered by the County Councils, as the conditions and terms of repayment are considered rigid and difficult. They, therefore, frequently apply for merchants' credit and hire-purchase facilities for which they pay interests amounting to 20 or 30 percent or even more. In the United States a recent message of the President relative to the problems of low-income farmers states i. a. that the present supply of intermediate credit is not adequate and that the respective government services should be strengthened.

shown, co-operative institutions after operations in that country for about half a century still provide only 3 percent of the borrowings of cultivators; the government provides another 3 percent and commercial banks only 1 percent, while private agencies, including money-lenders, traders and landlords, supply about 93 percent. The position in the majority of countries of the region, with the exception of Japan, which has a relatively extensive system of governmental and co-operative financing institutions, is not much different. In most countries of the Near East and of Latin America institutional agricultural credit is also little developed. However, also in very advanced countries credit advanced to farmers by individuals (relatives, merchants, brokers, etc.) plays a substantial role. In the United States, for instance, such credits amounted to 23.9, 26.2 and 27.8 percent of total farmers' indebtedness in 1951, 1952 and 1953 respectively. The different levels of institutional credit in developed and underdeveloped countries are evident from Table III-3.

Since the end of the war special attempts have been made in many under-developed countries to speed up the establishment of or expand credit institutions, public, semi-public and private. For example, in Latin America national systems of agricultural credit have been set up for the first time in a number of countries, e.g. Cuba, Haiti and Honduras. Throughout Costa Rica, the National Bank has set up rural credit committees covering small areas and managed by local people. In Brazil, the banking system has been strengthened by two new institutions interested in agricultural development, the National Bank of Economic Development and the Bank of North-Eastern Brazil. Further, to ensure productive use of loans, some countries, e.g. Brazil, Honduras, Nicaragua, Paraguay and Venezuela, have organized systems of supervised agricultural credit particularly for small farmers.

In most countries of the Far East, e.g. Burma, Cambodia, Ceylon, Indonesia, Japan, Malaya, Pakistan, the Philippines and Viet-Nam, various

TABLE III-3. OUTSTANDING INSTITUTIONAL AGRICULTURAL CREDIT AT END 1953 IN RELATION TO AGRICULTURAL AREA AND AGRICULTURAL POPULATION

AMOUNT	COUNTRY
I. *Average Loans Outstanding per Hectare of Agricultural Land (Arable Land Equivalent)* [1]	
Above $100	Norway, Sweden, Japan
Between $80 and $100	Israel, Italy, Puerto Rico
» $60 and $80	Finland
» $40 and $60	Belgium, Western Germany
» $20 and $40	Austria, France, United States, Argentina, Chile, Cuba, New Zealand, Philippines
» $10 and $20	Canada, Brazil [2], Australia
» $ 5 and $10	Portugal, Yugoslavia, Turkey, Egypt
» $ 1 and $ 5	Honduras, Mexico, India [2], Indonesia, Thailand, Morocco
Less than $ 1	Burma, Cambodia, Iran.
II. *Average Loans Outstanding per Head of Agricultural Population* [3]	
Above $500	New Zealand
Between $400 and $500	—
» $300 and $400	Norway, Sweden, United States, Australia
» $200 and $300	Argentina
» $100 and $200	Finland, France, Canada, Israel
» $ 50 and $100	Belgium, Italy, Chile
» $ 25 and $ 50	Austria, West Germany, Japan
» $ 15 and $ 25	Brazil [2], Algeria
» $ 5 and $ 15	Portugal, Yugoslavia, Turkey [2], Mexico, Philippines
» $ 1 and $ 5	Ceylon, Thailand, Egypt
Less than $1	India [2].

Note: Figures in this table refer to credits granted by financial institutions (public and semi-public institutions, banks, insurance companies, co-operatives, etc.) only and do not cover advances by merchants, dealers, private money-lenders, etc. The latter, of course, play an important role, particularly in the more under-developed areas.
Figures for outstanding agricultural credit are from replies to FAO credit questionnaires and as quoted in Annex Table 5.

[1] Agricultural land covers arable land (including orchards and fallow), permanent pastures and rough grazings wherever data for the latter are available. Unimproved pastures and rough grazings have been converted to "arable land equivalent" by a rough conversion factor, usually of one-tenth.

[2] Loans outstanding at end 1952.

[3] Data of agricultural population for all countries except Germany are taken from *FAO Yearbook of Agricultural Statistics*. For Germany the data are from the *World Census of Agriculture 1950*.

specialized and semi-specialized agricultural credit institutions have been organized. In India, where no special institutions for disbursing agricultural credit have been set up, the Reserve Bank has provided increased financial accommodation to land mortgage and co-operative banks. Attempts have also been made in some countries of the Near East, e.g. Egypt, Iran, Iraq, Jordan, Syria and Turkey, to reorganize or strengthen the position of the existing agricultural banks, and a new bank was recently established in Lebanon.

These measures have slightly augmented the flow of institutional credit to agriculture (Annex Table 5) in under-developed areas. Despite the improvement, however, such credit available in these countries is much lower than in countries with developed economies on both an area and a population basis (Table III-3).

Supplementary Facilities

Transport. Necessary investment for agricultural expansion was not of course limited to direct investment in agriculture itself. Many areas of the war-devastated and less advanced countries lacked the physical means of conserving agricultural products and moving them to market. Without roads, railways, waterways and transport vehicles, the movement of goods from the production locality is impossible and subsistence remains the objective of all economic activity. Even where roads and railways are available, insufficient capacity, as well as irregularity and inferior types of service, may lead to serious physical and economic loss.

Wartime requirements provided expanded transportation facilities to a certain extent in areas like the Near East and Africa, which previously had very few and rather obsolete transportation means. Where these remained operative after the war and could easily be converted to peacetime uses, they provided substantial aid to agricultural development.

In other parts of the world the postwar period saw a tremendous development of transportation facilities. In the war-devastated areas, the rebuilding of destroyed roads, bridges, ports, rolling stock and railroads provided an opportunity for the application of great technical improvements. Refrigeration in transport in the more advanced countries widened the market for perishable foodstuffs (meat, fish, fruit and vegetables). Expansion of transportation facilities was given high priority in the development plans of almost all countries, partly financed by international funds as mentioned earlier. New roads and railways, improved and enlarged ports have for the first time enabled growers in the Far East, the Near East, Latin America and Africa to reach urban consumers and export outlets.

Electricity. The increase of electricity output has been even more spectacular. This expansion has brought electric light and power into rural areas even where no specific efforts to this purpose have been made. The success of the United States Rural Electrification Administration has led to similar national efforts or to international co-operation in this field, as in Europe under the auspices of the E.C.E. Where it has been made available, electricity on the farm has enabled the introduction of labor-saving implements and machinery, in addition to easing the burden of the farmer's wife in the household. Devices like deep-freeze storages — individual or collective — are an aid to better marketing. Furthermore, electric power in rural areas has given an impetus to new processing plants in or near production centers, thus providing a ready market and contributing to cheapen the end product. It has also made possible the introduction of rural industries which are a convenient supply source for rural consumers, as well as a partial remedy for seasonal or structural farm unemployment.

No quantitative measurement of the expansion in transportation, power generation, food processing or rural industries in the last ten years can be attempted within the scope of this report. While the progress made is obvious, a wide field for further expansion is still open, subject, however, to difficulties which have been partly discussed in the section on financing agricultural development. Other difficulties are associated with the shortage of trained manpower, the absence of technical knowledge or the lack of understanding of the importance of many of these auxiliary services and facilities for agricultural development. This is one area where international and bilateral technical assistance can make a continuously increasing contribution to further progress in agriculture.

CORRECTION OF INSTITUTIONAL OBSTACLES TO AGRICULTURAL DEVELOPMENT

The need to expand agricultural production, together with political changes, have led to substantial institutional changes since the war, e.g. in systems of land tenure and land taxation. Institutional factors may hamper development in many ways. Modernization of agricultural meth-

ods may be impossible because antiquated systems of land tenure depress tenant farmers' incomes to an extent which leaves no margin for saving or investment, or because they lack the minimum security of tenure which would encourage the tenant to invest any funds at his disposal in the improvement of his holding, or because out-of-date systems of cropping are established by rigid customs or laws. Excessive fragmentation or uneconomically small holdings may prevent the farmer from using his time to best advantage or adopting modern means of production, e.g. mechanization. Over-large holdings may equally impede progress because the owner lacks the capital, desire or ability to develop his property. Uncertainty of title may restrict opportunities for credit. In spite, however, of the considerable efforts to improve man/land relationships since the war, the agrarian systems in many countries of Eastern and Southern Europe, the Near East, the Far East and of Latin America still represent serious obstacles to agricultural progress.

Agrarian reform measures in the broadest sense of the term have been carried out in more advanced countries as well as in less developed areas. They have covered redistribution of land, land registration, consolidation of fragmented holdings, improvements in tenancy relations, control of rents, and changes in land taxation. The organization of agricultural investment and credit has been discussed above.

In the advanced countries the emphasis was mostly in the field of consolidation of fragmented holdings while in the under-developed regions it was placed on the distribution of large, extensively cultivated estates or unutilized public or crown land and the reduction of intermediaries between landowner and cultivator. Tenancy relations were improved in advanced and underdeveloped countries; in the latter, however, mostly as a supplementary or even temporary measure in preparation for the transfer of ownership to cultivators. In many countries such specific land tenure improvements were also accompanied by complementary measures in the fields of agricultural credit, co-operative activity, education and extension. Co-operative types of organization were also applied in the field of land consolidation and in a few instances even for joint land utilization and cultivation. Taxation was also frequently used to counteract the accumulation of land in the hands of a few, to break up large estates, and to promote certain forms of ownership or types of organization.

Transfer of Ownership

Measures for the transfer of ownership to cultivators have been adopted in the postwar years in the Far East by Japan, India, Pakistan, Burma, China and Taiwan; in Europe by Finland, Italy, Spain and the Eastern European countries; in the Near East, e.g. by Egypt and Turkey; in Latin America by Bolivia, Guatemala and Puerto Rico. Although these governmental policies all had the common objective of better living standards and a higher social status for the farm population, they often stemmed from different socio-economic backgrounds.

In Eastern European countries the abolition of semi-fendal forms of land ownership was regarded as the most important aspect; the final aim was collectivization of agriculture. In Finland land reform was regarded as the necessary national response to an emergency created by the influx of displaced persons from ceded territory. In Far-Eastern countries, reform programs have long aimed at the removal of obsolete forms of land ownership. The common feature in recent Asian legislation is not so much the abolition of large estates as the abolition of those property rights in land which depress the income and social status of the farm operators, such as zamindari arrangements and variants in India and Pakistan. In these countries the criteria for expropriation were not generally the size of the holding nor the inefficiency of farming, but the forms of tenure. The beneficiaries in general were the existing cultivators, who previously occupied holdings under various forms of tenancies, and (except in Japan) the change in ownership had little effect on either the size of the farm unit or the type of farming.

The scope of recent legislation in the Far East is very striking. In India, for example, about one-third of the country has been covered and in Japan the number of persons receiving land represents more than half of all farm households. In China about 350 million people have been affected by land reform.

Land reform in Western Europe during this period has generally been on a limited scale. In Italy, up to the end of 1954, more than 700,000 ha. had been expropriated with some payments to the owner and about 350,000 ha., mainly of formerly uncultivated or extensively cultivated land, allocated to 65,000 families. In Spain, the National Land Settlement Institute had acquired 600,000 ha. up to the end of 1953 and a total area of 207,000 ha. had been made available for

settlement. In Western Germany 280,000 ha. of land will become available on the basis of the 1948 expropriation decrees. In Yugoslavia about 800,000 ha. were distributed after the war to landless and poor persons; farm ownership there is now widely distributed and co-operative farming was promoted and increased rapidly up to 1951.

In the Near East, the Egyptian law on agrarian reform of 1952 provides that in general no person shall own more than 84 ha. of agricultural land, and at the end of 1953 about 170,000 ha. had been expropriated or were scheduled for expropriation. Actual land distribution was lagging behind, however. In Turkey a total of 253,000 ha. were distributed to 52,000 families in accordance with the Land Reform Law of 1945. Similar actions have been taken in Lebanon, Iran, Iraq and Syria.

In Latin America the Bolivian decree on Agrarian Reform of 1953 fixing the maximum area of cultivable land to be held in small, medium and large holdings in accordance with differences in conditions of soil and climate is still in the stage of implementation. Efforts are made to give a minimum holding to each family where sufficient land is available. In Puerto Rico the land reform policy has resulted in three programs: public operation of large estates with profit-sharing arrangements for the workers, family farm settlement, and settlement of agricultural workers in small homesteads. The proportional profits farm program, remarkable as an example of land reform carried out in a plantation type of economy, aims at providing workers on large estates with the benefits of ownership without division of property. In Guatemala an earlier comprehensive program of land expropriation and re-distribution was revised by recent legislation. No new expropriations are to be carried out and provisions are made for owners who had been expropriated to make an application for the revision of their cases.

Improvement of Tenancy Relations

Great progress in this field has been made in large areas of the world. In Western European countries recent legislation affords a still higher degree of security to tenant farmers whose position on the whole was already fairly secure.

The United Kingdom in 1948, consolidating previous legislation, established full security of tenure for the efficient tenant farmer, who cannot be given notice to quit a farm if he is cultivating it in accordance with the rules of good husbandry. Comprehensive rights to compensation make any change in the tenancy of the farm costly to the landlord. Belgium's recent legislation has moved in a similar direction, while new legislation in Spain puts emphasis on the prevention of sudden eviction of tenants at the end of their present leases.

In the Far East, measures relate generally to: (i) setting a minimum period of tenancy; (ii) restricting grounds for eviction; (iii) establishing the tenant's right to restoration of lands; (iv) elimination of absentee landlordism and encouragement of peasant proprietorship; (v) restrictions on subletting; (vi) compensation for improvements. In India, Japan, Pakistan, the Philippines and Taiwan, new legislation providing security of tenancy, including the right to compensation and control of rents, has been introduced as part of the general program of agrarian reform. The new legislation prohibits labor or personal services or other onerous conditions, as for instance compulsory sales of produce to the landlord. This legislation, if successfully enforced, greatly improves security of tenure and increases the social status of the cultivator. In Burma, the tenancy disposal law deprives the owner of land of more than 50 acres of the right to terminate leases or to evict the tenant, and vests the powers of the landlord in the village tenancy committees.

In other regions little or no new progress in the conditions of tenants was reported during the period. In Latin America only Uruguay has introduced adequate measures. In the Near East only the recent agrarian reform law in Egypt gives some security to the tenant.

The problems of tenancy security and rent controls are evidently very different in the advanced countries and in the under-developed areas. In some of the former the problem now is to reconcile a high degree of security for the tenant-farmer with the efficiency of the farming system, while in the latter the problem is still a workable protection for the tenant. Similarly, in some advanced countries a degree of rent control is reached which leaves the landowner with but scant returns on his investment, while in the under-developed countries the problem remains the reduction of exorbitant rents to levels sufficiently low to enable the cultivator to make a living.

Land Consolidation

Progress in land consolidation has been made in some countries of Western Europe and Asia. In Switzerland, where excessive fragmentation is a problem of long standing, consolidation opera-

tions between 1941-1948 affected a total area of 146,000 hectares and have since been energetically continued. In Western Germany a new land consolidation law came into effect in 1953 ; between 1945 and 1953 farms comprising 470,000 hectares were consolidated or enlarged and these operations are continuing on a large scale. In Sweden, too, land consolidation measures are being carried out on an increasing scale, particularly in forested areas. Spain and Belgium also have introduced new legislation.

In the Far East, inheritance laws as well as the pressure of population encourage sub-division and fragmentation of agricultural land. Only India, Japan and Pakistan have carried out an active policy in the field of land consolidation. In Japan, after the realization of the agrarian reform program, large-scale action has started and almost 20 percent of all cultivated land had been consolidated at the end of 1954. Some Indian States have put into effect consolidation legislation with compulsory features. But consolidation of holdings is also being carried out on a voluntary basis through co-operative societies, particularly in the Punjab. Both in India and Pakistan extensive areas of land were involved in consolidation procedures during the last decade, and programs of considerable scope are designed for the future.

The consolidation of agricultural holdings can make a great contribution to the increase of agricultural productivity and the understanding of the benefits of consolidation will remove one of the main obstacles to further agricultural progress. Although these benefits are recognized in India, Japan and Pakistan and in Western European countries, the larger part of the Far and Near East and Latin America have not yet given enough attention to this problem. Fragmentation of forest holdings creates particular problems since it prevents sound forest management. Owners of small or scattered forest holdings are either quite indifferent towards their property or lack the technical knowledge and the capital for improvements even where feasible and profitable. Little progress has been made in consolidating such fragmented forest holdings ; the development of forest co-operatives — sponsored by the European Forestry Commission — promises a partial solution, however.

Land Registration and Agricultural Taxation

The general trend in land registration is towards the establishment of a system of registration of title which is superior to the system of registration of deeds. Considerable progress has been made in various countries, including Chile, the Dominican Republic, India, Morocco, and Turkey. Lack of properly defined titles has proved to be a serious obstacle to an efficient forest policy, particularly in the Arab countries where the property relations of relatively extensive forested areas have never really been determined.

Various measures have been taken since the end of the war to reform the land tax system, sometimes as a part of the wider reform of agrarian structures. The main object has been to give the state a larger share in the increased land income and to equate the burden of land taxes among interests in proportion to their ability to pay ; partly the objective is also to offer incentive to farmers for greater production.

The principal directions in which tax changes are effected include : (i) the collection of land rentals and tax directly from the tenants and cultivators instead of through intermediaries ; (ii) a progressive surcharge on land tax in the case of larger holdings ; (iii) special taxes on commercial crops ; (iv) increasing tendency to bring agricultural income within the scope of the general income tax or to subject it to a separate tax ; (v) betterment and development of levies ; and (vi) higher taxation of uncultivated or undercultivated land.

Among the countries which have introduced important measures to bring tenants into direct relation with the goverment, special mention may be made of China, Guatemala, India, Italy, Japan, Mexico, Pakistan and Yugoslavia. Where the contact between the government and tenants has been established, there has been an increase in the gross revenue without an appreciable change in the amounts of payments made by the tenant.

Many countries have used taxation of land and its produce as an instrument for promoting extension of cultivation and increased production from land. Newly reclaimed land or fallow land brought back to cultivation is exempted from taxation, e.g. in Chile, China, Colombia, Korea and Mexico. Investment in improvement has also been encouraged by making the cost of improvement deductible from taxable income, as, for example, in the United Kingdom, where most agricultural equipment is also free from payment of purchase tax. Exemption from taxes or custom duties for agricultural equipment is also practised in a number of other countries. In the U.S.S.R., taxes on private plots and livestock were reduced in order to increase the yield from private holdings as well as the number of livestock. In China, the taxation of

land is based on normal yield and any additional produce harvested as a result of good management or favorable weather conditions is exempted in order to offer an incentive to increased production. Some countries, e.g. Brazil, Panama, India and Taiwan, have adopted higher taxation of uncultivated or under-cultivated land to ensure better utilization.

While it is yet too early to pronounce any definitive judgement on the effect of various measures of land taxation introduced, the postwar period has been marked by a growing realization of both the functional and revenue aspects of the taxation of land and its income.

However, agricultural taxation is only one sector of general taxation, and shifts in agricultural taxation must be related to corresponding shifts in taxation as a whole. In the less developed countries, taxation systems have traditionally been primitive or feudalistic in character, with most of the taxation derived from heavy charges on land, on the movement of farm products to consumers or to export, or on consumption, and with relatively little or no direct taxes on incomes or on commercial or industrial profits or gains from speculation, which characterize the taxation systems of more highly developed countries. The taxation system in the less developed countries tends to bear relatively much more heavily on low-income groups on farms and in cities, and less on the high-income groups, than do the taxation system of more developed countries. During the past decade some progress in general tax reform, to correct this situation, has been started in a few European countries, and a beginning has been made in India, but in general direct action on this wider reform of taxation still remains for the future. In less developed countries, where there has been a considerable inflation since the prewar period, changes in land taxes have often lagged behind changes in farm price levels, and this has provided some relief from the tax burden on agriculture. Recent trends in agricultural price levels compared to general price levels, however, are tending to cancel this out.

PRICE POLICIES AS MEANS OF IMPLEMENTING AGRICULTURAL PROGRAMS

In nearly all countries price policies became one of the main tools for implementing postwar agricultural programs, and the gradual evolution of such policies with changing conditions is one of the most important and instructive chapters of postwar agricultural history.

Most countries emerged from the war with more or less comprehensive systems of price controls, imposed originally as a means of combatting inflation. Relatively few of these somewhat rigid systems, however, were able to withstand the impact of postwar shortages. In many countries black markets began to siphon off an increasing proportion of the total output and to diminish significantly the supplies available for distribution on the ration. Moreover, price ceilings could be more effectively maintained on such commodities as wheat or sugar, which have to be processed centrally through mills or factories, than on products such as eggs or butter which do not require centralized processing or distribution. Price ceilings therefore tended to act as a deterrent on the production of some badly needed basic foods and to divert productive resources towards less essential commodities. It thus became necessary to raise the ceiling prices on essential foods and in many countries there was a fairly rapid transition from ceiling prices to incentive prices designed to encourage production.

In some cases, however, the conflict between the need on the one hand to encourage production and on the other to minimize inflationary pressures led to elaborate and expensive systems of consumer subsidies. It led also to the maintenance of rationing and to state control of exports and imports, re-inforced in the latter case by the need to conserve foreign currency.

In both the domestic and international spheres, however, it was recognized that the assurance of outlets at adequate and stable prices could be at least as effective an incentive to production as high but unstable and fluctuating prices. This recognition helped to some extent in reconciling the incentive and anti-inflationary policies. Many countries guaranteed prices to domestic producers at an adequate, but not unduly high, level. Similarly, assurances of outlets made exporting countries ready to accept long-term contracts at prices somewhat lower than could have been obtained immediately on the open market.

Later, as supply conditions became easier, the emphasis in price policy shifted to stabilizing farm receipts or farm incomes; to the selective expansion of agricultural output; and to the limitation of government fiscal liabilities. In this phase, incentive prices changed in relative importance by comparison with other forms of direct encouragement to specific branches of production, which had always been in use as auxiliaries to incentive prices.

Over the world as a whole, during the postwar

period, there have at all times been some countries and regions in the first phase and others in the second. For instance, in the United States and Canada, the problem of low agricultural output never arose and the price policy was directed towards supplying export requirements or safeguarding farm incomes and finding outlets for expanding production. By contrast, some Latin American countries are still attempting to cope with the problem of combining incentive prices with anti-inflationary measures. Again, while nearly all the United Kingdom long-term contracts have now either expired or been rescinded or transformed, a number of countries in the Far East have only recently entered into long-term contracts concerning the supply and purchase of rice.

Farm Price and Income Policies

In setting producer prices or in guaranteeing farm incomes, governments have usually found it necessary to take account of the prices paid to farmers, of the prices of other agricultural commodities, and of changes in supply/demand conditions. According to circumstances these factors have varied in relative importance for price determination and in the methods of implementing policy.

Where these factors could not be taken into account because of lack of statistical data, farm prices have been expressed in fixed money terms somewhat arbitrarily determined without reference to, for example, movements in producers' costs. In order to find a satisfactory price level, governments frequently have been forced to proceed on a trial and error basis, and such prices have often had to be revised in order to keep them in line with fluctuating economic conditions. For example, during the Korean export boom, the purchasing power of fixed producer prices for stable foods, particularly rice in some Far Eastern countries, declined sharply in relation to the rapidly rising prices of export crops, and later of farm requisites, and in some instances difficulties were caused by shifts of land from foods to export crops. In such circumstances an arbitrarily fixed money price can only provide short-term security to the farmer, and if not revised in time it may defeat the very purpose for which it was established. Again where prices are falling it may involve the government in heavy deficiency payments, as recently in Ceylon.

In a number of countries essentially depending on agricultural exports (Argentina, Burma, Thailand, British and French African territories) the policy adopted was to insulate domestic producer prices from world prices. As a rule a centralized marketing agency pays the producer a price related, not so much to world market prices at which the agency sells, as to domestic prices. Originally the intention was mainly to stabilize producers' real returns, but where the product dominates the economy the over-all domestic price level can be largely controlled by its price (e. g. cocoa on the Gold Coast, rice in Burma). During the postwar period of high prices, large revenues accrued in many cases from export profits which, as explained elsewhere, were sometimes used for financing agricultural development. In some countries, indeed, the raising of revenue appeared to become the main concern, as in Argentina during the first Five Year Plan and to some extent in Burma in respect to rice exports, and producer prices were kept at a level which in time probably discouraged production.

One difficulty in fixing producer prices is to establish price levels for different agricultural products which will secure the desired balance of production. This difficulty is increased if prices of some important commodities are fixed while others are left to find their own level. A second difficulty is to establish a price level for agricultural in relation to other products which will maintain a reasonable relation between incomes in agriculture and in other sectors of the economy. Many examples could be quoted of such difficulties arising.

In more developed countries a number of more complex methods have been adopted for fixing farm prices. First, there is the parity system, whereby farm prices are related to an index of prices of commodities and services bought by farmers. The most notable example is to be found in the United States but it is, or has been, in force elsewhere, as in Japan. By the United States parity system, even for commodities covered by it, farm prices are not tied precisely to the cost of goods and services farmers purchase, being free to vary above the pre-determined percentage of parity ratio. For all commodities the ratio of prices received to paid has in fact varied considerably during the years since the war. Nor are incomes stabilized, since they can vary appreciably with the volume of production. The parity system, based on supply, demand and price relationships of a much earlier period, became progressively less adapted to the needs of the period as world shortages became less acute and exports tended to decline, and the United States government found itself faced with heavy price support liabilities. Various modifications of the parity system, such as progressive reduction and more flexible application of the

parity ratio and the linking of price support with production restriction through acreage allotment, which had in fact been provided for in the original enactment, have recently tended to obviate some of its more obvious drawbacks.

A simpler variant of the parity formula, found in Australia, South Africa, the Philippines, Brazil, Uruguay, Argentina and Chile, as well as in a number of European countries, was to relate the farm price of a commodity to its estimated cost of production or to estimated changes in the cost of production. This system is relatively easy and cheap to operate, but all countries basing farm prices on cost of production calculations have run into trouble at various times because of movements in factors not adequately taken care of by the price formula. For instance in Brazil, the farm price for cotton based on cost of production estimates got out of line with world prices ; and Australia now has to solve the problem of aligning farm prices for dairy products, related to production costs, with those obtainable in domestic and overseas markets.

In the U.S.S.R. agricultural producers receive three different prices for their products according to their disposal : (i) as compulsory delivery, (ii) as sales to the state, or (iii) on the free market. A move towards incentive prices was made in 1953 by reducing the compulsory delivery quotas and sharply increasing prices for state purchases and compulsory deliveries of meat, dairy products, potatoes, vegetables, flax and hemp seeds. The profits realized by the kolkhozes and the peasants on account of increased prices both for compulsory deliveries and state purchases were estimated in 1953 at 45 percent above those in 1952. But the total gains may have been smaller as it appears that increased sales to the state may have reduced the supplies available for sale on the free market. Such reductions might have been an incentive for peasants to produce more on their private plots, but so far this seems to have been the case only for hog production. On the whole it appears that the measures adopted in the U.S.S.R., and those on the same lines in associated countries, have not yet attained their objectives.

The United Kingdom, Sweden, Norway and Switzerland have by their price policies attempted to control the level of farm incomes as a whole, as well as adjusting agricultural production to changing requirements. Here farm prices are fixed by reference to an advance estimate of total farm income, taking into account the possibility of changes in the volume of production and estimates of the volume and cost of farm inputs. This system permits a highly selective use of incentive prices for the purpose of encouraging a particular branch of production within the general framework of agricultural policy and the desired limit of subsidy liabilities. Incomes are able to benefit from rising productivity but are subject to fluctuations caused by chance factors such as the weather and unforesecable changes in the general price level. The pre-conditions necessary for income stabilization in this form are, however, only to be found in countries where agricultural production is primarily for domestic consumption, and where farm income represents only a small proportion of the national income, and where the administrative requirement of extensive statistical services exist. Although other price support schemes may in the long run evolve towards a system of over-all farm income stabilization, it is unlikely that the exact methods developed by these European countries will be capable of very widespread application elsewhere.

Most schemes of farm price or income control have seen the growth of farm pressure groups designed to influence price policy in directions favorable to agricultural producers. In the United Kingdom and Sweden, for instance, negotiation between the government and producers is an integral part of price fixing and producers may, under some circumstances, be able to obtain more price and other concessions than the government would grant of its own accord. In the cost of production system, price fixing has not been a simple matter of applying an agreed formula, but has necessitated reconciliation of divergent views by producer groups and the government, as for example for rice prices in the Philippines and wool prices in Uruguay. In the United States producer pressure groups endeavor to influence the timing, extent and direction of changes in support prices and attendant provisions. By and large it seems safe to state that whatever system of producer price control is adopted, the actual outcome depends to a large extent on a process of bargaining.

Problems of Implementing Producer Price Policies

As already noted, policies of price incentives or price guarantees to agricultural producers often necessitated the maintenance of state control of distribution and foreign trade, and not infrequently subsidies to producers or to consumers as well.

In many food deficit countries, for example, the distribution of both domestic and imported supplies was undertaken by the government. In

other countries the government purchased enough of the supplies to be able to control the general level of prices on an otherwise free domestic market. In some cases, as in India, domestic supplies were purchased at a level not requiring subsidies, though substantial subsidies on imported foodstuffs were then often necessary to bring the prices down to the domestic level or to keep them within the reach of low income groups. In other cases, for example Switzerland, consumers paid the full price corresponding to farm support level, and the market was maintained by limitations on imports.

In exporting countries too, domestic prices had frequently to be insulated from those obtaining on world markets. For example in the United States, the parity system, combined with import duties and quotas on some products such as butter and cheese, and various measures to assist exports maintained prices to domestic consumers well above the levels ruling in international trade. In many other exporting countries domestic consumer prices were insulated against the inflationary pressure of high export prices. In some countries, including Canada, Australia and Denmark, ceiling prices were enforced. In other countries, particularly where the export commodity is predominant in the national economy, e.g. rice in Burma and Thailand, domestic consumer prices were controlled indirectly by diversion of export profits into government revenue through export taxes or export monopolies, adequate domestic supplies being ensured by quantitative export control. Similarly in the United States in one year there was an unexpectedly short cotton crop, and in this case, too, export limitations were used to keep domestic prices well below international prices. Export duties to recapture some of the windfall gains for the government, to fight inflation and prevent too great a diversion from food crops to export crops were widely used during export booms, in, among others, Far Eastern countries, Egypt and the British African territories. Again, where the domestic market was not insulated from the international, domestic consumer prices of export commodities were in some cases subsidized, as for example, dairy products in New Zealand.

Because of the burden of subsidies and the cost of the elaborate administrative machinery there was a move towards a restoration of free markets, but progress was only halting and experienced many setbacks, particularly in the Far East, where the acute shortage of food grains continued until the 1952/53 harvest. Distribution and consumer price controls have now been adandoned in most countries ; an exception for instance is Japan where price incentive policies for producers are continued. In Latin America, policies designed to check inflation by consumer price controls were adopted only in more recent years and are still in force in a number of countries, e.g. Chile and Mexico.

Foreign trade in agricultural products still remains to a large extent under government control. Thus many European and Far Eastern countries continue their import monopolies or other controls for essential foods, partly for balance of payments reasons and partly to stabilize both consumer and farm prices by regulating supply levels. Schemes to stabilize supplies and prices in spite of crop variations by use of government stocks are in fact being increasingly adopted in Far-Eastern food grain deficit countries as a permanent policy. The recent larger supplies have provided an opportunity to start building up the necessary reserves in some countries. In many other countries public agencies have been established under the joint control of representatives of trade and farm groups with power to promote orderly marketing, license handlers, control supplies, and thus stabilize prices. In Western Germany, for instance, imported grains, sugar, meat and dairy products pass through a public import agency before they may be traded in domestic markets, so that both timing and volume of distribution can be controlled.

The burden of subsidies has been gradually reduced, partly by allowing consumer prices to rise and partly by the gradual decline in world price levels. Where they remain, they have increasingly assumed the character of producer rather than consumer subsidies. Thus in Japan rice subsidies have been switched from import to domestically produced supplies. In the United Kingdom farm prices and incomes are maintained by deficiency payments to producers, leaving actual prices to find their own levels. In this way consumers receive much of the benefit of lower world prices.

But if declining world prices have eased the burden of subsidies in importing countries, they have also led increasingly to export subsidies in countries where domestic farm prices have been guaranteed at levels now above the world market price. Such subsidies are not always direct. They may take the form of trading losses. Again multiple and variable exchange rate systems, a form of concealed export subsidy, are practised widely in Latin America, but also in some countries of other regions, for example Indonesia and Thailand. By these systems, governments encourage exports

of certain commodities or in certain directions. The instability of export prices inherent in this method may at times however be discouraging to buyers.

Increasing subsidy liabilities have also led to modifications of producer support policies in exporting countries, such as reductions of support levels, as in the United States, or complete abandonment of guarantees, as for example in the case of jute in Pakistan or of cotton in Brazil.

Other countries have limited price guarantees to part of the total output, e.g. quantities required for domestic consumption, leaving additional marginal supplies to feel the impact of changing conditions of supply and demand. Thus for wheat in France, and wheat and dairy products in Australia, price guarantees are limited to a major portion of the total output, the remainder, including all or part of the exportable surplus, being left to find its own price level.

Not all attempts to stabilize export prices imply the use of subsidies. Another device is the price stabilization fund, fed by taxes or levies on exports when export prices are above support levels, which is used to subsidize prices in time of world market depressions. Such funds are used in Australia for wheat and dairy products and for major export crops in most British and French African territories. This system insulates the producer price to an extent varying from country to country from fluctuations in world prices, but as sometimes operated in recent years, e.g. for cocoa on the Gold Coast, may have provided the producer less incentive to expand production than would have been justified by world demand.

International Price Stabilization Efforts

Intensive controls of national markets have led to continued government intervention in international trade, partly with a view to supporting their national policies, partly to counteract the effects of national policies elsewhere. Exporting countries anxious to secure outlets met importing countries seeking stability of supplies and prices. The outcome has been a number of new types of bilateral and multilateral trade agreements.

During the early postwar period essential agricultural goods in short supply were distributed in accordance with allocations established by the International Emergency Food Council. This accentuated the trend towards the establishment of government import and export monopolies and the widespread practice of trading essential goods under government-to-government contracts. In their simplest form, these government contracts were short-term agreements covering delivery of a determined quantity within a period of one year or less at a pre-determined price, which was usually somewhat lower than prices outside the contract. Under barter agreements, mostly concluded between two soft currency countries, who exchange two commodities essential for their economies, prices usually run considerably above world market prices. They are a device to circumvent foreign exchange difficulties and are mostly short-term. Long-term contracts covering more than one year partly pursued the same objective. The United Kingdom contracts with Commonwealth countries aimed, in addition, at providing incentives to expanding production in the exporting country, while at the same time the somewhat lower prices ruling under the contracts helped the importing country to prevent inflation. Under such contracts importing countries undertake to purchase determined quantities, or minimum or maximum quantities at prices fixed in advance, either in absolute terms or according to an agreed method limiting fluctuations and thus stabilizing prices to some extent. The lower price ruling under many of these contracts may be considered the premium paid for guaranteed markets. It also provides some insurance against prices being at non-competitive levels after the expiration of the contract. While the United Kingdom gradually terminated long-term contracts after the Korean boom and as supplies became more abundant, new long-term agreements have been concluded in recent years by Burma with a number of countries in order to assure markets for her rice exports. Prices were pre-determined for a number of years on a diminishing scale, but Burma has committed herself to pass on to her contract partners any price concession granted to any other country. This clause may hamper the marketing of additional surpluses or cancel the price guarantee under the contracts. A long-term rubber-rice barter agreement concluded between Ceylon and China stabilizes the prices for both commodities at levels above the world market. After termination of the contract adjustment to world markets may be difficult. Under long-term arrangements production and prices tend to develop in response to one market in insulation from world markets, particularly if all or the major share of the surpluses is traded under contract.

There was also some progress during the postwar years in multilateral stabilization efforts. The new postwar agreements, the International Wheat Agreement and the International Sugar Agreement,

are more concrete and specific than earlier commodity agreements and unlike some concluded before the war (e.g. rubber, tea) include importers as well as exporters. Under the International Wheat Agreement, prices are allowed to fluctuate between certain limits, exporters being obliged to offer determined quantities at the maximum prices and importers to purchase quotas at the minimum price. Sales outside the quotas are sufficient to establish an effective world price. The International Sugar Agreement is based on a system of export quotas which vary according to fluctuations in the market price.

Direct Inducements to Production

The sometimes inflationary tendency of price incentives has already been discussed, but there are a number of other defects which seem inherent in this type of policy. For example, unless the relative prices of different agricultural products are very carefully adjusted, the increases tend to be somewhat unselective and not necessarily focussed on the commodities most needed. Where extensive economic and statistical analyses of past reactions to price changes are available, as in the United States, the method may be used with greater certainty. In some cases, propaganda and even directions had to be used to steer production into required channels.

A main argument for price incentives is that farmers can afford to finance improvements in their equipment or technical methods out of their increased profits. But these may not be adequate in the case of smaller farmers who may need it most, while indifferent farmers may be too resistant to technical change to take advantage of the opportunity for improvement offered by higher profits. Moreover, the policy is extravagant in that higher prices will merely swell the profits of those farms already producing profitably at near maximum capacity at the old price level.

In the early postwar years, the need to expand production in many countries was so acute that these disadvantages had to be disregarded. Later, as the burden of subsidizing incentive prices became increasingly onerous, attempts were made to find less expensive and more effective methods. These primarily took the form of direct inducements to farmers to effect improvements in equipment and technique without raising prices all round. One method, already discussed, was to improve credit facilities. Others included measures to reduce the cost to farmers of certain essential production requisites, or the provision of direct grants for specific farming operations.

Many countries, for example, have subsidized farmers' means of production, the commonest being fertilizers, machinery and fuel. In some countries these subsidy operations have been rather transitory ; for instance, a practice common to a number of countries in Latin America is for the government to arrange for a limited number of farm machines to be sold at subsidized prices so as to give an initial impetus to the mechanization of agriculture. In others, as in the United Kingdom (fertilizers) and Italy (fuel for farm machinery), such subsidies have become a permanent feature of the programs to raise production and farm incomes. In India, a fertilizer subsidy was introduced at a decreasing annual unit rate, with the intention of encouraging farmers to step up production sufficiently to allow them to pay for later unsubsidized supplies, while at the same time encouraging a domestic fertilizer industry at an economic level of output ; this proved so successful that a considerable increase in fertilizer production has already become necessary. Also to be mentioned in this category are the numerous instances of subsidy and even free supply of improved seeds and other planting material, or the provision of improved seed grain in exchange for an equal quantity of the farmers' own production. This not only supports directly the general aim of agricultural expansion, but also serves the purposes of technical education.

The most elaborate examples of subsidies or grants for specific farming operations are to be found in the United Kingdom, e.g. the grants for ploughing up grassland which has been out of cultivation for a number of years, or in the United States for certain soil conservation practices. In addition, there is the more indirect form of assistance through subsidized services, such as machinery pools, artificial insemination, pest control or technical advice. Here government expenditure is directly reflected in improved management methods or a higher technical standard leading to greater output or higher incomes.

The experience that countries have already had with these direct inducements to expand production has shown that they are less expensive than incentive prices and suggests that they are capable of a good deal wider adaptation and flexibility. They have so far been used in most countries as supplements to the general policy of incentive prices, but the changing agricultural situation has lent them a greater importance and there is now better appreciation of their value for maintaining

farm incomes, e.g. for social reasons, or for the selective expansion of production in conditions of relatively abundant supply. They may even offer an acceptable alternative to price incentive policies in free market conditions when guaranteed prices can no longer be maintained.

Price Policy and Marketing Problems

Parallel with the development of price policy in response to changes in the world agricultural situation, the attitude to marketing problems has undergone a marked change. In the early part of the period, in the face of overwhelming demand for increased production following the wartime shortages, improving marketing arrangements received relatively little attention. Governments preferred to accept and crystallize marketing systems in their prewar forms rather than seek improvements likely to provoke trade resistance, even though it was realized that price incentives might sometimes not reach the farmer, being siphoned off into the marketing system. This is especially true in the under-developed countries where inefficient marketing practices are frequently associated with retrogressive land tenure systems and inadequate sources of credit. Reduction of marketing margins can help maintain farm incomes while allowing consumers to benefit from the general lowering of relative agricultural prices. Most countries have recently given more attention to legislation and the allocation of more technical and financial resources for the furtherance of marketing efficiency.

In general there has been a sharp contrast between the handling of export commodities and of goods produced for domestic markets. The former come under the direct influence of buyers controlled from the destination points and acutely conscious of competitive standards and performance. Whereas the marketing of commodities exported to the United States and Western Europe is influenced by the standards of those countries, the spread in domestic marketing efficiency is extremely wide.

In the more advanced countries the last decade has seen further refinements in labor economy and retail salesmanship. In the United States mechanized handling and retail self-service have been associated with the provision of almost all household requirements at single convenient locations. At the same time there has been a marked increase in the services rendered to consumers by food retailers in sorting, packing, washing, preparing for cooking and even pre-cooking. The rapid extension of quick-freezing methods and low temperature sales cabinets in the food trade has extended the marketing life and raised the quality of perishable meats and vegetables at the consumption point. Because of the increase in services rendered, however, the distributive margin has tended to widen and declines in food prices at the producer level since 1952 had very little reflection in lower prices to United States consumers. Large volume sales by single enterprises have permitted direct procurement from producing areas and by-passing of wholesale markets and intermediaries. Decentralization is especially evident in the meat trade. Major grocery chains have set up their own purchasing departments, notably for fresh fruit and vegetables. In spite of some movement to less congested sites, wholesale produce markets are steadily declining in importance.

In Western Europe some of the economies resulting from the wartime rationalization schemes have been maintained, e.g. the distribution of milk in the United Kingdom. Though controls have been relaxed, no real attempt has been made to restore the old pattern of duplicatory retail delivery services. The abandonment of price controls in favor of deficiency payments at the farm level has given the market mechanisms freedom to express shades of consumer preference in terms of differential returns to producers and handlers. In this way the nature of consumer demand for different types of meat, eggs and cereals in the United Kingdom is clearly identified. With the termination of rationing and trade allocations, consumer demand analysis and sales techniques have been taken up with renewed interest.

In many countries pressure for orderly marketing procedures has led to the establishment of public agencies under the joint control of representatives of trade and farm groups. They have been given full power to regulate marketing procedures, license handlers, inspect business premises, control market flows and divert supplies into alternative uses. In most cases price stabilization is the primary objective with the improvement of quality standards and marketing efficiency as a justification to the consumer.

Some of the most interesting developments have occurred in Asia where governments have made extensive use of state and co-operative organizations to implement government purchase policies and are now directing them to the task of freeing peasant farmers from financial servitude to local merchants. The Kopra Foundation operating in the outer islands of Indonesia promotes purchases from drying co-operatives rather than commercial

intermediaries. The ACCFA marketing organization is constructing its own mills and warehouses in the Philippines. In these countries co-operative credit and warehousing programs are being discussed or are under way to help relieve needy producers of the compulsion to sell their crops immediately after harvest.

Agricultural marketing co-operatives have been a mainstay of farmer bargaining power in many parts of the world. Specialized fruit and nut co-operatives in California frequently include as many as 85 percent of the growers. By selling through a single agency the weakness of the individual producer, who controls an insignificant part of the crop, is converted into one of joint semi-monopolistic strength. Both in the United States and Scandinavia marketing co-operatives frequently carry the product through the wholesale stages, thus substantially reducing the proportion of the consumer price accruing to market intermediaries. Under the aegis of benevolent authorities marketing co-operatives have multiplied in Africa and the Far East.

Inability to establish and maintain recognized quality standards has been a major cause of high margins in primitive markets. In setting up the Bombay Milk Scheme, the government intervened directly to provide an improved supply of high quality milk, together with lower-fat "toned" milk at greatly reduced prices, and to provide low-cost distribution. In Thailand, an FAO training center on rice grading taught a staff of local workers to introduce and enforce improved grades. The application of quality standards to grains has been most successful where grade specification is made a condition of price support and storage credit.

With the establishment at strategic points of modern packing, cleaning and storage facilities, the Near Eastern countries have been able to develop new export markets for dried fruits and grains. The new meat packing plant for Ethiopia is illustrative of the investment and construction needed if the produce of such countries is to reach distant markets in good condition. Both the tropical American countries and the rice producers of Asia are now embarked upon extensive construction programs. The Hong Kong fruit and vegetable, and fish markets are outstanding instances where the provision of display and storage premises, transport vehicles and auction methods of price determination has become the basis of an efficient local marketing machine, with a greatly increased proportion of the retail price returned to the producer.

Apart from the development of market information on forestry products and better grading services, the improvement of timber marketing conditions and facilities has gone a long step forward. Better production methods and storage possibilities have increased the value of the commodities marketed, and while before the war great quantities of wood deteriorated as a result of inefficient or even non-existent storage facilities, new and rational storage systems today have reduced the deterioration and waste to incomparably lower levels.

IMPROVING PUBLIC SERVICES IN AGRICULTURE

Extension Services

A most significant postwar development, vital for the progress of postwar agriculture, has been the establishment of independent extension services in a large number of countries. Previously, with the exception of a few of the more advanced countries, education work with farmers was of a very limited character, and was carried out in conjunction with regulatory, research or other activities. Extension work as a sideline to administrative duties of departments of agriculture, or as a part-time activity of research workers and teachers, did not provide the intensity of effort needed to bring about change in agricultural practices. Independent agricultural extension services have now been established in the majority of countries and are in various stages of development. The task ahead is to intensify and expand these services to the point where every farmer has direct contact with the service, and where the service is adequately staffed and financed for providing technical guidance in all fields of agricultural development.

A second significant development, particularly to be noted in the Far East, has been a broadening of orientation of extension systems, with emphasis still upon agriculture but allowing for co-ordination of agricultural education, health and other services to rural people. These systems are in contrast to the more traditional agricultural extension services which operate under the ministries of agriculture. This broader approach has grown out of: (i) recognition of the need for attacking simultaneously the problems of food production, health, literacy, etc; (ii) the necessity to use most effectively the limited human and physical resources available; and (iii) the absence of non-governmental facilities and sources of supply for rural improvement in many countries. Commun-

ity development programs of India, Pakistan, and a number of other countries are examples of this type of development. In order to reach every farm and village with agricultural, health and other services, these countries are forming groups of multi-purpose workers on the village level. These are rural people with some education who are being trained and carefully supervised to perform selected educational tasks. Thus a limited number of technically trained workers in various fields can impart their knowledge to thousands of farmers and villagers.

Lack of technically trained personnel has made progress much slower in the establishment of satisfactory forest services. The few competent technicians are furthermore mostly centralized in the big cities. Under the guidance of FAO and aided by its technical assistance program, countries have now started to establish schools for foresters and fellowships for students from smaller countries.

Another outstanding development of postwar extension is an increasing recognition of the role of women and youth in rural improvement. The 4H Clubs movement in the United States and Young Farmers' Clubs in the United Kingdom were forerunners of a world-wide development of rural youth work. Since the war this movement has spread to Latin America and to countries of the Far East. Home economics extension services are still in their infancy except in the United States and a few other countries, but the need is recognized and encouraging results are being achieved throughout Northern Europe, and in other regions.

Marketing extension as a consistent public service is largely confined to North America. In the United States the Research and Marketing Act of 1946 furnished substantial financial assistance to marketing research projects which proved of immediate value in the improvement of agricultural marketing efficiency. By 1954 there were over 300 marketing specialists in the United States extension service at the different colleges of agricultural and home economics, advising on all aspects of the marketing process.

Elsewhere the organizations entrusted with education and extension responsibilities have tended to give less attention to marketing than to other aspects of agriculture. The basic difficulty has been that marketing services must extend beyond the farm and cover all the successive intermediaries who constitute the channels between the farmer and the consumer and over whom the farmer has no control. It is for this reason that, apart from North America, marketing extension has only developed fully where, as in Denmark, agricultural co-operatives do in fact control the later phases of marketing, appreciate the implications of processing, transportation and merchandizing problems and are thus able to direct their members along lines which reflect a progressive balancing of marketing and production interests.

A great deal of the stimulus to organizing or improving existing extension services has come from technical assistance and has largely been provided by FAO, FOA and various private foundations. FAO has organized regional meetings and training centers which have stimulated member countries to develop and improve their extension services. The Inter-American Institute of Agricultural Science has conducted research in extension methods and has organized training centers for extension workers throughout the Latin American republics. The United States bilateral programs have provided direct technical assistance in this field, and in addition have instigated a project under which individual governments enter into agreements with agricultural colleges in the United States, whereby the latter provide personnel for the development and operation of national schools of agriculture, experiment stations and extension services. This movement promises eventually to provide trained staff and research facilities for continuing agricultural development in participating countries.

Agricultural Research

Progress in agricultural research has been extremely rapid since the war in many countries. In the less developed regions, however, a shortage of trained personnel and absence of experimental facilities have remained formidable obstacles. This uneven progress has been counteracted in part by programs for exchanging research literature and the movement of scientists between countries for study and training on a scale unknown before the war. Through such exchanges deficiencies have become more obvious and a number of countries have taken the first steps to place their agricultural research on a suitable scientific level based on systematic work under their specific conditions.

Immediately following the war European countries directly affected by hostilities found the rebuilding of research facilities a difficult but urgent task. Trained personnel had to be re-assembled, contacts with workers in other countries re-established and new equipment obtained. Many of the most important agricultural research insti-

tutions in Europe were thus unable to commence effective work for some time. The vast postwar rehabilitation programs provided equipment, technical literature, and in some cases even funds for the rebuilding of damaged agricultural research facilities in Europe. In Asia, particularly in China, Korea and to a lesser extent in Japan, much the same postwar situation was found. In these countries too, the rehabilitation program was instrumental in placing research on a sounder footing.

The advanced countries not directly affected by military operations were in somewhat the same position. In North America key staff was scattered, many research programs interrupted in favor of emergency work, and worn-out equipment often impossible to replace. But the research institutions of these countries recovered quickly.

After the war, numerous new techniques such as the use of radioactive isotopes opened new fields. These techniques have advanced so fast that agricultural research workers found it imperative to develop better ways to facilitate international co-operation among those engaged in similar fields of work. As agricultural research grew more complex and expensive, countries have increasingly sought ways of fostering co-ordination of research programs both internally and internationally. This tendency became particularly evident in Europe where, after discussions extending over several years, a special sub-committee on agricultural research was formed under the FAO European Committee on Agriculture. In Europe there has also been a rising interest in more extensive intercountry movement of research scientists and exchange of information on projects under way. In the Far East the FAO International Rice Commission has fostered the organization of a broad-scale rice hybridization project which covers all the rice producing countries. This is an outstanding example of a co-ordinated research project in a single field bringing benefits to many countries.

In many less developed countries there has been a marked increase of interest in agricultural research as the benefits for each country in fostering its own agricultural research program have become better understood. In Iraq, for example, a completely new agricultural research administration has been designed and is now in the process of coming into operation with the help of technical assistance experts. In Central America, FAO is calling a meeting of research administrators to discuss ways of strengthening the organization of research. As in the case of extension work, the technical aid programs of the United Nations and the specialized agencies, as well as those of the United States and the Colombo Plan, have helped the development of agricultural research programs. However, the training of research scientists is still a substantial stumbling block in the way of effective research organization. Technical assistance experts have in many cases filled the gap by providing some training on the spot, but many countries still have a long way to go. Fellowship programs can provide valuable supplementary training abroad and returned fellows are now beginning to contribute to agricultural research in their home countries.

Agricultural Marketing

Public services in the field of agricultural marketing have been in existence for many decades in a number of countries in the Western Hemisphere, complementing and facilitating the work of private marketing agencies. In North America, especially in the United States, the provision of official market news reports, crop reports, and outlook information has been developed to a high degree of perfection. Recently, as a result of the pressure of surplus disposal problems, United States government agencies have given greater emphasis to guidance and promotion of technological research aimed at finding new uses and markets.

In Europe intergovernmental agencies have initiated programs to facilitate marketing of agricultural products. In 1950 the Economic Commission for Europe established a Working Party on Standardization of Perishable Products, which in collaboration with FAO has been studying proposals for standardization of trade in cheese and eggs, and standard grades and quality controls for fruits and vegetables. A draft agreement containing provisions to be applied in Europe for the commercial standardization and quality control of fresh fruits and vegetables moving into international trade has been submitted to governments, and recommendations been made on minimum quality requirements for potatoes and citrus fruits. The standardization of conditions of sale for cereals and citrus fruit is under study. The OEEC is also taking an increasing interest in improving marketing services in Europe. In the field of fruits and vegetables the establishment of a European Market Information Service is of particular interest.

In the Near East and the Far East some governments have become increasingly concerned in

the various public aspects of marketing, including the collection, compilation and dissemination of marketing information and development of grades and standards. The Turkish government has established the Office of Standardization in the Ministry of Economy and Commerce. Priority is given to export crops and it is hoped that gradually the present program of standardization and inspection will be extended to major domestic farm products as well.

In India the Directorate of Marketing and Inspection has continued the publication of marketing studies on specific commodities. Grading under the Agricultural Produce (Grading and Marketing) Act of 1937 was extended to a number of commodities such as vegetable oils, butter, fruits, fruit products and eggs. Plans are under way to improve market information by establishing a central market information service.

The "regulated markets" in India eliminate the crudest aspects of primitive bargaining. Here market authorities supervise weights and measures, fix charges and sanitary standards and provide information on prices and the volume of movement between markets. New legislation will provide for a decimal currency and uniform weights and measures. In Pakistan, the Ministry of Agriculture has initiated the preparation and publication of marketing reports and studies. Prior to the establishment of a grading system for wool, a handbook for grading of wool was published. In Thailand the government has recently appointed a committee to study means of controlling the quality of Thai export commodities and formulate grading descriptions. The possibility of establishing an objective system of grading based on written descriptions is under study. In Ceylon the Marketing Department has expanded its marketing information services and the advertizing of local produce; the chief organ of information is the monthly circular "Marketing Intelligence" of which about fifteen thousand copies are issued.

Proposed definitions of uniform standard grades for rice on an international level were the subject of discussion at meetings organized by FAO in 1953 and 1954 in Bangkok and Rangoon on the economic aspects of the rice industry.

In Libya an advisor from FAO has assisted in introducing a law requiring all citrus exported to be sorted, cleaned, graded and packed according to acceptable export quality standards. As a result the 1953/54 crop was sold at approximately double the previous export price, while only a relatively small investment was required in packing and grading equipment. In many African territories the establishment of grade standards, with wide premiums paid for quality, for important export crops has stimulated considerable improvement in quality. In Nigeria for instance, the proportion of palm oil purchases in the "special" food use grade rose from one percent in 1950 to 50 percent in 1953.

In forestry, marketing information centers and services have been or are being developed in most parts of the world, either in connection with the forest service or sponsored by trade and industrial organizations. More efficient market information and better public understanding of its utility are today essential features of most countries' forest economy. This progress has been supplemented by the creation of marketing organizations and establishment of adequate grading rules for species only introduced on the market after the war, particularly in respect of hardwoods from Asia, Africa and Latin America. Parallel with this development old and often obsolete grading rules for traditional commercial species in Europe and North America have been revised and improved to correspond better with today's requirements. This work has been undertaken by experts in either national forest services or by research institutes or other personnel employed for the sole purpose of establishing or revising the grading systems.

Chapter IV - PROGRESS IN TECHNOLOGY AND IN THE UTILIZATION OF PHYSICAL RESOURCES

AGRICULTURE

Changes in agricultural technology and resource development are usually difficult to discern from year to year and even more difficult to measure. For this reason *The State of Food and Agriculture* usually provides little information on this basic subject. The present ten-year review has provided an opportunity to make good this deficiency insofar as the data permit. Despite the inadequacy of the available information, at least part of the story can be told.

Water Use and Control

Programs for better use and control of water have played a major part in the struggle of the postwar decade to increase food and agricultural production. In the arid and semi-arid areas such as the Near East, parts of Latin America, Western United States and inland Australia, the main emphasis has been on bringing under cultivation areas hitherto devoted to extensive grazing or even desert lands. In Southeast Asia, with abundant but seasonal monsoon rains, the main objective has been a controlled water supply system instead of inundation flooding during the traditional cropping period ; some attention has also been given to the provision of irrigation during the dry season. In the humid and semi-humid regions with year-round rainfall, as in Northwestern Europe and Eastern United States interest has centered on supplementary sprinkler irrigation. In several areas primary attention has been given to control of floods, drainage and problems of water-logging and salty land.

Progress in developing water resources has been uneven, but in a number of important countries it has been a decade of considerable achievement. Except in regions where the war had little impact on economic development, specifically in the Americas, little progress was visible during the first half of the decade, but later events have shown that this was a period of active preparatory work. During the second half of the period the work has begun to gain momentum in many countries.

Quite the most outstanding progress has been made in certain countries of the Far East, where a tremendous impetus has been given to programs for utilizing more of the abundant water supplies for the benefit of agriculture. This is important not only because of the direct effects of irrigation on crop yields, but because a controlled water supply provides a much sounder economic basis for improvements in farming technique, such as using fertilizers, improved seeds and better cultural methods. Development of water resources is thus the spearhead of the drive for raising crop yields in India, where the irrigation program is probably the largest in the world aiming at doubling the area under irrigation (already nearly 20 million hectares before the war) within two decades. Practically no engineering progress was made until 1951, but in the first three years of the Five Year Plan over 3 million hectares were added to the irrigated area and around 5 million hectares will have been brought under irrigation up to March 1955. Pakistan also has undertaken a number of really large projects. Although it is too early to obtain precise figures, accomplishments during the decade may approach three-quarters of a million hectares. A steadily progressing irrigation program in Thailand has brought over 400,000 hectares under irrigation between 1947 and 1955, an increase of nearly 70 percent. In other Far Eastern countries programs have been on a much smaller scale and some have still not reached the construction stage, but in the region as a whole probably between 6 and 7 million hectares have been added to the irrigated area during the last decade.

In the Near East many countries have large and medium-scale projects under way but the rate of progress has often been rather uneven. It is possible that by the end of the decade a total of nearly half a million hectares may have been added

to the irrigated area of about 11 million hectares. In the Mediterranean area of Southern Europe and the North African littoral, a few large projects have been executed, but the further development of water resources has progressed rather slowly on the whole.

The region showing the second greatest advance is Latin America, where around 1.5 million hectares have been brought under irrigation, an increase of about 25 percent. Here again the record is very different from country to country, Mexico being responsible for about half of the total. As a result of this progress, irrigation facilities are now available on areas representing about 20 percent of the cultivated area in the Far East, about 15 percent in the Near East and about 7 ½ percent in Latin America.

In the Western United States the principal progress has been in developing ground water. Overall progress in irrigation has been considerably below that of some earlier decades. In Australia reservoirs under construction will more than double the capacity of existing dams, which have provided irrigation water for about half a million hectares in the southeast, but actual additions to the irrigated area during the decade are not known.

Information from the U.S.S.R. and China is of a piecemeal nature, but does indicate that in these regions there has been very substantial progress in irrigation development in the second half of the decade. In the U.S.S.R. five major irrigation projects announced in 1950, and scheduled for completion by 1958, would irrigate an area in excess of 6 million hectares, but the rate of achievement is unknown. Irrigation programs in China may be developing at a rate more or less comparable to that reached in India.[1]

In several temperate climate areas where a more advanced stage of development has already been reached, irrigation is beginning to be used on a large scale to provide even more intensified agricultural production, either by preventing moisture deficiency during vital periods of crop growth or by producing special crops. Supplemental irrigation has been increasing rapidly during the last decade in the Eastern United States and Western Europe. One of the most important factors has been the improvement in equipment for sprinkler irrigation, which has reached a stage of very great suitability and adaptability at the same time that the distribution of electric energy and fuel oils in rural areas has also been greatly improved.

[1] Data published by the *Far Eastern Economic Review* and the Information Service of ECAFE.

However, the real progress achieved in various parts of the world during the last decade in the use and control of water resources cannot be expressed wholly in figures. The work of studying and surveying, of planning the actual projects and building the basic waterworks has occupied several postwar years and is only now beginning to bear fruit. In many countries, notably in the Near East, the decade has seen the beginnings of a systematic survey of water resources including ground water, which has been greatly neglected in many countries. The utilization of this growing body of knowledge is a matter for the future.

As far as the planning of irrigation programs is concerned, there is still much room for improvement. Too often they have lacked firm foundations in the form of thorough surveys and a really comprehensive approach, taking into account all factors determining their usefulness. Difficulties have been experienced in providing a regular system of financing for construction and maintenance, or in bringing the water to the land, and thus the heavy investments have not always yielded their full benefit. Sometimes construction of new irrigation systems has been undertaken without paying sufficient attention to the possibilities of improving existing ones.

The conservation of water by the users and the efficiency of its use could generally be greatly improved. Considerable wastage of irrigation water continues in some areas, especially in Latin America. In many countries, where long irrigation tradition has made the farmers highly experienced, particularly in the Near East, irrigation systems are sometimes kept from efficient use by the high duties charged for the water. In this respect no notable progress can be reported except from the North American continent, where the efforts of highly developed extension services, aided by the systems of subsidy payments for land improvement, have influenced irrigation farmers to improve their practices. Research on water requirements for various crops has been given more attention to assure the most productive use of the water available. In most arid or semi-arid regions, real improvement cannot be expected on a considerable scale as long as the countries are not in a position to establish adequate advisory services to demonstrate the possibilities of improved irrigation practices.

Another problem of increasing concern is the deterioration of irrigated land due to soil salinity. In spite of wide studies, especially during this last period, annual losses in productive capacity of irrigated lands continue to exceed greatly the

gains from preventive measures and reclamation. This deterioration of valuable soil affects almost the whole of the Near East, most of West Pakistan, a part of India, the western regions of the United States and many areas elsewhere. The problem is now being controlled in the United States but at a cost which makes it prohibitive in most other countries. Although reclamation of saline soils is vital, it has become clear that the only solution lies in effective drainage and good irrigation practices. The need for providing irrigated land with an adequate system of drains has become better appreciated during the past decade, but the high costs involved continue to be a deterrent. In the more humid regions, drainage of land has made considerable progress, due mainly to advancement in knowledge of requirements and improvements in equipment.

A very important aspect is the control of flood water. In numerous major river valleys tremendous quantities of potentially valuable water are not only periodically wasted but destroy soil and crops over wide areas. Increasing emphasis has been put on the control of floods, through comprehensive programs of watershed protection and management as well as the building of storage reservoirs. Among countries where important progress has been made during the last ten years in flood control are the United States, Greece, China (for the protection of millions of hectares along the Hwai, Yangtze, Pearl and Yellow Rivers) and Iraq where flood control projects in the Wadi Tharthar and Habbaniya basins in the Tigris and Euphrates valleys are now nearing completion.

Soil Fertility

Under this heading some attention is paid to methods of maintaining soil fertility other than the use of commercial fertilizers. However, information on the use of the latter is so much fuller than that on other aspects of the subject, that they inevitably receive a disproportionate share of the space.

Before World War II, there were three highly industrialized regions, Northwestern Europe, the Eastern United States and Japan, which produced and consumed fertilizers on a large scale. These areas had in common a relatively dense population, a fairly high intensity of farming practices, and soils which, without great natural fertility, but with a reasonably adequate supply of water, showed a good response to fertilizers. Large quantities of phosphates were also used in Oceania and substantial amounts of nitrogen in Egypt. However, high density of population and pressure to increase crop production have not always resulted in the use of large quantities of commercial fertilizers. For instance, the Indian sub-continent and China scarcely used commercial fertilizers, since in the absence of industrial development they could only have been obtained at too high a cost to the farmer. In many other areas such factors as lack of water, poor transportation and sparse or inexperienced populations limited the use of fertilizers.

It is this prewar pattern rather than the immediate postwar position which provides the starting point for studying changes during the last decade. The general decrease in fertilizer consumption in Europe, Northeast Asia and Oceania between 1939 and 1945, as a result of damage to fertilizer plants and isolation from supplies, was a temporary phenomenon. It had, however, a major influence on food supplies for several years in countries accustomed to using fertilizers. One really significant development during the war years was the tremendous upsurge in fertilizer use in the United States where consumption almost doubled within a brief period. This trend continued into the postwar decade.

Postwar recovery in the field of fertilizers was particularly vigorous and sustained, supplies being utilized as soon as they became available. Prewar levels of consumption were reached everywhere by 1950. Thereafter world consumption continued to rise steadily and by 1953/54 had almost doubled as compared to prewar.

The most spectacular increase has occurred in North America where consumption is now four times as high as before the war, accounting for one-third of the world total of all fertilizers used as against one-sixth in prewar years. In Europe, where levels of consumption were already high, the increase compared with the late 1930's is of the order of 50 percent. Consumption of phosphates in Australia, New Zealand and South Africa has doubled, but use of other nutrients remains very low. The other three traditional intensive users of commercial fertilizers, Japan, Egypt and coastal Peru, are each consuming 50 to 60 percent more than before the war. Thus there has been a steady upward trend in fertilizer consumption in countries previously accustomed to its use partly through more intensive application. More favorable prices have undoubtedly been a major factor in this rise, but a growing body of detailed experimental knowledge and a growing fertilizer consciousness among farmers also underlie the

trend, which shows no signs of changing. One significant factor has been a rapid rise in the use of fertilizers on pastures in Europe, in Oceania and to some extent in North America. For instance in Australia the area of pastures to which artificial fertilizer was supplied rose from 7½ million acres in 1938-39 to 23 million acres in 1953-54. The greater consumption of fertilizers has undoubtedly made a significant contribution to generally higher yields in Europe, North America and Oceania.

We turn now to the areas where commercial fertilizers were either unknown or used only for export crops before the war. Viewed against levels of consumption in the regions covered in the previous paragraph the situation has not changed much. These vast areas, covering most of Asia, Africa and Latin America, still consumed less than 4 percent of the world's fertilizers in 1953/54. Absence of industrial development, high transport costs, low standards of education and extension services, adverse institutional conditions (e.g. tenure, credit), inadequate experimental data, all continue to militate against any rapid expansion of fertilizer usage. Nevertheless, the picture is not wholly unchanged. In aggregate the countries in this group are now consuming around 625,000 tons of fertilizers in terms of nutrient content compared with 140,000 tons (1.7 percent of the world's total) in 1938.

TABLE IV-1. FERTILIZER CONSUMPTION IN TERMS OF TRADITIONAL AND NEW USERS IN CERTAIN REGIONS

REGION OR COUNTRY	Prewar	1953/1954
	Thousand metric tons nutrient content	
Far East		
Japan and former territories	760	1 220
Other countries	100	240
Near East		
Egypt and French North Africa	120	200
Other countries	3	80
Africa		
Union of South Africa	55	135
Other countries and territories	18	36
Latin America		
Peru and Chile	60	110
Other countries	18	270

In the Far East before the war use of chemical fertilizers was confined to specialized export crops. During recent years most governments in this region have made special efforts to inculcate the idea of using fertilizers on rice and other basic food crops and have helped farmers obtain fertilizers at economic prices. India, Pakistan and the Philippines have now established one or more plants for manufacture of nitrogenous fertilizers and several governments have set up special organizations for distribution of fertilizers at subsidized rates and on credit. By 1953/54, 160,000 tons of nitrogen, probably more than half of which on food crops, were being used in the region (excluding Japan and former territories) compared with a prewar consumption of about 50,000 tons. Half of this consumption was in India, where the first fertilizer plant to be built in Southern Asia is now working to capacity. Although the amounts are negligible in comparison with the crop area, the significant fact is that a beginning has been made. The scattering of farmers in India, Pakistan, Ceylon, Indonesia, the Philippines and Thailand who have used fertilizers on rice may prove a powerful educational influence on their neighbors, provided that the relationship between prices of food crops and fertilizers makes fertilizer use profitable. In the Near East, Turkey, Israel, Syria and Cyprus have begun to use very small quantities of fertilizers and the same is true of some territories in Africa. In Latin America consumption has reached almost five times the prewar level, the biggest increases occurring in Cuba (sugar cane), Brazil (cotton and coffee) and Mexico. Despite the sharp increase, the changes may be less significant than those in the Far East, in the long run, because fertilizers continue to be mainly used on export crops and because the increase has probably been partly associated with high prices for these crops. One factor delaying progress in Southern Asia, in parts of Africa and Latin America is the sparsity of knowledge of the fertility requirements of various soils. The decade has seen a steadily increasing volume of experimental data which is gradually laying a better foundation for extension work in many countries.

It is interesting to compare these developments during the last decade with fertilizer "targets" for 1960 which were put forward by FAO in 1946, as being the minimum requirements to maintain the level of nutrition already attained in well-developed countries and raise nutrition levels in under-developed areas closer to standards required for health. In Europe, North America and Oceania these objectives were already attained

TABLE IV-2. WORLD FERTILIZER PRODUCTION BY REGIONS

REGION	N			P_2O_5			K_2O			All Nutrients		
	Prewar	1945/46	1953/54	Prewar	1945/46	1553/54	Prewar	1945/46	1953/54	Prewar	1945/46	1953/54
	Million metric tons nutrient content											
Europe [1]	1.37	0.67	2.69	2.07	1.18	2.92	2.20	1.29	4.04	5.65	3.14	9.65
North America [2]	0.42	0.68	1.55	0.68	1.44	2.22	0.28	0.72	1.60	1.37	2.83	5.37
Far East [3]	0.22	—	0.65	0.26	0.01	0.36	0.01	0.01	0.01	0.48	0.01	1.01
Near East	—	—	0.02	0.03	0.02	0.10	0.02	0.05	0.02	0.05	0.08	0.12
Africa	—	—	0.02	0.06	0.06	0.11	—	—	—	0.02	0.06	0.11
Oceania	—	—	0.02	0.34	0.36	0.55	—	—	—	0.34	0.36	0.56
Latin America	0.25	0.29	0.30	0.02	0.03	0.08	—	0.01	—	0.27	0.33	0.38
WORLD TOTAL	2.26	1.64	5.23	3.42	3.08	6.38	2.51	2.07	5.67	8.18	6.81	17.21

[1] Excluding U. S. S. R.
[2] Including U. S. possessions.
[3] Excluding China (mainland) and Northern Korea.
— None or negligible.

by 1953/54 and they were closely approached in Latin America and Africa. In Asia, however, only one-third of the objective then thought necessary has been reached. This is the other side to the picture of a promising beginning in the Far East depicted in the previous paragraph.

Some technological advances have been made in the fertilizer industry during the last decade. These include the use of acqua or anhydrous ammonia and ammonia solutions for direct application to soil and irrigation water, the granulation of fertilizers to improve their physical condition, increasing the concentration of P_2O_5 in phosphatic fertilizers, the treatment of phosphate rock with nitric acid and the increased production of urea and fertilizer pesticide mixtures. In the United States direct application of ammonia now accounts for 18 percent of the consumption of fertilizer nitrogen and interest in this practice has been displayed in India and Japan. Experiments are being carried out on the possibility of developing less expensive equipment. Increased attention has been given to the placement of fertilizers in relation to seeds and plants. In Japan the placing of ammonium sulphate in the reductive layer of the soil has given better rice yields and is now becoming standard practice. On the other hand there has been some progress in the broadcasting of fertilizer from planes under certain circumstances. In New Zealand, for instance, the hill pastures are now quite commonly treated with phosphatic fertilizer by aircraft.

TABLE IV-3. WORLD FERTILIZER CONSUMPTION BY REGIONS

REGION	N				P_2O_5				K_2O				All nutrients			
	Pre-war	1945/46	1953/54	1960 Targets	Pre-war	1945/46	1953/54	1960 Targets	Pre-war	1945/46	1953/54	1960 Targets	Pre-war	1945/46	1953/54	1960 Targets
	Million metric tons nutrient content															
Europe [1]	1.42	0.81	2.25	2.50	2.13	1.19	2.91	3.00	1.78	1.37	3.04	2.90	5.32	3.37	8.20	8.40
North America [2]	0 38	0.64	1.77	1.15	0.71	1.37	2.19	2.80	0.40	0.70	1.73	1.75	1.49	2.72	5.70	5.70
Far East [3]	0.43	0.05	0.80	*2.60	0.30	0.02	0.42	*1.35	0.12	0.01	0.25	*0.40	0.86	0.07	1.46	*4.35
Near East [4]	0.08	0.05	0.15	*	0.03	0.02	0.11	*	0.01	0.01	0.02	*	0.12	0.09	0.28	*
Africa	0.02	0.01	0.03	*0.20	0.05	0.07	0.12	*0.20	0.01	0.01	0.02	*0.05	0.07	0.08	0.17	*0.45
Oceania	0.02	0.01	0.02	0.05	0.35	0.35	0.56	0.50	0.02	0.01	0.03	0.05	0.38	0.38	0.61	0.60
Latin America	0.04	0.04	0.15	0.20	0.03	0.05	0.16	0.15	0.01	0.02	0.07	0.05	0.08	0.11	0.38	0.40
WORLD TOTAL	2.39	1.61	5.17	6.70	3.60	3.07	6.47	8.00	2.35	2.13	5.16	5.20	8.32	6.82	16.80	19.90

* Targets were prepared only on a continental basis. Figures for the Continent of Asia are shown against the Far East region and those for the continent of Africa against the FAO region of the same name, which excludes the Near East countries.
[1] Excluding the U. S. S. R.
[2] Including U. S. possessions.
[3] Excluding China (mainland) and in 1953/54 Northern Korea.
[4] Including French North Africa.

In soil fertility factors other than inorganic fertilizers have to be considered, including particularly the supply of soil organic matter by the liberal use of animal manures and composts, by green manuring and by including legume crops, pastures and hay in the rotation.

Probably the best use of animal manure is made in Western Europe, where supplies were greatly reduced until about 1950 when cattle numbers reached prewar levels. In Southern Asia, where the need for increased soil productivity is so acute, little use had been made before the war of animal manures and city wastes, which are carefully used in Japan, China and Korea. Although steps are being taken by several countries to stimulate the use of animal manure and composts, little has been achieved in this direction yet except in India, where the special effort under the Five Year Plan has resulted in a several-fold increase in the production of composts from city and village refuse.

The use of good rotations, including deep-rooted legumes and grasses for pastures and hay has received more attention since the war, particularly in Western Europe, Oceania and North America. However, a great deal more could be done in regions where climatic conditions are suitable. Green manuring is often practised under temperate climates, sowing legumes as catch crops or by establishing associated cover crops in orchards. While the growing of such crops for fertilizing and shade was already practised in several countries of Southern Asia, an increasing amount of experimental work has lately been devoted to the value of this practice under tropical conditions.

Appreciable progress has been made since the war in basic knowledge of soils. Until recently, even in the developed areas, only a few governments had more than a limited knowledge of their soils. Before the war several countries in the new continents, Australia, Canada, New Zealand and the United States, had expanding soil survey programs aimed at the solution of practical land-use problems. In Europe, however, the emphasis was more on research and teaching, and institutions received only moderate support from their governments. A certain amount of soil survey work was also conducted for several purposes in a few countries in Asia and Africa. Since the war a large number of new soil survey organizations have sprung up all over the world. Important programs are now being carried out in most European countries, in their overseas territories, in North America, Oceania and a limited number of countries in Latin America and Asia. Large areas have now been covered by reconnaissance soil maps, while lesser areas have been mapped in greater detail according to their development requirements. Although the area so far surveyed is a small fraction of the total land area, the recent progress shows a new appreciation of the value of soil survey in agricultural development recognizing better land use as the main objective.

Technical assistance programs have contributed much to this change of thinking and also to the establishment of soil survey organizations in under-developed countries, to the training of specialists and to the appraisal of soil potentialities in these areas. The large number of new soil specialists who have been trained and the excellent institutions which have been established in different parts of the world during this decade will make possible in the near future greater progress in soil work.

Agricultural Machinery

Improvements in hand and animal drawn implements and progress in power mechanization are both important in this field, but the main changes during the past decade have apparently occurred in respect of the latter.

Growth of Power Mechanization. The increased use of tractor power in farming since World War II provides one of the most striking technical developments of the period. More favorable prices for farm products in relation to capital and operational costs for power machinery, industrialization which has raised the cost of labor and forced farmers to look for other sources of power, a greater variety of machinery with smaller units and generally increasing machine consciousness among farmers, have been among the major factors at work, particularly in regions where farming is most commercialized. However, a major obstacle to power mechanization, particularly in less developed regions, has been the limited availability of foreign exchange. The situation has become easier with the return of the European producers into the export markets, but the exchange problem often remains a serious one. Special factors, which are mentioned below, have operated in several regions. As a net result, tractor numbers have generally doubled or tripled in less than a decade (1946 to 1953) in regions where they were already widely used before the war. Elsewhere the decade marks the beginning of their use for farming purposes, at least in certain countries, although actual numbers often remain small.

In Europe the factors enumerated above have been reinforced by strong government support for mechanization as part of national policies to produce more food. Tractors have been looked to as a means of releasing land from growing feed for draft animals, of bringing more land under the plough in some countries by bringing some of the permanent pasture land into a crop rotation, of helping to raise yields by more timely operations and of generally raising the productivity of the agricultural population. Little change in tractor numbers occurred before 1946, except in the United Kingdom which accounts for three-quarters of the regional increase during the war years. Since 1946 power mechanization has made rapid progress everywhere on the continent, except in the Iberian peninsula. In Western Germany, for instance, tractor numbers grew from 40,000 to 300,000 in seven years, in France from 50,000 to 178,000 and in Italy from 40,000 to 101,000. In the smaller countries, numbers increased from about 130,000 to 400,000. These developments have been common to both Western and Eastern Europe.

TABLE IV-4. WORLD TRACTOR NUMBERS, BY REGIONS [1]

REGION	1938/39	Immediate Postwar[2]	1953	Arable Area per Tractor[3] 1953
	..... *Thousands*			*Hectares*
Europe	275	464	1 414	104
North America	1 695	2 900	4 650	50
Latin America	35	64	189	470
Near East	5	16	52	1 200
Far East [4]	—	15	20	8 500
Oceania	57	91	211	100
U. S. S. R. [5]	524	450	969	230
TOTAL [6]	2 590	4 000	7 505	130

[1] Includes only tractors of over 8 h. p. The figures probably tend to under-estimate the degree of mechanization in Europe where there is a greater proportion of garden tractors than in other regions.
[2] 1946, except for Near and Far East for which the figures refer to 1949.
[3] Rough estimate to give general indication of intensity of mechanization in each major region at the end of the decade under consideration.
[4] Figures include an allowance for countries where no data are available and for privately owned tractors in those countries where data refer only to government owned tractors.
[5] In terms of tractors of 15 h. p.
[6] Does not include some small countries in the Near and Far East, dependent territories in all regions, China and the Union of South Africa. For these countries about 150,000 tractors should be added to the 1953 total.

In North America the expansion was very rapid immediately after the war, but since 1949, when the backlog of demand had been satisfied and the tractor park had already reached nearly 4 million units, the rate of growth has slowed down to around 5 percent per annum. Production, however, remained at a high level and larger numbers have become available for export. Tractor numbers in Oceania have more than tripled since before the war and continue to rise rapidly.

The development of mechanized farming has undoubtedly been a most striking postwar change in Latin-American agriculture. Perhaps more significant than the regional total is the change in distribution. In 1939 more than 70 percent of tractors in the region were in Argentina, while in 1952 this country accounted for 25 percent. In both Argentina and Mexico tractor numbers have grown over the seven years ending 1953 from under 20,000 to nearly 50,000, and in Brazil from 5,000 to 35,000. Rapid rates of increase have occurred in most of the small countries. Uruguay had about 20,000 tractors by 1954, with 80 percent of the arable land being farmed mechanically, compared with 3,000 in 1946. In many respects Latin America has come to occupy an intermediate position between the mechanically more advanced countries and the Near and Far East. Most of the increase has been in privately owned tractors, but the establishment of government pools has contributed substantially to bringing mechanized farming within the reach of large groups of farmers. These pools have been of considerable importance in several Latin-American countries, such as Peru, Brazil, Cuba and Chile, and are a typical development of the postwar period although in a few cases they were started earlier. A further important development is the initiation of tractor production. In Argentina and Brazil plants are under construction and will make a substantial contribution to mechanization in these two countries.

In the Near and Far East on the other hand, tractors on private farms have been of minor importance. Most of the increase has been the result of governmental schemes to extend the zone of cultivation (e.g. Turkey) or plough up difficult land (e.g. areas affected by kans grass [*Saccharum spontaneum*] in India) or provide government tractor pools for special areas (e.g. Ceylon, Indonesia, Burma). In the Near East developments have been very uneven, since over 60 percent of the tractors are in Turkey and 20 percent in Egypt, mostly in government pools. Nevertheless, most countries show a rapid rate of increase, though the part played by mechanized farming remains generally unimportant or even insignificant. In the Far East only India (about 9,000), Pakistan (about 2,000) and the Philippines possess

a significant number of tractors, practically all of which have been acquired in recent years. However, in nearly all countries the first experiments are being made in the use of power machinery for farming, mostly through mobile government owned fleets or smaller pools. In these countries even a few hundred tractors is a significant development, but it is too early to say to what extent they may find a useful place in the agricultural economy. So far they are used almost wholly for ploughing and initial cultural operations and mostly confined to areas presenting special difficulties for animal power, e.g. having deep-rooted weeds or where higher yields can be obtained from earlier planting if the land is ploughed without waiting for the seasonal rains. Some countries have begun purely experimental work on all-round mechanization of paddy cultivation.

Information from Africa is very scanty. Tractor farming has increased greatly in South Africa. In seven dependent territories for which there are figures, numbers increased from 30,000 to nearly 50,000 in only four years (1949-1953). This increase has occurred in connection with European-style farming with private ownership of the machinery.

Operation and Maintenance. The introduction of tractors into countries with little experience of machinery has naturally led to major problems of training of operators and mechanics, of building up servicing and maintenance facilities and of a supply line for fuel and spare parts. These problems seem to have been generally under-estimated at first and much effort and money was wasted in several countries during the initial years. With inexperienced handling breakdowns occurred quickly and expensive machinery either lay idle for long periods or, in some cases, was abandoned, with parts from several machines often being used to try to make a few serviceable.

There has been substantial progress indeed in overcoming these problems, especially in the last four or five years. Training centers for operators and workshop personnel have been set up in many countries and an increasing number of at least partially trained personnel have passed through courses; central and mobile workshop facilities are being established and the importance of maintaining stocks of spare parts is becoming increasingly recognized. Governments which have established tractor pools have been led to make provision for adequate care of the machinery. Technical assistance from FAO, the U.S. bilateral program and the Colombo Plan has been of the greatest importance in providing the initial stimulus and skills and farm machinery suppliers have frequently assisted in training courses for drivers. In a number of countries the return of soldiers from their military training is an important factor in adding to the mechanical skills of the rural population. In some cases (e.g. certain development authorities in India, Pakistan, Ceylon, Turkey, Peru, Brazil and Argentina) a sound technical basis has been laid for expansion of mechanization if conditions warrant it, but the majority of countries are still in the throes of establishing adequate initial servicing facilities and this period is likely to last for several years.

Animal-drawn Implements and Hand Tools. Much could be done to raise labor productivity and also provide better results by improving the rather primitive hand tools and animal-drawn implements generally used by farmers in under-developed regions or by introducing more effective types. This offers possibilities in many parts of the world which could provide wider benefits for the time being than power mechanization and without creating the technical and social problems that the latter sometimes raises. Even the substitution of the scythe for the sickle raises labor productivity several times. However, this is a much neglected field, because it lacks the glamour of power mechanization, and relatively little progress can be reported during the period under review. A few countries, mostly in the Near East (e.g. Afghanistan, Egypt, Ethiopia, Iraq and Libya) have requested advice from FAO on this matter and results have shown how great are the opportunities for progress along this line and how eager farmers are to accept better tools and implements if they are effectively demonstrated and provided cheaply by local manufacturers.

Plant Breeding and Seed Improvement

During the ten-year period under review there has been substantial progress in many countries in breeding better varieties of crops and getting them into use, but it is difficult to summarize the advances that have been made because of the multiplicity of crops involved. The production and distribution of high quality seed of improved varieties is a complex undertaking of which the several phases must be properly balanced and co-ordinated. Simultaneous progress is necessary on many fronts — breeding, testing, multiplication, certification, distribution, demonstration and acceptance by farmers — and these various aspects seldom each receive the individual attention that is needed to ensure over-all success. It is partic-

ularly important that effective provision be made for the production and distribution of seed, otherwise the work which goes into the breeding of new strains and the testing of their range of adaptation is largely wasted. Unfortunately, the seed production and distribution services are the weakest phase of the crop improvement program of many countries, including even some which have relatively highly developed agricultural services, with the result that research and breeding are often well ahead of farmer utilization of improved varieties. This was particularly the case in the under-developed regions at the beginning of the period.

Much of the considerable progress that has been made since then in many countries may be attributed to the intensified international co-operation among plant breeders which has characterized the postwar years. Not only has there been much more individual travelling by investigators, but there have also been many privately and officially organized international plant breeding conferences, including three series of regular annual meetings as a part of co-operative projects under the sponsorship of FAO on rice breeding in Southeast Asia, wheat and barley breeding in the Near East and maize breeding in Europe and the Mediterranean area. These opportunities for exchange of information and breeding material have had a markedly stimulating effect in strengthening national services for the breeding and utilization of improved varieties.

It may be said in general that in the underdeveloped countries more attention has been paid to basic food crops than before the war, with less concentration on export and industrial crops. Thus in Southeast Asia, rice has received major attention. In that region the situation was complicated by the complete dislocation of the plant breeding and seed production services that occurred during the war. Burma, Thailand, Viet-Nam, Cambodia, Indonesia, Malaya and the Philippines all suffered, and in the last two countries even the nucleus seed stocks of standard varieties were lost. The war and associated political changes also depleted technical staff. Nevertheless, except in Viet-Nam, Cambodia and Laos, where unsettled conditions still continue, the strength of the technical services is being gradually restored to the old level. The progress that has been made in many countries in the region has therefore largely consisted in regaining lost ground. Thus, in the Philippines, nucleus stocks of several important standard varieties which were lost during the war have been recovered, multiplied and again released, and in Burma a satisfactory seed scheme which was upset during the war has been resuscitated and improved. In addition, however, there have also been real advances. In Indonesia, for instance, the seed farm organization which was completely disorganized now considerably surpasses the prewar establishment, with some 250 seed farms in operation. As a result over one-third of the rice area is planted with improved seed. Similarly, in several States of India the area under improved varieties of rice has expanded from less than 20 to over 50 percent during the past few years. Nevertheless, with the major exceptions of Japan, Taiwan, Indonesia, Ceylon and some Indian States, only a small fraction of the rice area of the region as a whole is under improved varieties. Seed schemes throughout the region still need considerable strengthening before the full benefits of breeding programs will be realized.

In Latin America active work has been in progress on maize, the most important crop of the region ; considerable advances have been made in the breeding of rust-resistant and other improved wheats, and there has been significant progress in the breeding of cotton, sugar cane and some other crops. Here again, while some countries such as Argentina and Brazil are well advanced with respect to the utlization of improved varieties, in most there is inadequate provision for the multiplication and distribution of seed, though the situation is improving in many, particularly in Mexico and Colombia. In the Near East, with the major exceptions of Egypt and Turkey, little significant progress has been achieved and the greater part of the crops are still sown with local unimproved seed.

