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WHEAT STUDIES

OF THE

FOOD RESEARCH INSTITUTE

VOL. VII, NO. 2

DECEMBER 1930

THE WORLD WHEAT SITUATION, 1929-30

A REVIEW OF THE CROP YEAR

WHEAT consumption in the crop year 1929-30 seems to have fallen only a little below its line of post-war trend. The world wheat crop of 1929 was small, trend considered; and stocks had to be drawn down in the course of the year. The situation was seemingly one favorable for fairly high prices and firm markets. Yet on the British import market and in the major exporting countries wheat prices fell from a moderately high level when the year opened to the lowest level of post-war years at its close, despite stabilizing operations undertaken under the auspices of the Federal Farm Board in the United States.

Extremely heavy inward carryovers, the geographical distribution of these carryovers and of the wheat crop of 1929, and a general weakening of the disposition of traders to hold stocks combined to cause weakness in wheat prices. European import requirements were extremely small on account of a big inward carryover, a large domestic wheat crop, ample supplies of wheat substitutes, and governmental measures tending to restrict imports. International trade in wheat and flour, some 624 million bushels as measured by net exports, was the smallest in post-war years, principally because France, Italy, and Germany needed so little wheat. The small continental import requirements and the big Argentine inward carryover gave rise to severe selling pressure on the British market. The disposition to hold wheat was weakened not only by developments in the wheat situation itself, but also by the onset and progress of general economic depression. The crop year opened in an atmosphere of optimism, and closed in an atmosphere of pessimism. Despite reduction in the course of the crop year, wheat stocks remained relatively heavy at the end, especially in North America.

STANFORD UNIVERSITY, CALIFORNIA

December 1930

W H E A T S T U D I E S

OF THE

FOOD RESEARCH INSTITUTE

The central feature of the series is a periodic analysis of the world wheat situation, with special reference to the outlook for supplies, requirements, trade, and prices. Each volume includes a comprehensive review of the preceding crop year, and three surveys of current developments at intervals of about four months. These issues contain a careful selection of relevant statistical material, presented in detail in appendix tables for reference purposes, and in summary form in text tables and charts.

Each volume also includes six special studies bearing on the interpretation of the wheat situation and outlook or upon important problems of national policy. Subjects of issues published in recent volumes are listed inside the back cover.

The series is designed to serve the needs of all serious students of the wheat market, in business, government, and academic circles, by summarizing and interpreting basic facts and presenting current developments in due perspective. The special studies are written not merely for students of the wheat market, but as well for various groups of readers who are especially concerned with the fields discussed.

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The Food Research Institute was established at Stanford University in 1921 jointly by the Carnegie Corporation of New York and the Trustees of Leland Stanford Junior University, for research in the production, distribution, and consumption of food.

THE WORLD WHEAT SITUATION, 1929-30

A REVIEW OF THE CROP YEAR

This review is designed to present a balanced, comprehensive statement of a year's developments in the world wheat situation, in the light of fuller information than is available in the course of the year. The series of annual reviews, of which this is the seventh, not merely furnishes a continuing historical record, but makes for an increasingly reliable understanding of the permanent factors in the wheat market and contributes an essential background and basis for analyses, judgments, and forecasts regarding current and future developments.

SUMMARY

In all of its main features—wheat-crop outturns, consumption, international trade, changes in stocks, and the level and course of prices—the wheat-crop year 1929-30 was characterized by developments for which close analogies in other post-war years are not in evidence. In this sense, at least, the year was an unusual one, though no two post-war years in wheat have been identical even in their salient features. Moreover, the crop year 1929-30 was the first in a decade in which more or less significant influence upon the wheat situation was exerted by the appearance and progress of general economic depression practically world-wide in scope. In the United States, the year was the first to witness the Agricultural Marketing Act in operation. The year was one in which anticipations widely current in the early months were seriously disappointed. Losses to holders of wheat were unquestionably heavy and widespread.

Trend considered, wheat production was small in 1929-30; the outturn in the world, excluding Russia, China, and Asia Minor, probably fell farther below the line of post-war trend than any crop in nine years except that of 1924. The decline in outturn between 1928 and 1929 was larger both in absolute and in percentage terms than the decline between 1923 and 1924. The area harvested in 1929, however, fell not far below the record area harvested in 1928; such decline as there was resulted largely from heavy abandonment, and hence a notably

small harvested area, in Argentina. The relatively small world production in 1929 reflects chiefly a relatively low world yield per acre. Drought was apparently the major cause of the low yield. Yield per acre was low in all of the major exporting countries, but of these India and Canada had secured a lower yield once in the past decade, and the United States twice. In Europe ex-Russia, however, yields per acre were high, more so in the group of importing countries than in exporting countries of the Danube basin, except Bulgaria. France and Italy harvested bumper post-war crops. The distribution of production geographically, like that of 1925-26, favored a relatively small

movement of wheat in international trade. In quantity of outturn, trend considered, the world wheat crop of 1929 resembled that of 1924; in distribution, that of 1925. In quality, the wheat crop was apparently one of the best in recent years, notably in Canada and in Europe. As in 1925-26 but not 1924-25, the 1929 crops of rye and of the feed grains, upon which Europe could draw freely, were relatively abundant.

Wheat consumption in 1929-30 was probably maintained close to, but if anything a little below, its line of trend. The fragmentary evidence does not suggest any reduction of consumption in the major exporting countries as compared with 1928-29. Business depression and its attendant features, together with the good quality of the domestic wheat crop, and the abund-

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ance and relative cheapness of rye and the feed grains, suggest that in Europe the circumstances of 1929-30 favored more extensive substitution of other foods and feeds for wheat than was true in 1928-29. Nevertheless, variation in European consumption was probably a minor, not a major, factor in the development of trade and prices.

With the crop of 1929 so small in relation to trend of production and with consumption maintained close to its line of trend, stocks of wheat were reduced in the course of the year. Reductions occurred in Argentina, the Danube basin, and in some of the European importing countries, notably Germany and Italy. In the United States, Canada, and Australia, stocks were built up. The general level of stocks, probably of record height as the year opened, remained still a notably high one at the end. The wheat crops of 1927 and 1928 had led to heavy accumulations of stocks; and the crop of 1929 was not short enough to reduce these to an average or a normal level.

The volume of international trade in wheat and flour was in 1929-30 the smallest in post-war years, only around 624 million bushels as measured by net exports; the reduction in trade between 1928-29 and 1929-30 was over 300 million bushels, about 34 per cent. This was the largest change to occur between two successive years, in either direction, in the twentieth century. Having accumulated stocks in 1928-29, and having harvested a record post-war crop in 1929, European importing countries needed relatively little wheat and chose to draw upon stocks in 1929-30, as did some ex-European countries. Trade was small in volume not because exporting countries could not furnish shipments, but because European importing countries had exceptionally abundant supplies. The small volume of trade is traceable largely to the small takings of France, Italy, and Germany. Among the exporting countries, Argentina, as usual, shipped wheat freely, securing a relatively large fraction of the trade; Hungary and Jugo-Slavia also exported heavily, reducing stocks. Canada, the United States, and Australia held back or were unable to export unusually large fractions of their exportable surpluses. India exported very little, and was a net im-

porter in the winter months. Russia, despite a short wheat crop, reappeared as a net exporter in the latter half of the crop year. The course of trade throughout the year differed markedly from the average course, showing strikingly small winter shipments.

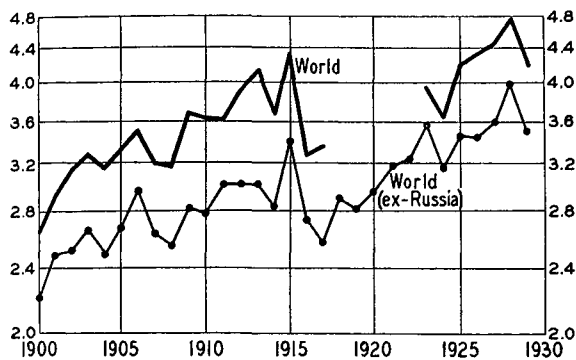
In spite of a relatively short wheat crop in 1929 (trend considered), and in spite of the fact that there was a large downward change in size of crop between 1928 and 1929, international wheat prices averaged about as low in 1929-30 as in 1928-29, and hence were among the lowest in post-war years. Without the huge inward carry-overs, and possibly the distribution of these, such low average prices could hardly have been witnessed. Events that governed the course of prices naturally affected the average level. From a moderately high point in August 1929 international wheat prices (but not prices in some importing countries) fell, with interruptions, to their lowest post-war level in July 1930; this occurred in the face of a reduction of stocks, a short world wheat crop, and efforts in North America toward price-maintenance. Apparently the confidence of holders was severely weakened by the successive items of news that came to their attention as the year progressed. Faulty appraisals of the wheat crops, of import requirements, and of initial stocks had been widely current early in the year, especially in North America. These were gradually corrected; trade and visible-supply statistics assumed an increasingly bearish aspect; pessimism was accentuated by breaks in stock prices, and by other evidence of the growth and spread of general economic depression. Unfavorable crop prospects in Argentina in parts of November and December 1929, and in the spring in the United States and Canada, were not without effect; but their effects were more than offset by the accumulation of bearish news. The sharpest and most extensive decline recorded during the crop year, in December-March 1929-30, seems to have occurred when British buyers, who had earlier accumulated huge stocks of Argentine wheat, practically withdrew from the market. The price developments of the year were unfavorable from the point of view of the Canadian Wheat Pool and of the Federal Farm Board.

I. CEREAL CROPS OF 1929

WORLD WHEAT CROPS SUMMARIZED

The world wheat crop of 1929 (excluding China) was the first crop since 1924 that fell below the post-war trend of production. As is evident from Chart 1, figures compiled by the United States Department of Agriculture indicate that the crop of 1929 ap-

CHART 1.—WORLD WHEAT PRODUCTION, 1900-29*
(Billion bushels; logarithmic vertical scale)



* Data of the U.S. Department of Agriculture as published in *Agricultural Yearbook*, 1930, p. 604; *Foreign Crops and Markets*, March 24, 1930, p. 432; and *World Wheat Prospects*, November 22, 1930, p. 3. "World" production figures do not include estimates of the wheat production of China, of some of the countries of Asia Minor, and of certain other small producers.

proximated 4,200 million bushels, and was over 500 million bushels smaller than the record crop of 1928. In absolute size it approached most closely the outturn of 1925, but, since world consumption has tended upward in the intervening years, production in 1929 appeared much smaller relative to the consumptive demand for wheat than it did in 1925. Excluding both Russia and China, the world wheat crop of 1929 (somewhat larger than the crop of 1925) was not the first, but rather either the second or third crop below the line of trend since 1924. Nevertheless, production in 1929 was much farther below the line of trend than it was in either of the other crop years, and hence its relative position was more like that of the crop of 1924.