Similar striking differences between adjacent countries in the utilization of improved varieties are exhibited even in Europe, as for example in the spread of hybrid maize during the past decade. The spectacular consequences of this remarkable plant breeding achievement in North America led to much interest in its potentialities for European agriculture and, as a result, large quantities of seed were imported into various European countries at the end of the war. Unfortunately, little information was available as to those hybrids suitable for introduction into particular countries and consequently there was often much intial disappointment. However, following extensive trials under FAO sponsorship of the full range of types available from North America, specific hybrids adaptable to the various European countries were identified ; by 1954

about 6 percent of the maize area of the region was under hybrids and the increased grain production in that year above that which would have been obtained from ordinary open-pollinated field varieties on the same land was of the order of 640,000 tons with a value of $ 55 million. Italy and France with 19 and 31 percent of their maize area respectively under hybrids were in the forefront, while the use of hybrids is only just commencing in Turkey and Yugoslavia. Even within a single country similar regional differences in the utilization of improved varieties occur. For example, in Northern Italy certain provinces have 60 to 95 percent of their maize area under hybrids, while in the south, where no adapted hybrids are available, they cover less than 1 percent. In these cases it is not mainly the organization of the extension and seed production services that is at fault ; what is needed is probably more intensive work on the breeding of varieties better adapted to the difficult environmental conditions.

One of the most heartening features of the postwar period is the ever increasing recognition of the potentialities of plant breeding as a means of improving crop yields. This is true even in countries where crop yields are high and is particularly striking in those countries of Western Europe, North America and Oceania, where plant breeding has already made spectacular progress. In such countries there is no feeling that the limits of the achievements of plant breeding have been reached, but rather that with changing agricultural and economic conditions the genetic moulding of our domesticated crops is a continuing task. This philosophy is of particular significance for the less intensively developed areas of the world, for plant breeding and seed improvement are relatively inexpensive undertakings in terms of monetary cost and technical manpower requirements and do not need anything like so heavy a capital investment as many other forms of agricultural development.

Control of Plant Diseases and Pests

The decade has been marked by significant advances in the knowledge of plant pests and diseases and their control, particularly by chemical means. The new chemicals have made a substantial contribution to maintaining or increasing yields of many crops in countries where they have been generally applied ; in some cases they have been the major factor in quite sharply increased yields. These adv ces have been achieved against a background of growing appreciation of the ecological factors which influence the epidemiology of the pests and diseases and of reaction of control measures upon the natural balance.

The first major synthetic insecticides, DDT and BHC, were introduced a little more than ten years ago. Subsequently, a great range of further synthetic pesticides has come into general use in countries where modern techniques are generally applied by farmers, and several are used widely even in under-developed regions. They are caracterized by extremely high potency and specific toxicity and their introduction has made it possible to reduce greatly the losses caused by many pests and diseases in both the temperate and tropical zones. One significant development has been the extended use of systemic insecticides and fungicides, which, if applied to one part of the plant, will be translocated through the plant to render it toxic to insects or organisms causing disease. Although this method of pest control shows high promise, it is still too early to evaluate it fully from the economic viewpoint.

In the field of weed control great strides have been made in the development of a range of hormone-type weedkillers and their adoption as a normal agricultural practice in many countries. These chemicals are greatly superior to ordinary weed killers in that they are highly selective in action, killing certain weeds without injuring crops and, when applied in very small amounts, capable of destroying susceptible plants.

Many of the newer and potent pesticides are, however, highly toxic to man and their adoption has stressed the need for the utmost caution in avoiding harmful residues on or in harvested products. The widespread application of those products has also underlined the dangers arising from the development of resistant strains of insects, weeds and other pests and has emphasized the need for research to keep pace with new problems.

As a consequence of the introduction of the new highly toxic and concentrated products, the decade has been marked by many advances in the modes of application with particular reference to low-volume application equipment, resulting in great economy of materials, time and labor. This includes the increased use of aircraft, of hand and power ground equipment for the delivery of mist sprays and fogs, the application of toxic smokes, the extended use of seed dressings, often combining insecticidal and fungicidal action, and improved soil treatments. Greatly increased attention has also been given to the formulation of pesticides to fit the needs of the new methods of application

and to gain maximum utilization of the toxic principles.

Increased international co-operation in many fields of plant protection has been another outstanding development. Regional co-ordination in the control and study of such pests as locusts and the establishment of concerted action for other important plant protection problems have yielded great benefits. Particularly important progress has been made in building up an organization for inter-regional co-ordination of the control of locusts in Central and South America, West and Central Africa and the Near East. Under the guidance of the International Plant Protection Convention, which was approved by the FAO Conference in 1951, many countries have organized or improved their national plant protection facilities to carry out systematic surveys and to intensify efforts in combatting dangerous plant pests and diseases. In close association with the International Convention, Regional Plant Protection Organizations have been set up in Europe, Southeast Asia, Mexico and Central America. Legislative measures designed to prevent the spread of pests and diseases have been improved in a number of countries, providing for more effective procedures with less interference to international trade.

Grassland and Fodder Improvement

Although the world's grasslands cover an acreage several times that of croplands, grass has always benefited much less than crops from the improvement of agricultural methods. During recent decades, the management of grass and fodder crops has improved substantially in countries in the temperate zones; in other regions their importance has become increasingly recognized and the means for improving them are being investigated and a beginning has been made, in many cases, in applying the results.

During the last decade progress has continued in Northwestern Europe, where the improvement and management of grasslands was well advanced before the war. During the war years most European countries had to increase their grain production at the expense of pastures and fodder crops and the desire to minimize the reduction of livestock resulted in the adoption of methods of obtaining an increased yield from the remaining grass and forage areas. After 1945, the shortage of hard currencies made these countries feel even more strongly the need for producing a higher proportion of the feed needed by their livestock population and they endeavored to apply more widely the practice of alternate crop and grassland husbandry, a very highly developed form of which is found in ley farming in England. A feature of this period has been the still closer integration between livestock and crop farming through the fuller use in the rotation of fodder crops and of temporary or artificial pastures, often laid out on ploughed-up permanent pastures. A considerable proportion of the increase in forage production may also be ascribed to the marked progress achieved in the management of permanent pastures, their fertilization, their upkeep and renovation, and particularly in the adoption of systems of rotational and strip-grazing. Much emphasis has also been given to the mowing of permanent pastures, the harvesting of green forage, its drying, conservation and utilization.

Outside Europe, under moist temperate climatic conditions, grassland expansion and improvement is taking place with a view to aiding soil conservation and ensuring the farmer a more stable income through lessening his dependence on single or cash crops, as was mainly the case in the United States, or, as in Australia and New Zealand, to build up the natural fertility of the soil through rejuvenation of native pastures by breaking, fertilizing and reseeding. In countries with advanced methods, the increase in productivity of pastures has been greatly aided by high standards of research, and by the incessant efforts of well developed extension services. Control of rabbits by myxomatosis is a striking example of the benefits of long-term research. In Australia, where myxomatosis was first introduced, the carrying capacity of sheep pastures has already been notably improved, and in Europe there is reason to believe that both cropland and pastures are more productive where myxomatosis is prevalent.

The countries of the Mediterranean region have always been characterized by a complete lack of integration between crop farming — mostly cereal monoculture, alternating with fallow — and animal husbandry, practised in an extensive way without any attempt to improve the native pastures, which often support great numbers of low standard stock. With a view to improving this sector of agriculture, which is vital for the whole economy of the region, OEEC and FAO carried out a survey of grasslands in 1950 and subsequently a Working Party on Mediterranean Pastures and Fodder Development was set up by FAO to promote and co-ordinate work in this region, where there exists a great potential for increasing fodder production in the progressive

erplacement of the cereal-fallow rotation by a cereal-leguminous fodder rotation. In the last decade, the acreage of grain and legumes in rotation has increased considerably, particularly in Cyprus, Greece and Israel. In Algeria much is being done in building up fodder reserves on irrigated lands. Under somewhat similar climatic conditions legumes have been incorporated to an increasing extent in the wheat farming in Southern Australia ; in Chile, considerable research has been conducted on the nutritive value of forage crops. Thus important steps have been taken towards laying a sounder basis for land use.

In the extensive low-rainfall range lands, which cover wide areas of the world, real improvement has been limited, with notable exceptions in Australia, the Union of South Africa, Western Canada and Western United States. In many arid and semi-arid regions migratory herds overgraze stretches of range close to waterpoints and are decimated when the grass fails on account of drought or pests. However, it is now being more fully realized that natural vegetation has not only to maintain the livestock but also to provide maximum conservation of soil and water. Reseeding with more resistant or better feeding grasses has been found possible under favorable conditions. Mostly on an experimental basis, tropical range areas have been fenced off and protected from gazing to ascertain the rate of natural regeneration and many experiments in deferred and rotation grazing have been carried out. FAO has commenced a survey on the semi-desert and other grazing lands of the Near East. Several countries have established or are studying the establishment of well distributed waterpoints and in some cases fodder reserves are stored in centers for use in emergency periods.

In tropical and sub-tropical areas grassland management and fodder protection are still in a very elementary stage of development. Livestock have in most cases been restricted to various types of wasteland between the cultivated land on one side and forest on the other ; the extension of cultivated land and restriction of forest grazing is progressively reducing the grazing lands. At the same time, due to social and religious considerations, excessive numbers of livestock are often kept on these lands which, because of their poor natural fertility, produce grass of such low quality that as soon as it matures, the animals will not eat it and are therefore in a state of starvation most of the time. Thus no appreciable animal product is returned and erosion is rapidly deteriorating the bare grazing areas. During the past decade there has been a growing realization that grass can be made to play a more important part also in the tropics. India is now conducting large-scale surveys of the botanical composition and ecology of the natural grazing lands as a basis for improved systems of grassland management. Ecological surveys, such as the one already mentioned for India, and the livestock survey carried out in Central America by FAO experts within a wider plan of integration under the sponsorship of ECLA, are laying the foundation for future improvement. Because of the limited value of the grass much attention is also given to the possibility of increasing production of fodder crops and research is being devoted to the nutritive value of various species of grasses and legumes.

In conclusion, it is clear that for a large part of the world, chiefly in the tropical and sub-tropical areas, little progress has been made in actual application of the principles that have been worked out for the improved management of grasslands, but considerable survey and experimental work has been done which should bear fruit in the future. In the areas of more intensive use of grasslands the chief objectives have been to make pastures more productive by reseeding and fertilizing and to integrate crop husbandry and animal husbandry more closely as the basis for stable farming systems. Under conditions of extensive grazing the chief objectives have been to reduce the pressure on the natural grazing lands during the early part of the growing season and in some countries to reseed abandoned croplands and favorable range areas, where the desirable grasses have been destroyed by over-grazing. In the tropics research has been directed towards studying the existing grassland resources, finding what systems of management and fertilizers they require and looking for some nutritive grasses and legumes that will flourish under tropical conditions.

Animal Health

The last decade has seen in Europe a vast epidemic of foot-and-mouth disease and following it the development of international co-operation in the control of this most important epizootic. In 1954, the European Commission for the Control of Foot-and-Mouth Disease was established by FAO and today eight member countries have joined the Commission.

In all countries with well developed veterinary services, increasing attention has been paid to the control and eradication of tuberculosis and

brucellosis. The application of better methods of diagnosis and the standardization of biological products used for diagnosis (e.g. tuberculin, *Brucella abortus* antiserum, and complement fixation test for Johnes disease) have helped materially.

In the less developed countries of the Far East and Africa, where the major epizootic disease is rinderpest, a mounting attack on a very wide scale has been launched and is steadily achieving good results. The use of better and cheaper vaccines has enabled this to be done. Improvement in other vaccines (e.g. anthrax and swine fever) has been carried out.

In the so-called "sterility" diseases, research has resulted in better knowledge of their control. This has gone hand in hand with improvement in the practice and techniques of artificial insemination, notably the preservation of semen by deep freezing. FAO has taken a leading part in co-ordinating this work particularly in regard to brucellosis and vibriosis and also in focussing attention on international trade in semen.

The efficacy of the modern insecticides, e.g. DDT, Benzene hexachloride, Chlordane, etc., have been utilized to good advantage to control external skin parasites of livestock, namely scab and ticks and also to reduce the diseases such as Texas fever, African coast fever and Heartwater, which these parasites transmit. This period has seen the successful elimination of the tsetse fly by aerial spraying with insecticides of a large area in Southern Africa.

More attention has been devoted, particularly in the sheep industry, to the control of internal parasites both by improved systems of management (rotational use of pastures) and by the development of vermicides, notably phenothiazine. Important discoveries in therapeutic medicine have led to great improvement in control, e.g. penicillin in mastitis, phenanthridinium compounds in trypanosomiasis, aureomycin in dysenteric conditions, sulpha drugs in septicaemic conditions, etc.

With the world-wide interest developing in the poultry industry and with the international movement of high producing stock, epizootic diseases have assumed greater importance than in the past. Control of diseases such as Newcastle disease has been a pre-requisite to the development of the industry and here better vaccines have played a big part.

Probably the most important animal health development in many of the under-developed countries has been the start of state veterinary services and also of laboratories for diagnosis and research. In many countries vaccine production is being carried out and the great importance of animal health to an efficient livestock industry is becoming recognized. A notable feature too has been the move towards regional control of epizootic diseases and FAO has done much to foster this, not only in Europe but also in the Americas, Near East, Far East and Africa.

Animal Feeding

Progress in recent years in the science of animal nutrition has been most marked in North America, Europe and Oceania. In Europe there has been a great increase in the use of homegrown feedingstuffs, particularly of grass, with a view to replacing the use of imported concentrates. The emphasis in the development of homegrown feedingstuffs has been on varieties and strains of those plants which have given an improved yield per unit area of land. At the same time both governments and private enterprise have shown an increased activity in research and feeding trials with a view to a more general use of industrial by-products such as sugar beet pulp, yeast concentrates, molasses, urea, and by-products of the meat and fish industries.

Concurrently with this progress, due to the complexity of modern manufacture of feeding rations, there has been an increasing use of analyses of feedingstuffs resulting in more scientifically prepared rations based upon actual requirements and production results, which in turn has resulted in more rational feeding practices on the farm.

Increased investigation into nutritional diseases and deficiencies has taken place over much greater areas of the world, revealing large areas of potentially good grazing land which heretofore has been looked upon as useless. Methods of diagnosis used in these investigations have progressively improved.

The use of antibiotics in animal feeding, especially pigs and poultry, has received considerable attention, particularly in the United States and Europe, and would appear to lend possibilities of improving the rate of feed conversion into protein for human consumption. The improved knowledge, leading to a better use of mineral supplements, has also played a considerable part in the manufacture of balanced livestock rations.

Finally the improved techniques of conservation of grass as silage, dried grass, hay, etc., have been of great importance in providing a good protein feed during the scarcity period of the year.

Animal Breeding

Over the past ten years the outstanding developments in animal breeding include the extensive use of recording yields of animals. These records have enabled livestock breeders to make a true evaluation, both in feeding and production, which in turn has made it possible to plan a more efficient breeding program. Considerable progress in this direction has been achieved in Denmark, the Netherlands, United Kingdom and New Zealand.

The comparatively extensive use of artificial insemination, particularly in North America and Europe, has considerably accelerated the technique of progeny testing and multiplication of superior germ plasm. More recently the newer developments in deep-freezing of semen have given an added impetus to this work and have opened up huge possibilities for introducing artificial insemination into areas hitherto denied this faster breeding technique. At the same time these developments, though beneficial on the whole, have given rise to new problems of disease dissemination and the need for its prevention.

In countries with less favorable climates the consensus of technical opinion is swinging towards improving indigenous animals through selection rather than through the introduction of improved animals from temperate countries. Earlier investigations have already shown that temperate-zone animals imported into these areas and their progeny frequently show a marked degeneration both in production and body conformation after a comparatively short time. This appears to be due to the inability of these animals to adapt themselves to the completely different environment with its coarse feedingstuffs, higher disease incidence, particularly parasitic diseases, and the considerably higher temperatures. Indigenous livestock, although frequently low producers, do appear to be more adapted to their environment and, apart from the work on selective breeding amongst these animals, investigations are underway in many parts of the world to find out what factors are involved in the problem of unfavorable environments depressing the production capacity of indigenous livestock.

Effects of Development of Resources and Technology on Agricultural Productivity

Both sparse data and limited space impose a cursory treatment of this subject, the complexity of which is increased by the difficulty of distinguishing the effects of improvements in technology and resource utilization from those due to longer period phases in the weather. There is also a considerable time lag between cause and effect, so that some of the gains in productivity during the past decade are due to prewar developments while the acceleration in the rate of resource development and technical application, which we have noted in the second half of the decade in certain regions, cannot be expected to show appreciable results before the second postwar decennium.

With these qualifications in mind, we may take a brief look at some examples of changes in crop and livestock yields and general levels of productivity per unit of area during the decade just passed as compared with the years before the war. These examples are intended to illustrate for some important commodities and countries the results of the technical innovations which we have described in previous sections. More general questions of productivity, in the sense of the relationship between output and input, as well as changes in labor productivity are discussed in a later chapter.

In Western Europe, particularly north of the Alps, it is clear that there have been permanent gains in crop and livestock productivity. Average cereal yields in the OEEC area (excepting Mediterranean countries) were 17 to 18 percent higher in 1948-53 than before the war; potato yields have increased still more. In Southern Europe it is probable that hybrid maize, which has been giving increased yields of 30 percent or more in Europe, will make an important difference as varieties adapted to the Mediterranean area become available. In most countries in the OEEC area milk yields per cow are now 10 percent or more higher than before the war and continue to rise at a rate of 1.5 to 2 percent per annum in Northwestern Europe. Over the period 1950-54, egg production per hen was about 13 percent above prewar and the rates of increase of livestock weight per feed input have improved, especially for pig production. In addition there has been a considerable benefit in terms of livestock products moving off the farm due to the replacement of horses by tractors, making way for increased numbers of directly productive livestock.[1] As examples may

[1] "Horses" refers to horses, mules and asses.
"Directly productive livestock" refers to cattle, pigs, sheep and goats. To obtain comparable indices livestock unit conversion factors were used as follows:

Horses	1.00	Cattle	0.75	Sheep	0.15
Mules	0.75	Pigs	0.15	Goats	0.15
Asses	0.70				

Except for the USA where the figures are taken from the *Agricultural Outlook Charts 1955*, USDA, all the references in this section to livestock numbers are based on these definitions and conversion factors.

be mentioned the United Kingdom with an increase of about 10 percent in productive livestock between 1939 and 1953/54 while horse numbers declined by about 70 percent. During the same period in the Netherlands productive livestock increased by about 7 percent while horse numbers declined 25 percent, and in Denmark productive livestock were up about 4 percent and horse numbers down 40 percent. In Italy, productive livestock rose 12 percent and horse numbers declined 8 percent between 1939 and 1952/53. In the OEEC area as a whole, there has been an estimated gain of 30 percent since prewar in net agricultural output which can be credited primarily to improved techniques and development and better deployment of resources.

A valuable body of information is also available for the United States. As a result of the general use of hybrids, along with the intensification of farming practices which these require, average maize yields have risen from 1.6 tons per hectare in 1925-39 to 2.4 tons in 1949-53, a gain of 50 percent. Wheat yields were 20 percent higher in 1949-53 than in the period 1925-39. Potato yields have about doubled (8 to 16 tons per hectare), disease control being the major contributing factor. The over-all result is that the index of crop production per acre of cropland,[1] which was stationary from 1910 to 1930, rose to 120 by 1945, 124 in 1950 and 1954 and averaged 127 in 1949-54. Livestock productivity has also been rising steadily and over a much longer period of time. Production per breeding unit of livestock was about 81 in 1920, 114 in 1945, 124 in 1950, 132 in 1954 and averaged 128 in 1949-54. Also, even more markedly than in Europe, there has been a notable shift away from horses as a source of farm power, with consequent benefit to numbers of directly productive livestock. In the United States in 1954 official figures show that the number of directly productive livestock was 15 percent above the level of 1939, while horses and mules were some 66 percent below[2]. FAO estimates of directly productive livestock and horse numbers in Canada were respectively 9 percent above and about 40 percent below prewar.

All these developments have meant a considerable increase in total agricultural production. For instance in the United States, despite relative stability in total crop and pasture land, the general index of agricultural production was 147 in 1953/54 on a prewar base of 100. Although there were some shifts within the total area, it is clear that advances in technology and improved land use have contributed the major part of this increase in output.

In Australia per hectare yields of cereals, hay, potatoes, sugar cane and most fruits have been substantially higher in recent years than before the war. Over the five-year period 1949-53, wheat yields, probably partly because of better weather, were 50 percent above the 1925-39 average. But better varieties, heavier fertilizer application, and a movement away from monoculture have also probably contributed. Milk yields have risen about 7 percent and the long-term upward trend in yield of wool per sheep has continued and has even been accentuated. The average clip was 8.6 lb. per sheep in the five years ending 1953/54 compared with 7.7 lb. per sheep during the last five years before the war, along with a rising trend in carrying capacity. Here also there has been a considerable increase in the number of directly productive livestock (117 in 1953/54 on base 1939 = 100) associated with a rapid reduction of horse numbers (in 1953/54 slightly under one-half of the 1939 figure). With little change in the agricultural area it is clear that most of the increase in production between prewar and the most recent postwar period must have been due to gains in crop and livestock yields consequent on improved technology.

In the case of the under-developed regions there is no such clear evidence of general increases in crop yields and, while data on livestock yields are lacking, it is unlikely that there has been any appreciable change. In the Far East over-all rice yields have been and remain lower than before the war. Only Japan, the Philippines and Malaya show clearly higher yields. Productivity per unit area of other cereals has also been slightly lower than before the war and cotton yields show no change. In summary it may be said that crop yields in the Far East were around 10 percent below the prewar average in the first half of the decade and are only now approaching the prewar level. Since comparatively little attention was being paid before the war either to the development of basic land and water resources, or, outside Japan, to technical innovation, there has not existed any basis for immediate increase in postwar yields. The irrigation and seed improvement programs, with help from fertilizers and improved control of diseases, may, however, begin to result in higher yields in the second postwar decade. Irrigation and farm machinery programs, the latter mainly in

[1] 1935-39 average = 100.
[2] From *Agricultural Outlook Charts 1955*, USDA.

India, have, however, made an important contribution to an expansion of somewhat under 10 percent in area, which is reflected in a similar increase in the general index of agricultural production.

In the Near East agricultural production is now running at a level some 40 percent higher than before the war. Cereal and cotton yields, however, show little change. There has been no progress in animal breeding or feeding (though some in disease control) which would lead us to suppose that any appreciable increase could have occurred in livestock yields. The explanation must therefore be sought in expansion of crop area and, perhaps, of animal numbers. In fact the crop area increased by about 40 percent. A big part of this increase has been in Turkey, but areas under cultivation have expanded sharply in most Near-Eastern countries. Farm machinery (Turkey) and water use and control programs have been important factors in the expansion of area.

In Latin America there is no evidence of any general increase in crop yields. However, yields of certain crops in certain countries have been appreciably higher during the past decade than before the war. For instance, Mexico has obtained a general and substantial increase in yields (maize, wheat, beans, groundnuts and cotton), which may be due largely to the rapid progress in irrigation. Rice yields are higher in Brazil and Peru, and bean yields increased in a few countries. Potato yields for the region are up about 30 percent. However, yields of many crops, the most important being maize, are generally lower, and an examination of yield changes suggests that they can have made very little contribution to the over-all increase in agricultural production.

As regards livestock, data on yields per animal are scanty. However, there has been an increase in the number of directly productive livestock, though in some countries the number of horses has also increased. For instance, in Argentina the number of directly productive livestock rose one-third between 1939 and 1952/53 and the number of horses fell by 15 percent, and in Brazil in the same period the number of directly productive livestock rose by 38 percent and the number of horses by 12 percent.

An increase of 25 percent in the Latin-American crop area and some increase in productive livestock numbers, compared with an increase of 30 percent in total agricultural output, seems to show that very little of the rise in production can be attributed to improved technology. Some of the area increase is the result of irrigation and farm machinery programs, but probably a great deal is due rather to a natural tendency on the part of farmers to extend the cultivated area in a still young and expansive agricultural economy.

In conclusion we may note that programs for improving the technology and physical resources of agriculture are indeed making a major contribution to production. The more advanced regions of Europe, North America and Oceania have been reaping the benefit in crop and livestock yields of a long period of sustained work in research, extension, public resource development and the energy of an educated farming class, as well as gains to be attributed to postwar efforts. Most countries in Latin America, the Far and Near East, and Africa have not had this inheritance, or only to a much lesser extent, and the efforts of the last decade have been largely devoted to beginning to build up such a patrimony for the benefit of the decades ahead. As yet their gains in yields are slight, but programs for expanding the area under cultivation have yielded quicker results.

FORESTRY

Together with the development of regional and national forest policies and world programming of forestry development, great progress has been achieved in improving the physical facilities in forest exploitation and in forest and wood technology which, in their turn, have led to a better and more rational utilization of available forest resources.

Before the war vast areas covered by rich forests remained unexploited because of their inaccessibility or because of lack of adequate means of transport. Old and inefficient exploitation methods left much valuable raw material lying in the forests as logging waste and the loss and deterioration of wood in the course of transport was often great. Since the war, however, considerable progress has been made in all these fields of forest exploitation, almost everywhere in the world. Improved road building facilities have made it possible to open many of the forests which were previously considered as inaccessible and this development has been accentuated further by the modernization of wood transport equipment. While these improvements have extended the exploitable forest areas and thus made more wood available, further increases in the availabilities have been obtained by rationalization of the exploitation itself. In every part of the world greater attention is being paid to the training of forest workers in order to establish a highly qualified and profession-conscious cadre of forest labor.

In addition to improved felling techniques more care is being taken in the maintenance of the felling tools, in their standardization wherever possible and in trying to find the most suitable tools for all the different uses which are needed in modern felling and logging operations. The improvement of exploitation methods has not only had a bearing on the volume of wood made available but particularly mechanization has also had a great influence on the cost of wood. Most categories of forest products, with the possible exception of pulp products, have a very high labor content and their prices tend to rise faster than general commodity prices. More efficient exploitation has thus helped to limit the extent of the rise in relative prices. All these efforts today are not only made on a national basis, but regional and world co-operation in this field is increasingly gaining ground.

Hand in hand with these efforts aiming at improvement of direct exploitation methods and thus at making more wood available from the forest, great attention is today being given to the selection of suitable tree species and to widening the range of hitherto commercially unknown species in all the various fields of wood utilization. World-wide exchange of information between different research agencies is helping to define the optimum climatic and soil conditions necessary to different species, and to achieve the best possible results from the afforestation or reforestation programs which today are carried out everywhere in the world. Better and more efficient training of foresters, their international exchange, and a general improvement of national forest services, notably in those parts of the world where little or no attention was given to these problems before the war, provide increasingly for better forest management and preservation of the forest wealth. Mass education has also made an important contribution in many countries in checking wasteful forest destruction, especially for fuel.

The progress achieved in forest technology and in the improvement of the tools of production would, however, have been in vain if similar progress had not been achieved in the methods of wood utilization itself. Wood technology has in fact taken a tremendous step forward during the postwar period by introducing new and more rational methods down to the lowest stage of utilization. This progress has been greatly stimulated by the cost factor mentioned above, and also in some areas by physical shortages of timber. The proportion of the forest crop burnt as fuel has declined and the proportion used industrially has risen. Furthermore, together with less waste in the exploitation, as well as in all stages of manufacture, new uses have been discovered for the waste itself. Greater use is made of small-sized roundwood — notably in thinnings so important to sound silvicultural practices — and of hardwood species. This trend has been greatly facilitated by the changing pattern of industry's needs from the forests. The ever-growing importance of the pulp industries calls for more small dimension wood, while the pulp mills, along with such new or recent industries as fiberboard and resin bonded particle boards, make use of an increasing volume of wood formerly classified as waste.

Efforts to use wood more rationally have not been limited to the primary stage of manufacture. While new materials have displaced wood in many of the uses in which it was the traditional medium, wood has retained its importance over much of the field, thanks to new construction methods which have enabled it to be used more economically. New wood saving or preserving devices, largely unknown before the war, are today widely accepted in every part of the world. These advances in wood technology, together with the introduction and marketing of species formerly unknown commercially, have improved the possibility of meeting the steadily growing demand for wood in its different uses.

FISHERIES

One fundamental difficulty which governments have encountered in their efforts to maintain or accelerate the postwar development of fishery industries has been the variable nature of the resource, the absence in many cases of any systematic record of its exploitation and the extent to which it is shared with other fishing countries. In some countries such as Norway, Denmark, United Kingdom, United States, Canada, U.S.S.R., and Japan, there is a long history of research, with the primary objective of conservation. Following the war there was a re-orientation of biological research toward the concept of rational utilization of fishery resources based on systematic appraisals. This implied a sharper distinction between fundamental biological studies and investigations carried out with due regard for economic priorities in the fishery industry.

In the advanced fishing countries, there has been a fairly steady intensification of biological research activities with particular emphasis on the measurement and behavior of important fish

stocks. The number of research vessels and shore establishments has increased correspondingly in Europe and North America, where the results of investigations of species of special economic importance such as cod, herring, halibut, tuna, salmon, have been used increasingly as the basis for fishery policy and resource management. Concern for the rational exploitation of such important stocks has encouraged the activities of international scientific councils already established before the war and promoted the formation of such bodies as the International Commission for the North-West Atlantic Fisheries and the International North Pacific Fisheries Commission. The situation in the North Sea, in particular, caused great anxiety among the European fishing countries, when the stocks, which had benefited from the virtual cessation of fishing during the war, again showed signs of depletion after the first few postwar years. The "North Sea Convention," drawn up in 1946, was eventually ratified in 1952 and appropriate conservation measures are now being implemented in that area. In the under-developed areas the systematic appraisal of resources has been of even more critical importance to the development of the fishery industries. In many parts of South-east Asia, the Far East, Africa and Latin America only isolated biological studies had been undertaken before the war. Since the war there has been a much stronger demand for investigations to reveal the possibilities for the exploitation of hitherto unknown marine resources, for developing the huge potential fish production in inland waters by improved management techniques, and for securing greater efficiency in the existing operations.

The trend in technological research since the war has been to expand investigations of problems of special importance to the fisheries and to expedite the application of developments made in related technological fields, e.g. food preservation, radio and echo-sounding equipment, diesel engines, naval architecture, etc. The latter was especially important during the immediate postwar period, when materials and equipment developed during the war could be put to immediate use in new fishing vessels. Notable improvements have been made in fishing vessel construction. In the European distant-water trawling fleets and the United States tuna vessels, the tendency has been to build larger and faster ships with ranges of over 2,000 miles, fully equipped with modern navigational aids, electrical fish-finding equipment and fitted out to provide better fish storage and more comfortable crew accommodation. Recently factory ships capable of processing at sea have been introduced experimentally in the North Atlantic. In smaller vessels, like those of the Danish seining fleets and the purse-seining fleets of the United States, Iceland, Canada and Norway, more efficient engines have been installed and the use of echo-sounding equipment has become almost universal. In the onshore industries greater use has been made of power. On the question of utilization, the fundamental problem is that of overcoming the extreme perishability of fish supplies in order to permit better marketing arrangements. In this field there has been a steady advance since the war, particularly with regard to deep freezing and canning in Europe and North America, and also in connection with quality improvement and control. Changes in the pattern of consumer demand, e.g. in favor of more attractive packs, pre-cooked products, etc., and increasing competition from alternative foods, e.g. meat, eggs, has compelled more attention to the quality and preparation of food products, especially for the influential United States market. The number of technological research establishments has increased in Europe to deal with problems of handling and preservation of the distant water catches from the Arctic, and in both North America and Europe in connection with processing, especially deep freezing. Internationally there has been a movement towards co-operation to achieve standardization in the preparation and description of fish products. In this period, too, the strong demand for fish meal and the ready means provided by reduction processes for the absorption of seasonal surpluses have promoted the rapid advance of fish meal and oil industries, and the development of superior techniques especially in the United States, Norway, Iceland and South Africa. Associated with this was the intensive research on the results of fish meal feeding to livestock and the growing recognition of the nutritional value of animal feeding stuffs derived from fish. More recently, further research has revealed possibilities in the use of refined fish meals in human feeding mainly by way of fortifying traditional foods, e.g., bread. In the under-developed areas, technological problems are more acute, ranging from the training of research and operational personnel and the introduction of more efficient fishing techniques and equipment to the problems of transport over long distance and difficult terrain and preservation under difficult climatic conditions. The latter has provided very considerable scope for technical assistance to under-developed fishing countries.

the picture. In the Near East, production increased by some 40 percent during the years under review, largely because of the increased area brought under cereals, often by mechanized agriculture, e.g. in Turkey and Syria, together with the spurt in cotton and other non-food crops under the stimulus of the Korean boom. Progress was erratic, however, for climatic reasons. In Africa a remarkable expansion in export crops contributed largely to an increase of 34 percent in total production, but the production of food crops primarily for domestic consumption also showed a notable advance, easily outstripping the growth of population.

Expansion was also uneven for climatic reasons in Oceania, where there was no marked change in the customary pattern of production, centered around livestock. Developments in Latin America, however, turned increasingly towards food crops under the pressure of a rapidly expanding population, and livestock production and particularly export crops tended to lag behind. Food crops, primarily rice and other cereals, were also the main preoccupation in the Far East. But, owing to the need for foreign exchange, some export crops, notably rubber, were encouraged from an early date and under the influence of the Korean boom these crops have outpaced food production. Recovery in the Far East was greatly retarded by continuing conditions of war and civil disturbance, boundary revisions and by lack of capital, equipment and technical knowledge. In some countries it is still far from complete, and in the region as a whole agricultural production has not yet caught up with the growth of population.

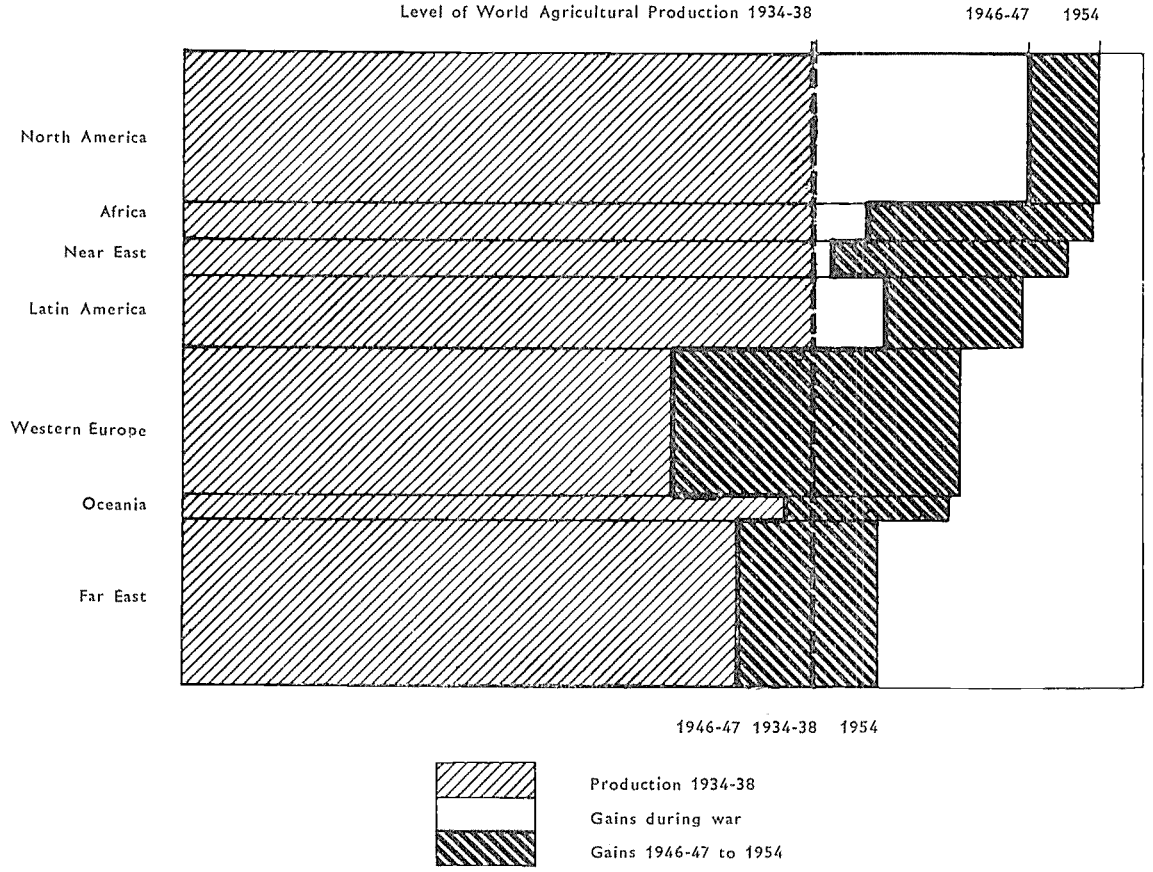
In North America, where the main expansion had come during the war years, the postwar period was essentially one of consolidation and readjustment. The total expansion in this latter period was limited, and at first largely directed toward cereals in view of the acute shortage in the rest of the world. The output of cotton and other non-food crops fluctuated sharply according to the state of demand and the influence of acreage restrictions. After a small initial contraction, however, livestock production, particularly beef and poultry products, has increased steadily and in the last year or two has drawn well ahead of crop production. In spite of its relatively slow postwar growth, North American agriculture, because of its wartime gains, still showed in 1954/55 a larger increase over the prewar level of production than any other region with the possible exception of Africa. But the disparity between production in that region and the rest of the world is being steadily reduced.

Although data on agricultural production in the U.S.S.R., Eastern Europe and China are incomplete, much more information has become available in the last two years and the general course of postwar development is fairly well known. Immediately after the war output in the U.S.S.R. and Eastern Europe was lower, relative to the prewar level, than in any of the other regions. Recovery has been slow for a number of reasons, some of the more important being perhaps the greater initial damage and the special emphasis placed on industry with a consequent lower level of investment in agriculture and lesser economic incentives to producers than elsewhere. Cereal production in Eastern Europe is not yet back to the prewar level and the region now imports grains. Cattle numbers are likewise below prewar figures. In the U.S.S.R. cereal production, although unchanged over the last three years, is a little above the prewar level but livestock numbers have not yet quite recovered. The unsatisfactory response of agricultural production in both regions coupled with a growing demand for foodstuffs has led to a definite change in policy during the last two years so as to provide increased agricultural raw materials and foodstuffs. In the meantime large quantities of livestock products and sugar are being imported into the U.S.S.R.

In the U.S.S.R. a major effort is being made to increase cereal output. Coarse grains will constitute a large proportion of the planned additional output in order to allow a simultaneous increase in livestock production. In contrast with most other countries more reliance is being placed, at least initially, on expanding the cultivated areas, by ploughing up unused land in Central Asia and Siberia, than on raising yields. In both the U.S.S.R. and Eastern Europe more scope has been given to the economic incentives of higher product prices and lower costs to agriculture. At the same time capital supplies are being made more readily available to peasants' holdings as well as to state farms and co-operatives.

Agricultural production in China was not affected significantly by World War II, but the level of output had not recovered from the effects of war and floods in the 'thirties, when the extension of civil war in 1948/49 further retarded recovery. In addition to some physical war damage there were the uncertainties and administrative difficulties attendant on the subsequent political changes. These affected agriculture directly through the introduction of co-operative farms, the re-

FIGURE V-2. - World and Regional Agricultural Production, 1934-38, 1946-47 and 1954



vision of land tenure and distribution and the virtual severance of China from world markets, while their main indirect effect may have been through the greater initial emphasis given to industry in the over-all economic planning. There has been some increase in agricultural production since 1949 but not sufficient to restore the per caput output of foodstuffs to former levels. The food situation in 1954, because of continuing population growth, disastrous flood damage and the necessity to maintain agricultural exports so as to finance capital imports, was the most critical for many years. Current production plans are thus for a substantial output increase, particularly of cereals, sugar and cotton.

The indices in Table V-1 and Annex Table 1 cannot take into account the relative size of the agricultural output in each region. The postwar recovery of production is shown in Figure V-2, which takes into account the relative size of the agricultural output of each region. It is apparent from this chart that the wartime gains in production in North America provided a reservoir to offset the worst losses in the Far East and Western Europe. Also apparent is how largely postwar developments in Western Europe have contributed to total world expansion, and how postwar developments have tended to reduce the geographic imbalances of production which developed during the war.

The balance of production cannot be properly considered without considering also changes in population, and postwar production developments are therefore shown on a per caput basis in Figure V-3. There has been a steadily rising trend in per caput production since the war in the world as a whole (the chart omits the U.S.S.R., China and Eastern Europe, owing to the incompleteness of available data, but their inclusion would not change the upward trend). Per caput production has also risen steadily in Western Europe, the Near East, Africa and the Far East, though in the last-named region it has not yet regained the prewar level. On the other hand, the trend is slightly downward in North America, though the per caput output remains substantially higher than before the war. In Oceania and Latin America it has remained fairly static, but at a level rather

Chapter V - THE COURSE OF PRODUCTION AND SUPPLIES

Some assessment may now be made of the results of the postwar efforts to expand production in agriculture, forestry and fisheries; to see how far the funds invested, the price and other incentives, the changes in land tenure, the wider use of science and technology, were successful in producing the quantities and kinds of food so badly needed at the end of the war. Consideration is also given to how progress in agriculture compared with industry and other sectors of the economy and with progress after World War I. Finally, what were the ultimate effects of the gradual increase in supplies? How far was the prewar pattern of international trade restored? How much have the inadequate levels of nutrition, clothing and housing in many areas been improved? What supplies for price or other reasons could not be used for these purposes, but instead went to swell the surplus stocks of many farm products which in time began to pile up in many parts of the world?

THE RECOVERY OF PRODUCTION

Some basic statistics on the development of agricultural production since the war are set out in Annex Table 1 and on fisheries and forestry in Part II. The main changes for agricultural production as a whole are briefly summarized in Table V-1; the course of production in certain regions for each main subsector of agriculture in relation to the growth of population is shown in Figure V-1.

TABLE V-1. PERCENTAGE INCREASE IN NET AGRICULTURAL PRODUCTION

REGION	1946/47–1954/55[1]	1934/38–1954/55[1]
	..... *Percent*	
Western Europe	61	24
Near East[2]	41	43
Africa	34	45
Oceania[2]	29	22
Far East	24	9
Latin America	22	35
North America[3]	10	48
All above regions	26	27
World[4]	30	20

[1] In regions where production fell back somewhat in 1954/55 an earlier peak year has been substituted.
[2] 1953/54.
[3] 1952/53.
[4] Including rough estimates for the U.S.S.R., China and Eastern Europe.

Agriculture

The progress achieved in some areas in rebuilding and expanding agricultural production was in fact remarkable. In Western Europe, where the most spectacular advances were made, crop production had virtually regained its prewar level by 1948/49, while livestock production did the same two years later. In the eight years from 1946/47 to 1954/55, the net farm output was raised by no less than 60 percent, an average increase of about 7 percent annually. Such rapid growth over so wide an area is probably unprecedented and outpaced even the North American agricultural expansion of 34 percent during the war years. Expansion in Western Europe was facilitated in that during the first half of the period the process was essentially one of recovery to a previously existing level, for which the necessary buildings and other equipment were in the main already at hand. But although later the pace slackened somewhat, this was only partly because of increasing technical difficulties; there was also some relaxation of the pressures making for increased production. A characteristic of the postwar production in Western Europe has been the increased attention to pasture and the attempt to re-establish livestock production without the heavy dependence on imported feeding stuffs of the prewar years. The success of these efforts is evident from the fact that the index of net agricultural production is consistently higher from 1949/50 than the indices of gross crop or of gross livestock production.

The pace set in Western Europe was approached in two of the less developed regions of the world, and in these no element of recovery entered into

FIGURE V-1. — Gross Output of Food Crops, Non-food Crops and Livestock Products in Certain Regions in Relation to the Growth of Population

(Indices : 1934-38 = 100)

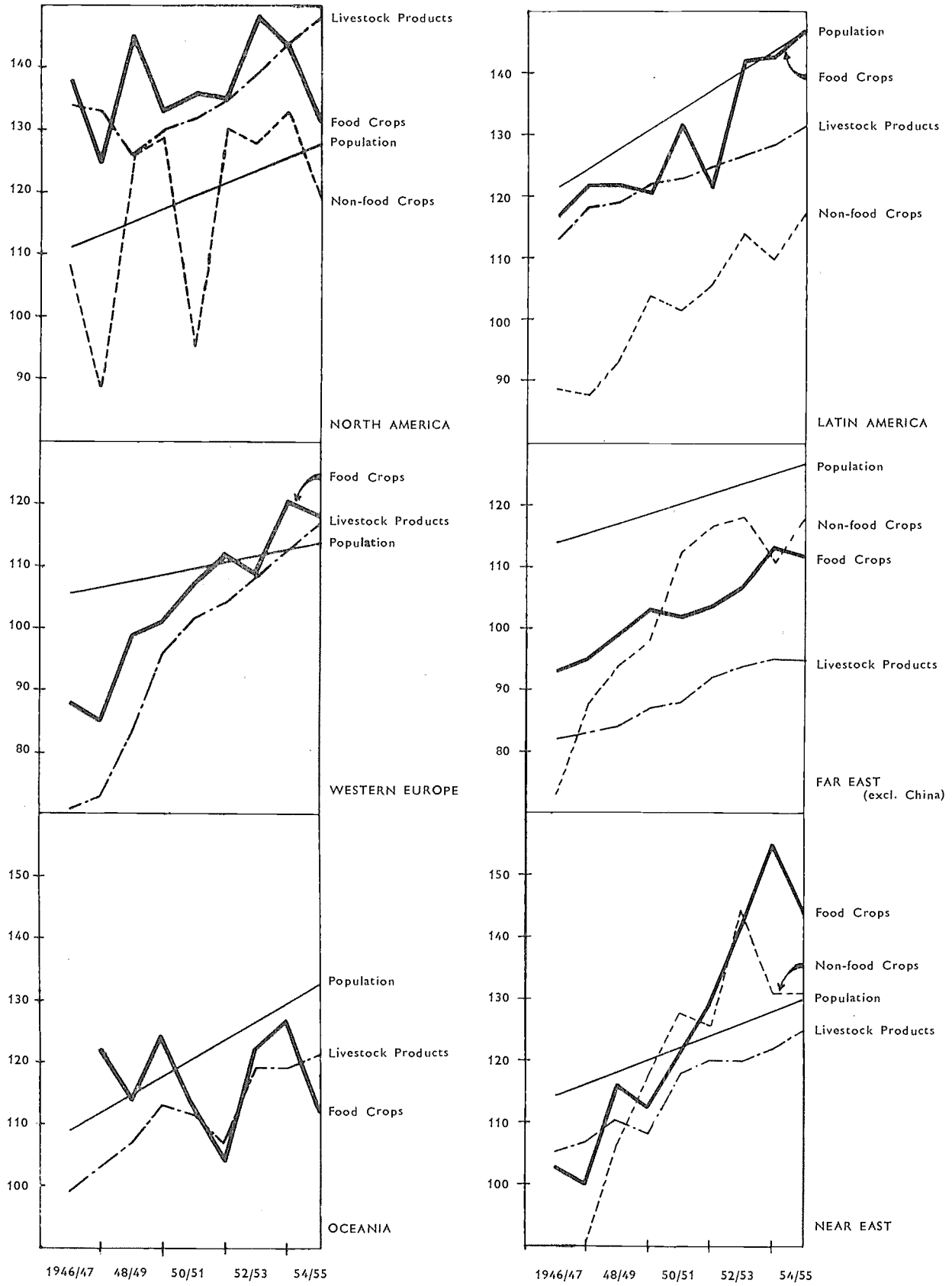


FIGURE V-5. — Comparison of Development of Cereal Production and Livestock Numbers after World Wars I and II

(Indices : Average 1909-13 and Average 1934-38 respectively = 100)

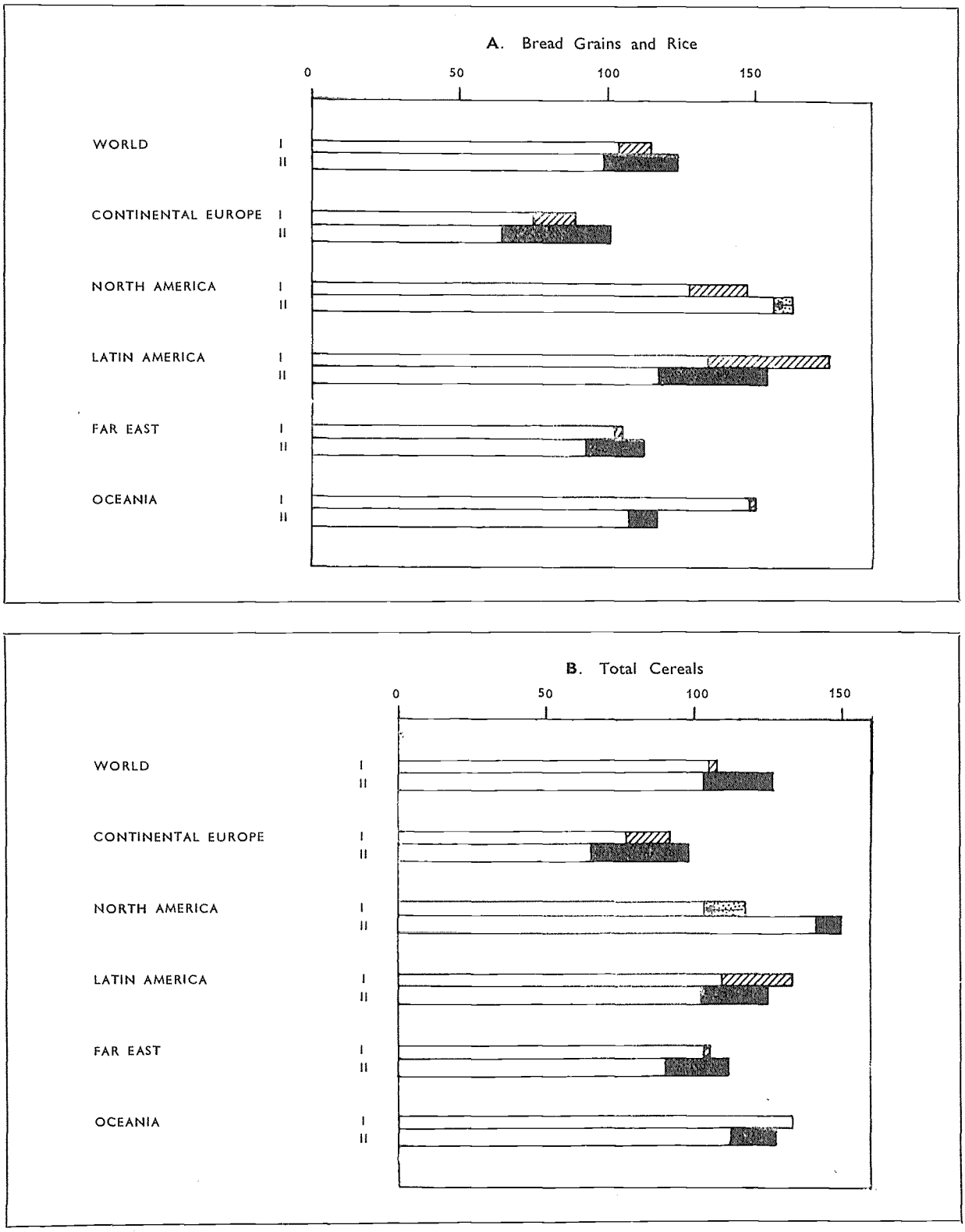


FIGURE V-5. — Comparison of Development of Cereal Production and Livestock Numbers after World Wars I and II

(Indices : Prewar = 100)

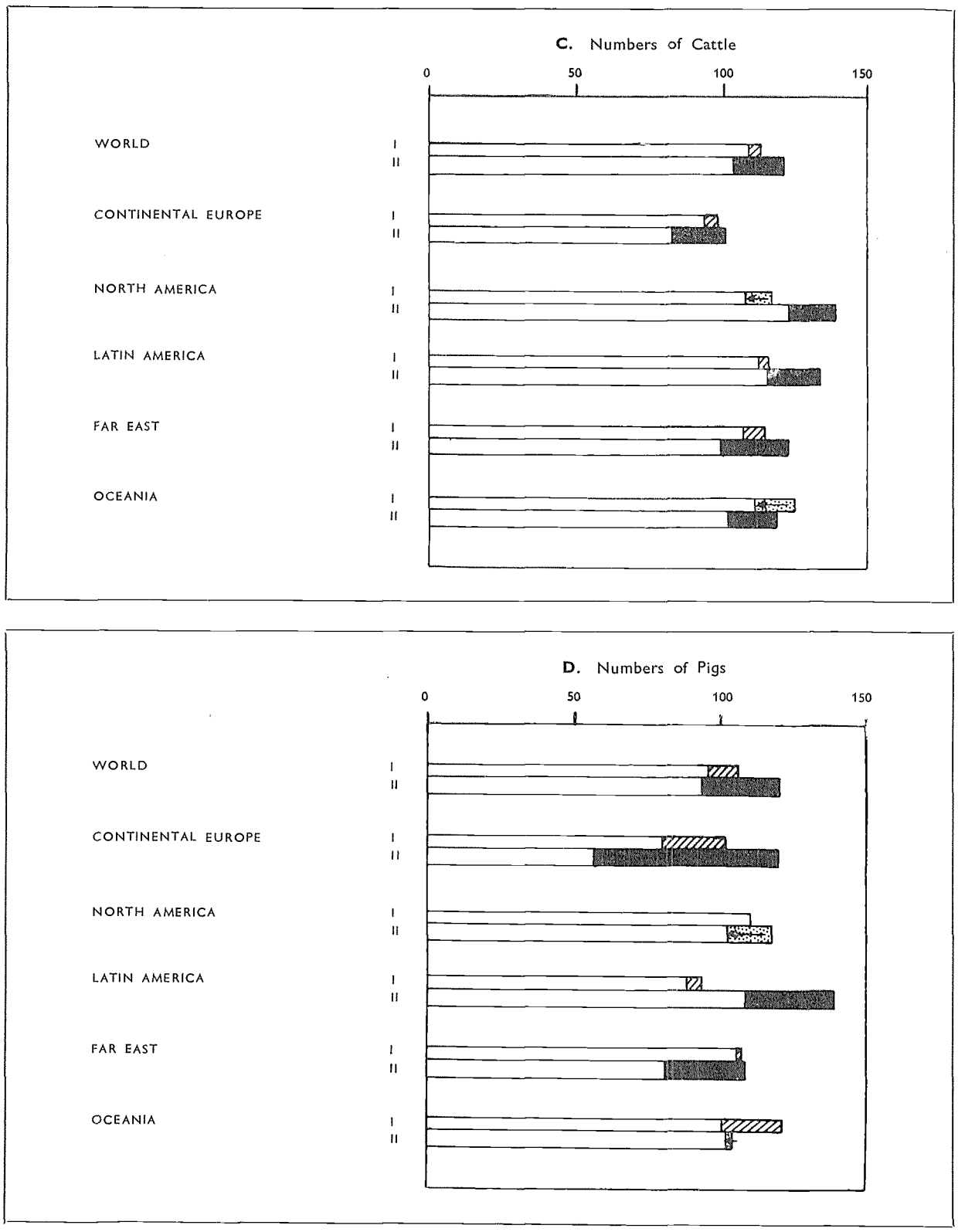
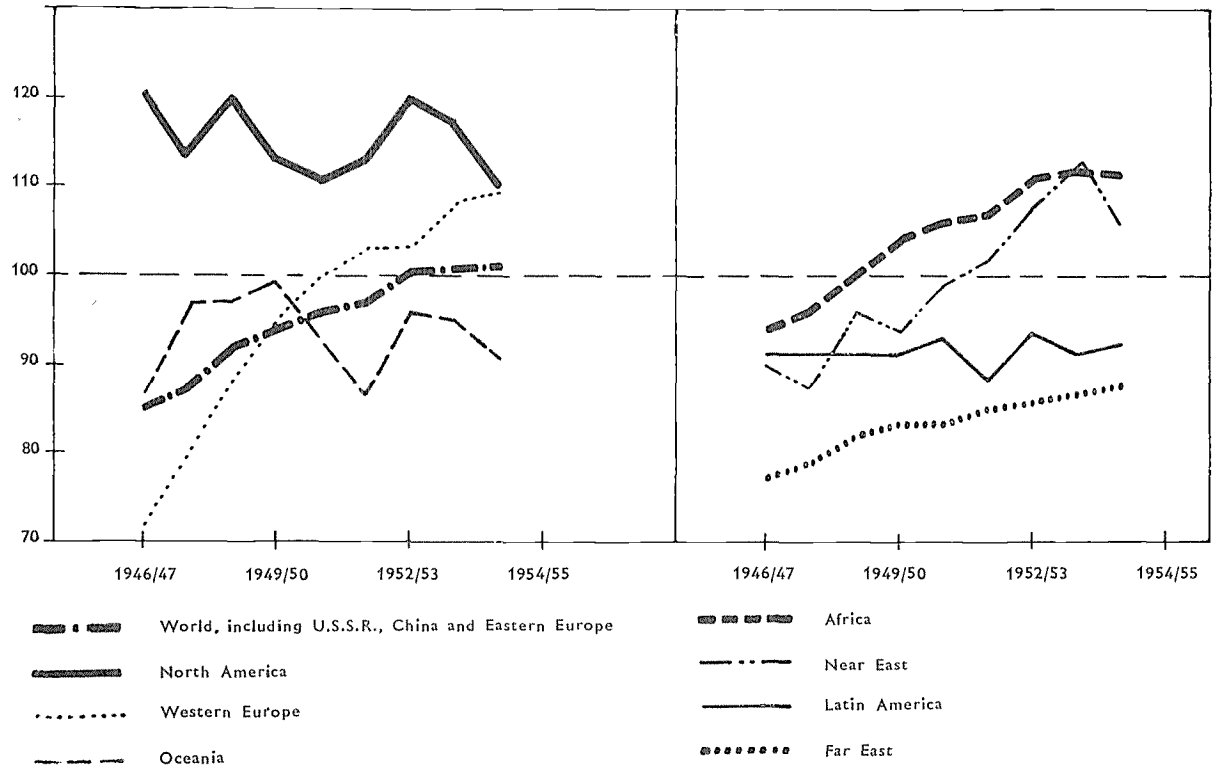


FIGURE V-3. — Per Caput Agricultural Production (1934-38 Average = 100)



lower than before the war, largely however because of the rapid growth of population in these two regions. This situation is reflected in a lower volume of agricultural exports from Latin America.

In discussing (Chapter II) the influence of the war on the pattern of agricultural production, it was noted that in the war-damaged areas livestock production had fallen more heavily than crop production and non-food crops more than food crops. The production of non-food crops had also tended to decline in the regions less directly affected by war, with the notable exception of Africa. But in these regions livestock production had tended to increase somewhat more rapidly than crop production as a whole, though not always faster than the production of food crops. As living standards are raised there is a tendency all over the world to consume more livestock products and less vegetable foods, though with some exceptions such as sugar and fresh fruit. The relatively greater increase in livestock production in the areas less directly affected by the war is thus in line with the long-term trend of demand.

As a result of postwar developments the trend towards increased livestock production seems to have been strengthened in the countries with more advanced agricultures. In both North America and Oceania indices of livestock production in 1954/55 were ahead of indices of crop production, and while in Europe the two had barely achieved a balance, it must be remembered that the postwar starting point for livestock was low and that a faster rate of expansion was necessary in order to catch up (Table V-2).

Data on livestock production in the less developed agricultures are inadequate and incomplete. So far as they go available estimates suggest that in these areas livestock husbandry, which in most countries was always a small sector of agriculture, has not kept pace with crop production. In the Far East it appears not yet to have regained its prewar level. The main concern in all of these regions has been with food crops, which are by far the most important part of their total output. Although in Africa there has been a very sharp advance in the output of non-food crops, mainly for export, and in the Far East a greater expansion of non-food than of food crops, owing mainly to the rapid growth of rubber production, it should be remembered that the non-food crops represent a relatively small share of the total output though they loom large in international trade.

FIGURE V-4. — Relative Growth of Agriculture, Manufacture, Mining and Population (Prewar = 100)

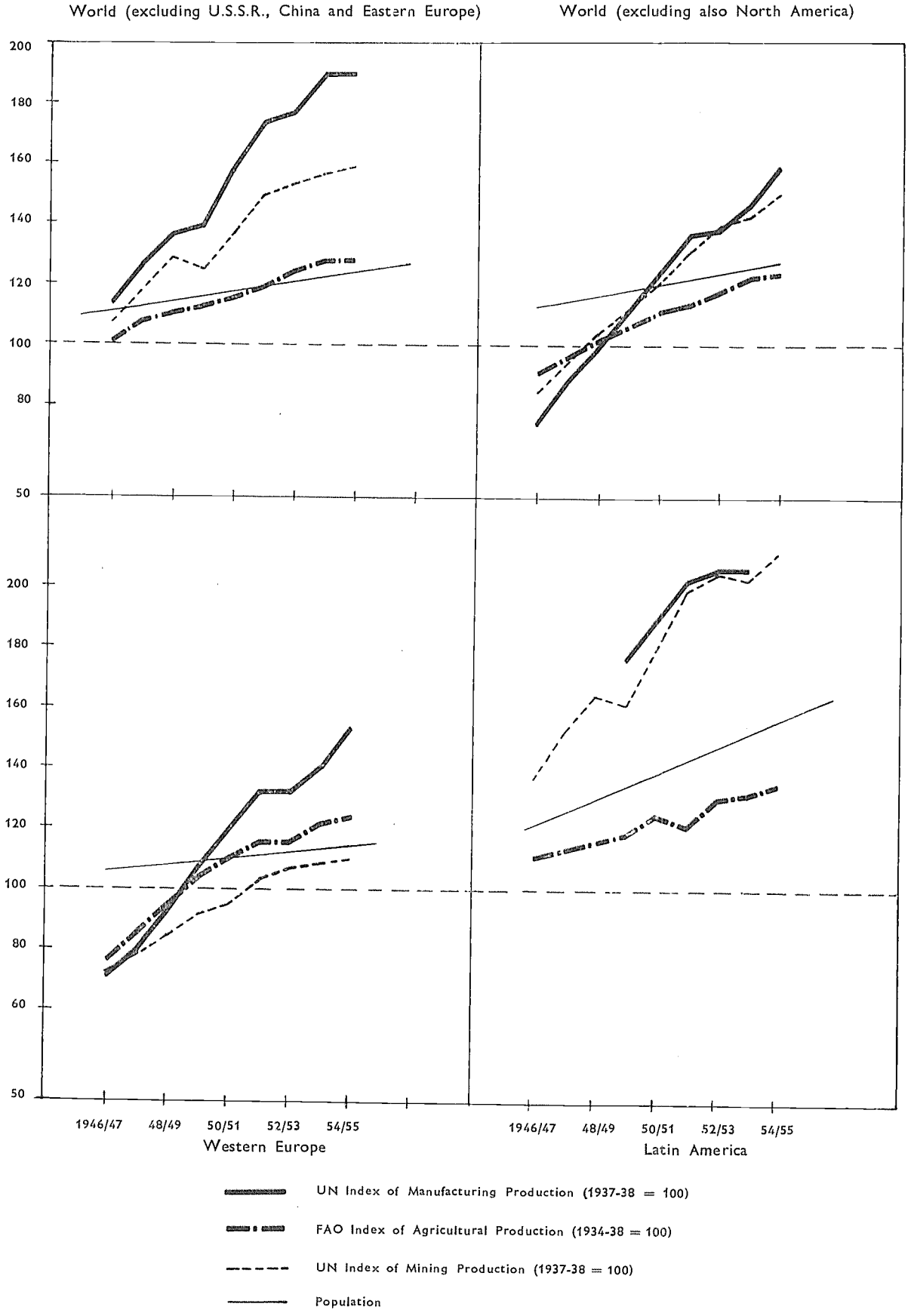


TABLE V-2. PRODUCTION IN THE MAIN SECTORS OF AGRICULTURE; 1954/55 IN RELATION TO THE PREWAR AVERAGE

REGION	Total Livestock	Food Crops	Non-Food Crops
	..... *1934-38 average* = *100*		
North America . . .	148	132	120
Oceania	121	113	[1]
Western Europe. . .	117	118	[1]
Africa	132	144	235
Near East	125	145	131
Latin America . . .	131	147	117
Far East (ex. China).	95	112	118

[1] Production relatively very small.

Wartime and postwar changes in the pattern of world production are shown more concretely in Figure II-4 where the world production of some important agricultural and forest products in 1954/55 is shown in relation to production at the end of the war in 1946/47 and to the prewar level. Although some of the more striking increases, e.g. for rubber and citrus fruit, largely reflect the growth of world demand, this is by no means always the case since price supports, price ceilings and other policy measures have largely influenced the postwar pattern of production. These national policies, however, have only a limited influence on international markets and, as will be shown later, there is some degree of correlation between prices on world markets and the relative growth of production.

The general impression from the data presented above is that the expectation of market outlets was probably the most important factor determining the rate of postwar expansion. Technical advances contributed largely to the rapid growth of production in Western Europe, but the lower levels of agricultural technique and equipment did not prevent almost as rapid an expansion in the Near East and Africa. Again, there can be little doubt that with the technical facilities available to them, North American farmers could have maintained the wartime rate of expansion had they been confident of profitable outlets for the increased production. Even before agricultural surpluses became a major problem, however, there were widespread uncertainties in North America on the future demand and the course of farm prices and incomes; acreage controls were introduced to limit the output of certain crops for which the market seemed inadequate. The depression of the 'thirties still threw its shadow over men's minds.

Other factors, already mentioned, were of primary importance in some areas, e.g. unsettled conditions in the Far East and drought in Australia and in some countries of the Near East and North Africa. A factor of rather general influence was the greater profitability of investment in other sectors of the economy which limited the investment resources available to agriculture. Thus building and real estate attracted a large share of investment capital in Latin America, secondary industries in Australia, mining and communications in Africa. Manufacturing was more profitable than agriculture in North America, though North American agriculture had an ample supply of capital throughout the period.

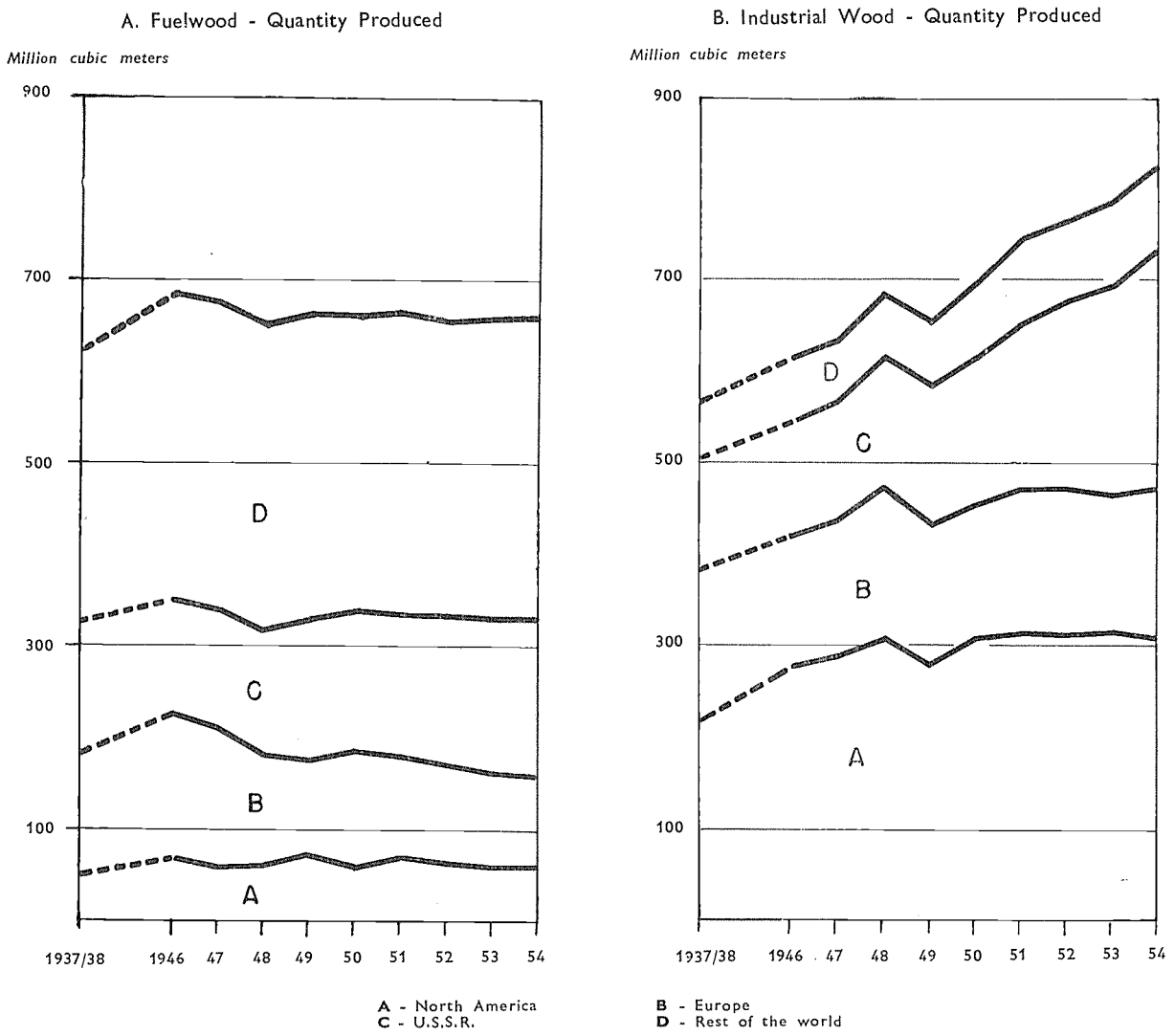
Rapid as it was, therefore, the postwar expansion of agriculture fell far short of general economic progress, and this remains true if allowance is made for the somewhat exceptional conditions in North America. Excluding North America, the world output from industry increased about twice as fast as the output from agriculture during the period from 1946-1954. For a few years agricultural expansion in Western Europe kept pace with manufacture, but was outstripped after 1950. Elsewhere the discrepancy has been still more marked (Figure V-4). Faster progress in sectors other than agriculture is to be expected in a rapidly industrializing world, though in some countries the disparity may have been unduly large.

There can be little doubt, however, that the recovery and progress of agriculture under the generally favorable economic conditions since World War II was considerably faster than after World War I. So much is evident from a comparison of the basic data on the growth of e.g. cereal production and livestock numbers in the years after each war (Figure V-5). Broader comparisons on the basis of indices of total world agricultural production seem unreliable, and indices prepared before World War II (e.g. by the League of Nations) do not appear to be comparable with those of FAO.

Fisheries

It is difficult to estimate the total annual world fish production at the end of World War II, but it is certain that it had fallen to under 20 million tons, substantially below the prewar level of about 22 million tons. It now exceeds 27 million tons, 20 percent above the prewar output. Most of the increase has occurred in the well established and developed fisheries of Europe, North America, Japan and the U.S.S.R., and has been based on known

FIGURE V-6. — Production and Utilization of Wood

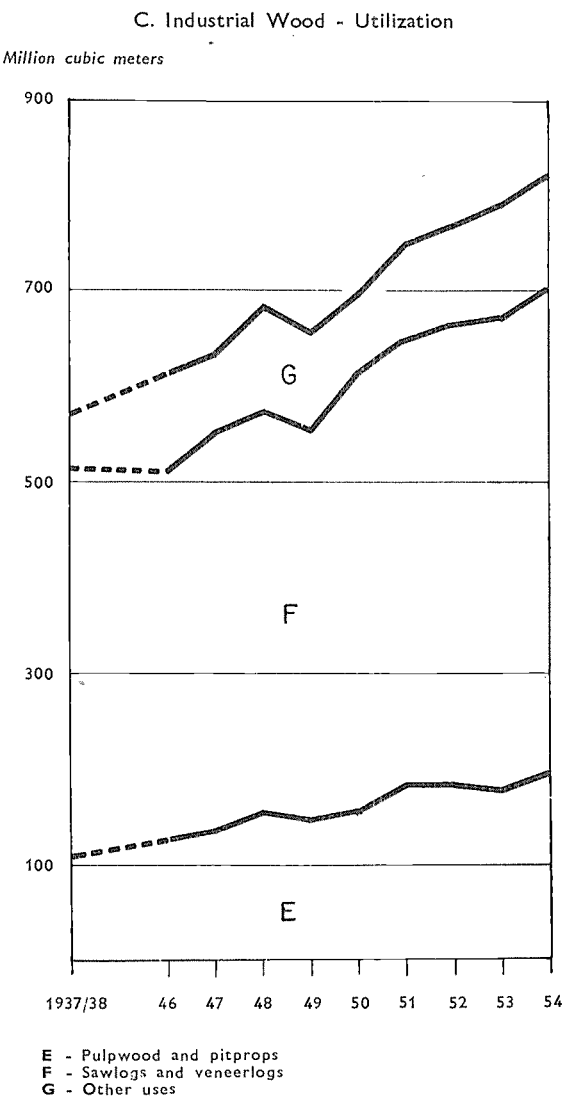


resources already subject to some exploitation. With the possible exception of South African pilchard, all the major increases have been due to the more intensive exploitation of these resources. Norway, for example, has doubled its production of winter herring since the war, while the United States has rapidly increased production of menhaden and tuna; Iceland has doubled its prewar cod production, and the postwar revival of the United Kingdom fisheries has rested mainly on the extended exploitation of North Atlantic and Arctic cod. On the other hand, the emergence of South and South-West Africa, Peru, Angola and Chile as significant fish producers and exporters is entirely a postwar development. During the last few years the tendency has been for production in the principal fish-producing countries to stabilize, except Japan and possibly the U.S.S.R. For the rest of the world there is little information, but it is evident that no major increases have occurred despite the pursuit of expansionist policies in the fisheries of Southeast Asia, the Far East and Latin America.

Forestry

Total removals of roundwood from the world's forests rose gradually from some 1,300 to close on 1,500 million cubic meters (15 percent) over the period 1946 to 1954. This increase came entirely from a rise of about 35 percent in the production of industrial wood (including a rise of 51 percent in pulpwood and pitprops) and the production of fuelwood declined slightly (Figure V-6 and Table V-3).

FIGURE V-6. — Production and Utilization of Wood (Concluded)



The largest increases occurred in the Soviet Union, where production had fallen rather heavily during the war. Figures available for the postwar period are, with the exception of 1950, based on planned production and they show a rise of as much as 75 percent from 1946 to 1954. Because of war damage to the forests principally exploited before the war, production has had to be extended increasingly into the northern part of the country and Siberia. Although the production of fuelwood increased, it represents a steadily declining proportion of the total volume of fellings, thus conforming to the general trend for a more rational utilization of forest resources.

In spite of a larger output of industrial roundwood, total fellings in Europe have declined since

TABLE V-3 : PRODUCTION OF ROUNDWOOD IN 1954 IN COMPARISON WITH 1946

CONTINENT	All Roundwood	Fuelwood	Industrial Wood	
			Total	Pulpwood and Pitprops
	Percentage change			
Europe	— 14	— 39	+ 12	+ 14
U.S.S.R.	+ 74	+ 40	+108	+300
North America	+ 6	— 14	+ 12	+ 41
Latin America	—	— 3	+ 13	—
Africa	+ 8	— 3	+100	—
Asia	+ 16	+ 4	+ 38	+150
Oceania	+ 29	—	+ 71	—
WORLD	+ 15	— 4	+ 35	+ 51

1946 because of a sharp fall in the use of fuelwood as other fuels once more became fairly plentiful. Serious overcutting occurred in some countries during the war and immediate postwar years; since 1949 the European output has, however, been more in line with the production capacity of her forests. The production of fuelwood also declined somewhat in North America, but total fellings increased slightly during the years under review, almost entirely because of a rise of 33 percent in output of the smaller sizes, chiefly for pulpwood. The production of sawlogs and other industrial roundwood rose by only 12 percent.

Production in other regions is still mainly of fuelwood and fellings of industrial wood are relatively small. The forest industries of Latin America and Africa were developed extensively during the war, when the output was raised by some 20-25 percent, but progress has since been slow in spite of the large untapped resources of these regions. In Oceania, the expansion started during the war has continued steadily. The forest situation is least satisfactory in Asia. Damage and over-exploitation were severe during the war in the main producing countries, and in 1954 the output of roundwood had barely regained the prewar level and was still insufficient to meet requirements.

INTERNATIONAL TRADE IN AGRICULTURAL PRODUCTS

The Prewar Pattern of Trade

Prior to World War II, international trade in agricultural products followed a well-defined pattern. The main geographical movement was

from the less industrialized regions of the Far East, Africa, the Near East, Latin America, and Oceania to Western Europe. North America was the only other region whose imports of agricultural products were greater than exports, but its gross and especially its net imports were much smaller than those of Europe. Although exports from the largely agricultural economies to industrialized Europe formed the largest sector of world trade, intra-regional trade was important for Europe, where more than one-fifth of agricultural imports came from other European countries. There was also an appreciable volume of trade within the Far-Eastern and other regions.

International trade in forestry products comprised mainly exports from the U.S.S.R., the Scandinavian countries and North America to Europe, with intra-regional trade in North America.

The Situation at the End of the War

In 1946, the first complete calendar year after the end of the war, the volume of world trade in agricultural products is estimated to have been about 20 percent less than before the war. For food and feeding stuffs the decline was of the order of 25-30 percent; trade in other sectors was less severely reduced, the volume of international shipments in natural fibers and rubber falling by about 13 percent, and in the case of beverages and tobacco by only 5 percent.

Apart from a smaller volume of trade, there were also, as noted in Chapter II, marked changes in its geographical pattern. In particular, North America, with a greatly expanded production, was able to triple her food exports and to increase her total agricultural exports by some 80 percent above the prewar level in replacement of supplies no longer available elsewhere. These increased exports comprised principally cereals, vegetable oils and livestock products.

At the other extreme, exports of agricultural products from the Far East had fallen to 40 percent of their prewar level (foodstuffs to only 16 percent) and exports from Europe to little more than 30 percent. Exports from Eastern to Western Europe almost ceased because of the severity of war damage to production and general shortages. There was also a considerably lower volume of agricultural exports from the Near East than before the war, but those from Latin America and Oceania were well maintained. The main changes in the volume of trade are summarized in Table V-4.

TABLE V-4. VOLUME OF GROSS EXPORTS AND IMPORTS OF AGRICULTURAL PRODUCTS IN 1946

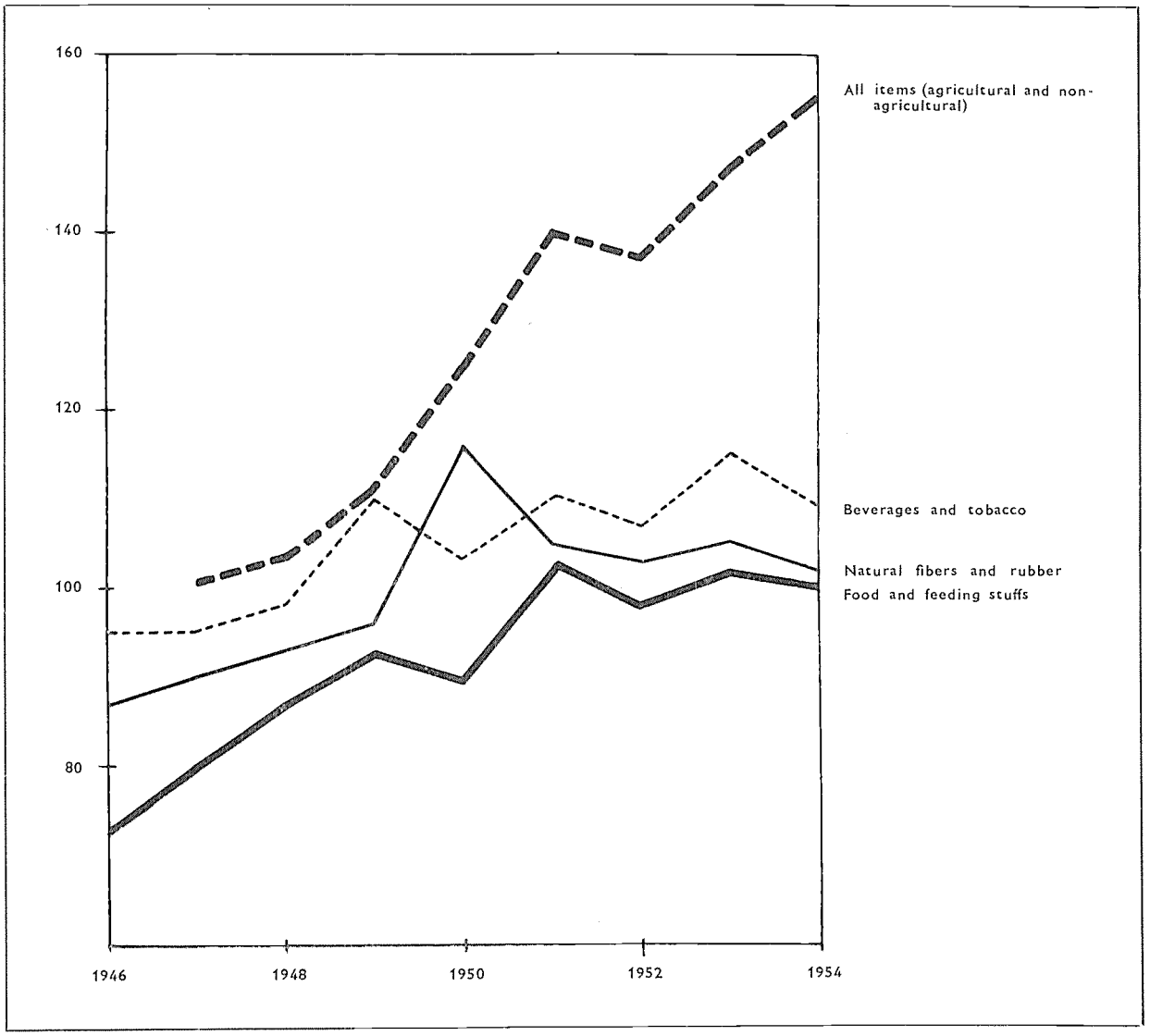
ITEM	All Agricultural Products	Food	Natural Fibers and Rubber	Beverages and Tobacco
	.... *1934-38 average = 100*			
World Trade	80	73	87	95
Exports				
North America . . .	180	313	164	153
Far East (excl. China)	44	16	63	69
Western Europe. . .	32	28	40	42
All other areas . . .	91	67	137	107
Imports				
Western Europe. . .	72	69	78	70
Far East (excl. China)	44	50	38	48
North America . . .	126	68	144	144
All other areas . . .	114	130	119	93

The Volume of International Trade Since World War II

The most striking feature of international trade in agricultural products in the period since World War II has perhaps been its relative stagnation. This was in marked contrast to international trade as a whole which developed fairly rapidly during this period, exceeding the prewar level by some 25 percent as early as 1950, and by 55 percent in 1954 (Table V-5). Trade in food and feeding stuffs, the largest sector of trade in agricultural products, regained its prewar level only in 1951, and since has not moved up or down from the prewar level by more than one or two percent. After a peak in 1950 at the time of the Korean boom, world trade in natural fibers and rubber has settled down at a level some 3-5 percent higher than before the war. The beverages and tobacco group shows a rising trend, though much less steep than that for world trade generally. For agricultural products as a whole the level of world trade has varied between 100 and 105 percent of the 1934-38 level in each year since 1950. Forest products, not included in this index, have also shown a relatively modest rate of expansion.

This lack of growth, particularly in the food and feeding stuffs sector, largely reflects the strong move toward a greater degree of self-sufficiency in agricultural products, whether for security, balance of payments, or other reasons, already discussed in Chapter II. In the case of natural fibers and rubber and forest products it reflects also the increasing use of substitute materials. It means that trade in agricultural products is be-

FIGURE V-7. — Comparative Growth of the Volume of World Trade Generally and of Trade in Agricultural Products (Prewar = 100)



coming a gradually decreasing part of world trade. Moreover, since the stagnant condition of trade contrasts with the steady expansion of agricultural production, it follows that production for export is becoming a smaller sector of agricultural production as a whole. The proportion of the world's agricultural output moving into international trade was of the order of 20 percent before the war and is now nearer 15 percent.

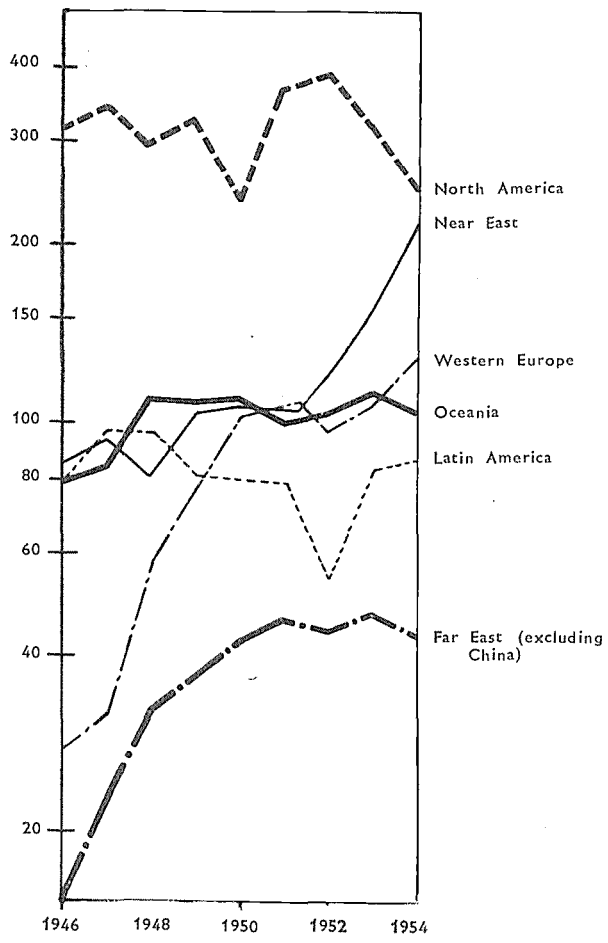
Regional Trends in International Trade in Agricultural Products

Food and Animal Feedingstuffs. The overall figures in Figure V-7 and Table V-5, however, naturally conceal important national, regional and commodity trends. From the regional indices in Figure V-8 it is evident that the wartime distortions of the general pattern of world trade in agricultural products persisted through much of the postwar period and to a large extent still remain. The most dramatic changes occurred in the food sector. For most of the postwar period food exports from North America were maintained at some 3-4 times the prewar level and only began to decline sharply after 1952. In view of the recovery of production elsewhere, this downward trend seems likely to continue though it may be considerably retarded by surplus disposal operations, particularly if means can be found of utilizing surplus food stocks more extensively for general economic development in the less industrialized regions of the world.

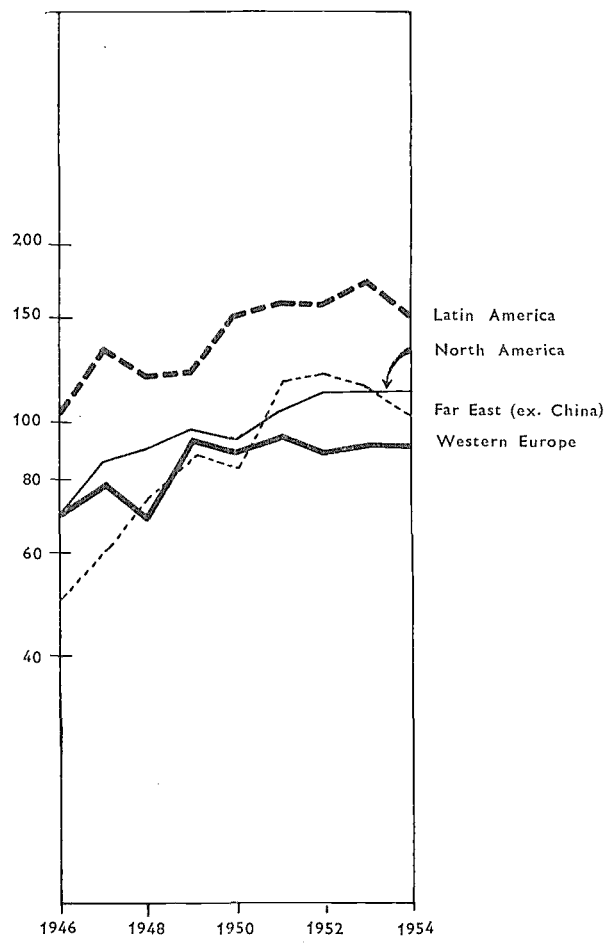
FIGURE V-8. — Regional Trends in International Trade in Agricultural Products

(Indices: 1934-38 = 100 ; semi-logarithmic scale)

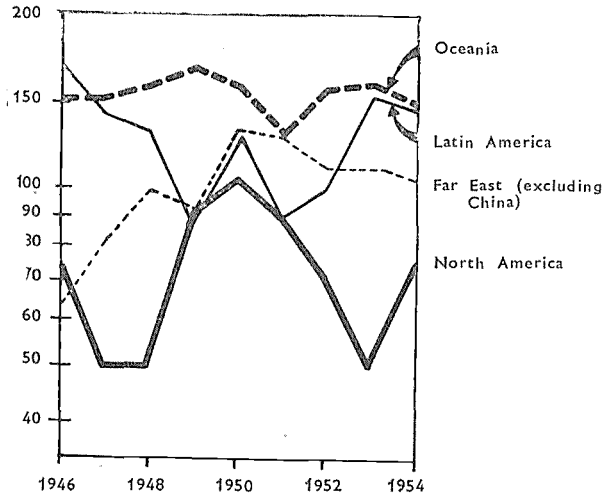
A. Gross Exports of Food and Animal Feeding Stuffs



B. Gross Imports of Food and Animal Feeding Stuffs



C. Gross Exports of Natural Fibers and Rubber



D. Gross Imports of Natural Fibers and Rubber

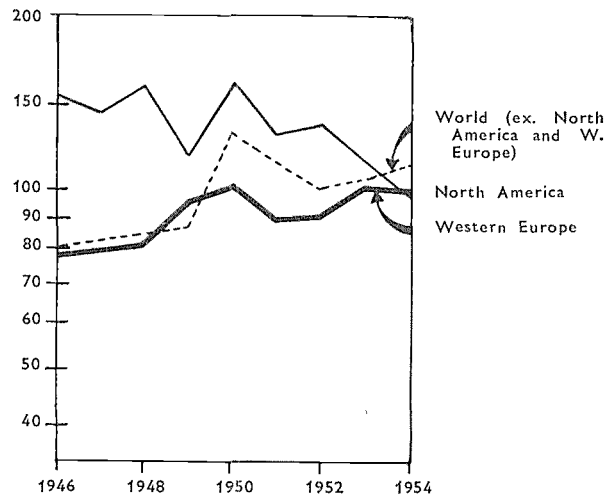
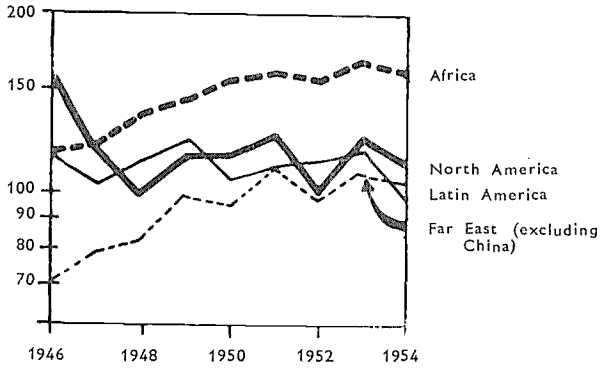
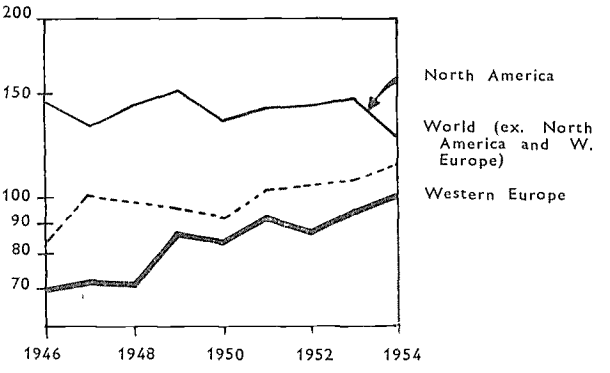


FIGURE V-8 (*concluded*)

E. Gross Exports of Beverages and Tobacco



F. Gross Imports of Beverages and Tobacco



In the regions most affected by war, Europe and the Far East, exports of foodstuffs go largely to other countries of the region. This is especially so in Europe, the main foods exported being fruit, vegetables and livestock products. Recovery from the low postwar level of exports in Europe was delayed for some time by currency restrictions and by the wartime fall in livestock production in European exporting countries. The prewar level was regained by 1950, and though further expansion was slow for some years a renewed upward trend has become evident in the last two years, aided by the operations of the European Payments Union and trade liberalization.

Recovery in the Far East has been slower and food exports, largely of rice and other foods to countries within the region, seem to have become stabilized at rather less than half the prewar level. At first, lack of exportable supplies was the main limiting factor, while in the last few years when supplies have been abundant, exports have been restricted by such factors as the high price of rice in relation to wheat, increased rice production in importing countries which has reduced their import requirements, and the shrinking world market for vegetable oils, discussed elsewhere. The production of sugar for export is still well below the prewar level, but the former markets are now fully supplied, mainly from the Caribbean countries. In view of the growing domestic requirements in Far Eastern countries it is uncertain whether the recent level of food exports will be greatly exceeded in the foreseeable future.

Food exports from Oceania have been running at some 10 percent above the prewar level and those from Latin America at some 10 percent less. The remarkable increase in food exports from the Near East in the last few years has been due mainly to the expansion of cereal production, notably in Turkey.

Figure V-9 includes exports from other regions to the U.S.S.R., Eastern Europe and China, and on the import side the quantities received from

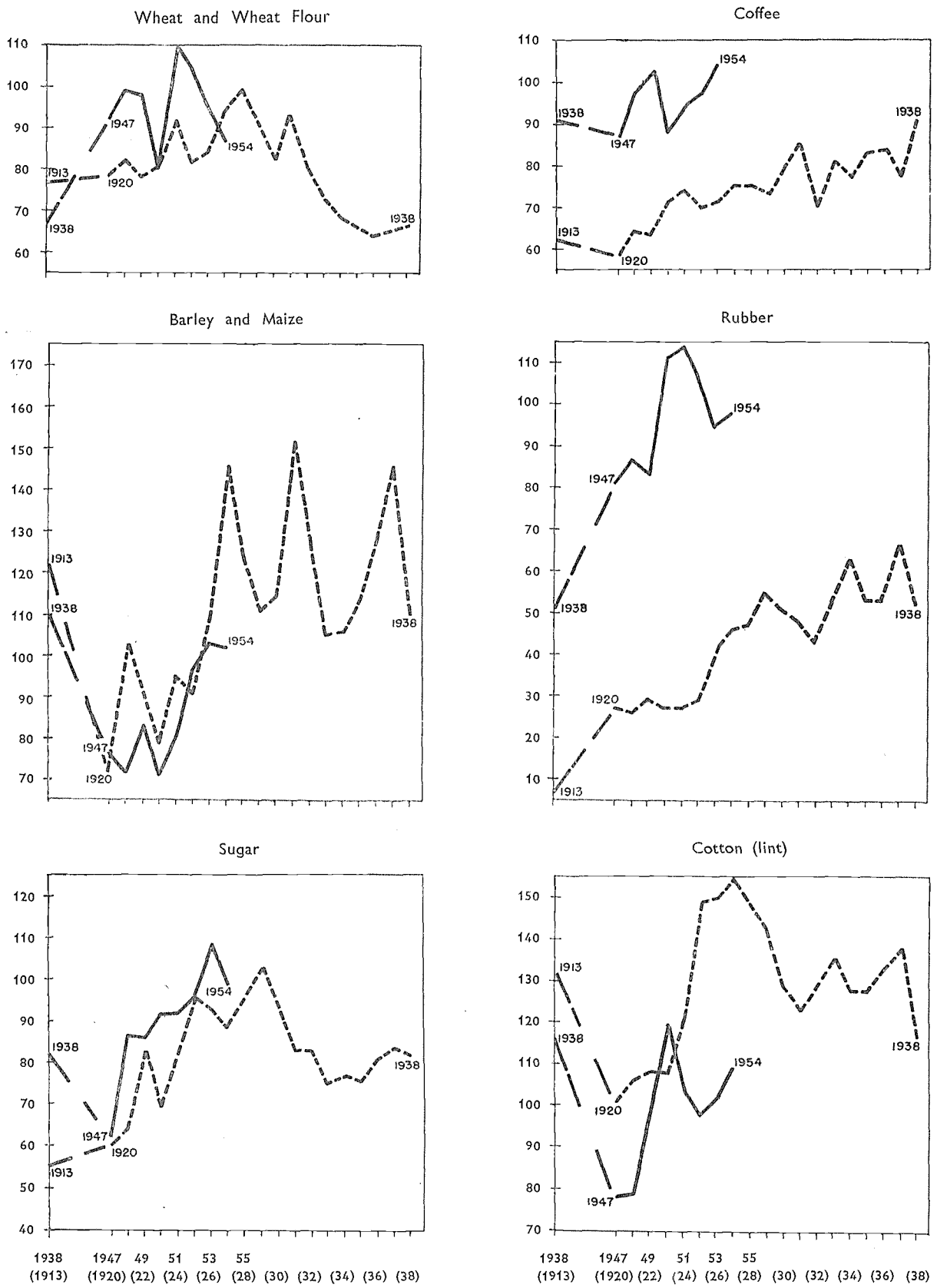
TABLE V-5. VOLUME OF WORLD TRADE IN AGRICULTURAL PRODUCTS; 1946-1954

ITEM	1946	1947	1948	1949	1950	1951	1952	1953	1954 Provisional
	1934-38 average = 100								
Food and feeding stuffs	73	80	87	93	90	103	98	102	100
Natural fibers and rubber	87	90	93	96	116	105	103	105	102
Beverages and tobacco	95	95	98	110	103	110	107	115	109
All agricultural products	80	85	90	96	100	105	101	104	102
Forest products	65	84	83	85	103	118	107	112	...
All items (agricultural and non-agricultural)[1]	...	100	103	111	125	140	138	148	155

[1] U.N. Index of world exports adjusted to 1937-38 base. ... Not available

FIGURE V-9. — Indices of Volume of Export of Certain Agricultural Commodities

(Average 1952-53 = 100)



those countries. Data on trade between the communist group of countries is lacking and no indices of their total trade can therefore be prepared. Their food exports to the remainder of the world, however, have remained at a fairly low level, while the U.S.S.R. has recently become a substantial importer of livestock products and sugar. As already noted the U.S.S.R. is now making a special effort to expand domestic agricultural production.

On the import side the picture is simpler and largely one of recovery. With her domestic agricultural production expanding more rapidly than population, imports of food and feeding stuffs into Western Europe, the largest importing region, have been stabilized in the last few years at some 10 percent less than the prewar average. Food imports into North America have been rather greater than before the war in the last few years, but the rising trend is very slow. Imports, mainly of grain, into Far Eastern countries rose to a high level for some years, but are now once more declining with the recovery of domestic production. Imports of foodstuffs into Latin America and other less developed regions have shown a more considerable increase, but are still relatively small in relation to those of the main importers.

The pattern of trade in fish, not included in the foodstuffs index, also showed changes in the postwar period. The United Kingdom reduced its imports from Canada and relied increasingly on domestic supplies and imports from Europe. Both European and Canadian exporters gave increasing attention to the United States market, adapting their processing and packaging, especially by deep-freezing, to the requirements of that market. Japan, after a slower start, is also increasing shipments of tuna to the United States. These developments, resulting largely from the dollar shortage, were matched by a tendency for traditional importers of cured fish in Latin America and the Mediterranean to switch purchases from Canada to non-dollar sources. As other foods became more plentiful, the demand for fish tended to decline and greater emphasis on quality, variety and price became imperative in import markets. There has recently been a drive to find new markets, especially for cured herring and deep-frozen fish. An important feature of postwar trade has been the strong demand for fish meal for animal feeding, especially in the United States and the United Kingdom.

Natural Fibers and Rubber. The indices for the raw materials group reflect a balance between a high level of trade in rubber, considerably larger than before the war, and a considerably lower level of trade for fibers. International trade in cotton and especially silk has remained well below the prewar level throughout the postwar period.

The rapid growth of rubber exports, reaching a peak at nearly twice the prewar level in 1951, largely accounted for the rapid recovery of exports of agricultural raw materials from the Far Eastern region after the war. The large volume of Far Eastern exports in 1950 and 1951 was also, however, swollen by heavy shipments of jute. Cotton exports from this region have ranged from one-third to one-half of their prewar level, and silk exports still lower.

Variations in cotton exports account for the very fluctuating but generally low level of exports of raw materials from North America and also from the Near East. Wool shipments constitute virtually the whole of the Oceanian export in this sector and have been maintained at about 50 percent higher than in the 1934-38 period.

The main features of the import trade in agricultural raw materials have been the greatly increased level of imports into North America and the failure of Western European imports to expand above their prewar level. Even so, Western European imports remain two to three times greater than those of North America. The higher level of North American imports is accounted for almost entirely by rubber and wool, and the decline since 1952 largely to the cessation of stockpiling of these commodities. Western European imports of natural rubber have also about doubled since 1934-38, but her imports of cotton and wool are somewhat lower. Also noteworthy is the rapid rise in raw material imports into the countries outside Western Europe and North America, which reflects their progress in manufacturing industry. The two main importing regions, however, still absorb some 80 percent of the world's shipments.

Beverages and Tobacco. The shift in the import balance from Western Europe toward North America and in some measure toward the less industrialized regions applies also to this group of commodities. In North America there has been a sharp rise in imports of coffee, while imports of tea and tobacco have also increased to some extent. Western Europe still imports less coffee than in 1934-38, but somewhat more tea, cocoa and tobacco. These two regions account for some 80 percent of world imports of this group of commodities.

There have been no major shifts in the pattern of world exports in this commodity group apart from the steady expansion of shipments from Africa, especially of coffee and tobacco.

Commodity Trends

Long-term trends for some individual commodities are apparent from the comparisons of the volume of world trade after World Wars I and II in Fig. V-9. For a few products, e.g. rubber, coffee and cocoa, the current level of trade is altogether higher than a quarter century earlier. It does not, of course, follow that past trends will continue. There are indications, for example, that international shipments of rubber are tending to decline with the end of stockpiling, though this may be only a temporary setback, and that the rising curve of cocoa shipments is beginning to flatten out. For some other products, e.g. cotton, world trade seems to be running at an appreciably lower level than after the end of World War I and for these international demand may be declining.

More interesting for prospects in the next decade are the commodities where the level of international demand seems to be greatly affected by war. Shipments of wheat and sugar, for example, rose steeply after World War I, but subsequently declined as production was restored in war damaged areas, in some cases under the influence of special measures to encourage production in importing countries. There are indications that for wheat the postwar rise in exports came earlier after World War II than after World War I, and that the decline also started earlier, though at the peak the volume of shipments was considerably higher than after the first war. Sugar shipments may be following a similar trend, though it is by no means certain that the decline in shipments of this commodity in 1954 was anything more than a temporary setback.

The trend for coarse grains is also interesting, but uncertain. To date the level of world trade has closely paralleled developments after World War I, and it remains to be seen whether the sharp rise in exports which occurred later in the inter-war period will be matched by a corresponding rise in the years immediately ahead. Against this likelihood are the efforts being made in some European importing countries towards the improved utilization of pasture and the increased domestic production of coarse grains as a means of saving imports. On the other hand there are some indications of an increasing use of coarse grains for small livestock, especially poultry.

THE EMERGENCE OF SURPLUSES

The accumulation of large unsold stocks of grain and other agricultural products, which clearly means that not all the increase in production has gone to raise the world's inadequate levels of nutrition and clothing, has been the most disquieting feature of the food and agricultural situation in recent years. Although these stocks are largely concentrated in North America, the surpluses in that region have inevitably led to difficulties elsewhere. The recent course of stocks of the main commodities and their location are shown in Table V-6. Only broad changes in stock levels will be mentioned here as the commodity situation is discussed in more detail in Part II of this report.

Stocks of some commodities, that have been rising over the past few years, have now begun to decline, but there are notable exceptions including cereals, of which the surplus is largest in terms of sheer size, and cotton. In the United States, investments of the Commodity Credit Corporation nearly doubled in both 1952/53 and 1953/1954 but the increase at the end of the current season will be rather smaller than in previous years, while elsewhere there should be some decrease in stocks. The end-of-season wheat stocks of the four major exporters more than trebled between 1952 and 1954, when they reached 45 million tons or more than twice the average level of their exports in recent years. At the end of the current season they are likely to be about the same as a year ago ; the decrease in Canada, resulting from the poor crop of 1954, being largely offset by a further increase in the United States. Stocks of coarse grains are expected to show a slight increase. Stocks of rice which began to grow in 1952, appear to be falling in the exporting countries of the Far East now that prices have eased, but are still rising in the United States and the Mediterranean exporting countries. Sugar stocks increased very sharply in Cuba in 1952 and there was a further sharp and more widespread increase in 1954. This year they should decrease, following the recent improvement in exports, including large sales to Russia. United States cotton stocks, which have been rising steadily, appear likely to increase further, but the 1955 acreage restrictions should bring some reduction by mid-1956. United States tobacco stocks have

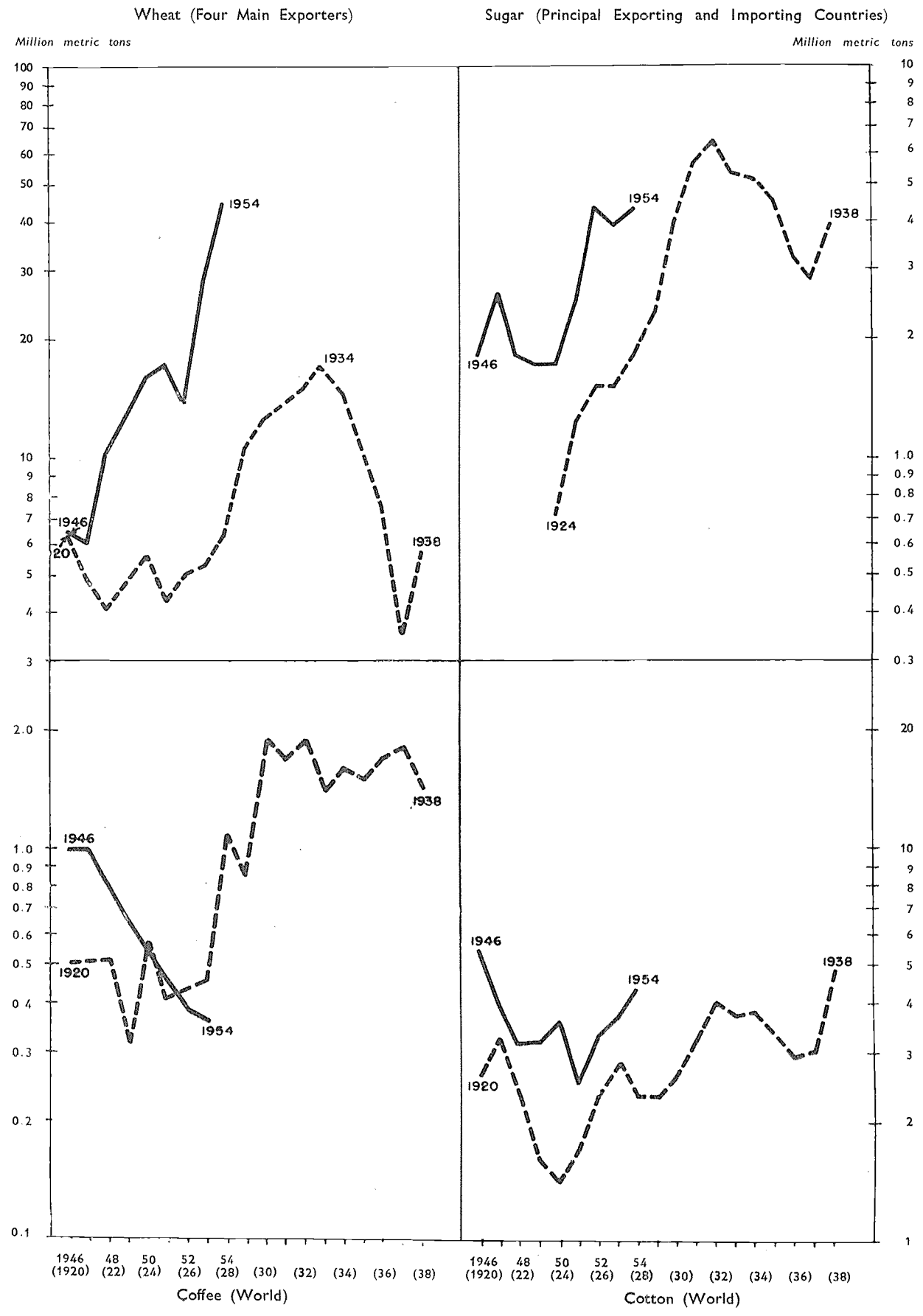
TABLE V-6. ESTIMATED STOCKS OF MAJOR COMMODITIES; 1951-55

COMMODITY	Month.	Stocks.					Production	Gross Exports
		1951	1952	1953	1954	1955 prel.	1951-54 average	1951-54 average
		Million metric tons						
WHEAT [1]								
United States	1 July	10.8	7.0	15.3	24.5	27.0	30.0	8.8
Canada	1 Aug.	5.1	5.9	10.0	15.9	12.8	[2]14.7	8.7
Argentina	1 Dec.	0.5	0.1	2.0	1.6	...	5.9	2.1
Australia	1 Dec.	0.5	0.5	1.0	2.6	2.5	4.9	2.4
Total 4 major exporters		16.9	13.5	28.3	44.6	...	55.5	22.0
RICE (milled equivalent)								
Asia	31 Dec.	0.2	0.7	1.4	1.3	...	21.3	3.1
United States	31 July	0.1	—	0.1	0.2	0.7	1.5	0.6
Mediterranean	30 Sept.	—	—	—	0.2	0.3	1.3	0.4
Total all exporters		0.3	0.7	1.5	1.7	2.0	24.2	4.1
COARSE GRAINS [3]								
United States	1 July[4]	25.1	18.2	24.5	28.6	33.5	104.0	3.2
Canada	1 Aug.	2.8	3.6	5.0	5.5	3.3	12.8	3.1
Total 2 major exporters		27.9	21.8	29.5	34.1	36.8	116.8	6.3
BUTTER								
United States	Dec.	0.01	0.03	0.13	0.17	...	0.70	[5]—
CHEESE								
United States	Dec.	0.10	0.11	0.20	0.25	...	0.57	0.01
DRIED SKIM MILK								
United States	Dec.	0.04	0.08	0.23	0.07	...	0.46	[5]0.01
LINSEED OIL [6]								
United States	1 July	0.42	0.41	0.37	0.29	...	0.31	0.10
Argentina	1 Dec.	0.22	0.30	0.23	0.05	...	0.14	0.17
Total 2 countries		0.64	0.71	0.60	0.34	...	0.45	0.27
LIQUID EDIBLE VEGETABLE OILS								
United States	1 Oct.	0.25	0.36	0.66	0.55	...	2.07	0.39
SUGAR (raw value)								
Cuba	31 Dec.	0.29	2.16	1.51	1.94	...	5.45	5.05
Other exporters [7]	31 Aug.[8]	0.44	0.54	0.54	0.76	...	4.96	2.01
United Kingdom	31 Aug.	0.58	0.56	0.88	1.48	...	0.67	[11]1.74
Other importers [9]	31 Aug.[10]	2.37	2.40	2.24	2.69	...	7.57	[11]5.28
Total		3.68	5.66	5.17	6.87	...	18.65	—
TOBACCO (farm weight)								
United States	1 Oct.[12]	1.45	1.54	1.66	1.71	1.78	1.01	0.24
COTTON (lint)								
United States	31 July	0.49	0.60	1.22	2.11	2.4	3.27	[13]0.89
Other producers		1.05	1.58	1.45	1.19	1.8	3.00	[13]1.51
Importers		0.77	0.72	0.69	0.68		0.03	[13]0.01
Total [14]		2.31	2.90	3.36	3.98	4.2	6.30	[13]2.41
NATURAL RUBBER (World Total) [15]	31 Dec.	0.83	0.84	0.84	0.88	...	1.84	[16]1.75

NOTE: Quantities shown include normal carry-over stocks.

[1] Exports relate to July-June and include wheat flour in terms of wheat.
[2] 8.1 in 1954.
[3] Rye, barley, oats, maize. Exports relate to July-June.
[4] Maize 1 Oct.
[5] Commercial exports only.
[6] Including seeds in oil equivalent.
[7] Belgium, Brazil, Denmark, Dominican Republic, Haiti, Peru, Philippines.
[8] Denmark 30 Sept.
[9] Canada, France, Western Germany, Japan, Netherlands, Sweden, United States.
[10] Japan 30 June, Germany 30 Dec., United States 31 Dec.
[11] Net imports.
[12] Flue-cured types 1 July.
[13] Exports of home-produced cotton for seasons 1951/52-1953/54 only.
[14] Excluding U.S.S.R., China and Eastern Europe; and including in stocks estimates of cotton afloat.
[15] Stocks include estimates of rubber afloat but exclude strategic stockpiles, which are probably now in the region of 1½ million tons.
[16] Exports of home-produced rubber only.
... Not available.

FIGURE V-10. — Stocks of Certain Agricultural Commodities after World Wars I and II



increased slowly over the past few years and should show a further slight increase. Holdings of dairy products in the United States are now falling. Butter and cheese stocks have been decreasing since the end of last year and with large sales for feed purposes dried skim milk stocks fell sharply from their 1953 peak. United States stocks of linseed oil and liquid edible vegetable oils were considerably reduced after mid-1954, while stocks of linseed oil in Argentina were practically liquidated. Commercial stocks of natural rubber have risen only slowly, a large surplus having been prevented by strategic stock-piling, which is now probably in the region of 1½ million tons. Purchases of rubber for stockpiles have ceased, but production and consumption appear now to be roughly in balance. Wine is another commodity in surplus in a limited number of countries, where it causes special problems because of the heavy dependence on wine production of a large part of the farming population.

Surpluses of agricultural products emerged after the First World War also, only at a rather later stage in the postwar period. Stocks of some commodities grew during the depression of the early 'twenties but a widespread accumulation did not occur until the end of that decade and the beginning of the next. Data on the levels of stocks in that period are rather scanty. Fig.V-10 enables comparisons with recent levels to be made for a few commodities, but the figures for the interwar period are probably less complete than for recent years and certainly so in the case of cotton. Stocks of wheat are now very much higher than at any time prior to World War II, and the same is true for coarse grains though to a much less marked degree. This is not the case, however, for the other commodities. Stocks of sugar and cotton are currently somewhat below the peak levels of the 'thirties. For coffee there is a striking difference between the low level of stocks at the present time and the situation in the nineteen-thirties when large quantities of coffee had to be destroyed.

Some of the factors causing the present situation are very similar to those that gave rise to the surpluses in the 'thirties. Now, however, they have come into play rather earlier in the postwar period and have been reinforced by new factors that have also contributed to the earlier emergence of surpluses. North America and the other undamaged areas, helped by a succession of exceptionally favorable seasons, achieved an even more remarkable expansion to meet shortages elsewhere than after World War I, while European agriculture, in spite of worse damage, recovered considerably more rapidly. Although war damage extended this time to the Far East, with its vast populations, and recovery there is not yet complete, imports into that region have already fallen considerably from the high levels reached in the early postwar years. An important new feature of the present postwar period is that policies of organized agricultural expansion have been almost universal. Originally designed to overcome postwar shortages they have been continued for purposes of self-sufficiency, to lessen dependence on dollar imports, and because of growing concern for the welfare of farmers, with the result that many countries are still expanding the output of commodities, such as cereals and sugar, of which there are unsold stocks elsewhere. Policies of price supports, far more widespread and comprehensive than in the 'thirties, have reinforced this tendency to a certain rigidity in agricultural production. In the 'thirties they were applied only after surpluses had already begun to emerge, while this time they have been a major influence throughout the postwar period.

A most important difference from the situation in the 'thirties is that most of the present stocks are controlled by governments, and there is consequently less danger of an unorganized unloading of supplies on to the market. The major example of a government surplus-holding agency is the United States Commodity Credit Corporation, whose investments (inventory stocks and stocks pledged in return for loans) have increased more than fourfold since 1952 (Table V-7). Another difference is that in the 'thirties the fall in prices caused by excess production was greatly accentuated by the fall in effective demand resulting from world-wide depression. On this occasion a general collapse in prices of commodities in surplus supply has been averted by farm price supports, by the avoidance of disorderly disposals of surplus stocks, and by the sustained demand resulting from full employment policies.

The surplus situation presents a twofold problem, which will be discussed more fully in a later chapter. First, existing surpluses must be disposed of with the minimum disorganization of normal trade channels. This problem is kept constantly under inter-governmental review by a special Consultative Sub-Committee of the FAO Committee on Commodity Problems. Second, and in the long run the more important, is the problem of avoiding similar accumulations in the future by stimulating consumption and adjusting production, in some cases inevitably by restricting

TABLE V-7. UNITED STATES COMMODITY CREDIT CORPORATION, QUANTITY AND VALUE OF INVESTMENTS[1]

COMMODITY	30 April							
	Quantity				Value			
	1952	1953	1954	1955	1952	1953	1954	1955
	Thousand metric tons				*Million dollars*			
Wheat	5 100	12 890	24 208	28 156	437	1 095	2 155	2 633
Rice	92	2	58	763	11	—	6	98
Barley	377	95	622	2 044	24	5	34	107
Oats	179	250	589	1 052	10	14	32	58
Maize	10 192	13 373	20 568	22 255	633	835	1 296	1 437
Grain sorghums	199	29	1 029	2 927	12	1	60	167
Butter	—	58	165	149	—	86	245	212
Cheese	—	35	164	176	—	31	146	156
Dried milk	12	84	298	101	4	32	109	38
Linseed	26	96	382	20	3	14	56	25
Linseed oil	93	86	31	37	58	55	13	14
Cottonseed oil	21	288	469	170	8	116	185	64
Cotton linters	13	178	279	318	3	36	58	67
Cotton, upland	86	482	1 674	1 817	59	339	1 268	1 439
Wool	—	49	55	70	—	70	81	103
Tobacco	179	231	281	366	199	225	270	406
Other commodities					148	182	175	237
TOTAL					1 609	3 136	6 189	7 261
					Percent			
Increase					...	95	97	12

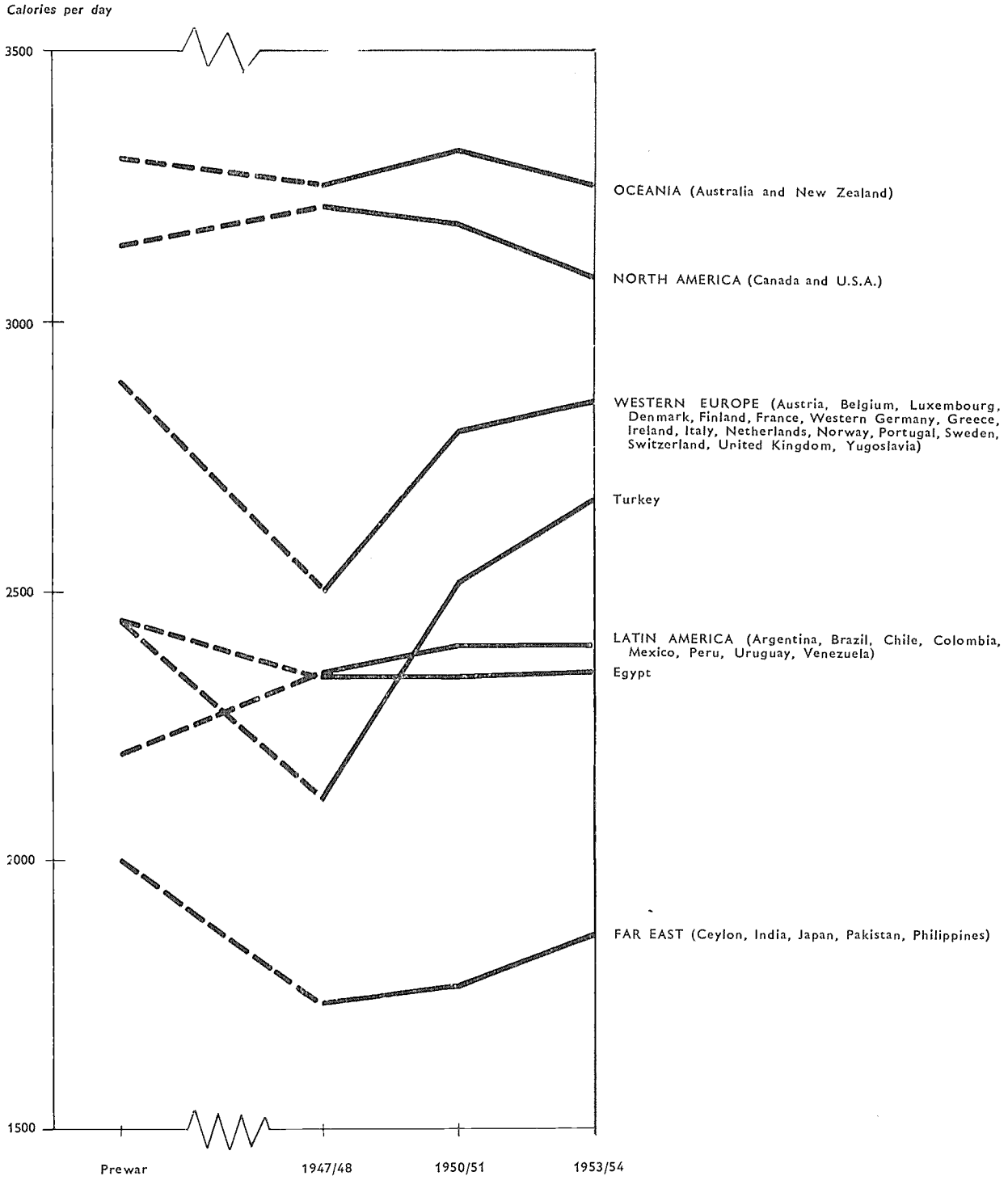
[1] Stocks pledged for outstanding loans and stocks in price support inventory.
... Not available. — None or negligible.
SOURCE: Report of Financial Conditions and Operations, USDA, Commodity Credit Corporation, April 1953, 1954 and 1955.

the production of the commodities affected. Surpluses have not arisen because production is in excess of the needs of a well-fed world. While effective demand is, by definition, always satisfied, nutritional needs for food and requirements for any reasonable standards of clothing in large areas of the world are still far from being met. Moreover, populations are increasing rapidly everywhere. The need is still for a continuing increase in agricultural production. To this end FAO has promoted regional inter-governmental consultations on "selective expansion," to discuss how surpluses of certain commodities can be avoided without any slackening either in the rate of agricultural expansion, or in the improvement of food consumption levels.

FOOD CONSUMPTION AND NUTRITION

Chapter II summarized the early postwar developments in the world food situation up to the time when food rationing and controls were abolished or substantially relaxed in most parts of the world. It was shown that while most of the developed countries affected by the war had restored their food consumption levels to something like prewar levels, progress was much slower in many of the less developed countries, especially in the Far East. In the later part of the postwar period two features are discernible. The first is the consolidation of earlier improvements in calorie levels in Western European countries and in some countries in Latin America. Increased incomes accompanied by a growing volume of food and agricultural output even made it possible for many of these countries to satisfy to a considerable extent consumer preferences, especially the growing demand for the more expensive livestock products. The second feature is the more rapid improvement in calorie levels in most of the countries in which progress in the early postwar years had been slow, e.g. in the Far East, the Near East, in Eastern Europe and in Germany and Austria. Part of this improvement is attributable to more favorable weather, but a large part is clearly due to the determined efforts made by governments to im-

FIGURE V-11. — Average Calorie Intake Region by Region, Prewar, 1947/48, 1950/51 and 1953/54

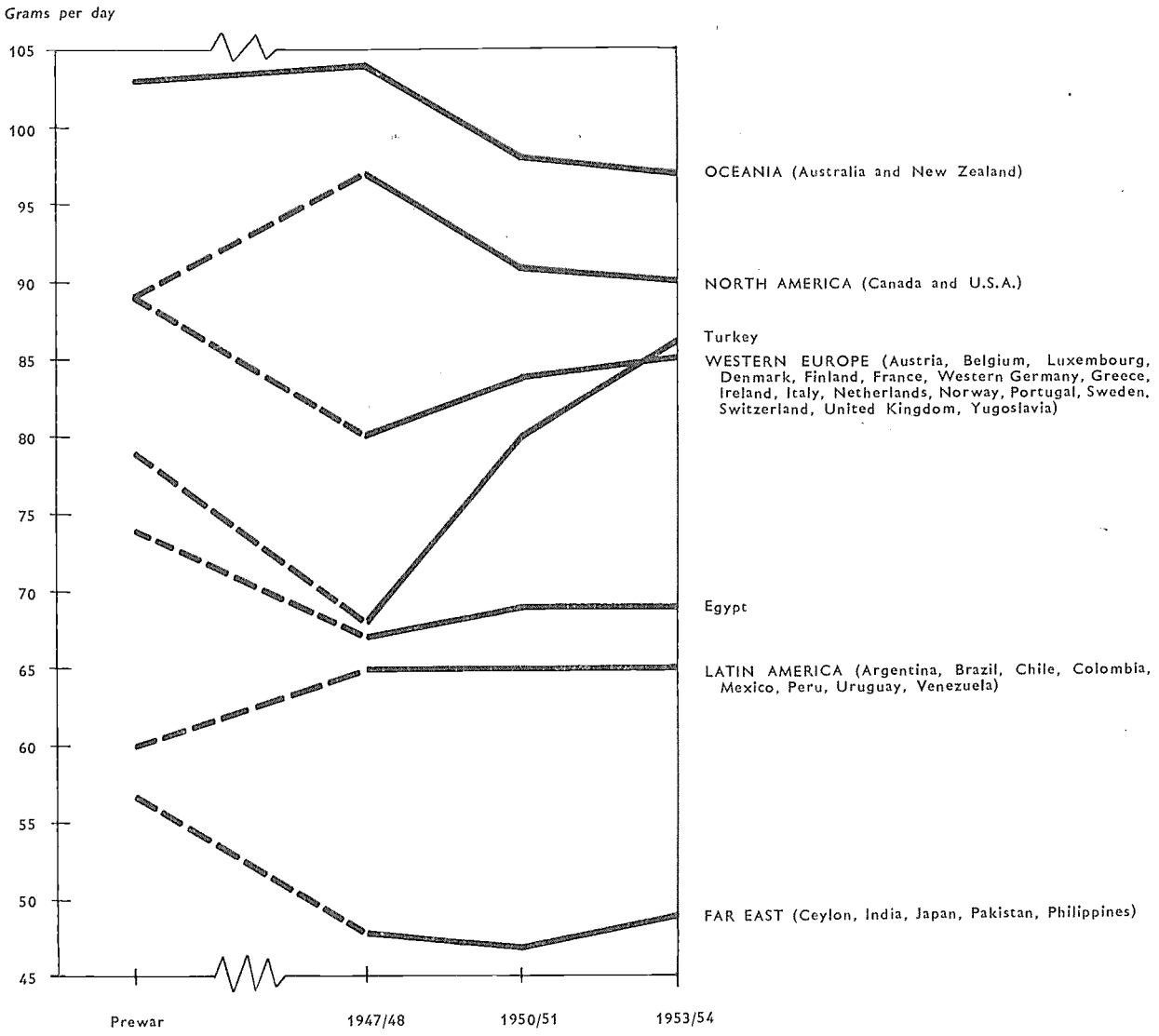


prove the lot of their people by planned agricultural development, increased application of improved methods of production and better appreciation and application of nutritional principles.

Comprehensive nutrition programs can be very effective in raising levels of food consumption and nutrition. Fortunately many governments are showing an increasing awareness of need for developing satisfactory nutrition programs.

The broad development of the world food situation, region by region, is illustrated in Figs. V-11 to 13 below, showing the trends in average

FIGURE V-12. — Average Total Protein Intake Region by Region, Prewar, 1947/48, 1950/51 and 1953/54



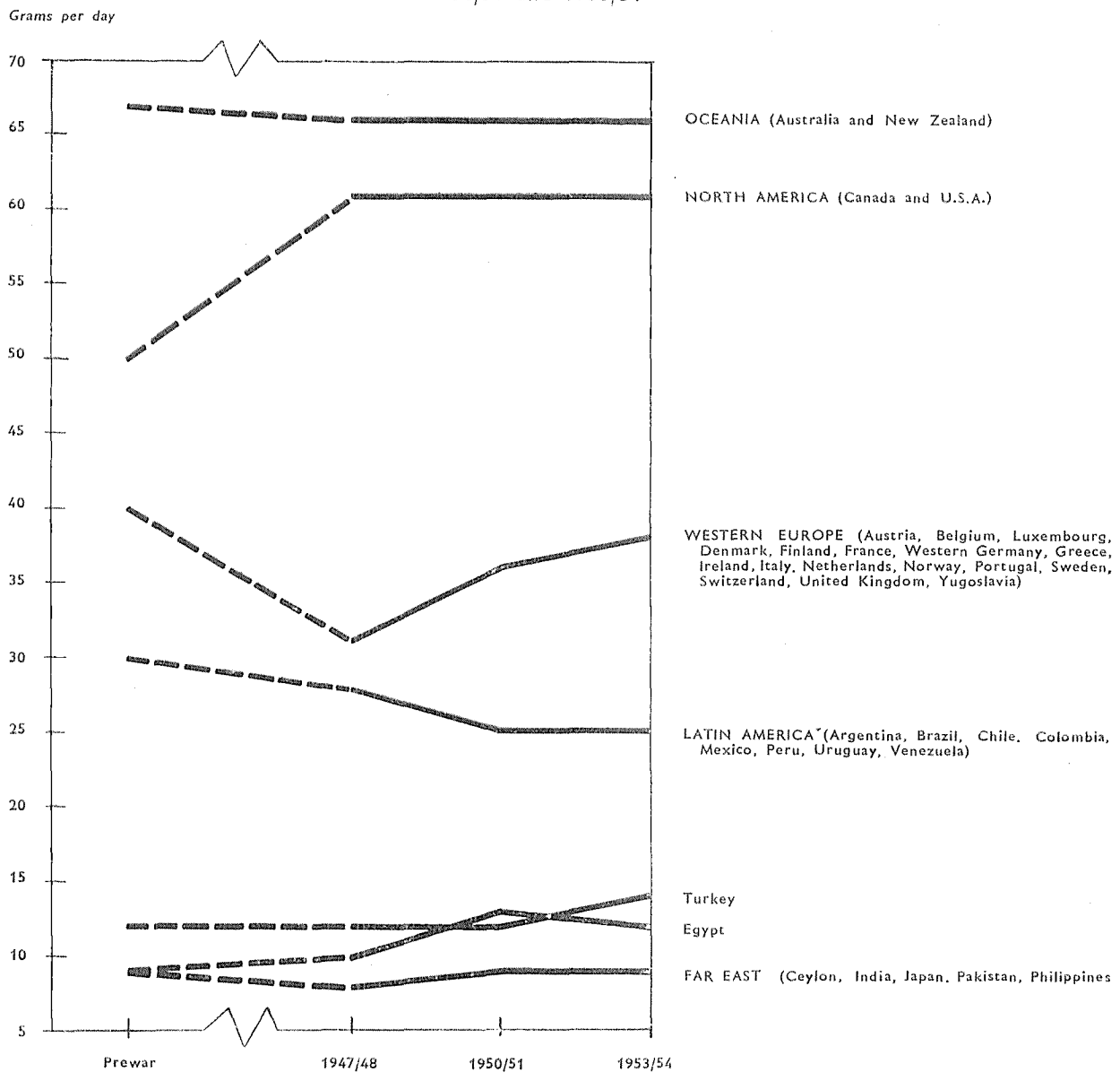
levels of intake for calories, total proteins and animal proteins.

These charts are based on data from national food balance sheets only. However, some information on food consumption levels is also available from dietary surveys, which indicate not only the average levels in the country as a whole, but also their variation within different sections of the population. Unfortunately only a few countries carry out comprehensive surveys of food consumption regularly on a national scale. Where such surveys have been made they have proved much more useful than food balance sheets as a basis for the development of satisfactory food policies and the improvement thereby of the nutritional status of the population.

In Western Europe the most important development has been the rising consumption of livestock products, including until recently fluid milk, and a noticeable expansion in the consumption of sugar. The tendency toward lower consumption of starchy roots has continued and there are indications that cereal consumption, too, is declining with the greater abundance of other foods. Lower consumption of cereals and a marked rise in the consumption of livestock products are, of course, outstanding features of the postwar food patterns in North America. Levels of food consumption higher than prewar have been maintained in Latin America, where population continues its rapid rise.

In the Far East, cereal consumption is approaching prewar levels. On the other hand, con-

FIGURE V-13. — Average Animal Protein Intake Region by Region, Prewar, 1947/48, 1950/51 and 1953/54



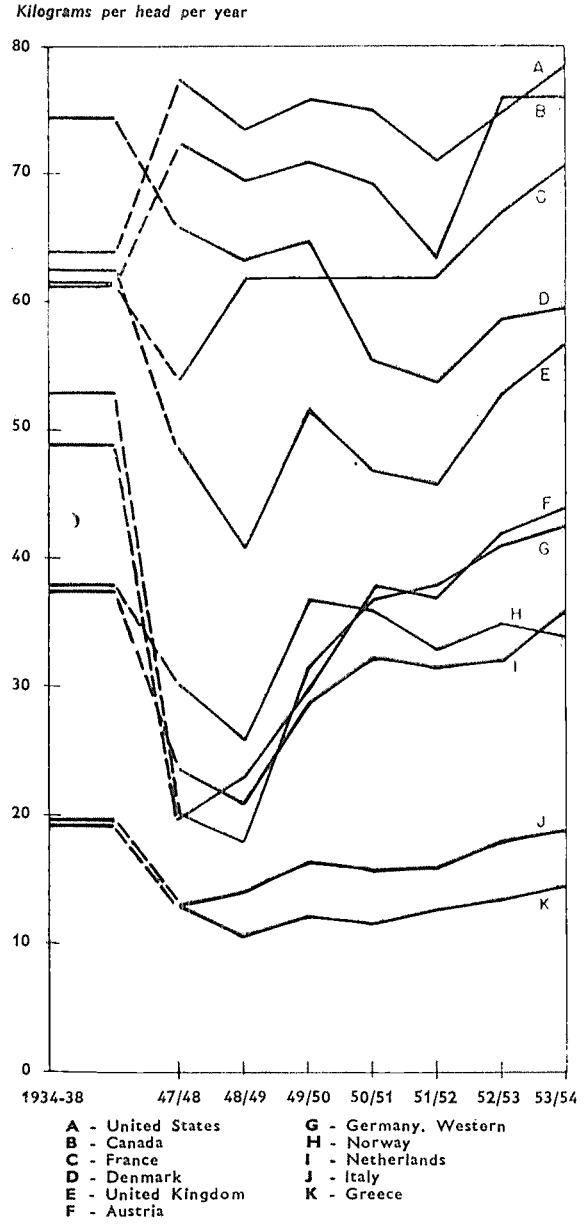
sumption of animal products does not generally appear to have even regained the markedly low levels existing before the war. However, in Japan animal protein consumption, which nearly doubled since the low level of 1946, now surpasses prewar levels. Statistics relating to food consumption levels are not readily available for many countries in the Near East, but average levels are generally better than prewar, especially in Turkey. Heavy population pressure in Egypt, however, is a serious obstacle to any rapid improvement in consumption levels in that country. Notable features in Africa are the outstanding rise in recent years in average food intakes in the Union of South Africa, and the enormous increase in sugar consumption in the whole region.

Wartime dislocation, recurrent postwar food shortages, the effects of the Korean war and its aftermath, and finally the re-emergence of food surpluses in some areas, have largely dictated the food policies of governments and the adjustments made in these policies in the light of the changing world food situation. Many of these policies and the measures taken to implement them have been briefly described in earlier chapters. In dealing with the trends in the world food situation, however, it is of vital importance that the powerful long-term factors at work should be

properly appreciated. The rapid changes in the postwar situation have perhaps tended to obscure the significance of these forces. With the abolition of most types of food controls and the gradual re-emergence of free markets, the impact of these forces, especially on the side of demand, has become more evident. One of these factors is the growth of population and the changes that are occurring or will occur in its composition, especially as regards age and occupational groups. Even more important is the rise in national income and its distribution among different classes of the population, for these will greatly influence the level of effective demand for food as a whole as well as different types of food. Associated with this are the relative price levels of different food groups to consumers, as determined largely by trends in costs of production and other factors on the supply side. Finally, there is the slow change in consumer tastes and preferences. These are complex factors whose possible effects cannot, however, be fully assessed without far more data than are currently available.[1]

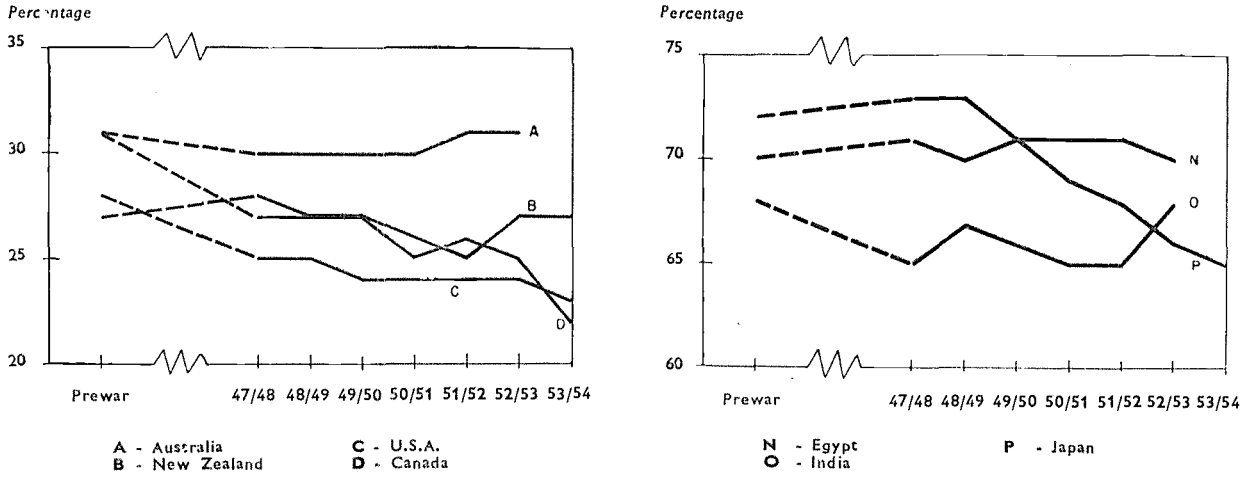
It seems fairly certain that some of the changed patterns of food consumption in different parts of the world compared with prewar are, to a large extent, the result of the interplay of varying trends in consumers' income and consumers' prices. The development in the consumption of livestock products in North America and Western Europe strikingly shows the effects of such trends. For example, in the United States the spectacular rise from prewar in per caput disposable national income (about 60 percent in terms of constant dollars) has resulted in a consumers' response which has more than offset the effect of the sharp advance in the price of livestock products. Per caput consumption of meat and milk products other than butter (in terms of liquid milk) has increased by 20 percent. The situation is similar in Canada. In Western Europe, however, the expansion in real per caput income has not been so marked. Prices of livestock products in Western Europe are, on the other hand, still very much higher in relation to other foods and the general increase in the cost of living. Consequently, despite the upward trend in meat consumption in nearly all countries, the present levels are still some 10-20 percent lower than prewar (Fig. V-14). Other factors have, of course, also contributed to this position. In some countries meat imports have been subject to control in view of balance of payments difficulties, while in the case of Denmark consumption has been re-

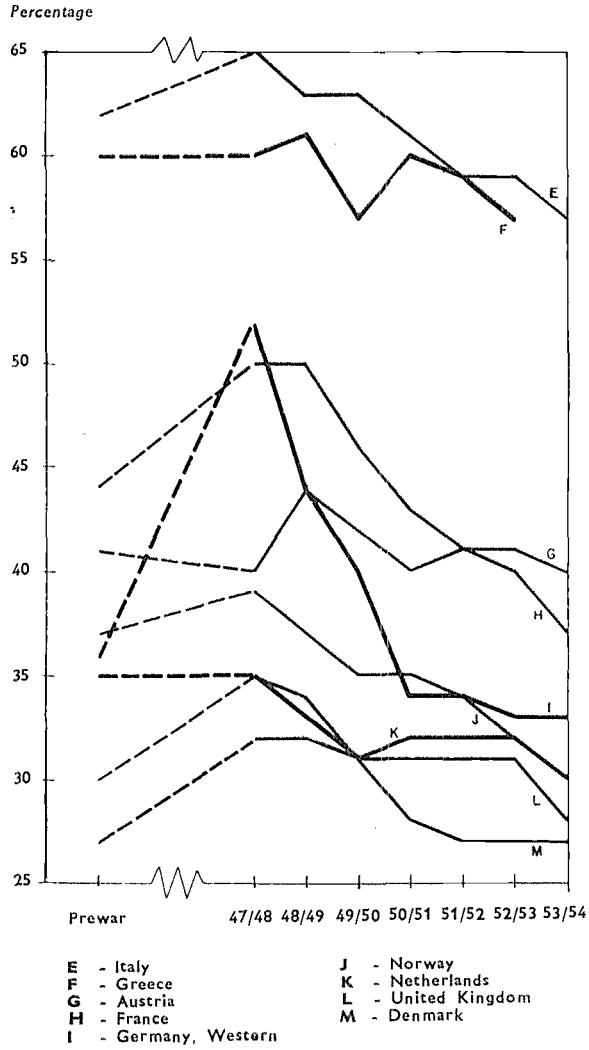
FIGURE V-14. — Meat Consumption after World War II



[1] Research into consumers' response to changes in income and prices is still at an early stage. Enough is known from country averages and such comprehensive dietary surveys as have been made to show that, as per caput income rises, the per caput intake of animal protein is likely to increase and that the proportion of income spent on high energy foods will in the long run fall even in countries where average calorie intake is now extremely low. (See *State of Food and Agriculture 1954*, pp. 35-7). But much more detailed studies will be needed in different parts of the world before any final conclusions can be reached on the extent of such changes for a given increment in income.

FIGURE V-15. — Proportion of Total Calories from Cereals





stricted in order to maintain exports and foreign exchange earnings.

It is, of course, possible that a permanent change in food habits may have contributed to a lower effective demand for meat. For example, the consumption of fruits, milk and cheese is higher than before the war in many Western European countries. This, however, does not seem very likely. More probably, the full restoration to prewar levels awaits a further expansion in consumers' income or some reduction in the level of meat prices.

The historic trend towards lower consumption of cereals in high and medium income countries, interrupted and reversed by the war in many countries, is once again beginning to reassert itself (Figure V-15).

The connection between this phenomenon and rising national income was discussed in the *State of Food and Agriculture 1954*, p. 36. The noticeable decline in this proportion in Western European diets is a striking confirmation of this inter-relation. On the other hand, the continuing heavy proportion of cereals in the diet of countries like India and Egypt shows that where income, and therefore total calorie intake, is low, no substantial improvement in the quality of the diet can be envisaged until the entire scale of income is raised. Changes in price relationships between different types of food are likely to be as important a factor as income changes. For example, the partial displacement of rice by wheat and other grains in postwar years in

India, Ceylon, Japan, the Philippines and other countries in the Far East was mainly due to the shortage of rice supplies and consequent sharp upward trend in rice prices relative to those of wheat and other grains. How far such displacements cause any significant permanent change in the traditional preference for rice among the mass of the population in the Far East is somewhat difficult to assess. It appears that earlier efforts of the governments to promote wheat consumption during the period of acute rice shortage have resulted in some shifts in consumption patterns which may become permanent. For instance, in Ceylon the recently acquired habit of wheat consumption, which is mostly confined to urban areas, appears to persist even after rice supplies have become plentiful enough to permit doubling of the rice ration recently. In Japan too, the consumption of rice and barley has decreased since the war in rural as well as urban areas, with a significant increase in the consumption of wheat. Despite the more recent tendency for rice consumption to increase, it seems that the use of wheat is spreading strikingly, particularly in rural areas.

If protective foods can be provided at lower prices, the possibilities for expanding consumption even of less familiar types of food are appreciable. Thus the recent impressive increase in the consumption of dried skim milk in Bombay and other cities in India has been largely due to the relatively low price at which it could be sold.

Milk consumption is still very low in many countries, mainly because milk is perhaps one of the most expensive foods, in terms of calories as well as proteins. Nevertheless, a greater demand for the more expensive protective foods is likely to result from the steady progress of industrialization and urbanization accompanied by increasing incomes. For example, contrary to what is sometimes assumed, it has been found in Japan that the average diets in urban districts are better than those in the rural districts except for cereals and other staple foods. Animal protein intakes, which are perhaps the best available indications of the quality of diets, have been consistently higher in the urban districts. A similar picture is revealed by an analysis of various dietary surveys undertaken in different parts of India during the period 1945-48. It was found that the percentage of the total calorie intake derived from protective foods (pulses, fruits, vegetables, milk and milk products) was appreciably higher for industrial workers than for agricultural workers.

An outstanding example of changed patterns in consumption due to price changes is to be found in the really substantial displacement of butter by margarine and other vegetable fats. Table V-8 sets out the figures for some of the principal countries concerned.

TABLE V-8. ANNUAL CONSUMPTION OF BUTTER, MARGARINE AND OTHER FATS

COUNTRY	Prewar	1947/48	1950/51	1952/53	1953/54
	Kilogram per caput, pure fat equivalent				
Netherlands					
Butter	5.2	4.4	2.3	2.1	2.2
Margarine and other fats	15.4	11.3	24.1	24.2	24.1
United Kingdom					
Butter	9.2	4.3	6.1	4.1	5.3
Margarine	3.4	6.4	6.9	7.4	6.9
Other fats	8.7	5.8	8.5	8.7	9.0
United States					
Butter	6.1	4.1	3.9	[1]3.2	[1]3.2
Margarine	1.1	2.2	2.3	[1]2.8	[1]2.9
Other fats	13.2	13.0	14.0	[1]13.7	[1]12.4

[1] Calendar year.

It would be unsafe to assume that butter will never recover even a part of the ground it has lost, in view of the recent general increase in total butter consumption, especially in the United States, France and United Kingdom. On the other hand, the conversion of feed into animal products is an expensive operation. In the case of fats, the advantage is therefore likely to lie with the cheaper forms produced from oilseeds whose output is steadily growing. Moreover, the quality of margarine and other vegetable fat products is steadily improving. For these reasons, it would seem that the shift in consumption compared with prewar may have an enduring basis.

CHANGES IN THE DEMAND FOR RAW MATERIALS OF AGRICULTURAL AND FOREST ORIGIN

Non-food items which are used as raw materials in industry, chiefly fibers, rubber and certain vegetable oils, represent by value about one-tenth of world agricultural production. Their importance is much greater in world trade in agricultural products, of which they account for about one-third. In addition, over half the output of the world's forests is used as a raw material by manufacturing or building industry. Certain by-products of

agriculture, such as tallow and hides and skins, and of fisheries also have industrial uses.

While the demand for all agricultural products is linked with the level of industrial activity, the demand for raw materials is naturally very closely dependent on the output of the industries using them. Forestry is in fact becoming increasingly dependent on industrial demand, as removals of wood for fuel have remained fairly static and the proportion of total output going to manufacturing and construction has steadily increased. The output of manufacturing industry as a whole has increased very rapidly since the war, the annual increase being some 5 percent ahead of population growth. No world index is available of building construction, an important consumer of forestry products, but this reached a very high level in the period of reconstruction immediately after the war which in many cases has since been maintained. Output of newsprint has also increased, with rising populations and the spread of literacy, while with improvements in marketing, especially of food, the demand for packaging materials has increased.

If the production figures in Table V-9 for agricultural raw materials and industrial wood are taken as reflecting the demand, it would appear that this has grown much less rapidly than the demand for manufactured products. For some agricultural raw materials the demand has in fact been less than the production figures suggest, as large stocks of e.g. cotton and rubber, have accumulated. Although the production of raw materials of agricultural and forest origin continues to grow, the proportional content of these raw materials in the output of manufacture has steadily declined. Figure V-16 indicates this clearly for some of the major agricultural raw materials.

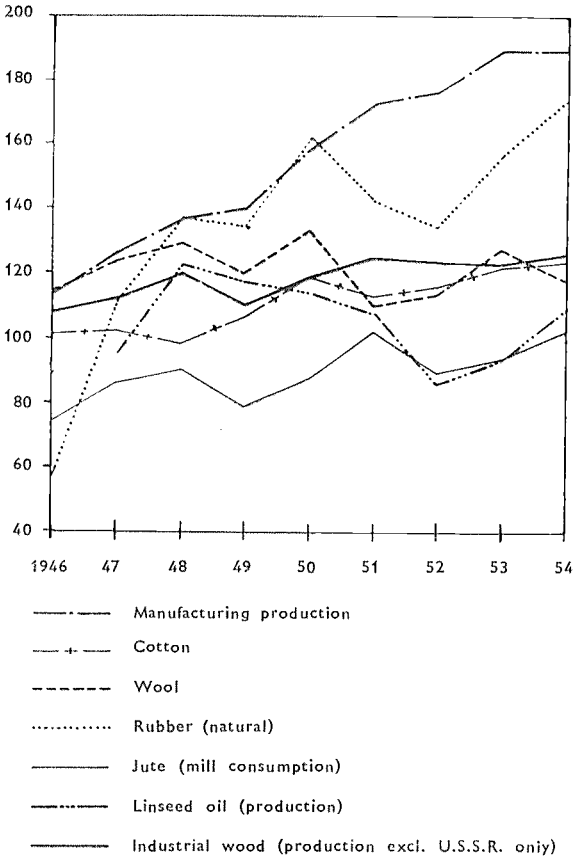
This trend reflects to some extent increasing efficiency in the use of raw materials, such as improved processing of oilseeds and the use of more finished wood products like plywood and fiberboard for non-supporting surfaces in construction. Still more, it reflects the development of new end-products with little or no agricultural and forest raw material content and the increasing use of substitutes. The latter factor directly affects the demand for raw materials of agricultural and forest origin.

TABLE V-9. WORLD [1] PRODUCTION, TOTAL AND PER CAPUT, OF FOOD, AGRICULTURAL NON-FOOD ITEMS, INDUSTRIAL WOOD AND MANUFACTURES

YEAR	Total Production				Per Caput Production			
	Food	Non-Food[2]	Industrial Wood	Manufactures[3]	Food	Non-Food[2]	Industrial Wood	Manufactures[3]
	..... *Prewar = 100*							
1946	103	86	108	114	91	76	99	101
1947	106	85	112	127	92	75	101	111
1948	112	104	120	137	96	89	107	118
1949	114	108	111	140	97	92	98	119
1950	118	103	119	159	98	86	103	133
1951	120	115	125	173	98	94	107	142
1952	126	119	124	177	102	96	106	144
1953	130	117	125	190	104	94	103	152
1954	129	115	126	190	102	91	105	150
	.... *Percent 1946-54*							
Annual average increase	2.9	3.8	1.9	6.6				

[1] Excluding U.S.S.R., Eastern Europe and China: for industrial wood excluding U.S.S.R. only.
[2] Fibers, natural rubber and inedible vegetable oils. The index excludes non-food products that are not industrial raw materials, i.e. coffee, tea and tobacco.
[3] UN Index of manufacturing production.

FIGURE V-16. — World (excluding U.S.S.R., China and Eastern Europe) Manufacturing Production and Consumption of some Major Raw Materials of Agricultural and Forest Origin (Prewar = 100)



Increasing Use of Substitutes

The difficulty of obtaining many conventional raw materials during the war was a powerful stimulus to the use of substitutes, and their use and range has increased further since then. Sometimes, availability of supplies has continued to be a factor; synthetic rubber production has been maintained for security reasons, and the substitution of other materials for wood has been stimulated by the increasing competition for supplies between the sawmills and the rapidly growing wood pulp industry, while the dollar gap has also been a stimulus. Generally, however, substitutes have continued to gain ground because their prices have been lower and more stable than those of the competing agricultural products (agricultural raw materials were particularly affected by the Korean boom), and because of technical superiority and often greater versatility of use and more constant quality.

The chief examples of substitutes have been synthetic detergents for soaps based on tallow and vegetable oils; paints using less or no vegetable oils; a large variety of man-made fibers; synthetic rubber; concrete, plastics, steel and other metals for wood; and plastics for leather. Almost all these substitutes come from outside agriculture; within agriculture and forestry themselves an example is the increasing use of paper instead of jute and cotton in packaging.

Production of synthetic detergents in the United States has increased from less than 0.1 million tons in 1945 to about 1 million in 1954, while soap production has fallen from 1.7 to 0.8 million tons (Table V-10). In many other countries there has been the same trend, though less marked. Synthetic detergents have been successful largely because they are superior for use with hard water and can be made specially for particular uses. Since 1945, the use of tallow and greases in soap has declined by one-third in the United States, although these fats have almost entirely replaced imported vegetable oils, other than coconut oil, in soap. Tallow production, however, has risen steadily and as a result its price has remained exceptionally low. This has helped to induce an increase in its domestic use in fatty acids, fat-fortified animal feeds and in detergents themselves, while there has been a very large increase in exports. New paints and varnishes have been developed which use less or no vegetable oils, but the decline in total direct use of linseed, tung, dehydrated castor, soybean and other drying oils in the United States has been largely offset by the use of linseed and soybean oils in the manufacture of alkyd resins for use in the new products.

TABLE V-10. UNITED STATES; SOAPS, SYNTHETIC DETERGENTS AND INEDIBLE TALLOW AND GREASES

YEAR	Soaps	Synthetic Detergents	Tallow and Greases				
	Production		Production	Use in Soap	Use in Other	Exports	Price Chicago
	..... *Thousand metric tons*						*Dollars per metric ton*
1937-41	1 495	10	530	438	88	—	138
1945	1 660	70	795	620	220	5	190
1950	1 350	567	1 030	618	200	242	194
1954	790	1 010	1 190	411	270	550	145

NOTE: Compiled from 'The Fats and Oils Situation,' U.S. Department of Agriculture.
— None or negligible.

Competition between man-made and natural fibers had begun long before the war with the introduction of rayon. More recently a large variety of non cellulosic man-made fibers has been developed and the pattern of inter-fiber competition is now extremely complex. Man-made fibers are rarely perfect substitutes for one natural fiber, but are generally partial substitutes for several, often having properties not possessed or possessed to a smaller degree by the natural fibers, while many new fabrics use mixtures or blends of both natural and man-made fibers.

The growing importance of man-made fibers in the total market for apparel fibers is shown in Table V-11. Silk is the only fiber the total consumption of which has actually fallen. Its short supply during and after the war facilitated the inroads of first rayon and then nylon into the women's hosiery market, one of its major outlets before the war. In the United States 82 percent of women's stockings were silk in 1939, while in 1953, 99 percent were nylon; in the Netherlands 9 percent were nylon in 1950 and 62 percent in 1953.

Competition has not been confined to apparel uses; there has also been considerable substitution in industrial uses, of which the most striking example is the replacement of cotton by rayon in the production of tire cord, which in the United States rose from 47 percent in 1946 to 97 percent in 1953 and in the United Kingdom from 37 to 85 percent over the same period. The purely industrial fibers have faced less competition from substitutes, though some nylon is being used for high-grade cordage, and there has been considerable replacement of jute (and also cotton) by paper in bag-making. Textile bags represented 70 per-

TABLE V-11 : WORLD CONSUMPTION OF APPAREL FIBERS

ITEM	1934-38 average	1948	1954	1934-38 average	1948	1954
	Thousand metric tons			*..Percent of total..*		
Natural						
Cotton . . .	6 370	6 230	7 600	80	73	69
Wool (clean basis) . .	935	1 166	1 138	12	14	10
Silk	50	20	25	1	—	—
TOTAL .	7 350	7 420	8 760	92	87	79
Man-made [1]						
Rayon . . .	632	1 111	2 044	8	13	19
Other. . . .	—	38	216	—	—	2
TOTAL .	632	1 149	2 260	8	13	21
GRAND TOTAL .	8 000	8 570	11 020	100	100	100

[1] Production. — None or negligible.

cent of total United States bag output in 1939 and only 30 percent in 1953. The substitution of synthetic for natural rubber is dealt with in Part Two.

The tremendous expansion in world production of wood pulp, 75 percent between 1946 and 1954, has led to strong competition with the saw mills for raw materials. This has on the one hand caused a search for alternative materials, such as agricultural residues, for pulping, and on the other hand has accelerated the trend which began before the war towards the use of concrete, steel, other metals and plastics in place of wood in its traditional uses. The use of steel and concrete is increasing in construction and for pitprops and railway ties. At the same time, products based on wood pulp are tending to replace some other agricultural raw materials, as in the case of rayon and also the replacement of textile bags by paper ones.

The increasing use of substitutes has been singled out as a major feature of the postwar demand situation for raw materials of agricultural and forest origin. It is this trend, rather than the well-documented short-term effects of the Korean boom in prices, strategic stockpiling or the dollar shortage, that has particularly distinguished it from the course of demand for food products. Nevertheless the importance and implications of the trend must not be exaggerated. Silk is the only product whose total consumption has fallen, while many have increased on a per caput as well as an absolute basis. Often substitutes have, by their cheapness, tapped new markets more than they have curtailed the market for agricultural products, while the development of substitutes for wood in its more traditional uses is releasing supplies for the expanding wood pulp industry.

Chapter VI - PRICE MOVEMENTS, FARM INCOMES AND CONSUMER PURCHASES

The price situation since the war has been extremely complex. In the immediate postwar years, all countries felt to a greater or less extent the inflationary pressures caused on the one hand by the shortage of food and other consumer goods and, on the other, by the high purchasing power generated by the war (see Chapter II). The success with which inflation was combatted varied widely from country to country, according to the degree of shortage and the effectiveness of the machinery of price control. The same factors also influenced both the relative increases in prices of agricultural products compared with non-agricultural products and the relative rises in prices of different agricultural products ; and these, too, varied greatly in different countries.

Even on international markets there was little uniformity of prices or price movements. The same commodities were sold at different prices under long-term or other government-to-government contracts, and on the free market. Wheat was sold at substantially different prices inside and outside the International Wheat Agreement. Again, while payments problems were acute many importers were ready to pay higher prices for supplies from soft currency than from dollar countries ; higher that is to say if converted at official exchange rates, though at times the differences may have reflected the over-valuation of some soft currencies.

From the welter of conflicting price movements and policies, it is difficult to disentangle any general or consistent trends, and conclusions which seem valid for one group of countries do not always apply to others where circumstances were different. It would be impossible in the space available to examine the course of prices in all countries or for all main agricultural commodities. There are some general questions, however, which seem of particular importance for the present study.

Have prices of agricultural products as a whole risen more or less than prices in general on international markets ? How do the relative increases in prices of agricultural commodities compare with each other ?

Has the rise in prices of agricultural products at the farm level been greater or less than the rise in prices generally and, in particular, of the production requisites and other items which farmers have to buy ? How have these price trends affected farm incomes ? Have the gains in farm income levels compared with prewar years been maintained, and how does the trend of farm incomes compare with those in other occupations ?

Has the rise in food prices at the retail level been greater or less than the rise in farm prices ? Have marketing margins widened or narrowed ? How does the rise in retail food prices compare with the increase in consumers' incomes ? Are consumers spending a larger or smaller proportion of their incomes than before on food and other agricultural products ? Have these factors led to an increase or a decrease in retail sales of food ?

Available data do not always enable a categorical answer to be given to these questions. Nor will the answer necessarily be the same for all countries. The information available, however, is reviewed below.

PRICE MOVEMENTS ON INTERNATIONAL MARKETS

The world market for agricultural products is only now being gradually re-established after its breakdown during the war and immediate postwar years. For some years after the war, therefore, market quotations of the qualities and types of foodstuffs and other commodities moving in international trade lost much of their normal significance. Price controls meant that sales on domestic and export markets were often made at different price levels. Moreover, export sales of the same qualities of e.g. North American wheat, South-

east Asian rice, Danish butter or Southern Hemisphere meat were frequently made simultaneously at widely differing prices under various contracts or agreements and on the open market. During a large part of the postwar period, many market quotations therefore represent the prices at which only part of the supply was traded, often a relatively small part, and in many cases were not very closely related either to the average returns received by sellers or the average prices paid by buyers.

An attempt has therefore been made to obtain a more representative measurement of the average values at which international sales of the main agricultural products were made, on the basis of the average export and average import unit values in national trade accounts. Such estimates have been made for 40 commodities, on the basis of samples which as a rule covered some 75-95 percent of the total quantities moving in world trade. These average values, converted at official exchange rates to US dollars [1], have been weighted in accordance with the relative importance of the various commodities in world trade in order to compute indices of average export unit values and import unit values for agricultural commodities as a whole. Apart from some time lag between export and import values, evident at times of sharply rising or sharply falling prices, the two indices run very close together and for practical purposes appear to be virtually interchangeable. The index of export unit values has been carried back (in terms of post-1934 US dollars) as far as 1929, and the index of unit import values on a somewhat smaller sample to 1913, in order to make possible a comparison of the broad movement of prices after World War I and World War II. In neither case do the indices cover the actual war years.

[1] Indices were also made using sterling values for commodities normally traded in that currency, but for simplicity have been omitted from the present discussion. A more complete report of the study is to be published separately.

Changes in Average Unit Values for Agricultural Products and for All Products in International Trade

The index of average export unit values for agricultural products (1952-53 = 100) is shown in comparison with the UN index of export unit values for all products in Figure VI-1 (a). Both indices run fairly close together during the postwar years, though the rise during the period of the

FIGURE VI-1a. — Indices of World Average Export Unit Values

(Average 1952-53 = 100 ; semi-logarithmic scale)

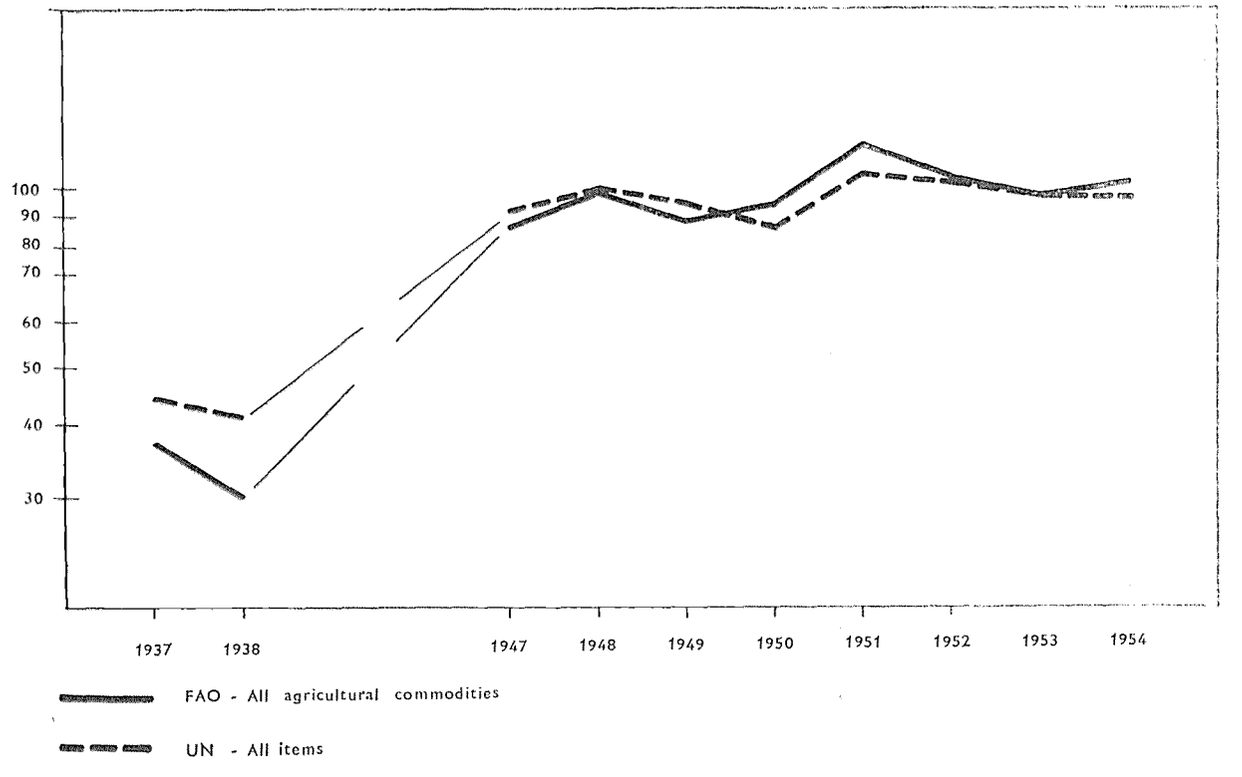
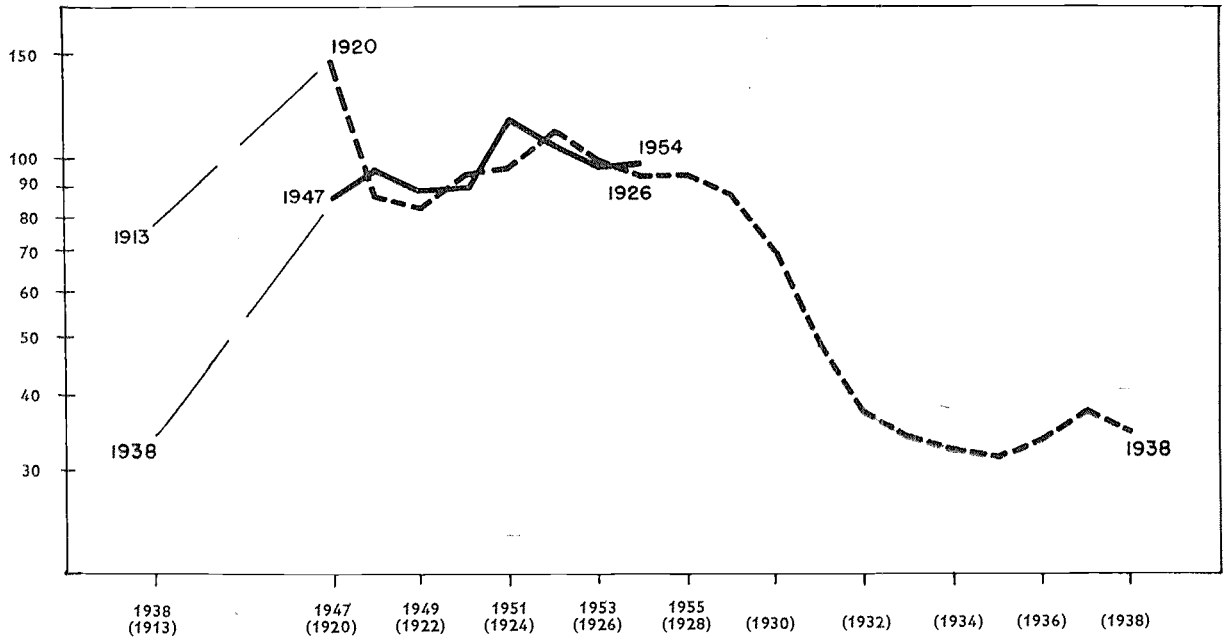


FIGURE VI-1b. — Indices of World Average Import Unit Values, in Post-1934 U.S.$, of Agricultural Commodities

(Average 1952-53 = 100 ; semi-logarithmic scale)



Korean boom was greater in the case of the index for agricultural products. Using a 1952-53 base, average values before the war are seen to have been lower for agricultural products than for international trade as a whole. reflecting correctly the depressed conditions of agricultural prices during the 'thirties.

Looked at the other way, the rise in prices of agricultural products on world markets since the late 'thirties has been considerably greater than the rise in prices generally. Thus on a prewar base (1937-38 = 100) average unit values of agricultural products in 1952-53 become 299 and for world trade generally 237.

Comparison with World War I

In Figure VI-1 (b), a comparison is made of the trend of unit values of agricultural products after World War I and World War II. The influence of the more effective measures of price control taken after the second war is clearly evident in that prices rose more gradually and never reached the dizzy heights attained in 1919 and 1920. Equally, there was no sudden fall after the second war of the kind which occurred between 1920 and 1921. From 1948 to 1954, however, (i.e. from three to nine years after the end of World War II) the level of unit values of agricultural products as a whole was remarkably close to the level in the same interval after World War I, from 1921 to 1927. The catastrophic fall in values which coincided with the world depression of the nineteen-thirties began only in 1929, or some eleven years after the end of hostilities.

The close coincidence in the level of unit values in recent years with those ruling at the same period after the first war must be largely fortuitous, and it is not suggested that the collapse of agricultural prices from 1929 to 1932 is likely to be paralleled by a similar fall in the years immediately ahead. Some of the essential differences in economic conditions between the two periods, which render such a development unlikely, were discussed in the section on stocks in Chapter V. Nevertheless the experience of the inter-war period is there to show what might occur if market supplies seriously out-ran market demand, if governments abandoned all price supports and if the stocks recently accumulated were unloaded haphazardly on to world markets.

Changes in Average Values of Different Classes of Agricultural Products

Figure VI-2 shows the trend of average unit values in international trade for foodstuffs, natural fibers and rubber, and beverages and tobacco respectively. For foodstuffs as a whole, the peak

TABLE VI-1. RELATIVE INCREASE IN AVERAGE VALUES IN INTERNATIONAL TRADE OF CERTAIN AGRICULTURAL PRODUCTS; 1937-38 TO 1952-53

1937-38 = 100

Natural rubber . . 164	Dairy products . . 194	Sugar. 282	Cocoa. 504
Citrus fruit 165	Tobacco 212	Coarse grains . . . 307	Rice 568
Meat 186	Wheat 215	Wool. 314	Coffee 645
Tea 192	Edible oils 267	Cotton 354	

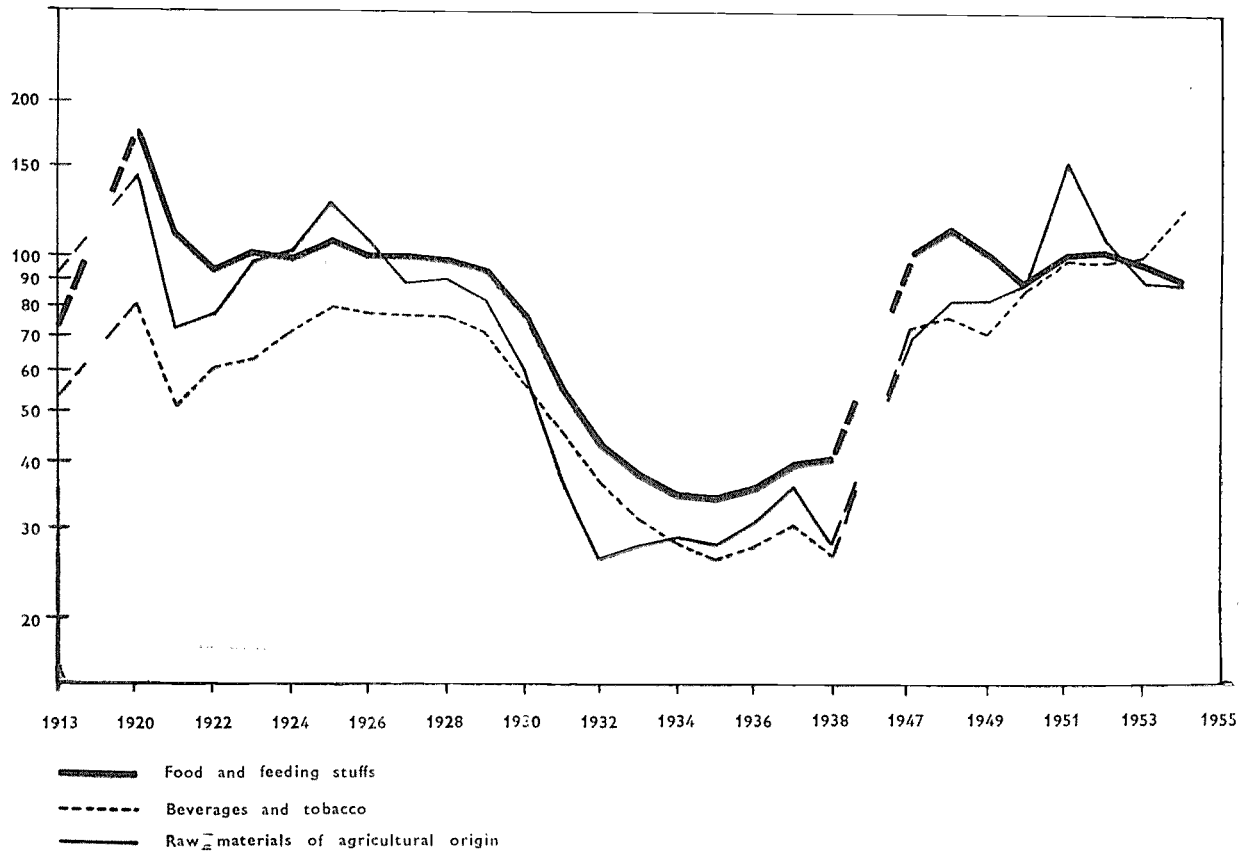
NOTE: For all agricultural products taken together, the corresponding index is 299, and for all items in international trade (agricultural and non-agricultural) 237. The latter figure is based on the UN index of average values re-calculated to the base 1937-38 = 100.

level after World War II was reached in 1947 and 1948 when the shortage was most acute. Since then there has been a gradual downward drift as supplies gradually became more plentiful, interrupted to a limited extent by the outbreak of the Korean war. In spite of the heavy accumulation of surpluses in recent years, there has been no sudden break in prices, a fact which must be primarily attributed to price supports and the cautious stocks disposal policies of the United States government. As is shown later, however, the timing and extent of the price movement varied considerably between different foodstuffs.