If total available supplies, rather than production alone, are to be considered, the years 1924-25 and 1929-30 do not appear so markedly similar. The outturn of 1924 was preceded by the strikingly large crop of

1923, just as the one of 1929 was preceded by the record outturn of 1928; but since the crop of 1923 followed in the wake of two small crops, whereas that of 1928 followed the sizable crop of 1927, stocks at the beginning of the year 1924-25 must have been relatively much lower than stocks at the beginning of the season 1929-30.

Although at the present time the world outturn of 1929 appears to have been relatively small, in August 1929 it was generally judged to be even smaller.¹ Official and private estimates of production for most of the major countries of the Northern Hemisphere (particularly of the European importing countries and North America) have been revised upward in the interim, and present estimates of the world production now stand from 100 to 150 million bushels above the estimates published in August 1929.

The relatively small world crop of 1929 was mainly attributable, as was the short crop of 1924, to a low yield per acre, though in both years there was also a slight decrease in acreage as compared with the preceding year. Chart 2 (p. 92) illustrates these facts. Only in France, the Netherlands, the United Kingdom, and Argentina can the harvested wheat acreage of 1929 be considered distinctly small; whereas the yield per acre was lower than for any other year of the past decade in the large producing areas of Australia and Argentina, and was also abnormally low in the United States, Canada, India, and Bulgaria. Drought was the dominant factor causing the low yields, though rust also appears to have been important in Argentina.

The distribution of world production among the principal producing areas in 1929 was most similar to the distribution in 1925. In both of those years an extraordinarily large proportion of the crop was harvested in the chief importing countries,

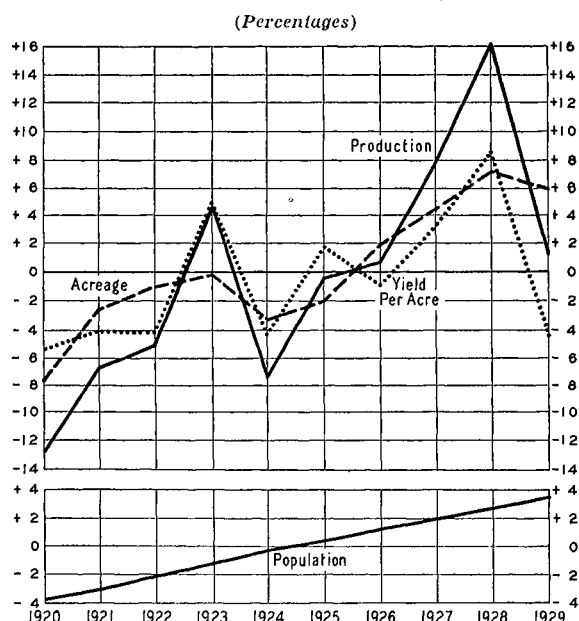
¹ Estimates of the world crop, excluding Russia and China, published by the U.S. Department of Agriculture in *World Wheat Prospects* for the given dates were as follows, in million bushels:

August 15, 1929.....	3,350
September 16, 1929.....	3,400
August 22, 1930.....	3,460
October 21, 1930.....	3,491

the exporting countries of the Southern Hemisphere had exceptionally small outturns, and an unusually large proportion of the Northern Hemisphere crop was harvested in Europe.¹ In 1929 North America

were undoubtedly of exceptionally fine quality, and the Canadian outturn graded unusually high. In the United States, the Danube basin, and Australia the wheat crops of 1929 appeared to be at least of average quality; but in Argentina the quality was not good, though apparently not so bad as in 1925.

CHART 2.—WORLD (EX-RUSSIAN) WHEAT PRODUCTION, ACREAGE, AND YIELD PER ACRE, AND WORLD POPULATION, IN TERMS OF PERCENTAGE DEVIATIONS FROM THE 1922-27 AVERAGE, 1920-29*



* Production, acreage, and yield per acre figures based on detailed statistics shown in Appendix Tables I-III. Population figures in part from official sources, in part from *International Yearbooks of Agricultural Statistics*, and adjusted for particular countries to give consistent trends; the principal regions omitted are Russia, China, the East Indies and Malay regions, and most of Africa.

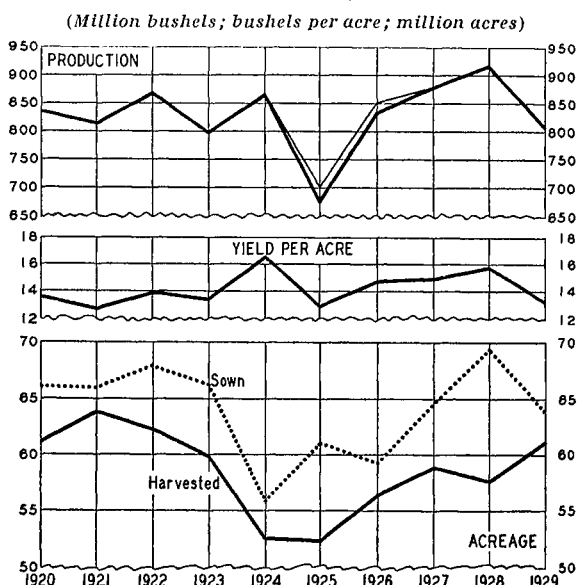
apparently contributed the smallest percentage of the world crop that she has contributed since the war; while the outturn of the European importing countries was larger in both absolute and percentage terms than in any other post-war year.

The quality of the world wheat crop of 1929 doubtless was, on the average, rather high—comparable at least to the good crops of 1926 and 1928. The crops harvested in the European importing countries in 1929

NORTH AMERICAN CROPS

The United States wheat crop of 1929 is now officially estimated at 809 million bushels.² Compared with previous post-war years the crop therefore approximated the relatively small crops of 1921 and 1923, but was considerably larger than the strikingly short crop of 1925. As is apparent from Chart 3, which shows production,

CHART 3.—WHEAT PRODUCTION, YIELD PER ACRE, AND ACREAGE SOWN AND HARVESTED IN THE UNITED STATES, 1920-29*



* Data from Appendix Tables I-IV and VIII. The data plotted for 1929 differ slightly from the latest official estimates shown in the tables. The light solid line represents production according to our tentative adjustments shown in Appendix Table IV. If the adjusted production figures and the official acreage figures are correct, some of the yield per acre figures shown in the second section of the chart are too low.

acreage, and yield per acre of wheat in the United States for the period 1920-29, the relatively small outturn of 1929 was secured from the largest area harvested since 1922.³ The acreage sown for the 1929 crop was exceeded in size by the areas sown for the

¹ See Appendix Table IV.

² Appendix Table III shows estimates of wheat production in individual countries for 1920-29.

³ Estimates of wheat acreage for the various countries appear in Appendix Table I. Additional data on acreage harvested and sown in the United States appear in Appendix Table VIII.

crops of 1927 and 1928, as well as by the areas sown for the crops of the very early post-war years; but since abandoned acreage in 1929 (only 2.7 million acres for the winter-wheat crop) was smaller than in any other year of the past decade with the single exception of 1921, the area remaining for harvest ranked quite high. The relatively small wheat production of 1929 is thus attributable mainly to a low yield per acre; the yield per acre estimated by the Department of Agriculture is 13.2 bushels, a figure smaller than any other during the decade 1920-29 except that of 1921, 12.8 bushels, and that of 1925, 12.9 bushels.¹ In practically every respect the wheat crop of 1929 stands out in marked contrast to the crop of 1928. In 1929, as has been noted, a relatively small outturn was secured from a harvested area of good size, the acreage having been maintained at a high figure as a result of unusually small abandonment. In 1928, on the other hand, a bumper crop (now estimated at 915 million bushels) was harvested from an area which was relatively small as the result of the abandonment of an abnormally large portion of the extensive area sown.

While both the winter- and the spring-wheat crops may be described as slightly below average in size, the spring-wheat production appears somewhat smaller in comparison with the crops of recent post-war years than does the winter-wheat production.² This is mainly due to the fact that the winter-wheat acreage harvested was the largest acreage harvested since 1922, while the spring-wheat acreage, though somewhat larger than the good-sized areas harvested in 1920, 1925, and 1927, was about 650 thousand acres smaller than the strikingly large acreage harvested in 1928.

Early in the growing season both winter- and spring-wheat crops promised to be larger than they turned out to be, while in the late summer and early fall of 1929 they were generally reported to be smaller than they are now estimated to have been.³ May

weather was generally favorable for winter wheat, but during June and July the crop deteriorated largely as a result of excessive rain in some wheat areas and excessive heat in others. According to the latest revision (December 1930) the winter-wheat crop of 1929 is reported to have approximated 576 million bushels—a figure decidedly higher than the estimate of August 1929, but lower than the early forecast made in May 1929. Spring wheat likewise deteriorated markedly during July. Adverse weather factors of various kinds were responsible for the decline in the prospects; in some localities the wheat suffered from drought and extreme heat; in others it was harmed by high winds or low temperatures. Some improvement took place during August. The most recent revised estimate of the crop places the outturn at 233 million bushels.

There is nothing strikingly unusual about the distribution of the 1929 crop by classes. All of the classes of wheat except the hard red winter wheat ranked among the smaller crops of the decade 1920-29;⁴ and even the outturn of hard red winter wheat was exceeded in three of the other nine years.

Judged by most of the common standards, the United States wheat crop of 1929 was of average quality or better, but was by no means exceptionally good. The Department of Agriculture reported the crop to be approximately 87.5 per cent of "high medium quality," a rating 1.3 per cent under the ten-year average (1918-27) and 1.9 per cent below the figure for 1928. The weight per measured bushel was only average or slightly higher, approximately 58.3 pounds per bushel. On the other hand, the protein content of the crop ran moderately high; and the number of bushels required to produce one barrel of flour was fairly low (4.672 bushels).

The small Canadian wheat crop of 1929, 305 million bushels, was secured from the largest area ever sown, 25.3 million acres. It is evident from Chart 4 (p. 94) that the 1929 crop was considerably larger than the exceptionally poor crops of 1920 and 1924, but was approximately equal to the relatively small one of 1921. The yield per acre, reported to be 12.1 bushels, is the sixth lowest yield reported during the thirty years 1900-1929. Like the United States crop, the Canadian crop of 1929 stands out

¹ See Appendix Table II for estimates of yield per acre in individual countries for the years 1920-29.

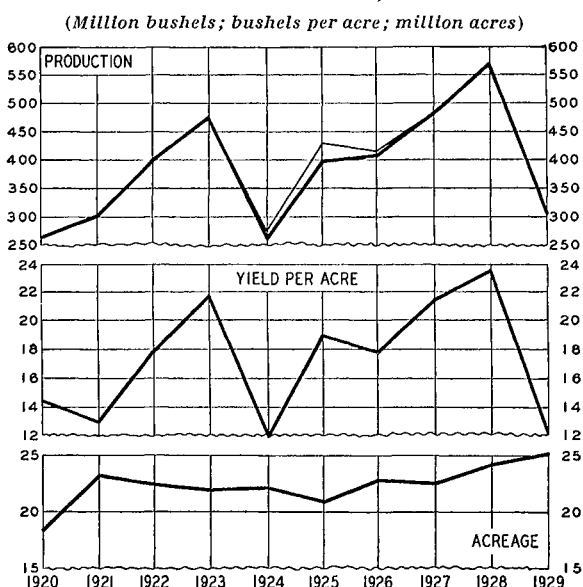
² See Appendix Table XII.

³ See Appendix Table XI.

⁴ See Appendix Table IX.

in marked contrast to the outturn of 1928. Canadian wheat production in 1929 was notably small, mainly as the result of a low yield per acre; production in 1928, on the other hand, was the largest on record, partly because of a large acreage, but principally because of an extraordinarily high yield per acre, the highest yield since 1915.

CHART 4.—WHEAT PRODUCTION, YIELD PER ACRE, AND ACREAGE IN CANADA, 1920-29*



* Data from Appendix Tables I-IV. The areas are areas sown. The significance of the light solid line is explained in the note to Chart 3, p. 92.

The development of the Canadian crop during the summer of 1929 can be illustrated by estimates of crop condition published as of the end of each month. The following figures are official estimates of the condition of the spring-wheat crop in all of Canada:¹

	May 31	June 30	July 31
1924	96	92	77
1928	100	103	107
1929	100	88	66

For comparative purposes, condition estimates for the years 1924 and 1928 are presented in contrast with the estimates for 1929. In 1928 the crop showed more marked improvement during the summer period than in any other post-war year, while in 1924 the deterioration during June-July

was greater than in any other post-war year prior to 1929 except 1919, when the deterioration (as measured by the number of points of decline shown by the condition estimates) was approximately the same as in 1924. In 1929 the June decline of 12 points and the July decline of 22 points were the largest declines for those respective months recorded during the decade. The deterioration in the 1929 crop, so strikingly portrayed by the condition estimates, was due in the main to a poor start and long-continued drought. As in the United States the condition of the crop was decidedly spotted; in some localities timely rains resulted in good yields, while in other localities a continued deficiency of rainfall, excessive heat, and high winds led to extremely low yields.

The non-uniformity of crop conditions was responsible for much uncertainty in regard to the size of the crop, and judged by the most recent revised estimates of production the early fall estimates ran generally somewhere around 25-50 million bushels too low.

In quality, the Canadian wheat crop of 1929 ranked exceedingly high. Especially notable is the fact that the percentage of the hard red spring wheat which graded Number 1 and Number 2 was unusually high as compared with other recent years.² The moisture content of the grain harvested in 1929 was unusually low, as is suggested by the very small percentage of the 1929-30 inspections rated as "no grade." Both the Grain Research Laboratory of the Board of Grain Commissioners and the Canadian Wheat Pool have published reports showing the protein content of the crop to be decidedly high.³ Even the weight per measured bushel and the milling yield, both reported as inferior in October 1929 on the basis of early milling and baking tests of

¹ For each year 100 represents the average condition as of that date during the preceding ten years; hence the actual condition represented by 100, or any other given number, is not exactly the same for different years.

² See Appendix Table XIII.

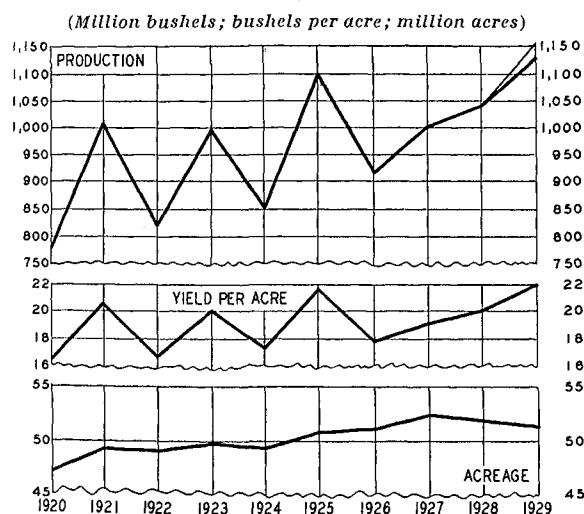
³ Grain Research Laboratory of the Board of Grain Commissioners, *First Report on the Protein Content of the 1929-30 Crop*, October 1, 1929; and Canadian Wheat Pool Research Department, *Preliminary Report on Quality of the 1929 Crop*, October 9, 1929.

the Grain Research Laboratory, were later found to be somewhat above average.¹

EUROPEAN WHEAT CROPS

The European (ex-Russian) wheat crop of 1929 is reported to have been the largest crop harvested during post-war years. At present it appears to have exceeded the crop of 1928 by approximately 55 million bushels and the crop of 1925 by 65 million bushels,² and is thus much larger than it was anticipated to be in the early fall months of 1929.³ The outstanding feature of the distribution of the 1929 crop is that the group of European importing countries secured a record post-war outturn, whereas production in the Danube basin was considerably smaller than in 1928, though still relatively large. These facts are brought out by Charts 5 and 6.

CHART 5.—WHEAT PRODUCTION, YIELD PER ACRE, AND ACREAGE IN EUROPEAN IMPORTING COUNTRIES, 1920-29*

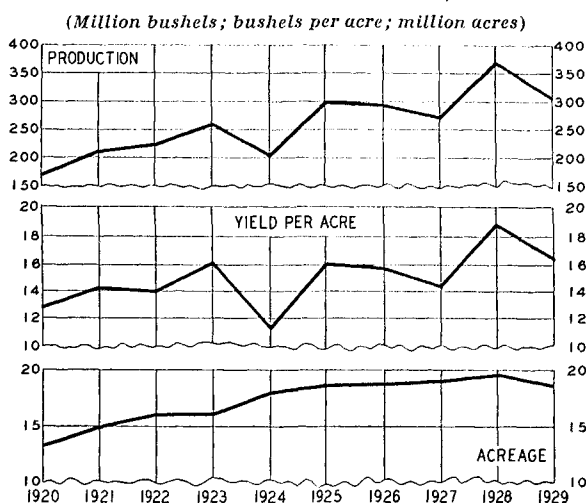


* Data from Appendix Tables I-IV. "European importing countries" includes all the European countries for which data are given in the tables, except the four Danubian countries and Russia. The light solid line represents our tentative adjustment for underestimation of the French crop in 1929.

The importing countries harvested a record crop mainly as a result of exceptionally high yields per acre in most of the large producing countries. France and Italy obtained yields higher than they had secured in any other post-war year, while the British Isles, Spain, Holland, Denmark, Czecho-

Slovakia, Poland, and the group of Baltic countries obtained yields which had been exceeded only once or twice during the past decade; and in Germany the yield in 1929 was surpassed only in 1921, 1925, and 1928.

CHART 6.—WHEAT PRODUCTION, YIELD PER ACRE, AND ACREAGE IN THE DANUBE BASIN, 1920-29*



* Data from Appendix Tables I-IV. "Danube basin" includes Hungary, Jugo-Slavia, Roumania, and Bulgaria.

But in spite of the high yields per acre in most of the importing countries, recent official estimates indicate that only Italy, Czecho-Slovakia, Poland, Switzerland, and the group of Baltic countries secured record post-war crops. Many European commentators are inclined to add France to the list of countries which produced record crops, for although the French crop of 1929 was officially reported as 10 million bushels smaller than the 1925 crop, the evidence suggests that the crop was probably some 20 million bushels or so larger. At least tentatively we are inclined to employ a figure of 350 million bushels for the French

¹ Dominion Bureau of Statistics, *Crop Report Number 15*, January 23, 1930. According to Canadian milling statistics only 4.48 bushels of wheat were required for making one barrel of flour in 1929-30, as was also true in 1925-26, whereas 4.54 bushels were used in 1928-29 and 1926-27 and 4.59 bushels in 1927-28.

² See Appendix Table IV for comparisons with other years. In that table the estimate of the crop in other Europe in 1929 includes our estimate of 350 million bushels for the French crop in place of the official estimate of 320 million bushels.

³ Most observers apparently expected the crop of 1929 to fall somewhat short of, or at the most to about equal, the crop of 1928.

crop. All of the countries which obtained record post-war crops, except France and Italy, harvested their crops from areas of record (post-war) size; and the wheat acreage in Austria and Sweden was likewise larger in 1929 than in any previous post-war year. The large French crop appears all the more unusual since it was secured from an acreage that was officially ranked as smaller than the area harvested in any other post-war year, except 1920. Most of the remaining importing countries of Europe harvested large crops from areas of only fair average size (trend considered)—the harvested wheat acreage having been appreciably reduced in a number of countries by the severe winter weather of 1928-29.