Average unit values of natural fibers and rubber have shown wider fluctuations than those of foodstuffs. Although the initial rise in values for raw materials, especially rubber, was slower, they showed a remarkably sharp rise during the Korean boom, when they reached their postwar peak, followed by an almost equally sudden fall. Similarly, between the two wars the rise in prices during the boom period of the later nineteen-

FIGURE VI-2. — Indices of World Average Import Unit Values, in Post-1934 U.S.$, of Agricultural Commodities by Major Groups

(Average 1952-53 = 100 ; semi-logarithmic scale)



twenties and the fall during the depression of the 'thirties were much sharper for the raw materials group than for foodstuffs..

Values of the " beverage and tobacco " group of commodities have shown a fairly steady rise throughout the period since World War II, chiefly because of the continuing strong demand for, and limited supplies of, coffee and cocoa. In 1954 they were at a higher level than in any year since 1913.

Changes in Average Values of Selected Commodities

Finally in Figure VI-3 the trend of average unit values in international trade after World War II for a number of individual commodities or commodity groups is shown in relation to average values after World War I. For a surprisingly large number of commodities average unit values since the second war have been remarkably close to those ruling at the same interval after World War I. Wheat, coarse grains, edible oils, cotton and tobacco fall into this category. Average unit values of sugar were initially lower after the second than after the first war, but in the last few years have been about the same. Until recently, meat was moving in international trade at lower unit values than at the comparable period after the first war, but the difference has now greatly narrowed.

On the other hand, up to 1954 average unit values of rice, wool, coffee and cocoa have been substantially higher than those ruling after the first war, and those of dairy products substantially lower. At first values of dairy products, and also those of meat, were largely influenced by the long-term United Kingdom contracts, but these now operate in only a restricted field and price levels are primarily determined by normal market influences. In the same way, values of rice might have been somewhat higher through much of the postwar period but for the government-to-government contracts operated in Southeast Asia. Values of coffee, cocoa and wool on international markets have been mainly determined by supply and demand.

The general movement of average unit values of individual commodities is seen to have been generally as described above for the broader commodity groups. This applies particularly to the main foodstuffs traded internationally, including cereals, sugar and edible oils. For sugar and edible oils, however, the highest values were reached not in the immediate postwar years but during the Korean boom. For coarse grains and rice the sag in values before the Korean boom was particularly marked, and for rice the high levels subsequently reached only began to break at the end of 1953. For livestock products, as already noted, the movement of prices was somewhat different from that of other foodstuffs.

Cotton and wool followed fairly closely the general trend of prices for raw materials already described and this applies also to rubber and jute which are not included in Figure VI-3. Similarly, coffee and cocoa exhibit the general rising trend for the beverages and tobacco group, but this is much less marked for tobacco, while values of tea declined somewhat after 1948 and did not recover until 1954, when they showed a marked but temporary rise.

Rise in Average Values Compared with the Immediate Prewar Years

The immediate prewar period was in many respects abnormal as prices of agricultural products had scarcely recovered from the effects of the depression. Nevertheless, it has been so widely used as a baseline that a good deal of interest attaches to the relative rise in unit values of individual commodities on international markets since that time. Some of the main commodities are therefore shown in Table VI-1 in relation to the increase in average unit values in international trade from 1937-38 to 1952-53, when postwar prices first took on some element of stability. It should be pointed out, however, that a steep increase over this period may reflect either a high price level in 1952-53, or a particularly low price level in 1937-38. The longer-term series in Figure VI-3 therefore give a more balanced indication of changes.

Forest Products

Similar indices of average values in international trade are not available for forest products, but their prices have in fact risen more steeply than those of most other materials since the prewar period. This applies particularly to roundwood and sawnwood. Prices of processed products, such as wood pulp and paper, have followed more closely the general course of prices.

The higher levels of prices for forest products established in 1946 and 1947 remained fairly stable until the outbreak of the Korean war in mid-

FIGURE VI-3. — Indices of Average Import Unit Values, in Post-1934 U.S.$, of Certain Agricultural Commodities

(Average 1952-53 = 100 ; semi-logarithmic scale)

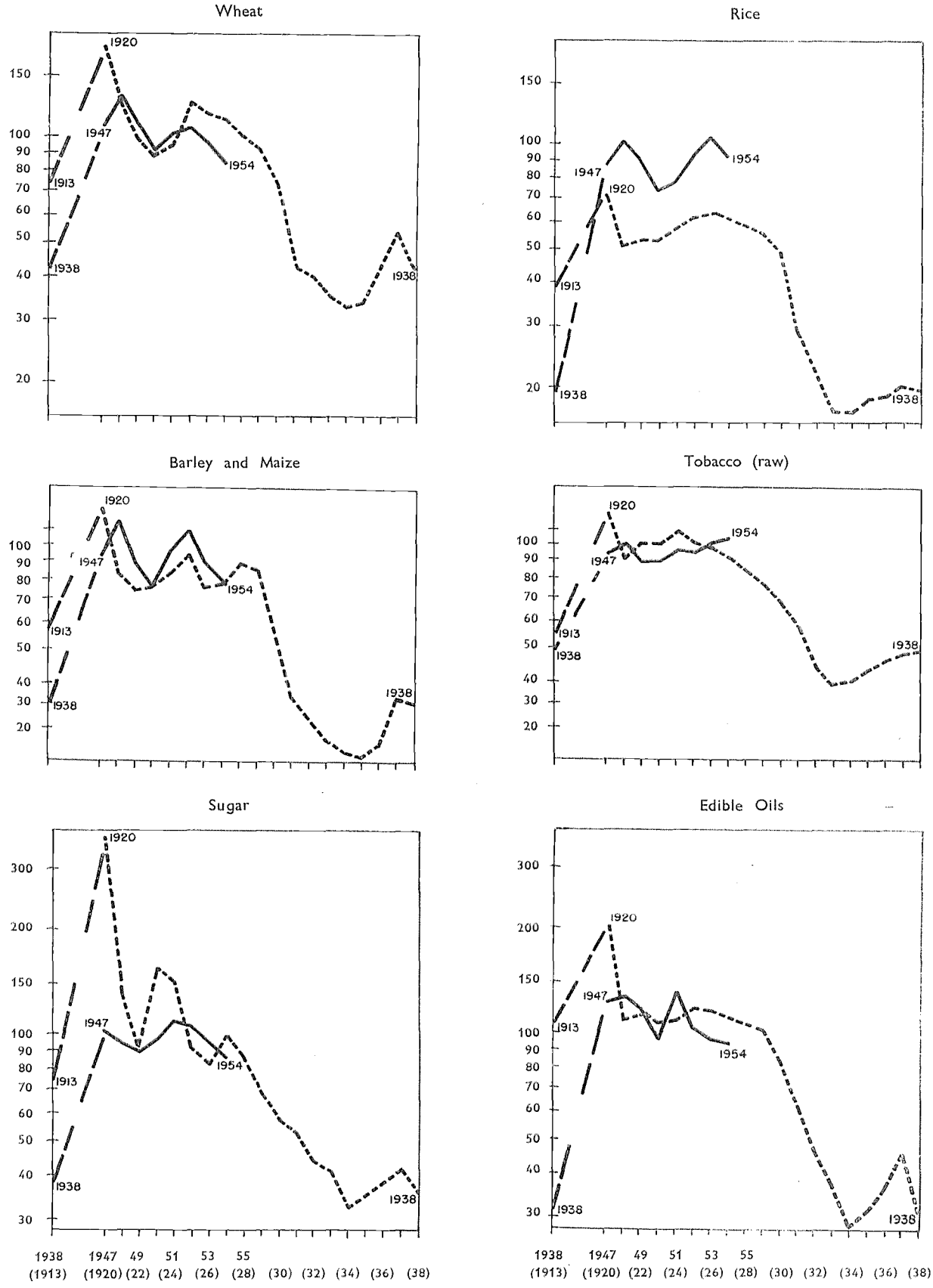


FIGURE VI-3. — Indices of Average Import Unit Values, in Post-1934 U.S.$, of Certain Agricultural Commodities (Concluded)

(Average 1952-53 = 100 ; semi-logarithmic scale)

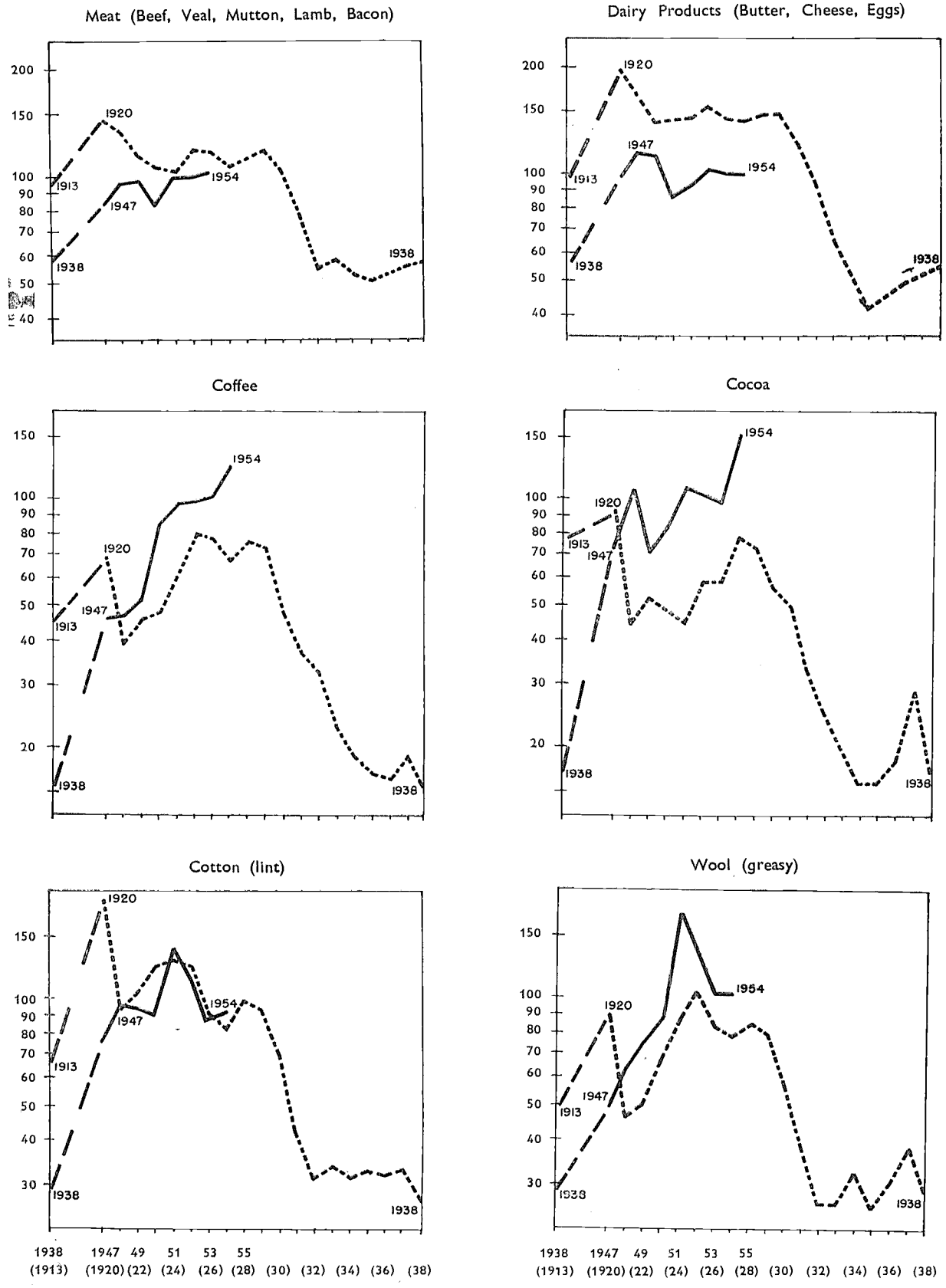
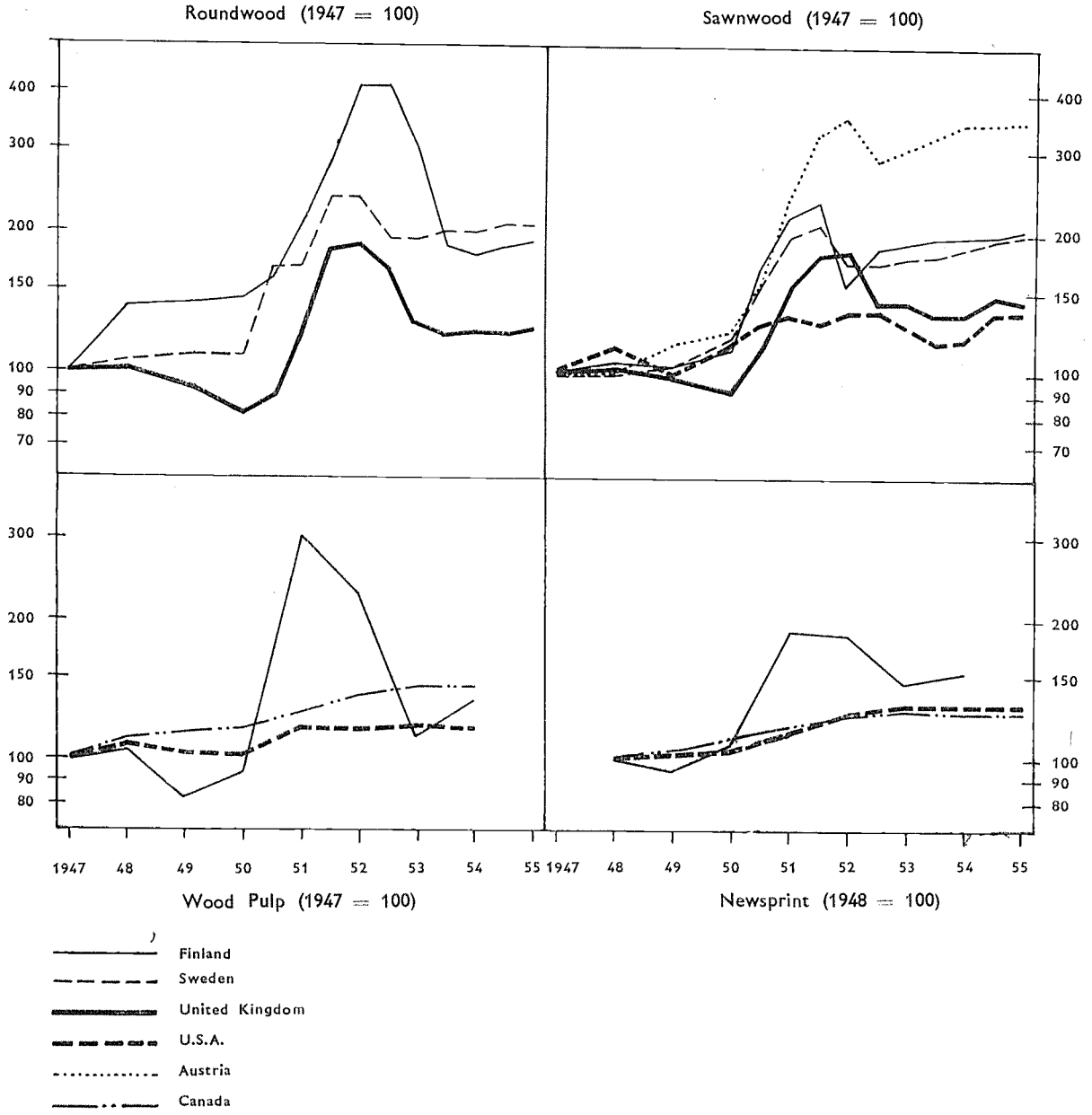


FIGURE VI-4. — Price Indices of Timber and Timber Goods

(Semi-logarithmic scale)

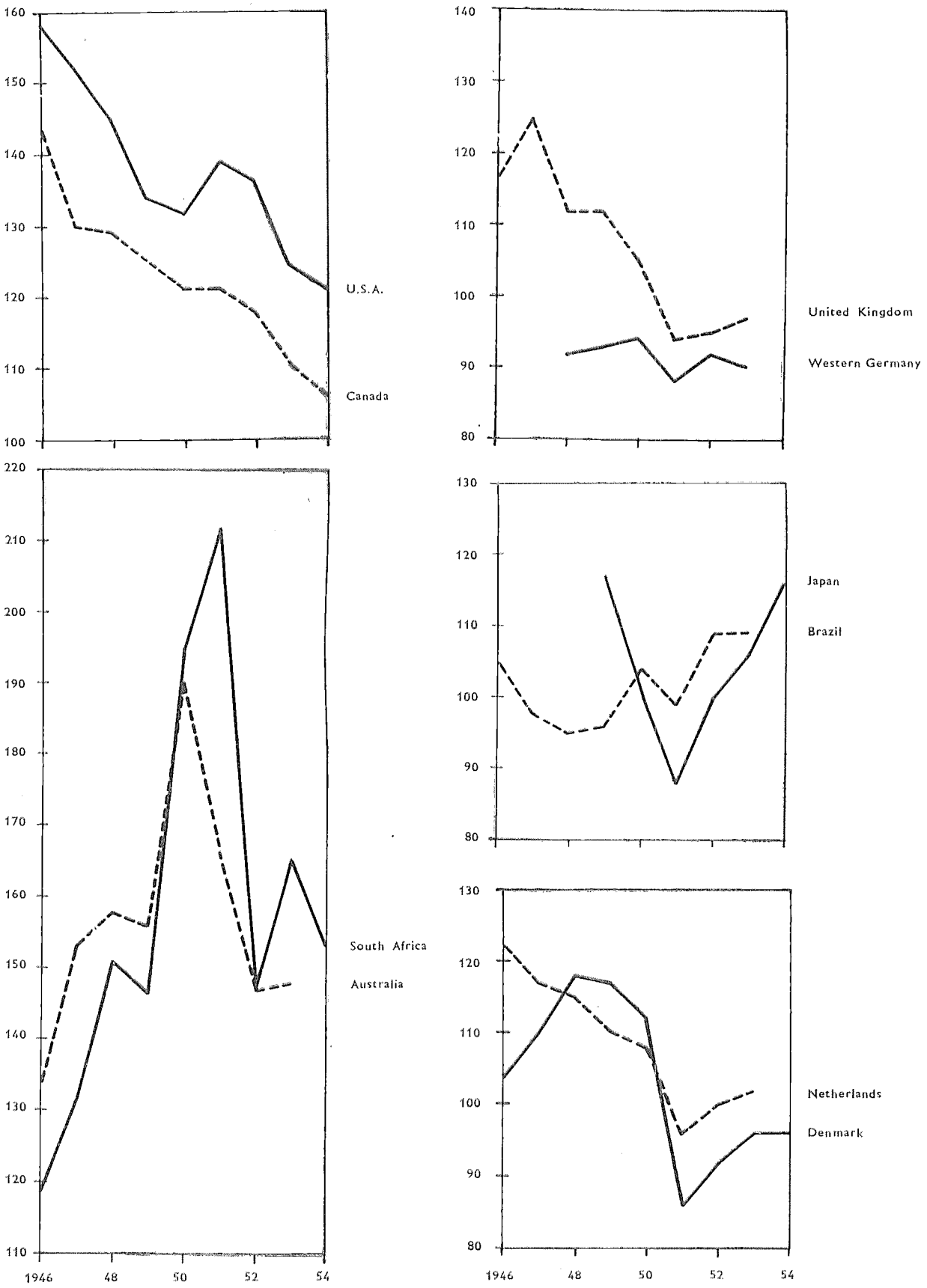


1950, which led to an unprecedented rise in prices followed by a steep fall in 1952. Since then, prices of wood pulp and its products have shown more stability than those of less finished forest products, and prices in North America (where even the influence of the Korean boom was effectively controlled) more stability than prices in Europe and other regions. The general course of prices of forest products since the second world war is shown in Figure VI-4.

PRICE MOVEMENTS AND THE PRODUCER

The higher level of prices of agricultural products on world markets was naturally paralleled by higher prices on the domestic markets of the various countries. There is little value in assessing the extent of the rise as such, since this depended largely on the degree of inflation in the country concerned. What is more important is to consider

FIGURE VI-5. — Ratio of Indices of Farm Prices of Agricultural Products to Indices of General Wholesale Prices (1938 = 100)



how the rise in farm prices, and also in the wholesale and retail prices of agricultural products, compared with the rise in prices generally.

An indication of the movement of farm prices in relation to the general level of wholesale prices is given for a number of countries in Figure VI-5. In most countries, Germany, Denmark and Brazil are exceptions, the ratio was considerably higher after than immediately before the war. This is not unexpected in view of the food shortage and of the depressed state of agricultural prices in the nineteen-thirties. But for the operation of price controls, which were more generally imposed on foodstuffs than on any other products, the relative rise in the level of agricultural prices would often have been still greater.

In most countries there has since been a considerable fall in the ratio from the high level of the early postwar years and in some (e.g. Canada and the United Kingdom) it was in 1954 little or no higher than before the war. There are indications in some countries, however, of a partial recovery in the last few years.

The peak period for farm prices in relation to wholesale prices generally was not the same in all countries. In North America it came immediately after the war, in some European countries one or two years later, and in countries exporting agricultural raw materials, e.g. Australia and South Africa for wool, at the time of the Korean boom.

On the whole it may be concluded that while farm prices gained ground in relation to prices generally in the immediate postwar period, much of that advantage has since been lost, and in some countries the ratio is almost as unfavorable to farmers as in the late nineteen-thirties.

Ratio of Prices Paid and Received by Farmers

From the point of view of farm incomes, a still more significant indicator is the ratio of the prices farmers receive for their products to those of the goods and services they customarily buy. Rather few countries publish such ratios and they are not all entirely comparable. From the data available (Table VI-2) there are indications that in European countries this price relationship was most favorable to farmers in the period 1947-49. Since then there has been a persistent decline, though in some cases there are signs of a halt about 1953.

In Canada the ratio of prices received and paid by farmers was rather stable at a much more favorable level than before the war from 1946-1952, but there has since been a marked decline. In the United States, too, the ratio has declined steeply in recent years. Australia showed a steady rise in favor of farm prices, culminating in 1951 with the Korean boom. Thereafter there was a rapid fall of about one-third in a year, but since the middle of 1952 the price relationship has been fairly stable.

In most countries the movements of the more precise ratio of prices paid and received by farmers thus tells the same story as the movement of the relation between farm and general wholesale prices: that the gains of the early postwar years have

TABLE VI-2. RATIO OF PRICES RECEIVED AND PRICES PAID BY FARMERS; PREWAR AND 1947-54

COUNTRY	Prewar	1947	1948	1949	1950	1951	1952	1953	1954
	..... *1952 = 100*								
Canada	[1]84	115	117	112	111	114	100	93	...
United States	[1]85	114	109	99	101	107	100	92	85
Austria	[2]113	...	...	106	101	101	100	96	...
Belgium	[2]112	110	118	107	101	99	100	90	87
Germany, Western	[3]107	...	112	121	108	105	100	102	...
Netherlands	...	110	106	103	107	101	100	97	...
Norway	[2]84	123	125	123	105	101	100	96	...
Australia	[4]79	100	118	111	138	134	100	103	95
Japan	...	...	...	94	94	91	100	106	...

... Not available. [1] 1935-39. [2] 1937. [3] 1938. [4] 1937-38.

been largely lost, and that in many countries price relations have become no more favorable to farmers than before the war.

Farm Incomes and Expenses

Price ratios alone do not of course determine the level of farm incomes, which are affected by the volume of the input items (i.e. the goods and services farmers buy for the purpose of production) and by the volume of sales. The increased production achieved since the war in itself is a factor tending to raise farm incomes. In some countries subsidies and other state payments have also become a significant part of farm receipts.

The modernization of agriculture since the war has led to marked increases in the essential expenses of farming. Mechanization and the greater use of fertilizers are only two increased expenses now essential to efficient production. Estimates are given in Table VI-3 of the trend of purchases for farm production from other sectors of the economy, i.e. after excluding wages to hired workers. They are based on national statistics and have been deflated by appropriate price indices. Even after eliminating price changes it will be noted that the expenses of farmers in the United States have approximatety doubled since before the war. Other countries show a marked trend in the same direction. The data between countries are not fully comparable, however, and the table needs to be interpreted with caution. Thus the swift rise in production costs in the Netherlands and to some extent in the United Kingdom is partly due to the resumed use of imported feeding stuffs, as well as to the trend towards modernization.

Indices of farm incomes themselves, based on

TABLE VI-3. INDICES OF FARM PRODUCTION EXPENSES (EXCLUDING WAGES) ADJUSTED TO ELIMINATE THE EFFECT OF PRICE CHANGES; PREWAR AND 1947-1953

COUNTRY	Prewar	1947	1948	1949	1950	1951	1952	1953
	1952 = 100							
Canada	75	98	93	97	97	96	100	101
United States	50	75	86	87	94	98	100	100
Australia	...	87	87	94	95	88	100	...
New Zealand	...	77	89	92	96	108	100	...
United Kingdom	...	...	81	88	94	95	100	...
Netherlands	103	56	58	71	81	89	100	113

... Not available.

TABLE VI-4. INDICES OF INCOME DERIVED FROM AGRICULTURE DEFLATED BY COST-OF-LIVING INDICES; PREWAR AND 1947-1954

COUNTRY	Prewar	1947	1948	1949	1950	1951	1952	1953	1954
	1952 = 100								
Denmark	58	...	78	89	102	105	100	106	...
Germany, Western	72	...	71	73	92	108	100	107	...
Netherlands	51	68	83	102	95	95	100	101	...
France	...	...	118	106	103	101	100	103	...
United Kingdom	49	...	89	95	88	104	100	97	90
Canada	33	87	101	95	85	110	100	90	63
United States	59	117	122	99	101	109	100	98	88
Australia	...	115	104	130	194	103	100	...	...
New Zealand	...	93	91	105	155	101	100	...	...
Japan	...	...	122	65	87	96	100	96	...

... Not available.

FIGURE VI-6. — Real Income of Agriculture and Volume of Net Output (1952 = 100)

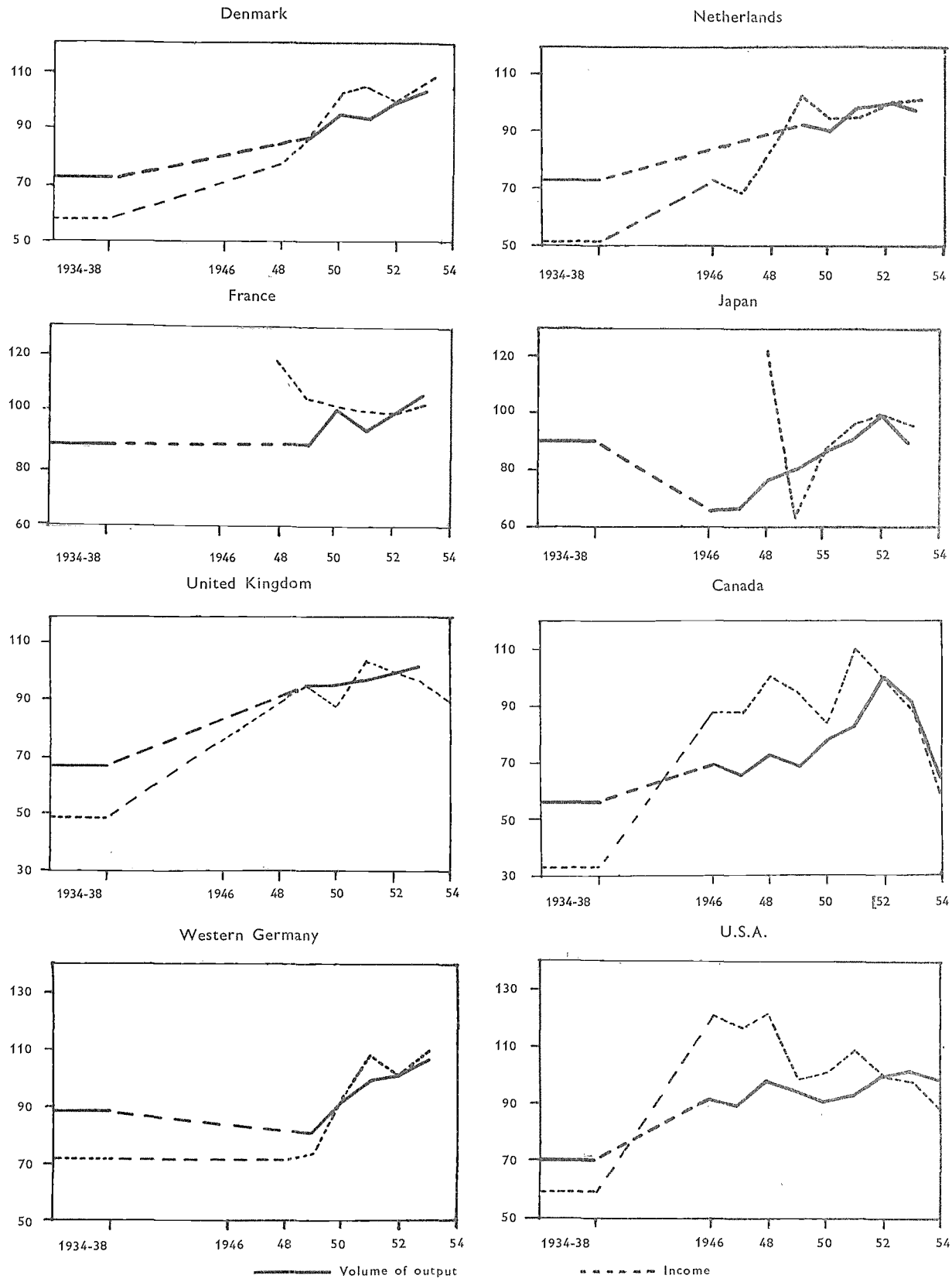
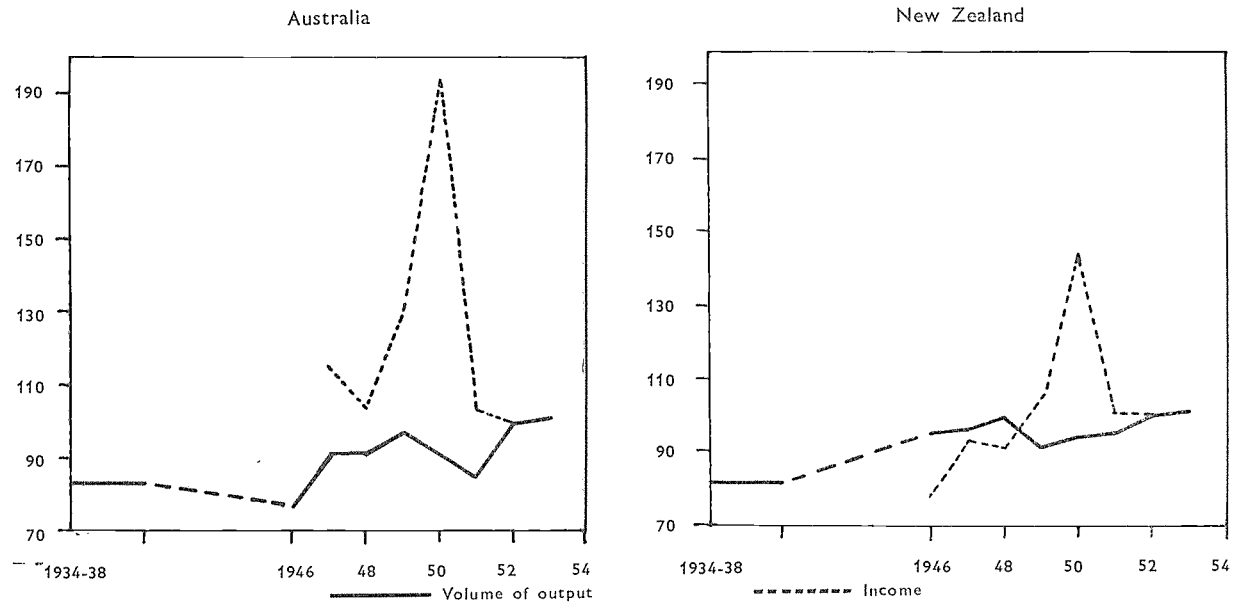


FIGURE VI-6. — (Concluded)



national statistics, but deflated by the cost of living indices to eliminate major price changes, are set out in Table VI-4. This table again needs to be used with caution because of some lack of comparability between countries, and because cost of living indices based mainly on urban conditions are not ideal deflators for farm income series. Nevertheless, it seems clear that in all countries the farming community was substantially better off in the immediate postwar years than before the war, which in any case was a period of unexampled depression in agriculture. When allowance is made for the decline in numbers engaged in agriculture in some countries, the per caput gain becomes considerable.

As regards postwar trends, the picture is rather confused. Only Denmark and Western Germany, which had the smallest war-time increase, have shown a persistently rising trend. In the United States and Canada there has been a very rapid decline from the postwar peak, while the Netherlands, France and the United Kingdom appear to have achieved a certain degree of stability at about the 1949 level. In all countries for which comparable data are available, however, farm incomes on a real basis remained substantially higher in 1953 and 1954 than before the war.

As regards the manner in which the income earned by the agricultural industry is divided, in every country for which there is information, farmers' income rose and fell more steeply than total agricultural income. The income of wage earners in agriculture, on the other hand, lagged behind during periods when total agricultural income was rising, and fell more slowly or even rose while it was falling. Taking the postwar period as a whole, however, there does not seem to have been any strong tendency for farm workers or farm operators to better themselves at the expense of the others.

Farm Incomes in Relation to the Level of Production

It is instructive to compare the indices of the real value of farm incomes in Table VI-4 with the volume of production to form some idea of how the rewards to agriculture have changed in relation to its output. Indices of net output in a number of countries, comparable to those given on a regional basis in Chapter V, have therefore been plotted in Figure VI-6 in relation to indices of farm income.

For the countries included in the chart real incomes fell less or rose more during the war than did the volume of output, reflecting the relatively greater increase in agricultural prices than in prices generally. In postwar years there is a striking contrast between experience in North America and that in Europe. In the countries of Europe, with the possible exception of France, incomes and output have more or less kept in line, whether during rapid expansion (Denmark, Western Germany and the Netherlands up to 1949), or in relative stability (the United Kingdom and the Netherlands after 1949). In North America, on the other hand, incomes have been roughly

stable while output rose (Canada), or declined while output was stable (United States). In Oceania the series is greatly disturbed by oscillations of the Korean boom, but on the whole the very high income of 1950 does not seem to have affected trends which were already visible earlier.

Labor Productivity in Agriculture

In the long run incomes in agriculture as in all other occupations are likely to depend largely on the output per man employed. It will therefore be well to examine briefly the trend of labor productivity since the war, particularly in view of the technological developments summarized in Chapter IV. No comparison is attempted of the level of productivity in agriculture and other industries, for such comparisons can be made only by allotting price weightings to the products of agriculture and manufacture which are bound to be somewhat arbitrary. A few comparisons are made, however, of the rate of growth of productivity in agriculture and in other occupations.

Industrialization leads to a steady decline in the proportion of the labor force engaged in agriculture. In the United Kingdom, the first country to industrialize, agriculture employs only 5-6 percent of the nation's manpower, and there is still a slow drift of labor from the land, attracted by the higher level of wages and shorter hours in towns. In the United States, the decline in agricultural manpower in recent years has been much more rapid. From 1939 to 1954 the number of workers engaged in agriculture fell from 11½ to 8½ millions, or from 20 to 13 percent of the total labor force. Most other industrialized countries show a similar though slower trend. In under-developed countries the percentage of the population engaged in agriculture (but not always the actual numbers) tends to decline slowly.

This shift of manpower from agriculture to industry is no less necessary for the progress of agriculture than for the progress of manufacture. Agricultural incomes and welfare depend ultimately on the level of labor productivity in agriculture, and the output per man in agriculture cannot for long be raised beyond the capacity of urban markets to absorb his surplus production.

Indices of the manpower engaged in agriculture (based on available national estimates, official and unofficial) are set out in Table VI-5 in man-years, and where available also in man-hours, to take account of the tendency to work shorter hours. Figure VI-7 shows these estimates in

TABLE VI-5. LABOR FORCE IN AGRICULTURE IN CERTAIN COUNTRIES; 1945-54

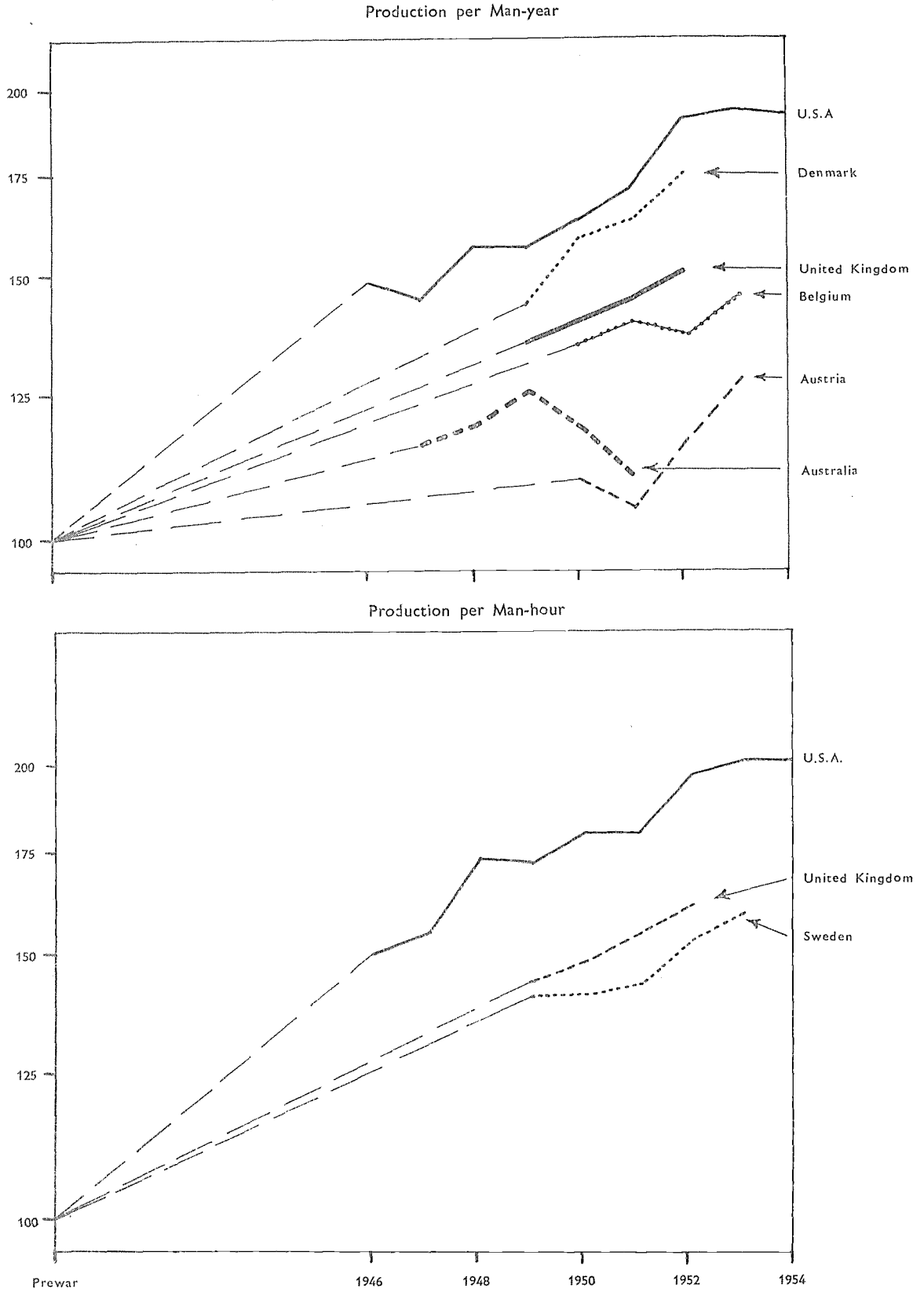
COUNTRY	1945	1946	1947	1948	1949	1950	1951	1952	1953	1954
	Index of Man Years (1938 = 100)									
Austria [1]	...	...	...	...	...	88	88	87	87	...
Denmark	...	86	83	84	83	81	79	78	...	...
United Kingdom	107	108	108	108	105	103	101	100	...	...
Canada [2]	100	114	105	108	104	101	96	88	87	...
United States [1]	86	88	89	89	86	80	78	75	74	73
Australia	93	94	94	92	93	93	92	...	...	...
	Index of Man Hours (1938 = 100)									
Sweden	...	...	...	84	81	79	77	74	72	...
United Kingdom	106	103	103	102	99	97	94	93	...	...
United States	91	88	84	81	79	72	74	72	72	70

[1] Index of total employment. [2] 1942 = 100. ... Not available.

Sources: Austria : Austrian Institute for Economic Research.
Denmark : Landbrugstatisk.
U.K. : H. T. Williams in "Changes in the Productivity of Labour in British Agriculture." Journal of Proceedings of Agricultural Economics Society, Volume X, No. 4, March 1954.
Canada : W. J. Anderson in "Productivity of Labour in Canadian Agriculture." Canadian Journal of Economics and Political Science, Vol. 21, No. 2, May 1955.
U.S.A. : Agricultural Outlook Charts, 1955, U.S.D.A. October 1954.
Sweden : Communication received from Mr. Jureen of the Statens Jordbruksnamd.

FIGURE VI-7. — Growth of Labor Productivity in Agriculture

(Indices : Prewar = 100 ; semi-logarithmic scale)



Source : FAO estimates of output and Table VI-5 ; Belgium : *L'agriculture belge; évolution-situation actuelle* (October 1954).

relation to FAO estimates of net output in the countries concerned to give an indication of changes in output per man. The steady rise in productivity apparent in these countries may be due to some extent to favorable weather, but there can be little doubt that it comes mainly from improved methods of farming and the more efficient utilization of labor.

The estimates in Figure VI-7 show changes in the gross productivity of labor in agriculture, and for any comparison with other industries, allowance must also be made for the increase in "input expenses," i.e. the cost of the additional fertilizers etc., which contributed to the increase in production. Such estimates, with comparable estimates of productivity in industry, are available only for a few of the more advanced countries (Table VI-6). Output in agriculture remains very dependent on the weather, and the indices of productivity in agriculture therefore fluctuate from year to year more than for industry. Those for Canada in particular are considerably raised by the very favorable harvests of 1951 and 1952. It should be noted also that the indices for Canada are estimated at current prices, and the rise would be appreciably slower if they had been computed at constant prices like those of the other countries. The indices for the United States are affected in some years by acreage restrictions and other limitations on agricultural production.

On the whole, however, the general indications of Table VI-6 are that over the whole postwar period the increase in productivity in the countries included in the table has been at least as fast and possibly faster in agriculture than in industry. If this trend continues a gradual narrowing of the gap between agricultural and non-agricultural incomes may be expected, barring any sharp fall in agricultural prices in comparison with prices generally.

TABLE VI-6. RATE OF GROWTH OF PRODUCTIVITY IN AGRICULTURE AND INDUSTRY; 1946-53

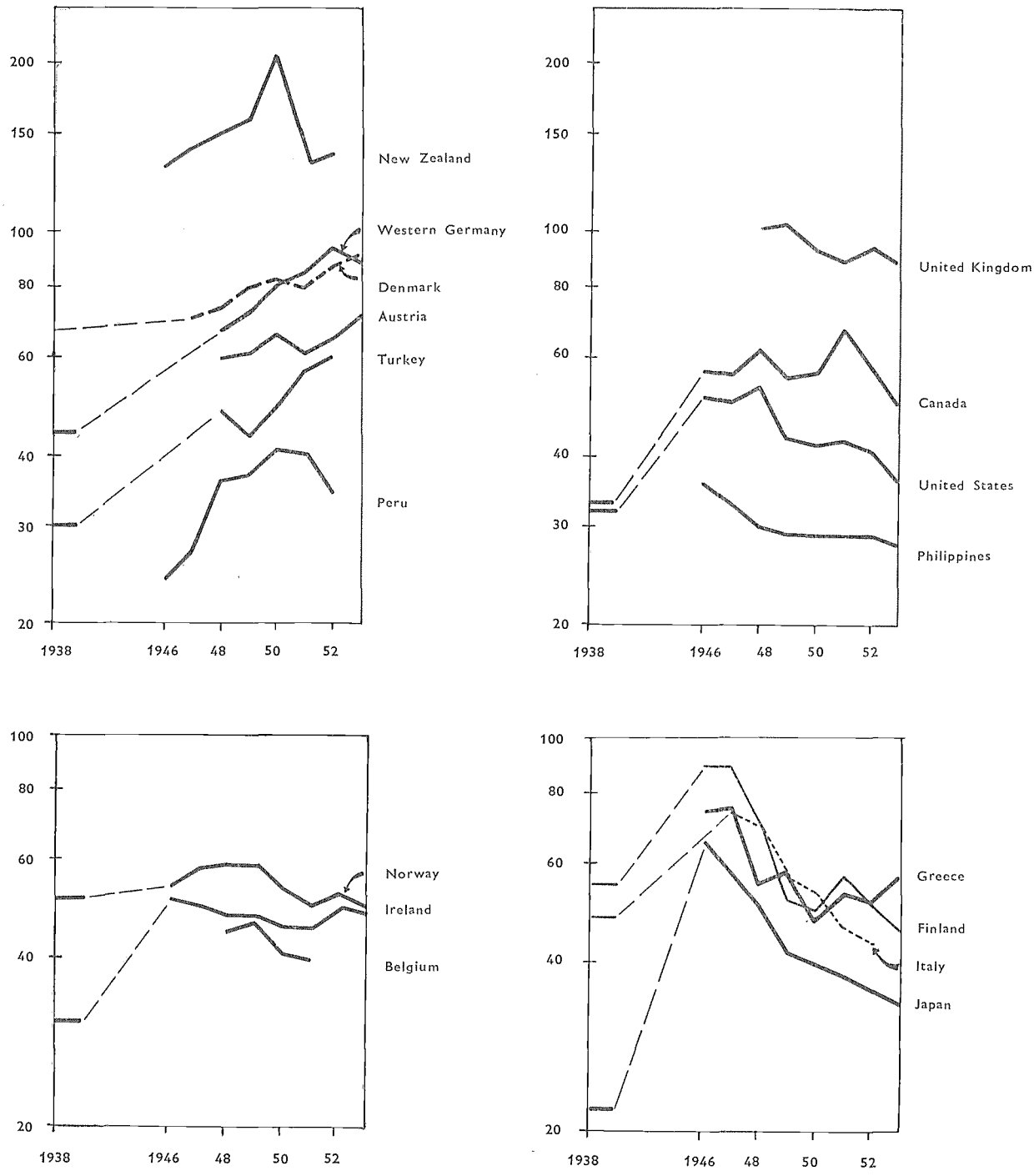
ITEM	1946	1947	1948	1949	1950	1951	1952	1953
	..... *1949 = 100*							
CANADA								
(Net output per man year at current prices)								
agriculture	69	83	99	100	107	155	151	128
other occupations	81	87	98	100	107	114	123	132
UNITED STATES								
(Net output per man hour)								
agriculture	87	86	100	100	114	105	108	114
private industry	95	93	96	100	106	107	110	113
UNITED KINGDOM								
(Net output per man year)								
agriculture	...	...	97	100	101	111	111	...
industry	...	...	96	100	106	106	104	109
(Net output per man hour)								
agriculture	...	...	97	100	101	112	113	...
SWEDEN								
(Output per man hour)								
agriculture	...	...	90	100	102	101	110	115
manufacturing industry	89	92	96	100	104	108	110	...

... Not available.

Sources: Canada: Anderson, *op. cit.*
U.S.A.: Bernstein, "American Productivity and the $ payments Problem" in "Review of Economics and Statistics" May 1955, quoting figures used by the Joint Committee on the Economic Report.
U.K.: Agriculture based on Williams, *op. cit.*
Industry; FAO estimates using official data on industrial output and manpower, following methods adopted by Adams "The Real Product of the UK, 1946-52," London and Cambridge Economic Service Bulletin No. 7 (New Series), in *Times Review of Industry*, September 1953.
Sweden: Agriculture: Jureen, *op. cit.*
Industry: Swedish Statistical Yearbook 1954.

FIGURE VI-8. — Incomes in Agriculture, Forestry and Fisheries as a Percentage of Incomes in Other Occupations

(Semi-logarithmic scale)



Per Caput Incomes in Agriculture in Relation to Other Industries

Even in the postwar period, however, there are few countries in which average earnings in agriculture are in any way comparable with those obtained in other occupations. In the United States, for example, the average income in 1938 of all persons engaged in agriculture (including both farm operators and farm workers) was estimated to be only about 37 percent of the average earnings of an industrial worker. As a result of increased output and higher farm prices, average per caput farm incomes rose in 1947 to a peak of 80 percent of average earnings of workers in industry, but by 1953 had again declined to only 50 percent.[1]

In Figure VI-8 approximate estimates, based on national income data, are given for a number of countries of per caput incomes in agriculture, including forestry and fisheries, as a percentage of average incomes in all other occupations. The estimates are inevitably subject to a considerable margin of error, but the trends for each country are likely to be significant, as well as the wider differences from country to country. The following seem to be the main conclusions :

Of all countries for which estimates are available, only New Zealand has shown a consistently higher level of incomes in agriculture than in other occupations. Parity has been approached since the war in the United Kingdom, and latterly in Western Germany and Denmark.

In most countries, however, agricultural incomes are well below the average in other pursuits, often less than half.

Per caput incomes in agriculture were substantially higher in relation to those outside agriculture in the immediate postwar years than in 1938 in all countries for which comparable estimates are available.

Postwar trends have not been uniform. In one group of countries, comprising Germany, Denmark, Austria, Turkey, Peru and possibly New Zealand, per caput agricultural incomes have continued to improve in relation to incomes in other occupations. More often, however, the relative position of the farmer has deteriorated, and in four countries (Finland, Greece, Italy and Japan) the decline from the relatively favorable postwar position has been very sharp. But only in two countries of the seventeen in Figure VI-8 (Finland and Norway) was the relative position of the farmer in 1953 (the latest available estimates) apparently as unfavorable as in 1938.

The greatly increased level of farm incomes in comparison with the years before the war was an essential factor in the postwar expansion of agriculture, since much of the increased receipts were ploughed back in the form of new machinery, modernized buildings, increased livestock numbers, etc. Without this injection of capital from within the farming industry the postwar development of production would have been much slower.

Although the rural population remains considerably better off than during the nineteen-thirties, the recent worsening of their position in many countries, particularly in relation to other sectors of the community, cannot be without an effect on the economy as a whole. For example purchases of farm equipment and machinery have declined since 1951 in the United States with the decline in farm incomes, and the production of such equipment in 1954 was about one-third less than in 1951. Farm purchases of other goods are likely to be taking the same course. Especially in countries where the farm population is still fairly large, the welfare of the whole nation is closely linked with the prosperity of the farmer.

PRICE MOVEMENTS AND THE CONSUMER

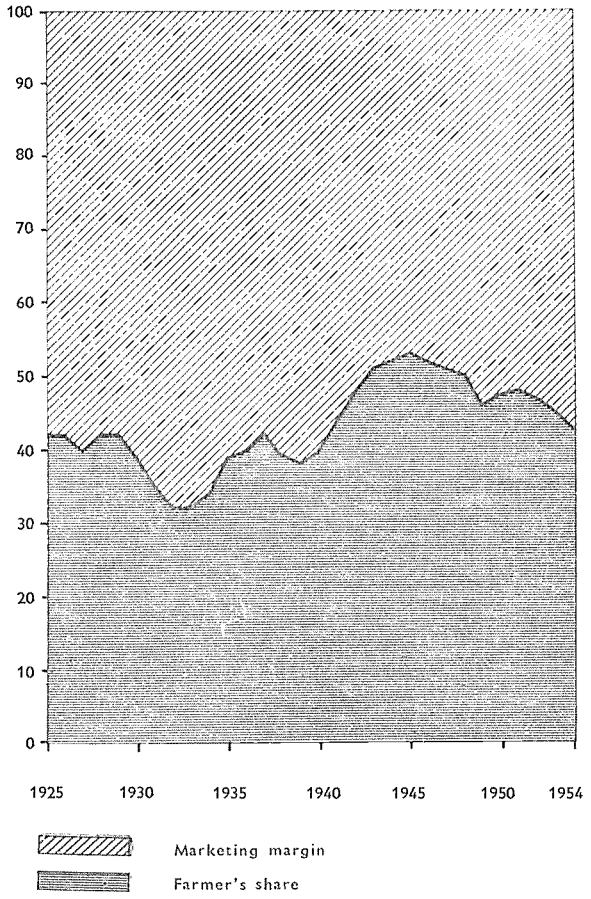
In so far as the level of consumption of food and other agricultural products is affected by prices, it is the final retail price to the consumer which matters. The price paid to the farmer, or the price at which food is imported, is only one constituent and not always the largest one, in this final price.

Detailed estimates of the cost of marketing domestically grown foods are prepared regularly in the United States and Canada, but not regularly in other countries. In the United States, the farmer's share of the final retail price has usually ranged between 40 and 50 percent. It fell as low as 32 percent in the depression years 1932-35, rose to a peak at 53 percent in 1945, and has since declined to 43 percent in 1954 (Figure VI-9). In general, the cost of marketing, which covers both processing and distribution, fluctuates much less than the farm price. It thus accounts for a larger part of the retail price when farm prices are

[1] U.S.D.A. Farm Income Situation, No. 149. Oct. 1954.

falling and a smaller part when prices are rising. A comparison of farm and retail prices indicates that this is also the case in other countries.

FIGURE VI-9. — Farmer's Share and Marketing Margin as Percentages of Retail Cost of U.S. "Market Basket" of Farm Food Products 1925-1954



Source: U. S. D. A.: *Marketing and Transportation Situation.*

Recent Trends in Marketing Costs

During the last few years of falling farm prices, however, marketing margins in the United States have risen absolutely as well as proportionately. The main factor in this divergence has been the behavior of labor costs which accounted for 53 percent of the marketing bill in 1953 as compared with an average of 47 percent in 1935-39. Hourly earnings of workers in food marketing enterprises continued to rise and averaged 4 percent higher in 1954 than in 1953, even though still greater increases had been obtained in the previous years. Transportation charges and the prices of other services and materials bought by marketing firms have changed little since 1952. Rents and taxes were higher in some areas. Labor productivity in marketing services probably increased during this period, but either the rate of increase in productivity did not match the rise in wages or else additional services were provided for consumers. Probably both factors played a part.

United States experience also indicates that marketing margins may move in varying directions for different commodity groups. Over the period 1947-54 gross marketing margins on fruit and vegetables, fresh and processed, rose by 10 percent, whereas the average increases for all foods in the "market basket" was 21 percent. It appears, therefore, that the marketing of fruits and vegetables is one sector where competitive increases in efficiency have more than counterbalanced the general rise in factor costs. In contrast, it may be noted that bakery and bread retailers' margins have almost doubled over the period 1946-54.[1] Marketing margins for liquid milk have also risen substantially, showing an increase of 20 percent since 1950. At the same time, however, the margin on milk sold in containers holding more than one quart declined in 1953-54, thus indicating a possible means of saving in distribution costs.

In other countries, direct measurement of marketing margins is rare, though indications of marketing cost trends have been deduced from the relative movement of farm, wholesale agricultural and retail food price indices. Comparisons of this type may at times lead to erroneous conclusions since the component items are generally weighted differently in each index. In the Canadian wholesale price index for farm products, for example, grains and feeding stuffs are allocated half the total weight.[2] The retail food price index, however, allows them one-tenth of the total weight and gives one-third to items such as coffee, tea and sugar which have no bearing on the farm price index. Nevertheless, where prices for certain commodity groups can be compared fairly at each marketing

[1] Profits of the leading canning companies expressed as a percentage of stockholders' equity averaged 6.6 percent in 1953, as compared with 12.5 percent for leading baking companies and an average of 9.1 percent for all food processors combined.

[2] L. F. WOOLLAM, *Economic Annalist*, Ottawa, Aug. 1954 and Feb. 1955.

stage, it is evident that distributive margins have widened in Canada also. The price of dairy products at retail rose 2.1 percent from 1951 to 1954 as against 1.3 percent at the farm level. Prices of animal products fell 17.0 percent at retail as against 20.7 percent at the farm. In Canada, average annual marketing margins are also estimated directly for specific commodities. The margin on fluid milk rose from 7.9 to 9.9 cents per quart or 25 percent in 1949-53, the margin on beef from 23.3 to 26.3 cents per lb. or 13 percent over the same period. The rise in over-all farm-to-consumer marketing costs during these years was 16 percent, which compares favorably with increases in wages and freight rates of over 30 percent during the same period. As in the United States, the increase in marketing costs was least significant in connection with certain canned fruits and vegetables.

In England and Australia marketing costs for liquid milk have been compared for different time periods. Rationalization schemes introduced during the war reduced these costs substantially. Part of these economies resulted from the zoning of distribution routes and large-scale treatment and handling of milk, part from a reduction in consumer services such as afternoon deliveries and a wide choice of suppliers. Thus, between 1937/38 and 1948/49, the marketing margin for liquid milk in England and Wales rose only from 12.7 to 15.3 pence per gallon while general prices nearly doubled. The limited rise in meat slaughtering and wholesaling costs from 1.0 pence to 1.7 pence per lb. during the same period also reflects some relative savings.

In most other countries the available information on marketing margins is much less precise. Some figures are quoted here to indicate their general level, but they should not be used to make detailed comparison between countries. The value added between farm and consumer to the gross farm production of foods, beverages and tobacco in Italy in 1954 has been estimated recently as about 39 percent of the retail value.[1] In France the margin between the imputed farm and retail values of farm foods consumed by persons on farms was estimated at some 50 percent in 1951/52. This figure probably understates the proportion applicable to the whole population, since it excludes bread and other highly processed foods. In both France and Italy, turnover and sales taxes play a considerable part in widening the spread between farm and consumer prices.

It is customary to assume that food marketing margins in the less developed countries are high because of the large number of small enterprises, evident inefficiencies and outmoded handling methods. Little statistically acceptable information is available. However, the total spread between the farm and retail values of home-produced food in Ceylon in 1951, as indicated by calculations made for national income estimates, was 29 percent of the retail value. These figures suggest that the comparatively small proportion of highly processed foods in the diet and the simple retail services may keep over-all marketing costs down to a relatively low proportion of the final price. These conclusions are also borne out by Table VI-7, which gives some indication of the price spread between producer and consumer for different agricultural commodities in India.

Uniform conditions do not necessarily obtain throughout the Far East, and margins in some other countries appear to have been higher. The improvement in security conditions during the last five years in countries such as Burma, as well as savings on transport costs and business risks following the improved organization of the market, have been reflected recently in reductions in the marketing margin for rice.

In most countries, attempts have been made, especially during the war and postwar years, to limit and reduce marketing margins by governmental injunction. However, even the refinements of administrative intervention attained in the United Kingdom were offset in many cases by pressure to maintain margins adequate to keep the least efficient enterprises in business. Some success has been achieved where margins are de-

TABLE VI-7. STRUCTURE OF RETAIL PRICE OF CERTAIN FOODS IN INDIA

ITEM	Percentage of consumer price			
	Potatoes	Rice	Sugar	Milk
	..... *Percent*			
Producers' share . . .	56.0	67.0	65.0	65.0
Freight	12.0	7.0	11.0	—
Miscellaneous charges .	7.0	17.0	9.0	—
Wholesalers' margin . .	6.0	3.0	5.0	15.0
Retailers' margin . . .	19.0	6.0	10 0	20 0

— Nil.

Source : K. R. Kulkarni, *Agricultural Marketing in India*, Bombay 1951.

[1] Giuseppe Orlando, *Rivista di Economia Agraria*, IX, 4, Dec. 1954.

termined by institutional factors, rather than by competitive costs. Government sales taxes and freight charges by state-controlled transport systems have been manipulated to favor certain products.

The high proportion of the final cost to consumers of processing and distribution inevitably leads to widespread concern because of its restricting effect on consumption levels, particularly for the poorer consumers. There are undoubtedly opportunities for considerable economies in marketing, particularly in the less developed countries, for example by eliminating much of the spoilage which takes place because of delays in distribution or ineffective methods of storage, and by eliminating unnecessary intermediaries, though this may involve problems of alternative employment. These developments have already taken place to considerable extent in more advanced countries. But there they have had less effect on margins than might have been expected because of the tendency to provide more elaborate services or greater refinements of processing, which the consumer often has to accept whether he wants them or not.

Unless marketing costs can be reduced, there seems to be no means of reconciling the need to reduce the cost of food to consumers as a means of raising nutritional levels, with the provision of a standard of living to the farm population comparable with those in other industries. So far little progress can be claimed in this field. The most hopeful sign is perhaps the renewed interest in the last few years in agricultural producers' co-operative associations or producers' marketing boards, both in industrialized countries, such as the United Kingdom, and in less developed countries, e.g. in Southeast Asia. The problem is not a new one, but it is one of the most important in the food and agricultural field. It is, moreover, one which merits renewed attention now that the postwar scarcities have been overcome and agricultural surpluses are once more emerging in a world in which a large part of the population remains under-nourished and inadequately clothed and housed.

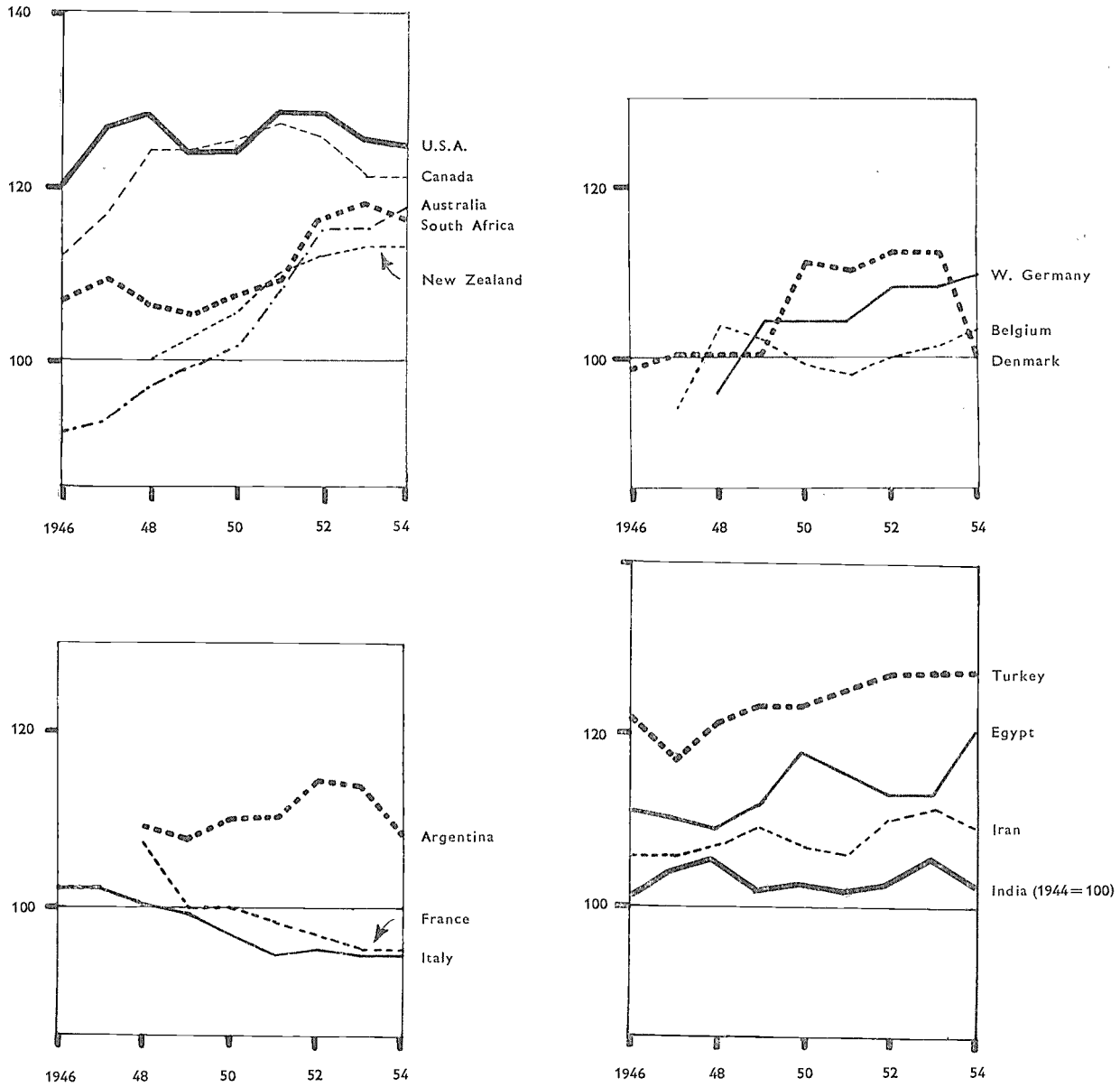
Retail Food Prices in Relation to Retail Prices Generally

As already noted, both domestic farm prices and prices of agricultural products on world markets had risen much further above the prewar level by the end of the war than had prices generally. The same relation held also at the retail level, where the rise in retail food prices was generally greater than the general rise in the cost of living. Because of the relative inflexibility of the cost of distribution, however, fluctuations in retail food prices themselves and also in their relation to retail prices generally, were smaller than those of farm or wholesale prices. For example in the United States the ratio of the retail food index to the general index of retail prices was 20 percent higher in 1946 than in 1938, while the rise in the ratio of the farm price index to the general index of wholesale prices was no less than 58 percent.

When a similar comparison is made at the retail level for a number of countries (Figure VI-10) certain distinctions become evident. For example in both the United States and Canada, the retail food price index has remained some 20-30 percent above the level of the general index of retail prices throughout the postwar period, and has shown no tendency to follow the downward movement of farm prices in relation to prices generally. The trend in Argentina and to a varying degree in a number of Far-Eastern countries has been similar. On the other hand in Southern Hemisphere Commonwealth countries retail prices for food had maintained at the end of the war about the same relation to retail prices as a whole as in 1938. This reflected both a rather tight system of price control and the absence of any very acute food shortage. Gradually, however, under the pressure of world shortages the food price index has risen more rapidly than the general index until the ratio between the two is now almost as high as in North America.

In Europe the situation is more complicated. In some countries various measures of protection before the war prevented the catastrophic fall in agricultural and food prices which occurred during the nineteen-thirties in North America and other exporting regions. As a result of the initially more reasonable balance, together with strict price controls, the ratio of food to general retail prices was little different in 1946 from 1938. In some countries, e.g. France and Italy, this ratio has since tended to fall slightly. In other countries, e.g. Germany and Denmark, food prices jumped suddenly in relation to prices generally a few years after the end of the war when price controls or consumer subsidies were removed because of their expense, or because the worst of the food shortage and the main inflationary pressures had passed.

FIGURE VI-10. — Ratio of Indices of Retail Food Prices to Indices of Retail Prices in General (1938 = 100)



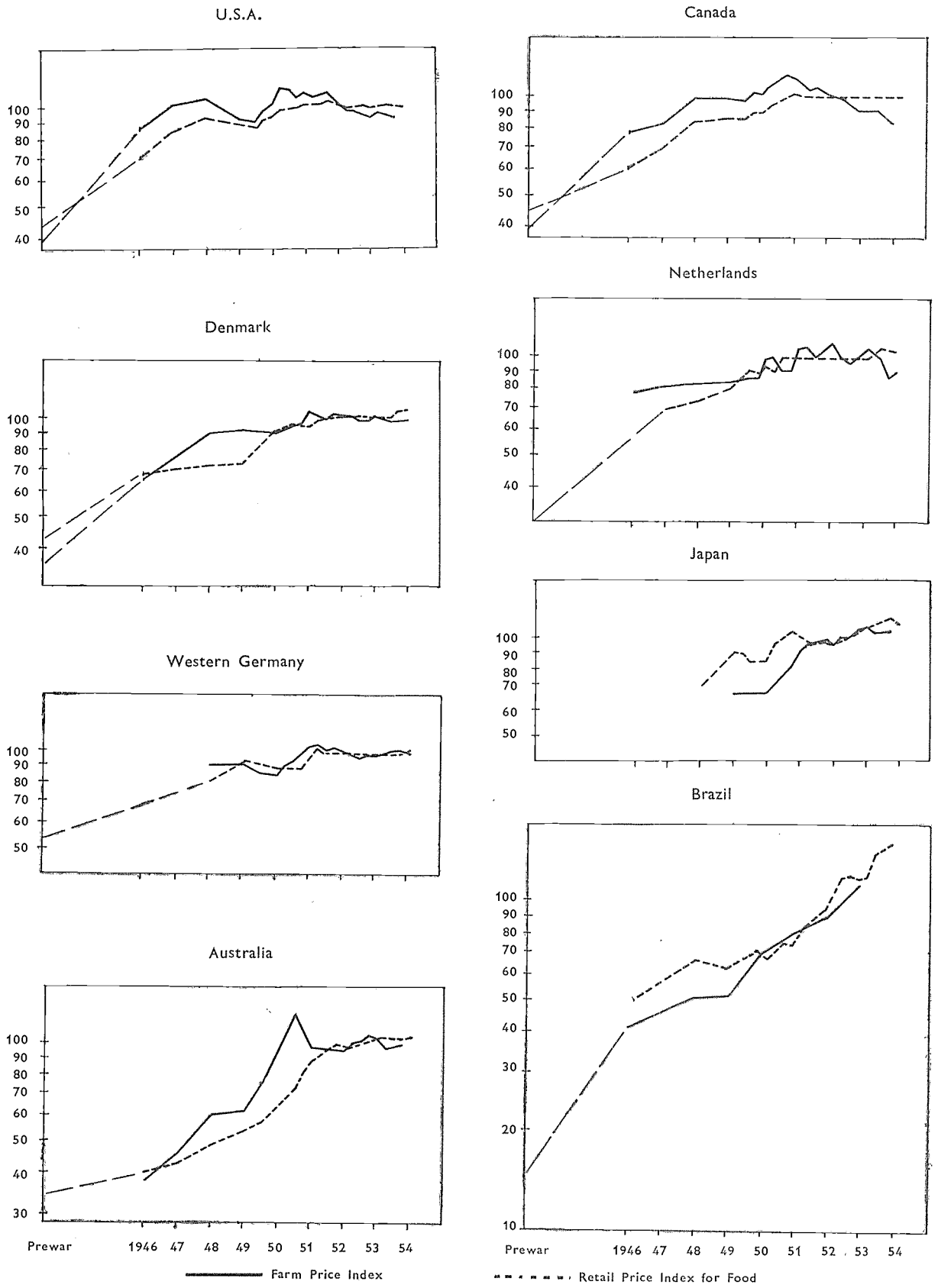
Retail Prices in Relation to Farm Prices

The general course of retail food prices has been somewhat different from the course of farm prices (Figure VI-11). In nearly all countries they rose more slowly than farm prices during the war and early postwar years. Thereafter in countries where farm prices declined, as in the United States, Canada and the Netherlands, retail prices remained stable. In countries where farm prices levelled out, as in Denmark and Japan, retail food prices continued to rise with the continuing increase in the cost of marketing. Retail prices in all countries have fluctuated less sharply than farm prices and with a considerable time-lag. Even in Germany where the farm and retail food price indices have kept much more closely in step than in the majority of countries, there was a considerable lag before the price increases of 1950-51 were fully reflected at the retail level. The adjustment of retail prices to a downward movement of farm prices is customarily still slower.

Some countries which show exceptions to the general trend are included in Figure VI-11. In Japan the initially more rapid rise in the retail than in the farm price index appears to be due to

FIGURE VI-11. — Indices of Farm Prices and of Retail Prices for Foodstuffs in Selected Countries

(Average 1952-53 = 100 ; semi-logarithmic scale)



differences in coverage, the farm price index being understood to be based wholly on official prices, while the retail index covers also free market sales. Again in the conditions of continuing inflation in Brazil the exceptional relation between the two price indices may reflect the different weighting of coffee at the farm and retail level.

Retail Food Prices and Food Consumption Levels

During the years of greatest shortage, price controls and in some countries food subsidies considerably limited the rise in the retail cost of food. As supplies became more abundant, controls were relaxed and finally abandoned while consumer subsidies on food were reduced or eliminated. In many countries the paradoxical result was a sharp rise in retail food prices just when supplies were becoming more plentiful. Again, during the most recent period when surplus stocks were beginning to accumulate, retail prices failed to follow the downward trend of farm prices. Moreover the fall in farm prices themselves was limited by policies of farm price and income supports. All these factors tended to limit an expansion of consumption parallel with the increase in world production and supplies, and contributed in some measure to the accumulation of surplus stocks.

Rather few countries have sufficiently detailed statistical information to permit, even in a rough way, any estimate of the effect of changes in retail prices or food consumption levels. In Figure VI-12, however, an indication is given of the trend of per caput consumer purchases of food in several countries based either on estimates of total consumer expenditure on food or occasionally on indices of retail sales. In all cases the estimates have been deflated by the index of retail food prices to eliminate the effect of price fluctuations.

The result is no more than an approximate measure of the volume of food moving into consumption. In the North American countries in particular, the sharp rise in consumer expenditure on food results partly from a higher level of consumption, including a marked swing from cheaper to more expensive foods, but partly also from more expensive methods of processing, packaging, and distribution. The real rise in the per caput consumption of food, in terms either of quantity or quality, is probably less than the increase in per caput retail sales at constant prices. The same is likely to be true, though to a less extent, of the corresponding estimates for countries outside North America.

The estimates of per caput consumer purchases of food at constant prices have been shown in comparison with the index of retail food prices, and also with changes in the "real value" of per caput national income. The influence both of price and income on food purchases is easily seen in the case of Canada. Although real incomes increased steadily from 1948 to 1951 per caput purchases of food tended to decline because of the rise in retail prices. From 1951 onwards, however, per caput sales of food again began to rise as retail prices were stabilized while incomes continued to grow. Similarly in the United States per caput food purchases fell from 1946 to 1948 when prices rose and real incomes remained stationary, but began to rise slowly from 1949 onwards as real incomes began to rise and prices became more stable. In both North American countries, however, the gradual return of textiles and other industrial consumer goods to the market after the war-time shortages tended to divert purchasing power from food.

In Denmark and Norway the rise in food prices following the abolition of controls and subsidies in 1949-50 seems to have led to a fall in per caput food purchases in spite of a continuing rise in real incomes. In Western Germany rising incomes and relatively stable prices led to a steady increase in per caput food purchases, though here and especially in Japan, where postwar food shortages were particularly acute, the improved level of supplies may until recently have been a major factor in the steady rise in per caput food sales. Where shortages were not acute, price and income seem to have been of comparable importance in their influence on the volume of food sales.

Expenditure on Food in Relation to Total Expenditure

One result of the postwar changes in price relations has been a tendency in many countries for purchases of food to absorb a larger proportion of total consumer expenditures than before the war in spite of a considerable rise in the real level of incomes (Figure VI-13). As a general rule, a rise in income is accompanied by a decline in the proportion spent on food, but the effect was somewhat exaggerated before the war by the unusually low prices of foodstuffs. In the United States, the average proportion of family expenditure devoted to food rose from 31 percent in 1938 to

FIGURE VI-12. — Per Caput Expenditures on Food at Constant Prices in Relation to Average Per Caput Real Incomes and Indices of Retail Food Prices

(Average 1952-53 = 100)

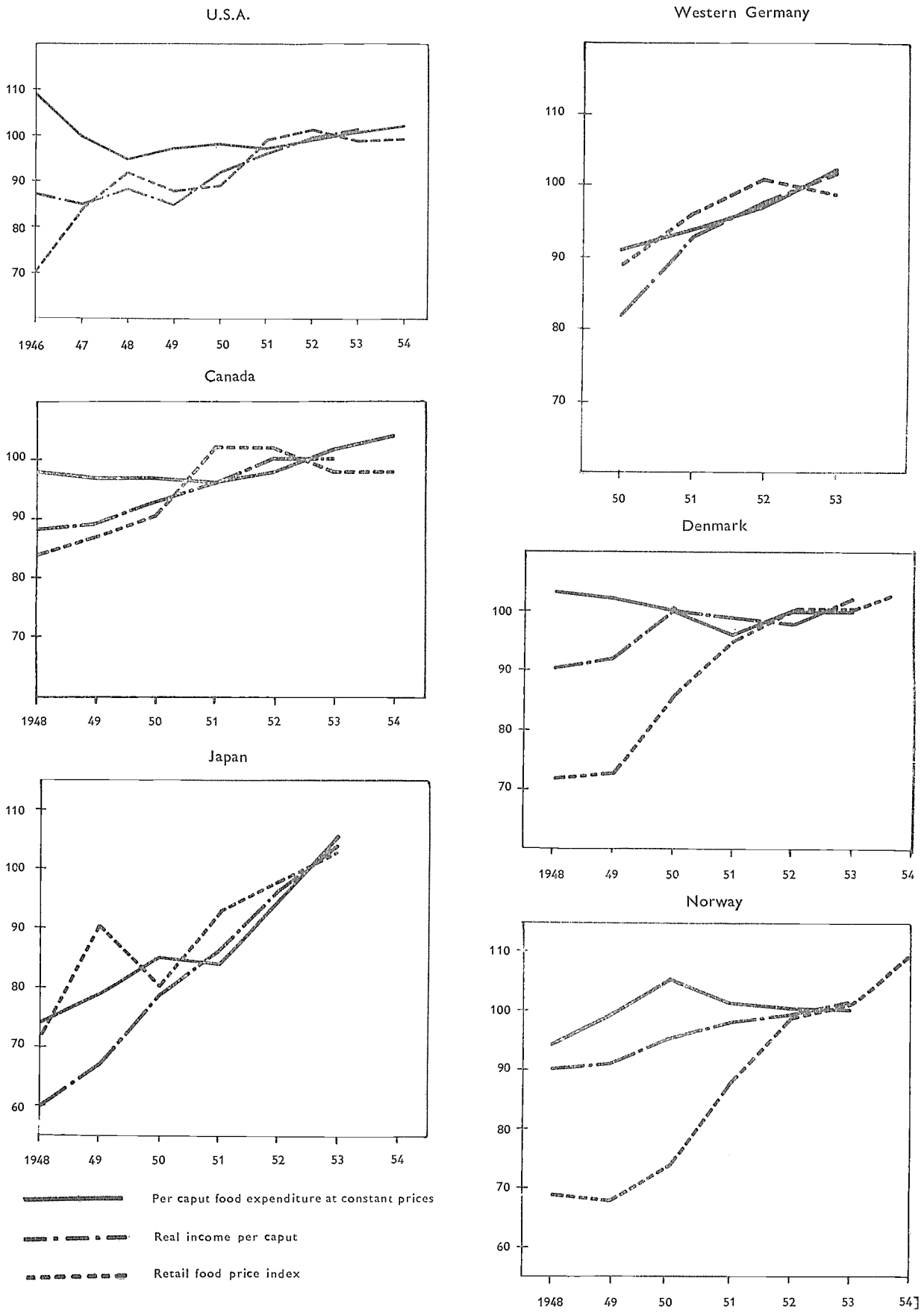
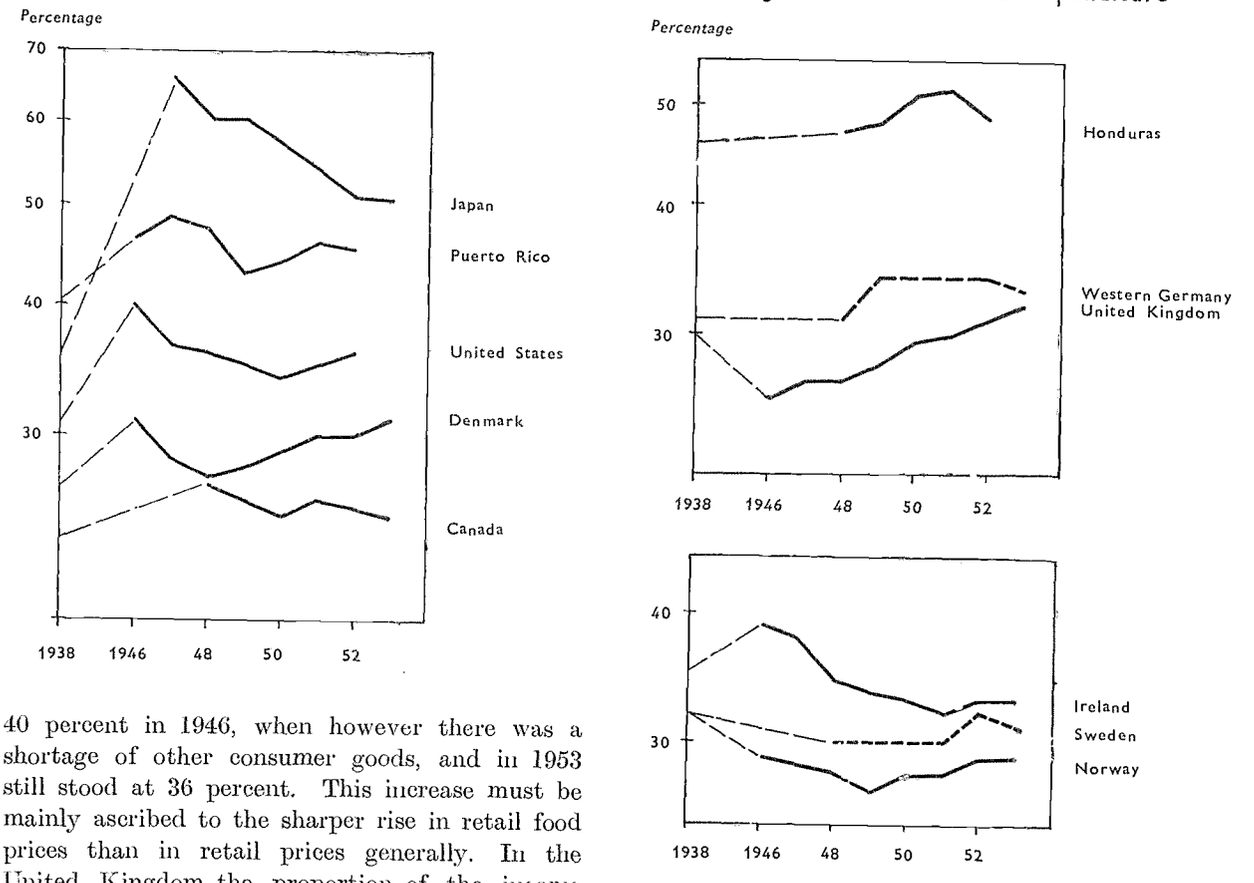


FIGURE VI-13. — Expenditure on Food as a Percentage of Total Personal Expenditure



40 percent in 1946, when however there was a shortage of other consumer goods, and in 1953 still stood at 36 percent. This increase must be mainly ascribed to the sharper rise in retail food prices than in retail prices generally. In the United Kingdom the proportion of the income spent on food fell from 30 percent in 1938 to 26 percent in 1946 when retail food prices were heavily subsidized, but has since risen steadily to 32 percent in 1953. In an extreme case the proportion rose from 36 percent in Japan in 1938 to 66 percent in 1946, and still stood at about 50 percent in 1953. Where there has been no rise in the percentage expenditure on food, as in Ireland, Norway and Sweden, the balance between retail food prices and retail prices generally has shown little change from the prewar relationship.

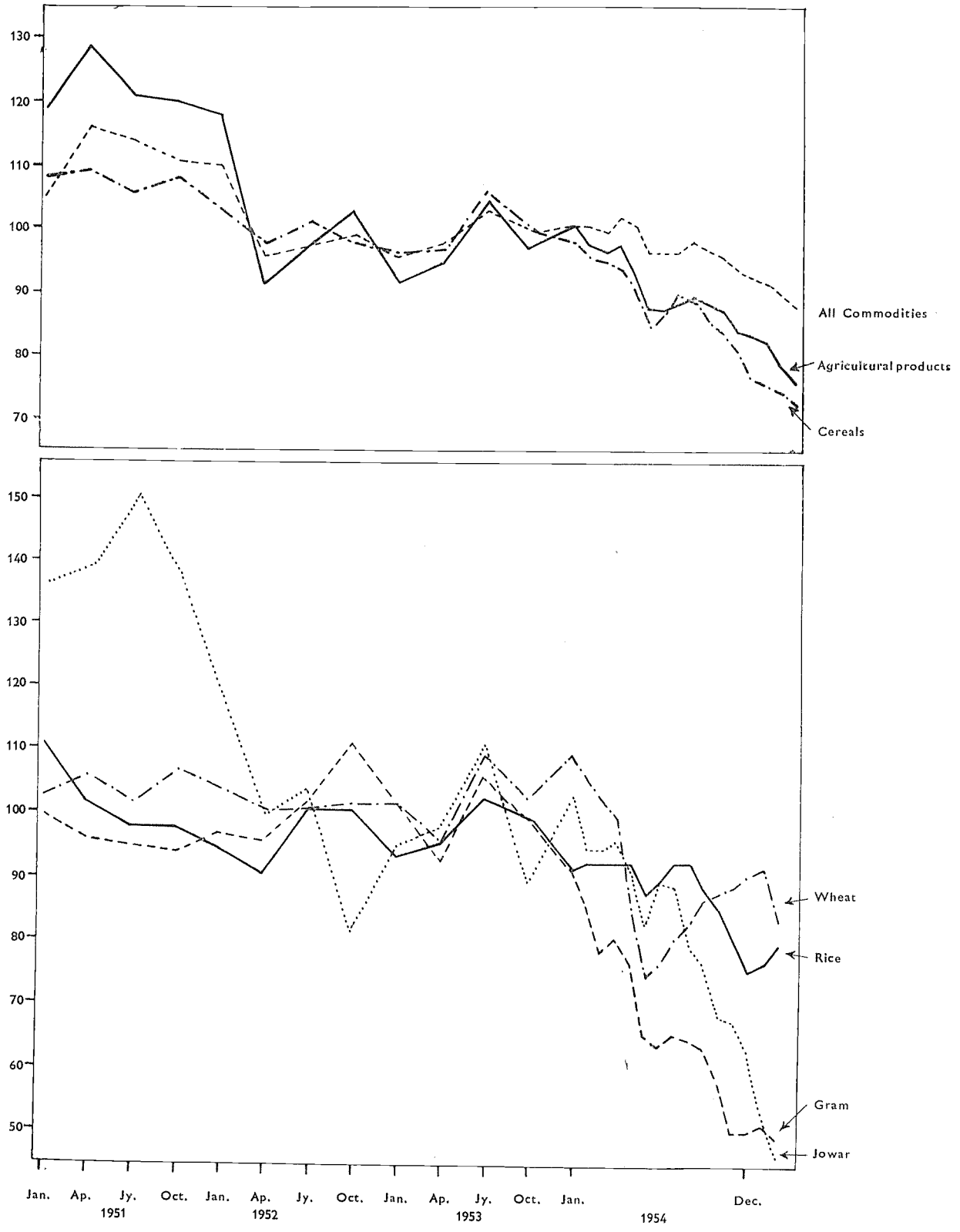
Price Levels and Further Development

The general conclusion from this brief review is that purchasing power has once more become the limiting factor on the sales and consumption of food. It follows that it is only as purchasing power is raised by rising incomes or lower retail food prices that there can be further substantial progress towards improved levels of food consumption. Similarly the further expansion of agricultural production will in the long run depend on the same factors since production cannot for long outrun effective demand.

It is true that in the more advanced countries most consumers can now easily afford a nutritionally adequate diet. Nevertheless recent experience shows that purchases of food are still markedly influenced by retail price levels; inflexible retail prices may therefore contribute materially to the piling up of surplus stocks. In less wealthy countries the ceiling on the sales and consumption of food and other agricultural products imposed by limited purchasing power is still more rigid. Recent developments in India provide a striking example. Although among the worst nourished countries of the world, the recent increases in production in that country have led to sharp falls in farm prices of grain and other foodstuffs (Figure VI-14). Unless the fall in the producer's returns can be checked, e.g. by securing to him a larger proportion of the final selling price, or by measures to expand demand for foodstuffs, the reduced profitability of food production may seriously check its further expansion, and in turn impede the further improvement of food consumption levels. Some of the implications of these questions are discussed more fully in the next Chapter.

FIGURE VI-14. — India : Movement of Wholesale Prices 1951-1955

(Indices; Average 1952-53 = 100)



Source : *Reserve Bank of India Bulletin.*

Chapter VII - ISSUES AHEAD

Seen in retrospect, the changes in the food and agricultural situation over the past decade have been remarkable. World agricultural production was raised by nearly 30 percent. In most countries the acute postwar food shortages were overcome in the course of a few years. Serious famines were averted, and in many countries food consumption raised to a higher level than ever before. The findings of nutritional science have been widely adopted in welfare schemes, e.g. of child feeding, and also to an increasing extent in planning the broad lines of agricultural development. In the more advanced countries there has been almost a revolution in agricultural methods as a result of mechanization and the widespread adoption of improved techniques. In the less developed parts of the world impressive steps have been taken towards the better use of land and water resources. The productivity of land and farm labor has increased at an unprecedented rate.

In fisheries there have been parallel advances, for example in the greater use of mechanical power, and in the better utilization of fisheries products. New and important prospects are opening up, e.g. in fish culture, for the more intensive development of sea and inland fisheries.

In forestry the most important advance of the past decade perhaps lies in the wider understanding of the importance of a sound forest policy, not only to maintain output, but also as an essential element in soil conservation and proper land utilization. As a result, measures to preserve, improve and add to forest capital are more widespread than ever before. There has, moreover, been considerable progress in forest exploitation so that areas formerly considered inaccessible now yield a forest crop, and also in the better utilization of wood with a minimum of waste.

Although the balance of the postwar decade lies heavily on the credit side, there were inevitably some weaknesses. Except perhaps in the U.S.S.R. and Eastern Europe, where investment in agriculture was deliberately curtailed in favor of industrialization, these weaknesses have been not so much on the side of production as of distribution and marketing. During the most critical period of shortage, world distribution of food was boldly and on the whole successfully tackled through the machinery of the Combined Food Board, the International Emergency Food Council and UNRRA. But these were emergency organizations whose functions were never intended to continue after the first crisis had passed. And with the gradual return of more normal conditions some of the inherent difficulties and problems of food and agriculture began to re-assert themselves, though sometimes in a new guise. Four may be singled out for special mention :

(1) The failure of consumption to keep pace with the expansion of production, in spite of evident under-nourishment in many parts of the world, with the consequent emergence of surplus stocks of some commodities.

(2) A lack of flexibility in adjusting agricultural production to the shifting trends of demand, often intensified by unduly rigid systems of farm price supports. This also largely contributed to the build-up of surpluses.

(3) The stagnation of world trade in agricultural products in contrast to the rapid expansion of world trade as a whole, and the instability of prices of many agricultural products on international markets. Obstacles to the free movement of agricultural products between countries were yet another factor contributing to the emergence of surpluses.

(4) The low level of farm incomes in most countries in comparison with the incomes in other occupations, which ultimately can be overcome only by greatly increased

productivity, and the tendency for the gains of the immediate postwar years to be lost in spite of farm price and income supports.

These weaknesses and their repercussions have given rise to some of the main problems of food and agriculture at the present time, and those which are likely to be uppermost in the next decade. It is not suggested that there are no further problems on the side of technology and production. The need for higher levels of production and consumption in under-developed countries is almost as great as ever. Continued advances in technical methods no less rapid and fundamental than those of the past decade may be expected in the years immediately ahead. But the extent to which they can be utilized will depend to an increasing extent on the success with which the economic and social problems of agriculture can be resolved.

The latter problems are long-standing and intractable, and they will certainly not be finally solved during the next decade. It is not over-optimistic, however, to suggest that they can be tackled with more hope of success in present world conditions than in the conditions which obtained between the wars. The remainder of this chapter is devoted to a review of the four difficulties set out above in the light of the experience of the last decade.

THE PROBLEM OF UNDER-CONSUMPTION

It was shown in earlier chapters that over large areas of the world the level of effective demand for farm products, rather than the technical or organizational ability to expand agricultural output, has generally become the limiting factor to further expansion of production and consumption. Further increases in production can be justified therefore only to the extent that they can be matched by increases in consumption.

Many examples could be cited from recent experience in support of this conclusion, e.g. the slowing down of the expansion of agriculture in North America because of limitations of outlets. Again, agricultural surpluses have occurred not only in countries where nutritional requirements are in general met, as in the United States, or in countries such as Cuba, which specialize in the production of particular commodities for export. Even in countries like India, where there is little food production for export and where there is no question of available supplies exceeding the basic nutritional needs of the population, surpluses are beginning to emerge because of insufficient purchasing power, as shown by declining prices, accumulating stocks, and new government support measures. Although there are still some countries where food shortages continue to contribute to inflationary pressures, they are generally countries where food imports have had to be restricted for reasons of over-all policy or balance-of-payments considerations.

This conclusion gives rise to two main questions. How fast is the future level of demand likely to rise? What steps might be taken to increase the demand for farm products?

Rate of Growth of Demand

World demand for agricultural, fisheries and forest products has risen steadily through the past decade, and this trend seems likely to continue, possibly at an accelerating rate. The rise in demand depends normally first on the growth of population, and secondly on three inter-related factors which determine the level of per caput demand: (i) changes in real income per head and income distribution; (ii) the effect of changes in real income on the demand for food; and (iii) fluctuations around the long-term trend.

World population is expected to increase between 10 and 17 percent over the next ten years,

TABLE VII-1. ESTIMATED POPULATION OF THE WORLD BY REGIONS, 1955 AND 1965

REGION	1955	1965			
		Lowest Assumption	Highest Assumption	Lowest Assumption	Highest Assumption
		... *Millions* ...		... *1955 = 100* ...	
World	2 603	2 853	3 052	110	117
Latin America	181	220	230	121	127
U.S.S.R.	215	241	251	112	117
Near East	122	135	143	111	117
Africa	165	176	199	107	121
Far East	1 318	1 436	1 559	109	118
Oceania	14	15	16	109	116
North America	179	197	204	110	114
Eastern Europe	75	82	85	109	113
Western Europe[1]	334	351	365	105	109

Source. Population Division of the U.N. "Framework of Future Population Estimates" (E/Conf.13/126).
[1] Including all Germany.

with the fastest rise in Latin America and the slowest in Western Europe. These changes are in line with those which occurred during the past decade (Table VII-1).

The factors determining the level of per caput demand are influenced by so many variables that any long-term estimate is bound to be largely guesswork. The most that can be done is to indicate the direction and order of magnitude of the influence which each main factor may exert.

Changes in Per Caput Income. There are no satisfactory statistics of national income on a world basis, but the growth of world industrial production may serve as a rough indicator of the changes in real income which are likely to affect the demand for farm products sold commercially. Information from about a dozen countries for which data on both are available suggests that real national income increases about two-thirds as fast as industrial production. In underdeveloped countries the ratio may be different, but to the extent that such countries are affected by the demand for export crops, their level of income would be largely influenced by the level of industrial activity in the industrialized countries as well as by domestic levels of economic activity.

World industrial production rose sharply from 1946 to 1951 and subsequently moved upward at a somewhat slower rate (Table VII – 2). From 1950 to 1954 the average annual increase on a per caput basis was about 3 percent for the world as a whole (excluding the communist group of countries), or about 4 percent if the United States too is excluded. These figures would probably be somewhat higher if 1955 were included. If an average increase of 4 percent annually were maintained during the next 10 years there would be an over-all increase of nearly 50 percent in per caput industrial production. Applying the two-thirds rule, this would correspond to an increase of around 30 percent in per caput national incomes. This figure should be taken as no more than an indication of the possible rate of growth and not as a forecast. It would, of course, be attained only if governments are able to prevent major depressions as successfully as in the period since the war.

TABLE VII-2. PER CAPUT CHANGES IN WORLD INDUSTRIAL AND AGRICULTURAL PRODUCTION [1]

YEAR	Industry (Manufacturing and Mining)	Agriculture	Excluding U.S.A.	
			Industry	Agriculture
		Prewar = 100		
1946	100	90	69	81
1947	110	91	76	84
1948	117	95	85	88
1949	116	96	93	91
1950	131	97	102	93
1951	140	98	111	94
1952	141	102	112	96
1953	149	103	117	98
1954	147	100	125	97

[1] Excluding U.S.S.R., China, and Eastern Europe.

Income and Expenditure on Food. The influence of such an increase in per caput incomes on the demand for agricultural products, and particularly for food, would depend on where the increases took place. As people or nations have larger incomes they tend to spend relatively more for other products and relatively less for food, drink and tobacco, though the total amount so spent still increases. This is clear from the expenditure figures for a number of selected countries in Figure VII-1. From a rough graphical analysis of these few observations (Figure VII-1 (b)) it appears that the average proportion of each $100 of the per caput national income spent on food, drink, and tobacco declines from 55 percent for the first $100, and 38 percent for the second, to about 25 percent for the seventh $100, and to 20 percent at $900 and above.[1]

Increases in national income in countries with very low per caput incomes are therefore likely to have a much greater effect upon the demand for farm products than increases of the same amount in higher-income countries. If the efforts for economic development in the less developed countries speed up over the coming decade, it will be of great significance for future increases in the demand for farm products.

Consumption levels of food and other agricultural products will depend, not only on per caput

[1] Analysis of year-to-year changes in the same countries during this period leads to similar conclusions.

FIGURE VII-1a. — Relation between National Income Per Caput and Retail Expenditure for Food, Drink and Tobacco Per Caput (all in U.S. Dollars)

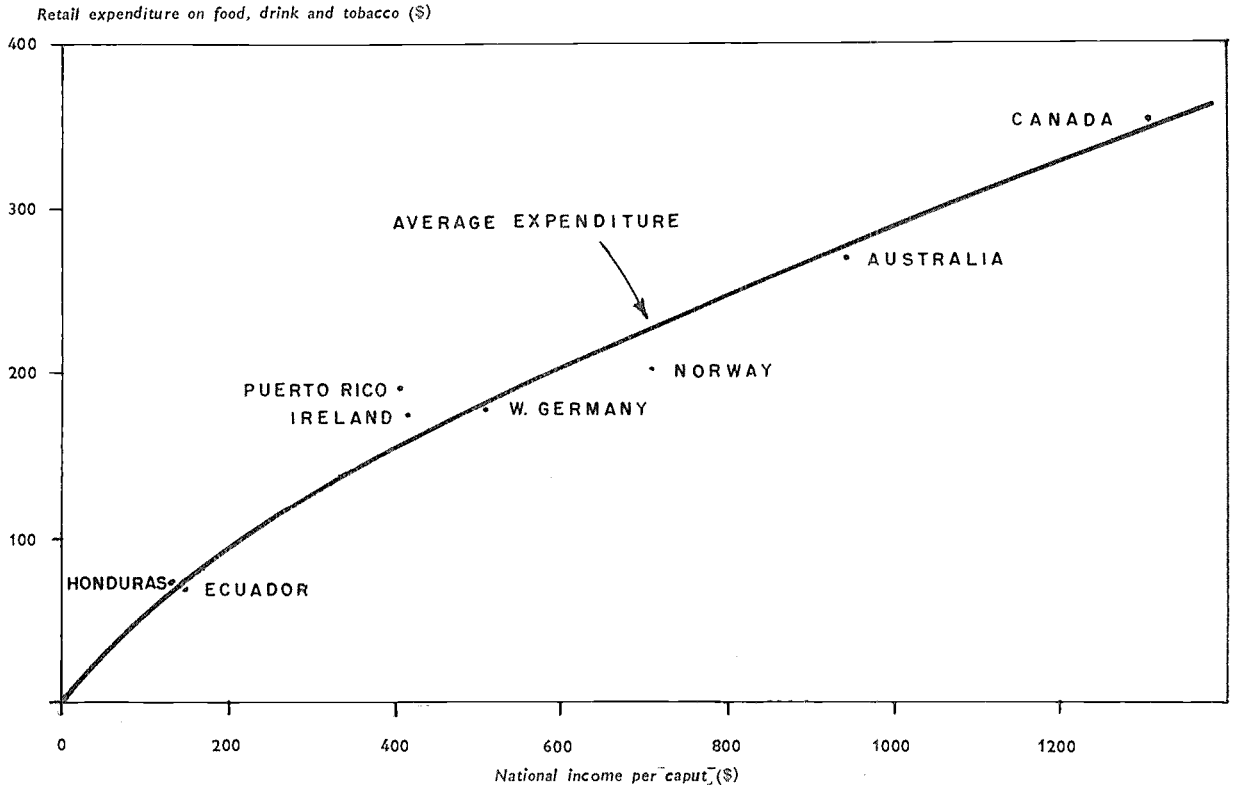
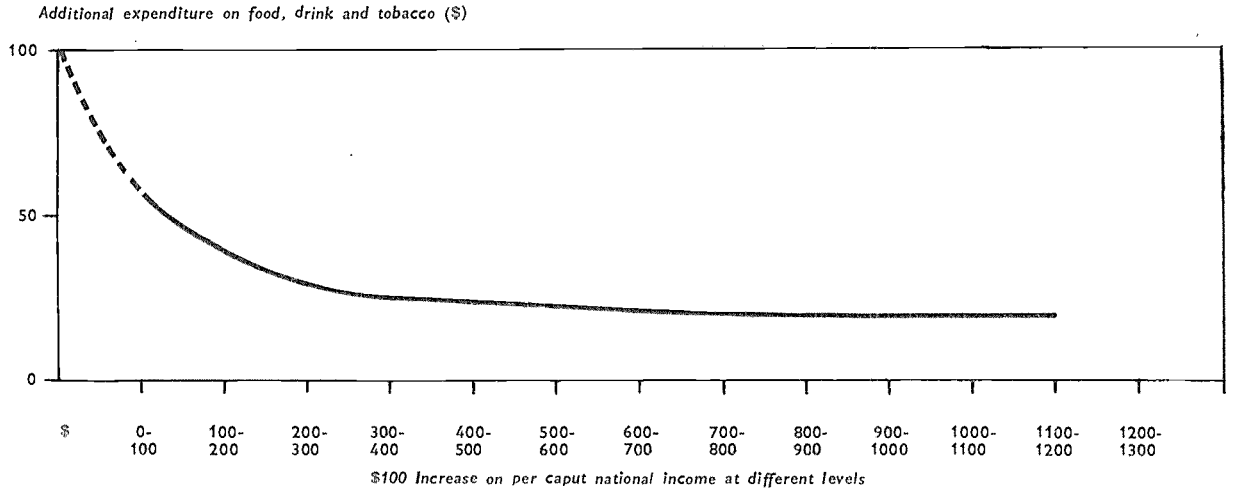


FIGURE VII-1b. — Estimated Amount of each Additional $100 of Income Spent for Food, Drink and Tobacco



real income, but also on their prices to the ultimate consumer. It was shown in Chapter VI that even in the wealthiest countries there is still a considerable price elasticity for food, and there are indications that for the world generally price elasticity for agricultural products and especially for food is appreciably greater than income elasticity. The movement of prices of food and other agricultural products in relation to prices generally is likely to affect the volume of consumption to an

extent at least comparable to changes in income.[1]

Increases in buying power do not affect all food products equally. As was shown in an earlier issue of this report,[2] human consumption of grains and potatoes increases with buying power at low income levels, but tends to decline again at higher levels above about $200 per caput national income. By contrast, the consumption of animal protein, an indicator of the consumption of meat, dairy products, fish, etc., continues to increase up to high levels of per caput national income. Higher consumption of livestock products in turn widens markets for coarse grains and other feeding stuffs. A continuing increase in demand over the period ahead may thus have widely different effects on different food products.

The greater nutritional deficiencies in less developed countries make it particularly important to increase the consumption of protective foods such as livestock products, fruit and vegetables. Nutritional education can contribute to this end. It has been estimated, for example, that in order to meet the modest nutritional levels suggested in the FAO Second World Food Survey, milk supplies in the Near East would have to be increased by nearly twice the percentage necessary in Europe. In all regions a proportionately greater increase of supplies of protective foods than of, e.g., cereals is desirable on nutritional grounds.

Cyclical Changes. The general rising trend of demand may be considerably disturbed by cyclical changes in economic activity. Considerable progress has been made in smoothing out such changes, and great depressions now seem much less likely to occur than formerly. Nevertheless, it must be recognized that the relative stability of the world's economy since the war has been aided by favorable circumstances as well as by deliberate policy. It cannot yet be safely assumed that the long-term rise in incomes and demand will not meet temporary set-backs or even more protracted difficulties.

Measures to Expand Demand and Consumption

Certain conclusions appear to follow from the preceding paragraphs :

The most basic means of increasing the demand for agricultural products would be measures to raise per caput national incomes.

For foodstuffs in particular, the largest increase in effective demand would be obtained if the rise in incomes were concentrated on the poorer groups of consumers, that is to say in the least developed countries, and in the poorer social groups within each country.

Since price elasticity, especially for food, appears to be comparable with and perhaps greater than income elasticity, the most effective way of raising food consumption levels[3] would be measures to reduce retail prices to the consumer.

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[1] A very rough idea of the effects of past changes in the level of world prices and of industrial production on the volume of consumption may be obtained by analyzing the interrelations between indices of agricultural production in Chapter V, of prices in international trade in Chapter VI and of world industrial production presented earlier. Such an analysis suggests that for agricultural products as a whole consumption (assumed for the purpose to be equivalent to production) declined by about 9 percent for each 10 percent rise in prices (with the level of industrial production unchanged), but increased about 5 percent for each 10 percent rise in industrial production (with prices unchanged).

Food and feeding stuffs showed a moderate degree of price elasticity, but a relatively low elasticity of demand with respect to changes in industrial production, used as an indicator of changes in real income. For example, if as suggested earlier, industrial production increased by some 50 percent over the next ten years, a rough calculation suggests that world per caput food consumption might increase by about 4 percent, assuming no change in price levels. Combining this estimate with the population forecasts in Table VII-1, it appears that if prices remain unchanged there might be an increase of 14 to 22 percent in the total world consumption of food over the next ten years. Similar computations suggest, however, that the increase in per caput consumption would be offset if prices increased by about 5 percent, or doubled by a fall of about 5 percent in prices. In the first case the increase in the volume of total consumption might be as low as 10 percent, and in the second it might be as high as 26 percent according to the population forecast used. Larger changes in price levels would lead to correspondingly larger variations in the volume of consumption.

For agricultural raw materials and for beverages and tobacco price elasticity appeared to be lower than for foodstuffs, and income elasticity considerably higher.

These preliminary analyses, however, make no allowance for such factors as the effect of national price policies in modifying changes in world price levels, changes in stocks, or changes in the geographical pattern of industrial production, and should be taken only as indicating possible orders of magnitude.

[2] *State of Food and Agriculture 1954*, pp. 35-37.

[3] The distinction between increases in demand and consumption should perhaps be clarified. An increased demand for foodstuffs caused by higher income may be reflected in higher consumption if prices remain unchanged, or in higher prices if the volume of supplies remains unchanged. An increased consumption resulting solely from lower retail prices

The problems involved in increasing national income and in distributing it more widely have been considered by the United Nations Economic and Social Council, but obviously go far beyond the terms of reference of FAO and are not discussed here. Methods of raising food consumption levels were clearly set out in the report of the Seventh Session of the FAO Conference in late 1953. They fall broadly under three headings :

(i) Measures of nutritional and consumer education ;

(ii) Special distribution schemes gratis or at reduced prices to ensure adequate nutrition to vulnerable groups of consumers ; and

(iii) Measures to reduce the cost of food and other agricultural products to consumers generally.

Action in these directions was recommended by the Conference, but recent reports suggest that in most countries relatively little tangible progress is being made at the present time.

Nutritional and Consumer Education. The demand for particular foods can often be stimulated by measures for educating the public on the nutritional importance of the foods in question and on the ways of preparing them for consumption. The increased use of liquid milk in many western countries has been largely brought about by extensive propaganda on its nutritional importance. Similarly, propaganda to stimulate the use of certain foods as substitutes for others in short supply were adopted during the war with considerable success by many countries, and in a few cases are being continued even now.

Nutritional and consumer education would be of special importance when it is intended to expand the production of foods which are desirable nutritionally but not very familiar to the population. Unless measures are taken at the same time to familiarize consumers both with the nutritional value of these foods and the best ways of preparing them, all efforts to increase their production are likely to be fruitless.

Special Distribution Schemes. Free or subsidized milk distribution to children and mothers, school lunch programs, food distribution to the needy, supplementary grants of foodstuffs to recipients of unemployment insurance or public relief (food-stamp plans) are methods which have been tried or used, with advantage both to the recipients and to the producers of the foodstuffs. Of course the financial resources of individual governments set limits to actions of this kind. Intergovernmental aid for such programs has been supplied internationally for milk (UNICEF), and bilaterally (US surplus disposal for special feeding programs and food packages). There is still ample scope for governments, individually and in concert, to further increase food consumption by these or similar measures.

Reducing Retail Prices. Special schemes of education and distribution, however valuable, are clearly of limited application, and it is in measures to reduce the cost of food to the consumer that the crux of the problem of under-consumption seems to lie. The rigidity of retail prices, by imposing a similar rigidity on consumption levels, has been one factor tending to the build-up of surplus stocks.

A reduction in the retail price of foodstuffs cannot be proposed without considering its effect on the producer's income, as in most countries farm incomes are already low in relation to incomes in other occupations and tending to lose ground. To reduce them further would be undesirable socially and might lead to a fall in farm output. In practice this means that lower retail prices must be obtained by lower marketing costs, or by lower costs of production so that the producer can accept a lower price with no loss of income, or by a combination of both. Increased efficiency and productivity, both in production and distribution, holds the key to increased sales and consumption of agricultural products.

Lower Marketing Costs. The most direct methods of reducing retail prices are those which narrow the spread between prices to producers and at retail. As shown earlier, these margins have tended to widen in recent years. There are instances where high profits are a major factor in making foodstuffs expensive, but more generally it is the outmoded and inefficient way of marketing foodstuffs, with resultant heavy losses through spoilage, or the small volume of trade and high costs per retail unit. This last is specially prevalent in many countries with heavy unemployment or under-employment, with a resulting tendency for too many individuals to set up small retail

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does not therefore imply an increase in the demand for food, except perhaps to the extent that it is obtained by eliminating over-elaborate methods of distribution or processing. This might be regarded as a transfer of demand from services to foodstuffs as such.

shops, thus further dividing the insufficient volume of business. Again many agricultural producers in less advanced countries devote much of their time to retailing, selling their own produce in local markets.

Attention has already been drawn to the increasing interest in producers' marketing organizations, co-operatives or otherwise, which if wisely managed can do much to promote sales and reduce the cost of marketing and even of production. The Milk Marketing Board in the United Kingdom is an outstanding example of such an approach. Endowed with the necessary authority such an organization may re-direct supply flows, assign varying proportions of the supply to different uses and distribute total receipts with a view to achieving a rationalized over-all marketing pattern. In many countries consumers' co-operatives may also have an important part to play.

There are also many opportunities to lower prices by more efficient marketing which do not involve any major re-organization of marketing methods. Mass retailing and self-service, large-size retail units,[1] well organized wholesale produce markets, rational distribution of perishable foodstuffs (milk, fresh fruit and vegetables), are some of the methods which can be used to improve the distribution system in great cities and in more advanced countries. Adequate storage, processing and transport facilities to reduce spoilage, establishing sound and convenient weights and measures, and controlled quality standards and grades are some of the measures more adapted to less developed marketing systems.

In some countries governments can also contribute substantially by removing such obstacles to cheaper marketing as retail turnover taxes or local tolls on basic foods. The provision of market intelligence, crop reporting and forecasting services, and especially the supply of credit to finance storage and to make producers less dependent on local traders are other means by which governments can help in reducing the cost of marketing.

Lower Retail Prices by More Efficient Production and Lowered Farm Prices. The price to producers is as important as the share of the intermediaries in making up retail food prices. In Chapter IV of this report the many technological advances in agriculture, fisheries and forestry and their application have been reviewed. To the extent that modern agricultural methods are spread and agricultural efficiency raised, reductions in producer prices become possible without reducing, and even increasing farmers' incomes. Left to itself, the spread of modern methods and technology is slow, particularly in under-developed areas. In stepping up extension work and rural education, governments can speed the spread of modern technology in still backward areas. This should be coupled with more intensive research, both to evolve still better methods, and to adapt the findings of research in other parts of the world to the particular environmental and human conditions of the country concerned. The importance of increased extension services and research facilities is becoming more widely recognized, and it is perhaps on this side that the most encouraging progress is being made, as will be evident from the review in Chapter III.

The Capital Cost of Improved Methods of Production. In many cases improved methods of production in agriculture, forestry and fisheries require little capital expenditure. Others demand a substantial increase in operating, or fixed capital, and attention was drawn in Chapter VI to the steady rise in the input expenses of agriculture in the more advanced countries. In view of the low incomes of most cultivators and fishermen these increased costs may be an insuperable barrier to greater efficiency, and the provision of additional sources of finance and credit is often an indispensible condition for substantial improvement.

The provision of readily available agricultural credit on terms which can be borne even by the small farmer is a task which in many cases will have to be performed, at least initially, by governments or by public financial institutions. This applies to short-term credit needed for operating expenses like improved seeds, fertilizers and small implements or tools, and still more to medium-term credit for the improvement of livestock, for draft animals, agricultural machinery, buildings or soil improvement. In many conditions

[1] A recent comparison of retailing systems in the United Kingdom, the United States and Canada shows that in the two latter countries there are fewer food shops per thousand of population, with a larger turnover in relation to the labor force than in the United Kingdom. This is a not unexpected consequence of higher incomes and labor costs. However, the United States and Canada have more shops in luxury and semi-luxury trades than the United Kingdom, so that the total number of shops per thousand of population was the same in all three countries. Hall and Knapp, *The Economic Journal*, March 1955.

co-operative credit societies may be the most suitable medium for organizing an adequate supply of short- and medium-term credit. Such societies can in fact perform a dual function, not only in providing credit, but also by bulk buying in reducing the cost of fertilizers, pesticides and equipment to their members. Where the social and cultural conditions for co-operative action have not yet developed, however, governments may themselves need to fill the gap through their own institutions.

THE PROBLEM OF PRICE SUPPORTS AND GREATER FLEXIBILITY OF PRODUCTION

Lack of purchasing power was one main reason for the sudden emergence of surplus agricultural stocks, almost before the last of the postwar shortages had been overcome. Another was the rigidity of the pattern of production, intensified by widespread policies of price support. Adjustments of production to fluctuations in demand cannot in the nature of things be made as quickly in agriculture as in industry. Price supports, however, enabled production to be profitably maintained or even expanded after effective demand had been satisfied, and the unwanted supplies inevitably went to swell the mounting stockpiles.

Price supports are so much a part of the world-wide move towards greater security and welfare that they are unlikely to be abandoned on any large scale. They have given a stability and confidence to farming never before enjoyed, and have been an important factor in the rapid recovery of production after the war. They are justified by the weak bargaining position of the farmers, typically small operators, in relation to the traders, processors and others with whom they have to deal, who normally command much greater financial resources. This is also the justification for the establishment of producers' marketing organizations which to some extent can reduce the need for price supports.

Moreover, if price supports have contributed largely to the accumulation of surpluses they have also been a major factor in preventing the worst effects which might have resulted. The stocks have been securely held under governmental control as part of the machinery of price support, without which it would have hardly been possible to avoid a collapse of farm prices and farm incomes which might well have had serious repercussions on the world economy as a whole.

The growth and background of price support policies were discussed in Chapter II and the problems and difficulties of operating them in Chapter III. In this section further consideration is given to some of the attempts now being made to eliminate the rigidities and other undesirable secondary effects of price supports, without sacrificing their undoubted benefits. This problem is not only an urgent one at the present time, but the development of the food and agricultural situation in the years ahead seems likely to depend in no small measure on the success with it is solved.

Price Supports and Over-production

The possibility that price supports might cause production to outrun demand was foreseen when they were first established in the United States. Provision was made from the beginning for acreage controls and, for some crops, marketing allotments, and these measures have been applied increasingly strongly in recent years. It is on such measures rather than on the somewhat greater degree of flexibility of support prices in recent legislation that the main reliance must be placed for limiting further unwanted production. Acreage controls have been reasonably effective in the past in limiting the over-production of individual commodities, e.g. cotton and tobacco. If, however, there is a general over-production of agricultural products, they may merely shift the problem from one commodity to another. Moreover, they involve an elaborate administrative apparatus, are slow to put into effect, and are naturally purely restrictive in their operation.

An alternative system, adopted in recent years in France for wheat and in the United Kingdom for milk, is to limit the amount of production covered by price supports. In France, price guarantees cover the estimated domestic requirement of wheat for direct human consumption; in the United Kingdom the domestic demand for liquid milk.

Any additional production must be sold for what it will fetch: wheat on the export market or for animal feeding, and milk for manufacture into milk products. Such schemes can probably operate most effectively when the whole output is sold through a central agency. Even then the administration may be complex unless some form of pool price is in force, particularly if production or marketing quotas have to be allotted to individual growers. Such schemes are appreciably less restrictive than fixed ceilings on production and marketings but involved more danger of stimulating unwanted export supplies.

Price Supports and the Pattern of Production

Price supports may throw the pattern as well as the volume of production out of line with market demand. One criticism which has been made of the United States system is that by limiting price supports to a number of products, e.g. wheat, cotton and tobacco, production is attracted towards these commodities and away from others which do not enjoy price supports, e.g. meat, for which demand is increasing and the price elasticity fairly high. Moreover, the price floor under feeding grains to some extent limits the possibility of reducing the cost of producing meat.

Attempts to avoid such rigidities in the pattern of production have been made in, e.g., the United Kingdom and Sweden. To a large extent, the emphasis is put on supporting farm incomes as a whole rather than the prices of individual products. Within the income ceiling price incentives are given now for milk, now wheat, now bacon, etc., according to current national policy or to consumer demand.

The principle of farm income rather than farm price support seems to offer much greater opportunities for flexibility. But it may be difficult to operate, and a recent review of the United Kingdom system [1] suggested that in practice encouragement is sometimes given to commodities already in ample supply rather than to those where further expansion is wanted, e.g. because of the operation of a built-in formula for changes in costs of feedingstuffs.

Price Supports and High Cost Production

In addition to the increased rigidity they impose on agriculture, price supports have been criticised as unnecessarily costly (since all farmers benefit whether they need it or not) and as tending to favor high cost production. Increasingly, therefore, attempts are being made to reduce the costs of production, especially on marginal farms, by subsidizing or otherwise lowering the price of "inputs," e.g. fertilizers, tractor fuel, farm machinery or other equipment (see Chapter III). Or selective subsidies may be given for specific operations, e.g. rearing cattle on marginal hill farms.

Such methods are less expensive to the state than rigid price supports, which tend to maintain prices at the level necessary to keep the less efficient producers in business. They also benefit the consumer, for by reducing production costs they make it possible to set price supports at a lower level. Similar results may be expected from expanded extension services, improved credit facilities and similar measures tending to lower costs of production.

Price Supports and International Trade

Again, price supports have been criticised for the additional obstacles they place on international trade. High support prices may involve limiting imports to avoid a fall in market prices which would increase the liability of the state. Equally they tend to lead to subsidized exports and fears of unfair competition if domestic production exceeds effective demand on the home market at the support price level.

The most interesting recent attempt to limit such interference with the mechanism of normal trade is the system of deficiency payments for cereals recently adopted in the United Kingdom. In effect cereals are sold in the open market in competition with imported cereals, on which there are no restrictions. Any shortfall in the average realized from the support price is then made good by direct deficiency payments from the Treasury to individual farmers.

This system clearly transfers the whole burden of farm price supports from the consumer to the taxpayer. But it has several advantages, for it frees domestic as well as international trade, restores market differentials for differences of quality, and avoids any restricting effect on consumption resulting from high support prices. In addition, the system may perhaps provide a means of extending price supports to perishables, such as fruits and vegetables, though this has not yet been tried. As operated for cereals, however, deficiency payments have been criticised as leading to an unnecessary outflow of currency (probably inevitable if the intention is to liberalize trade), and also as unnecessarily expensive to the state because of the low level of prices received by farmers immediately after the harvest, though these may largely reflect an insufficiency of grain drying and storage facilities, or difficulties in obtaining credit. Moreover, the system of payments to individual growers seems administratively complicated, but might be simplified if sales were centralized through, e.g., a producers' marketing agency. A still more recent scheme in the United

[1] E. M. H. Lloyd in the London *Times*, 20 and 21 July 1955.

Kingdom of deficiency payments for livestock for slaughter seems to involve even more complex methods of payment. In the United States a system of deficiency payments, essentially similar to that in the United Kingdom, is applied to wool with the object of maintaining wool farmers' incomes.

Price Supports in Countries Producing Mainly for Export

Price supports are perhaps most needed in countries producing largely for export because of the wide price fluctuations on world markets, but they are correspondingly difficult to operate. The exporting country has little control over the selling price abroad, and if, as is often the case, agriculture forms a large sector of the total economy large government payments are impracticable.

Buying in by the government or a marketing agency when prices fall below a certain minimum, a typical price support measure, has been sometimes adopted by primarily exporting countries, e.g., as recently in New Zealand for wool. Such methods are likely to succeed if fluctuations in supplies and demand are not excessive, but may otherwise involve a danger of heavy loss, even if the country largely dominates world export supplies.[1] Or, as in the case of Australian wheat, the whole crop may be purchased by the government or marketing agency at a fixed price and sold at different price levels on the domestic and export markets. But the resources available are usually too small to modify for more than a short time any large fall in export values by such measures.

More often, therefore, reliance has been put on alternative methods of income stabilization. The simplest is the equalization fund under which part of the over-average returns in good years are set aside to make up returns to producers in bad years. But for a number of reasons, some of which are discussed elsewhere, such funds have been difficult to operate and there is always a danger that accumulated funds may lose in value at times of general inflation. State marketing agencies could operate in the same way, but since the war have been more often used for raising revenue rather than for supporting prices to growers. Changes in exchange rates, especially in the case of prolonged changes in export price levels, have long been one method of securing greater domestic price stability. A more recent modification has been the system of multiple exchange rates which made possible selective treatment for individual products without necessarily affecting the economy as a whole. Because of the importance of international trade in the economy of countries, however, none of these methods can as a rule be effectively applied without parallel controls on imports.

No entirely satisfactory solution of the problems of countries producing mainly for export seems likely, unless some means can be found of limiting the fluctuations of commodity prices in export markets by international agreement. This question is discussed in the next section.

Price Supports as a Brake on Consumption

The foregoing paragraphs suggest that many of the criticisms of traditional systems of price support ultimately come round in large measure to the danger that, by maintaining high price levels, price supports may limit consumption. This applies, for example, to the periodic need to impose acreage and marketing limitations; to the danger that price controls may divert production resources away from commodities whose consumption could be increased; to the criticism that price supports protect high cost producers; and to the fact that price supports sometimes necessitate restrictions on imports. It applies also to the fairly widespread criticism that support prices based on a parity formula leave no freedom to allow for changes in related production costs resulting from technological improvements. Moreover, as noted in Chapter II, price stabilization as such, by preventing the fall in prices which normally follows a bumper crop, tends to prevent temporary increases in consumption levels which may benefit both consumers and producers. In all these ways traditional methods of price support may tend both to retard improvements in consumption levels and also to increase the risk of surpluses.

Special interest therefore attaches to the above modified systems of price support (and alternative means of aiding farmers) which, by lowering production costs, enable support prices to be set at a lower level or which, as in the case of deficiency payments, combine price supports with the mechanism of the free market.

[1] The most dramatic example was the destruction in the nineteen-thirties of excess stocks of Brazilian coffee which had accumulated under the combined influence of a series of bumper crops and a world depression. Earlier, however, a collapse of coffee prices was successfully countered in Brazil by buffer stocks (partly financed from abroad) in 1907-14 and again immediately after World War I.

In considering the influence of price supports on consumption levels, however, some other considerations must be borne in miud. Particularly important is the fact that not all agricultural products have a high degree of price elasticity. Sales of meat and other livestock products might well be increased appreciably by support methods which permit lower and more flexible support prices. But at least in Western countries this does not apply to wheat which has a very low price elasticity when used for human consumption, and as shown in Chapter V, wheat is in fact the only commodity where stocks have so far risen to heights entirely unprecedented in time of peace. Special methods of disposal may therefore be necessary to deal with surpluses of products with little price elasticity of demand.

The possibility of using such stocks to speed up economic development in under-developed regions is discussed in a later section. Another possibility is sales at two price levels. For example surplus potatoes have been sold at low prices by the United Kingdom Ministry of Food and surplus skim milk powder by the United States Commodity Credit Corporation for use as stock-feed. In effect, this means transforming a product with a low price elasticity of demand into one with a higher elasticity. Before the war French wheat exported for stock feed was dyed an unattractive color to prevent supplies finding their way back into normal trade, and the same method has been used for disposing of surplus potatoes for stock feed in the United Kingdom. Similar safeguards may be possible with other products and may permit two price sales to be more widely used for surplus disposal both on domestic and export markets. Other means may also be found of usefully disposing of surplus supplies, e.g for manufacture.

It may be objected that two such price systems abandon the principle of price supports. To the extent, however, that surpluses have resulted from unusually heavy crops, production costs per ton are lower and farmers can therefore accept a lower price without loss of income. How far two price systems may be useful must depend on conditions in each country; they will normally be used cautiously and only as a last resort.

If the cost of price supports is to be kept within reasonable limits, some control of the supplies reaching the market will often be necessary, and any such restriction is bound to have a limiting effect on consumption. Such limitations are minimal if production does not as a rule diverge widely and over a long period from the level of effective demand at a reasonable, but not inflated, price. Restrictions on supplies may then be limited to the carry-over of supplies from heavy to light crop years to iron out seasonal fluctuations due to the weather. This was the concept of the " ever-normal granary " in the United States and of the system of domestic reserve stocks now being established in India.

But it is clearly impossible to insure completely against the " danger " of a series of good harvests and an excessive accumulation of stocks. And it is perhaps worthy of note here that the danger of surpluses, to some extent inherent in support prices, may be avoided by the alternative method of stabilizing farm incomes through an equalization fund, already mentioned in connection with exporting countries. This method can also be used in non-exporting countries, as in the United Kingdom for wool.

Finally, the influence of price supports on retail prices and consumption levels should not be exaggerated. As shown earlier, on average the price received by the producer is only about half the final retail price paid by the consumer and the cost of marketing, normally still more inflexible than the farm price even under systems of price support, is thus equally important in its effect on retail prices and consumption levels.

Price Supports; Tentative Conclusions

It is too soon for any final judgement on the success of the various modifications of the basic concept of price support now being tried. The most suitable method is in any case bound to vary from commodity to commodity and from country to country. Certain tentative conclusions, however, seem possible :

(i) Systems which put primary emphasis on maintaining farm incomes as a whole are likely to give greater flexibility of production than those which maintain more or less fixed support levels for each single commodity.

(ii) Measures aimed at reducing production costs, e.g. fertilizer subsidies or grants for specific operations, may make possible a reduction in support price levels without reducing farm incomes, which would result in a net economy to the state and which would also benefit consumers.

(iii) The danger of building up surpluses, to some extent inherent in traditional methods of price support, may be reduced by systems which do not preclude the operation of the free market, such as deficiency payments. The same is true of the method of stabilizing farm incomes through an equalization fund. These methods may of course have other drawbacks which make them unsuitable in any particular case.

(iv) For commodities with a low price elasticity special disposal measures, e.g. two price systems, may sometimes be necessary to prevent an excessive accumulation of stocks after bumper harvests.

THE STAGNATION AND PRICE INSTABILITY OF INTERNATIONAL TRADE IN AGRICULTURAL PRODUCTS

It was pointed out in Chapter V that the volume of world trade in agricultural products recovered more slowly after the war than did agricultural production, and since 1950 has shown no further expansion. In contrast, world trade as a whole has continued to grow vigorously throughout the postwar period. Trade in agricultural products is thus less important in relation both to total agricultural production and to the total volume of world trade than it was before the war.

It is doubtful if this general tendency is likely to be reversed. There appears to be a long-term trend for production, both in industry and agriculture, to expand more rapidly than international trade, and with the rise in the levels of both domestic production and consumption in under-developed countries this trend may be accelerated. The attempts of many countries to attain a greater degree of self-sufficiency in food and agricultural raw materials, whether for security, social or balance of payments reasons, also work against the expansion of agricultural trade. So too does the policy of many countries to import capital goods in preference to consumer goods. The increasing substitution of natural by synthetic raw materials is yet another factor limiting the growth of trade in agricultural products.

These factors are likely to continue to retard the expansion of international trade in agricultural products, but they do not mean that no further expansion is possible. There are moreover a number of factors which may work in the opposite direction, e.g. the relaxation of international tensions and the solution of problems of international payments would weaken some of the main incentives to greater self-sufficiency; the growing need of under-developed countries for foreign exchange is likely to act as a strong stimulus to them to expand exports; rising consumption levels in under-developed and tropical countries may gradually make them increasingly large importers of the products of temperate zones.

Again, the trend is not the same for all agricultural commodities. As shown in Chapter V, import requirements of wheat which rose sharply after the war are now gradually declining, and trade in rice and in vegetable oils and oilseeds seems to have settled down at a lower level than before the war, but exports of other commodities including fruit, sugar, coffee and, until recently, rubber continue to grow. Moreover the volume of trade in other products, e.g. beef and cocoa, could be increased if larger export supplies were available. By shaping their production to the trends of world demand, exporting countries might do much to expand sales.

Another line of approach is the removal of obstacles to trade. These, however, are bound up with the general economic, social or strategic problems of importing countries and range beyond the sphere of this report. There are also more purely agricultural factors, such as improvements in grading and packing, or the reduction of wastage in transit which would often repay increased attention. Still more important, measures to reduce production and marketing costs of export products would often make it possible to export profitably at lower price levels. Industrial expansion was largely achieved on this basis. Competitiveness in price is particularly important for raw materials suffering from the inroads of synthetic substitutes into their markets.

The extreme instability of prices of agricultural products on international markets is a severe handicap to importing and perhaps still more to exporting countries. Price fluctuations are especially marked for raw materials and beverages. International prices of certain foodstuffs have attained a greater degree of stability than before because of the operation of domestic support prices (particularly in the United States), of long-term contracts, though these are of less importance than in the immediate postwar years, and of international commodity agreements. But these stabilizing influences have scarcely affected the situa-

tion of the majority of agricultural products, and price fluctuations of agricultural raw materials since World War II have been at least as extreme as in any former period.

Postwar experience has shown how difficult it is to achieve progress in this field, but tangible if limited progress has been made. The need for greater price stability, and perhaps also the difficulty of attaining it, are likely to be no less in the coming than in the past decade. Progress may perhaps best be achieved on a gradual, commodity by commodity basis, as foreshadowed in the recent FAO sponsored international consultation on price stabilization of olive oil, and the forthcoming consultations for rice. Where international commodity agreements on the lines of those for wheat and sugar are not feasible, periodic international consultations on the outlook for export supplies, import requirements, price policies etc. for specific commodities would in themselves assist in securing greater stabilization. International agreement on the management of national stocks might be still more effective. It may be, even, that the next decade will see some attempts at more radical solutions, e.g. by the operation of internationally controlled and financed buffer stocks. A major difficulty in the past has been agreeing on basic price levels in international commodity agreements, e.g. for wheat, and one possible means of progress might be to attempt by international agreement to limit the degree of price movement, up or down, in any one year or shorter period, e.g. by a system of export and import quotas, or by the agreed management of national stocks or an international buffer stock.

The greatest threat to the stability of international prices in the years ahead lies in the huge accumulations of surplus stocks of some agricultural products which overhang the world's markets. Particular importance therefore attaches to the continuance of international consultations on stocks disposals and of the restraint so far shown by the principal countries holding surplus stocks in placing them on international markets. Here the internationally agreed FAO principles for surplus disposal can be of outstanding value in preventing a collapse of prices of the kind which occurred between the wars.

FARM INCOMES AND PRODUCTIVITY

Changes in the balance between agricultural and other prices during the war and immediate postwar years lifted farmers out of the depression of the 'thirties. Farm price and income support policies have given them a greater degree of economic security than ever before. Except in a handful of countries, however, these developments have not given the rural community incomes commensurate with those in other occupations. Nor have they enabled farm incomes to keep pace with the general rise in national incomes since the war. In most countries the agricultural population is tending to lose the relative gains achieved in the early postwar period.

Price changes, as they affect the agricultural producer, have been discussed in the two preceding sections. Ultimately, however, income levels depend very largely on the level of labor productivity, and unless output per man in agriculture increases at least as fast as in other occupations, the relative economic position of the farmer is likely to continue to decline.

The technical advances in agriculture summarized in Chapter IV offer opportunities for a rapid increase in the output per man in agriculture. The limited data available, set out in Chapter VI, suggest that at least in some of the more advanced countries advantage has been taken of these opportunities, and that in these countries the growth of labor productivity in agriculture has been fully comparable with that in industry.

But technical advances cannot lead to increased output unless conditions are favorable for putting them into practice. This means first that the knowledge of the improved methods must be made available to farmers through the extension and advisory services, and that credit or other financial resources for any necessary additional investment is available. These points have already been discussed. It means also that remunerative outlets must be available for any additional supplies produced, and this too has been considered in a world context in the section on the likely growth of demand.

In any one country, however, the size of the market for agricultural products depends not only on the general level of economic activity. It depends also on the relative size of the population engaged in agriculture and in other occupations. For example, if in an industrialized country 10 percent of the population work on the land, they have the opportunity of raising their output to the point where each farm family can feed itself and nine other families in urban occupations. At the other extreme, in an under-developed country with 75 percent of the population engaged in agriculture, there is only one-third of an urban family

to provide a market for each farm family. This imposes a very low ceiling on the possible expansion of agricultural output per man.

This obviously is a grossly over-simplified illustration. It leaves out of account the export market. It ignores also the possibility of raising production to improve the food consumption level of the farm population itself, often woefully inadequate in under-developed countries. Nevertheless it does bring out a general principle of very great importance.

The conclusion, and it is not of course a new one, is that progress in industry and agriculture are closely linked, and that an expansion of industrial activity in under-developed countries is an essential precondition for any substantial advance in agricultural productivity and in turn of the prosperity of the farm population. Increased investment in non-agricultural fields may thus be the most rapid means of improving the lot of the farmer.

There is the further point that in under-developed countries there is often a great density of rural population, so that the average land area available for cultivation by each farm family is too small to keep it fully occupied. The result is widespread rural under-employment, unless there are opportunities for part-time work in other occupations. In such circumstances it follows that for any real improvement in the economic condition of the farm population there must be a decline not only in the percentage of the population engaged in agriculture, but also in their absolute numbers. Otherwise the average size of farms cannot be raised to an economic level. This necessity forms, as it were, a "sound barrier," through which it is extremely difficult for an under-developed country to break, and increasingly so in view of the accelerating growth of population in such countries with the improvement in health services.

The strong measures which most governments have taken over the past decade to increase their levels of food production and to develop agriculture, especially in under-developed countries, are now beginning to bear fruit and to show up in substantial increases in production. In some countries, such as Greece and India, the expansions in production have been remarkable, and in the latter country have led to declining farm prices and difficulties in moving the increased supplies into consumption. This points to one interesting possibility. Under-developed countries have chronically been faced with a shortage of capital. In the efforts to finance their economic development they have often had to hold back on their domestic financing of new development in order not to create an inflationary situation. In other cases, as in some Latin American countries, they have had to cut back their development programs to reduce inflationary pressure. Increasing food supplies may, however, change the situation and create the possibility of higher levels of domestic investment without creating inflation. Under-developed countries might well watch this situation and consider whether increased food supplies would enable them to expand their levels of investment without creating undue inflationary pressures. Expansion in food production in under-developed countries may thus in itself provide them with additional possibilities for more rapid economic development.

In addition, the surplus supplies in highly developed countries can themselves be used to finance a more rapid rate of economic development, if supplied to under-developed countries under proper terms and with adequate safeguards. The principles which apply to these uses of surplus food, and the safeguards that need to be maintained to assure increased economic development without depression of farm incomes have been explored in a recent FAO study. [1]

CONCLUSION

The problems which lie ahead and the guidance which experience in past years may give in dealing with them have been discussed under four separate headings. But it is perhaps worth stressing in a final note how very closely problems in agriculture are interlinked. To quote only one example, a reduction in the cost of agricultural production through greater efficiency may contribute towards an increase in consumption levels, to reducing the burden of price supports, to the expansion of world trade in agricultural products (particularly in competition with synthetic substitutes) and to an improvement in farm incomes.

The problems which have been discussed are small in comparison with those which faced the world a decade ago, when the agriculture of a large part of the world lay in ruins and millions of mankind were in danger of starvation. For

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[1] *Uses of Agricultural Surpluses to Finance Economic Development in Under-developed Countries — A Pilot Study in India* — Commodity Policy Studies No. 6, June 1955.

all that today's problems may be even more difficult of solution. Those of the immediate postwar years were of an emergency nature, and all men and all nations could co-operate without serious reservation to overcome them. Those which now face us inevitably involve a greater conflict of interests, and agreement and co-operation, both within each country and internationally, are consequently more difficult to secure.

Almost for the first time since 1945, however, the majority of governments have time and elbow room in which to formulate their policies. The basic problems are still there — undernourishment, low farm incomes, heavy pressure of rural population, and others — but on the whole governments can take a longer-term view than before without being unduly preoccupied with pressing day-to-day difficulties, such as inflation, trade gaps and shortages of essential supplies for agricultural development. Progress has been uneven, and while some countries are still struggling with these difficulties, others, further ahead, are already laying down their long-term plans. But this unevenness is in itself an advantage. It enables an assessment to be made, as has been attempted in the preceding pages, of the practical merits and de-merits of the various policies adopted by those countries which have progressed furthest, and thus provides guide-posts for the others. It is in learning from previous experience, and in avoiding past errors, that the best policies will be discovered for the future development of agriculture, forestry and fisheries.

PART TWO

A TEN-YEAR REVIEW AND SHORT-TERM OUTLOOK BY COMMODITIES

WHEAT

Developments in Production and Trade

The world wheat economy over the past decade has passed through three phases. In the initial period, lasting through 1947/48, wheat production, owing to the effects of the war, prolonged by some bad seasons, was inadequate to the point of scarcity. During these years it was necessary to maintain the system of international allocation of export supplies created in wartime by the Combined Food Board and later continued by the International Emergency Food Council. In the second period, lasting through 1951/52, world production gradually increased and though world import requirements remained at high levels, exportable supplies were large enough to meet the effective demand. In the third — and present — period supplies have become excessive.

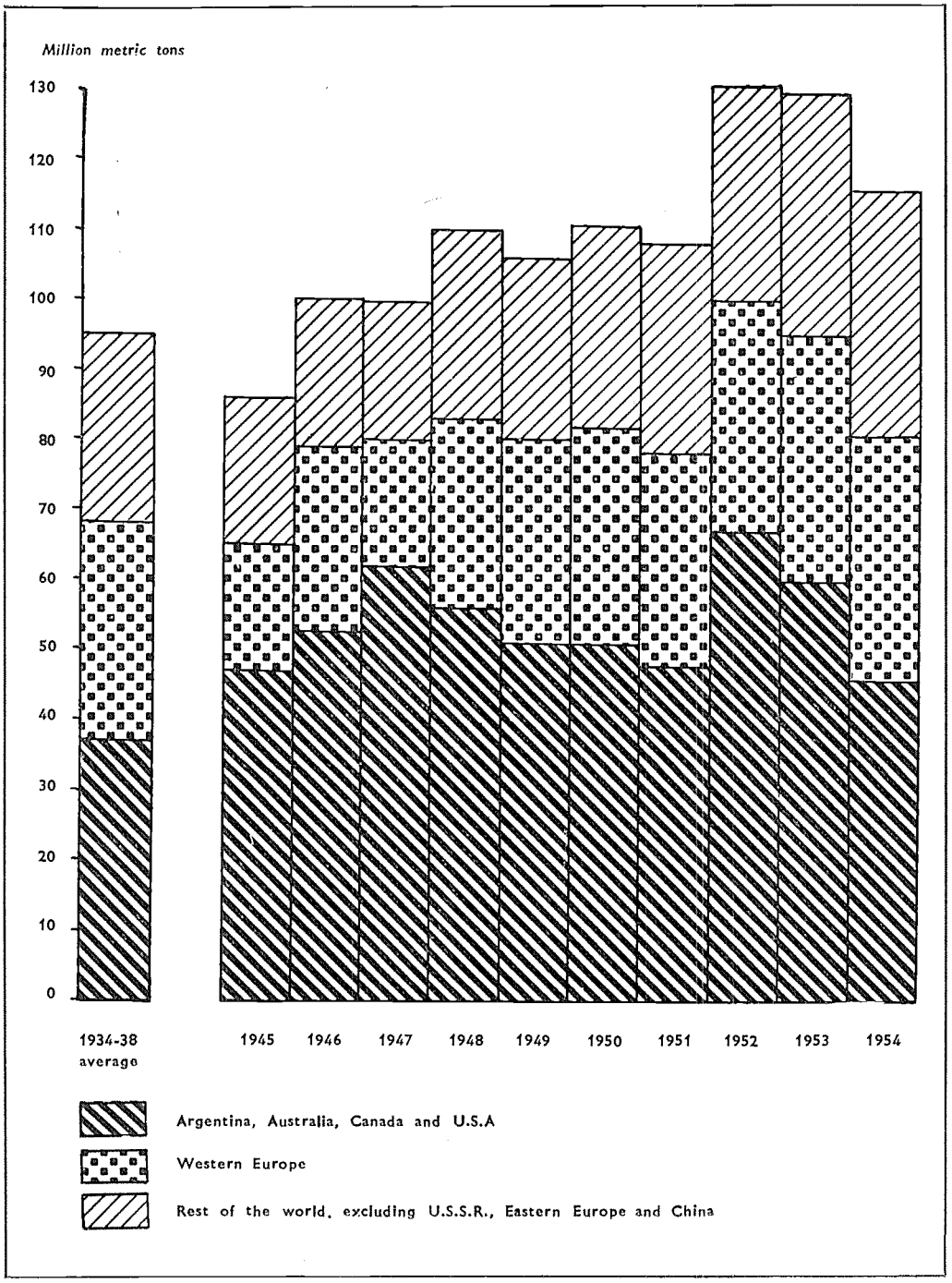
On the demand side, the postwar situation presented striking changes, some of which persisted even after the immediate scarcities had been overcome. Many traditional importing countries emerged with higher deficits owing to population growth and reduced production. Some countries, previously surplus or self-sufficient in wheat, required additional supplies to feed increased populations and to satisfy the shift in consumer preference to wheat from other grains, a shift associated with increasing standards of living and urbanization. Finally, the territorial and political changes deprived some importing countries of important sources of wheat and other grains, which were formerly part of their national territories, or with which they had close political or economic connections. Import requirements, though fluctuating, have thus consistently been at substantially higher levels than in prewar years.

Western Europe, the main importing region, did not restore its prewar level of production until 1950/51. In some years there were abnormal deficits in France, Italy and Yugoslavia due to crop failures, while Western Germany, which is considerably more urbanized than the prewar Reich, and which formerly received substantial quantities from Eastern Germany, has become one of the world's largest wheat importers.

Large new import demands for wheat also developed in Asia because of reduced crops of food grains, greatly curtailed supplies of rice and the needs of growing populations. The increased Far Eastern need was not fully met in the first postwar years, owing to the high demands from all other importing regions. This situation persisted even after recovery elsewhere, imports not reaching their peak until 1951/52. India imported heavy quantities in several years. Japan, now cut off from its former sources of supply of rice and other grains in neighboring countries, and with a considerably increased population, became and still is one of the world's largest wheat importers. The remaining regions, though representing a small fraction of world import needs, also demanded increased quantities.

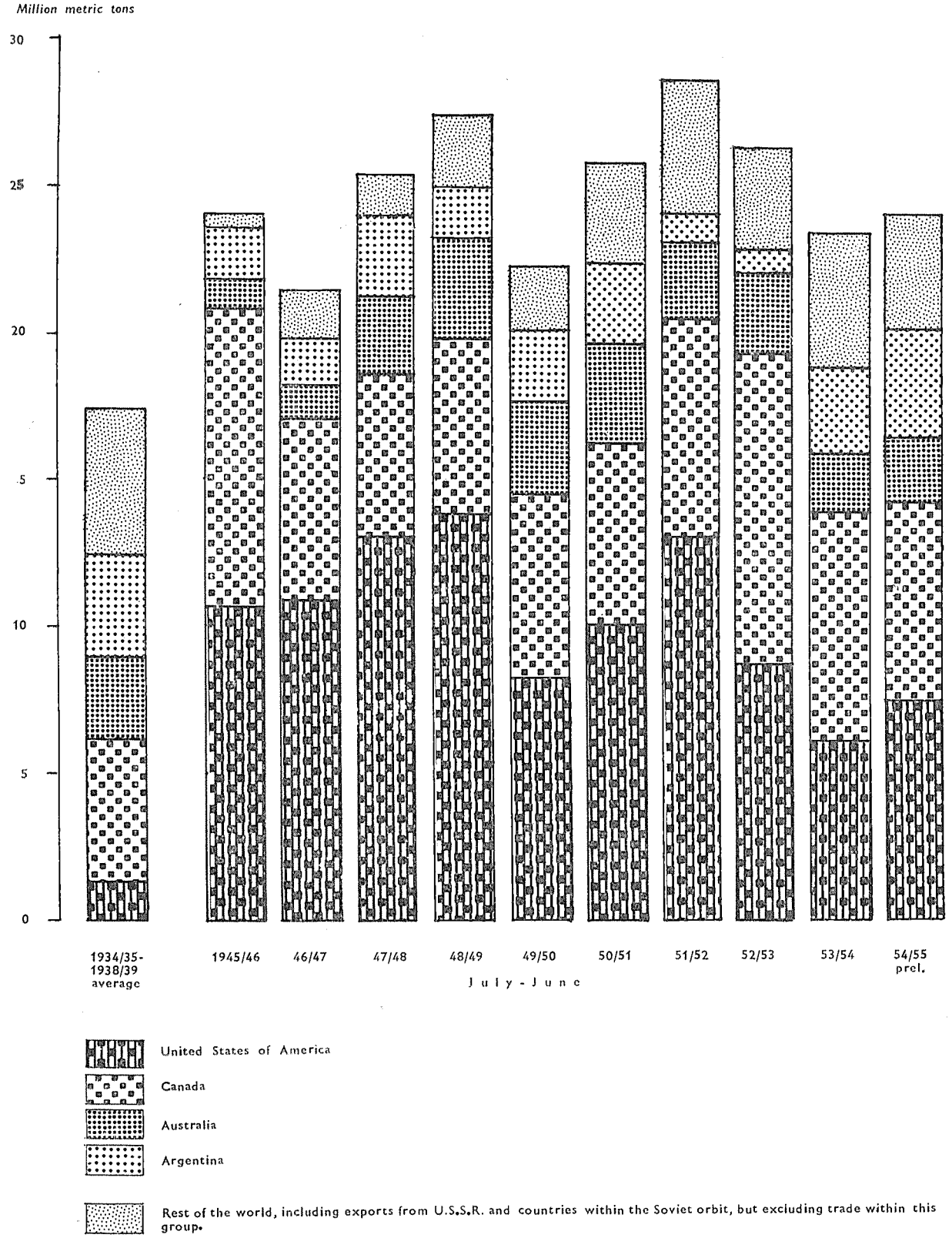
These high demands were met mainly by increased production in North America, notably in the United States, where a run of favorable seasons and expanded acreage under a system of high crop supports had brought about a large expansion. The expansion in the United States was large enough not only to supply a greatly increased domestic usage, but also to make the country the world's largest wheat exporter over the greater part of the postwar period. Canada also grew more wheat both during and after the war and increased its exports to levels higher than those of the 'twenties. In Argentina and Australia, shortages of labor and farm requisites and some seasons of drought reduced production during and immediately after the war, and these two suppliers did not immediately regain their prewar level of exports. In fact, in Argentina wheat production was not firmly restored until 1953, but Australia was able to maintain consistently high exports from 1948 to 1953. These four exporting countries were the source over most of the postwar period of about 90 percent of world exports. Very little wheat has been supplied by the remaining export sources. In this respect there are close similarities in the two postwar periods. After

FIGURE C-1. — World Production of Wheat, 1934-38 Average and 1945 to 1954



both wars there has been an increased dependence on the four major exporters, and particularly on North America, though more pronounced in the period after World War II, and in both periods there has been a contraction in the exports of the secondary suppliers, notably the U.S.S.R. and the countries of Eastern Europe. By the 'thirties the latter group had recovered to a point where they were supplying between a quarter and a third of world exports, while by the end of the present decade, even with the addition of exports from France and Turkey, their proportion had grown to only one-fifth. The growth of population, increasing consumption and profound changes

FIGURE C-2. — World Exports of Wheat and Wheat Flour (wheat equivalent), 1934/35-1938/39 Average and 1945/46 to 1954/55



in the organization of agriculture make it unlikely that the eastern group will recover their former prominence; in fact, in most postwar years one or more countries in this group have been in need of imports.

TABLE C-1. END-OF-SEASON STOCKS OF WHEAT IN THE FOUR MAJOR EXPORTING COUNTRIES

YEAR	Argentina 1 December	Australia 1 December	Canada 1 August	United States 1 July	Total
	Million metric tons				
1924-28 av.	0.5	0.2	1.4	3.1	5.2
1929-33 av.	0.5	0.4	4.1	8.9	13.9
1934-38 av.	0.3	0.5	3.3	4.3	8.4
1945	2.2	0.3	7.0	7.6	17.1
1946	1.2	0.5	2.0	2.7	6.4
1947	1.1	0.4	2.3	2.3	6.1
1948	2.0	0.7	2.1	5.3	10.1
1949	1.2	0.5	2.8	8.4	12.9
1950	0.2	1.2	3.1	11.6	16.1
1951	0.5	0.5	5.1	10.8	16.9
1952	0.1	0.5	5.9	7.0	13.5
1953	2.0	1.0	10.0	15.3	28.3
1954	1.6	2.6	15.9	24.5	44.6
1955 prel.	...	2.5	12.8	27.0	...

Sources: Official sources as far as available; Food Research Institute; USDA; Canadian D.B.S.; and FAO.
... Not available.

By 1950/51 wheat production in countries other than the four main exporting countries had recovered its prewar level. The prospect of overexpansion in world wheat supplies had become evident before this and had led the United States to introduce acreage restrictions for the 1950/51 crop and to schedule them again for 1951/52. In the latter years, owing to the Korean crisis, the restrictions were withdrawn before the crop was entirely sown and the high world demand of that year resulting from a stocking demand associated with the Korean war and with low domestic crops in some importing countries, particularly India, postponed the emergence of surpluses. In 1952/1953, however, bumper crops in the four major and in some of the minor exporting countries, and a shrinking import demand following good European crops, produced large surpluses. In this one year end-of-season stocks in the four major exporting countries were increased from 13 to 28 million metric tons. Production was maintained at about the same level in the following year and stocks were increased to 45 million tons, an unprecedented level equivalent to about twice the volume of recent annual world exports. In 1954/55, supplies for export and carry-over were at record levels and, despite a poor Canadian crop and curtailed production in the United States following the reintroduction of acreage restrictions, it appeared doubtful that the total end-of-season accumulation would be significantly reduced. A further instalment of acreage restrictions in the United States for the 1955/56 crop is expected to bring new crop supplies in that country into line with anticipated disappearance and possibly to reduce stocks slightly. However, since world crop prospects for 1955 appear to be good, heavy stocks will again be carried into 1956/57.

The developments in production, trade and stocks and the changes in the pattern of exports and imports are summarized in Tables C-1 to 4.

TABLE C-2. WHEAT PRODUCTION; 1945-1954 AND PREWAR AVERAGE

COUNTRY OR REGION	1934-38 average	1945	1946	1947	1948	1949	1950	1951	1952	1953	1954
	Million metric tons										
Argentina	6.6	3.9	5.6	6.5	5.2	5.1	5.8	2.1	7.6	6.2	7.5
Australia	4.2	3.9	3.2	6.0	5.2	5.9	5.0	4.3	5.3	5.4	4.5
Canada	7.2	8.7	12.3	9.3	10.5	10.1	12.6	15.0	18.8	16.7	8.1
United States	19.5	30.1	31.4	37.0	35.2	29.9	27.7	26.7	35.3	31.8	26.4
Total 4 countries	37.5	46.6	52.5	58.8	56.1	51.0	51.1	48.1	67.0	60.1	46.5
Western Europe	30.8	18.2	26.1	17.7	27.9	30.1	30.6	30.2	32.6	35.1	35.2
Near East	9.6	6.5	8.5	7.6	10.8	9.0	10.7	11.9	13.3	15.7	13.3
Far East [1]	12.1	11.8	10.3	9.2	10.5	11.4	12.0	12.1	11.0	11.5	13.4
Others	4.6	3.3	3.5	5.0	5.5	5.6	6.2	5.9	6.6	7.5	8.5
WORLD TOTAL [2]	94.6	86.4	100.9	98.3	110.8	107.1	110.6	108.2	130.5	129.9	116.9

[1] Excluding China and Manchuria.
[2] World, excluding U.S.S.R, Eastern Europe, China and Manchuria.

TABLE C-3. WHEAT AND WHEAT FLOUR EXPORTS; 1945/46-1954/55 AND PREWAR AVERAGE

COUNTRY	July - June										
	1934/35-1938/39 average	1945/46	1946/47	1947/48	1948/49	1949/50	1950/51	1951/52	1952/53	1953/54	1954/55 prel.
	Million metric tons, wheat equivalent[1]										
Argentina	3.3	1.9	1.7	2.8	1.7	2.4	2.8	0.9	0.8	3.0	3.5
Australia	2.9	1.0	1.3	2.6	3.3	3.1	3.5	2.7	2.7	1.9	2.5
Canada	4.8	10.2	6.2	5.6	6.1	6.3	6.1	9.4	10.7	7.8	6.8
United States[2]	1.3	10.7	10.8	13.1	13.8	8.2	10.1	13.0	8.7	6.0	7.4
Total 4 countries	12.3	23.8	20.0	24.1	24.9	20.0	22.5	26.0	22.9	18.7	20.2
Others	5.2	0.2	1.3	1.4	2.4	2.2	3.2	2.5	3.4	4.6	4.8
WORLD TOTAL[3]	17.5	24.0	21.3	25.5	27.3	22.2	25.7	28.5	26.3	23.3	25.0

[1] The following extraction rates have been used in converting flour to wheat equivalent: Argentina 70 %, Australia 72.0 %, Canada 72.6 %, United States 71.5 %, other countries 75.0 %.
[2] Figures include exports under the various United States foreign aid programs, and shipments to territories and possessions, but exclude exports of flour made from Canadian wheat imported for milling in bond.
[3] Including exports from U.S.S.R. and countries within the Soviet orbit, but excluding trade within this group.

TABLE C-4. WHEAT AND WHEAT FLOUR IMPORTS; 1946/47-1953/54 AND PREWAR AVERAGE

REGION	July - June								
	1934/35-1938/39 average	1946/47	1947/48	1948/49	1949/50	1950/51	1951/52	1952/53	1953/54
	Million metric tons, wheat equivalent								
Western Europe	[1]12.5	12.4	17.3	16.8	12.6	12.9	14.4	13.8	12.0
of which:									
Germany, Western	[1]1.3	2.2	3.6	3.3	2.4	2.4	2.3	2.3	2.4
Italy	0.7	1.3	2.4	2.3	1.2	1.3	1.8	1.2	0.6
United Kingdom	5.8	4.6	5.3	5.7	4.7	4.2	4.9	4.7	3.9
Asia	1.9	3.7	3.8	5.3	5.6	5.2	7.9	5.6	6.1
of which:									
India	...	...	1.3	2.0	1.7	2.1	4.1	1.4	0.7
Japan	0.3	0.7	1.0	1.6	2.0	1.6	1.7	1.2	2.5
Others	3.2	4.4	3.8	4.3	4.6	5.8	6.6	6.5	5.4
of which:									
Brazil	1.0	0.9	0.6	0.8	1.1	1.4	1.4	1.4	1.6
WORLD TOTAL	17.6	20.5	24.9	26.4	22.8	23.9	28.9	25.9	23.5

[1] Prewar average is the estimated quantity received by present territorial area from all sources including other parts of prewar Germany.
... Not available.

Marketing and Price Developments

Government intervention in the production, pricing and trading of wheat, already introduced on a wide scale during the 'thirties, became much more far-reaching during the war and postwar years. The objective during and after the war was mainly to maximize production; later other motives, notably the support of farm income, promotion of economic development and protection of the balance of payments, became prominent. The measures taken have usually included guaranteed prices to farmers and control of exports or imports. In general, government production policies have been expansionist and have been allowed to operate in individual countries irrespective of price and supply developments in other countries. With the development of surpluses,

the need for policy adjustments became evident and, recognizing this, a few countries have modified their policies, reducing price supports to farmers and limiting the quantities of wheat to which they are applied. In some importing countries also, there have recently been relaxations in government control of imports, in response to the larger supplies and wider distribution of export wheat and to the easing of hard currency difficulties, but guaranteed prices to domestic producers have generally been retained. In exporting countries, export sales are generally made by state marketing agencies, which either handle all purchases from domestic producers, or stand ready to take over wheat offered them. These agencies, by means of stock-holding and orderly marketing, have prevented a disruption in world prices which might otherwise have occurred after the large harvests of 1952 and 1953.

International trade has been characterized by a wide use of bulk contracts administered by governmental or semi-governmental agencies. Over half of the wheat entering international trade in the years 1949/50 to 1952/53 and a substantial proportion of the exports in the past two years have moved under the terms of the International Wheat Agreement (IWA), while much of the remainder has moved under bilateral inter-governmental contracts, frequently as part of comprehensive trade agreements or barter transactions. Currency considerations rather than price have often determined the source and destination of wheat movements and have been responsible for much of the variation in prices that has ruled over the period.

In these conditions of insulated national markets and multiple pricing in export markets, it is difficult to speak of a " world " price in the earlier sense of the term. During the term of the first International Wheat Agreement, there were broadly three export prices, namely, in ascending order : the price for IWA sales, in practice the maximum of the IWA range ; the price for non-IWA sales, usually determined by the domestic price in the United States ; and the price for wheat from non-dollar sources which usually included a non-dollar premium. After 1952/53, however, with the advent of surpluses and the lessening of the dollar shortage, prices declined and the differentials were largely eliminated. The price for IWA sales declined below the maximum of the renewed Agreement and the non-IWA price dropped to the IWA level. The United States open market price, which continued to be supported by the farm crop loan arrangements, lost most of its significance as an export price and the non-dollar premium disappeared. Except in Canada and Australia, where the prices received by producers are set below the price obtainable from exports, countries exporting wheat have found it necessary to pay

TABLE C-5. WHEAT PRICES IN CANADA AND THE UNITED STATES ; 1945/46-1954/55

YEARS BEGINNING JULY	Canada			United States			Subsidies for IWA exports Gulf ports	
	Prices received by farmers (average all grades) [1]	No. 1 Northern Manitoba		National av. support prices (at farm)	Prices received by farmers (av. all grades)	Hard Winter No. 2 Kansas City cash (weighted average)	lowest	highest
		Contract exports [1 2 3]	Other exports [1 3]					
	Can. $ per bushel			*U.S. $ per bushel*			*U.S. cents per bushel*	
1945/46	1.83	1.40	...	1.38	1.49	1.60	—	—
1946/47	1.83	1.46	2.27	1.49	1.90	2.09	—	—
1947/48	1.83	1.43	2.61	1.83	2.29	2.52	—	—
1948/49	1.83	1.87	2.14	2.00	1.98	2.19	—	—
1949/50	1.83	1.87 / 1.77	1.99	1.95	1.88	2.16	49	67
1950/51	1.85	1.80	1.97	1.99	2.00	2.32	53	76
1951/52	1.84	1.85	2.31	2.18	2.11	2.44	39	74
1952/53	1.84	1.86	2.23	2.20	2.09	2.27	40	62
1953/54	...	[4]1.91	[4]1.93	2.21	2.04	2.30	[6]8	[6]67
1954/55[5]	...	[4]1.73		2.24	2.09	2.43	[6]62	[6]87

[1] In store Fort William Port Arthur.
[2] The first five prices quoted in this column relate to the United Kingdom-Canada contract, the remaining prices are those which ruled for IWA sales.
[3] Including carrying charges from August 1947 to August 1953.
[4] Since the first week of August 1953, cash prices for contract and non-contract sales have been identical.
[5] Preliminary.
[6] Also applicable to some sales outside IWA.
.. Not available. — None or negligible.

subsidies on exports or to defray the export losses of their marketing agencies out of government funds. Owing to the existence of national marketing agencies, however, the fall in export prices was less severe than it might have been in free market conditions. Some of the significant price series for this period are shown in Table C-5.

Outlook

The large carry-over of wheat in exporting countries will continue to overshadow wheat markets in the coming year. Production restrictions in the United States combined with unfavorable weather in Canada in 1954 checked the increase in stocks in 1954/55 and continued area restrictions in the United States may succeed in bringing about a light reduction by the end of 1955/56. Elsewhere no curtailment of production has been enforced and in many countries the rising trend in production has probably not run its full course. There is thus little prospect in the immediate future of a significant recovery in trade and the pressure of supplies on grain markets is likely to continue. Hitherto, government stockholding and orderly marketing have prevented violent changes in the export market and these safeguards may continue and may possibly be reinforced by the International Wheat Agreement if it is renewed in 1956/57, and is extended to cover a large proportion of world trade. In addition to world weather conditions, the disposition of the present surpluses in the United States and the changes that may occur in the United States farm policy, will be the main factors that will determine the future.

COARSE GRAINS

Production and Trade

Production of coarse grains at the end of the war was, in contrast to wheat, somewhat higher than in the immediate prewar years and the subsequent decade has witnessed further substantial increases. However, some marked shifts had occurred in the distribution of production. A notable advance took place in the United States with scarcely any increase in acreage, primarily due to the general adoption of hybrid varieties of maize. In postwar years, United States maize crops have fluctuated around 80 million metric tons compared with 53 million tons in the period 1934-38. Barley and oats have also been produced in consistently larger quantities and grain sorghums, a relatively minor crop, also shows a big increase since prewar years. Rye alone has shown some decline. Canada also increased its output

TABLE C-6. PRODUCTION OF COARSE GRAINS [1]; 1945-1954 AND PREWAR AVERAGE

COUNTRY OR REGION	1934-1938 aver.	1945	1946	1947	1948	1949	1950	1951	1952	1953	1954
	Million metric tons.										
Argentina	9.4	5.5	8.2	8.7	5.1	2.0	4.8	2.9	7.3	6.9	6.6
Australia	0.7	0.9	0.7	1.4	1.0	1.1	1.1	1.2	1.7	1.6	1.2
Canada	7.1	9.7	9.5	7.3	9.9	8.1	10.9	13.7	14.7	13.2	9.5
United States	72.6	101.4	109.0	83.7	120.1	106.1	105.3	98.9	107.1	104.4	105.8
Total 4 countries	89.8	117.5	127.4	101.1	136.1	117.3	122.1	116.7	130.8	126.1	123.1
Western Europe	42.7	28.4	33.8	32.2	36.3	39.2	37.1	42.5	40.4	45.8	44.3
Others	36.3	32.2	35.2	36.0	38.9	40.8	40.1	41.3	45.2	49.5	48.3
WORLD TOTAL [2]	168.8	178.1	196.4	169.3	211.3	197.3	199.3	200.5	216.4	221.4	215.7
of which :											
Rye	9.4	6.6	7.3	6.6	8.4	8.4	8.8	8.2	9.8	9.4	10.2
Barley	27.9	26.9	29.6	28.7	33.4	31.9	34.9	37.4	41.3	43.4	43.7
Oats	37.4	42.8	43.5	36.2	41.8	40.1	43.5	44.2	43.8	42.3	43.8
Maize	94.1	101.8	116.0	97.8	127.7	116.9	112.1	110.7	121.5	126.3	118.0

[1] Rye, barley, oats and maize.
[2] World, excluding U.S.S.R., Eastern Europe, China and Manchuria.

of feed grains through both acreage and yield increases, barley in particular having expanded to two to three times the prewar level, and because of this expansion Canada has recently become the largest exporter of feed grains. Australia, too, has achieved a steady increase in acreage and yield, and, in the last years of the decade, its output has been about twice the prewar volume. The expansion in these three countries has been reflected in the pattern of world exports. A steady advance in production, especially of barley, has also taken place in the Near East, with crops in the past three years approximately 50 percent above their prewar level. The barley exports from this region have recently been twice their prewar volume and those from French North Africa were also considerably larger. The Union of South Africa has raised its maize crop very substantially above the prewar average but, owing to increased domestic needs, exports have rarely reached the prewar volume.

Production in Argentina has followed a very different course. Argentina was, before the war, the principal exporting country, but has experienced a substantial decline in output through a combination of reduced acreages and some bad seasons. Its maize crop has generally been less than half the prewar volume and the better farm prices of recent years have not brought about full recovery. There have been, however, sizeable increases in barley, oats and rye, crops which have been less affected than maize by the war and postwar increases in farm costs and the shortages of labor and production requisites. The decline in Argentine exports of maize has been only partly offset by larger exports of the other feed grains.

Production in Western Europe was as low as two-thirds of its prewar volume in 1945, but has shown steady progress during the decade, though not recovering the prewar level until 1951. In general, the increases in Northwestern Europe were more substantial than in other European countries and a notable development has been the increased importance of barley, particularly in the United Kingdom, France and Denmark.

In contrast to wheat exports, trade in coarse grains has recovered very slowly and fully regained its 1934-38 level only in 1953/54. In the first postwar years exports of feed grains were held back by the more pressing demands on shipping presented by the postwar wheat requirement, rather than by limited supplies (except for maize), and the dollar shortage continued for some years to be a limiting factor, since North America has regularly supplied half or more of the quantities entering international trade in the postwar years, as compared with little

TABLE C-7. EXPORTS OF COARSE GRAINS;[1] 1945/46-1954/55 AND PREWAR AVERAGE

COUNTRY	July - June										
	1934/35-1938/39 average	1945/46	1946/47	1947/48	1948/49	1949/50	1950/51	1951/52	1952/53	1953/54	1954/55 prel.
	Million metric tons										
Argentina	7.3	2.2	2.6	4.4	2.3	1.9	0.6	1.1	0.9	3.8	2.7
of which maize	(6.5)	(1.1)	(1.9)	(3.0)	(1.9)	(1.2)	(0.2)	(0.6)	(0.6)	(1.3)	(1.7)
Australia	—	—	0.1	0.3	0.5	0.4	0.5	0.5	0.7	0.7	0.5
Canada	0.5	1.0	0.7	0.4	1.2	1.0	1.1	2.5	4.0	3.9	2.1
United States[2]	1.1	1.0	3.4	1.4	3.2	3.6	3.9	2.7	3.9	3.1	3.0
of which maize	(0.8)	(0.5)	(2.9)	(0.8)	(2.3)	(2.8)	(2.9)	(2.0)	(3.1)	(2.8)	(1.9)
Total 4 Countries	8.9	4.2	6.8	6.5	7.2	6.9	6.1	6.8	9.5	11.5	8.3
Others	5.9	0.3	1.4	3.1	3.5	3.9	3.6	4.6	3.5	3.3	2.9
of which U.S.S.R and Eastern Europe[3]	(2.5)	(—)	(...)	(1.3)	(1.3)	(2.0)	(1.1)	(1.5)	(0.9)	(0.5)	(...)
WORLD TOTAL	14.8	4.5	8.2	9.6	10.7	10.8	9.7	11.4	13.0	14.8	11.2

[1] Rye, barley, oats and maize. Gross exports.
[2] The United States has also exported substantial quantities of grain sorghum in postwar years, sometimes exceeding one million tons, but before the war such exports were very small.
[3] Includes exports from U.S.S.R. and countries within the Soviet orbit, but excludes trade within this group.
—None or negligible. ... Not available.

TABLE C-8. IMPORTS OF COARSE GRAINS ; [1] 1946/47-1953/54 AND PREWAR AVERAGE

ITEM	July - June								
	1934/35-1938/39	1946/47	1947/48	1948/49	1949/50	1950/51	1951/52	1952/53	1953/54
	Million metric tons.								
Western Europe . .	12.5	5.0	7.0	8.0	9.3	7.2	9.2	8.2	9.5
of which :									
Belgium	1.4	0.5	0.7	0.8	1.1	0.7	0.8	1.0	1.3
Germany, W. [2] .	1.6	0.9	0.8	1.7	1.8	0.8	1.8	1.8	1.2
Netherlands . .	1.3	0.3	0.7	0.6	1.0	0.8	0.8	0.6	1.3
United Kingdom	4.3	0.5	1.5	2.1	1.8	2.0	2.7	2.1	2.8
Asia	0.3	1.3	1.2	1.0	0.7	0.8	0.8	1.9	1.3
of which :									
Japan	0.2	0.3	0.3	0.6	0.5	0.7	0.6	1.3	1.1
Others	1.9	1.5	1.5	1.6	1.5	1.5	1.9	2.4	3.5
WORLD TOTAL . .	14.7	7.8	9.7	10.6	11.5	9.5	11.9	12.5	14.3
of which :									
Rye	1.0	0.5	1.4	1.1	1.5	0.8	0.9	0.7	1.6
Barley	2.7	1.7	2.3	2.6	3.6	3.2	4.3	6.0	5.6
Oats.	0.9	1.1	0.7	1.3	1.1	1.1	1.8	1.6	2.0
Maize	10.1	4.5	5.3	5.6	5.3	4.4	4.9	4.2	5.1

[1] Rye, barley, oats and maize. Gross imports.
[2] 1946/48-1948/49 Bizone. Prewar average is the estimated quantity imported by the present territorial area from all sources including other parts of prewar Germany.

more than 10 percent before the war. Australia, though contributing little in comparison with the exports of Canada and the United States, also shows a proportionately large increase. The remaining sources of coarse grain exports, however, have participated in trade on a very much reduced scale. In only two of the postwar years have Argentine exports amounted to as much as half of their prewar volume of about 7 million tons and in some years its shipments have been very minor. Owing to this decline, world maize exports are still only about half their prewar volume. Shipments from Eastern Europe and the U.S.S.R. have also fallen far short of their prewar importance.

As before the war, the bulk of world exports was directed to Western Europe, but its share is now smaller both relatively and in absolute terms. In 1953/54, its imports were only 9.5 million tons compared with 12.5 million tons before the war. With the increase in domestic crops, however, total European supplies are now somewhat larger than they were before the war and animal consumption, as well as industrial usage, is on a slightly higher level.

The non-European demand remains above prewar due to the import requirements of Japan. Substantial quantities of barley, oats and rye have also been imported into the United States from Canada (Table C-8).

Prices

Prices of feed grains reached their postwar peak in 1947/48, following the removal of price controls and the harvesting of a poor maize crop in the United States. In this year, prices of maize at Chicago exceeded $90 per metric ton and feed grain quotations were correspondingly high in Canada and elsewhere. In the following year there was a drastic decline to an average of $60 per ton. A moderate recovery followed and there was a second peak in 1951/52 of $72 per ton, coinciding with the Korean price boom. Thereafter, the course of prices has been downwards, though with some reversal in 1954/55.

On the whole, feedgrain prices have fluctuated more than the "free" world price of wheat and substantially more than the IWA wheat prices. In common with wheat, there were wide spreads

FIGURE C-3. — Prices of Coarse Grains, 1945/46 to 1954/55

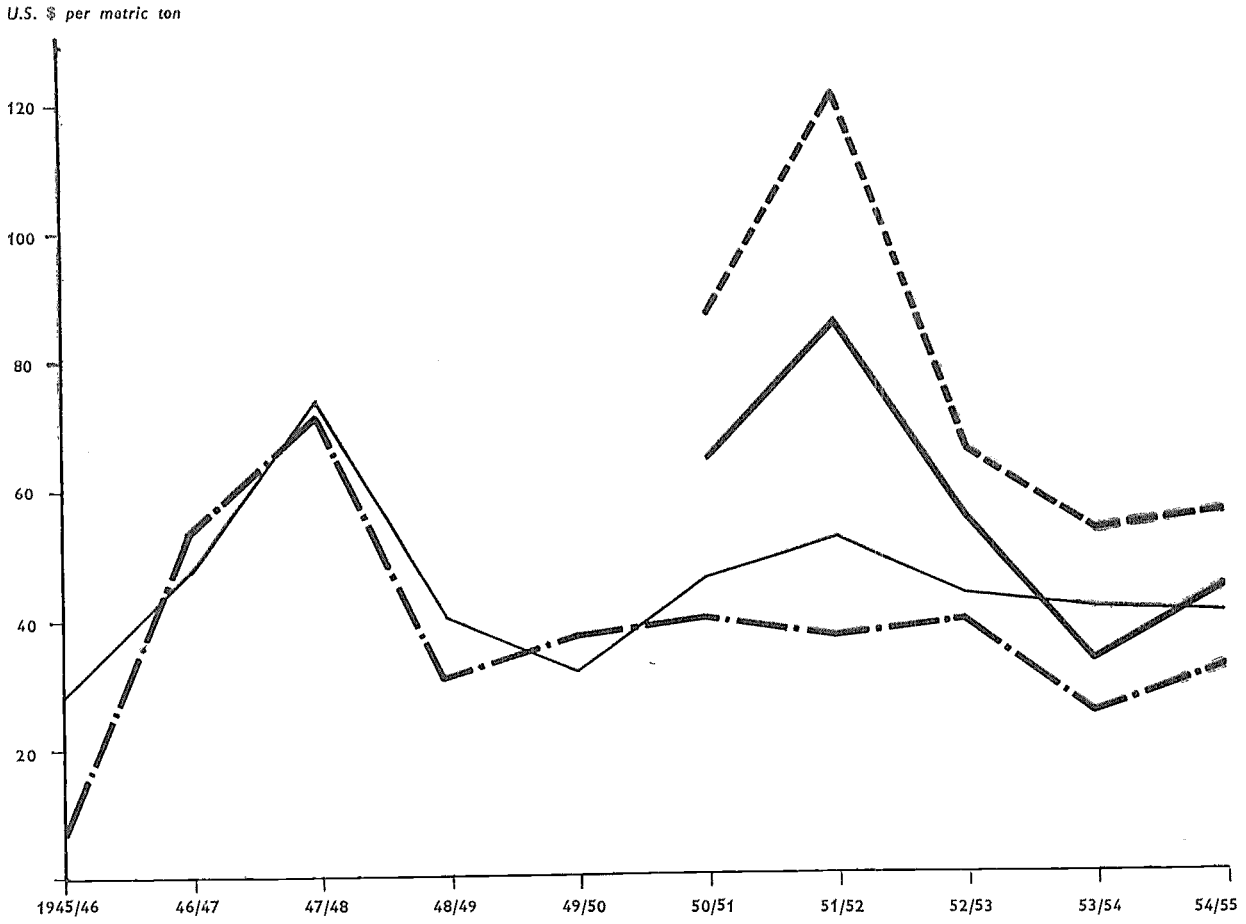


TABLE C-9. COARSE GRAIN PRICES; 1945/46-1954/55

YEARS BEGINNING JULY-JUNE	cash prices				cif prices North Seaports	
	Canada		United States		Argentina	Iraq
	Oats	Barley	Barley	Maize		
	feed No. 1 [1]	feed No. 1 [1]	feed No. 3 at Minneapolis	yellow No. 3 Chicago	Maize	Barley
	U. S. $ per metric ton					
1945/46	30	27	53	49	...	...
1946/47	[2]58	[2]73	62	68	...	...
1947/48	[2]76	[2]91	81	94	...	...
1948/49	46	51	50	60	...	...
1949/50	50	57	50	52	...	...
1950/51	57	60	56	66	106	84
1951/52	56	57	56	72	131	105
1952/53	52	59	54	63	86	76
1953/54	47	45	45	[3]61	73	53
1954/55 [4]	53	52	47	60	76	64

Source: Die Weltmärkte wichtiger Nahrungsmittel, Bonn.
[1] In store at Fort William/Port Arthur.
[2] Includes, from August 1946 to July 1948, equalization fees applied to export sales.
[3] In May 1954 export subsidies were applied for about 3 months amounting to nearly $7 per metric ton.
[4] Preliminary.
... Not available.

between dollar and non-dollar prices up to 1951/52, but sharp adjustments in the following two years have brought feed grains from different sources to a fairly uniform level (Table C-9).