Unlike the European importing countries, the group of Danubian exporting countries did not harvest a record crop. But although Danubian wheat production in 1929 fell considerably below the bumper crop of 1928, the outturn of 1929 was the second largest of the decade; and it now appears to have been approximately in line with the general upward trend. A similar statement may be made in regard to the average yield per acre, but not in regard to the acreage; for the wheat area in the Danube basin in 1929 was not up to its line of trend. Of the four Danubian countries, Jugo-Slavia alone harvested a crop which appeared distinctly large (trend considered). The large outturn of Jugo-Slavia is attributable partly to the record acreage harvested, and partly to a high, but by no means a record, yield per acre. The wheat crops of Roumania, Bulgaria, and Hungary (especially Roumania) suffered markedly from winterkilling and from late spring frosts. Weather during the later growing season was more favorable, however, and the yields per acre reported for Roumania and Hungary were rather high. Only in Bulgaria was the yield decidedly low.

As a result primarily of warm dry weather during the ripening and harvesting period the quality of the total European (ex-Russian) crop of 1929 was exceedingly good, comparing favorably with the crop of 1928. For example, in Germany, 61 per cent of the crop of 1929 weighed over 59 pounds per measured bushel, as compared

with 57 per cent in 1928 and only 29 per cent in 1927;¹ while in France the average weight per measured bushel in 1929 was reported to be 59.73 pounds, approximately the same as the high weights recorded for the crops of 1922 and 1928;² and in the United Kingdom the weight per bushel was the highest in nine years.³ Other measures of quality would probably likewise indicate that the crop of 1929 was generally above average, but such measures are lacking at present.

The Russian crop of 1929, approximately 703 million bushels, appears to have been the smallest harvested during the five years 1925-29, but probably to have exceeded the crops of earlier post-war years. The 1929 outturn was obtained from an area of 75.7 million acres, an area second in size only to the record post-war area of 1927. Thus, the yield per acre in 1929 was exceedingly low. At 9.3 bushels to the acre it ranks with the low yields of 1924 and 1927 and is in marked contrast to the high yields of 12.4 bushels in 1925 and 1926.

OTHER NORTHERN HEMISPHERE WHEAT CROPS

Of the wheat crops of other Northern Hemisphere countries the most noteworthy were the record crops harvested in the northern African countries. As a group, the

¹ The following figures representing the percentages of the German winter-wheat crop that weighed different specified amounts per measured bushel were published by the U.S. Department of Agriculture in *World Wheat Prospects*, October 21, 1930, p. 17.

	1927	1928	1929
Less than 57 pounds.....	28	7	10
57-59 pounds.....	43	36	29
Over 59 pounds.....	29	57	61

² Official estimates of the weight per measured bushel of French wheat for the years 1922-29 are as follows (calculated from data published in *Bulletin de l'office de renseignements agricoles*, October issues):

	Pounds		Pounds
1922	59.73	1926	58.60
1923	57.87	1927	57.76
1924	58.53	1928	59.74
1925	58.86	1929	59.73 ^a

^a Preliminary.

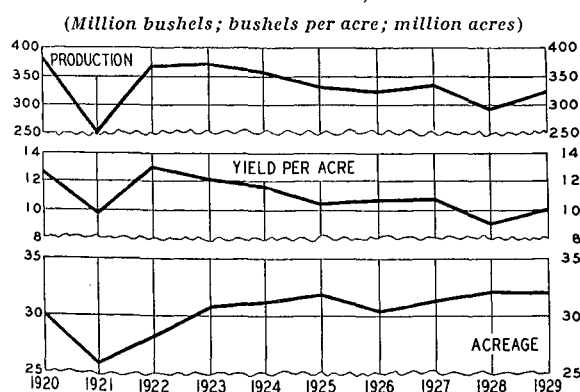
³ The following figures, showing the average weight per measured bushel of wheat, were secured from *Agricultural Statistics*, published annually by the Ministry of Agriculture and Fisheries:

	Pounds		Pounds
1921	62.8	1926	61.9
1922	61.2	1927	61.2
1923	62.1	1928	62.6
1924	61.4	1929	63.0
1925	62.2		

three French dependencies had the largest wheat production of post-war years (77 million bushels); and Egypt likewise obtained a record outturn (45 million bushels). The acreage harvested in each of the northern African countries was large in comparison with the previous years of the decade, and apparently about in line with the general upward trend evident in those countries since the war. Only in Egypt was a record yield per acre secured; each of the French dependencies had a high, but none had a record, yield. In Mexico, as in the countries of northern Africa, favorable weather conditions helped to produce a large crop.

The crop harvested in India in 1929 stood out in marked contrast to the large crops of the northern African countries. At 320 million bushels, it ranked as the second smallest of the five short crops of 1925-29. Since the crop of 1929 immediately followed the shortest crop of the period (the 1928 crop of 291 million bushels), available wheat supplies must have been very low at the time the 1929 crop was harvested. In 1929, as in the preceding year, the small size of the crop was apparently due in the main to an exceedingly low yield per acre, as appears from Chart 7. The wheat

CHART 7.—WHEAT PRODUCTION, YIELD PER ACRE, AND ACREAGE IN INDIA, 1920-29*



* Data from Appendix Tables I-III.

acreage harvested in 1929 was exceeded during post-war years only by the large acreage of 1928.

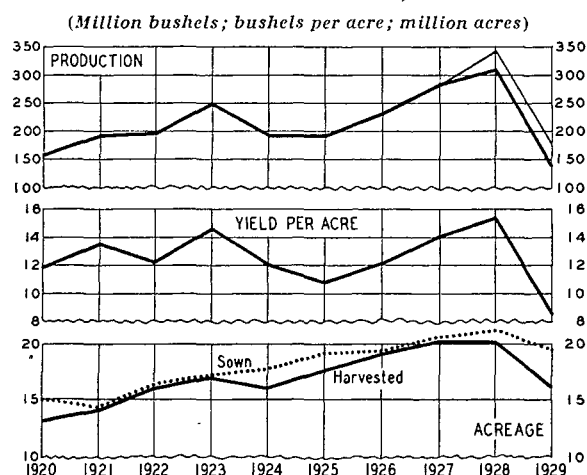
Of the remaining countries of the Northern Hemisphere, Japan and Chosen and the countries of Asia Minor appear to have

had good-sized outturns, whereas China appears to have secured a crop of only fair size.

SOUTHERN HEMISPHERE WHEAT CROPS

Wheat production in the Southern Hemisphere in 1929 fell decidedly below what may be considered its post-war trend. If approximately 375 million bushels of wheat were harvested in the major countries of the Southern Hemisphere, as seems probable, production was lower than in any year since 1925, and was some 200 million bushels smaller than the record post-war crop of the preceding year. Both of the principal producing countries, Argentina and Australia, secured relatively small crops, as is apparent from Charts 8 and 9.

CHART 8.—WHEAT PRODUCTION, YIELD PER ACRE, AND ACREAGE IN ARGENTINA, 1920-29*

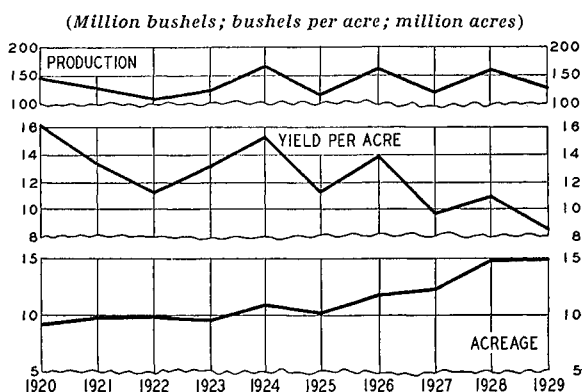


* Data from Appendix Tables I-IV. The significance of the light solid line is explained in the note to Chart 3, p. 92.

The Argentine crop was by all odds more strikingly small than the Australian production. Judged by official estimates the Argentine crop of 1929 was the smallest of post-war years, 137 million bushels. Many if not most observers, however, consider the official estimate much too low, and the export, consumption, and stocks figures available at the present time suggest that the official figure is approximately 35 million bushels too low. Yet, even if the official estimate were increased by 35 million bushels, the outturn of 1929 would still rank as one of the smallest crops of the decade—

either as the smallest since 1920, or as approximately equal to the 1925 outturn which may have been overestimated. Moreover, it is significant to note that a production of 175 million bushels is only slightly more than half the size of the large 1928 production. Chart 8 readily suggests the explanation of the small crop of 1929. The

CHART 9.—WHEAT PRODUCTION, YIELD PER ACRE, AND ACREAGE IN AUSTRALIA, 1920-29*



* Data from Appendix Tables I-III.

acreage sown for the crop was not exceptionally small (even when the general upward trend is considered), but unfavorable weather conditions during the growing season were responsible for an unusually heavy abandonment of wheat acreage, and also for an exceptionally low yield per acre, either 8.5 or 10.8 bushels, as one uses the official production figure or the figure which we employ. During the early part of the growing period, up to the middle of September, the crop suffered reduction on account of extremely dry weather, while from early November to harvest time great damage was done by rust infestation which affected not only the size of the crop but also the quality. If the production of 1929 has been officially underestimated by 35 million bushels, there must likewise have been official understatement of either the acreage harvested or the yield per acre. At present, however, it appears impossible to make corrections in the acreage or yield figures with any assurance of accuracy. The weight per bushel of the Argentine crop of 1929 appears to have been lower than the weight of the preceding crop; and some

complaints came from Europe in regard to the milling quality of the wheat. But although the 1929 crop was apparently of fairly poor quality, it was no doubt much better than the extremely poor crop of 1925.

In Australia, the crop of 1929 was neither one of the smallest nor one of the largest on record since the war; yet it clearly should be considered as a relatively small, rather than as a relatively large, outturn. The wheat acreage in Australia, in contrast with the acreage harvested in Argentina, was in line with the general upward trend, but only a trifle larger than the acreage of the preceding year. The yield per acre, however, was, as it probably was in Argentina, the lowest in a decade; and one of the chief factors which reduced the Argentine yield—a deficiency of rainfall up to the middle of September—was apparently likewise the major factor responsible for the low yield in Australia.