Current Situation and Outlook

Generally high levels of production in North America in recent years have resulted in increases in stocks. In Canada, the upward trend was reversed in 1954/55 owing to adverse weather. Early indications, however, pointed to some increase in Canadian sowings of feed grains in 1955. In the United States, acreage restrictions were applied to the maize crop of 1954 because of the

TABLE C-10. END-OF-SEASON STOCKS OF COARSE GRAINS; 1945-1955 AND PREWAR AVERAGE

YEAR	United States					Canada				Argentina
	Rye 1 July	Barley 1 July	Oats 1 July	Maize 1 Oct.	Total	Rye 1 Aug.	Barley 1 Aug.	Oats 1 Aug.	Total	Maize 1 April
	Million metric tons									
1935-39 av.	0.3	0.8	2.5	9.5	13.1	0.1	0.2	0.5	0.8	0.4
1945	0.3	2.1	3.4	8.0	13.8	0.1	0.6	1.5	2.2	2.5
1946	0.1	1.3	4.2	4.4	10.0	—	0.7	1.2	1.9	0.3
1947	0.1	1.2	4.0	7.2	12.5	—	0.6	1.1	1.7	0.4
1948	0.1	1.1	2.6	3.1	6.9	—	0.7	0.7	1.4	0.8
1949	0.2	2.2	4.2	20.7	27.3	0.3	0.6	0.9	1.8	0.8
1950	0.2	1.7	3.1	21.5	26.5	0.2	0.4	0.7	1.3	0.7
1951	0.1	2.0	4.2	18.8	25.1	0.1	1.2	1.5	2.8	0.1
1952	0.1	1.6	4.1	12.4	18.2	0.2	1.7	1.7	3.6	0.3
1953	0.2	1.1	3.7	19.5	24.5	0.4	2.4	2.2	5.0	0.1
1954	0.4	1.5	3.4	23.3	28.6	0.5	3.1	1.9	5.5	0.1
1955 (prel.)	0.5	2.9	4.7	25.4	33.5	0.5	2.2	0.6	3.3	0.1

Source: Official sources as far as available supplemented by USDA and FAO estimates.
— None or negligible.

growth of stocks, which have nevertheless increased further in 1954/55 to a record level. For the 1955 maize crop, acreage restrictions will again be in force and the level of price support has been reduced from 90 to 87 percent of parity. Reduced supports will also rule for other feed grains. Nevertheless, early indications on the 1955 crop prospects, based on sowing intentions, suggest that the output may be larger than in the past year. The increase in feed grain cultivation in the United States, both in the current season and last year, is largely attributable to the sowing of these grains on land taken out of other crops subject to acreage restrictions and marketing quotas. Although the United States stocks of feed grains represent a smaller proportion of requirements than those of wheat and while the continuing upward trend in consumption of livestock produce provides better demand prospects, the potential effects of the stocks on markets could be considerable, particularly when price levels adjust themselves to the lower support levels (Table C-10).

RICE

The Last Decade

The last ten years have witnessed great changes in the world rice situation. At the end of the war production was low, needs great and trade disrupted. Unlike the war of 1914-18, when no actual fighting took place in rice-growing areas, physical destruction and economic dislocation were widespread from 1942 to 1945, and when military operations were ended, civil unrest, amounting in some countries to actual warfare, prevailed over large areas including three out of the leading four prewar exporting countries. Political units were split up and new trade barriers erected. Drainage and irrigation — the veins and arteries of rice cultivation — were hampered and neglected and the movement of labor, capital and goods needed to maintain and restore them impeded. Thus in 1945, the world produced about 25 million tons less paddy than prewar, a decline of 17 percent.

The year 1952 marked a turning point. While the recovery in production was slow until 1951, mainly owing to political factors such as those cited, demand was fostered by social changes, international aid and the increased incomes of those who benefited by the Korean boom. Throughout this period, the amount of rice grown in Asia remained below the prewar level, but in the meantime, population had grown rapidly so that in 1951 the Far East had over 100 million more people to feed than in 1938. Shortages arose in countries which depended on imports for part of their rice supplies, and prices rose sharply on free or " black " markets.

Three main methods were used by countries to deal with these shortages: they tried to provide more rice, to share out equitably what rice there was, and to supplement rice with other foodstuffs. The most effective long-term weapon was the increase in production. The efforts of farmers, aided by governments and stimulated by relatively high prices, led to a rapid recovery in the acreage

TABLE C-11. RICE (PADDY) PRODUCTION; 1946-1954 AND PREWAR AVERAGE

COUNTRY	1934-38 average	1946	1949	1951	1952	1953	1954 prel.
	Million metric tons						
India	[1]32.3	33.0	35.3	31.6	34.3	41.3	36.9
Japan	11.5	11.4	11.9	11.3	12.4	10.3	11.4
Pakistan	[1]11.2	12.8	12.4	11.8	12.4	13.9	12.8
Indonesia	[2]9.9	7.7	8.4	9.2	10.0	10.8	[2]11.1
Burma	7.0	3.8	[2]5.2	5.5	5.8	5.6	5.9
Cambodia, Laos and Viet-Nam	6.5	4.3	[2]4.6	5.4	4.6	[2]4.7	[2]4.2
Thailand	4.4	4.6	6.7	7.3	6.6	[2]8.2	6.0
Other Asia	9.9	7.6	11.1	13.7	12.2	13.1	12.2
Total Asia (excl. China mainland)	92.7	85.2	95.6	95.8	98.3	107.9	100.5
Other continents	6.4	7.3	10.9	11.3	12.2	13.0	13.7
WORLD TOTAL (excluding Eastern Europe, China and the U.S.S.R.)	99.1	92.5	106.5	107.1	110.5	120.9	114.2
China Mainland (estimate)	50.5	46.3	44.7	45.5	47.8	48.3	...

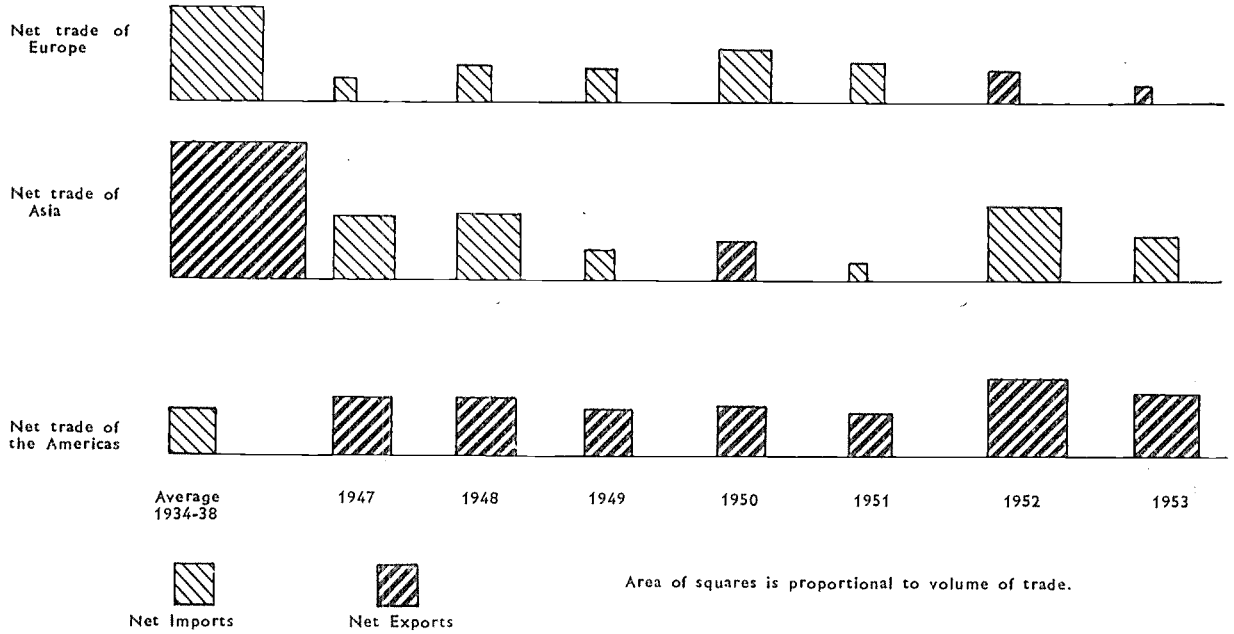
[1] 1936-38 average. [2] Unofficial estimate. ... Not available.

under rice which by 1948 had exceeded the prewar area. Much of this additional land was, however, not yet well equipped for rice growing and yields consequently fell in some important countries. Production therefore increased less than acreage, particularly in Asia. In other regions, however, output rose sharply, particularly in Brazil, Egypt and the United States and part of this increase was made available for export. Thus by 1951, Brazil and Egypt exported three times as much rice as in 1934-38, while the United States exports had increased sevenfold. Intergovernmental action, under the auspices of FAO, allocated rice exports until 1949, in such a manner that very little rice was allowed to go to countries where it was not the main staple food. Thus shipments to Europe were greatly reduced. On the other hand, Asia which had in prewar days provided 93 percent of the world's gross exports and which had been a net exporter of over two million tons to other regions, now became a net importer. Since the rice made available for world trade was still less than half the prewar quantity, Asia also imported large amounts of other cereals. In 1934-38, 7 leading Asian importing countries bought about 5¼ million tons of rice and less than ¼ million tons of other cereals (net imports); in 1951 they took 3¼ million tons of rice but 7½ million tons of other cereals.

This radical change in the world rice trade was accompanied by far-reaching changes in market structure. Almost everywhere outside the United States both rice exports and imports were effected by governments instead of by private traders. Markets were insulated from each other and even export prices varied from country to country, sometimes even for different buyers from the same exporter. Domestic rationing was widespread and outlasted international allocation by some years. Consumers had to take kinds and qualities of rice to which they were unaccustomed, particularly in Japan which had to find new distant sources of supply to replace the flow from Formosa and Korea. Changes in marketing were often accompanied by a deterioration in processing and in some countries the rice exported was of considerably lower quality than formerly. There was increased inter-governmental activity on rice problems, and an International Rice Commission was set up under the aegis of FAO, but not, however, to deal with questions of international trade.

Difficulties in obtaining foreign supplies and a widespread tendency toward autarky stimulated many importing governments to greater efforts to increase production. Export prices, which had dropped in terms of U.S. dollars after the devaluation of sterling in September 1949, rose again sharply after the outbreak of warfare in Korea, and thus gave a further impetus toward the expansion of production. By the end of 1952, the results were beginning to be noticeable. Larger crops were reaped in every continent and Asia at last exceeded her prewar output. This increase

FIGURE C-4. — Significant Changes in the Direction of World Trade in Rice, Average 1934-38, 1947 to 1953



was continued even more sharply in 1953. As the Asian crop expansion had taken place mainly in the importing countries, the reaction on international trade in the following years was marked. India's imports fell by about three-quarters and Indonesia's by well over one-half. Rice shipments began to be determined by the decisions of importers rather than by the quantities made available for export. In making these decisions, importers could pay regard also to price comparisons with other cereals which had gained more widespread acceptance among consumers during the period of acute rice shortage. Of these competing cereals, the price of barley started to fall sharply in the early autumn of 1952 and "free" wheat, though less sharply, in the late autumn. Export-

TABLE C-12. WORLD TRADE IN MILLED RICE

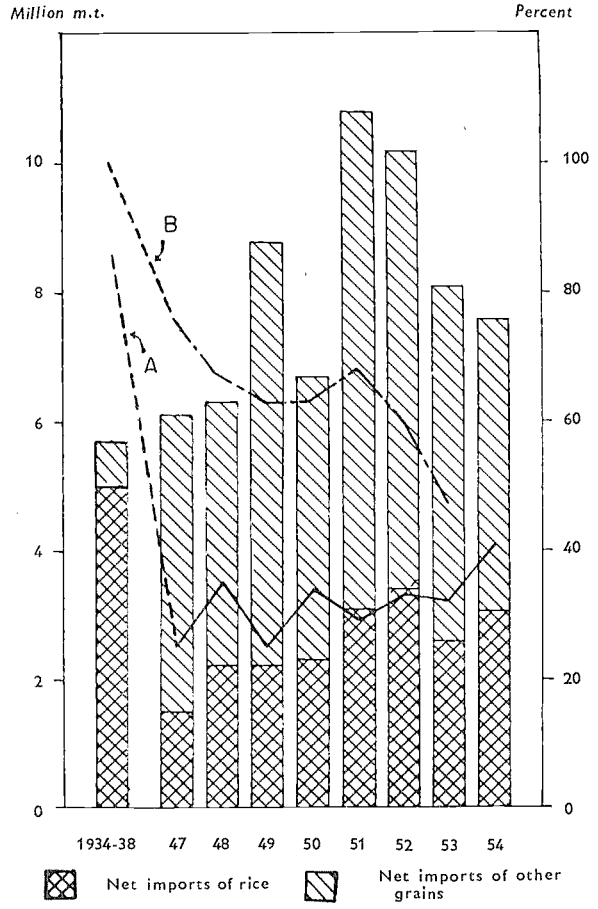
COUNTRY	1934-38 average		1946		1948-50 average		1952		1953		1954 prel.	
	Exports	Imports	Exports	Imports	Exports	Imports	Exports	Imports	Exports	Imports	Exports	Imports
	Million metric tons, milled equivalent											
Burma	3.1		0.4		1.2		1.3		1.0		1.5	
Thailand	1.4		0.5		1.2		1.4		1.3		1.0	
United States	0.1		0.4		0.5		0.8		0.7		0.6	
Cambodia, Laos, Viet-Nam	1.3		0.1		0.1		0.2		0.2		0.3	
China		0.7		0.2		0.3	0.2		0.3		0.2	
Italy	0.1		—		0.1		0.3		0.2		0.2	
Japan		1.7		—		0.3		1.0		1.1		1.4
India		1.9		0.3		0.7		0.7		0.2		0.6
Malaya-Singapore		0.5		0.3		0.5		0.4		0.5		0.3
Indonesia		0.3		0.1		0.2		0.8		0.4		0.2
Other Asia	2.3	1.0	0.4	0.7	0.3	0.8	0.2	0.8	0.1	1.1	0.3	1.0
Other areas	0.3	2.2	0.6	0.3	0.6	1.0	0.5	0.9	0.4	0.9	0.2	0.7
WORLD TOTAL [1]	8.6	8.3	2.3	1.9	4.0	3.8	4.9	4.7	4.3	4.2	4.3	4.2

— None or negligible.

[1] Total exports are exports of domestic rice from surplus producing countries; in addition about 300,000 metric tons of domestic rice in prewar and less than 50,000 tons in postwar years were exported by net importing countries. Imports are net figures.

ters, however, refused to follow suit for rice, with the consequence that the volume of sales was greatly reduced. The decline in exports led to an abnormal accumulation of stocks in Southeast Asia. By mid-autumn 1953 some price concessions began to be made by government selling agencies, but by then the pressure of the record crops of 1953 had led to a sharp fall in United

FIGURE C-5. — Net imports of Rice and Other Cereals into Six Far East Countries, and Relative Price Movements, 1934-38 Average, 1947-54 Annual



A. Imports of rice as percentage of total imports of grains.
B. Price ratio of other cereals to rice, based on indices of import unit values.

Note : Other grains include wheat and wheat flour, rye, barley, oats, maize and sorghum and millets. The six Asian countries are Ceylon, India, Indonesia, Japan, Malaya and the Phillipine Islands.

States markets, and this downward tendency was reinforced by the emergence of new exporters, e.g. China and Pakistan. A further sharp decline in imports was averted in 1954 as a result of a very poor rice crop in Japan and of India's desire to build up a food reserve. However, the Japanese authorities, mainly owing to price considerations, decided to cover more than half of the deficiency created by the short-crop by imports of cereals other than rice.

Thus for almost three years, exporting countries have been unable to find buyers for as much rice as they would have liked to supply. Nevertheless, some corrective measures have begun to operate. Restrictions on rice consumption have been gradually removed and rationing has been abolished almost everywhere with the notable exception of Japan. Foreign trade has been liberalized and imports — again except for Japan — restored to private merchants whose interest lies in expanding markets. Countries in Southeast Asia made greater efforts to meet the wishes of buyers ; more attention was paid to quality in processing, and old stocks which had deteriorated were sold off at cut prices for animal feeding. The fall in prices reduced the export pressure from other regions ; rice shipments from the United States and Italy declined sharply, and the burden of stock-holding was partly shifted from Southeast Asia to North America and to countries on the Mediterranean. The 1954 world crop, though ample, was somewhat smaller than the record figure of 1953, and there was in particular a marked reduction in Cambodia and Thailand, which produce largely for export.

Current Situation and Outlook

Supplies which could be made available for export are still ample to meet any calls importers are likely to make on them in the near future. Purchasing power generally has been well maintained, but the demand for imported rice threatens to contract in 1955 owing to the changes in the two special circumstances which were a feature of 1954. Japan has reaped over a million tons more rice than in the previous year and India has already built up most of her intended reserve. The main sign of growth in import demand is from China and Eastern Europe, though in both cases it is not yet clear how far this will be an increase in net imports. The share of world imports supplied by Asia may be higher than in the postwar years up to 1953, but much will depend on the policy regarding government stocks to be adopted by the United States, since most of the exportable surplus of the 1954 crop in that country is now in government hands.

Apart from these existing stocks, there will almost certainly be less available for export from the new United States production, since farmers have approved the marketing quotas which imply a reduction of almost one-quarter in the 1955 rice

area. Present world prices have probably also diminished the prospects of any marked revival in production for export in Brazil. In some other countries, too, where there is a fair choice of alternative uses for land and labor, the expansion of the rice area is likely to be halted. Wheat prices have kept steady over the last year, so that the further decline in rice prices during this period in some retail markets has tended to make rice a more attractive purchase, and this, coupled with the widespread abolition of rationing, is almost certainly leading to some increase in rice consumption.

It is difficult to conclude whether these corrective measures will be sufficiently far-going to restore some kind of equilibrium over a long-term period. Too many unknown factors are involved for any positive reply to be given. Long-term forces are at work. The increase in knowledge about better rice farming leads some authorities to believe that we are "on the threshold of a revolution in production." More rice can certainly be grown; the extent to which this will be done will, over an average of good and bad years, depend on incentives. More rice could certainly also be consumed, apart from the increase due to the growth in population. For this to happen on any really large scale, the millions of people in China and India will have to earn greater purchasing power and the price of rice will have to be sufficiently attractive, compared to that of other foods. The traditional rice exporting countries are, by the nature of their economies, suited to meet such increased demand. In the meantime, short-term fluctuations will ocur. The desire to bring these within bounds is spreading and ways and means are being sought to achieve this without running counter to long-term developments.

SUGAR

Postwar developments in the world's sugar economy can be broadly grouped into two periods. The first period, marked by acute initial shortage, prolonged rationing and strong efforts to expand production, lasted from the end of the war until 1950. It was followed by a period of large production increases, not fully matched by rising consumption, accumulation of stocks and declining prices, which, eventually, led to government measures to restrict production and the establishment of the International Sugar Agreement.

From 1946 to 1950

The condition of the world sugar economy at the end of World War II was similar in two respects to the situation which prevailed after World War I. Europe's production had declined and in 1947/48 was one-third lower than immediately before the war. Secondly, this loss was largely

TABLE C-13 SUGAR; PRODUCTION BY CONTINENTS; PREWAR AVERAGE AND ANNUALLY 1946/47 - 1954/55
(CENTRIFUGAL ONLY)

REGION	1934/35-1938/39 average	1946/47	1947/48	1948/49	1949/50	1950/51	1951/52	1952/53	1953/54	1954/55 prel.
	Million metric tons - raw value									
Europe	6.6	5.2	4.5	6.8	6.8	8.9	8.7	8.0	10.5	9.4
North and Cen. America	7.0	10.4	10.9	10.2	10.8	11.6	12.7	10.8	11.0	10.9
South America	1.8	2.5	2.8	2.9	2.7	3.1	3.3	3.6	4.0	4.3
Asia	4.3	1.5	2.3	2.9	3.1	3.2	4.2	4.5	4.4	4.5
Africa	1.1	1.2	1.4	1.4	1.4	1.6	1.5	1.7	1.9	2.0
Oceania	1.8	1.5	1.5	2.0	2.0	1.9	1.8	2.1	2.4	2.5
TOTAL (ex. U. S. S. R.)	22.6	22.3	23.4	26.2	26.8	30.3	32.2	30.7	34.2	33.6
	1934-38 average = 100									
Europe		79	68	103	103	135	132	121	159	142
North and Cen. America		149	156	146	154	166	181	154	157	156
South America		139	156	161	150	172	183	200	222	239
Asia		35	53	67	72	74	98	105	102	105
Africa		109	127	127	127	145	136	155	173	182
Oceania		83	83	111	111	106	100	117	133	139
TOTAL (ex. U. S. S. R.)		99	104	116	119	134	142	136	151	149

made good by a great expansion of production in and increasing exports from the Western Hemisphere, notably Cuba. Production in Asia on the other hand, which had not been adversely affected by the first war, had declined by two-thirds in 1946/47, and net exports ceased altogether in the immediate postwar years. Thus, at the end of the war, sugar was scarce and rationing continued longer than for most other commodities, partly also for currency reasons. Global production figures do not reveal the full extent of the shortage in importing countries during the first postwar years. Although world production increased by about 15 percent by 1948-50, when Western Europe again reached its prewar level of output, a large proportion of the expanded production was in low income countries where rising income had begun to stimulate the demand for sugar. Exportable supplies were inadequate for meeting the requirements of traditional importing countries as well as the new demand in countries of rising living standards.

These circumstances helped to stimulate efforts to expand production in deficit areas. Additional stimulus was provided by exchange difficulties. Although the major exporters did not exploit the word shortage by inflating prices unduly, "real" prices rose everywhere and were in 1946-50 about 150 percent higher than in 1934-38. To non-dollar exporting countries, and to domestic producers, the price relationship was made more favorable still by various financial techniques.

The major exception to this was the export trade of the British Commonwealth to the United Kingdom which was transacted at prices substantially below free market prices. In return, however, the United Kingdom granted price guarantees to Empire producers, which eventually took the form of a 10-year agreement in 1951. Indeed, the United Kingdom guarantee was one important factor stimulating production. Exportable supplies from British countries rose from 1.5 million tons in 1934-38 to 2.4 million tons in 1954, contributing 36 percent of the expansion of net world

TABLE C-14. SUGAR; WORLD NET EXPORTS; PREWAR AVERAGE AND 1946-54.

REGION	1934-38 average	1946	1947	1948	1949	1950	1951	1952	1953	1954 prel.
	Million metric tons - raw value									
Europe	0.3	0.2	0.4	0.5	0.5	0.5	0.6	0.4	0.5	1.0
North and Cen. America	3.5	4.7	6.6	6.8	6.2	6.3	6.7	6.4	7.0	5.7
South America	0.5	0.4	0.5	0.8	0.5	0.5	0.5	0.6	0.9	0.8
Asia	2.8	—	—	0.4	0.8	1.1	0.9	1.4	1.8	1.7
Africa	0.7	0.5	0.5	0.6	0.7	0.6	0.8	0.7	0.8	1.0
Oceania	0.6	0.3	0.2	0.5	0.6	0.5	0.4	0.4	0.9	0.7
TOTAL	8.4	6.1	8.2	9.6	9.3	9.5	9.9	9.9	11.9	10.9
U. S. S. R.	0.1	...	...	...	—	—	0.1	0.1	0.1	0.1
TOTAL	8.5	6.1	8.2	9.6	9.3	9.5	10.0	10.0	12.0	11.0

... Not available — None or negligible.

TABLE C-15. SUGAR; INDICES OF NET IMPORTS BY CONTINENTS; ANNUALLY 1946-54
(CENTRIFUGAL ONLY)

REGION	1946	1947	1948	1949	1950	1951	1952	1953	1954 prel.
	1934-38 average = 100								
Europe	85	92	127	115	119	123	108	150	104
North and Cen. America	81	131	106	125	116	119	125	125	128
South America	200	150	150	200	200	200	150	200	150
Asia	22	33	78	67	72	83	106	133	167
Africa	75	100	100	125	200	175	225	225	225
Oceania	100	100	100	100	100	100	100	100	100
TOTAL	72	96	107	111	113	117	120	141	134

exports over this period. Moreover, during the last two years Commonwealth guaranteed prices have been about 55 percent above the world market price.

In general, expansion was aided also by numerous technical developments, both in the agricultural and industrial sectors, which increased the profitability of sugar production and made possible substantial wage increases.

From 1951 up to the Present

The transition to abundance was effected very rapidly between 1950 and 1952. In 1950 per caput supplies (exclusive of the U.S.S.R. and China) were still 2 percent below the 1934-38 average. By 1952 production had risen by 42 percent and per caput supplies had increased to 15 percent over prewar. This was due not only to the increase in North American production, but also to rising output in Europe (32 percent above prewar years) and Africa and Oceania. This development demonstrated that the basic characteristic of the prewar sugar economy -- a tendency to surplus production — was still operating. Indeed, stock increases and a sharp decline in prices which were widely anticipated, were prevented only by the outbreak of Korean hostilities and the general economic revival stimulated by it. However, in contrast to prewar, the postwar production expansion was matched by a tendency of consumption to rise, aided by derationing, expanding demand in large population areas (e.g. the U.S.S.R. and India), and sustained by generally full employment and rising income in the highly developed countries. The rise in consumption in many countries was facilitated also by the continued outflow of various forms of United States financial aid.

The situation became critical for producing countries in 1951/52. Early in 1952 Cuba harvested the greatest crop in its history (7.2 million tons, as compared with the average of 5.7 million tons during the previous five years, and 2.8 million tons in 1934-38). Exportable supplies, especially from non-dollar exporting countries, rose sharply in 1952/53, although Cuba

TABLE C-16. SUGAR; CONSUMPTION IN SPECIFIED LOW CONSUMPTION COUNTRIES; PREWAR AND 1954

COUNTRY	Prewar Consumption		1954 Estimate		Percent Increase	
	Total	Per Caput	Total	Per Caput	Total	Per Caput
	Metric tons	*Kg*	*Metric tons*	*Kg*	*Percent*	
Latin America						
Dominican Rep.	19 300	12.7	48 900	21.0	154	65
Guatemala	13 600	6.7	45 000	15.0	231	124
Haiti	3 000	1.1	32 000	10.0	966	808
Bolivia	23 400	9.1	70 000	22.0	199	142
Ecuador	26 000	11.7	65 000	19.0	150	62
Peru	67 700	10.3	186 000	20.0	175	94
Argentina	392 500	29.6	650 000	35.0	66	18
Africa						
Belgian Congo	1 400	0.1	22 000	1.3	1 471	1 200
Egypt	150 500	9.5	300 000	13.0	99	37
Gold Coast	6 200	2.0	25 000	6.0	303	200
Nigeria	8 800	0.4	35 000	1.2	298	200
Nyasaland	800	0.5	7 000	2.8	775	460
Algeria	80 000	11.0	140 000	15.0	75	36
Tunisia	35 000	13.6	65 000	18.0	86	32
Morocco	166 000	25.0	290 000	35.0	75	40
Br. E. Africa	32 000	2.3	140 000	7.0	338	204
Asia						
Ceylon	79 700	14.2	140 000	17.0	76	20
Iran	97 000	6.1	250 000	12.0	158	97
Iraq	41 300	11.0	110 000	20.0	166	82
Syria	34 600	9.9	55 000	15.0	138	52
Lebanon			27 500	20.0		102
Turkey	80 000	3.8	210 000	9.0	162	88

restricted its 1953 crop to about 25 percent below that of the previous record year, and total world production fell off. Net world exports reached their highest postwar figure in 1953 with 12 million tons, or 41 percent above 1934-38. However, Cuba had entered the new year (1953) with an increase of about 2 million tons in carry-over stocks which, although segregated in various special reserves, could not but affect the market. In January 1953, free market prices declined to about 3.50 cents a pound, as compared with 4.50 to 4.70 cents during January 1952. Cuba's sale of a million tons to the United Kingdom at special prices to facilitate de-rationing helped to stabilize world markets; but extremely favorable weather conditions during the summer of 1953, as well as increased plantings in some areas, resulted in a crop for 1953/54 11 percent higher than that of 1952/53 and 51 percent above the 1934-38 average.

It was at this point that the International Sugar Agreement was negotiated to regulate free market supplies so as to maintain prices within a range of 3.25 U.S. cents per lb. (minimum) and 4.35 cents (maximum). It came into operation in 1954 and relieved the pressure on the market of the great increase in supplies. Even with the maximum permissible reduction in export quotas (20 percent of the basic quotas specified in the Agreement), prices declined slightly below the minimum at various times and the 1954 average world export price was only 1/100th of a cent above it (3.26 cents).

Another factor, important especially from the long-term standpoint, began to make itself felt. Consumption continued to expand. India — hitherto practically self-sufficient — entered the market as a major importer in 1954. Besides the comparatively minor decline in domestic production, a large proportion of India's imports of about 750,000 tons was due to a rise in demand following the general economic development and the spread of the tea-drinking habit. Imports rose also in other low consumption countries, especially in Africa and the Near East. Before the end of 1954, the U.S.S.R. began to buy large quantities on the world market.

In the early months of 1955, the world sugar economy attained a fairly satisfactory equilibrium. Production expanded in all areas except Europe, where beet crops were reduced by unfavorable weather during the summer of 1954, and in Cuba and Puerto Rico, where crops were restricted by administrative measures. Instead of utilizing their export quotas under the Agreement, some Eastern European countries had to import sugar to cover their requirements. Stocks which had risen in 1953 and 1954, began to decline somewhat and free market prices began to improve in early 1955. Half of the 20 percent reduction in 1955 quotas made by the International Sugar Council in December 1954 was restored in April 1955, and a further easing of export restrictions was decided in June. Consumption continued to expand, particularly in Africa and Latin America.

TABLE C-17. SUGAR; WORLD PRICES, CURRENT AND DEFLATED, AND PRICE INDICES; AVERAGES OF 1924-28 AND 1934-38 AND ANNUAL 1946-1954

YEAR	World Price		Indices of World Prices			
	Current	Deflated [1]	Current	Deflated [1]	Current	Deflated [1]
	U.S.cents/lb		*1924-28 average = 100*		*1934-38 average = 100*	
1924–28 average	2.82	4.39	100	100	294	237
1934–38 average	0.96	1.85	34	42	100	100
1946	4.19	5.32	149	121	436	288
1947	4.96	5.15	176	117	517	278
1948	4.24	4.06	150	93	442	219
1949	4.16	4.19	148	95	433	226
1950	4.98	4.83	177	110	519	261
1951	5.70	4.97	202	113	594	268
1952	4.17	3.74	148	85	434	202
1953	3.41	3.11	121	73	355	168
1954	3.26	2.95	116	67	340	159

[1] By U.S. Wholesale Price Index 1947/49 = 100

Outlook

In most major producing areas sugar output is likely to rise in 1955/56, notwithstanding crop restrictions in a number of important producing countries. On the other hand, there is every reason for anticipating further consumption increases, especially in Africa, Latin America and the Near East. However, not only supply considerations are likely to determine the trade policies with respect to sugar of the U.S.S.R. and the Eastern European countries, and it is by no means certain that they will continue to make major imports. In India, also, consumption requirements are likely to be met largely by increased domestic production and by withdrawals from stocks, which may eliminate the need for further imports. Of crucial importance to the world free market will be the development of the European beet crops. Should weather conditions produce a crop in excess of ten million tons (as in 1953/54), Europe's import requirements would be severely reduced. The problem of effecting a balance under the International Sugar Agreement between free-market supplies and requirements could become very difficult.

LIVESTOCK

Meat

Postwar Trends. At the end of World War II, meat production in Europe was at a low level as herds had been depleted owing to scarcity of feeds and war devastation. In the summer of 1947 Europe suffered an unusual drought. The scarce supplies of high protein feeds were under international allocation and feed grain imports were limited by the pressing need for food grain. The situation improved as domestic feed supplies increased and was helped by the European Recovery Program. In most countries, meat rationing had been abolished by 1950, but in the United Kingdom it remained until July 1954. In the United States and Canada, however, meat production was brought to exceptionally high levels through the impetus of war needs and facilitated by ample feed supplies. Although domestic consumption was high, the United States and Canada were able to export large quantities of meat in the immediate postwar years in response to the strong European demand. Production in Oceania was more or less the same as in prewar years, but reduced per caput consumption enabled the region to make substantial exports to Europe. Argentina's production in 1946 was more than one-tenth larger than prewar, and there was a marked increase in 1947, in which year exports were substantially above the 1934-38 average.

TABLE C-18. WORLD PRODUCTION AND EXPORTS OF MEAT; 1946-1954

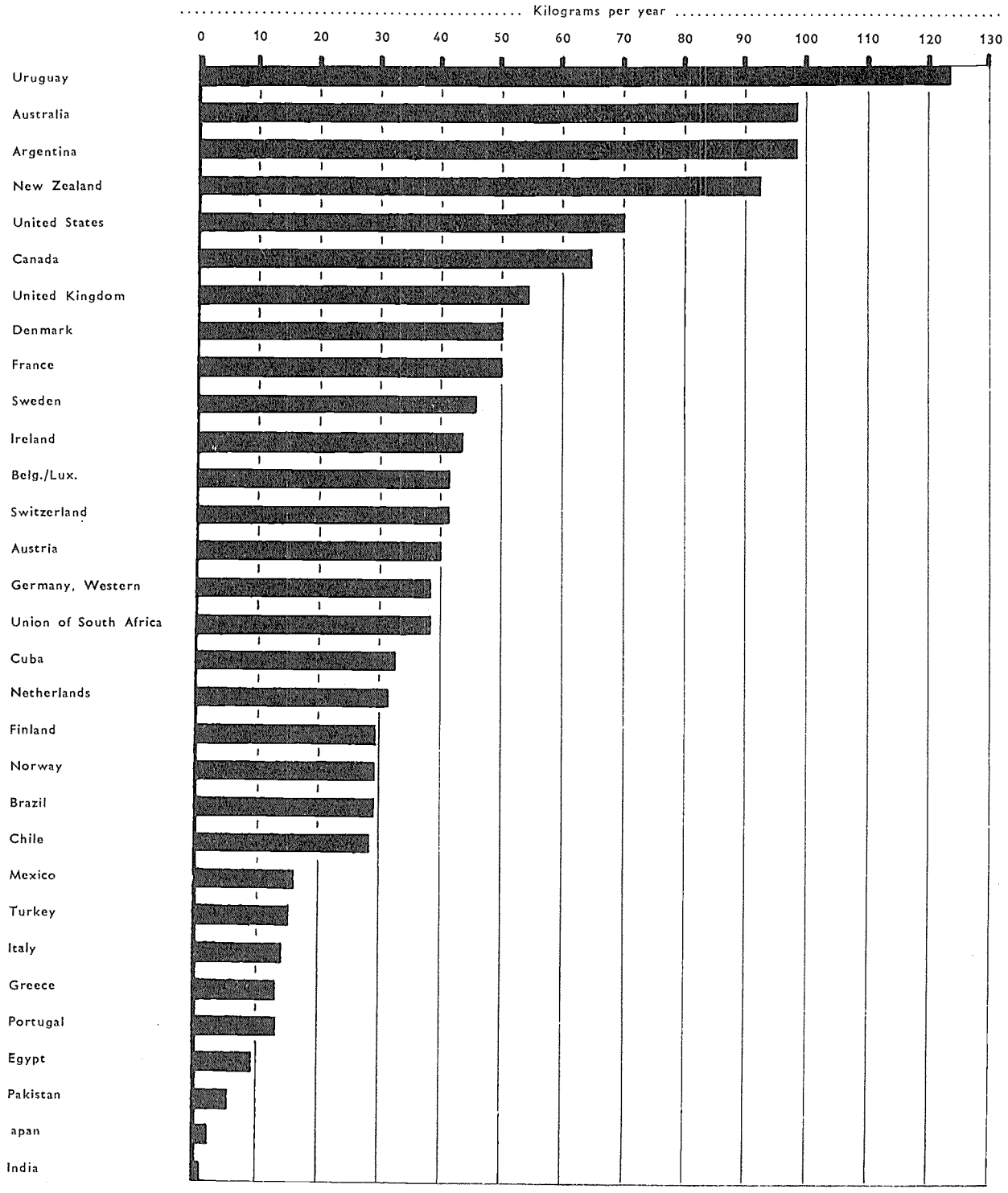
YEAR	Production [1]	Exports
	..... *Prewar = 100*	
1946	105	131
1947	107	106
1948	104	94
1949	111	95
1950	116	96
1951	119	94
1952	124	94
1953	130	104
1954	134	111

[1] Excluding Eastern Europe, U.S.S.R. and China.

World meat production increased steadily after 1948 and by 1954 was 34 percent higher than prewar. In many countries, the growth of production was furthered by increased livestock productivity due to improvements of breeding stock, better feeding and higher reproduction rates than before the war. In Western Europe, production in 1954 was 80 percent greater than in 1946 and 17 percent above prewar. In North America, after a decline from the high level of the immediate postwar period, a marked expansion started in 1951, and output in 1954 exceeded the prewar volume by two-thirds and the immediate postwar level by 15 percent. In Latin America, output rose in the first postwar years, but since 1949 it has scarcely changed, being about one-fifth above prewar. Oceania's production expanded steadily and in 1953/54 exceeded the prewar volume by 28 percent.

With satisfactory progress in production, per caput consumption in Western Europe improved considerably from the low levels of the first postwar years, but by 1953/54 prewar levels had been passed in only a few countries. In Oceania, per caput consumption is still below prewar. On the other hand, in North America, more meat was consumed during the whole postwar period than before the war and 1954 consumption of beef, veal, pigmeat, mutton and lamb was nearly one-fourth greater than in 1935-39. In Latin America, present consumption levels are higher than before the war in only a few countries, among them Uru-

FIGURE C-6. — Meat Consumption[1] per Caput 1953/54



[1]Consumption of beef, veal, pigmeat, mutton, lamb and goatmeat.

guay, Colombia and Venezuela. In Argentina, per caput consumption declined from the peak which was reached in 1949 and was in 1954 a few percent above prewar. The great differences in meat consumption levels between countries are illustrated by Figure C-6.

In view of the predominant position of the United Kingdom among the importing countries,

bulk purchases by the Ministry of Food on the basis of long-term contracts with the main suppliers were an important feature of world meat trade in the postwar period. Such contracts were entered into, for example, with Australia, New Zealand, Argentina, Uruguay, Denmark and Ireland. As imports of meat and livestock, except bacon, into the United Kingdom reverted to private trade in July 1954, the long-term contracts were terminated, with exception of the bacon agreements with Denmark and the Netherlands which are due to expire in the fall of 1956.

The pattern of international trade in meat has changed substantially during the postwar period. The import demand of Europe declined very considerably after the recovery of production. A notable increase in exports from a number of European countries occurred in recent years with the result that in 1954 the total quantity of meat exported from Denmark, France, Ireland and the Netherlands was more than double the prewar volume. North America, a most important meat exporting area in the immediate postwar period, has become a net meat importing area in recent years. Exports from South America, which in 1946 and 1947 had been on the high prewar level of around 800,000-900,000 tons yearly, declined after that date as an increase in the quantities moving into domestic consumption coincided with a reduction in output, caused largely by severe droughts in Argentina. In 1954, South America's export volume was less than half of prewar. In most recent years, the U.S.S.R. began to import meat.

In broad outline meat prices have been favorable to producers during the postwar period, owing to the strong demand for meat, and have

TABLE C-19. UNITED KINGDOM MEAT IMPORTS BY TYPES AND COUNTRIES OF ORIGIN; 1938 AND 1952-1954

TYPES OF MEAT COUNTRIES OF ORIGIN	1938	1952	1953	1954
	... *Thousand metric tons* ...			
Type				
Beef and veal (excluding offal)	598	134	313	273
Mutton and lamb (excluding offal)	351	357	358	332
Pork (excluding offal)	62	15	45	33
Poultry, dead	22	25	18	14
Bacon	349	256	317	306
Beef and veal, canned	59	83	95	111
Pig products, canned	9	49	42	41
TOTAL	1 450	919	1 188	1 110
Country of origin				
Denmark	174	196	239	242
Ireland	34	48	61	71
Netherlands	28	49	46	44
Poland	28	45	62	48
Canada	67	25	4	4
United States	10	—	—	—
Argentina	456	115	150	154
Brazil	31	—	—	—
Uruguay	54	6	54	10
Union of South Africa	1	4	3	2
Australia	231	83	246	176
New Zealand	270	325	304	316
Other	66	23	39	43
TOTAL	1 450	919	1 188	1 110
Other meats not included above	120	154	120	104
TOTAL [1]	1 570	1 073	1 308	1 214

[1] Excluding whale meat, frozen; beef and veal extracts and essences; bladders, casing and sausage skins.
— None or negligible.

TABLE C-20. MEAT EXPORTS, SELECTED COUNTRIES; PREWAR AVERAGE AND 1952-1954

COUNTRY	All types, except canned				Canned			
	1934-38 average	1952	1953	1954	1934-38 average	1952	1953	1954
	..... *Thousand metric tons*							
Argentina	496	179	209	[1]216	70	57	58	[1]65
Uruguay	73	58	52	[1]55	33	11	14	[1]23
Australia [2]	244	124	268	208	4	96	64	67
New Zealand	267	394	333	377	3	16	14	13
Canada	84	40	42	42	[3]5	8	10	23
United States	57	62	76	70	5	6	11	11
Denmark	217	249	318	350	4	34	40	46
France	3	10	16	55	2	17	10	14
Ireland [2]	45	58	74	85	[4]1	19	12	12
Netherlands	40	69	66	68	10	52	44	51
TOTAL	1 526	1 243	1 454	[1]1 526	137	316	277	[1]325

[1] Preliminary. [2] Canned bacon and ham included under "all types, except canned." [3] Four year average. [4] 1938.

TABLE C-21. MEAT AND LIVESTOCK PRICES IN SELECTED COUNTRIES: 1948-54

COUNTRY	1948	1949	1950	1951	1952	1953	1954
	1953 = 100						
United States							
Wholesale prices of meat	120	104	112	129	119	100	99
Meat animals (prices received by farmers)	121	104	114	137	118	100	99
Canada							
Wholesale prices of livestock	98	103	116	142	110	100	98
France							
Wholesale prices of meat, meat animals, poultry and rabbit	...	81	77	106	110	100	106
Germany, Western							
Meat animals (prices received by producers) [1]	...	80	98	100	110	100	108
Import prices of meat and meat animals	...	...	93	103	106	100	103
Denmark							
Average unit values of exports of beef, veal and pigmeat	88	89	89	100	110	100	97
New Zealand							
Meat export prices [1]	74	68	71	77	90	100	108

[1] 12-month periods ending 30 June of years stated.

... Not available.

tended to increase more than prices of milk. An outstanding example of this is found in the United States where farm prices of beef cattle rose by 263 percent between 1935-39 and 1948-52, while milk prices rose by 146 percent only, causing a decline in the number of milk cows and a striking increase in beef cattle. However, in 1953 there was a severe decline in cattle prices due to much heavier marketings, and farm prices for beef cattle were only 148 percent above prewar.

Meat prices were at their highest postwar levels in 1951 and 1952. In North America they began to decline in 1952 and the downward movement continued in the following year when there was a particularly heavy fall of cattle prices in the United States. Last year, on the other hand, the decline was insignificant. In Western Europe, in most cases the peak was reached in 1952. 1953 prices were generally lower, but in contrast to North America the year 1954 witnessed increases in several instances. In the United Kingdom, prices received by producers under the policy inaugurated by the Agriculture Act of 1947 have been rising steadily. In 1953, prices for fat cattle were 200 percent and those for bacon pigs 350 percent above the 1936-38 averages. For the year 1954/55, guaranteed prices for fat cattle and fat sheep remained unchanged in comparison with the preceding year and there was a reduction in the guaranteed price for fat pigs, the first in the postwar period. Prices for meat from the Southern Hemisphere have increased steadily until 1954, due to strong import demand in the United Kingdom and to rising costs of production in the exporting countries. It appears, however, that further major increases in prices for meat from the Southern Hemisphere are not likely.

Current Situation and Outlook. Supplies of meat in 1955 are ample and demand continues to be firm. The prospects for the year are for a further satisfactory growth in production. Pigmeat will account for much of the increase in the Northern Hemisphere as pig marketings are much heavier than in 1954 in many countries, including Canada, the United States, Western Germany, the Netherlands and the United Kingdom. Oceania's production in the season 1954/55 is substantially greater than that of the previous year. While Argentina may produce slightly more than last year, output in

Uruguay declined in 1954 and no increase is likely this year.

World exports of meat, in terms of carcass weight, are estimated to have been 7 percent larger in 1954 than in the year before and 11 percent above prewar. As production in the main exporting countries is generally running high, no decline in the 1955 trade volume is likely in spite of the expected shortfall in Uruguay. United Kingdom imports of all meats in 1954, expressed in product weight, were 7 percent less than in the preceding year, largely due to reduced receipts from Australia and Uruguay. It is expected that the volume of imports in 1955 will be larger, although consumer preference for fresh, home-produced meat is making it difficult to dispose of imported frozen meat. Exporting countries, and particularly Argentina, have therefore increased shipments of chilled beef. Except for bacon, imports of meat into the United Kingdom are now in private hands and the choice of consumers greatly influences marketing and prices. Imports into the United States in 1954, although less than in the preceding three years, were 187,000 tons, expressed in carcass meat equivalent.

Western Germany's import demand has been growing since 1952 and imports of meat, meat products and live animals, expressed in carcass weight, were 145,000 tons in 1954 against 81,000 tons two years earlier ; in view of the substantial increase in the domestic production of pigmeat, the current year's demand will be concentrated on cattle and beef. In the past year, purchases of meat in world markets by the U.S.S.R. and Eastern European countries were much larger than in 1953 and their total amount is estimated at 120,000 tons, with Argentina, Uruguay, Denmark and France as the main suppliers. Two-thirds were bought by the U.S.S.R., while the bulk of the balance went to Czechoslovakia and Eastern Germany. Purchases by the U.S.S.R. continued in the current year.

In Western Europe consumption is now higher than at any time during the postwar period, but in several cases prewar levels have not yet been reached. Current per caput consumption in the United Kingdom is estimated to be about 5 percent below prewar, while in Western Germany the shortfall is about 15 percent. In the United States, 1955 per caput consumption will remain at the high level of the previous year while slight increases are likely in Canada and in Australia.

In general, cattle prices for the current year will remain relatively stable at last year's levels. Pig prices, on the other hand, have recently declined in many countries, due to the increases in supplies. In the United States, the hog/corn ratio, based on prices received by farmers, was 11.7 in May 1955 against 16.8 the year before. A similar decline occurred in Canada. In the United Kingdom, the guaranteed prices for 1955/56 for fat cattle, sheep and lamb were increased, the increase for fat cattle being about 4 percent. At the same time, the guaranteed price for fat pigs was reduced by 5 percent.

In contrast to 1953, when the United States government purchased a substantial quantity of beef in order to contribute to the stabilization of the cattle market, no such purchases were made in 1954. Storage holdings of meats in the United States at the end of April 1955 were 16 percent larger than the year before, but 9 percent less than the average for the period 1950-1954. Whereas beef stocks were reduced, there was a marked increase in stocks of pork. In Canada, total meat stocks, except canned meat, were slightly lower at the end of April than the year before.

Dairy Products and Eggs

Postwar Trends. Immediately after World War II, milk production was at a high level in North America but in Western Europe it was one-fourth below prewar, owing to reduced livestock population and lower yields. In Oceania, milk production fell during the war because of labor shortages, drought and marketing difficulties ; the prewar level was regained in 1947/48. In Latin America, production in 1946 was about one-third higher than before the war. Western Europe has since rehabilitated its production to the extent that in 1954, 50 percent more milk was produced than in 1946, but still only 16 percent more than prewar. In North America, production declined during the first postwar years, partly owing to the poor harvest of 1947 ; it was fairly stable between 1948 and 1952, after which another upward movement started. In Oceania recovery was hampered by severe drought in Australia in 1951 and by high farm wages. On a world basis, milk production in 1954 was only about 20 percent higher than before the war, while meat production was 34 percent higher. An important aspect of milk production in the postwar period has been the increase in milk yields per cow which occurred in many countries. In the United States the average yield in 1954 was one-fourth above prewar. Substantial increases were recorded also in Western European countries and Oceania.

During the postwar period, consumption of fluid milk has become the main outlet for milk, a position which before the war belonged to butter. However, it seems that milk consumption at present price relationships may have reached a saturation point in many Western Hemisphere countries. In fact, since 1950/51 per caput consumption has scarcely changed in North America, while it has declined in Oceania and in many Western European countries.

TABLE C-22. WORLD PRODUCTION OF MILK, BUTTER, CHEESE AND DRIED SKIM MILK; 1946-1954 [1]

YEAR	Milk	Butter	Cheese	Dried Skim Milk
	..... *Prewar = 100*			
1946	98	74	93	209
1947	98	77	98	221
1948	100	77	104	233
1949	107	86	123	311
1950	112	91	127	308
1951	113	89	130	256
1952	112	87	135	323
1953	118	96	146	445
1954	121	99	148	471

[1] Excluding Eastern Europe, U.S.S.R. and China.

The production trends for butter and cheese have been quite different during the postwar period, as shown in Table C-22. Butter production, which during the war had declined much more than production of cheese, expanded up to 1950 when growing competition with margarine caused a decline. The downward movement was reversed in 1953 largely due to heavily increased production in North America. However, in 1954 butter production had hardly reached the prewar level while production of cheese was nearly 50 percent above prewar, the upward trend of the latter being unbroken during postwar years. The outturn of dried skim milk in recent years has been more than double the 1946 volume. Substantial changes occurred in butter consumption during the postwar period. In both the United States and the United Kingdom, the 1950-1954 average per caput consumption of butter was 45 percent below the prewar level, in the Netherlands 50 percent, in Norway 40 percent, in Canada 33 percent, in Western Germany 27 percent and in Australia 10 percent. On the other hand, margarine consumption was much greater than prewar in most countries. The downward trend in butter consumption was reversed in many countries during the last two years.

TABLE C-23. PER CAPUT CONSUMPTION OF LIQUID MILK, [1] SELECTED COUNTRIES; PREWAR, 1950/51 AND 1953/54

COUNTRY	Prewar	1950/51	1953/54	1953/54 as % of 1950/51
	.. *Kilograms per year* ..			%
Finland [2]	260	276	280	101
Norway	188	253	245	97
Sweden	250	232	224	97
New Zealand	190	224	216	96
Switzerland [2,3]	244	226	213	94
Netherlands	146	196	199	102
Canada [2]	181	184	184	100
Austria	186	165	176	107
Denmark [2]	167	172	171	99
Ireland [2,3]	141	167	165	99
United States [2]	150	160	160	100
United Kingdom	107	158	154	97
Germany, Western	139	119	131	110
Australia [3]	110	133	130	98
Belgium-Luxembourg	81	104	109	105
France	86	91	87	96
Italy	36	48	50	104
Greece	42	31	39	126

[1] Whole milk equivalent of cream included unless otherwise stated. In some countries, part of the milk consumed consists of standard milk.
[2] Postwar: calendar years 1951 and 1954.
[3] Excluding cream.

World exports of butter before the war had averaged 610,000 tons per year. After the war, they were only 46 percent of prewar but had reached 80 percent of prewar in 1950, when the trend again turned downwards, and in 1954 the tonnage was about 70 percent of prewar. Cheese exports were at a relatively high level immediately after the war and they are currently about 30 percent above prewar. The major part of the butter and cheese moving into international trade was covered by long-term contracts between the United Kingdom and its main suppliers, i.e. Australia, New Zealand and Denmark. Whereas the New Zealand contract was terminated by mutual agree-

TABLE C-24. WORLD EXPORTS OF BUTTER, CHEESE AND PRESERVED MILK; 1946-1954

YEAR	Butter	Cheese	Preserved Milk
	..... *Prewar = 100*		
1946	46	97	255
1947	54	96	210
1948	62	86	187
1949	70	125	217
1950	80	129	210
1951	74	132	217
1952	70	121	210
1953	72	130	210
1954	70	128	202

TABLE C-25. EXPORTS OF BUTTER, CHEESE, CONDENSED AND EVAPORATED MILK AND DRIED MILK: SELECTED COUNTRIES; PREWAR, 1953 AND 1954

COUNTRY	Butter			Cheese			Condensed and Evaporated Milk			Dried Milk		
	1934-38 average	1953	1954	1934-38 average	1953	1954	1934-38 average	1953	1954	1934-38 average	1953	1954
	Thousand metric tons											
Denmark	149	137	141	8	60	59	18	42	30	—	11	12
France	4	1	3	11	17	19	5	13	[1]17	—	2	—
Ireland	24	—	3	1	1	—	6	6	1	—	2	1
Italy	1	—	—	24	17	17	2	—	—	—	—	—
Netherlands	50	53	52	60	86	92	162	208	209	17	32	36
Norway	—	5	2	2	3	2	2	[1]1	—	—	—	—
Sweden	23	13	13	—	5	5	—	—	—	—	4	2
Switzerland	—	—	—	19	18	22	6	4	5	—	—	—
Canada	2	—	—	33	7	2	9	8	4	2	18	11
United States	1	—	2	1	3	2	15	69	60	2	58	90
Argentina	8	15	15	2	4	3	—	—	—	—	—	[2]1
Australia	100	40	48	9	24	24	7	37	20	2	[3]26	[3]25
New Zealand	140	161	135	87	103	94	3	11	6	7	53	40
TOTAL	502	425	414	257	348	341	235	399	352	30	206	[2]218

[1] Including milk powder. [2] Preliminary. [3] Including malted milk. — None or negligible.

ment in 1954, the remaining contracts are due to expire in 1955. Trade in preserved milk has been about twice the prewar volume during most of the postwar years, with dried milk expanding much more than condensed and evaporated milk.

During the first postwar years, retail prices of milk and dairy products were, to a large extent, influenced, controlled or directly fixed by governments. This is one reason why prices of liquid milk increased less during the 'forties than prices of other dairy products, thus contributing to the increased consumption of fluid milk.

The egg supply situation developed satisfactorily during the postwar period. Production on a world scale is estimated to be more than 50 percent above prewar, with an increase of 75 percent in North America and 25 percent in Western Europe. Consumption is above prewar in many countries, with particularly heavy increases in the United States and Canada. In the first postwar years, exports of eggs from European countries were at extremely low levels and shipments from North America accounted for the major part of world exports. Later, however, European countries increased their shipments steadily. Exports from the Netherlands in 1954 were more than double the prewar volume and Denmark also exported substantially more than before the war. Whereas United Kingdom imports of eggs in the shell in the postwar years have been less than prewar, Western Germany has emerged in recent years as the largest importer. In 1954, imports into Western Germany were 75 percent larger than those into the United Kingdom.

TABLE C-26. WORLD PRODUCTION AND EXPORTS OF EGGS; 1946-1954.

YEAR	Production [1]	Exports
	Prewar average = 100	
1946	112	74
1947	113	49
1948	116	61
1949	125	70
1950	134	95
1951	135	86
1952	142	88
1953	145	98
1954	152	111

[1] Excluding Eastern Europe, U.S.S.R. and China.

Current Situation and Outlook. World milk production, which in 1954 increased by about 2½ percent, is expected to show a further increase of between 1 percent and 2 percent in 1955. In the United States, the number of milk cows at the beginning of 1955 was slightly less than the year before; this decline, however, may be offset by greater yields, and production is expected to be more or less equal to that of 1954. In many European countries, production was adversely effected by unfavorable weather in winter and early spring, and milk production was smaller than in the previous year. On the other hand, pro-

duction in Oceania is greater than in the preceding season, mainly because of favorable conditions in Australia.

It is likely that in the current year slightly less butter will be produced than in 1954. In a number of countries of the Northern Hemisphere, among them Denmark, Western Germany, the Netherlands and the United States, butter production in the first quarter of this year was below the corresponding levels of last year. Cheese production is likely to remain at the record level of 1954, as an expected decline in the United States will be offset by larger production in Europe. Also a decrease in the volume of dried skim milk production is likely.

In 1954, butter consumption showed increases in the United States, Western Germany and the United Kingdom. Consumption in the United States of both fluid milk and other dairy products is expected to increase in 1955. Prospects are that demand for dairy products in general will remain firm.

Trade in dairy products in the current year may not show any substantial changes against 1954. A reduction in butter exports from European countries is likely, but shipments from Oceania are expected to be larger than in 1954 and the decline in the total export volume, if any, should therefore be small. Cheese exports may be maintained as a trend towards increased production has been evident in the major European exporting countries, such as Denmark, the Netherlands and Switzerland. Import demand for butter and cheese in the United Kingdom and Western Germany is firm. The U.S.S.R. and the Eastern European countries purchased, in 1954, about 57,000 tons of butter in world markets; this year, however, imports into this area are likely to be much smaller.

Prices of dairy products in the current year should continue to be fairly stable, under the influence in many cases of price support operations. In the United Kingdom, the guaranteed price for milk for the season 1955/56 was increased by about 2 percent, and in the Netherlands the guaranteed minimum price to producers for milk is a few percent higher than it was the year before. In the United States, support prices for butter, cheddar cheese and dried skim milk for the support year 1955/56 remained unchanged in comparison with the preceding year, and Canada will continue to support the butter price at the same level as last year. In some countries, as for instance in France, butter prices may be somewhat higher than in 1954, when they declined appreciably. The accumulation of stocks in government hands, which during 1953 and 1954 took place in the United States, was checked towards the end of 1954 and at the end of March of this year government holdings were less than the year before, with the greatest decline in dried skim milk.

TABLE C-27. AVAILABLE SUPPLIES OF DAIRY PRODUCTS, OWNED BY THE U.S. COMMODITY CREDIT CORPORATION, AT SPECIFIED DATES

PRODUCT	31 March 1954	1 July 1954	1 January 1955	31 March 1955
	.... *Thousand metric tons*			
Creamery butter. . . .	163	200	121	107
Cheddar cheese	177	187	152	149
Dried skim milk. . . .	272	137	42	39

In countries outside North America, no particular changes in stock levels are expected to take place during the current year.

Current egg production is running at high levels. Owing to unfavorable prices in 1954, the expansion of laying flocks has slowed down and the 1955 growth in world egg production is therefore expected to be considerably less than the year before. Trade is well maintained, owing largely to the continuing strong demand in Western Germany, and the volume of total exports in 1955 is therefore not expected to decline below 1954. In the United Kingdom, the guaranteed price to producers has been increased by about 2 percent. In the United States, there was a heavy fall in prices in 1954, but no further decline is likely to occur this year. On the average, egg prices in 1955 will be more or less at the levels of last year.

FISHERY COMMODITIES[1]

The greater part of world fish production and trade derives from the exploitation of a few major species which occur in accessible abundance, e.g. cod, herring, sardine. Fishing is therefore much less selective than agriculture, and changes in the composition of catches are due mainly either to

[1] For this section see Table C-28.

the varying abundance of the stocks or the varying intensity in the fishing of certain stocks. In the postwar period, for example, the disappearance of the California sardine caused landings (which had reached 681,400 metric tons in 1936) to fall from 149,200 tons in 1951 to 6,500 tons in 1952, while the North Sea catches of the commercially important " prime " varieties, especially plaice and haddock, fell rapidly from their high level just after the war owing to the depletion of stocks. Increased landings of herring in Norway, menhaden and tuna in the United States, most species in Japan, redfish in Iceland, etc., were due to heavier exploitation. The only " new " resource of major commercial importance exploited during the period has been the pilchard and maasbanker, of which combined catches of the Union of South Africa and of South-West Africa rose from a negligible level pre-1949 to approximately 500,000 tons in 1953.

The adjustments required to meet changing conditions of trade are therefore chiefly made in the utilization of fish products and in this respect the industry, at least in its more technically advanced sectors, has shown on the whole great adaptability in the face of postwar changes of demand for different types of commodities and in balance of payments.

The immediate postwar emphasis on fish production in bulk to meet current food shortages shifted towards quality and variety as demand became more discriminating, especially as the dollar-earning but highly competitive markets of North America became more attractive to European and other exporters. The period saw the appearance of many new forms of edible fish products designed to create consumer interest and a heavier investment in facilities for the preservation of fish during storage and transport.

At the same time the intensification of livestock production, particularly in the United States, created and sustained a strong demand for fish meals which greatly assisted the fishery industries to dispose of offals, surpluses or unwanted species and in some cases even to employ enlarged capacity primarily for the reduction of catches to meals and also oils.

Fresh and Frozen Products

Consumption in its fresh state is still the largest single usage of fish (between 40 and 50 percent of total supplies live weight) to which traditionally a large part of the marketing organizations has been geared and on which consumer preferences in many areas are firmly based. In the postwar period, developments have been mainly in preparation, packing and transport, with more emphasis on fillets to facilitate handling, reduce transport costs and to utilize otherwise wasted offal.

At the same time the use of freezing techniques already well established in North America has extended gradually in Europe, at first to carry over temporary surpluses and then to diversify presentation, and also to permit transport over greater distances, especially in the case of European exports to North America. Since over half the Western European landings of white fish are 10 to 15 days old at discharge, the problem of preservation on board has become pressing and a limiting factor in the drive to improve quality. In the United States, particularly, freezing techniques have been used extensively to diversify fish products with the main emphasis on consumer appeal. Production of " fishsticks, " an entirely new product, the 1954 monthly output of which expanded to several thousand tons is an example.

There were some important changes in the postwar trade in fresh and frozen products. In Europe the important prewar importers were the United Kingdom and Germany. The United Kingdom has continued to import heavily, with a marked increase of fresh and frozen products (1938 — 83,000 tons and 1949 — 186,500 tons) at the expense of more costly canned products.

German imports of fresh and frozen fish rose sharply after the war to just over 200,000 tons which was 30 percent above the prewar level, but fell to below 90,000 tons in 1950 and subsequent years. Meanwhile, the United Kingdom's exports of fresh and frozen herring to Germany fell from over 35,000 tons in 1938 to 200 tons in 1953. The other important European exporters, Denmark, Iceland and Norway, all achieved substantial increases in the export of fresh and frozen products, among which the trade in frozen fillets is essentially a postwar development. Icelandic exports of these products increased from about 17,500 tons in 1938 to over 156,000 tons in 1949, after which they fell again owing to reduced imports by the United Kingdom and Germany. Denmark nearly doubled its prewar exports of 52,000 tons, while Norway exported 182,000 tons in 1949 compared with 120,000 tons in 1938. As a result of declining trade to Western Germany and to the United Kingdom, Norway's annual exports dropped to less than 97,000 in 1950 although some improvement occurred in 1951-52. The ex-

port of frozen products to the United States has become increasingly important to these countries, while the weaker markets in Western Europe have compelled them, during recent years, to seek additional outlets in Central and Eastern Europe and the Middle East. Japan overtook its prewar exports after 1950 and in particular has doubled its trade in frozen tuna with the United States. In general, although fresh fish has continued to dominate domestic markets in most areas outside North America, frozen products have slowly gained ground and have been especially important in diversifying and extending international trade.

Dried, Salted and Smoked Products

Approximately one-quarter of the world's total catch is cured by means of drying, salting and, to a lesser degree, by smoking. These ways of processing and preserving the catches are particularly important in Europe and in Southeast Asia and the Far East.

Cured Cods, Hakes and Haddocks, etc. In Europe, the Faeroes, Iceland, Norway, France, Portugal and Spain are significant producers of salted cod and, apart from the latter three countries which are also large-scale consumers, these producers export their output to the South European consumers as well as to Brazil and to the Caribbean area.

During the decade preceding World War II, Spain and Portugal began the development of a domestic cod fishing fleet and, after the war, their policies for expansion were accelerated and at present they are producing an appreciable percentage of their domestic needs. This has resulted in a general decline in the quantities recorded as entering international trade.

During the postwar years, currency difficulties and trade restrictions continued to afflict the exporting countries, and the hard currency exporter, Canada (including Newfoundland), had great difficulty in selling salted cod. The switch to fresh and frozen products, with frozen fillets as a significant element, was encouraged in Canada, not only by the currency difficulties in the traditional salted fish markets, but also by the increased demand for fresh and frozen products in the United States.

Immediately after the war, Iceland's enlarged fleet continued direct landings of fresh fish for the markets of the United Kingdom. Later on reduced imports of fresh fish by the United Kingdom and Germany caused Iceland to switch back to salted cod production, assisted to some extent by increased imports of salted cod by Greece, Italy, Spain and Brazil, especially during 1947-52.

Dried or Salted Herrings, Sardines, Anchovies, etc. Apart from Japan producing large quantities (130,000 tons in 1952) of dried and salted sardines and herring, mainly for domestic consumption, the chief producers in 1953 of this product were Germany (55,400 tons), Iceland (23,100 tons), the Netherlands (72,000 tons), Norway (82,800 tons), and the United Kingdom (30,500 tons). Trade barriers and other restrictions have reduced the traditional exports from Iceland, the Netherlands, Norway and the United Kingdom to Western Germany and the countries of Eastern Europe although recent trade agreements have caused a partial revival of the trade. In some exporting countries the difficulties experienced in disposing of salted herring have resulted in the establishment of canning plants to absorb part of the catch and, in addition, appreciable quantities of herring catches are being utilized by meal and oil reduction units.

Dried or Salted Miscellaneous Fish. In Asia, the two focal points in the trade in dried and salted products are the imports into Ceylon from Pakistan, India and the Maldive Islands, and the trade into Singapore from Thailand and Indo-China for transfer to Indonesia.

Ceylon's imports from Pakistan, India and the Maldives (which in 1938 amounted to about 16,000 tons) increased from 20,700 tons in 1947 to 25,600 tons in 1952, but dropped to less than 20,000 tons in 1953 ; this drop was caused mainly by a decline in the quantities supplied by India.

The trade through Singapore from Thailand and Indo-China to Indonesia amounted to approximately 50,000 tons in 1938. During the postwar years, supplies from the Associated States were extremely low as a result of the continued hostilities. Thailand's exports to Malaya, although quite small in 1947-50, reached their prewar level in 1951, and this, together with increased supplies from Japan, enabled Malaya and Singapore to rehabilitate the trade to Indonesia to a certain extent. Exports to that country amounted to 37,000 tons in 1952 compared with 49,000 tons in 1938. This postwar increase was reversed in 1953, when Indonesia took only 24,000 tons.

Canned Fishery Products

Nearly 10 percent of the total world catch is used by the canning industry. However, in Africa, North America and South America, one-fifth of the total catches are utilized in this fashion. In several European countries, as well as in Japan, canning industries are of great national significance.

The world's canned packs consist mainly of the output from Pacific salmon, herring and sardines, including pilchards, and from the tunas, bonitos, true mackerels and horse mackerels. Small quantities are packed from crustaceans and mollusks, although these are high-priced products. In the United States, the canned pack (84,500 tons in 1953) of animal and pet foods utilizing fish is quite significant.

Canned Pacific Salmons. The five Pacific salmons (which represent the bulk of the group of species called salmons, trouts, smelts, etc.) are landed in Canada (British Columbia), the United States (Oregon and Washington), Alaska, Japan and the Pacific coast of the U.S.S.R. In these areas, the greater part of these five species are canned, while the balance and most of their landings in other parts of the world, which are comparatively small, are marketed fresh, frozen or cured.

In Canada, the British Columbia annual pack of canned salmon has remained stable during the postwar decade at between approximately 30,000 to 40,000 tons and consists principally of pink, chum and sockeye products. The United States production in Oregon and Washington shows a two-year cycle with a big pack in the odd years; these cyclical fluctuations (varying annually between 19,400 and 28,900 tons in 1947-53) are caused mainly by changes in pink salmon abundance on local fishing grounds.

Alaska, which produces mostly chum, pink and sockeye, is the main source of the United States canned salmon. Its postwar production has been showing a downward trend from 94,000 tons in 1947 to 62,300 tons in 1953 caused principally by a decline in pink and sockeye catches. The sockeye fishery is subject to a four-year cycle of which the levels were seriously affected by the 1913 rock slide at Hell's Gate on the Fraser River, and have been partially restored since the war as a result of the newly constructed fish-pass.

The Japanese postwar production compares very unfavorably with the prewar level as a result of the loss of important fishing grounds to the U.S.S.R. The lack of available statistics on both production and exports prevents an assessment of the extent to which the U.S.S.R. salmon catches and canned fish production have offset the Japanese decline. The Japanese output has been increasing slowly during the last five to six years as a result of mothership salmon fishing expeditions and this development is continuing.

In the United States, the decline in production, as well as the virtual disappearence of the United Kingdom as an importer, has resulted in canned salmon exports decreasing from 27,900 metric tons in 1947 (compared with 21,900 metric tons in 1938) to less than 1,000 tons annually during the 1950's. Similarly, currency difficulties, import and currency controls have reduced the annual exports of Canadian salmon, especially to the United Kingdom, Australia, New Zealand and the Union of South Africa. The Canadian producers offset these losses by increasing exports to the United States aided by declining Alaskan salmon production and despite stiffened competition from increased output of canned tuna. In 1954, the United Kingdom, Australia, New Zealand and the Union of South Africa took various steps to ease the imports of canned salmon which therefore has an improved market outlook in 1955.

Canned Herrings, Sardines, Anchovies, etc. The Portuguese industry experienced a critical situation with a decrease in the abundance of sardines on their fishing grounds, principally in 1948-49. Tinplate scarcities affected the Portuguese and Spanish producers who, together with the French, had to face increased competition from the expanded Moroccan production, which amounted to 56,100 tons in 1950 and 42,500 tons in 1953, compared with only 12,800 tons in 1938. With the general stiffening of competition in the markets for canned sardines, French Morocco later suffered a reversal in their market expansion, especially through lowered demand from the United Kingdom.

Immediately after the war, the German and Japanese production was insignificant, but with the rehabilitation of their economies, their fish canning industries were rapidly improved and by 1953-54 had approximately reached prewar levels.

In the United Kingdom, the canned output from herring (16,000 tons in 1952) increased, partly in an attempt to find new utilization channels in the face of increased difficulties in disposing of salted and other cured herring products. Similarly, the Netherlands developed a canned herring industry during the postwar years, producing

TABLE C-28 TOTAL ANNUAL CATCH AND LANDINGS OF FISH, CRUSTACEANS, MOLLUSKS, ETC., BY SELECTED COUNTRIES; 1938 AND 1946-53

C = Catch (live weight) L = Landings (landed weight) CL = Catch and landings identical

COUNTRY		1938	1946	1947	1948	1949	1950	1951	1952	1953
		Thousand metric tons								
Major producers										
Canada (incl. Newfoundland)	C	837	...	988	1 053	1 000	1 048	1 013	940	925
	L	760	598	878	955	899	962	927	849	837
Japan	CL	3 562	2 130	2 206	2 431	2 642	3 086	3 666	4 649	4 577
Norway	C	1 153	...	1 195	1 502	1 297	1 466	1 831	1 806	1 506
	L	1 065	855	1 032	1 318	1 084	1 279	1 669	1 670	1 378
United Kingdom	C	1 198	...	1 172	1 206	1 159	989	1 086	1 105	1 122
	L	1 098	925	1 047	1 098	1 049	926	993	1 038	1 030
United States (incl. Alaska)	C	2 253	...	2 283	2 410	2 504	2 590	2 365	2 391	2 385
	L	1 930	2 021	1 967	2 041	2 172	2 216	2 002	1 950	2 019
Medium producers										
Denmark	C	97	...	206	226	258	251	293	324	343
	L	89	190	195	217	245	241	281	312	331
France	C	530	...	476	468	474	454	528	488	520
	L	463	...	441	422	426	408	482	426	459
Germany, Western	C	777	...	...	409	501	553	680	665	730
	L	714	265	...	368	459	512	636	621	694
Iceland	C	274	...	484	478	408	373	418	402	425
	L	249	317	433	414	343	324	371	335	361
India	CL	...	...	662	530	570	827	763	752	...
Korea, South	CL	629	299	302	285	300	219	277	...	...
Netherlands	C	256	...	295	294	264	258	294	314	343
	L	256	195	256	258	234	230	262	277	310
Philippines	C	81	...	251	195	238	226	299	318	312
	L	81	50	251	195	238	220	296	313	306
Portugal	C	240	...	282	275	281	307	307	334	392
	L	218	260	230	221	214	229	233	254	293
Spain	C	408	...	581	547	571	598	603	612	635
	L	388	571	540	504	518	538	546	549	568
Union of South Africa (incl. South West Africa)	C	74	...	115	176	201	258	465	641	628
	L	53	...	106	165	191	254	460	631	623
Selected smaller producers										
Angola	CL	26	58	51	113	131	136	177	157	222
Argentina	CL	55	58	65	71	65	58	78	79	...
Australia	CL	34	36	38	39	35	33	38	46	52
Belgian Congo	CL	1	...	14	18	25	43	37	48	...
Belgium	C	43	...	81	71	68	59	57	71	74
	L	39	70	75	64	61	53	52	63	66
Brazil	CL	103	122	140	145	153	153	158	175	...
Ceylon	CL	...	...	...	24	36	43	37	26	26
China (Taiwan)	CL	90	52	63	84	80	84	104	122	131
Chile	C	32	...	61	65	77	88	94	119	107
	L	30	61	60	64	76	87	91	118	107
Egypt	CL	38	42	47	43	55	44	50	54	...
Faeroes	CL	63	65	97	92	100	98	93	87	89
Finland	CL	44	26	46	46	66	66	66	58	62
French Morocco	CL	31	51	51	56	93	123	91	122	128
Greece	CL	25	22	22	34	35	52	43	43	46
Hong-Kong	C	...	...	...	...	...	...	35	40	36
	L	...	...	14	22	27	31	31	35	32
Ireland	C	13	...	22	26	18	17	17	19	19
	L	12	21	20	25	16	16	16	18	18
Italy	CL	181	169	160	157	179	186	186	215	214
Malaya	CL	...	...	119	139	162	170	162	162	164
Mexico	CL	17	55	54	68	68	74	75	58	67
New Zealand	C	29	...	33	34	36	34	34	35	...
	L	25	29	31	33	34	32	32	33	...
Peru	CL	5	28	31	36	45	74	97	107	...
Poland	CL	13	23	40	48	49	66	72	...	...
Spanish Morocco	CL	...	10	11	11	10	9	9	11	11
Sweden	C	129	...	165	194	182	187	183	204	196
	L	124	161	156	184	173	176	173	194	186
Thailand	CL	161	...	151	161	154	178	187	192	205
Tunisia	CL	10	9	10	12	11	12	15	13	12
Turkey	CL	76	...	...	...	...	...	110	100	103
Uganda	CL	...	...	9	11	12	15	20	23	23
Venezuela	CL	22	77	76	92	75	78	75	...	...
Yugoslavia	CL	11	...	12	14	28	27	24	23	24

... Not available.

14,400 tons in 1953 compared with 3,100 tons in 1947.

New canning industries were developed in Venezuela and Mexico. In the Union of South Africa and South-West Africa, the annual production of canned pilchards, initiated during the war years, increased very rapidly after 1946. The expansion in this region (from 3,500 tons in 1947 to 28,200 tons in 1953) took place in response not only to an internal demand (to a certain extent facilitated by import controls to conserve foreign exchange) but also to expanded demands from countries in Asia not able to buy from hard currency suppliers.

In Canada, a large canned output (amounting to 30,100 tons in 1947) was maintained in British Columbia during the war years and the immediate postwar years, but, with the increase in general food supplies and the tightening of import controls by soft currency markets, production dropped rapidly to less than 2,000 tons by 1953, the catches being used instead for the manufacture of fishmeal.

In the United States, the very significant drop in the natural abundance of the California sardines in the traditional fishing grounds resulted in the virtual wiping out of a fish canning industry which, in 1952 and 1953, produced a canned annual pack of only approximately 2,000 tons compared with over 100,000 tons in 1950. To a small extent this decline was offset by an expansion (to 15,500 tons in 1953) of canned products from Pacific anchovies and sea herring as well as the maintenance of Maine sardines canned output on a comparatively high level (between 15,000 and 35,000 tons annually).

Canned Tunas, Bonitos, Mackerels, etc. The world production of canned products from tunas, bonitos, mackerels, etc., has shown a very rapid increase during the postwar years, and the 1953 packs of approximately 200,000 tons aggregate three times those in 1938. This rapid expansion was caused mainly by an increased market in the United States encouraging an expanded local canned production from both domestic catches and imported raw materials, as well as an increased output of canned tuna in Japan and of canned bonito in Peru.

The related industries, both inside and outside the United States, are very sensitive to the level of United States tariff duties imposed upon imports not only of the final canned product, but also on frozen tuna destined for eventual canning in the United States.

With the rehabilitation of the Japanese industry after World War II, frozen tuna exports to the United States increased very rapidly (from zero in 1947 to 16,000 tons in 1952), and Japan also developed its canning industry to export tuna in oil (300 tons in 1948 to 14,400 tons in 1950) to this market. The lapse of the United States-Mexico trade agreement restored the ad valorem duty to 45 percent. As a result United States imports showed a radical drop in 1951, when only 1,600 tons were imported compared with 16,500 tons in 1950. This decline was balanced by increased imports of tuna canned in brine.

Fish Meals

About 15 percent of the world total catch is used in reduction plants for processing to meals and oils. For some selected countries, whose aggregate catch amounted to nearly 16,000,000 tons in 1953, approximately one-quarter of the catch was used for reduction purposes.

Fishmeals, including fish solubles and homogenous condensed fish for animal feeding, are obtained from two principal sources of raw material; (*i*) offal, scrap and waste from fish dressed for the fresh, frozen, curing and canning activities; and (*ii*) whole fish used entirely and extensively for the manufacture of fishmeal and, in the case of oily species, also for the extraction of body oils. After World War II, there was a tremendous demand for fishmeal as poultry and animal feeding stuff and for inclusion in the balanced animal feed rations by the animal husbandry and poultry-raising industries of North America and Western Europe and countries such as South Africa.

To keep pace with this increased world demand, absorbing some 950,000 tons in 1953, production was expanded in several ways. Not only were existing fishmeal reduction units expanded, whether based on offal or other disposition channels or on fish entirely available for fishmeal production, but also new fisheries were established in areas where catching for these purposes were unknown before World War II. In certain countries, raw materials were diverted to fishmeal production with the disappearance of the markets for canned and fresh fish as the general world food situation improved after World War II. Furthermore, improved reduction techniques increased the rate of extraction and the introduction of stickwater plants increased appreciably the quantities of protein and vitamins made available as fish meal.

In the United States the Atlantic menhaden fishery, and in Norway the herring fishery, were both expanded to increase the output of fishmeal, and larger quantities than ever before were caught exclusively for this purpose. In Angola, French Morocco, South-West Africa and the Union of South Africa, Denmark, the Netherlands and Chile, new industries have been established and these are making significant contributions to the world output. The restoration of the postwar fisheries in the United Kingdom and Germany rehabilitated their fish meal industries which use mainly offal from trawl-caught landings. The United Kingdom's difficulty in selling edible herring has also encouraged the disposal of catches of this species to fishmeal plants.

In British Columbia, the decline in the demand for canned Pacific herring by 1948, as a result of the general improvement in the world food situation, resulted in large quantities of this species being used for fishmeal reduction. In Norway a similar development occurred; after the immediate postwar period, utilization of herring as human food in the fresh or frozen form declined and larger quantities were turned over for fish meal reduction.

Apart from minor fluctuations in the national level of fish meal production in a few countries, the general trend was usually upward from a world total of about 400,000 tons in 1947 to 950,000 tons by 1953-54. A levelling-off occurred in the Union of South Africa and South-West Africa as a result of limitations being placed on the number of fishmeal plants and their capacities in a cautious attempt at conservation of stocks.

An exception to the general development pattern, however, occurred in the California pilchard reduction industry, which produced less than 500 metric tons in 1952 and 1953, compared with 82,000 metric tons in 1938. This drastic decline was caused by the virtual disappearance of the California sardine from its traditional fishing grounds. However, the return of appreciable quantities in 1954 seems to be an indication that this downward trend might be reversed, at least partially, in coming years; the causes of this decline have not yet been fully established and the future level and rate of rehabilitation of the Californian industry is difficult to predict.

Outlook

With the expansion of meat, dairy and other animal protein supplies, the fishing industry will continue to face increased competition in advanced countries from meat for consumption, which development on the other hand may be offset by increasing demand for high quality fish products, such as frozen fillets, fish sticks, improved cured and specially canned products, and by growing consumption in countries with rising incomes and improving methods of distribution. The increasing use of fish meal for animal feed together with the strong demand for protein-supplying animal feeds suggest a continued buoyant market for this fishery commodity.

FATS, OILS AND OILSEEDS

Postwar Trends

World War II disrupted both trade and production of fats and oils. World export supplies in 1945 were less than one-half their prewar level and there was an immense unsatisfied demand in Europe, the main market. Owing to war damage and economic dislocations there had been sharp reductions in output of butter and animal fats in Europe, and in copra, palm kernels and palm oil in the traditional exporting countries of Indonesia, the Philippines and Malaya. Export supplies had also been cut by the rise in consumption in some major prewar exporting countries where population was increasing rapidly, notably in India, Egypt and China. Antarctic production of whale oil was limited to about 60 percent of the prewar level by an International Convention in 1944. However, United States production of fats and oils was about 30 percent or one million tons, oil equivalent, larger than prewar. Government programs had led to a vast expansion in output of soybeans and linseed to replace supplies cut off by the war, and the United States developed a large export balance of fats and oils in contrast to an import balance before the war. There were also increases in output of oilseeds in West Africa and Argentina during the war.

Recovery in world production was rapid in the years after 1945, and by 1949 the postwar pattern and trends in production, trade and consumption of fats and oils were mainly established. Total world production of fats and oils (outside the U.S.S.R.) was slightly higher than prewar. In North America and Africa production was substantially larger than prewar and both total consumption and exports had risen. Total production was about the same as prewar in South America

and Asia, but consumption was rising rapidly owing to increased population and industrialization, and exports were declining. Production and consumption in Western Europe steadily rose to roughly the prewar level. World production has since risen further and is now around 24 million metric tons, oil equivalent. Per caput consumption of all fats and oils (edible and inedible) is today slightly below prewar in Europe and North America. It is higher than prewar in other areas, however, and the deficit in Europe and North America is roughly offset by the increased use of new substitutes for fats and oils, notably synthetic detergents for soap, and rubber-based and alkyd resin paints for linseed or other oil-based paints.

World export supplies of fats and oils, though increasing, remained relatively scarce until 1949 and their distribution among importing countries was determined largely by allocations of the International Emergency Food Council [1] and by long-term contracts and other bilateral trading arrangements between a number of importing and exporting countries. Government controls of trade and consumption of fats and oils, practically universal during the war, were continued in most countries. Prices rose abruptly whenever price controls were lifted. To mitigate the effects of the decline in Far Eastern exports and a scarcity of dollar exchange with which to buy United States fats and oils, strong efforts were made to expand commercial output in dependent territories, especially in French and British West Africa, and the Belgian Congo. There were two other notable

[1] In 1947 this became the International Emergency Food Committee of the FAO.

FIGURE C-7. — Monthly Average Prices of Fats and Oils in International Markets 1951-1955

(Semi-logarithmic scale)

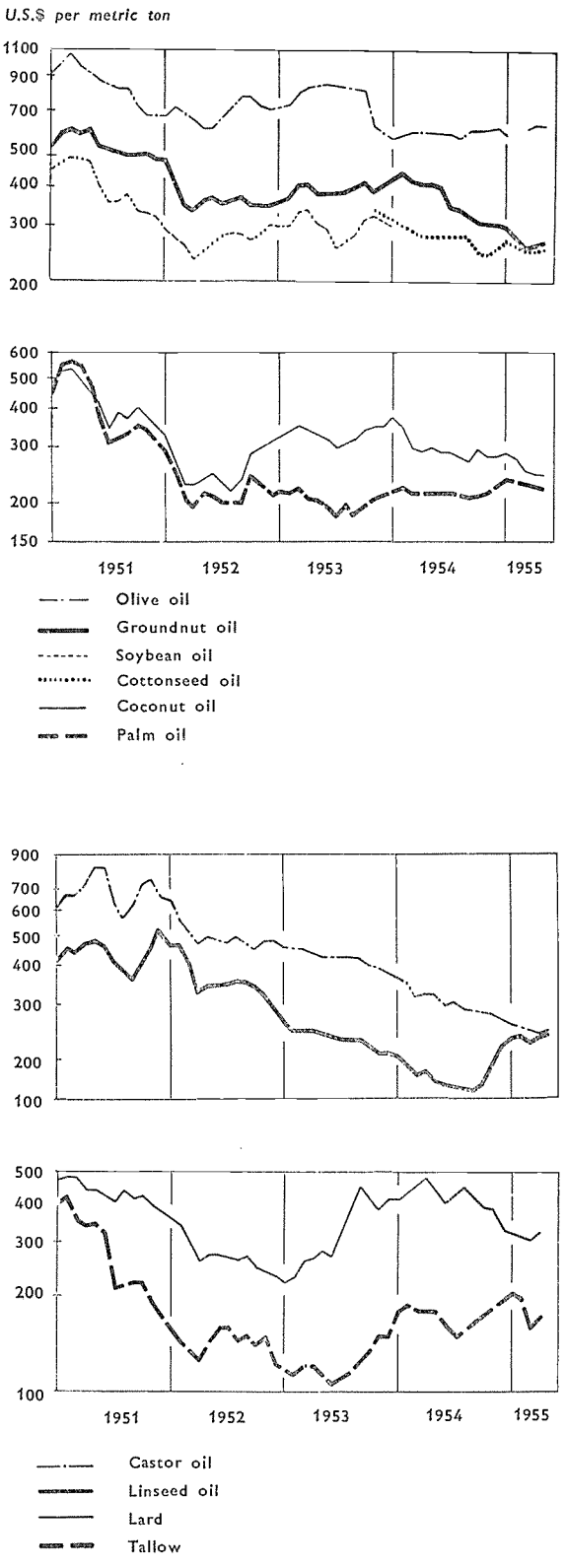


Figure C-7.