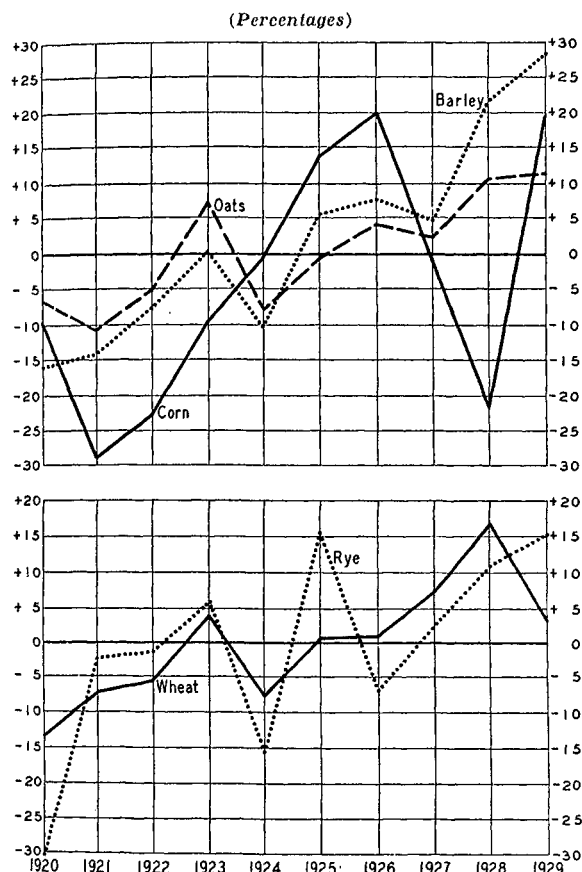
RYE AND FEED GRAIN PRODUCTION IN 1929

An analysis of the supply position of rye and the common feed grains is useful in interpreting the wheat situation in a given year only if it be assumed that rye and the coarse grains are substituted for or supplemented by wheat under appropriate conditions of supply and price. This assumption is discussed below.¹ It is sufficient here to note that, although direct evidence is lacking, the information available leads one to infer that, while mutual substitution between wheat and the other cereals (and probably also potatoes) may not be of major importance for the world as a whole, it is probably of some importance in Europe or in particular countries of Europe, where rye seems to rank first as a wheat substitute.

Chart 10 shows the annual production (in terms of percentage deviations from an average) of rye and each of the feed grains in those countries which make important contributions of the respective cereal to European markets; the chart also shows the annual production of wheat in the world, excluding Russia and China. The chart suggests that during the season 1929-30 rye and the feed grains were relatively

¹ See pages 99-100, 102-03.

CHART 10.—PRODUCTION OF WHEAT IN WORLD (EX-RUSSIA), AND PRODUCTION OF RYE, CORN, BARLEY, AND OATS IN EUROPE (EX-RUSSIA) AND IN THE PRINCIPAL EXPORTING COUNTRIES OF THE WORLD, IN TERMS OF PERCENTAGE DEVIATIONS FROM THE 1922-27 AVERAGE, 1920-29*



* Data from Appendix Tables IV-V. Rye production figures are for Europe (ex-Russia), Canada, United States, Argentina; corn production figures are for Europe (ex-Russia), Argentina, the Union of South Africa; barley and oats production figures are for Europe (ex-Russia), Argentina, Canada.

abundant, and the position of each of the cereals decidedly easy. In fact, in only

three years of the decade 1920-29 were the crops of all three of the coarse grains relatively large (1925, 1926, and 1929), and in one of those years (1926) the rye crop was distinctly small. Thus, the supply situation of the major grains other than wheat was perhaps easier in 1929 than in any other year except 1925,¹ and in marked contrast to the preceding year when small corn crops made the feed situation relatively tight. In Europe (ex-Russia) alone, the oats, barley, corn, and potato crops of 1929 were all record post-war crops, and the rye out-turn was officially estimated as approximately equal to that of 1925, the largest of the decade.² The official estimate of the several crops may be inaccurate, notably as regards Argentine corn. One needs to judge the rye and feed grain position in the light of changing livestock population, and with knowledge of changes in carryovers. On these subjects the available information is scanty, though it is clear that livestock population in Europe has tended both to grow more rapidly than human population, and also to fluctuate more erratically; and one may be assured that the carryovers of rye into 1926-27 and 1929-30 were large ones. Again, the concept of a general European supply position is certainly not a sharply delineated one, if only because there is a more or less different situation in each country, and because the basis is tenuous for deciding that supplies in one or another non-European country affect the European situation. Even with these qualifications, however, Chart 10 seems to carry some significance; and inferences regarding ease or tightness in the statistical position of rye and the feed grains are more or less confirmed by records of grain prices in the United Kingdom, Germany, and Italy.

II. CONSUMPTION OF WHEAT IN 1929-30

Among the several major topics that require discussion in a comprehensive survey of the world wheat situation in 1929-30, none is more difficult to analyze than the actual developments in consumption. Statistics bearing directly upon consumption are rare; and for most countries it is possible merely to draw inferences, more or less securely founded, from statistics of

crop production and of imports or exports. With statistics of milling operations and of wheat stocks so scanty, with so little tangi-

¹ The crops of 1929 were obviously much larger than those of 1925, but since the livestock population in European countries increased strikingly during the four years 1925-29, the easiness of the feed grain situation may actually have been no more marked in the former than in the latter year.

² See Appendix Tables V, VI, and VII.

ble direct evidence of the extent to which wheat as food for men or feed for animals may in successive crop years be substituted for or supplanted by rye, the coarse grains, or potatoes, and with the certainty that the situation differs from country to country, there is always a rather wide margin of uncertainty about what may have happened to consumption in a given crop year. Yet, at least so far as concerns international trade and wheat prices in 1929-30, the subject of consumption is important.

If one chooses to assume that consumption of wheat is notably stable over a period of years, then he may infer that the known events in trade and prices in 1929-30 are attributable largely to developments in the wheat-stocks position. If one chooses to assume that in Europe, at least, wheat consumption is notably variable from year to year, then he may infer that trade was small and that prices fell largely because there was a strongly marked tendency in Europe to substitute rye and/or the coarse grains and potatoes for wheat. On the whole we incline toward the former point of view. Yet there is evidence that in some countries of Europe rye was substituted for wheat to a greater extent than usual in 1929-30. In the major exporting countries, wheat consumption seems not to have departed significantly from its line of trend.

IN THE MAJOR EXPORTING COUNTRIES

In the United States, the trend of per capita flour consumption seems to be about constant, or possibly a little downward; growth of population, however, results in an upward trend in aggregate flour consumption. Domestic disappearance of flour in the United States in July-June 1929-30 (estimated flour production minus net exports and shipments to possessions) was about 108.8 million barrels, larger than in any of the preceding six years except 1928-29, but 1.1 million barrels smaller than in that year.¹ Moreover, visible supplies of flour are reported to have increased about 1.42 million barrels in the course of the year. These figures, however, can hardly be interpreted as conclusive evidence of smaller aggregate flour consumption in 1929-30 than in 1928-29. There may well

have been a reduction, more than compensatory, of flour stocks in the hands of bakers, retailers, and consumers between July 1, 1929, and June 30, 1930; this inference is not susceptible of definitive proof, but seems to be warranted by the sharply different course of wheat prices in June 1929 and June 1930.² In so far as business depression affects flour consumption at all in the United States, the effect is presumably expansion rather than contraction, bread being a distinctly cheap food in the American diet. All told, there is little reason to suppose that the crop year 1929-30 witnessed either a significant decline or a significant increase in flour consumption in the United States. The use of wheat for seed was about the same as in 1928-29.³ The amount fed to livestock and lost or wasted does not appear to have been strikingly large or small. It was perhaps high rather than low, though evidence on the subject is contradictory.⁴

In Canada the official estimate of wheat ground for domestic consumption of flour in 1929-30 was 44 million bushels, about the same as in 1928-29.⁵ Another set of statistics shows that the amount of flour retained for domestic consumption (flour milled minus net exports) was a little smaller in 1929-30 than in 1928-29 or 1927-28, but

¹ See Appendix Table XXXIII.

² We infer that when wheat prices rise sharply, as they did in June 1929, bakers tend to accumulate flour stocks; and the reverse when prices fall, as in June 1930. The trade journals afford some evidence of a decline in bakers' flour stocks in 1929-30. Flour stocks held by city mills declined about 290 thousand barrels in the course of the year (see Appendix Table XXIX).

³ See Appendix Table XXXV A.

⁴ The U.S. Department of Agriculture has, however, published estimates of the quantities of wheat fed to livestock on farms where grown and lost or wasted for the crop years 1924-25 to 1928-29. The figures run as follows, in million bushels: 42.7; 37.2; 40.5; 50.0; 44.8. See a mimeographed publication, *Farm Value, Gross Income, and Cash Income from Farm Production*, Washington, March 1930, pp. 11-15. The figure for 1928-29 has been revised to 55.6 million bushels, and the figure for 1929-30 is 58.2 million. In addition, it is now estimated that some 32.1 million bushels of wheat were fed elsewhere than on farms where grown in 1929-30. Murray (see circulars of Clement, Curtis and Company, March 4, 1929; April 2, 1930; and September 3, 1930) has estimated that normally about 4.2 per cent of the United States wheat crop is fed to livestock, and that about 3.9 per cent or a little more was so fed in 1929-30, as against 4.4 per cent in 1928-29.

⁵ See Appendix Table XXXV B.

otherwise the largest in post-war years.¹ Presumably, as in the United States, invisible flour stocks were reduced in the course of the year; there is no convincing evidence that the year witnessed a decline in human consumption of flour. The use of wheat for seed was the largest in post-war years, but this item has not changed greatly in recent years. The crop of 1929 was of such excellent quality that the quantities unmerchantable and lost in cleaning (presumably fed to livestock) were the smallest in four years.² Statistical information is not available regarding the quantity of sound wheat fed to livestock on farms, but no good reason appears for supposing that such use was unusual in 1929-30.

In Argentina, flour consumption probably was maintained on the upward trend apparent since the war, and no reason appears for supposing that the use of wheat for feed or seed was unusual. Much the same may be said of Australia; here, however, the record wheat area sown for the wheat crop to be harvested in December 1930 doubtless involved a relatively large disappearance for seed.

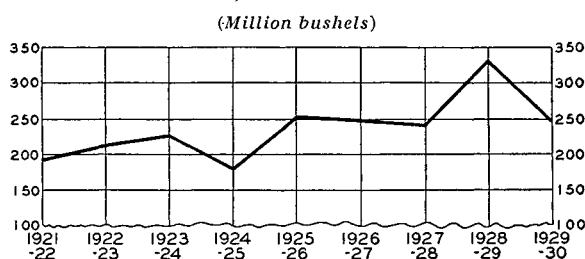
IN THE MINOR EXPORTING COUNTRIES

In the four major exporting countries, the use of wheat for human food seems to vary little from year to year, increasing as the population increases; the fluctuations in supplies are absorbed by changes principally in exports and in stocks, and to a much lesser degree by variations in the use of wheat for feed and seed. In India, however, variations in human consumption may be significant. More or less substitution may occur under appropriate circumstances; and, with the level of subsistence

not high, there may be appreciable variation also in the total per capita calorie intake, in which wheat may share. But the bare statistics of domestic utilization do not suggest any striking development in Indian wheat consumption in 1929-30; the figure, 320 million bushels, is very close to the figures for any of the preceding five years.³

At first glance the statistics of domestic utilization in the Danube basin suggest a sharp reduction of wheat consumption in that region during 1929-30. The data for nine post-war years are shown in Chart 11.

CHART 11.—APPARENT DOMESTIC UTILIZATION OF WHEAT IN THE DANUBE BASIN, BY CROP YEARS, FROM 1921-22*



* Data from Appendix Table XXXIV.

Utilization in 1929-30 fell around 80 million bushels below the high figure of 1928-29, and perhaps more than 30 million bushels below the line of trend. The corn crop of 1928 was only 250 million bushels; that of 1929 was 523 million. If substitution of corn for wheat and wheat for corn actually occurs in substantial volume, one is justified in regarding the high apparent domestic utilization of wheat in 1928-29 as evidence that wheat was in that year widely substituted for corn; whereas in 1929-30 corn was substituted for wheat. In the absence of price statistics for the several cereals, however, an alternative explanation seems equally reasonable. The high apparent domestic utilization of wheat in 1928-29 may represent an extraordinary accumulation of wheat stocks in the course of the year, and the relatively low utilization of 1929-30 (trend considered) may represent reduction of wheat stocks. Since wheat and corn have widely different uses, and since exports of corn and barley continued even in the face of the short crops of 1928, we are tentatively disposed to regard the fluctuations in Danubian domestic utilization of

¹ The data, in thousand barrels, are as follows for August-July crop years (official statistics of flour production and net exports):

	Production	Net exports	Domestic retention
1921-22	14,954	7,701	7,253
1922-23	19,544	10,936	8,608
1923-24	20,542	11,933	8,609
1924-25	18,180	10,108	8,072
1925-26	19,025	10,847	8,178
1926-27	17,862	9,238	8,624
1927-28	19,074	9,794	9,280
1928-29	20,872	11,730	9,142
1929-30	15,763	6,696	9,067

² See Appendix Table XXXV B.

³ See Appendix Table XXXIV.

wheat principally, though of course not exclusively, as evidence of changes in wheat stocks. In short, we believe that the relatively low wheat utilization in 1929-30 does not represent relatively low wheat consumption induced by the abundance of corn, but rather may be taken to suggest that wheat consumption was maintained about on its line of trend, stocks being drawn down in the course of the year.

Little can be said of wheat consumption in Russia. Since the crop of 1929 was apparently smaller than any of the preceding four crops, aggregate consumption may also have been smaller. Flour was rationed in many cities. If one accepts official Soviet estimates of the average wheat crops of 1909-13 and allows roughly for what may have been net exports of wheat in those years from the present territory of Russia, it seems fairly clear that, on account of the increase in population, Russian per capita consumption of wheat could not have attained its pre-war level in the years 1925-26 to 1929-30, though total consumption may have been approximately as large. The relatively heavy wheat exports from Russia in the autumn of 1930 have served to focus the attention of the Western world upon the outlook for Russian wheat exports; but the subject, which involves some consideration of consumption, need not be discussed here.¹ Within the crop year 1929-30, Russia did not play a notably significant part in the world wheat market, though the situation changed in the early months of the present crop year, 1930-31.

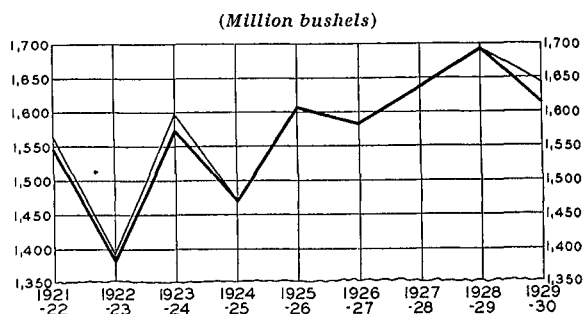
IN EUROPEAN IMPORTING COUNTRIES

As is true of the Danube countries, the principal evidence regarding wheat consumption in the European importing countries consists of data on domestic utilization or disappearance—that is, domestic wheat crops plus net imports of wheat and flour.² The data are difficult to interpret because so little is known, on the one hand, of the extent to which wheat may be substituted for or supplanted by rye, the coarse grains,

and potatoes, and, on the other hand, of the magnitude of changes in wheat stocks.

Chart 12 summarizes the data on domestic utilization of wheat in the European importing countries (except Portugal) from

CHART 12.—APPARENT DOMESTIC UTILIZATION OF WHEAT IN EUROPEAN IMPORTING COUNTRIES (EX-PORTUGAL), BY CROP YEARS, FROM 1921-22*



* Data from Appendix Table XXXIV. Does not include Portugal, for which adequate trade statistics are not available. The light solid line represents our adjustments for probable understatements of the German crops and imports in 1921-22 to 1923-24, and of the French crop in 1929-30.

1921-22 to 1929-30; the heavy line represents summations of official crop estimates as they stand, while the light line represents our tentative alterations of German statistics in the early years and of the French crop estimate for 1929. As judged by the heavy line, utilization in 1929-30 fell some 80 million bushels below the figure for 1928-29, and possibly 50 or 60 million bushels below the line of post-war trend. Alternative explanations can be found for the relatively low figure for 1929-30. Were stocks of wheat built up in 1927-28 and 1928-29 but reduced in 1929-30, while consumption in all three years was subjected to very little change except in so far as it increased each year with growth of population? On the other hand, did wheat stocks remain almost unchanged, while consumption for food and feed declined in 1929-30 to a lower level than in 1928-29, and perhaps in 1927-28? Again, is it possible that inaccuracies in the official crop estimates are largely responsible for the fluctuations in domestic utilization?

So far as we are able to evaluate the information, there appears to be some truth in each of these hypotheses. If one accepts 350 million bushels as a more accurate esti-

¹ A forthcoming issue of *WHEAT STUDIES* will deal with Russia as a producer and exporter of wheat.

² See Appendix Table XXXIV for data by countries.

mate of the French crop than the official estimate of 320 million, then European domestic utilization (as judged now by the light line) in 1929-30 fell below that of 1928-29 by around 50 rather than 80 million bushels, and below the line of trend by only 20 or 30 million. Even with such an adjustment, however, a relatively low figure for domestic utilization in 1929-30 remains to be explained.

In some European countries, domestic utilization in 1929-30 was higher, not lower, than in 1928-29; the list includes Spain, the British Isles, Switzerland, Austria, Poland, Estonia, and Lithuania, and France if the French crop of 1929 was officially underestimated. In all other countries domestic disappearance was smaller in 1929-30 than in 1928-29. The most striking decrease, 48.6 million bushels, occurred in Germany; in Belgium, Greece, Denmark, and Italy the decreases ranged between 4 and 14 million bushels, and in other countries between 0.6 and 2.3 million.

In certain respects conditions in Europe in 1929-30 favored relatively heavy consumption of rye, the coarse grains, or potatoes to replace wheat. Unemployment, presumably accompanied by reduction of purchasing power among the mass of consumers, began to show more than its seasonal increase in some countries in the last half of the crop year—notably in Germany, the United Kingdom, Italy, and Czechoslovakia; in other countries such as France, Belgium, Holland, Denmark, Norway, and Sweden, business depression seems not to have become apparent in any appreciable degree of severity within the crop year under review. All told, there is little reason to believe that business depression exerted significant influence on European wheat consumption in 1929-30, though it may have tended slightly to restrict it. A rather more important influence acting in much the same direction was the excellent quality of the European domestic wheat crops and the abundance of rye, corn, oats, barley, and potatoes. On the British import market, barley, corn, and oats were notably cheaper in relation to wheat than was the case in 1928-29; and oats and barley were in 1929-30 cheaper in relation to wheat than they were in 1927-28. In Italy, corn

was cheaper in relation to wheat than it had been in 1928-29 or 1927-28. In Germany, oats and barley were cheaper in relation to wheat than they had been in any of the preceding six years; and rye was cheaper in relation to wheat than it had been in any of these years except 1925-26.¹ Under these circumstances, and particularly because the quality of native wheat was so good, it is reasonable to suppose that somewhat less wheat was consumed in 1929-30 than in 1928-29. Among other things, there was little incentive to grind wheat at low extraction, for millfeed prices did not favor heavy production of mill offals. Presumably the most significant kind of substitution was rye for wheat; of this there is some evidence in the domestic utilization statistics for Germany, Belgium, Holland, Czechoslovakia, Austria, and the Scandinavian and Baltic countries. Perhaps also there was a little substitution of corn for wheat in Italy.

Nevertheless, the evidence pointing to relatively low consumption of wheat in 1929-30 is not conclusive in the sense of being exclusive. One can explain the lower domestic utilization of wheat in Italy in 1929-30 than in 1928-29 in some part by a reduction of stocks of domestic wheat, and in Denmark by a reduction in the stocks of import wheat; and in Germany also stocks both of import and of domestic wheat were certainly drawn down in the course of the crop year. If reduction of wheat stocks was the principal cause of lower apparent domestic utilization in Germany, Italy, and Denmark in 1929-30 than in 1928-29, it is the principal cause of the lower figure for the European importing countries as a group. Tentatively we are inclined to regard the decline in the total European domestic utilization of wheat in importing countries not as evidence of a striking or notably significant decline in actual consumption of wheat, but rather as evidence of a tendency to reduce stocks. Consumption of wheat probably fell close to its line of trend, though substitution, chiefly of rye, presumably caused it to fall slightly below.