Note : Prices are compiled from *The Public Ledger*, London. They are converted to U.S. dollars from other currencies at official rates of exchange and are c.i.f. or c. and f. European port, except as otherwise noted. A few series are estimated in some months from related series.

Olive oil : North African, 1 %, f.o.b. From March 1955, Tunisian 1 %, f.o.b.

Groundnut oil : Indian, bulk, June 1953 through June 1954, South African, drums.

Soybean oil : American, crude, f.o.b. U.S. port.

Cottonseed oil : American, semi-refined, bulk, f.o.b.

Coconut oil : Straits, 3 or 3 ½ %, bulk.

Palm oil : Belgian Congo, bulk.

Castor oil : Bombay first, drums.

Linseed oil : Argentine, bulk.

Lard, refined : 37-lb tins, f.a.s. ship, New York.

Tallow, inedible : American, fancy, bulk, f.o.b. New York.

features in trade. Oilseeds were increasingly crushed in producing countries and exports of oilseeds were reduced in favor of oils. This was mainly a result of government industrialization plans in producing countries such as Argentina and India, and it created a large unused capacity in the European and Japanese oilseed processing industries. In addition, world exports of liquid edible oils (groundnut, soybean and whale oils) were materially smaller than prewar while trade in "hard" oils (palm kernel, palm and coconut oils, and tallow) was larger. This was mainly a reflection of large declines in exports of Manchurian soybeans and Indian groundnuts, increased commercial output of palm produce in tropical Africa, and a larger production and export of tallow from the United States.

In 1949 there was a striking rise in world production and trade in fats and oils and international prices fell sharply. United States production reached a new record level, and there were also large oilseed crops in Western Europe and Indonesia and substantial supplies of Nigerian groundnuts from the crop harvested in late 1948. Indigenous exports from the United States, about half of which was financed by United States funds for foreign economic aid, rose from about 400,000 tons, oil equivalent, in 1948, to nearly 1 million tons in 1949. Reflecting the recovery in world supplies, government controls were relaxed in most countries and the I.E.F.C. allocations were discontinued in February 1949.

There was a further upsurge in trade following the Korean crisis in June 1950 when import demand rose sharply as large stocks were built up in the United States and Western Europe. World exports rose to a new high level, and international market prices increased sharply, reaching a peak in early 1951. Buying policies then became cautious, and with large supplies in the United States and Africa, prices declined until April 1952. By 1953 stocks in most importing countries had been reduced. World import demand recovered and most prices rose moderately. World exports totaled 5.6 million tons, oil equivalent, or only slightly lower than in 1951. Stocks in exporting countries increased during 1953. United States output reached a new record level and the government accumulated heavy stocks of cottonseed oil under the price-support program for cottonseed. The government also was carrying large stocks of linseed oil acquired in 1948. There were also large government stocks of linseed oil in Argentina and of groundnuts in Nigeria, where the railroads had been unable to move all of the crop to seaports.

Current Situation

World production of fats and oils (excluding the U.S.S.R.) in 1954 was about 4 percent higher than in 1953 and almost 3 percent above the previous record total in 1952.[1] This followed favorable growing conditions for oilseed crops harvested in late 1953. The major increases were in output of olive oil in the Mediterranean region and of groundnut oil from bumper West African groundnut crops. There were also increases in United States cottonseed oil and Indian and Philippine coconut oil, which more than offset moderate declines in lard and soybean oil in the United States, rapeseed oil in Western Europe and sunflower oil in Argentina. Production of palm oil and palm kernels continued at record levels in Nigeria.

International trade in fats and oils increased sharply to a new postwar record level. World exports reached about 6.4 million metric tons, oil equivalent, over 10 percent higher than in 1953 (see table C-29). There were major increases in exports of linseed and cottonseed oils and a substantially increased trade in groundnut, coconut and palm oils. Beginning in late 1953, heavy export sales were made from government stocks of linseed and linseed oil in the United States and Argentina and cottonseed oil in the United States, at prices well below those prevailing in domestic markets. United States exports of cottonseed oil rose from 36,000 tons in 1953 to 260,000 tons in 1954, by far the largest amount on record. World exports of linseed and linseed oil in 1954 rose to a postwar record of 630,000 tons, oil equivalent, over twice the volume in 1953. By the end of 1954, unsold government stocks in Argentina and the United States had been reduced to a relatively low level, and Nigerian carry-over stocks of groundnuts had been liquidated as a result of improvement in railway facilities. Exports of groundnut oil from India, suspended in early 1953, were resumed in mid-1954 following a record-sized groundnut crop.

Despite the heavy world exports, the general level of prices of fats and oils in international markets in 1954 was only moderately lower than in 1953 (see Fig. C-7). There were substantial declines in prices of oils in the drying-oil group (linseed, castor and tung) and of cottonseed and olive oils. Prices of coconut and palm kernel

[1] Production includes the oil content of oilseeds (including olives) harvested in autumn of previous year, the oil being mainly consumed or marketed in the calendar year indicated. U.S.S.R. production data are not available.

TABLE C-29. FATS, OILS AND OILSEEDS; WORLD INDIGENOUS EXPORTS [1] IN TERMS OF OIL BY REGION AND BY TYPE; 1938 AND 1950-54

ITEM	1938	1950	1951	1952	1953	1954 prel.
	Thousand metric tons					
By Region:						
Europe [2]	495	402	399	301	354	360
North and Central America	157	1 003	1 130	1 079	1 227	1 805
South America	665	580	596	177	342	395
Africa	1 087	1 353	1 104	1 294	1 438	1 500
Asia	2 730	1 501	1 794	1 490	1 434	1 500
Oceania	396	378	354	410	428	395
Antarctic	566	344	348	301	424	415
WORLD TOTAL	6 096	5 561	5 680	5 052	5 647	6 370
By Type:						
Butter, fat content	509	396	350	333	360	365
Lard	166	260	351	317	249	300
Liquid edible oils [3]	1 797	1 299	1 292	1 077	1 307	1 570
Hard oils [4]	2 193	2 426	2 518	2 490	2 680	2 755
Whale and fish oils [5]	678	519	521	436	586	590
Drying and miscellaneous oils [6]	753	661	648	399	465	790
WORLD TOTAL	6 096	5 561	5 680	5 052	5 647	6 370

[1] Includes only indigenous oilseeds and oils produced from indigenous materials. Trade among Eastern European countries and the U.S.S.R. is not included in postwar years.
[2] Excluding U.S.S.R. except in 1938.
[3] Chiefly groundnut, soybean, cottonseed, olive, rapeseed, sunflower, and sesame oils, and oil equivalent of groundnuts, soybeans, cottonseed, rapeseed, sunflower and sesame seed.
[4] Chiefly coconut, palm and palmkernel oils, tallow, greases and oil equivalent of copra and palm kernels.
[5] The entire production of whale oil in the Antarctic is counted here as an export. Sperm oils and fish liver oils are not included in these figures. 70,000 tons have been deducted from 1952 and added to 1953 to allow for stocks of Antarctic whale oil from the 1951/52 season that were not sold until 1953.
[6] Chiefly linseed, castor and tung oils and oil equivalent of linseed and castor seed.

oils declined moderately. However, prices of most other fats and oils were about the same or higher than a year earlier. World import demand for fats and oils was stronger in 1954. Lower carry-over stocks in continental Europe and the high level of economic activity were major factors in this strength. In addition, the U.S.S.R. became a substantial buyer of fats and oils, importing over 100,000 tons of Argentine linseed oil and 33,000 tons of butter. In the United Kingdom, which accounts for over one-quarter of world imports of fats and oils, total import demand remained strong despite the disposal of the large government stocks (mainly of palm kernels) on the domestic market. Consumer rationing of fats was ended in May 1954, and per caput consumption of butter and margarine combined was about 5 percent higher than in 1953. Imports of fats and oils were freed from all restrictions other than foreign exchange controls; the long-term contracts with Nigeria and other West African territories were terminated at the same time and only partially replaced with commercial contracts.

Outlook

Production of fats and oils remains large in 1955 in most areas, with the major exception of the Mediterranean region. Mediterranean olive oil output fell sharply owing to the poor olive crops harvested in late 1954, particularly in Italy. Argentine production of sunflowerseed in recent years has fallen sharply owing to a reduction in acreage in favor of grains. The government fixed a relatively more favorable price for the 1955 crop; the hectarage rose moderately but total supplies of edible oils remain well below domestic needs. The French West African groundnut crop harvested in late 1954 declined substantially owing to unfavorable rains, and the Nigerian groundnut crop was also smaller. These declines, however, were partly offset by a record harvest in India and a larger crop in China.

Production in the United States will reach a new record level in the marketing year ending September 1955; cottonseed oil output is moderately lower, but there will be large offsetting increases

in production of soybean oil and lard. Moreover, although United States Government stocks of vegetable oils were substantially lower than a year earlier, domestic supplies of soybeans, including farm stocks, were unusually heavy in April owing to a relatively slow rate of crushing. Prospects for the United States oilseed crops to be harvested in autumn 1955 indicate another large output; cottonseed output will probably be lower, reflecting a reduced acreage allotment for cotton, but further increases in the production of soybeans and linseed are indicated. Lard output will also continue to rise following a large spring pig crop, and United States tallow output is expected to remain heavy.

Exports of United States cottonseed oil were exceptionally large in the early months of 1955 and there were heavy stocks in bonded warehouses at Dutch ports. Exports of groundnut oil from India, where supplies were heavy, rose spectacularly, and the price of groundnut oil reached its lowest level since prewar. There were also increased shipments of United States soybeans, lard and tallow, and Philippine copra, and prices of most fats and oils in January-June 1955 were thus substantially lower than a year earlier. Linseed oil, however, continued the price recovery that began in autumn 1954 following the near-exhaustion of government stocks in the United States and Argentina.

Although world supplies of most fats and oils are abundant and exports will remain large this year, world import demand remains generally strong. It has risen substantially in the United Kingdom following the reduction in stocks last year, and the U.S.S.R. continues to be an important buyer in world markets. By mid-1955, moreover, only small quantities of cottonseed oil held by the United States Government remained unsold and the decline in world prices of cottonseed, groundnut and coconut oils was halted. On balance, international prices are likely to be well maintained during the second half of 1955 and early 1956, provided world economic activity remains high.

FRESH FRUIT

Postwar Trends

Production of all major fruits has expanded rapidly since the war. Output of oranges and grapefruit is about 50 percent higher than in 1934-38 and other major fruits show an increase of 30-35 percent.

Trade has expanded less, but the 1951-53 average exceeded that of 1948-50 for all major fruits except grapefruit and 1954 brought a substantial increase for all fruits except pears. This higher level of exports is expected to be maintained also in 1955. The over-all trend in production and trade is shown in Table C-30.

Trends in exports from the various regions show, however, great deviations from those of world trade as a whole, as seen in Table C-31. Banana exports from South America and Africa have increased sharply since the war, whereas the central American countries have had smaller exports, mainly due to the effect of diseases and hurricanes.

Orange exports from the United States have increased more than 100 percent over the 1934-38 average whereas the average exports from the Mediterranean region, in 1951-53, were only 22 percent up. In 1954, however, Mediterranean orange exports reached a level 35 percent above

TABLE C-30. MAJOR FRESH FRUITS; PRODUCTION AND EXPORTS[1]

FRUIT	Production					Exports				
	1934-38 average	1948-50 average	1951-53 average	1954	1951-53 in percent of 1934-38	1934-38 average	1948-50 average	1951-53 average	1954	1951-53 in percent of 1934-38
	Thousand metric tons				*Percent.*	*Thousand metric tons*				*Percent.*
Bananas	8 063	9 870	10 355	10 645	128.4	2 469	2 250	2 552	2 760	103.4
Oranges and tangerines	8 800	11 340	12 971	13 720	147.4	1 768	1 480	2 060	2 340	116.5
Lemons and limes	1 055	1 260	1 412	1 413	133.8	277	210	261	295	94.2
Grapefruit	1 170	1 700	1 720	1 735	147.0	121	130	127	150	105.0
Apples (table)	6 900	8 900	9 226	9 980	133.7	720	500	714	715	99.2
Pears (table)	2 250	2 680	2 990	2 970	132.9	148	155	186	180	125.7
Grapes[2]	3 200	3 860	4 330	[3]4 500	135.3	222	170	218	290	98.2

[1] World excluding China and U. S. S. R. [2] Grapes sold for fresh consumption. [3] Estimate.

TABLE C-31. EXPORTS OF BANANAS, ORANGES, APPLES AND GRAPES; TOTAL [1] AND REGIONAL

FRUIT AND REGION	1934-38 average	1948-50 average	1951-53 average	1954
	.... *Thousand metric tons*....			
Bananas	2 469	2 250	2 552	2 760
of which :				
North and Central America	1 620	1 450	1 320	.....
South America	420	420	727	.....
Africa	141	187	286	.....
Canary Islands	130	154	165	.....
Oranges and tangerines	1 768	1 480	2 060	2 340
of which :				
Mediterranean region	1 261	1 006	1 544	1 734
United States	150	203	307	330
South America	160	91	37	35
Union of South Africa	85	113	128	197
Apples (table)	720	500	714	715
of which :				
Western Europe	199	269	417	417
United States and Canada	348	119	102	79
Argentina and Chile	12	26	70	70
Australia and New Zealand	108	68	90	114
Grapes	222	170	218	290
of which :				
Western Europe	165	100	133	181
United States and Canada	24	40	58	69
Argentina and Chile	9	6	9	8
Union of South Africa	8	16	16	15

[1] World exports excluding China and U. S. S. R.
... Not available.

prewar. The Union of South Africa has achieved a remarkable increase in orange exports reflecting trends in production, but South American exports are much reduced, in spite of a nearly unchanged output. Domestic consumption in South America is absorbing a larger part of production than before the war.

The substantial increase in European apple production has resulted in increased intra-European trade and in a very sharp decline in exports from North America, and until 1953, in exports from Australia and New Zealand. Exports of table grapes from the United States and South Africa have risen, whereas European exports did not reach the prewar level until 1954.

Europe is the most important outlet for exporters of fresh fruit (except for bananas), though 84 percent of the total supplies of fruit consumed in the OEEC countries are of domestic origin. In the early postwar years European imports of fruits were cut drastically to save foreign currency and until late in 1948 no imports were allowed in Western Germany. The recovery in the European economy since 1948 and the gradual liberalization of trade have brought a very marked expansion in intra-European trade and lately also in imports from other regions, mainly of bananas and of oranges. Imports into Western Europe of some major fruits are shown in Table C-32.

With further improvement in the European balance of payments situation, in particular in relation to the dollar region, sharper competition from the United States may be expected, mainly for oranges. Before the war the United States was a principal supplier to the United Kingdom market, but since the war import restrictions have practically prevented imports from the United States. European continental countries, however, have taken more than prewar, partly as a result of the subsidies paid to United States exporters and this together with the large increase in exports to the Canadian market accounts for the over-all increase in United States orange exports. Termination of European restrictions on dollar imports and establishment of convertibility would most probably result in a further increase in the United States citrus exports to Europe, even though the export subsidies, according to an official declaration during the GATT Session, November 1954, may be terminated when the restrictions against imports from the dollar area are removed.

TABLE C-32. IMPORTS INTO WESTERN EUROPE OF MAJOR FRESH FRUITS

FRUIT	1934-38 average	1948-50 average	1951-53 average	1954
	... *Thousand metric tons* ...			
Oranges and tangerines	1 280	1 148	1 690	1 910
Lemons and limes	198	162	184	217
Grapefruit	80	70	67	93
Total citrus fruit	1 558	1 380	1 941	2 220
Bananas	735	560	790	1 030
Apples (tables)	620	325	483	458
Pears (table)	125	135	152	157
Grapes	150	110	140	190
Total other major fruit	1 630	1 130	1 565	1 835
GRAND TOTAL	3 188	2 510	3 506	4 055

Outlook

It is a widely held view in trade circles that with the rate of new plantings in recent years, the output of oranges a few years ahead may present a serious marketing problem. The Spanish government has restricted new plantings of oranges since 1953 and advocated a similar policy for other Mediterranean countries. No other countries, however, have as yet enforced restrictions. Area and production of oranges and tangerines for all principal producing countries are shown in Table C-33. In the 13 countries included in the table, the area of oranges in 1953 was 21 percent above the prewar average and 9 percent above the 1948-50 average. As orange trees reach bearing age about 4-5 years after planting, trees planted in 1950-53 should produce their first crop during 1955-58, and it is known that considerable plantings were made also in 1954. The data for the United States shown in the table represent bearing area only. In 1952, however, 13 percent of the total orange area in Florida was non-bearing and currently about 5,000 hectares are added annually to the bearing area, resulting in an increased output of at least 125,000 tons a year. Yields have risen sharply since prewar. The output of oranges by 1960 is expected to exceed the 1951-53 average by 1,300,000 tons in the United States, 600,000 tons in Spain, 200,000 tons in French Morocco and 100,000 tons in the Union of South Africa. Israel, Greece, Turkey and Brazil also expect substantial increases. It is unlikely that European imports will continue to increase as rapidly as in 1953 and 1954, unless prices should fall substantially. There is as yet no indication that production of orange juice and frozen concentrates, which solved the surplus problem for the citrus industry in Florida, will become of similar importance in Europe in the near future

TABLE C-33. ORANGES;[1] AREA AND PRODUCTION; PRINCIPAL PRODUCING COUNTRIES

COUNTRY	Area					Production					
	1934-38 average	1948-50 average	1953	1953		1934-38 average	1948-50 average	1951-53 average	1954	1954	
				Prewar = 100	1948-50 = 100					Prewar = 100	1948-50 = 100
	... Thousand hectares ...			*.... Indices ....*		*..... Thousand metric tons .....*				*.... Indices ....*	
United States	[2]174.7	[2]220.4	[2]228.4	130.7	103.6	2 284	4 299	4 917	5 315	232.7	123.6
Spain	[3]75.2	78.4	87.2	115.9	111.2	[3]1 044	821	1 147	1 110	106.3	135.2
Italy	[4]33.1	[4]44.2	[4]52.8	159.5	119.5	389	504	633	664	170.7	131.7
Israel	[5]25.1	11.5	11.9	47.4	103.5	[5]346	223	330	395	114.2	177.1
Algeria	[6]16.6	26.8	29.8	179.5	111.2	91	230	278	318	349.4	138.3
Egypt	[7]12.7	12.8	[9]15.0	118.1	117.2	184	224	266	249	135.3	111.2
French Morocco	[7]10.4	23.5	[9]34.0	326.9	144.7	29	145	186	216	744.8	149.0
Turkey	[8]7.5	[8]14.0	[8]18.0	240.0	128.6	35	49	91	[9]111	317.1	226.5
Sub-total (7 countries)	180.6	211.2	248.7	137.7	117.8	2 118	2 196	2 931	3 063	144.6	139.5
Brazil [10]	99.4	78.3	77.2	77.7	98.6	1 172	1 211	1 241	1 200	102.4	99.1
Japan	34.0	31.0	33.0	97.1	106.5	465	380	444	654	140.6	172.1
Union of S. Africa [11]	23.0	21.9	25.6	111.3	116.9	132	198	208	245	185.6	123.7
Australia	16.8	19.5	21.0	125.0	107.7	100	131	121	[9]100	100.0	76.3
Jamaica	[9]7.5	[9]15.0	[9]15.0	200.0	100.0	[9]30	58	54	[9]60	200.0	103.4
Sub-total (5 countries)	180.7	165.7	171.8	95.1	103.7	1 899	1 978	2 068	2 259	118.9	114.2
GRAND TOTAL 13 countries	536.0	597.3	648.9	121.1	108.6	6 301	8 473	9 916	10 637	168.8	125.5

[1] Including tangerines and clementines.
[2] Florida and California only and excluding non-bearing area.
[3] 1931-35.
[4] Specialized and mixed plantings converted into specialized equivalent.
[5] Palestine.
[6] 1938 and 1939.
[7] 1938.
[8] Estimated from number of trees.
[9] Estimates.
[10] Excluding tangerines.
[11] Area of all citrus, 1936, 1950 and 1952 respectively.

If exporters cannot develop new markets elsewhere, recent investments in orange plantings may prove unprofitable. The orange marketing problem is likely to become one of the principal problems of the fruit industry in the future.

DRIED VINE FRUIT AND WINE

In recent years, major wine producing countries in Europe and North Africa have had serious marketing problems for common wine. Government intervention has been necessary to dispose of surpluses by distillation and to provide some adjustment of production.

Although there were surplus problems before the war in years of abundant harvests, the area under vines has expanded steadily in most countries. Only in France and Algeria is it still below the prewar average. After a temporary setback during the war, yields per hectare are again increasing, owing to better cultivation practices and selection of disease resistant varieties. Of the total grape output 80 percent goes into crushing, 12 percent is marketed fresh, and the remainder is dried. There is a clear upward trend in the quantities marketed fresh, but for viticulture as a whole, wine production is likely to remain the principal outlet.

Trade accounts for a rather small percentage of production and up to 1954 was lower than prewar. The bulk is consumed in the producing countries. The trend in consumption during this century has been downwards in the countries with high consumption but other countries show an increase. Recent years show a general increase from the low level at the end of the war. Restrictions on new plantings, with great emphasis on quality, and compensatory payments for shifts to other crops are widely used in the countries with surplus problems, but in many hilly regions practically no other crop provides a gross income sufficiently high to provide a living on the small plots of land now operated as vineyards. In such areas an adjustment of production is largely dependent on development of other rural industries when possible.

Production of dried vine fruit is limited to few countries and offers no solution to the surplus problem in the grape industry as a whole. In the United States, however, on the average of 1951-54, 34 percent of the grape crop went into raisins and only 45 percent into wine. Surplus problems in California have been solved by Fed eral subsidies on raisin exports and on diversion of surplus raisins from commercial channels.

World production and exports of dried vine fruit are shown in Table C-35. Production and export of currants (Greece, Australia) are still below prewar. Production of raisins (mainly U.S.A., Turkey, Australia) is higher but trade has

TABLE C-34. WORLD PRODUCTION OF WINE

REGION	1909-13 average	1924-28 average	1934-38 average	1948-52 average	1953
	Million hectoliters				
Europe	126.8	151.5	156.2	140.4	165.9
North Africa	8.4	10.7	20.1	14.9	20.1
Other regions	10.8	16.8	18.7	30.1	[1]27.0
WORLD TOTAL	146.0	179.0	195.0	185.4	[1]213.0

[1] Estimate.

TABLE C-35. DRIED VINE FRUIT; WORLD PRODUCTION AND EXPORTS

ITEM	1934-38 average	1948-50 average	1951-53 average	1954
	Thousand metric tons			
Raisins				
World production	481	477	554	502
World export	224	236	225	234
Currants				
World production	180	97	93	82
World export	90	55	60	85

expanded little, except for the United States and Greece. Turkish exports since 1951 have decreased sharply, a development partly attributed to the United States subsidies and lately to the Greek devaluation. Turkey itself has now introduced subsidies and minimum prices. Demand for dried fruits has not followed the upward trend for fresh fruit.

COFFEE

Postwar Trends

The past decade marked the end of one and the beginning of another of the long-term cycles that seem to characterize the world coffee economy. Three major cycles, of about twenty years duration, have taken place since 1890. While consumption grew gradually, production followed a cyclical movement characterized first by an expansion brought about by high prices, leading to the emergence of surpluses and a fall in prices, followed by a decline in production lasting until stocks were used up and prices began to rise. The last cycle appears to have ended during 1948-49. Since 1949, high prices have stimulated a new phase of expansion. Whether events will follow the pattern of previous cycles, or whether international co-operation will succeed in eliminating at least the extreme fluctuations remains to be seen.

The coffee situation in 1946 was substantially different from that prevailing in prewar years. Since the 'thirties, world production had declined by 20 percent and previously accumulated stocks had been worked down. In Brazil, both area and tree population fell by about one-quarter during this period. The decline was due in part also to the very low returns to producers in terms of purchasing power. In Indonesia, the third largest producing country before the war, plantations had suffered severe damage. But low "real" prices and other wartime factors had stimulated consumption in the United States. Orderly marketing had been effected during the war years by a quota system under the Inter-American Coffee Agreement and prices had been raised gradually. Measured in terms of purchasing power, however, prices to

TABLE C-36. COFFEE: PRODUCTION, TRADE, STOCKS AND PRICES BY CONTINENTS AND WORLD TOTAL

ITEM	1934-38 average	1946	1949	1953	1954 prel.
	Thousand metric tons				
I. Production					
North and Central America	328	324	391	403	436
South America	1 784	1 355	1 475	1 594	1 570
Asia	155	31	67	110	94
Africa	142	226	239	334	335
WORLD TOTAL [1]	2 415	1 942	2 175	2 448	2 442
II. World Exports	1 650	1 760	2 070	2 090	1 760
III. Net Imports					
North and Central America	805	1 286	1 364	1 305	1 070
Europe	695	331	446	581	610
WORLD TOTAL	1 613	1 770	1 960	2 007	1 800
IV. World Stocks	1 607	983	646	357	...
	U.S. cents per lb				
V. Prices					
Wholesale Santos 4, NY [2]	9.7	18.5	31.8	58.5	78.3
Wholesale Santos 4, NY [3]	18.6	23.5	32.1	53.4	70.9
U. S. Retail Price [2]	25.1	34.4	55.4	89.2	110.8
U. S. Retail price [3]	42.2	41.2	54.4	78.0	96.3

[1] Including Oceania.
[2] Actual.
[3] Deflated: Wholesale price by U. S. wholesale Price Index 1947-49 = 100. Retail price by U. S. Consumer Price Index 1947-49 = 100.
... Not available.

TABLE C-37. COFFEE; PERCENTAGE CHANGES IN PRODUCTION, TRADE, STOCKS AND PRICES BY CONTINENTS AND WORLD TOTAL

ITEM	1946 in relation to 1934-38 average	1949 in relation to 1934-38 average	1949 in relation to 1946	1953 in relation to 1949	1954 in relation to 1934-38 average	1954 in relation to 1946	1954 in relation to 1949	1954 in relation to 1953
	Percent							
I. Production.								
North and Cen. America	– 1	19	21	3	33	35	12	8
South America	– 24	– 17	9	8	– 12	16	6	– 1
Asia.	– 80	– 57	117	64	– 40	203	40	– 15
Africa	60	69	5	40	137	48	40	0.4
WORLD TOTAL	– 20	– 10	12	13	1	26	12	– 0.2
II. World Exports.	7	25	18	1	6		– 15	– 16
III. Net Imports.								
North and Cen. America	60	69	6	– 4	33	– 17	– 22	– 18
Europe	– 52	– 36	35	30	– 12	84	37	5
WORLD TOTAL	10	22	11	2	12	2	– 8	– 10
IV. World Stocks	– 39	– 60	– 34	– 45				
V. Prices.								
Santos 4 - N. Y. [1]	91	228	72	84	707	323	146	34
Santos 4 - N. Y. [2]	26	73	37	66	281	202	121	33
U. S. retail [1]	37	121	61	61	341	222	100	24
U. S. retail [2]	– 2	29	32	43	128	134	77	23

[1] Actual. [2] Deflated.

producers were certainly no higher than during the depressed prewar years. Due to the spectacular rise in United States consumption, total world trade was higher than prewar, although European imports were less than half.

Developments in the world coffee economy since 1946 fall into two periods, the salient features of which are brought out in Tables C-36 and C-37.

The 1946-49 period was characterized by sustained demand, not supported by a commensurate rise in production, a rapid decline in stocks and a rise in prices. Production was still substantially below prewar, and on a per caput basis in the major consuming areas about 23 percent lower. In the United States, which absorbed almost 70 percent of total world imports in 1946, rising national income, changes in consumption habits during the war years, and relatively low prices continued to stimulate consumption. Although price control had been terminated in 1946, large carry-over stocks prevented a marked price rise until 1949, when the last Brazilian government stocks were liquidated; and in that year United States imports reached an all-time peak.

European imports, although held back by rationing and dollar shortages, had also begun to recover from the postwar decline and all indications pointed to the conclusion that prices, which had risen gradually during the previous two years, were bound to advance further.

The rise in prices, especially of non-dollar coffee, began to stimulate interest in new planting. In Africa, colonial governments began to organize active campaigns to stimulate planting. Some new plantings were made also in the minor producing countries of Latin America. However, until the last years of the decade new plantings were not on a large scale, and their output was not sufficient to match population increases, and still less to allow expansion of consumption.

The exhaustion of stocks, coupled with rising European imports, was followed by an unprecedentedly rapid rise in prices. In 1950 the average wholesale price in New York rose by more than 50 percent (Santos No. 4), as compared with the previous year. Taking the 1934-38 average as 100, the price of Santos No. 4 reached 524, and the deflated price stood at 265. Although United States consumption and imports were reduced in

1950 as a result of the high prices, various factors combined to prevent a substantial reaction. Indeed, in 1953 a new price advance set in, when a freeze in Brazil reduced yields and destroyed millions of young trees, and gained momentum in 1954. Retail prices in the United States rose during the summer of 1954 to almost 400 percent above the 1934-38 average and wholesale prices to 800 percent.

The inevitable result followed. Consumption in the United States, which had been sustained by an unprecedented growth in per caput income, fell precipitately in 1954 and imports declined by 19 percent as compared with the previous year and by 23 percent in comparison with 1949. In Europe, where the percentage rise in retail prices was much smaller, since import duties had always constituted a significant proportion of the consumer prices, imports and consumption continued to expand. But even in Europe high prices have had very adverse effects on consumption. In contrast to practically all other commodities, the per caput consumption of which has recovered or surpassed prewar levels, net Western European imports of coffee in 1954 were still 4 percent below the 1934-38 average, and per caput supplies were 13 percent lower.

More important from a long-term standpoint were the production effects. Stable prices encouraged planting, both in Latin America and in Africa. In Brazil, a major proportion of the price increase was withheld from producers by techniques of multiple exchange rates; yet coffee planting became extremely profitable even there. Vast areas of new lands were cleared, and considerable replanting with higher yielding varieties took place in old coffee areas of declining productivity.

Current Situation and Outlook

The decline in consumption and prospects of higher production in the immediate future have brought about a fall in prices. During the first part of 1955 prices were 32 percent below the peak in the previous year. Probably consumption will begin to rise in consequence of the current and still lower prices for distant positions. But substantial stocks have been accumulated in the two chief producing countries and prospects are for further production increases. Moreover, 1955 prices are still generally very remunerative to producers and may continue to stimulate new planting. Should the experience of the three previous cycles be repeated, production might rise very substantially during the next 5 to 7 years, while consumption expansion would be much more gradual even at prices very substantially lower than those of 1955. Governments of some producing countries forecast great production increases in the next few years. It is possible, therefore, that the world coffee economy will again be confronted with very difficult conditions in the future, unless effective international co-operation can be developed.

TEA

Production

Production of tea has expanded steadily in postwar years in line with demand; price fluctuations, except during the past two years, have not been very great. Exports and planting, furthermore, have been regulated by national associations and, internationally, by the Interna-

TABLE C-38. TEA PRODUCTION BY MAJOR AREAS; PREWAR AND SPECIFIED POSTWAR YEARS

COUNTRY OR REGION	Prewar average	1946	1949	1952	1954 prel.	Percentage change 1954 over	
						prewar	1946
	Thousand metric tons					*Percent*	
India	178	227	265	306	288	62	27
Ceylon	104	135	140	144	165	59	22
Indonesia	75	2	27	37	46	— 39	130
Japan	49	21	33	57	68	...	...
Total Asia	456	427	516	590	610	34	43
Africa	9	16	17	20	26	189	63
World	466	440	535	615	639	37	45

... Not available.

tional Tea Committee. Demand in the United Kingdom, the largest consuming country, was subject to rationing during most of the postwar period, and in other countries the development has been orderly. Probably the most striking single development during the past ten years was the great increase in Indian domestic consumption.

There were, however, some important changes in the geographic pattern of production. When prewar markets were re-opened, India and Ceylon were able to make up for the loss of Indonesian and Japanese supplies. Indonesian production is still about 40 percent below prewar but in Japan restoration was achieved by 1952. As a result of the great production increases in India, Ceylon and Africa, world output in 1954 was 35 percent above prewar. The largest percentage increase has taken place in Africa (almost 200 percent above 1934-38). Production will continue to expand, especially in Ceylon and Africa, if demand continues to grow.

Except in Africa, where area was expanded, the postwar expansion has been secured almost entirely from higher yields achieved through better agricultural practices and the use of higher yielding varieties. A considerable amount of replanting has taken place, but in the signatory countries of the International Tea Agreement the permissible quotas of planted and replanted areas have not been fully utilized in recent years. Higher yields helped to compensate for increased labor and other production costs.

Consumption

Adequate supplies and relatively low prices, as well as the fact that tea is a sterling commodity, made possible early relaxation or removal of rationing and import controls. In the United Kingdom, although rationing was not terminated until 1952, quotas were generous and per caput consumption was only slightly lower than before the war. However, the removal of rationing, which coincided with rising coffee prices and aggressive tea marketing policies, eventually began to affect consumption, and in 1954 the prewar consumption of 4.2 kg. was surpassed. Consumption has risen also in other Commonwealth countries, as well as in Africa, Northern Europe and North America.

TABLE C-39. TEA; INTERNATIONAL TRADE, DOMESTIC CONSUMPTION IN PRODUCING COUNTRIES, AND PRICES; PREWAR AND SPECIFIED POSTWAR YEARS

ITEM	Prewar	1946	1949	1952	1954	Percentage change 1954 over	
						prewar	1946
	Thousand metric tons					*Percent*	
World net exports	404	308	441	440	472	17	53
World net imports	387	310	416	430	467	21	51
U. K. net imports	194	160	211	215	232	20	45
North and Cen. America net imports	55	60	62	63	72	31	20
U. S. A. net imports	38	42	42	42	52	37	24
Domestic consumption in producing countries	110	120	122	...	170	54	42
	Pence per pound						
Prices							
Calcutta							
Tea for export	11.1	[1]28.6	34.9	25.2	52.9	377	85
Colombo - all tea	12.3	[1]28.8	34.7	31.1	47.0	282	63
London							
All tea	13.6	—	—	36.1	63.6	361	—
Real price [2]	40.6	—	—	24.7	46.1	14	—

[1] 1947 prices. [2] London prices deflated by Sauerbeck-Statist Index; 1948 = 100. ... Not available.

The greatest percentage rise, however, has taken place in some of the Asian producing countries, notably India, and is probably related to the rise in national incomes. In India alone, the quantities of tea earmarked for domestic consumption in 1954 amounted to over 80,000 tons as compared to 68,000 tons in 1944-46 and 41,000 in 1937-39 in India and Pakistan. Consumption in producing countries as a whole is estimated to have increased by over 50 percent since prewar years.

Trade

International trade, which in 1946 had fallen by about 22 percent below prewar, recovered rapidly in the postwar period. In 1954 net trade was about 20 percent higher than in 1934-38 and 50 percent higher than in 1946. However, the percentage of production exported has been consistently lower than before the war, due to the rise of consumption in producing countries. Other changes include a decline in the entrepot trade of the Netherlands and the United Kingdom and increased purchases by consuming countries at the Calcutta and Colombo auctions.

Due largely to the operation of controls under the auspices of the International Tea Committee, tea prices were comparatively stable during 1933-38, whereas coffee and cocoa prices declined. In the postwar years the rise in tea prices has been much less marked than that of coffee and cocoa. Current money prices (Calcutta, for export) were 190 percent higher during 1948-52 than during the last prewar years but coffee and cocoa prices had risen by 350 to 470 percent. In 1952 an exceptionally large Indian crop, combined with the continuation of rationing in the United Kingdom until late in the year and ample stocks, brought about a sharp temporary fall in Indian tea prices. However, in the following year unfavorable weather and restriction of output by producers in Northern India resulted in a rise of prices which gained momentum during 1954. By January 1955, London prices had risen by an average of 72 percent as compared with the end of 1953 and 154 percent as compared with the end of 1952. Subsequently there was a sharp reaction and by April prices had fallen to their mid-1954 levels.

In real terms, however, tea prices were no higher, and probably consistently lower than before the war until 1954 because of rises in a number of general indices — import unit values, labor costs, indices of cost of living in producing countries, rice prices, etc. This, together with rising income, probably accounts for the increase in consumption in India and a number of other low-income countries. Also in the United Kingdom, average real prices at the London auctions were substantially below prewar in 1951-53, and rose only 14 percent above the 1934-38 real price in 1954.

TABLE C 40. TEA, COFFEE AND COCOA PRICES; IMPORT UNIT VALUES

YEAR	Tea		Coffee	Cocoa	U. K. Import Values
	London	Calcutta			
	..... *1933-38 average = 100*				
1925-29 av.	133	128	228	207	148
1930-32 av.	92	72	114	102	104
1948	...	270	279	688	322
1949	...	319	331	371	326
1950	...	338	530	553	370
1951	327	300	565	614	493
1952	273	230	564	614	478
1953	326	326	609	640	422
1954	474	482	815	997	415

Note. London, all tea, pence per lb., Calcutta, tea for export, pics per lb., Coffee Santos 4, New York, cents per lb., Cocoa Spot Accra New York, cents per lb.
... Not available.

Outlook

Future developments will be mainly determined by economic considerations. On the one hand, there is no doubt that production in the main Far Eastern countries and in Africa could be further increased through replanting with higher-yielding plant material, heavier manuring and more efficient pest control, even without expansion of area. There is no reason for anticipating a reversal of current consumption trends, either in the United Kingdom or in producing countries. On the other hand, existing taxation and financial liabilities arising out of the recent labor legislation have raised production costs, considerably. Producers will undoubtedly try to maintain remunerative price levels by adjusting output to current demand, if necessary by restoring voluntary crop restriction. For the current year, early crop reports point toward a somewhat larger output in Ceylon and Southern India; but once the present heavy United Kingdom stocks are absorbed, prices should show greater stability than in the past year, although at levels below the 1954 average.

COCOA

Postwar Trends

Cocoa and coffee are the only two agricultural commodities which have continued to be in short supply during the entire decade. While coffee supplies should increase during the next few years, the world shortage of cocoa is likely to remain for many years. In relation to population in the ten most important cocoa consuming countries, world supplies during the last few years have been 11 percent lower than the 1934-38 average.

During the 40-year period of great expansion ending with the outbreak of World War II, world cocoa production rose from 100,000 to 740,000 tons. During the decade 1939-49 average world production was 13 percent lower than during the last five prewar years. The disorganization of shipping, the disappearance of the European market, the low producer prices of cocoa, the wartime demand for labor and other economic factors, including the rise in prices of other foods, led to a shift in production efforts. The effect of these factors was reinforced by agronomic forces, such as growing senility of trees, increased incidence of pests and diseases (including the spread of a new virus disease) and reduction in availability of good forest land. World production recovered after 1948 but this was due to a rise in Latin-American production, African output having continued lower than in the 1934-38 period, both relatively and in absolute terms. While production has been rising in the French and Belgian territories, it has fallen steadily in the two chief producing countries, the Gold Coast and Nigeria. The average of the five years 1948-52 was lower than that of the last five prewar years, and the trend has continued during the last two years when production was 16 percent lower than in 1948-52. In no postwar year has the Gold Coast approached its prewar peak of 305,000 tons.

Economic, social and agronomic factors explain the different trend in production since 1940 as between Latin America and Africa. In the former region, high prices have stimulated an increase in cocoa planting and production, which, hesitant at first, gained momentum as farmers began to realize that high cocoa prices were more than a transitory phenomenon. Abandoned cocoa farms have been rehabilitated; considerable efforts have been made to improve cultivation practices and to implement disease control techniques. In Africa, cocoa growing, which is dominated by peas-

TABLE C-41. COCOA; PRODUCTION BY CONTINENTS; PREWAR AVERAGE AND 1946/47 - 1954/55.

REGION	1934/35 -1938/39 average	1946/ 1947	1947/ 1948	1948/ 1949	1949/ 1950	1950/ 1951	1951/ 1952	1952/ 1953	1953/ 1954	1954/55 prel.
	Thousand metric tons									
North and Cen. America	65	59	65	60	65	65	62	76	69	75
South America	179	200	156	178	219	202	168	161	188	229
Asia	6	3	3	4	4	4	4	5	6	6
Africa	495	408	398	516	486	518	461	517	476	472
Oceania	3	4	4	4	3	3	4	4	4	4
WORLD TOTAL	748	674	626	762	777	793	699	763	743	786

TABLE C-42. COCOA; INDICES OF PRODUCTION IN VARIOUS CONTINENTS; 1946/47 - 1954/55.

REGION	1946/ 1947	1947/ 1948	1948/ 1949	1949/ 1950	1950/ 1951	1951/ 1952	1952/ 1953	1953/ 1954	1954/55 prel.
	1934-38 average = 100								
North and Cen. America	91	100	92	100	100	95	117	106	115
South America	112	87	99	122	113	94	90	105	128
Asia	50	50	67	67	67	67	83	100	100
Africa	82	80	104	98	105	93	104	96	95
Oceania	133	133	103	100	100	133	133	133	133
WORLD TOTAL	90	84	102	104	106	93	102	99	105

ant producers, has had to cope with increasingly difficult problems which tax the resources of the peasant cultivators. Disappearnce of forest areas, increased incidence of pests and diseases, a rising percentage of old trees with declining productivity have all combined to reduce output. It is probable that these difficulties were aggravated by low returns. During the war years and until 1948 "real" prices received by farmers were even lower than during the disastrous period of 1934-38. Although farm prices have improved greatly since then, governmental monopoly buying authorities have paid prices substantially lower than farmers would have received in a free market. It may be significant that in the French African territories, where competitive marketing was restored at the earliest opportunity, production has risen as compared with prewar, although the agricultural problems (except for the swollen shoot disease) have been similar to those of the Gold Coast and Nigeria.

TABLE C-43. COCOA; CURRENT AND DEFLATED PRICES IN THE UNITED STATES AND UNITED KINGDOM 1946-54

YEAR	United States				United Kingdom	
	Current Price		Deflated Price		Current Price	Deflated Price[1]
	Spot Accra	Unit value of imports	Spot Accra	Unit Value of imports	Unit value of imports	Unit value of imports
	..... *1934-38 average = 100*					
1946	190	176	127	119	158	87
1947	574	672	313	260	416	210
1948	654	643	329	325	683	303
1949	352	367	187	196	476	201
1950	526	470	268	241	691	256
1951	584	602	267	277	962	293
1952	584	578	275	275	879	260
1953	608	548	292	265	828	246
1954	948	906	452	434	1 242	367

[1] Deflated by national wholesale price indices.

The decline in per caput supplies, coming at a time of rapidly rising incomes, has inevitably been followed by a great rise in prices.

In consumption, the outstanding development of the last few years had been the recovery and growth of European demand. Europe's share in world imports of cocoa beans has risen steadily from about 40 percent in the immediate postwar years to 51 percent in 1952, 55 percent in 1953 and 58 percent in 1954. Even as late as 1948 net imports of cocoa beans and cocoa products(in terms of beans) were only two-thirds of the prewar average. On the other hand, the United States, which absorbed 42 percent of world supplies during the immediate postwar period (37 percent in prewar years) has reduced imports severely, although per caput income has risen more than in Europe. United States imports in 1954 were probably only 32 percent of world imports and trade during the first five months of 1955 indicates that the 1954 percentage distribution of imports will persist during the current year.

The distribution of imports since 1950 is markedly different from the trend of 1900-1939. During the earlier period United States imports increased more rapidly than Europe's, rising from 20,000 tons at the turn of the century (19 percent of world supplies) to 242,000 tons (37 percent of world supplies) during the last prewar years, while Europe's rose from 82,000 (77 percent) to 365,000 tons (56 percent of world supplies). Even on a per caput basis the rise during these years of high immigration into the United States was higher than in any other country except the United Kingdom. Indeed, the real consumption increase was probably higher in the United States than in the United Kingdom, since in the latter substantial stock building took place in the last prewar years.

TABLE C-44. COCOA; NET IMPORTS BY CONTINENTS; 1946-54.

REGION	1946	1947	1948	1949	1950	1951	1952	1953	1954 prel.
	..... *1934-38 average = 100*								
Europe	73	70	69	91	110	96	87	105	107
North and Central America	118	111	105	117	113	103	99	100	90
South America	190	150	120	120	150	160	160	170	170
Asia	50	100	75	125	75	100	125	225	125
Africa	400	400	350	250	200	300	150	200	250
Oceania	162	188	150	200	125	100	112	112	150
U. S. S. R.	62	65	150	125	188	188	250	250	250
WORLD TOTAL	94	89	87	104	113	101	96	107	104

TABLE C-45. COCOA; PER CAPUT SUPPLIES IN THE UNITED STATES, FRANCE, GERMANY AND THE UNITED KINGDOM

YEAR	United States	France	Germany	United Kingdom
	..... *Grams*			
1909	680	610	690	580
1924-1928 av.	1 470	990	1 130	1 280
1934-1938 av.	1 880	1 000	1 230	1 870
1954 prel. . .	1 560	1 000	[1] 1 530	[2] 2 780

[1] Western Germany only.
[2] Adjusted for estimated stock changes.

Outlook

High prices have for various reasons affected United States consumption more than European, and in 1954 the United States per caput absorption was 17 percent lower than in 1934-1938. A decline in prices as a result of a substantial rise in supplies over two or more years would reverse this trend and open large new markets for cocoa products. The economic outlook for cocoa is, therefore, favorable — provided research on the synthetic substitutes, which has been greatly stimulated by high prices during the past few years, does not meet with substantially greater success than hitherto, and production of cocoa is increased gradually to enable manufacturing, distribution and consumption to become adjusted to an expansion of supplies. Indeed, the economic outlook for cocoa appears to be more favorable than for any other major agricultural commodity. Studies of the long-term relationship between consumption, prices and income indicate that by 1960 the world would absorb about 150,000 tons more than the output of the last few years, or 20 percent, at a "real" price of 25 cents a lb. (current money price, 28 cents). Such a price would be remunerative to growers, and would provide the countries in which cocoa production can be expanded with badly needed foreign exchange.

TOBACCO

Production and Consumption

World tobacco production has been greatly affected by the steadily increasing demand all through the 20th century and in particular by the meteoric increase in cigarette consumption. The two world wars brought a sharp increase in consumption in all countries when ample supplies of leaf tobacco were available and in countries where supplies were short during the war years there was a rapid increase in postwar years. Where women have taken up smoking or where smoking has become common from a rather young age, the increase in consumption per caput is sharpest and particularly of cigarettes. These have now gained supremacy also in many countries whichbe fore World War II were predominantly consumers of cigars or pipe tobacco. Cigarette consumption is still increasing in nearly all countries except the United States where there has been a slight decrease since the record high level of 1952, mainly because of publicity regarding the health aspects of excessive cigarette smoking. Consumers' preferences have generally stimulated demand for bright cigarette tobacco, such as flue-cured (bright Virginia), often blended with Burley tobacco and Oriental leaf. Cigarettes made purely from the Oriental leaf type dominated in prewar years in many European countries. In the early postwar years demand for this type decreased, but is again increasing, and larger quantities than ever are being used for blending with other types.

Consumption of cigar tobacco has shown a decreasing trend in the last decade and, moreover, cigar tobaccos have been in very short supply in the postwar years. However, in countries with high income levels, demand seems to have maintained its level in recent years. Demand for the darker tobacco types used for pipe tobacco, chewing tobacco and snuff has been shrinking over the last 20 to 30 years. For tobacco consumption as a whole there is a strong correlation between per caput consumption and real income. Hence high employment levels and increasing real incomes have stimulated consumption.

World tobacco production in 1950-54 was more than 20 percent above prewar level (see Table C-46). Production of flue-cured tobacco, Burley and Oriental tobacco accounted in prewar years for respectively 20, 5 and 8 percent of the total, whereas on the average of 1953 and 1954 these types accounted for approximately 32, 8 and 8 percent of the total. Dark air-cured and fire-cured tobaccos have decreased in volume.

The rapid increase in the output of flue-cured tobacco reflects the development in cigarette consumption and particularly of "straight Virginia" or "blended" types. Average yields per acre in the United States have increased steadily from 856 lb. in 1934-38 to 1,272 lb. in 1950-54. The

area restrictions imposed in connection with the United States price support program, adopted early in the 'thirties, stimulated farmers' endeavors to raise the largest possible crop per hectare. Yields in other countries have also increased. The United States production of flue-cured is nearly 100 percent higher than the 1934-38 average. The

TABLE C-46. TOBACCO PRODUCTION AND TRADE

ITEM	1934-38 av.	1946-48 av.	1949-51 av.	1952-54 av.
	.... *Thousand metric tons*			
Production - Total (farm weight)	2 715	3 095	3 155	3 360
of which :				
flue-cured	560	841	934	1 065
Oriental tobacco	204	246	269	276
All other types	1 951	2 008	1 952	2 019
Export - Total (dry weight)	540	527	583	587
of which :				
Principal exporters of flue-cured [1]	234	314	322	304
Oriental [1]	112	96	114	121
of cigar leaf [1]	118	86	86	92
Other countries	76	31	61	70
Import - Total (dry weight)	550	490	550	550
of which :				
Into West Europe	[2] 370	302	364	362
Into United States	30	39	43	47
Into Asia	80	41	47	52

[1] Export of all leaf types.
[2] Including Germany, prewar boundaries.

relatively high and stable price of American tobacco, made tobacco growing, especially of the flue-cured type, attractive in other countries too, and Canada, Southern Rhodesia and India have together increased production four times since prewar and are now significant competitors in the international markets. Brazilian ouptut of flue-cured tobacco has also increased four to five times since prewar. The preferential import duties in the United Kingdom, the largest importer in the world, had a stimulating effect on ouptut in Commonwealth countries also in the 'thirties and the dollar shortage in the postwar years gave another impetus to expansion in the soft-currency areas. There has been a notable increase in tobacco growing in southern and western Europe, and some of the overseas markets for United States flue-cured leaf, such as the Philippines and Indonesia, are making great efforts to develop domestic production of flue-cured leaf.

Among producers of Oriental leaf, Greece suffered from war and civil war and production did not reach the prewar level until 1950 and is now some 10 percent larger, whereas Turkey has expanded production about 80 percent above the 1934-38 average. Yugoslavia has also increased output heavily as Bulgaria and Rumania in postwar years ceased all exports to Western Europe.

Outpnt of cigar leaf in Indonesia, the Philippines and Brazil has decreased, due to high labor costs and a shift to other crops, including cigarette leaf, and cigar leaf production is still below prewar level.

Trade and Prices

The changes in production are reflected in the pattern of trade. Expoters of flue-cured leaf have expanded their markets. In 1934-38 and 1950-54 the United States exported an average of respectively 147,400 and 176,900 metric tons of this type. Flue-cured exports from Canada, the Rhodesias and India together rose from a prewar average

FIGURE C-8. — World Exports of Leaf Tobacco

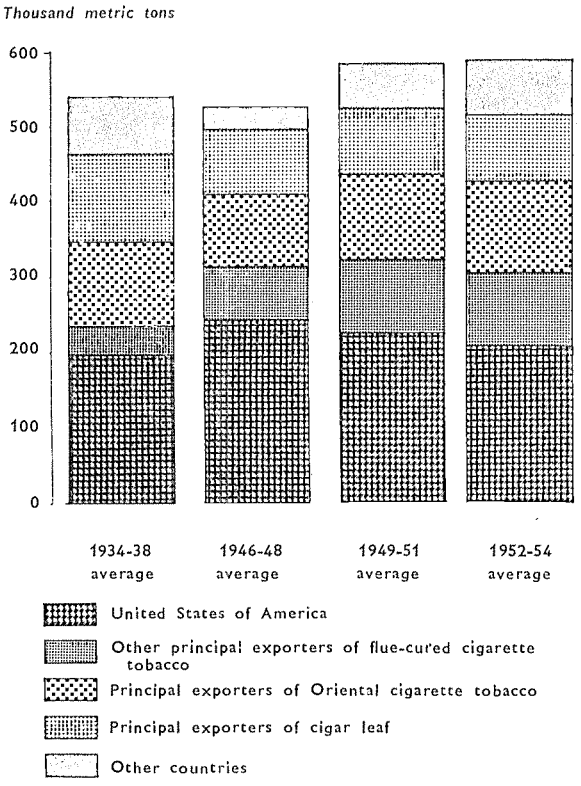
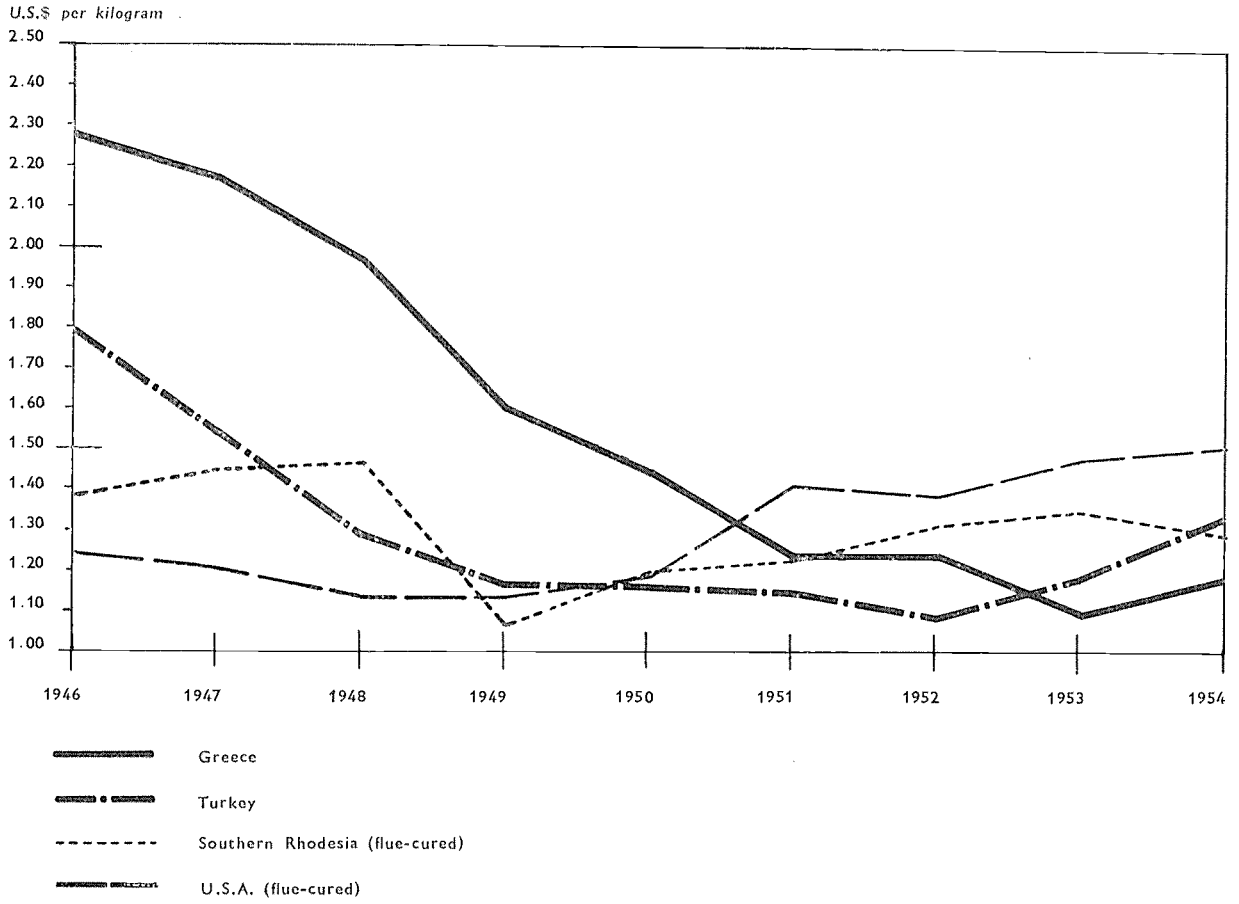


FIGURE C-9. — Export Unit Values of Leaf Tobacco, 1946-1954



of 22,000 tons to 90,000 tons on the average of 1950-54. Exports of Oriental leaf from Greece surpassed the 1934-38 average in 1953 and 1954, but Turkey exported more than twice the prewar volume and its exports to the United States in particular have increased. Exports of cigar leaf, mainly from Indonesia, have decreased.

World imports of all leaf have on the average of the last six years equalled prewar imports. As total consumption has increased, a higher degree of self-sufficiency has thus been achieved, especially in Asia which has reduced imports since the war. China was in prewar years an important outlet for American tobacco.

Price movements for flue-cured and Oriental type cigarette tobacco have been very different. Figure C-9 shows unit values of Oriental and flue-cured leaf exports in the years 1946-54, expressed

TABLE C-47. EXPORT UNIT VALUES OF LEAF TOBACCO; 1946-54

ITEM	1946	1947	1948	1949	1950	1951	1952	1953	1954
	..... *U.S.$ per kg. 1946-1954*								
Oriental leaf:									
Greece	2.28	2.17	1.97	1.59	1.44	1.24	1.25	1.08	1.18
Turkey	1.79	1.53	1.28	1.16	1.16	1.15	1.08	1.18	1.34
Flue-cured leaf:									
United States	1.24	1.21	1.13	1.13	1.18	1.42	1.39	1.48	1.52
South Rhodesia	1.39	1.45	1.47	1.06	1.19	1.24	1.32	1.35	1.29

TABLE C-48. STOCKS OF LEAF TOBACCO AND DISPOSALS; UNITED STATES AND CANADA

ITEM		Carry-over into crop year [1]			Production	Estim. exports	Estim. domestic use	Estim. carry-over into
		1952/1953	1953/1954	1954/1955	1954/1955	1954/1955 prel.	1954/1955 prel.	1955/56
		Thousand metric tons, farm weight						
United States :								
All types :		1 544	1 658	1 706	998	244	680	1 780
of which :	flue-cured	785	840	869	602	205	354	910
	Burley	481	528	543	302	16	225	604
Canada :								
All types :		80	82	79	83	18	46	98
of which :	flue-cured	64	69	69	78	17	41	89
	Burley	9	6	4	2	1	2	3

[1] For the United States, flue-cured leaf stocks on 1 July plus stocks of other types on 1 October. For Canada, all stocks refer to 1 October.

in U.S. dollars. Oriental tobacco, which in prewar years was priced higher than flue-cured, has greatly improved its competitive position by a substantial decrease in price, expressed in U.S. dollars. Devaluations of Greek and Turkish currencies have contributed to this achievement. Rhodesian tobacco has also been in a more competitive position since the sterling devaluation in 1949. United States export unit values show a slowly increasing trend since World War II.

Outlook

In spite of the extensive control over tobacco plantings, stocks in exporting countries have accumulated in recent years mainly in the United States, Canada, Cuba and India. Stocks of Oriental tobacco which for some years were burdensome have practically been disposed of. Table C-48 shows estimated stocks in the United States and Canada at the beginning of the crop year 1955/56 compared with actual stocks at the beginning of the three previous years. The United States stocks are expected to increase further during the 1954/55 season, in spite of support to exports given by sales in local currencies. Canadian stocks may also increase, due to the record output in 1954. In the United States area quotas for flue-cured and Burley tobacco have been further reduced in 1955 to establish a balance between supplies and demand and the tobacco market is expected to remain stable in 1955/56. For the coming years American producers of flue-cured leaf have expressed the view that competition will sharpen with regard to price as well as to the quality and that efforts to reduce the cost of production should be increased.

COTTON

Production

Postwar recovery in world cotton production was slow and unbalanced. Not until 1949/50 was the average prewar volume reached and this was almost entirely attributable to increased crops in the United States of which a substantial part went into stocks. In all other major producing areas production was still substantially below the prewar volume; but there had been a notable increase in crops of what had been minor producing areas before the war.

The past five years have seen a further increase in world cotton production and a considerable change in the geographic pattern. Production in all areas outside the United States has increased; but the increase has been rather modest in the case of major producing countries participating in world trade in cotton, Egypt, Brazil, Pakistan and India. The advance has been very marked in the crops of the Soviet Union and China and even more so in the crops of the lesser producers. In fact the latter two groups in 1954/55 accounted for virtually all of the 18 percent increase in production over the prewar volume.

Price incentives to cotton production have been by no means unfavorable in the postwar years. United States price supports have provided a basic minimum to world prices for cotton. The latter have, however, over considerable periods exceeded

these, sometimes by a very substantial margin. On the other hand, an outstanding feature of postwar developments bearing on costs of production has been the strong upward trend in yields. In recent years a world production about 20 percent higher than prewar has been obtained from approximately the same harvested area. The increase in yields, while fairly general, is by no means uniform, ranging from about 40 percent in the United States to scarcely any in India. Much of the increase is attributable to a shift from older cotton producing regions to newer ones where irrigation facilities have been developed, e.g. Mexico, the Middle East countries, the Soviet Union and the western region of the United States. Since 1948/49, however, cotton crops in the United States, normally the producer of 40 to 45 percent of the world output, have been contingent on whether accumulated stocks called for acreage restrictions. When these have not been in force the volume of output has been fairly consistently at about 20 percent above prewar. But this has proved too large for commercial outlets, and acreage restrictions were in operation in 1950/1951 and again from 1954/55 onwards.

TABLE C-49. COTTON PRODUCTION ; 1945-1954 AND PREWAR AVERAGE

SEASON BEGINNING 1 AUGUST	United States	China and U.S.S.R.	Other Major Producers [1]	Others	Total
	..... *Million metric tons*				
1934–1938 av.	2.8	1.3	1.9	0.7	6.7
1945	2.0	0.8	1.3	0.5	4.6
1946	1.9	0.9	1.3	0.6	4.7
1947	2.6	1.0	1.3	0.6	5.5
1948	3.2	1.0	1.3	0.8	6.3
1949	3.5	1.0	1.4	0.9	6.8
1950	2.2	1.3	1.6	1.1	6.2
1951	3.3	1.6	1.8	1.1	7.8
1952	3.3	1.5	1.8	1.2	7.8
1953	3.6	1.7	1.7	1.3	8.3
1954	3.0	1.7	1.8	1.4	7.9

[1] India, Pakistan, Brazil and Egypt.
Source : International Cotton Advisory Committee.

The incentives and scope for expansion in major producing areas outside the United States have been more limited. The governments of India, Pakistan and Egypt have modified the price incentive by tax and other regulations which held the local price below the world level ; and, excepting Pakistan, yields have shown relatively small increases in these countries and in Brazil in the postwar era. At the same time, the governments of India, Pakistan and Egypt have restricted the land (and fertilizer) available for cotton cultivation in the interests of growing more food for rapidly increasing populations. In Brazil, the incentives for other crops, notably coffee, have been relatively more favorable.

Consumption and Trade

Conditions of demand for apparel and textiles in early postwar years were extremely favorable and raw material supply was not a primary problem. Large stocks of cotton were available in many producing countries. Textile activity in such countries, especially in the United States and more generally in countries outside the former combat zones, was at a high level. Elsewhere, particularly in Japan and in the major cotton importing countries of Europe, however, the dislocations of textile labor and destruction of textile machinery had to be made good.

World cotton consumption did not recover the prewar volume until 1949/50. In the United States there had by that time been some recession from the wardrobe replenishment boom of earlier years, but with the growth in population and incomes since prewar years, consumption was of course substantially higher. In the other major producing countries (outside the Soviet Union and China) and in countries with expanding textile industries based on domestic raw cotton, consumption had increased proportionately even more, although there had been a temporary setback in India following partition due to a shortage of cotton. In the traditionally cotton importing regions and also in China, where short crops had followed political upheavals, consumption expanded steadily but was still considerably below prewar in 1949/50.

During the past five years, world cotton consumption has increased approximately 20 percent. This period has not been without its setbacks which have been due to temporary recessions in the demand for textiles, particularly in the United States and in the major cotton importing countries. Over the whole period, however, all areas show an advance, the most modest being in the United States. A steady advance has taken place in the consumption of cotton producing countries using in the main their own cotton, particularly in the Soviet Union and China. The relatively sharp increase in consumption in the major importing countries is attributable mainly to Japan.

The position reached in 1953/54 as compared with 1934-38 reflects important long-term devel-

TABLE C-50. COTTON AND RAYON CONSUMPTION; 1945-53 AND PREWAR AVERAGE

SEASON BEGINNING 1 AUGUST	COTTON					Total cotton and rayon	Percent cotton
	United States	U. S. S. R., China and Eastern Europe	Major importers [1]	Other major producers and minor importers	Total cotton		
	Million metric tons						
1934–38 av.	1.4	1.5	2.4	1.1	6.4	7.0	92
1945	2.0	0.9	0.9	1.5	5.3	6.0	88
1946	2.2	1.1	1.3	1.5	6.1	6.9	88
1947	2.0	1.3	1.4	1.5	6.2	7.3	85
1948	1.7	1.4	1.6	1.4	6.1	7.3	84
1949	1.9	1.2	1.7	1.6	6.4	8.0	80
1950	2.3	1.4	1.9	1.6	7.2	9.0	80
1951	2.0	1.6	1.9	1.5	7.0	8.6	81
1952	2.1	1.7	1.9	1.6	7.3	9.2	80
1953	1.9	1.8	2.1	1.8	7.6	9.6	79

[1] United Kingdom, Western Europe and Japan. *Source:* International Cotton Advisory Committee.

opments. First, the increase in cotton consumption has been slow relative to its partial substitute rayon, due to price relationships being unfavorable to cotton and to technological advances in rayon. The disparity in rates of increase has diminished as the invasion of cotton markets by rayon has been completed. Second, the increase in cotton consumption has taken place virtually only in cotton producing countries. The major cotton importing countries, which are also major rayon producers, and which have lost export markets for cotton textiles in cotton producing countries, are consuming less cotton than twenty years ago.

World trade in cotton in early postwar years was high in relation to consumption in importing countries as wartime accumulated stocks were shipped to clothe machinery being brought into operation. With the failure of production to expand and the diminution in export availabilities outside the United States, textile recovery in importing countries became increasingly dependent on the United States, where large quantities of cotton were being accumulated in the course of price support operations. Access to United States cotton was, however, limited by the dollar shortage. With the advent of United States Foreign Aid programs, United States exports expanded to about 20 percent above prewar in 1949/50, the total volume of trade being slightly smaller.

Subsequently, world trade in cotton declined and did not revive until 1953/54. During this latter period exports from both the United States and other exporting countries have been highly variable, but have tended on the whole to decline, while a marked expansion has occurred in the exports of other producing countries, including the Soviet Union. Comparing 1953/54 with prewar, the total volume of trade was about the same, but it has been supplied to the extent of only 57 percent by the four major exporters (United

TABLE C-51. TRADE IN RAW COTTON; 1945-1953 AND PREWAR AVERAGE

SEASON BEGINNING 1 AUGUST	Exports				Imports			
	United States	Other major exporters [1]	Others	Total	United Kingdom	Other W. Europe	Japan	Others
	Million metric tons							
1934–38 av.	1.1	1.2	0.5	2.8	0.6	1.0	0.7	0.6
1945	0.8	0.7	0.5	2.0	0.4	0.7	0.1	0.7
1946	0.8	0.8	0.5	2.1	0.4	0.8	0.2	0.7
1947	0.4	0.9	0.6	1.9	0.3	0.8	0.1	0.8
1948	1.0	0.8	0.5	2.3	0.5	0.9	0 2	0.8
1949	1.3	0.7	0.7	2.7	0.4	1.1	0 2	0.9
1950	0.9	0.7	1.0	2.6	0.4	1.1	0.4	0 8
1951	1.2	0.5	0.9	2 6	0.4	1.0	0 4	0 8
1952	0.7	0.7	1.1	2.5	0 3	1.1	0 4	0 8
1953	0.8	0 8	1.2	2.8	0 4	1.1	0 5	0 8

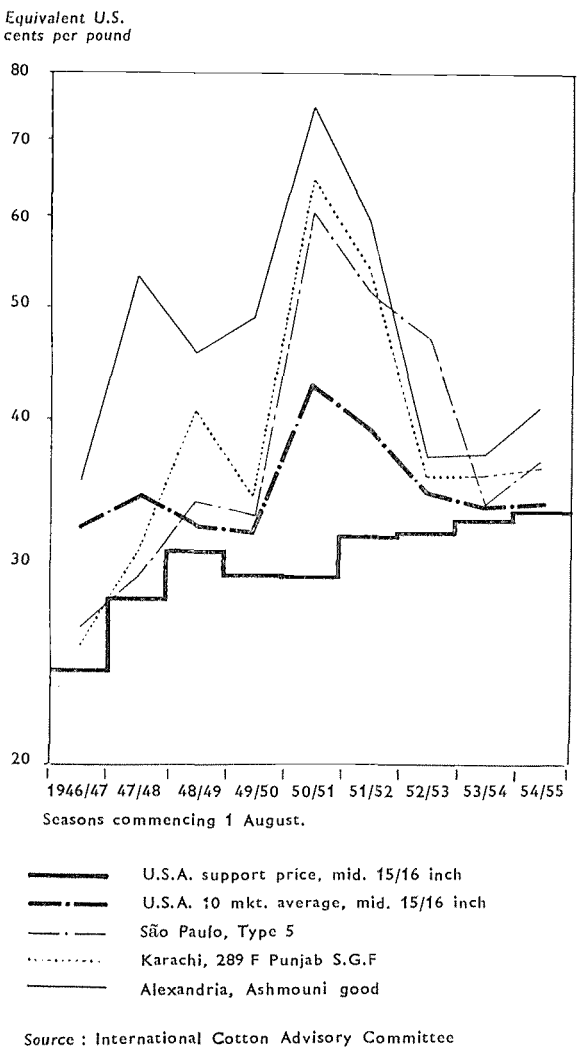
[1] India, Pakistan, Brazil and Egypt. *Source:* International Cotton Advisory Committee.

States 28 percent) as against 82 percent (United States 39 percent) before the war. On the import side, the major postwar features are the increased importance of the lesser importers and the failure of the United Kingdom and Japan to recover their prewar volume.

Stocks and Prices

With world consumption on a higher plane than the slowly rising volume of production, the heavy postwar world stock of cotton was halved by the beginning of the 1949/50 season. During this period, however, the corresponding advance in prices was confined to non-U.S. cottons. With the dollar shortage limiting demand, prices in the United States fell to the support level and stocks began to mount.

FIGURE C-10. — Raw Cotton Prices (Including Export Taxes and Subsidies)



Source : International Cotton Advisory Committee

A sharp reversal to this development occurred when the effect of United States production restrictions coincided with the upsurge in consumption at the time of the Korean conflict. Prices of all cottons, but especially those outside the United States, rose to extraordinary heights. Since 1950/51 the trend of prices has been downwards. United States prices have declined to the support level again and have remained in this region for two or three years, while stocks have again been mounting.

The accumulation of United States stocks is such that the world volume is on the upgrade but in other countries, both producing and importing, stocks have been declining over the past two years. Meantime world prices for all cottons have remained keyed to the United States support price.

After advancing continuously over the past two seasons, world cotton consumption shows signs of levelling off. The main positive feature in the situation is the increasing volume of consumption in the industrializing cotton producing countries. In the United States an awaited upsurge has so far failed to materialize ; and in the cotton importing countries of Europe consumption is barely being maintained, while in Japan it has declined sharply. If, as seems likely, little further headway is made in consumption as a whole, then despite the considerable cut in United States production, the world carry-over will increase again at the end of the 1954/55 season, with possibly an additional concentration in the United States.

Outlook

While special surplus disposals may give some relief, a further cut in production and possibly a cut in prices is in prospect. In the United States, the acreage allotted to cotton for 1955/56 has again been sharply reduced, so that even with the very high yields of the last season, the crop could decrease by half a million metric tons. This would more than offset any further increase likely to occur in other cotton crops and the world carry-over might begin to diminish.

However, producing countries other than the United States, being able to dispose of practically all the cotton they can produce, either to expanding domestic textile industries at relatively low local prices, or in world markets at a shade below the United States support price, will continue to expand production so long as United States prices remain relatively high. An adjustment in the latter either through a lowering

of the support or by means of an export subsidy, which would of course affect the entire world structure, is therefore not to be excluded.

WOOL

Production

World wool production reached a peak in 1941/1942 but by the end of the war, heavy slaughterings in Europe, the Soviet Union and the United States had reduced it by 10 percent. The predominance of the Southern Hemisphere countries had thus increased. Low prices for crops before the war and the strong wartime demand for meat had especially favored the rearing of crossbred sheep. The rapid advance in fine wool values after 1946 favored merino production in particular, but it was not until quite recently that, with a spectacular increase in the Australian clip in the 1952/53 season, merino type wool has recovered its prewar proportion of about one-third.

The ten postwar seasons have seen an almost continuous expansion in production, amounting over the period to about 20 percent for the world as a whole. The increase has been proportionately somewhat greater for the Southern Hemisphere, but this is entirely attributable to larger Dominion clips. In South America, and more especially in Argentina, production has scarcely been maintained. Contrary to the general trend, United States production has declined sharply, despite price support arrangements designed to encourage production.

Outside the Americas, expansion has been fairly general. European production has recovered steadily. A relatively important increase has occurred in the Soviet Union, where considerable efforts have been made to build up livestock numbers. Carpet wool production in the Near East has also risen substantially.

Consumption and Trade

The depletion of wardrobes during the war and high postwar incomes resulted in abnormally heavy demands for wool textiles in the early postwar years. Wool consumption in Europe had surpassed the prewar level by 1948 and in the United States it had reached a level twice as high as before the war. Although the American industry experienced some recession shortly afterwards, the boom continued in Europe and the outbreak of hostilities in Korea, followed by military orders and a building up of textile inventories, gave further impetus to activity generally. World wool consumption reached a postwar peak in 1950. Up to this point consumption had been running 15 percent above the slowly rising volume of production, and was only sustained by continuously drawing on stocks. Subsequently consumption adjusted itself downwards. Since 1951 it has climbed slowly and more in line with production, although arrested at times by recession in the demand for textiles.

A noteworthy change in the pattern of consumption in recent years is the decline in the importance of the United States. Emerging from the war as the largest consumer, United States consumption had fallen to half of its earlier volume by 1954. While in this last year it may have been unduly depressed, there is evidence that the relatively high price of wool, augmented as it is by a substantial import duty, has afforded

TABLE C-52. WORLD WOOL PRODUCTION; 1945/46-1954/55

REGION	1945/46	1946/47	1947/48	1948/49	1949/50	1950/51	1951/52	1952/53	1953/54	1954/55
	Thousand metric tons, clean basis									
Southern Dominions [1]	389	399	405	425	457	461	460	520	510	531
South America [2]	201	188	165	155	159	166	158	167	169	155
U. S. A.	86	78	70	63	55	55	55	59	61	62
Other countries	284	307	328	348	351	374	395	400	412	419
WORLD TOTAL	960	972	968	991	1 022	1 056	1 068	1 146	1 152	1 167

[1] Australia, New Zealand and Union of South Africa. [2] Argentina and Uruguay.

A noteworthy change in the pattern of consumption in recent years is the decline in the importance of the United States. Emerging from the war as the largest consumer, United States consumption had fallen to half of its earlier volume by 1954. While in this last year it may have been unduly depressed, there is evidence that the relatively high price of wool, augmented as it is by a substantial import duty, has afforded

TABLE C-53. WORLD WOOL CONSUMPTION; 1946-1954

REGION	1946	1947	1948	1949	1950	1951	1952	1953	1954
	Thousand metric tons, clean basis								
Europe [1]	510	606	655	683	723	598	614	708	723
United States	339	321	320	232	294	224	216	229	177
Other countries	176	185	191	191	195	208	230	241	238
WORLD TOTAL	1 025	1 112	1 166	1 106	1 212	1 030	1 060	1 178	1 138

[1] Including U.S.S.R. *Source:* Commonwealth Economic Committee (adjusted).

opportunities for the highly developed man-made fiber industry to make inroads into wool's markets.

Postwar trade in wool has been largely governed by the availability of supply both from stocks and from current clips. As wartime accumulated stocks were approaching exhaustion by late 1950 and since export availabilities were otherwise low in relation to import demands at that time, an international allocation scheme was proposed but proved to be impracticable. Subsequent to the 1951/52 recession, trade has re-expanded more or less on the basis of current exportable clips. The most important deviations in this respect have been the South American clips, the erratic movement of which has been largely influenced by fiscal and foreign exchange policies. Dominion

TABLE C-54. WORLD EXPORTS IN RAW WOOL; [1] 1946/1947-1953/54

ORIGIN	October-September							
	1946/47	1947/48	1948/49	1949/50	1950/51	1951/52	1952/53	1953/54
	Thousand metric tons, clean basis							
Dominion wool [2]	725	465	548	572	433	465	483	471
South America [3]	150	195	88	155	91	45	199	90
Other countries [4]	63	65	67	86	69	55	78	64
TOTAL EXPORTS	940	725	705	815	595	565	760	625

[1] Excluding wool on skins.
[2] Excluding shipments from the Dominions to Joint Organization, London, but including J. O. offerings in the U. K.
[3] Argentina and Uruguay.
[4] In calendar year beginning in season shown.

TABLE C-55. WORLD IMPORTS[1] OF RAW WOOL; [2] 1946-1954

REGION	January-December								
	1946	1947	1948	1949	1950	1951	1952	1953	1954 Prel.
	Thousand metric tons, clean basis								
United Kingdom [3]	150	170	162	201	187	133	179	216	179
Europe (Continent) [4]	295	317	286	308	312	215	227	299	296
United States	292	181	219	124	212	164	166	133	93
Japan	—	1	6	10	20	33	40	54	40
Other countries	40	40	34	30	33	27	25	30	25
TOTAL IMPORTS	775	710	705	675	765	570	635	730	635

[1] Retained.
[2] Excluding wool on skins.
[3] Excluding J. O. imports, but including sales of J. O. wool to British mills at U. K. auctions.
[4] Including U. S. S. R.
Sources: Commonwealth Economic Committee; Joint Organization; FAO Year Book of Food and Agricultural Statistics.

wools, accounting for upwards of 70 percent of the world market, have continued to move freely.

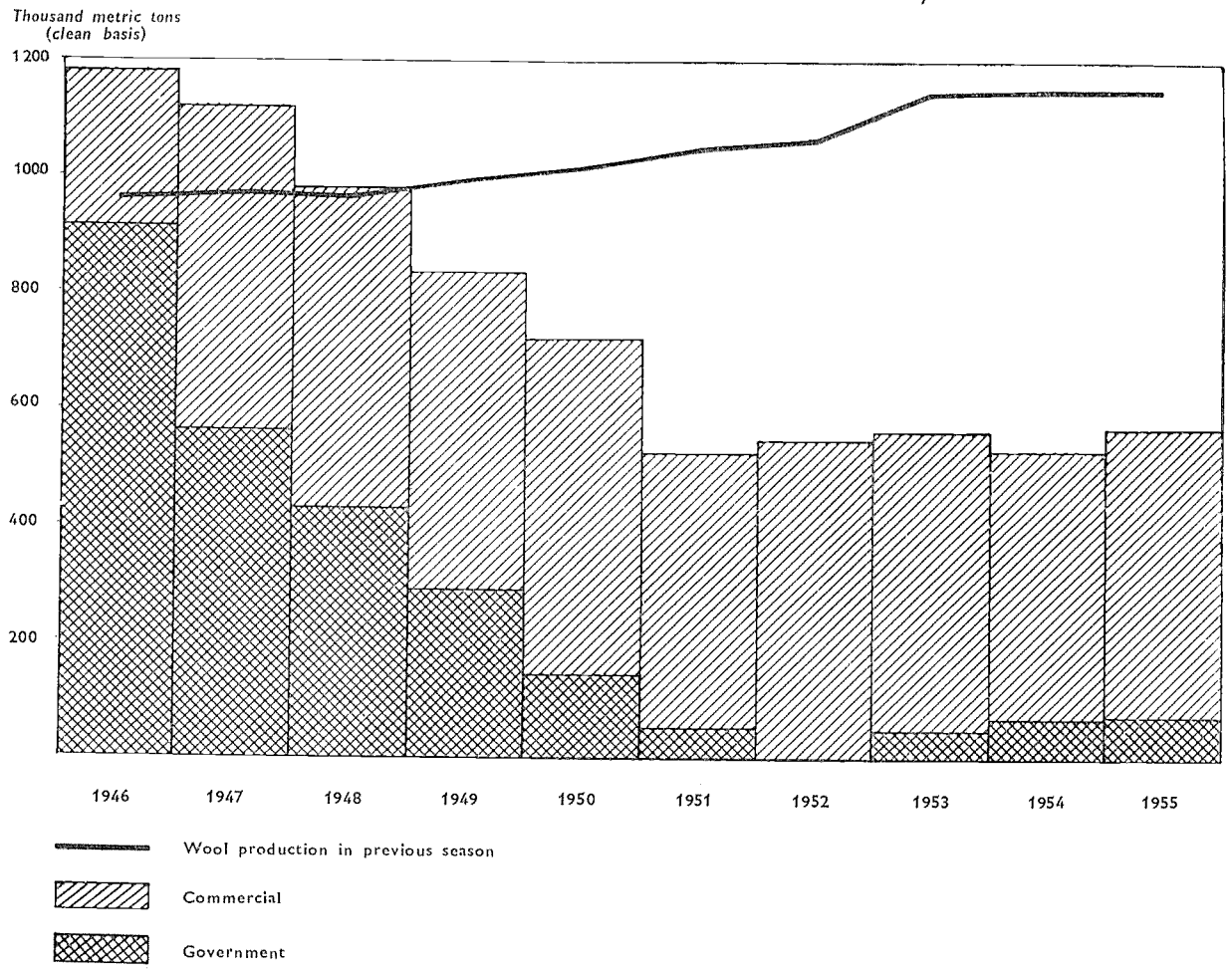
The early postwar predominance of the United States in wool consumption is reflected even more markedly in its high imports following the decline of the domestic clip. However, by 1954 the United States proportion of imports had fallen to 15 percent compared with 38 percent in 1946. At the same time the United Kingdom and Japan had re-assumed positions of greater importance.

Stocks and Prices

At the end of the war world stocks of wool represented about one year's consumption. Three-quarters of these stocks were, however, in the hands of government-financed agencies in the United Kingdom and the United States consisting of the equivalent of two Dominion and one and a quarter U.S. clips. There was also a considerable carry-over in South America. Pent-up needs ensured a ready market for these stocks; and a reserve price arrangement for Dominion wools guaranteed that their disposal did not adversely affect the market for current clips. Liquidation of governmentally financed stocks was completed by 1950/51, at which time world stocks approximated six months' consumption.

During this period of stock liquidation, prices of wool were on the upgrade. Events in Korea precipitated a further sharp advance to a peak in 1950/51. In the following months, prices fell even more sharply than they had advanced, but have shown little fundamental weakness in the last three years. They have been well sustained by commercial demand; government operations have had only a marginal effect on the market.

FIGURE C-11. — World Wool Stocks on 1 January



Current Situation and Outlook

World wool production again reached a record volume in the 1954/55 season. Dominion clips were somewhat larger, but in South America and the Soviet Union there appears to have been a setback. The movement of exportable supplies (there are no significant stocks in major producing countries) has been rather uneven, partly due to impending price adjustments and particularly to the temporary suspension of the sales tax and the adjustment of differential exchange rates in Argentina and the replacement of price supports by income payments for domestic wool in the United States.

At the same time demand has been affected by a falling off in wool textile activity in 1954, notable also because it did not extend to the industry's consumption of other (including manmade) fibers. Thus an unfavorable tendency in prices developed, but it was confined to the finer wools. Early in 1955, however, there was a pickup in the rate of activity in the wool textile industries. It is particularly worthy of note that the long-awaited recovery in the United States industry is at last appearing to materialize. Available supplies would allow for an increase of about 5 percent in wool consumption in 1955 and present trends suggest that this may be realized.

JUTE

Production

The acute shortage of rice in the late war years had resulted in a large-scale diversion of land from jute to rice cultivation in Bengal, where upwards of 90 percent of the world jute crop is grown. World jute production was at a comparatively low level in relation to requirements in early postwar years. High prices for jute did not, however, have a sustained effect on production until after the partition. From 1949 onwards a considerable expansion took place, as the jute/rice price relationship had become more favorable to jute planting. Expansion was even greater in India, where the advance in the price of jute (relative to rice prices) following the devaluation brought about an expansion in what had been formerly marginal jute growing areas. Consequently, the Indian crop increased from about 25 percent of the total in 1948 to 40 percent in 1951.

The total expansion lifted the volume of production in 1951/52 and 1952/53 beyond the immediate requirements of jute manufacturing industries. In Pakistan the area licensed for jute cultivation was consequently drastically curtailed. In both India and Pakistan, however, the price of jute had fallen very sharply, while the price of rice had been maintained. The incentive to plant jute was therefore much reduced. Total production in the past two seasons has been about one-third less than in the two preceding seasons ; and a substantial draft on stocks has been necessary to meet manufacturing requirements.

Consumption and Trade

Certain long-term changes in commodity handling techniques are unfavorable to jute as a packaging material and these were quickened by the war. Moreover, the shortage and relatively high price of jute and jute goods up to 1951 encouraged the use of substitutes, notably paper. Consequently, the manufacturing of jute has never recovered to the immediate prewar scale at any time in the postwar period.

India's manufacturing predominance had increased to four-fifths of world mill consumption during the war, but has since subsided to the prewar proportion of three-fifths. Following partition, India became an importer of jute from Pakistan and banned the export of the commodity. In the period of short crops, export quotas were in force in Pakistan, except for hard currency countries and Argentina, which, however, are not important manufacturers of jute. Consequently, recovery in the European industries was delayed until 1951. Meanwhile a new jute manufacturing industry has been encouraged in Pakistan, which now accounts for about 5 percent of world jute consumption.

Stocks and Prices

In the early postwar years jute was relatively expensive and prices advanced almost continuously up to 1951. Producer prices did not, however, follow the rise in the international market in 1950-1951. In the price decline which followed, the Pakistani government was more successful in maintaining export prices, which had fallen by 50 percent in the 1925/53 season, than prices paid to producers, which dropped by 60 percent — well below the legal minima, in spite of the fact that one-third of an annual crop was bought in

TABLE C-56. PRODUCTION AND DISPOSALS OF JUTE; 1948/49-1954/55

ITEM	1948/49	1949/50	1950/51	1951/52	1952/53	1953/54	1954/55 (prel.)
	Million metric tons						
Production							
Pakistan	1.12	1.18	1.20	1.32	1.36	0.76	0.76
India	0.37	0.56	0.60	0.85	0.84	0.57	0.57
TOTAL	1.49	1.74	1.80	2.17	2.20	1.33	1.33
Disposals							
Mill consumption: India (est.)	1.20	0.98	1.04	1.12	1.00	0.96	1.09
Mill consumption: Pakistan	—	—	—	—	0.02	0.05	0.09
Exports overseas: India	0.16	0.11	—	—	—	—	—
Exports overseas: Pakistan	0.32	0.31	0.76	0.58	0.68	0.68	0.68
TOTAL	1.68	1.40	1.80	1.70	1.70	1.69	1.86

by the Pakistan Jute Board. Those stocks were liquidated in the past two seasons and prices, particularly prices paid to producers, have been rising.