¹ A propaganda in favor of rye was set under way in Germany, where also the regulations favored the use of rye.

III. STOCKS AND CARRYOVERS

At the beginning of the crop year 1929-30, the aggregate stocks of old-crop wheat in Europe (ex-Russia), North America, and Australia undoubtedly stood at much the highest August level of post-war years. Since the wheat crop of 1929 was a short one, trend considered, and since consumption probably fell close to its line of trend, stocks were in the aggregate reduced in the course of the year. The reduction seems to have occurred not in North America or Australia, but in Argentina, the Danube basin, and the importing countries of Europe as a group. Despite the net reduction, stocks at the end of July 1930 were probably the largest in post-war years, those of July 1929 alone excepted. The level and movement of wheat prices in 1929-30 are largely explicable by reference to a huge inward carryover of wheat, which made the supply position relatively and unusually easy in spite of the relatively short wheat crop of 1929. During the preceding crop year, 1928-29, huge stocks of wheat were carried without exerting their potential influence toward depressing prices. In 1929-30, with the appearance of severe business depression, the heavy stocks became burdensome and exerted a profound effect.

VISIBLE SUPPLIES

Chart 13 shows the weekly course of commercial visible supplies of wheat in the United States, Canada, and afloat to Europe and in ports of the United Kingdom for the past three crop years, each of which has been characterized by high levels.

In the United States, visible supplies (Bradstreet's) rose very sharply in August 1929, when the movement from farm to market was heavy,¹ stimulated by the advancing prices of July and facilitated by weather favorable for rapid harvest with the combine. The movement of wheat to export was not of large enough volume in proportion to prevent the rapid increase of visibles. Congestion in storage devel-

oped. The peak of visible supplies was reached earlier than usual, though not much earlier than in 1927. The decline between early November 1929 and late June 1930 was extraordinarily large, principally because the wheat required for consumption and export had to be drawn from the visible in larger proportion than usual; farmers marketed heavily prior to November, but thereafter tended to hold their wheat. The increase of visible supplies in July 1930 was notably sharp, as the big new winter-wheat crop of 1930, harvested under favorable weather conditions, moved heavily to terminal markets.

In Canada, the visible supply failed to decline in August 1929 as much as in the preceding years because exports were restricted by the unusual relationship prevailing between Winnipeg and Liverpool prices.² The Canadian crop of 1929 was small and harvested early under very favorable weather conditions. It moved to market quickly while exports remained disproportionately small, so that the visible supply rose sharply in September and October, but failed to increase as much as usual in November and December. As in the United States, the peak of visibles came early.

Visibles afloat to Europe, which constitute the larger fraction of the combination shown in Chart 13 of visibles afloat and in ports of the United Kingdom, tend on the whole to reflect the volume of wheat moving in international trade. These visibles remained at about a normal level in the early months of the crop year, but fell and remained low during the winter and spring, recovering to a more usual level near the end of July 1930. In general this was the course of international trade.³

Visible supplies in United Kingdom ports, which are combined with the visibles afloat for Europe in Chart 13, merit particular attention. Chart 14 (p. 106) shows wheat and flour stocks in ports of the United Kingdom on the first of each month, on the average for 1923-24 to 1929-30, in 1924-25, and in 1929-30. In 1929-30, these stocks were below average on August 1 and September 1; but they accumulated heavily in

¹ See Appendix Table XVIII for monthly receipts at primary markets in the United States.

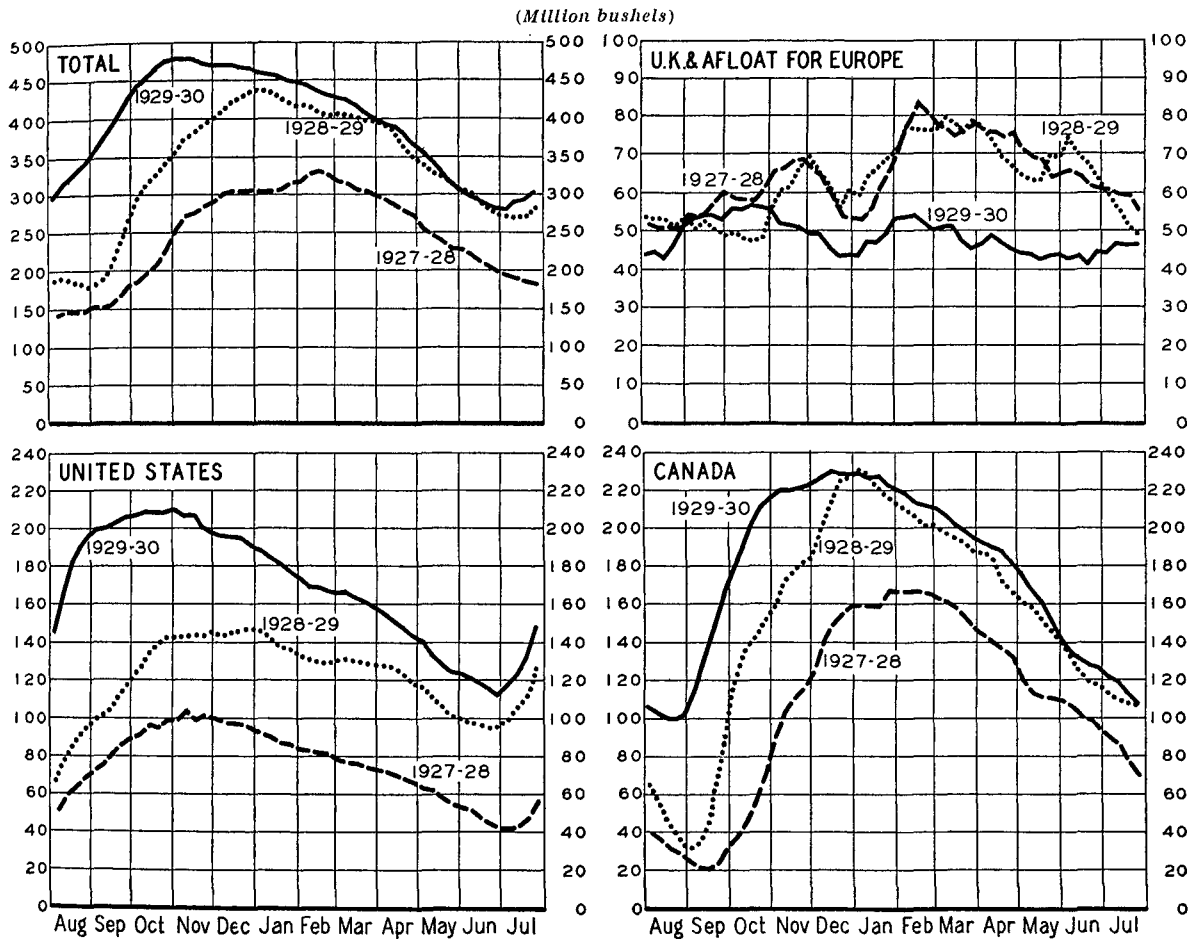
² See below, p. 122.

³ See below, p. 113.

September–November, reaching the record post-war level of over 20 million bushels on December 1, 1929. In our judgment this accumulation of stocks in the world's leading wheat-importing country was an im-

wheat, pressed for shipment, could not find an adequate outlet in continental Europe, and piled up in British ports. The effects upon price began to appear when, in December 1929 and thereafter, British im-

CHART 13.—VISIBLE WHEAT SUPPLIES IN THE UNITED STATES, CANADA, AND UNITED KINGDOM PORTS, AND AFLOAT TO EUROPE, WEEKLY, AUGUST 1927–JULY 1930*



* Data from *Grain World*, *Northwestern Miller*, and *Canadian Grain Statistics*.

portant factor in the sharp decline of wheat prices in December–March 1929–30.¹ The curve showing British port stocks in 1924–25 is inserted to provide a contrast between stocks in 1929–30 and stocks in the preceding post-war year of heaviest accumulation. Fear of shortage of wheat appears to have induced the accumulation of stocks in 1924–25; but in 1929–30 the accumulation may perhaps be described as almost inadvertent. It occurred because Argentine

porters chose to reduce the heavy stocks rather than to maintain their imports at the usual level.

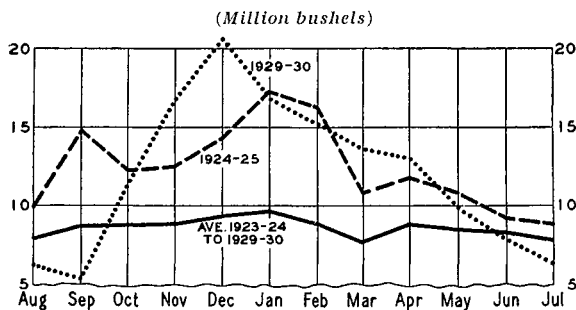
CARRYOVERS IN THE MAJOR EXPORTING COUNTRIES AND EUROPE

The wheat-stocks data commonly known to the trade show, as may be seen from Chart 13, a striking increase in visible supplies in the course of the crop year 1928–29, and a further though much smaller increase in the course of the crop year

¹ See below, p. 138.

1929-30; the general level remained extraordinarily high in both years. There are, however, stocks of wheat in other positions than in the visible supplies of the United States, Canada, afloat, and in the United Kingdom.

CHART 14.—WHEAT STOCKS IN PORTS OF THE UNITED KINGDOM ON THE FIRST OF EACH MONTH, AUGUST-JULY 1924-25 AND 1929-30, COMPARED WITH AVERAGE MONTHLY STOCKS, 1923-24 TO 1929-30*



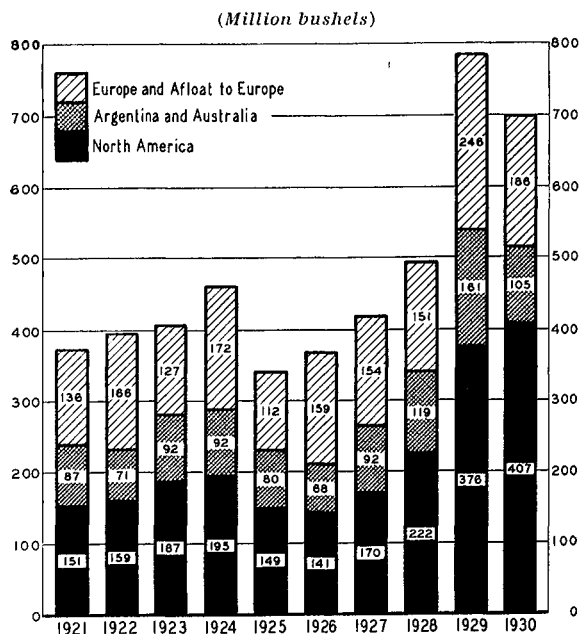
* Data from Broomhall's *Corn Trade News*.