While the supply of raw jute has been contracting, activity in jute manufacturing has been on the upgrade during 1954/55. Hours of work in Indian jute mills have been increased and the new Pakistani industry is steadily expanding operations. In Europe and elsewhere jute manufacturing appears to have been well maintained. However, the advance in prices was halted in February 1955, when it was realized that supplies would not be as tight as had been anticipated.

Current Situation and Outlook

The sharp fall in the price of rice last season combined with the strengthening of jute prices has made jute a more attractive crop. All the evidence suggests that the Pakistani target of a maximum crop of 1.0 million tons will be exceeded in 1955, probably by a considerable margin. For similar reasons a heavy crop is also expected in India. The Pakistani government has consequently announced minimum export prices for the current season.

Over the last forty years the use of jute has remained stationary despite the increase in the production of agricultural commodities, owing to developments in handling methods and the use of other packaging materials (much influenced by the relative price and price stability of the raw materials). Prospects for a continued expansion of jute usage in household uses appear more favorable. Work is also in hand on the development of entirely new uses. Such favorable developments may do no more than offset the adverse trends, however, and with the expansion in manufacturing capacity, which is taking place in an industry already burdened with excess plants, intensified competition in the international market appears to be in prospect. The extreme fluctuations in supplies and prices also limit the growth in jute demand, as markets lost to substitutes in periods of short supplies and high prices are difficult to recapture.

RUBBER

Production

At the end of the war, rubber production in Southeast Asia, normally the producer of about 95 percent of the world's natural rubber supply, was of very small dimensions. Recovery was, however, speedy; world output had surpassed the prewar average by 1947. Most sectors in Southeast Asia shared in the recovery, with the notable exception of Indonesian estates.

With industrial demand increasing and with the strategic stock purchases brought about by events in Korea, production continued to climb. It reached a peak in 1951 when it approached double the prewar volume. The main feature of this secondary expansion was the great increase in the output of small holdings where, in the face of a relatively sharp advance in the price of rubber,

TABLE C-57. CONSUMPTION OF NATURAL AND SYNTHETIC RUBBER ; 1945-1954

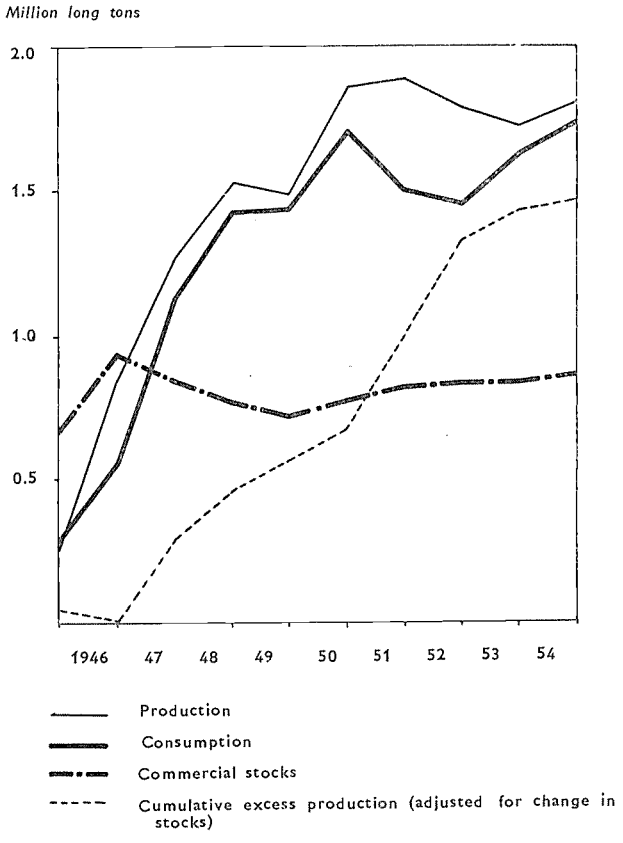
ITEM	1945	1946	1947	1948	1949	1950	1951	1952	1953	1954
	Thousand metric tons									
World										
Total natural and synthetic . . .	1 146	1 491	1 763	1 933	1 918	2 321	2 350	2 372	2 540	2 548
Natural	267	564	1 128	1 445	1 461	1 732	1 524	1 473	1 654	1 796
Percent natural .	23	38	64	75	76	75	65	62	65	70
United States										
Total natural and synthetic . .	812	1 056	1 140	1 086	1 005	1 279	1 233	1 281	1 359	1 253
Natural	107	282	572	637	584	732	461	461	562	607
Percent natural .	13	27	50	59	58	57	37	36	41	48

Source : International Rubber Study Group.

producers gave more attention to tapping rubber and less to rice and other crops. At the time, a substantial measure of recovery was achieved on estates in Indonesia, which by 1951 was again the largest rubber producer, accounting for 43 percent of world output.

As prices fell steadily over the following two and a half years, production declined slowly. This decline affected all major producing countries with the exception of Viet-Nam and Cambodia. But it was confined in the main to small holdings ; estate production in both Malaya and Indonesia remained rather stable. The total decline was rather modest and still left rubber output in 1953 at about 75 percent above prewar. Moreover, by mid-1954 production on small holdings was again tending to expand in the face of an upturn in rubber prices and a sharp fall in the price of rice.

FIGURE C-12. — World Production, Consumption and Stocks of Natural Rubber



Source : International Rubber Study Group.

Consumption

At the end of the war rubber manufacturers were largely supplied from synthetic rubber industries which had been constructed during the war, notably in the United States. As natural rubber became available in larger quantities and at competitive prices, it captured a larger share of the expanding market. By 1949 natural rubber accounted for 76 percent of total natural and synthetic rubber consumption in the world and 58 percent in the United States, where operations in synthetic rubber plants had been reduced to a legislated minimum.

Total natural and synthetic rubber consumption was stepped up by over 20 percent between 1949 and 1950 and has further expanded, reaching something over twice the immediate postwar and

also the prewar volume in 1954. During these latter five years, however, market forces have not been continuously favorable to natural rubber. Following events in Korea, not only manufacturers' demands but also government demands for strategic stockpiles were increased. Since supply could not increase on the same scale, the price of natural rubber advanced far beyond the level competitive with synthetic rubber; and in the United States the government, in order to ensure that stockpile requirements for natural rubber were met, introduced regulations limiting the scope of its usage, while synthetic rubber output was re-expanded to meet manufacturing requirements. Thus, although world consumption of natural and synthetic rubber continued to expand, natural rubber's proportion fell to 62 percent and in the United States to 36 percent in 1952.

The last two years have seen the end of stockpile purchases, a steady fall in the price of natural rubber to a level competitive with the synthetic product and the virtual removal of limitations on natural rubber consumption in the United States. In consequence, the consumption of natural rubber had expanded to a record volume in 1954 and accounted for 70 percent of total natural and synthetic rubber consumption globally and 48 percent in the United States.

Stocks

Throughout the entire postwar period production has been more or less in excess of consumption and the world's stock of natural rubber is now very large. By far the greater part of this excess has, however, been absorbed in governmental strategic stockpiles, the largest share being held by the United States. While the acquisition of these stocks undoubtedly heightened market activity, especially in 1951/52 when the major portion was acquired, it has more recently tapered off; and, of course, release is governed by stringent regulations.

Up to 1949 commercial stocks were declining as strategic stocks increased. Thereafter, however, a variable increase has taken place. Excess production has diminished steadily over the past three years and by 1954 the small balance was largely added to commercial stocks. While the ratio of these stocks to consumption has varied in recent years, it has been tending to decline and is now scarcely equal to six months' consumption.

Until mid-1954 natural rubber consumption was increasing despite the reduced level of manufacturing activity, particularly in the United States. Natural rubber prices having fallen to levels competitive with those for the synthetic product, a larger share of the declining market was captured. In the second half of the year, however, manufacturing activity was definitely on the upgrade and this resulted not only in a further increase in natural rubber consumption, but also in a revival of synthetic rubber consumption.

Outlook

The expansion in demand has continued this year. The International Rubber Study Group estimates total consumption for the whole year at 2,830,000 metric tons (including 1,860,000 metric tons of natural rubber), which is 11 percent greater than the record totals of the last two years. For the first time since the war, expansion in the consumption of natural rubber will be limited by the volume of current production rather than by the competing demands of strategic stocks. Output is expected to increase, as the result of rising prices, by only 2½ percent to 1,875,000 metric tons which leaves a very small balance to improve the level of commercial stocks. By mid-1955 prices of natural rubber were considerably above the United States price of "general purpose" synthetic rubber. The latter has remained unchanged for more than two years and production has been reduced and re-expanded in accordance with changes in demand. Only about two-thirds of capacity was used in 1954, but this year output is expected to rise by nearly 40 percent to one million metric tons. Virtually all the government-owned production facilities in the United States have now been transferred to private concerns. Their price and production policies will clearly have an important bearing on the future demand for natural rubber. The long-term demand for rubber in general is extremely favorable. However, the proportion satisfied by natural rubber is likely to decline unless its output can be expanded fairly quickly at prices competitive with those for synthetic rubber.

HARD FIBERS

At the end of the war hard fiber production was 25 percent below the prewar level, mainly as a result of devastation in the Philippines (abaca)

TABLE C-58. HARD FIBER PRODUCTION AND IMPORTS; 1946-1954

ITEM	1946	1947	1948	1949	1950	1951	1952	1953	1954
	Thousand metric tons								
Production									
Abaca	60	128	104	90	122	157	145	140	117
of which: Philippines	54	110	82	73	106	139	123	120	106
Sisal	203	202	264	268	309	345	367	364	397
of which: Br. East Africa	136	136	159	163	165	191	203	207	217
Henequen	122	130	136	120	114	99	108	98	119
of which: Mexico	108	117	123	104	98	82	95	87	104
Marginal fibers	75	63	60	59	55	56	54	53	53
WORLD TOTAL	450	525	565	540	605	655	675	655	685
Imports (retained).									
Europe	...	120	150	160	215	220	190	210	250
United States	159	219	176	167	210	238	234	220	183
Others	...	60	90	85	85	100	100	90	90
WORLD TOTAL	300	400	415	410	510	560	525	520	525

... Not available.

and Indonesia (sisal). The recovery in output, which in 1951 and 1952 reached a level moderately above the prewar average, was largely due to the increased production of sisal in Africa and Latin America. Henequen production fell away from early postwar high levels. Abaca production has recovered to only two-thirds of the prewar level, being adversely affected among other things by mosaic disease.

As compared with prewar there has been some decline in Japanese and, to a lesser extent, European usage of hard fibers, but this has been taken up by increased requirements in the United States, which included substantial strategic stockpiling. The United States has accounted for 45 percent of total hard fiber imports in the postwar period. There has been some switch from abaca to sisal in rope-making in other countries, notably in the United Kingdom, largely on account of balance of payments difficulties.

The shortage of hard fibers in the first five years after the war led to a more or less continuous advance in prices up to a peak in the second half of 1951. With ample supplies and comparatively heavy stocks of cordage, hard fibers shared fully in the general decline in commodity markets in 1952. In spite of a setback in Philippine abaca, output has remained high and the market was generally weak in 1954. The improvement in industrial activity, however, holds the promise of a revival in demand in 1955.

The increasing relative importance of sisal in hard fiber supplies, already in evidence for the last thirty years, has been reinforced by postwar developments. Output is still rising and the indications are that the international market is likely to remain highly competitive.

FOREST PRODUCTS

Roundwood

The development of roundwood production in the world has already been dealt with in Chapter IV. The trade in roundwood, mainly industrial, during the decade under review has not exceeded two percent of the total production of industrial roundwood in the world and has been principally concentrated in Europe. This European trade in industrial roundwood has varied between 3 and 6 percent of the total production in the region. The main categories which have entered international trade are pulpwood and pitprops, the trade of which amounted to about 10 to 15 percent of their total output. In utilizing roundwood, Europe has a problem of uneven distribution of the region's forest resources with respect to the wood or wood-using industries. The flow of this trade, mainly from the northern European countries, reached its highest level in 1951 and 1952 as a result of heavy buying by the main importing

countries. The decrease in roundwood supplies from their prewar level from the U.S.S.R. and Eastern European countries contributed to the pressure on export supplies available in northern Europe. The volume of trade in pitprops and pulpwood showed strong fluctuations; that of pulpwood increasing by nearly 300 percent in 1954 as against 1946, whereas that of pitprops declined slightly. Trade in other roundwood has remained more or less stable and has in general been limited much more to trade between neighboring countries with the exception of imports of hardwood logs from other regions, which have shown some increase during the period reviewed. In other regions of the world the volume of trade in roundwood has remained rather insignificant, with the exception of North America, where the usual flow of pulpwood from Canada to the United States has increased and where the volume of pitprop exports to Europe has declined. The U.S.S.R., which was one of the main exporters of pulpwood and other roundwood before the war, did not resume pulpwood exports at all, and, in fact, became a pulpwood importing country. Exports of pitprops by the U.S.S.R. were resumed only slowly and on a much lower level than prewar.

The development of world trade in roundwood during the past decade shows a rather clear slowly declining trend. This is a normal result of the efforts made all over the world to reach a greater degree of self-sufficiency, to reduce the volume of trade in raw materials of forestry origin

TABLE C-59. EXPORTS OF MAIN CATEGORIES OF ROUNDWOOD : 1946-1954

ITEM	1946	1947	1948	1949	1950	1951	1952	1953	1954
	Thousand cubic meters								
Coniferous Logs									
Europe	1 095	3 247	2 936	1 985	1 222	1 070	983	700	984
North America	201	237	357	373	274	332	312	495	604
WORLD	1 340	3 550	3 340	2 380	1 520	1 420	1 310	1 270	1 610
Broadleaved Logs									
Europe	270	284	385	365	484	631	396	503	670
North America	124	219	253	240	204	225	215	244	250
Latin America	170	210	190	210	180	240	200	190	200
Africa	570	720	880	960	1 290	1 770	1 120	1 550	1 600
Asia	100	180	280	400	1 200	1 340	2 170	3 160	3 300
Oceania	23	28	25	28	33	28	60	60	25
WORLD	1 260	1 650	2 010	2 210	3 390	4 230	4 160	5 710	6 045
Pulpwood									
Europe	924	1 888	3 292	2 584	2 870	4 285	3 511	2 198	3 633
Finland	(263)	(303)	(577)	(846)	(1 882)	(3 478)	(2 631)	(1 431)	(2 146)
North America	4 868	5 261	6 008	4 126	4 493	7 355	6 401	4 488	4 641
Canada	(4 731)	(5 059)	(5 909)	(4 111)	(4 424)	(7 322)	(6 358)	(4 460)	(4 536)
WORLD	5 800	7 160	9 310	6 710	7 410	11 640	9 920	6 690	8 280
Pitprops									
Europe	2 554	3 576	2 850	2 785	2 278	2 342	3 858	1 924	2 280
Finland	(1 254)	(1 618)	(1 279)	(1 135)	(880)	(1 122)	(1 653)	(588)	(966)
U. S. S. R.	[1]20	[1]50	[2]42	[2]110	[2]213	[2]276	[2]301	[2]357	[2]586
Canada	1 009	863	762	710	62	219	1 017	263	241
WORLD	3 590	4 500	3 690	3 610	2 560	2 840	5 180	2 540	3 110

[1] Secretariat estimate.
[2] Exports to countries of Western Europe only.

and to increase trade in semi-finished and finished products. In Europe, however, the decline will probably be considerably slower and from time to time the market may experience certain upswings. For 1955, for example, the present indications point to a somewhat higher volume of trade in roundwood, principally in pulpwood and pitprops, than the 1946-1954 average.

Sawnwood

A considerable change took place in the world's sawnwood production and trade during the war years. Three features of this development were of major importance to the world situation as a whole. The first and perhaps the most significant was the heavy reduction of European production to about 25 percent of the 1938/39 level, with the resulting decline of about 50 percent in the main producing countries' export possibilities, in a period when the region's needs far exceeded the normal prewar requirements. This was followed by a slow gradual increase during the period 1946 to 1954 which stabilized the output at a level about 10 percent lower than prewar. The trade, however, practically regained the prewar levels, mainly from great efforts to rationalize the use of wood in the main exporting countries, primarily in northern Europe, together with a noticeable increase in their production of sawnwood which led to greater export availabilities. This development also partly compensated for a decline in domestic production in some of the importing countries, notably in Western Germany. The second important feature in the world sawnwood situation was the continuing growth of North American output, which was able to meet the increasing needs of that region and at the same time maintain the volume of exports at its prewar level. The third feature was the drastic decline in export supplies of sawnwood from the Soviet Union and the almost complete absence of Soviet exports for a considerable period after the war. Although the production of sawnwood in the U.S.S.R. showed a rather steep rise, the enormous reconstruction and other requirements of the country allowed only a fraction of the production to be used for export.

In most of the other regions of the world except Asia, sawnwood production increased steadily during the decade and continued at a level markedly higher than prewar. In Asia, however, the main sawnwood producing country is Japan and its production fell steeply immediately after the war to less than half of the previous top levels. Not before 1951 did the production of sawnwood in Japan regain and exceed the previous highest volume. The world situation in 1954 was characterized by a rather slow but steady rise in the volume of sawnwood production. In Europe only limited possibilities exist for reaching a substantial long-term rise in the region's sawnwood production, but in Asia the great resources of broadleaved species still provide enormous unused reserves. The problem of utilizing broadleaved sawnwood is not exclusively Asian; it is receiving attention throughout the world. A comparison between prewar and postwar production of broadleaved sawnwood shows rather strikingly the great advances that have been made. In Europe the increased utilization of broadleaved species as sawnwood helped avoid more serious consequences of the shortage of sawn softwood during the early postwar period.

The development of world trade in sawnwood showed several interesting aspects during the pe-

TABLE C-60. PRODUCTION OF CONIFEROUS (SOFTWOOD) SAWNWOOD; 1946-1954

REGION	1946	1947	1948	1949	1950	1951	1952	1953	1954
	Thousand standards								
Europe	8 985	9 085	9 390	9 315	9 435	9 380	8 550	8 780	9 145
U. S. S. R. [1]	7 000	7 500	8 000	8 500	9 000	10 000	11 000	11 640	12 500
North America	15 617	17 272	17 853	16 658	19 356	18 907	18 653	19 400	18 496
Latin America [1]	360	430	440	510	600	850	1 090	1 060	1 070
Africa [1]	100	120	140	170	190	200	200	210	220
Asia [1]	2 300	2 580	2 790	2 630	2 920	3 030	3 230	3 220	3 220
Oceania [1]	310	340	350	310	340	370	400	390	420
WORLD [1]	34 670	37 330	38 960	38 090	41 840	42 740	43 120	44 700	45 070

[1] FAO estimates.

TABLE C-61. PRODUCTION OF BROADLEAVED (HARDWOOD) SAWNWOOD; 1946-1954

REGION	1946	1947	1948	1949	1950	1951	1952	1953	1954
	Thousand cubic meters								
Europe	9 625	10 080	9 670	10 320	9 675	9 665	9 100	8 935	9 275
U. S. S. R. [1]	6 000	6 300	6 700	7 000	7 400	8 300	9 100	9 600	10 500
North America	21 002	19 449	19 677	14 791	18 803	19 614	19 595	20 719	18 882
Latin America [1]	5 170	5 000	4 840	4 450	4 360	4 730	4 720	4 740	5 000
Africa	1 300	1 510	1 410	1 440	1 420	1 600	1 650	1 750	1 750
Asia	4 190	4 550	5 250	5 750	6 590	7 000	7 790	8 050	8 050
Oceania [2]	2 358	2 549	2 709	2 464	2 553	2 837	2 736	2 722	2 750
WORLD	49 640	49 440	50 260	46 210	50 800	53 750	54 690	56 520	56 210

[1] FAO estimates.
[2] FAO estimates of boxboard component added except for 1954.

riod 1946 to 1953. The volume of total exports of both sawn softwood and sawn hardwood almost doubled during this period. Regional developments, however, varied considerably. The increase in the volume of sawn softwood exports was primarily due to a rise of some 140 percent in the exports by European countries, notably Austria, Finland and Sweden, whereas the expansion of world trade in sawn hardwood was due chiefly to increased exports by European countries, notably France, as well as from Asia. The trade in other regions on the other hand showed less marked changes although a steady upward trend was discernible. The bulk of world trade in sawn softwood is intra-regional and is primarily concentrated in Europe. The same uneven distribution of supply and demand that determine the course of trade in other forest products also set the pattern for the region's trade in sawnwood. In North America, on the other hand, the bulk

TABLE C-62. EXPORTS OF SAWNWOOD

YEAR	Coniferous sawnwood	Broadleaved sawnwood
	1946 = 100	
1947	134	158
1950	174	226
1953	181	184
1954	205	198

of the trade is limited to imports from Canada by the United States, although during recent years exports by both Canada and the United States to other regions have shown some increase. Trade in sawn softwood between Europe and other regions has suffered a steady decline, partly because of the rising demand within the region and partly because the relatively high prices of European sawn softwood make it increasingly difficult for the European exporting countries to compete with Canada and the United States in markets such as Australia and South Africa. Other sawn softwood exporting countries, notably Brazil, have succeeded, despite the considerable increase in their domestic requirements, in gradually stepping up their exports, especially to the United States and Europe. Temporary monetary or trade policy difficulties have at times, however, hampered this development. The Pacific area and South Africa, formerly important importers of sawn softwood, have become increasingly self-sufficient. The violent price fluctuations on the international sawn softwood market between 1950 and 1952, as well as the generally unduly high price level of internationally traded sawn softwood greatly contributed to the efforts toward self-sufficiency made by these regions. The international trade in sawn softwood is rather uniform as to products and is traditionally set into a more or less established pattern between countries, but the world trade in sawn hardwood is much different. The main difference is in the enormous variety of broadleaved species, most of which have become commercially important only recently. World trade in sawn softwood does not present any great possibilities for further development either in composition of species or geographical distribution of trade. Trade in hardwoods, however, has great possibilities for further expansion. Many of the new species, introduced to the trade during recent years, must become better known and receive wider acceptance than hitherto; when suitable uses have been found for all the various

TABLE C-63. EXPORTS OF SAWN SOFTWOOD, INCLUDING BOXBOARDS; 1946-1954

REGION AND COUNTRY	1946	1947	1948	1949	1950	1951	1952	1953	1954
	Thousand cubic meters								
EUROPE:	5 683	7 524	8 346	10 048	11 580	12 914	10 026	12 610	13 590
Austria	37	159	463	1 173	2 255	2 410	2 438	2 775	3 290
Finland	1 677	2 079	2 283	2 825	3 084	3 917	2 767	3 154	3 404
Sweden	1 994	1 966	2 597	3 101	3 746	4 241	3 252	4 465	4 376
U. S. S. R.	[1]140	[1]370	[2]257	[2]617	[2]850	[2]635	[2]603	[2]1 037	[2]1 309
NORTH AMERICA:	6 412	8 909	6 596	6 185	9 587	10 361	9 354	9 266	11 143
Canada	4 885	6 145	5 470	4 980	8 665	8 405	8 063	8 151	9 821
LATIN AMERICA:	1 210	1 170	1 400	1 010	1 400	1 540	1 090	1 410	[1]1 475
Brazil	867	793	943	624	822	1 088	636	923	
AFRICA	25	30	45	25	50	55	35	40	[1]45
ASIA	35	60	25	15	10	460	100	100	[1]75
OCEANIA	20	25	55	55	35	50	40	50	[1]55
TOTAL	13 530	18 090	16 720	17 960	23 510	26 020	21 250	24 510	[1]27 690

[1] FAO estimates.
[2] Importers' figures; exports to countries of Western Europe.

species, they will undoubtedly eventually replace and supplement softwoods in many of their traditional uses.

As to the situation in 1955, all indications point to a stable and firm market for sawnwood, both coniferous and broadleaved, in most parts of the world. The 1955 trade figures may therefore easily represent a new postwar record level in the world trade of sawnwood.

Plywood and Fiberboards

One of the most remarkable developments in forest industries since the end of the war has been the great expansion of world production of plywood and fiberboards. In 1946, the level of plywood production in most countries of the world had fallen far below the prewar output; world production, however, was about equal to that of prewar, due primarily to the steady war-time expansion of the United States plywood industries. By 1954, the total production of plywood in the world had increased by about two and a half times from the level in 1946. In the U.S.S.R 1952 production reached the prewar top levels and has since shown a further steady increase. In Asia, primarily in Japan, the immediate postwar output of plywood was about one-half the prewar production. During the decade reviewed, it increased, however, to nearly four times the 1946 output and attained almost twice the prewar volume. In Latin America, the total production of plywood, after having shown a marked rise from the prewar level, declined in 1947-50 due to decreased output in Brazil, the region's main producing country, but recovered remarkably during 1950-54, when output doubled. The recorded expansion of the region's total production was due to the establishment and expansion of plywood industries in countries that had little or no production prior to the war. Africa, on the other hand, is one of the regions where the relative increase has been fastest. Economic and industrial development in different parts of the region and better knowledge of the great variety of hardwood species available made possible a ten-fold increase in the region's plywood production from the 1946 level and even more from the prewar period. In the Pacific area, the expansion of the plywood industries had already started during the war and continued at a steady pace during the decade, registering a rise of some 70 percent.

TABLE C-64. PRODUCTION OF PLYWOOD; 1946-1954

REGION	1946	1947	1948	1949	1950	1951	1952	1953	1954
	Thousand cubic meters								
Europe	525	730	910	1 095	1 305	1 595	1 495	1 615	[1] 1 900
U. S. S. R. [1]	400	500	600	700	[2] 810	850	880	950	1 000
North America	1 467	1 743	2 015	2 330	3 316	3 734	4 351	5 051	5 200
Latin America [1]	120	110	80	95	85	125	150	160	170
Africa [1]	7	7	12	21	[2] 29	69	45	65	[1] 70
Asia [1]	175	228	241	199	189	285	390	550	[1] 660
Oceania	58	60	73	75	82	83	64	84	100
WORLD [1]	2 750	3 380	3 930	4 510	5 820	6 740	7 380	8 480	9 100

[1] FAO estimates. [2] Planned figure.

TABLE C-65. PRODUCTION OF FIBERBOARD ; 1946 1954

REGION	1946	1947	1948	1949	1950	1951	1952	1953	1954
	Hardboard								
	Thousand metric tons								
Europe	205	255	320	380	515	645	545	620	[1] 795
U. S. S. R. [1]	5	5	5	10	25	25	60	70	70
North America	255	283	351	240	387	357	442	435	496
Latin America	—	—	—	—	20	20	30	30	[1] 40
Africa	—	—	—	—	—	20	30	30	[1] 30
Asia	7	7	14	10	10	9	20	20	[1] 30
Oceania	8	19	21	26	34	34	47	61	[1] 80
WORLD	480	570	710	665	990	1 110	1 175	1 265	[1] 1 540
	Insulating Board								
	Thousand metric tons								
Europe	140	185	230	205	235	290	240	275	[1] 315
U. S. S. R. [1]	5	5	5	10	25	25	60	70	70
North America	731	835	977	669	862	965	908	995	1 057
Latin America	—	—	—	—	—	—	—	—	—
Africa	—	—	—	—	—	10	10	10	[1] 10
Asia	2	2	6	5	5	6	10	10	[1] 10
Oceania	5	11	14	14	19	18	43	49	[1] 50
WORLD	885	1 040	1 230	905	1 145	1 315	1 270	1 410	[1] 1 510

[1] FAO estimates. — None or negligible.

The main plywood exporting countries before the war were Finland, Poland and the U.S.S.R., which between them accounted for some 75 percent of the total world trade. Exports by Poland and the U.S.S.R. were cut heavily when the war started, while Finland maintained and even increased the volume of its plywood exports. Finland currently accounts for about half of total world trade, which latter is about 30 percent smaller than prewar. The great increase of world plywood production during the period 1946 to 1954 has thus primarily met the needs of domestic markets in the main producing countries. The United Kingdom has continued its predominant position as a plywood importer and still absorbs some 30 to 50 percent of the total world trade, as against 50 to 60 percent during the prewar period.

Another feature of the postwar development in forest industries has been the expansion of fiberboard production, which more than trebled from the prewar level and more than doubled during the review period. The main quantitative increase took place in Europe and North America, which both raised their output by about the same tonnage from the 1938 level. Although the tonnage increase was about the same, the relative

increase in Europe was over five times as against a rise of about two and a half times in North America. Since 1946, the European production of fiberboards has more than trebled, while the North American output almost doubled. In all other regions of the world, fiberboard industries did not exist before this decade. The Pacific area and the U.S.S.R. show marked increases in production; elsewhere the development has been relatively slow. Of the two categories of fiberboards, insulating and hardboards, production of the latter has expanded more rapidly. The multiple possibilities of utilizing hardboard with plywood have become increasingly important to more rational use of sawnwood.

World trade in fiberboards represents around 10 percent of the total production. Sweden alone accounts for some 50 percent of the total world trade, the northern European countries together for over 70 percent. The volume of exports by other countries is therefore rather insignificant. Imports are more evenly distributed, although the United Kingdom receives some 25 to 28 percent of the world's total fiberboard imports.

In 1955, the demand for both plywood and fiberboards seems to have reached levels higher than ever, and production figures for these two commodities will therefore probably show a new record. In the trade in fiberboards, all time highs appear quite possible in 1955; in the plywood trade a postwar record may be reached, but owing to much lower Soviet exports the figure would not equal the prewar one.

Wood Pulp

At the end of the second world war the production of wood pulp had in most countries of the world fallen far below prewar levels. The two outstanding exceptions were the United States and Canada, where production continued to expand rapidly up to 1941, remained fairly steady in the succeeding years and resumed its rapid expansion immediately the war was over. Thus the total world production in 1946 was roughly the same as in 1937/38, the rise in North American output having compensated for the decline elsewhere. The end of the war saw a tremendous upsurge in the demand. A good deal of capacity, especially in Europe and the U.S.S.R., had been destroyed or damaged during the war and great efforts were needed to restore capacity to its prewar level. At the same time, a number of factors contributed to a remarkable growth in the demand for pulp and paper: industrial recovery, economic progress, improving living standards, rising literacy. Thus from 1946 to 1954 the world's wood pulp production rose by about 85 percent. This entailed a considerable rise in raw material requirements — corresponding to some 45-50 million cubic meters of pulpwood. This tremendous rise in pulpwood needs led at times to serious shortages of traditional softwood pulping species, permitting at the same time improvements in the utilization of traditional materials and more extensive use of other materials. The most important outcome of this latter development has been the significant rise in the volume of temperate hardwoods used for pulping. The last decade has seen intensive research in many parts of the world aimed at broadening the raw material basis of the pulp and paper industry. This has stemmed partly from anxieties in the long-established producing centers as to the future adequacy of reserves of traditional materials, partly from the desire to establish new industries based on indigenous materials in many parts of the world where traditional conifers are lacking. The technical advances which have been made in recent years have belied some of the fears expressed at the Preparatory Conference on World Pulp Problems convened by FAO in Montreal in 1949. Today, it can be stated with confidence that the world as a whole possesses sufficient fibrous resources — conifers, temperate and tropical hardwoods, bamboo, grasses and agricultural residues — and the requisite techniques to sustain any conceivable future rise in the world's pulp and paper needs. North American wood pulp production in 1946 already stood at 78 percent over the 1938 level; by 1954 it had increased to more than 50 percent above the 1946 figure. In marked contrast, European wood pulp production in 1946 was only half that of prewar. Indeed, in Germany and the Eastern European countries production had fallen to levels which represented only some 10 to 15 percent of the output immediately before the war. Thus the mills of Northern Europe, which had been less adversly affected during the war period, accounted for 78 percent of Europe's wood pulp production in 1946, as against 57 percent before the war. The three northern countries have always accounted for the bulk of the world's pulp export trade; in response to the strong demand for pulp and paper in the postwar years, production recovered rapidly and by 1954 output in these three countries was some 12 percent over the prewar level. Elsewhere in Europe recovery was slower. In Germany (Western and Eastern), recovery was

long delayed, and in spite of a rapid rise in recent years production still remains some 700,000 tons below that of prewar. Certain other countries, for example France and Italy, have been able to expand their output over prewar levels largely through the increased pulping of hardwoods. In the U.S.S.R. large pulping capacity was destroyed during the war and output in 1946 was less than half that of prewar. Great efforts were made, however, to restore and expand pulping capacity, and by 1954 production was almost double that of prewar. The Soviet Union's enormous forest resources, of which only a relatively small proportion are today used industrially, ensure the Soviet pulp industry excellent possibilities of further rapid expansion.

Before the war, Japan was by far the greatest wood pulp producer in the Far East, but by the time the war ended production had fallen to a very low level. The last decade, however, has seen an astonishing growth in the Japanese pulp industry so that by 1954 wood pulp production was roughly seven times that in 1946, and three times that of prewar. This sustained and rapid rise continued until May 1954; since then monthly output figures have shown no significant changes.

Until recently, the paper industry in China has been largely a small-scale craft industry, based on non-wood materials, and there has been little production of wood pulp on an industrial scale. However, China's paper needs have been rising rapidly since the end of the civil war, and, in addition to encouraging maximum output from hand-made paper mills, existing wood pulp mills have been restored and expanded and new ones built. Nevertheless, because China's forests are localized and limited in extent, China's paper industry still relies largely on pulp made from rice straw, bamboo and, more recently, bagasse. Elsewhere in the Far East, though there are several countries with a sizeable production of paper, notably India, these industries are largely based on either materials other than wood, or imported wood pulp, or both.

This is true, also, generally speaking, of Latin America and Africa, but in these regions, as in the Far East, with paper demands rising rapidly, there is an increasing disposition to expand domestic production based on indigenous materials. Thus wood pulp production in Latin America, for example, has roughly trebled since 1946.

The last decade has seen no significant changes in the pattern of international trade in wood pulp. Throughout this period exports have been

TABLE C-66. WOOD PULP PRODUCTION; 1946-1954

REGION	1946	1947	1948	1949	1950	1951	1952	1953	1954
	Mechanical								
	Thousand metric tons								
Europe	2 060	2 390	2 950	3 200	3 770	4 040	3 800	4 040	4 600
U. S. S. R. [1]	150	250	400	450	500	580	620	700	750
North America	5 968	6 379	6 666	6 646	7 313	7 793	7 815	7 766	8 057
Latin America [1]	80	90	100	110	120	120	150	150	160
Africa [1]	—	—	—	—	5	5	5	10	15
Asia [2]	130	170	230	300	370	530	580	670	690
Oceania	45	49	54	76	87	85	98	125	[1]130
WORLD [1]	8 430	9 330	10 400	10 780	12 170	13 150	13 070	13 460	14 400
	Chemical								
	Thousand metric tons								
Europe	3 640	4 450	5 150	5 390	6 140	6 750	6 080	6 490	[1]7 600
U. S. S. R. [1]	250	400	600	650	800	900	1 000	1 100	1 200
North America	9 483	10 836	11 836	11 300	13 620	15 351	14 137	15 000	15 948
Latin America [1]	40	70	80	100	140	180	200	200	220
Africa [1]	—	—	15	15	25	20	15	20	25
Asia [2]	80	120	190	270	460	580	750	1 000	1 100
Oceania	41	71	43	61	67	69	114	102	[1]120
WORLD [1]	13 530	15 950	17 910	17 790	21 250	23 850	22 300	23 910	26 210

[1] FAO estimates. [2] FAO estimates except for year 1946-48. — None or negligible.

concentrated in the hands of Canada and the northern European countries, which in 1946 accounted for 97 percent, but their share declined steadily to 86 percent in 1954. The main importing countries have been the United States and the United Kingdom, each of which normally imports from 1½ to 2 million tons annually. The United States' imports represent only a small proportion of its total pulp needs; the United Kingdom, however, Europe's largest paper producer, depends almost entirely on imports of wood pulp. The rapid expansion in the United States' pulping capacity in recent years has somewhat diminished its dependence on imported wood pulp, and in 1954, for the first time, the North American region became a net exporter of wood pulp. One effect of the disparate development of wood pulp capacity in different parts of the world during the war and postwar periods has been to intensify the high geographical concentration of pulp production and consumption. This led to serious difficulties for small consuming countries in 1950/51 when, during the boom that accompanied the Korean war market, pulp prices trebled in some instances. These events stimulated efforts in many of the less developed countries to reduce their dependence on imported supplies by developing indigenous production.

TABLE C-67. EXPORTS OF WOOD PULP

ITEM	1946	1948	1950	1952	1954
	..... *Thousand metric tons*				
Chemical wood pulp.	3 260	3 960	4 740	4 220	5 660
Mechanical wood pulp	690	810	1 010	970	1 150

In 1955 both the production and trade of wood pulp are likely to register new advances over previous record levels. Much new pulping capacity, both wood-based and other, will start production in this year. The demand, domestic as well as for export, shows no signs of declining and the maintenance of industrial activity on a high level almost everywhere in the world makes it rather unlikely that any sudden changes before the end of this year either upwards or downwards could take place in the present trend in the world demand for wood pulp.

Paper and Board

Before the war the total world production of paper and board had just about reached 30 million tons; half of this was produced and consumed in North America. The war and the postwar years further intensified this geographical concentration of production and consumption, and in 1946 North America accounted for about 75 percent of the total world paper and board production of some 30.2 million tons. Thus the enormous disparities in consumption levels between North America and most other parts of the world before the war had grown even greater by 1946. Today, however, the great efforts to raise the standard of living in many of the countries with low income levels, mostly outside North America and Europe, have brought about a more rapid relative increase in their paper and board consumption levels than in those countries which had enjoyed a high prewar rate of consumption. The concentration of practically all the world production and consumption in North America and Europe led in 1950-51 to great difficulties in meeting adequately the requirements of all regions of the world and resulted in some shortages and a strong boom on the market. These developments greatly intensified the campaign made by the United Nations and its specialized agencies, notably FAO and UNESCO, to facilitate the establishment of new paper and board capacity in the less developed regions and countries and to make them more self-sufficient. FAO, because of its responsibilities in the field of forestry and forest economics, has carried the main burden of these efforts, which, although they mainly bear on long-term prospects, have shown immediate positive results.

The fact that the world production of paper and board in 1946 was more or less on the prewar level had been entirely a result of the steep rise in the North American output until 1941. The production of paper then flattened out together with wood pulp production in this region and did not resume its expansion until 1945/46. The North American production of board had however increased throughout the war years, mainly because of increased utilization of waste paper in board manufacture.

In other principal paper and board producing regions, namely Europe, the U.S.S.R. and Asia, the production has suffered enormous damage, either by the destruction of industries or by shortage of raw materials. The level of output had consequently fallen to less than half of the prewar production in each of the three regions. The potential needs, however, had risen considerably as a result of various increased requirements mentioned in the previous chapter. The main postwar expansion of paper and board industries took place

TABLE C-68. PRODUCTION OF PAPERBOARD AND OTHER PAPER; 1946-1954

REGION	1946	1947	1948	1949	1950	1951	1952	1953	1954
	Thousand metric tons								
Europe	5 130	5 800	6 925	7 855	9 150	10 215	9 065	10 175	[1]11 520
U. S. S. R.[1]	300	600	815	965	1 185	1 400	1 530	1 700	1 800
North America	17 860	19 659	20 387	18 844	21 255	23 965	21 173	23 150	[1]23 850
Latin America [1]	165	270	300	340	570	690	715	700	750
Africa [1]	—	—	—	—	50	50	120	130	140
Asia [1]	205	295	430	625	860	1 170	1 370	1 675	1 850
Oceania [1]	115	115	115	125	200	220	180	200	265
WORLD [1]	23 775	26 740	28 970	28 755	33 270	37 710	34 155	37 730	40 175

[1] FAO estimates. — None or negligible.

largely in regions where available raw material resources permitted such expansion. In Europe, where the capacity had already been to a great degree set by the region's forest resources, the main efforts were directed to the re-establishment of the prewar level of production. Only in a few countries, such as Finland and Sweden, did the available domestic raw material supplies permit further increase in capacity. In several other countries, such as France, Italy and the United Kingdom, the utilization of new species for pulping and better recovery of waste paper made possible some increases over the prewar production levels.

In the U.S.S.R. the volume of paper and board production rapidly increased from the low 1946 level and soon exceeded the prewar top levels. With ample raw material supplies and continued steady progress in most fields of economic and industrial activity, the U.S.S.R. will undoubtedly have a relatively greater further expansion of paper and board industries than most other countries.

Of all the problems which the world's paper and board industries have to face today, the most important is to secure adequate newsprint supplies. The manufacture of newsprint depends more than most other products of this category on long fibrewood pulps, especially spruce, and is therefore highly concentrated in the spruce regions, i.e. North America, where Canada alone accounts for over half of the total world production, and the countries of northern Europe. Until more progress is made in utilizing other species for newsprint manufacture, the world's newsprint industries will continue to be concentrated in these regions. The increase of world newsprint capacity has so far been limited to the raw material supplies of the traditional principal producing countries. In paper and board production, however, the biggest expansion during the past decade has taken place in paper of wrapping grades and in board, both of which can use a considerable variety of raw materials. This development, therefore, has not been limited to the traditional prewar producing regions and countries alone, but has been tied closely to the rising industrial activity and higher standards of living all over the world.

The pattern of world trade in paper and board did not change perceptibly after the war. By

TABLE C-69. NEWSPRINT PRODUCTION; 1946-1954

REGION	1946	1947	1948	1949	1950	1951	1952	1953	1954
	Thousand metric tons								
Europe	1 440	1 575	1 870	2 270	2 570	2 645	2 615	2 825	[2]2 950
U. S. S. R. [1]	110	135	270	330	360	400	425	450	475
North America	4 789	5 129	5 315	5 529	5 708	6 009	6 165	6 160	6 510
Canada	(4 088)	(4 373)	(4 520)	(4 696)	(4 789)	(5 004)	(5 159)	(5 190)	(5 429)
Latin America	10	20	30	35	65	75	105	110	[1]110
Africa	—	—	—	—	—	—	—	—	—
Asia	80	95	110	115	140	185	390	530	[1]560
Pacific Area	30	30	30	30	30	30	35	45	[1]50
WORLD	6 460	6 985	7 625	8 310	8 875	9 345	9 735	10 120	[1]10 655

[1] FAO estimates. — None or negligible.

TABLE C-70. EXPORTS OF PAPER AND BOARD

ITEM	1948	1950	1952	1953	1954
	..... *1946 = 100*				
Newsprint	107	126	135	137	142
Other paper and board	117	124	126	150	185

1946 the total volume of trade had fallen rather low in comparison with prewar levels, but the geographical distribution had remained by and large the same. Canada and the northern European countries still accounted for the bulk of world exports. The United States and the United Kingdom were the most important newsprint importing countries, while imports of other paper and board were more evenly distributed among countries in different regions. There was, however, a distinct trend after the war toward a greater degree of finished paper exports by the main exporting countries at the cost of pulp exports. The existence of paper industries in many countries that depend largely on imported supplies may be threatened by this development. Reduction in pulp exports may be contrary to the natural wishes of most importing countries, but they are a logical long-term development in world pulp and paper trade.

While in 1955 the international trade in wood pulp is still likely to reach new record levels, new paper making capacity has also been put up in most of the principal exporting countries and the results of this will no doubt show strongly already in the 1955 trade figures. The demand continues firm and so far no particular stock accumulation has been noticed either at the mills or consumers.

Prospects

What are then today the short-term prospects of production from the forests in different regions? In the world as a whole the development can be expected to continue toward a greater output of wood pulp and its products, while the production of most less finished forest products is likely to remain more or less stationary. In Europe and North America, where the available forest resources are already under rather heavy exploitation, there is little possibility of any sizable increase in the total volume of roundwood production. The demand for wood pulp is rising faster than that for sawnwood and other semi-finished products, the relative importance of pulpwood in total fellings can therefore be reasonably expected to increase further. In addition, the trend discernible in certain, hitherto principally exporting countries, of an increased degree of finishing and of a greater integration of pulp and paper industries, tends to indicate no rise, perhaps even a slight decline, in the available export supplies of wood pulp. These countries may be expected to have an increasing output of paper and board. This development may have some unfavorable effects on the expansion possibilities of the main wood pulp importing countries' paper industries. Great efforts are being made to obtain better use of the available forest resources in every part of the world, notably with regard to hardwood pulping. This will in due course greatly alleviate the otherwise possible shortage of pulping raw materials in those countries that greatly depend on imported supplies of either wood pulp or pulpwood. In the less developed countries, such as Latin America and Africa, the expansion of sawmilling and wood pulp and paper manufacture can be expected to continue more or less at an even pace. The rising standards of living, together with economic and industrial expansion, have a similar bearing on almost all the most important forest products, the main weight, however, clearly shifting towards paper and board, particularly at the present rapid rate of increase in literacy. Consequently, the substitution for those forest products which are more easily replaceable by other materials will continue hand in hand with efforts to further rationalize the use of wood in its less finished forms.

As to the possible progress in increasing the available roundwood supplies it seems reasonable to expect, in regions such as Latin America and Asia, an increase in the rate of purely industrial and other forest plantations of fast growing species like poplars and eucalypts. Plantations for watershed protection, shelter belts, and protection of agricultural lands, etc., will also yield some industrial wood. This development will be supplemented by the further opening up of hitherto totally or partly unexploited forests in Latin America, Asia and Africa and the better knowledge and use of certain less known hardwood species which can reduce the growing strain on available supplies of coniferous species. The rapid expansion and the enormous possibilities of further increase in the Soviet Union's roundwood production should not be overlooked. It may gradually contribute toward greater supplies, chiefly of coniferous species, being made available for export.

ANNEX TABLES

ANNEX TABLE 1. INDEX NUMBERS OF FOOD AND TOTAL AGRICULTURAL PRODUCTION

REGION	1946/47	1947/48	1948/49	1949/50	1950/51	1951/52	1952/53	1953/54	1954/55
	Prewar average = 100								
FOOD PRODUCTION									
Western Europe	76	85	94	104	110	115	115	122	124
North America	138	135	142	134	139	139	152	151	145
Latin America	115	120	121	122	130	125	135	136	139
Oceania	92	108	109	116	111	104	117	120	116
Far East (excl. China)	91	93	97	100	100	102	105	110	109
Near East	103	102	114	112	120	126	135	144	138
Africa	107	111	117	124	128	130	137	142	142
All above regions	103	106	112	114	118	120	126	130	129
WORLD [1]	93	97	104	107	111	112	117	120	120
TOTAL AGRICULTURAL PRODUCTION									
Western Europe	77	85	95	104	110	115	115	122	124
North America	134	129	139	133	133	137	148	148	141
Latin America	111	114	116	119	125	121	131	132	135
Oceania	95	107	110	117	112	107	121	122	120
Far East (excl. China)	88	92	96	99	100	103	106	109	109
Near East	102	101	113	112	121	126	135	143	138
Africa	108	112	118	125	130	133	140	144	145
All above regions	101	104	111	113	116	119	125	128	127
WORLD [1]	92	96	103	106	110	112	117	120	120

[1] Including estimates for the U. S. S. R., Eastern Europe and China.

ANNEX TABLE 2. INDEX NUMBERS OF PER CAPUT FOOD AND TOTAL AGRICULTURAL PRODUCTION

REGION	1946/47	1947/48	1948/49	1949/50	1950/51	1951/52	1952/53	1953/54	1954/55
	Prewar average = 100								
PER CAPUT FOOD PRODUCTION									
Western Europe	72	79	87	95	100	103	103	108	109
North America	124	119	123	114	116	114	123	120	113
Latin America	94	96	94	94	97	91	96	95	94
Oceania	85	97	97	100	92	85	93	93	87
Far East (excl. China)	80	81	83	84	83	84	85	88	86
Near East	91	89	97	94	99	102	107	113	106
Africa	93	95	99	104	105	105	109	110	109
All above regions	91	92	96	97	98	98	102	104	101
WORLD [1]	85	88	93	94	97	97	100	102	101
PER CAPUT TOTAL AGRICULTURAL PRODUCTION									
Western Europe	72	79	87	95	100	103	103	108	109
North America	121	114	120	113	111	113	120	117	110
Latin America	91	91	91	91	93	88	93	91	92
Oceania	87	97	97	100	93	87	96	95	91
Far East (excl. China)	77	79	82	83	83	85	86	87	86
Near East	90	88	96	94	99	102	108	112	106
Africa	94	96	100	104	106	107	111	112	111
All above regions	90	91	95	96	97	98	102	103	100
WORLD [1]	85	87	92	94	96	97	100	101	100

[1] Including estimates for the U. S. S. R., Eastern Europe and China.

ANNEX TABLE 3. DAILY INTAKE PER CAPUT OF CALORIES AND ANIMAL PROTEIN; PREWAR, 1947/48 AND 1950/51

REGION AND COUNTRY	Calories			Total Protein			Animal Protein		
	Prewar	1947/48	1950/51	Prewar	1947/48	1950/51	Prewar	1947/48	1950/51
	Number			*Grams*			*Grams*		
EUROPE									
Austria	3 000	2 300	2 790	88	73	81	39	21	35
France	2 870	2 480	2 830	97	83	93	43	35	43
Germany, Fed.Rep	3 040	2 240	2 810	85	76	76	43	24	36
Greece	2 600	2 300	2 510	84	69	77	23	18	17
Ireland	3 400	3 260	[1]3 500	99	104	[1]96	47	50	[1]49
Italy	2 520	2 230	2 430	82	71	77	20	16	20
Netherlands	2 840	2 750	3 025	80	81	82	41	39	39
Norway	3 210	2 950	3 180	90	96	104	49	49	57
Portugal	...	2 290	2 460	...	62	67	...	19	20
Sweden	3 110	2 940	3 230	95	95	95	59	62	60
Switzerland	3 140	3 080	3 240	96	93	97	54	46	51
United Kingdom	3 110	2 990	3 100	80	90	88	44	44	46
Yugoslavia	3 020	2 140	2 400	95	65	76	22	11	20
FAR EAST									
China	2 230	2 115	...	71	66	...	6	5	...
India	[2]1 970	[2]1 690	1 640	[2]56	[2]48	45	[2]8	[2]8	6
Japan	2 180	[3]1 670	2 100	64	50	54	10	8	10
Philippines	1 910	1 770	[4]1 960	53	49	[4]43	20	18	[4]10
NEAR EAST & AFRICA									
Egypt	2 450	2 340	2 340	74	67	69	9	10	13
Turkey	2 450	2 120	2 510	79	68	80	12	12	12
Union of S. Africa	2 300	2 490	[5]2 550	68	73	[5]72	23	26	[5]26
LATIN AMERICA									
Argentina	2 730	[5]3 210	[5]3 110	98	[5]110	[5]98	62	[5]66	[5]63
Brazil	2 150	[5]2 340	[5]2 350	68	[5]63	[5]59	32	[5]25	[5]17
Uruguay	2 383	[6]2 890	[7]2 940	90	[6]91	[7]99	61	[6]59	[7]67
NORTH AMERICA									
United States	3 150	3 220	3 180	89	97	91	50	61	61
OCEANIA									
Australia	3 300	3 260	3 280	103	105	97	67	67	65
New Zealand	3 260	[1]3 210	[1]3 275	100	[1]100	[1]104	67	[1]64	[1]70

[1] Calendar year ending during the consumption year.
[2] Including Pakistan.
[3] Including unreported production, the total caloric supply per caput is estimated at 1970 calories.
[4] 1952/53.
[5] Calendar year beginning during the consumption year.
[6] 1949.
[7] 1952.
... Not available.

ANNEX TABLE 4. PER CAPUT CONSUMPTION OF SELECTED COMMODITIES; PREWAR, 1947/48, 1950/51 AND LATEST AVAILABLE YEAR.

REGION AND COUNTRY	Period	Cereals [1]	Pulses and Nuts	Starchy Roots [2]	Total Sugar	Meat [3]	Milk and Dairy Prod. [4]	Oils and Fats [5]
		Kilograms per year						
EUROPE								
Austria	Prewar	138	4	96	24	49	200	20
	1947/48	138	6	113	12	20	100	10
	1950/51	127	3	107	24	38	180	19
	1953/54	116	3	103	26	44	200	19
France	Prewar	124	8	143	24	61	150	16
	1947/48	102	7	176	17	54	110	13
	1950/51	118	7	125	27	62	160	16
	1953/54	109	6	124	30	71	160	15
Germany, Western	Prewar	113	3	185	26	53	160	24
	1947/48	126	3	180	15	20	85	7
	1950/51	101	3	187	28	37	155	24
	1953/54	98	3	174	26	42	170	24
Greece	Prewar	163	16	14	11	20	80	16
	1947/48	143	13	30	9	13	50	15
	1950/51	158	14	32	10	12	60	16
	1953/54	149	13	38	10	14	60	16
Ireland	Prewar	131	2	195	38	55	150	16
	1947	132	1	197	26	60	170	19
	1950	131	2	189	40	53	200	23
	1953	133	2	183	40	54	200	23
Italy	Prewar	164	22	37	7	20	75	13
	1947/48	151	16	40	7	13	70	10
	1950/51	153	15	33	12	16	90	12
	1953/54	155	14	46	16	19	95	13
Netherlands	Prewar	107	6	116	33	38	200	24
	1947/48	101	4	155	32	24	220	17
	1950/51	101	4	142	40	32	195	30
	1953/54	92	4	107	40	36	220	30
Norway	Prewar	119	3	130	37	38	250	28
	1947/48	121	2	115	23	30	230	24
	1950/51	116	3	126	24	36	345	28
	1953/54	99	3	104	40	34	340	28
Portugal	1947/48	115	16	116	14	14	20	14
	1950/51	127	8	139	13	14	26	14
Sweden	Prewar	96	4	122	46	49	300	21
	1947/48	83	3	131	42	44	250	21
	1950/51	92	4	116	50	51	315	24
	1953/54	79	3	103	45	51	300	24
Switzerland	Prewar	110	5	90	39	53	330	18
	1947/48	117	5	111	36	39	250	16
	1950/51	118	9	84	39	46	320	18
	1953/54	105	9	75	40	50	310	17
United Kingdom	Prewar	95	5	82	45	64	150	25
	1947/48	111	5	115	38	43	190	20
	1950/51	100	6	110	37	50	220	26
	1953/54	92	6	98	47	57	210	23
Yugoslavia	Prewar	228	7	55	4	23	120	7
	1947/48	176	4	10	4	15	50	4
	1950/51	174	8	27	6	22	90	8
	1952/53	189	5	33	8	18	90	10

ANNEX TABLE 4. PER CAPUT CONSUMPTION OF SELECTED COMMODITIES; PREWAR, 1947/48, 1950/51 AND LATEST AVAILABLE YEAR (*Concluded*).

REGION AND COUNTRY	Period	Cereals [1]	Pulses and Nuts	Starchy Roots [2]	Total Sugar	Meat [3]	Milk and Dairy Prod. [4]	Oils and Fats [5]
		Kilograms per years						
FAR EAST. *								
China.	Prewar . . .	87 85	25	30	1	13	...	6
	1947/48 . . .	80 83	24	35	—	10	...	6
India.	Prewar.[6] . . .	79 64	22	8	14	3	65	3
	1947/48[6]. . . .	68 48	20	7	14	3	56	4
	1950/51. . . .	55 56	23	8	14	1	47	3
	1952/53	58 60	23	10	12	1	47	3
Japan	Prewar	134 28	8	63	14	4	4	2
	1947/48	105 32	4	56	3	1	2	1
	1950/51. . . .	109 45	5	56	5	2	6	1
	1953/54	103 46	5	56	13	3	10	2
Philippines	Prewar	97 31	17	26	13	17	5	3
	1947/48. . . .	79 37	17	24	7	14	5	5
	1952/53. . . .	96 36	12	50	14	12	7	3
NEAR EAST AND AFRICA								
Egypt	Prewar. . . .	182	22	5	14	7	40	5
	1947/48. . . .	182	9	7	11	9	50	6
	1950/51. . . .	171	10	8	15	12	60	4
	1952/53	167	10	7	17	12	60	4
Turkey	Prewar	193	10	6	8	17	35	7
	1947/48. . . .	162	8	11	6	16	35	6
	1950/51. . . .	192	11	19	11	16	40	7
Union of South Africa	Prewar	156	2	16	23	38	76	4
	1947	151	5	19	39	45	78	4
	1951	160	3	15	33	38	80	6
	1953	166	4	14	41	41	80	6
LATIN AMERICA								
Argentina.	Prewar	106	2	66	27	107	160	10
	1948	126	2	88	33	116	165	17
	1951	111	4	101	33	103	165	19
	1952	100	3	55	31	99	135	20
Brazil	Prewar	78	23	91	25	50	...	6
	1948	79	26	123	30	39	...	6
	1951	92	24	122	32	29	...	7
	1952	89	25	120	33	27	...	7
Uruguay	Prewar	85	2	40	24	107	150	13
	1949	96	3	43	36	114	150	16
	1952	94	1	58	32	126	165	15
NORTH AMERICA								
United States	Prewar	90	7	64	49	64	200	22
	1947/48. . . .	82	7	57	47	78	220	21
	1950/51. . . .	76	7	49	50	75	250	22
	1953	72	7	46	48	37	240	22
OCEANIA								
Australia	Prewar	101	2	49	54	120	160	19
	1947/48. . . .	98	4	60	52	112	170	16
	1950/51. . . .	99	6	42	59	110	195	19
	1952/53	94	4	43	48	108	175	19
New Zealand	Prewar	87	3	50	50	109	220	21
	1947	92	4	46	46	95	250	18
	1950	88	4	51	54	106	270	23
	1953	87	5	40	46	100	270	25

* For the Far East the first column under "Cereals" refers to rice, the second column to other cereals.
[1] In terms of flour and milled rice.
[2] Includes flour in terms of fresh product.
[3] In terms of carcass weight. Includes poultry and offal.
[4] In terms of of liquid milk. Excludes butter.
[5] In terms of product weight.
[6] Including Pakistan.
... Not available.

ANNEX TABLE 5. AMOUNT OF INSTITUTIONAL AGRICULTURAL CREDIT IN USE BY REGIONS AND COUNTRIES; 1951, 1952 AND 1953
(in U.S. $ equivalent [1])

REGION AND COUNTRY	Total amount of loans advanced during:			Total amount of loans outstanding at end of:		
	1951	1952	1953	1951	1952	1953
	..... *Million U.S. dollars*			..... *Million U.S. dollars*		
EUROPE						
Austria [2]	33.3	—	—	—	46.5	58.1
Belgium	13.5	21.0	26.8	83.3	89.7	100.7
Finland [2]	—	—	—	185.7	192.2	199.9
France	—	1 240.2	1 629.0	—	964.8	1 197.7
Germany (Western)	—	179.1	228.3	220.2	329.1	455.7
Italy	—	—	—	1 220.0	1 414.2	1.741.3
Norway [2]	—	—	—	209.4	204.2	210.3
Portugal	—	14.6	18.7	—	18.4	22.0
Spain	11.3	—	46.8	42.2	—	—
Sweden [2]	—	—	—	583.8	574.9	618.0
Yugoslavia	55.0	79.7	35.6	55.4	127.0	131.9
NORTH AMERICA						
Canada	—	—	—	—	526.0	565.9
United States [2,3]	[2,3] 3 502.0	2 851.0	2 784.0	7 837.0	8 408.0	8 249.0
LATIN AMERICA						
Argentina	—	789.4	1 080.0	—	860.0	1 083.9
Brazil [2]	310.3	467.6	512.6	384.5	532.2	—
Chile [2]	98.3	—	—	—	111.3	131.6
Colombia	154.6	208.6	—	72.5	107.2	—
Cuba	—	16.1	—	63.3	58.3	55.8
Dominican Republic	8.5	14.6	—	—	15.3	—
Ecuador	—	16.7	—	—	20.4	—
Honduras	—	1.8	2.6	—	2.1	2.5
Mexico	—	316.5	135.0	—	118.9	126.0
Puerto Rico	—	30.3	20.9	—	32.5	35.1
OCEANIA						
Australia	581.4	697.6	—	—	485.4	537.1
New Zealand	87.4	100.5	79.4	200.6	237.3	239.0
FAR EAST						
Burma	7.6	12.6	11.2	—	—	4.3
Cambodia	0.2	0.4	0.8	—	0.5	0 8
Ceylon [2]	6.3	7.1	—	9.5	12.2	—
India [2]	122.1	104.7	—	115.0	142.1	—
Indonesia [2]	—	32.0	36.5	—	17.2	29.2
Japan	1 267.3	1 151.5	1 217.4	459.8	601.2	1 075.5
Pakistan	55.2	35.3	—	9.9	—	—
Philippines	79.4	97.3	112.4	85.2	143.2	160.3
Thailand	3.5	8.9	9.3	9.8	16.3	21.4

ANNEX TABLE 5. AMOUNT OF INSTITUTIONAL AGRICULTURAL CREDIT IN USE BY REGIONS AND COUNTRIES; 1951, 1952 AND 1953 (*Concluded*)

(in U.S. $ equivalent [1])

REGION AND COUNTRY	Total amount of loans advanced during:			Total amount of loans outstanding at end of:		
	1951	1952	1953	1951	1952	1953
	..... *Million U.S. dollars*			..... *Million U.S. dollars*		
NEAR EAST						
Egypt	34.6	54.7	60 0	—	21.5	19.7
Iran	—	2.1	3 1	—	6.3	6.8
Israel [2]	—	—	—	—	21.1	35.0
Turkey	232.2	482 3	362.8	165.8	195.3	—
AFRICA						
Algeria	—	181.4	172 0	—	82.5	101.6
Gold Coast	0.8	1.4	—	0.3	0.3	—
Madagascar	—	1.5	0.9	—	1.8	3.1
Morocco	—	7.5	7 0	—	10.9	11.9
Mozambique	—	—	0 1	0.6	0.6	0.6
Nigeria	0.8	—	1.7	—	0.4	0.7
Northern Rhodesia	—	1.4	5 3	—	1.4	3.9
Southern Rhodesia	3.6	2.9	—	3 4	6.6	—
Tanganyka	0.4	0.3	—	6 6	0 8	—
Tunisia	—	4.2	7.4	—	11.8	15.2
Uganda	6.7	55.9	—	2 4	8.1	—
West Africa (French)	—	1.8	4 5	—	0.4	5.7

NOTE: Figures in this table refer to credits granted by financial institutions (public and semi-public institutions, banks, insurance companies, co-operatives, etc.) only and do not cover advances by merchants, dealers, private money-lenders, etc. The latter, of course, play an important role particularly in the more underdeveloped areas.

[1] Figures in national currencies are converted into dollars on the basis of 1953 rates of exchange. The original data do not always refer to calendar years. Such split-year data are put under the calendar year in which most months of the split year fall.

[2] Data for 1951 or/and 1952 are revised because of corrected figures received from the countries or of changes in exchange rates.

[3] Excluding loans guaranteed by CCC.

Source: Replies to FAO Credit Questionnaire.

ANNEX TABLE 6. WESTERN EUROPE; PRODUCTION OF SELECTED COMMODITIES

COMMODITY	1934-38 average	1946/47	1947/48	1948/49	1949/50	1950/51	1951/52	1952/53	1953/54	1954/55 pre lim.
	Thousand metric tons									
Bread grain	38 260	31 575	22 315	34 093	37 191	37 344	36 590	39 290	41 942	42 900
Coarse grain [1]	35 186	28 313	27 575	30 105	32 106	30 314	36 115	33 752	38 994	36 700
Sugar (centrifugal)	3 962	3 467	2 946	4 396	4 354	5 884	5 799	5 423	7 081	6 450
Citrus fruits	1 993	1 397	1 644	1 834	1 624	2 166	2 218	2 640	2 442	2 400
Apples	7 467	5 791	6 174	5 900	7 840	11 460	7 042	11 222	9 214	9 900
Wine	14 111	10 318	12 068	12 153	11 779	14 143	14 243	13 246	15 544	15 100
Olive oil [2]	810	725	1 160	373	1 026	488	1 397	706	1 102	764
Tobacco	187	175	235	223	245	261	282	238	278	270
Beef and veal	3 920	3 041	3 129	3 090	3 586	3 787	3 859	4 027	4 202	4 500
Pigmeat	4 183	2 092	2 217	2 656	2 653	3 933	4 240	4 689	4 782	5 000
Mutton and lamb	732	513	454	502	581	573	580	614	637	680
Eggs	2 134	1 334	1 626	1 866	2 211	2 356	2 325	2 375	2 550	2 700
Milk	80 974	63 595	63 355	73 426	81 564	86 745	87 710	89 431	92 943	95 000
Index of All Farm Products	*100*	*77*	*85*	*95*	*104*	*110*	*115*	*115*	*122*	*124*

[1] Barley, oats and maize. [2] New series including estimates of oil extracted by solvent.

ANNEX TABLE 7. WESTERN EUROPE; EXPORTS AND IMPORTS OF SELECTED COMMODITIES

COMMODITY	1934-38 average	1946	1947	1948	1949	1950	1951	1952	1953	1954 prelim.
	Thousand metric tons									
GROSS EXPORTS										
Wheat and wheat flour	1 276	269	252	284	660	1 360	940	623	1 040	2 300
Sugar	795	227	565	1 177	1 161	1 970	2 150	1 315	1 510	1 560
Citrus fruits	1 181	299	381	579	810	846	1 149	1 180	1 420	1 250
Wine	501	310	270	375	470	455	515	510	545	590
Bacon, ham and salted pork	265	54	46	34	106	192	195	220	270	260
Eggs in shell	200	26	42	76	140	250	195	200	224	250
Raisins	118	10	42	63	90	95	69	94	112	125
GROSS IMPORTS										
Wheat and wheat flour	11 652	12 660	14 929	6 863	15 190	10 680	14 430	13 560	12 890	13 100
Maize	8 479	144	3 445	3 760	5 000	4 300	3 800	3 950	4 240	4 250
Rice (milled equiv.)	1 270	35	72	185	300	570	480	260	320	400
Sugar	3 433	2 379	3 345	4 150	4 050	4 450	4 400	4 020	5 170	3 750
Vegetable oils and oil-seeds	2 763	1 074	1 494	1 704	2 318	2 437	2 795	2 481	2 399	2 716
Oranges	1 360	635	951	1 094	1 189	1 411	1 627	1 647	1 980	1 990
Beef fresh	671	563	615	512	487	417	268	240	400	363
Mutton	350	439	456	390	366	400	252	370	365	340
Canned meat	80	451	252	136	155	175	245	210	190	200
Butter	578	237	257	346	399	439	429	349	351	320
Cheese	229	261	234	205	300	274	304	255	280	275
Rubber	359	383	406	463	489	673	741	696	655	685
Cotton (lint)	1 752	1 203	1 085	1 121	1 481	1 583	1 468	1 344	1 430	1 570
Jute	591	247	223	302	350	400	540	411	570	475
Wool (clean basis)	501	428	484	474	534	509	353	429	530	470
Coffee	686	318	390	428	458	489	500	553	585	620
Tea	256	197	200	211	241	199	245	252	252	280
Cocoa	365	269	256	255	355	405	365	328	389	400
Tobacco	372	324	311	272	376	369	400	323	370	385
Wine	1 682	1 170	870	1 225	1 280	1 350	1 370	1 550	1 588	2 015

ANNEX TABLE 8. EASTERN EUROPE ; PRODUCTION OF PRINCIPAL CROPS

YEAR	Bulgaria			Czechoslovakia			Eastern Germany			Hungary			Poland			Rumania		
	a	b	c	a	b	c	a	b	c	a	b	c	a	b	c	a	b	c
	Million metric tons																	
1947	2 1	0.1	0 2	3.5	4.7	2.5	3.5	8.0	3.1	4.0	1.1	1.2	8.4	30.8	3.5	7.0	1.6	0.6
1948	...	...	0.5	4.7	6.6	4.5	4.4	12.4	4.1	6.3	2.1	1.8	11.7	26.8	4.2	...	1.2	0.8
1949	...	...	0.4	5.4	2.3	4.5	4.5	8.5	3.5	...	2.6	1.8	12.0	30.9	4.8	...	1.0	...
1952	2.9	...	0.4	4.8	...	4.7	6.0	12.0	5.0	3.7	1.1	1.2	11.1 (av.)	26.6	6.0	4.5	2.3	0.8
1953	4.3	...	0.8	5.0	8.5	5.5	5.3	12.0	5.0	5.3	2.2	2.5		31.3	6.9	6.0	...	0.9
1954	4.0	...	0.8	...	...	...	5.0	13.3	6.1	5.2	2.3	2.5	...	33.8	7.3	6.2	...	...

a — Cereals.
b — Potatoes.
c — Sugar beet.
... Not available.

ANNEX TABLE 9. U.S.S.R, CHINA AND EASTERN EUROPE; PRODUCTION OF CEREALS

YEAR	U.S.S.R. [1]	China [1]	Eastern Europe [2]
	Million metric tons		
1947	...	...	28.5
1948	114.7	...	...
1949	124.5	...	...
1950	124.5	...	...
1951	121.2	...	...
1952	131.0	163.9	33.0
1953	[3](131.0)	165.0	37.0
1954	[3](131.0)	170.0	[4]37.0

[1] Include pulses.
[2] Bulgaria, Czechoslovakia, Eastern Germany, Hungary, Poland, Rumania.
[3] Official statements indicate the figures for 1953-54 as similar to 1952.
[4] Estimate.
... Not available.

ANNEX TABLE 10. NORTH AMERICA; PRODUCTION OF SELECTED COMMODITIES

COMMODITY	1934-38 average	1946/47	1947/48	1948/49	1949/50	1950/51	1951/52	1952/53	1953/54	1954/55 prelim.
	Thousand metric tons									
Wheat	[1]33 800	42 640	46 510	45 760	40 002	40 310	41 735	54 074	48 540	34 529
Maize	[1]65 600	81 988	60 084	91 888	82 611	78 032	74 046	83 801	81 632	75 891
Rice (paddy)	956	1 474	1 597	1 736	1 848	1 755	2 077	2 182	2 386	2 669
Beef and veal	4 077	5 474	5 980	5 242	5 337	5 302	4 877	5 275	6 855	7 148
Pigmeat	3 591	5 512	5 209	4 993	5 082	5 300	5 668	5 777	4 984	4 958
Butter	1 144	832	905	843	920	889	789	782	887	905
Eggs	2 421	3 705	3 710	3 691	3 739	3 893	3 924	4 039	4 092	4 244
Milk	54 628	63 315	61 439	59 195	60 757	60 205	59 315	59 623	62 633	63 866
Soybeans	1 170	5 507	5 026	6 119	6 355	8 235	7 792	8 224	7 428	9 465
Groundnuts	540	925	990	1 060	846	924	760	620	720	473
Cottonseed	4 927	3 187	4 246	5 393	5 950	3 724	5 703	5 610	6 120	5 173
Tobacco	619	1 117	1 006	955	957	975	1 127	1 086	995	1 080
Cotton (lint)	2 756	2 571	1 881	3 226	3 497	2 171	3 284	3 282	3 570	2 966
Index of All Farm Products	*100*	*134*	*129*	*139*	*133*	*133*	*137*	*148*	*148*	*141*

[1]1937-41 average. Average production for 1934-38 was abnormally low owing to the effects of the extreme droughts of 1934 and 1936.

ANNEX TABLE 11. NORTH AMERICA; EXPORTS AND IMPORTS OF SELECTED COMMODITIES

COMMODITY	1934-38 average	1946	1947	1948	1949	1950	1951	1952	1953	1954
	Thousand metric tons									
GROSS EXPORTS										
Wheat and wheat flour	6 030	15 852	19 664	18 560	18 080	12 440	20 790	22 040	16 780	13 100
Maize	800	621	3 248	602	3 405	2 450	2 540	2 530	3 370	1 950
Rice (milled equiv.)	70	374	436	394	516	490	500	790	700	570
Sugar	80	327	208	46	39	220	100	110	70	50
Vegetable oils and oilseeds	16	98	144	257	460	322	456	293	295	560
Oranges	195	373	399	319	235	233	315	350	430	401
Beef	7	176	80	55	47	40	43	32	18	14
Pork	9	34	5	4	7	3	12	7	21	21
Canned meat	10	449	161	33	15	10	12	14	21	34
Cheese	34	133	105	61	69	50	50	3	10	4
Cotton (lint)	1 294	928	620	641	1 169	1 341	1 163	924	645	941
Tobacco	204	313	241	201	233	229	250	197	247	220
GROSS IMPORTS										
Sugar [1]	3 200	3 577	5 090	4 423	5 066	3 930	3 820	4 040	3 993	4 000
Vegetable oils and oilseeds	770	387	549	464	412	493	491	363	387	452
Citrus fruits	131	285	262	255	221	216	241	270	290	295
Rubber	523	398	757	791	712	864	795	856	700	645
Jute	74	80	45	79	67	82	112	45	98	44
Wool (clean basis)	68	322	195	234	135	224	175	175	143	100
Coffee	807	1 276	1 154	1 296	1 368	1 147	1 259	1 260	1 310	1 070
Tea	56	61	57	58	62	77	59	63	70	72
Cocoa	261	297	286	266	304	317	287	273	271	243
Tobacco	32	38	42	39	41	41	48	48	48	49

[1] Excluding imports from U.S.A. Territories.

ANNEX TABLE 12. LATIN AMERICA; PRODUCTION OF SELECTED COMMODITIES

COMMODITY	1934-38 average	1946/47	1947/48	1948/49	1949/50	1950/51	1951/52	1952/53	1953/54	1954/55 prelim.
	Thousand metric tons									
Maize	17 982	16 680	16 330	14 989	13 502	15 615	15 006	16 582	19 214	19 000
Wheat	8 620	7 560	9 240	7 923	7 695	8 580	4 880	10 640	9 820	11 344
Sugar (centrifugal)	6 887	10 996	11 616	11 304	11 503	12 238	14 092	12 400	12 664	12 775
Coffee	2 112	1 680	1 706	1 844	1 866	1 795	1 932	2 008	1 980	2 007
Meat [1]	5 135	5 362	5 899	5 846	5 959	5 954	5 910	5 920	5 895	5 930
Index of All Farm Products	*100*	*111*	*114*	*116*	*119*	*125*	*121*	*131*	*132*	*135*

[1] Beef and veal, pigmeat, mutton and lamb.

ANNEX TABLE 13. LATIN AMERICA; EXPORTS AND IMPORTS OF SELECTED COMMODITIES

COMMODITY	1934-38 average	1946	1947	1948	1949	1950	1951	1952	1953	1954 prelim.
	Thousand metric tons									
GROSS EXPORTS										
Wheat and wheat flour	3 445	1 443	2 305	2 250	2 070	2 790	2 600	270	2 620	3 150
Maize	6 620	2 355	2 557	2 688	1 105	850	640	720	1 120	2 150
Rice (milled equiv.)	110	313	352	346	144	240	230	300	160	110
Sugar	4 030	5 881	7 868	8 604	7 734	6 770	7 180	6 980	7 820	6 300
Beef	507	269	363	341	416	255	183	145	167	170
Mutton	67	148	148	90	75	56	30	57	60	70
Pork	12	26	6	16	15	11	15	7	14	18
Canned meat	123	170	150	153	113	121	124	72	80	100
Cotton (lint)	340	561	443	379	321	400	440	400	565	725
Wool (clean basis)	117	189	162	169	103	158	68	104	161	95
Coffee	1 398	1 519	1 467	1 658	1 779	1 452	1 559	1 593	1 700	1 360
Tobacco	57	115	72	62	73	72	72	73	62	66
Cocoa	208	207	187	156	206	222	180	147	199	210
GROSS IMPORTS										
Wheat and wheat flour	1 670	1 835	2 516	2 160	2 310	2 950	3 070	3 510	3 390	3 150
Rice (milled equiv.)	390	224	386	320	355	410	430	320	340	270
Sugar	240	462	307	337	367	380	380	300	390	370
Potatoes	180	130	193	310	221	220	220	200	235	175
Cotton lint	9	56	49	50	54	59	45	50	50	80
Coffee	29	60	58	55	45	43	40	34	43	45

ANNEX TABLE 14. OCEANIA ; PRODUCTION OF SELECTED COMMODITIES

COMMODITY	1934-38 average	1946/47	1947/48	1948/49	1949/50	1950/51	1951/52	1952/53	1953/54	1954/55 prelim.
	Thousand metric tons									
Wool (clean basis)	323	364	373	388	417	410	405	466	454	470
Meat[1]	1 415	1 414	1 458	1 511	1 619	1 589	1 518	1 648	1 742	1 783
Butter	[2]377	282	323	340	351	354	334	376	352	352
Wheat	4 380	3 300	6 100	5 350	6 070	5 185	4 450	5 440	5 510	4 640
Sugar (centrifugal)	942	672	760	1 098	1 080	1 034	872	1 097	1 468	1 510
Index of All Farm Products	*100*	*95*	*107*	*110*	*117*	*112*	*107*	*121*	*122*	*120*

[1] Beef and veal, pigmeat, mutton and lamb.
[2] New Zealand 1936-39, Australia 1939.

ANNEX TABLE 15. OCEANIA ; EXPORTS AND IMPORTS OF SELECTED COMMODITIES

COMMODITY	1934-38 average	1946	1947	1948	1949	1950	1951	1952	1953	1954 prelim.
	Thousand metric tons									
GROSS EXPORTS										
Wheat and wheat flour	2 787	1 492	1 291	3 486	3 193	3 220	3 348	2 223	2 730	2 100
Sugar	560	261	168	470	600	510	370	380	920	800
Copra	132	57	88	95	107	126	132	132	120	145
Beef	155	131	176	169	136	129	107	96	203	176
Mutton and lamb	272	320	322	286	335	321	232	342	307	341
Pork	37	23	11	12	19	16	13	10	14	12
Canned meat	8	63	48	59	46	47	59	112	79	80
Butter	240	172	201	220	219	225	184	221	202	184
Cheese	95	97	113	100	118	124	128	118	122	117
Wool (clean basis)	293	412	414	438	472	445	362	440	448	410
GROSS IMPORTS										
Wheat and wheat flour	60	119	174	205	200	190	200	280	250	250
Sugar	80	86	83	100	80	130	100	110	100	120

ANNEX TABLE 16. FAR EAST (EXCLUDING CHINA MAINLAND); PRODUCTION OF SELECTED COMMODITIES

COMMODITY	1934-38 average	1946/47	1947/48	1948/49	1949/50	1950/51	1951/52	1952/53	1953/54	1954/55 prelim.
	Thousand metric tons									
Cereals										
Rice, (milled equiv.)	64 080	59 615	60 950	64 965	65 904	63 879	64 386	67 976	74 608	69 773
Wheat	12 111	10 325	9 177	10 453	11 409	11 955	12 138	11 025	11 525	13 440
Other cereals	26 404	21 682	23 333	23 420	25 071	23 193	23 689	26 872	29 957	29 800
Total	102 595	91 622	93 460	98 838	102 384	99 027	100 213	105 873	116 090	113 013
Sugar (centrifugal and crude)	6 583	3 815	4 748	4 984	5 174	5 516	6 470	6 630	6 682	6 972
Starchy roots	21 260	21 500	21 600	24 400	25 100	25 700	25 900	28 400	29 100	29 100
Pulses	7 960	8 220	9 650	9 860	9 870	10 000	9 560	10 510	11 220	11 450
Oilseeds (oil equiv)	4 400	3 920	4 000	3 840	4 340	4 620	4 760	4 620	4 980	5 100
Tea	454	416	442	468	500	532	569	587	567	600
Tobacco	793	596	552	534	586	626	631	638	705	768
Cotton	1 090	644	629	553	753	803	875	933	1 009	1 025
Jute	1 526	1 010	1 565	1 392	1 186	1 706	2 023	2 110	1 043	1 090
Rubber	983	780	1 203	1 477	1 439	1 805	1 812	1 707	1 636	1 720
Index of All Farm Products	*100*	*88*	*92*	*96*	*99*	*100*	*103*	*106*	*109*	*109*

ANNEX TABLE 17. FAR EAST (EXCLUDING CHINA MAINLAND); EXPORTS AND IMPORTS OF SELECTED COMMODITIES

COMMODITY	1934-38 average	1946	1947	1948	1949	1950	1951	1952	1953	1954 prelim.
	Thousand metric tons									
GROSS EXPORTS										
Rice (milled equiv.)	8 922	1 298	1 644	2 676	2 853	2 982	3 629	3 148	2 720	3 000
Sugar	3 185	25	50	472	877	1 159	1 003	1 390	1 915	1 750
Vegetable oils and oilseeds	1 707	648	1 045	1 067	1 181	1 320	1 513	1 331	1 169	1 291
Rubber	1 150	1 075	1 537	1 755	1 665	2 250	2 260	2 020	1 870	1 960
Cotton (lint)	685	197	219	281	232	288	244	310	355	185
Jute	781	353	284	580	635	1 136	1 070	570	990	790
Coffee	98	8	7	7	15	30	31	24	41	40
Tea	357	288	333	356	421	383	440	401	450	440
Tobacco	96	43	36	50	51	73	84	67	60	54
GROSS IMPORTS										
Rice (milled equiv.)	6 127	1 692	1 777	2 526	2 520	2 764	3 717	3 907	3 295	3 200
Wheat and wheat flour	1 000	2 944	3 198	3 320	5 252	4 006	5 935	5 757	6 354	3 800
Total cereals[1]	7 689	5 372	6 945	6 834	8 976	9 143	11 706	11 614	11 232	8 200
Vegetable oils and oilseeds	376	87	119	178	269	347	305	278	297	410
Rubber	253	198	364	359	302	559	666	496	389	457
Cotton (lint)	912	272	280	246	435	618	604	690	667	700
Jute	39	4	10	13	265	329	480	300	270	240

[1] Includes barley, oats, maize, millet and sorghum as well as wheat and rice.

ANNEX TABLE 18. NEAR EAST; PRODUCTION OF SELECTED COMMODITIES

COMMODITY	1934-38 average	1946/47	1947/48	1948/49	1949/50	1950/51	1951/52	1952/53	1953/54	1954/55 prelim.
	Thousand metric tons									
Wheat	9 595	8 500	7 560	10 810	8 980	10 730	11 860	13 255	15 740	13 430
Barley	4 200	4 180	3 750	4 830	4 470	5 060	5 350	6 300	6 910	5 580
Total grains[1]	21 093	20 433	18 825	24 629	21 778	24 332	25 701	28 516	32 374	28 930
Sugar (centrifugal)	224	334	387	367	362	416	485	503	563	600
Citrus fruits	786	843	987	725	649	860	940	986	1 090	1 090
Cotton (lint)	562	387	406	559	607	707	674	796	668	730
Tobacco	86	137	137	98	124	120	124	122	155	133
Index of All Farm Products	*100*	*102*	*1 1*	*113*	*112*	*121*	*126*	*135*	*143*	*138*

[1] Wheat, barley, rye, oats, maize, millet and sorghums, and rice (paddy).

ANNEX TABLE 19. NEAR EAST; EXPORTS AND IMPORTS OF SELECTED COMMODITIES

COMMODITY	1934-38 average	1946	1947	1948	1949	1950	1951	1952	1953	1954 prelim.
	Thousand metric tons									
GROSS EXPORTS										
Wheat and wheat flour	235	119	224	70	200	370	150	620	840	1 250
Barley	360	496	339	36	445	580	550	630	840	1 050
Maize	10	7	45	23	7	10	20	40	40	50
Millet and sorghum	150	64	101	40	148	85	90	70	155	50
Rice (milled equiv.)	150	262	182	357	368	200	350	80	70	100
Total cereals[1]	918	953	908	526	1 168	1 245	1 170	1 440	1 945	2 500
Sugar	70	13	8	31	17	10	10	10	20	10
Olive oil	12	6	1	4	2	3	5	5	9	4
Total vegetable oils and oilseeds	16	11	6	18	28	24	20	27	33	23
Lemons and limes	12	3	2	2	3	5	11	21	18	15
Oranges	328	227	350	306	191	201	220	220	260	425
Total citrus fruits	340	231	352	308	194	206	231	241	278	440
Cotton (lint)	470	311	392	415	462	570	440	460	635	485
Wool (clean basis)	16	14	13	12	8	19	18	13	13	9
Tobacco	35	36	49	44	84	55	70	62	76	55
GROSS IMPORTS										
Wheat and wheat flour	300	411	291	777	1 242	1 360	1 940	1 710	1 350	900
Barley	20	67	78	49	28	60	90	60	80	50
Maize	10	1	100	375	176	190	40	60	40	30
Sorghum	40	25	51	9	47	65	65	65	55	50
Rice (milled equiv.)	94	23	23	70	51	80	70	60	70	60
Total cereals[1]	470	529	544	1 280	1 544	1 755	2 205	1 955	1 595	1 090
Sugar	320	208	239	388	447	620	400	470	650	600
Vegetable oils and oilseeds	38	26	16	30	34	28	44	48	35	38
Lemons and limes	4	1	1	—	1	1	4	4	2	2
Oranges	8	13	9	3	3	6	33	34	27	20
Total citrus fruits	12	14	10	3	4	7	37	38	29	22
Coffee	37	43	47	44	46	44	35	36	37	35
Tea	26	19	37	41	51	50	56	52	58	60

[1] Including oats.

ANNEX TABLE 20. AFRICA; PRODUCTION OF SELECTED COMMODITIES

COMMODITY	1934-38 average	1946/47	1947/48	1948/49	1949/50	1950/51	1951/52	1952/53	1953/54	1954/55 prelim.
	Thousand metric tons									
Wheat	2 500	2 500	2 020	2 530	2 800	3 225	2 960	3 450	3 630	4 073
Barley	2 090	1 630	1 670	2 410	2 820	2 240	2 410	2 790	3 170	2 915
Maize	4 490	5 118	6 235	4 756	5 447	5 600	5 032	6 565	7 041	6 700
Rice (paddy)	1 684	1 888	1 875	2 002	2 078	2 426	2 434	2 495	2 670	2 700
Sugar (centrifugal)	950	1 024	1 140	1 236	1 276	1 438	1 335	1 496	1 590	1 722
Groundnuts (oil equiv.)	437	618	669	682	645	592	789	800	855	837
Index of All Farm Products	*100*	*108*	*112*	*118*	*125*	*130*	*133*	*140*	*144*	*145*

ANNEX TABLE 21. AFRICA; EXPORTS AND IMPORTS OF SELECTED COMMODITIES

COMMODITY	1934-38 average	1946	1947	1948	1949	1950	1951	1952	1953	1954 prelim.
	Thousand metric tons									
GROSS EXPORTS										
Cereals [1]	1 468	323	447	737	1 475	1 490	1 365	1 255	1 295	1 850
Sugar	660	511	510	637	746	660	800	760	850	980
Groundnuts (oil equiv.)	331	239	229	257	298	262	185	258	284	340
Palm kernel (oil equiv.)	302	223	249	293	329	347	311	324	335	356
Groundnut oil	3	43	43	61	80	82	77	87	146	100
Palm oil	243	214	235	286	334	346	326	350	371	385
Citrus fruits	1 620	1 253	2 272	3 270	3 970	4 690	4 710	4 740	4 930	5 550
Cotton (lint)	130	167	153	164	196	190	190	220	220	235
Wool (clean basis)	53	123	53	57	51	53	50	60	60	65
Coffee	114	199	222	244	231	252	286	290	285	290
Cocoa	462	433	385	428	517	509	487	468	523	440
Tobacco	31	34	45	58	63	74	72	74	77	82
GROSS IMPORTS										
Cereals [1]	781	2 205	981	1 102	954	1 026	1 202	1 351	1 414	1 050
Sugar	370	244	325	397	452	530	600	630	700	720

[1] Wheat and wheat flour, barley, maize, sorghum, rice, oats.

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