In view of the importance which the subject of world wheat stocks has assumed in the past two crop years, we have prepared rough estimates of stocks as of about August 1 in Argentina, Australia, the Danube basin, and the importing countries of Europe as a group; at the moment it does not seem feasible to attempt to evaluate numerically the stocks in India, northern Africa, Russia, China, or other countries. Chart 15 summarizes these rough estimates, in combination with official and unofficial data on recorded stocks in North America, afloat to Europe, and in ports of the United Kingdom. In spite of the uncertainties surrounding estimates of European stocks, the general picture may perhaps be taken as a useful guide to the world wheat-stocks position in post-war years, at least if one excludes from consideration such large wheat-producing areas as Russia, China, and India.

In retrospect it seems fairly clear that the stocks position did not become striking until the advent of the huge crop of 1928, though in the preceding three years there had been a tendency to increase stocks from the distinctly low level of August 1925. In the course of 1928-29, stocks were increased in all the positions considered in

the data of Chart 15 except afloat to Europe and in ports of the United Kingdom; the result was a carryover of around three-fourths of a billion bushels into the crop year 1929-30—a carryover not far from twice as large as a normal or an average one, and about a fifth as large as a good-sized world wheat crop exclusive of Russian and Chinese production.

CHART 15.—APPROXIMATE WHEAT STOCKS IN NORTH AMERICA, IN ARGENTINA AND AUSTRALIA, AND IN EUROPE AND AFLOAT TO EUROPE, AUGUST 1, 1921-30*



* Data from Appendix Table XXVII.

We find no explanation of the level and course of wheat prices in 1929-30 that can be made to seem plausible without reference to this huge inward carryover. In each of many commodities, stocks at some time or other and in some position or other may rise to a height such that holders lose confidence and there ensues a more or less protracted period of attempted liquidation. For wheat, this situation seems to have been foreshadowed by the price decline of February-May 1929, only to be interrupted by unfavorable crop developments in Canada and the Southern Hemisphere; it came to the foreground again after December 1929, and perhaps both contributed to and was intensified by general economic de-

pression which became striking about at that time and has persisted since. The crop year 1929-30 seems clearly to have witnessed more or less severe and more or less intermittent pressure from holders of wheat stocks, though the data do not permit one to ascertain precisely where, when, how, or why the pressure was exerted.

In the course of the crop year 1929-30, carryovers were reduced. Consumption of wheat seems to have been maintained close to its line of trend, but the crop of 1929 was short enough to require some drafts upon stocks. The general reduction does not seem to have been large—perhaps only about 80 million bushels, though it may have been larger or smaller than this.¹ Stocks increased notably in the United States, where the tendency to hold at a low level of prices is ordinarily stronger than elsewhere; they also increased a little in Canada and Australia. The notable reductions seem to have occurred in Argentina, the Danube basin, and in a lesser degree the importing countries of Europe as a group, though as between different countries there were some increases and some reductions. The reductions were apparently largest in Germany and Italy.

The net reduction seems clearly not to have been large enough to bring the aggregate carryover out of 1929-30 at all close to a normal or average post-war level. The crop year 1929-30 closed, therefore, in the presence of a stocks situation still distinctly unfavorable for the wheat price level, though less unfavorable than at the opening of the crop year.

OUTWARD CARRYOVERS IN THE UNITED STATES

The aggregate carryover in the United States on July 1, 1930, approximated 275 million bushels if calculated to include wheat stocks in Bradstreet's visible supply, in city mills and in transit to these mills, in country mills and elevators, and on farms. This was the largest carryover of post-war years. Its size reflects the tendency of holders of wheat in the United States to hold more firmly when prices are low than is the practice in other exporting countries—a tendency that has been in evidence during the past two crop years, and in 1923-24 as well. This holding tendency finds ex-

pression in the relatively narrow spreads between futures prices at Chicago and Liverpool. Larger exports in 1928-29 and 1929-30 would have kept the carryover at a lower level; but the import requirements were filled by other exporting countries where sellers were more pressing, and where the domestic price met world prices. The restriction of exports and the piling up of stocks was naturally effected through the mechanism of prices. United States prices, despite a big crop in 1928 and an average one in 1929, have ruled relatively high in relation to import prices and prices in one or another of the exporting countries. These relationships seem traceable broadly to the characteristic disposition of Americans (both growers and speculators) to hold wheat at low levels.

In the course of the crop year, the United States carryover was increased about 30 million bushels. As might be expected in view of the fact that the crop of 1929 was over 100 million bushels smaller than the crop of 1928, this increase was much smaller than the increase of around 120 million bushels that occurred in 1928-29.

Chart 16 (p. 108) shows, with comparisons, three items of the carryover, Bradstreet's visible, stocks in country mills and elevators, and stocks on farms. All three increased somewhat in the course of the crop year and all three items were relatively large on July 1, 1930. Wheat stocks held in city mills and in transit to these mills, however, decreased a little, as did city mill stocks of flour.² Possibly there was also a

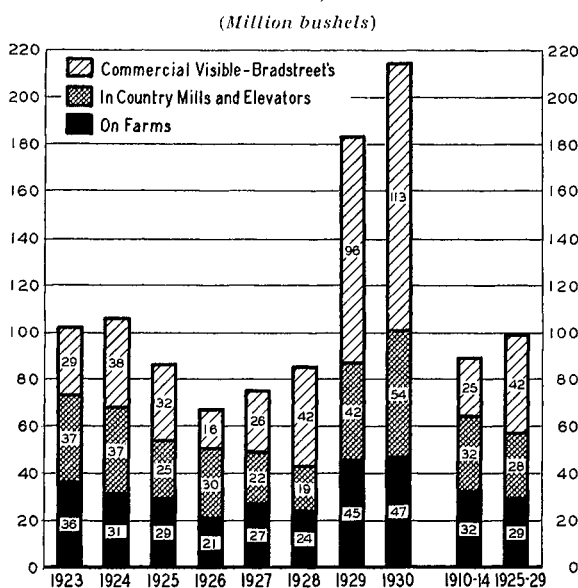
¹ In our calculation of the stocks in European importing countries on August 1, 1930, we have assumed that the French wheat crop of 1929 approximated 350 rather than 320 million bushels, the official estimate; and this assumption results in a smaller reduction of European stocks between August 1929 and August 1930 than would appear if the official estimate had been employed in the calculation. On the other hand, our calculations of stocks in the Danube basin and the European importing countries involve the assumption that consumption of wheat fell exactly on its line of trend both in 1928-29 and 1929-30; and since the feed grain situation was such as to have encouraged feeding of wheat to animals in 1928-29 and not in 1929-30, it follows that the actual reduction of stocks in these regions in 1929-30 may have been smaller than our calculations suggest.

² See Appendix Table XXIX. Flour stocks held by city mills are not included in our calculation of total United States wheat stocks; the calculation has been altered to accord with the practice of the U.S. Department of Agriculture.

decrease in the stocks of flour held by bakers, retailers, and consumers, though direct estimates are not available.

It is impracticable here to attempt to ascertain why the several major items of the total carryover, and the geographical components of these items, changed as they did between July 1, 1929, and July 1, 1930.

CHART 16.—WHEAT STOCKS IN THE UNITED STATES ON JULY 1, 1923-30, COMPARED WITH AVERAGE WHEAT STOCKS 1910-14, AND 1925-29*



* Data from Appendix Table XXVI.

It is interesting to note, however, that farmers retained on farms only 1.4 million bushels more on July 1, 1930, than on July 1, 1929, while the percentage of the crop retained was 5.8 as against 5.0 the year before, and was indeed the largest percentage retained in two decades, except in 1916 and 1921. Relatively the heaviest increases of farm stocks occurred in Ohio, Indiana, and Nebraska. In country mill and elevator stocks, however, the increases were heaviest in Washington, North Dakota, Oregon, and Montana. The increases in visible supply were most striking in Buffalo, Duluth, and Portland.

CANADIAN CARRYOVER, JULY 31, 1930

According to the official estimate, the Canadian carryover on July 31, 1930, reached 112 million bushels, some 8 million bushels larger than the previous record

post-war carryover of 1929.¹ Here, as in the United States, there was an increase of stocks, though not a large one, in the course of the crop year 1929-30. This increase was almost offset by a decline in stocks of Canadian wheat in United States lake and Atlantic ports, which stood at 23 million bushels in 1929 and 16 million bushels in 1930. Stocks held in elevators and stocks in transit, rather than stocks on farms or in flour mills, were strikingly large.

The maintenance of Canadian stocks at so high a level was a remarkable phenomenon in a country which depends heavily upon wheat exports. The outward carryover constituted over a third of the crop of 1929; in earlier post-war years the proportion carried over had never equaled a fifth. Canadian sellers of wheat obviously misjudged the world wheat situation in the earlier months of the crop year. Heavier importation into Europe and higher world prices than actually occurred were anticipated, and at the peak of the Canadian crop movement Canadian traders—undoubtedly not the Pool alone²—held Canadian prices above export parity. Consequently, Canadian exports of wheat were restricted, while Argentina largely supplied the needs of European importers.

SOUTHERN HEMISPHERE STOCKS, AUGUST 1, 1930

According to a direct estimate of Argentine wheat stocks in ports, in stations along the railways, and on farms as of August 31, 1930,³ the total was 55 million bushels. Other stocks of wheat and flour undoubtedly existed in mills, bakeries, retail establishments, and households. Although it is impossible to calculate from this estimate precisely the size of total stocks on August 1, a figure of approximately 70 million bushels appears to be a reasonable one. This would be about a normal Argentine stocks figure.⁴ It implies a reduction of stocks amounting to roughly 65 million bushels in the course of the crop year. Presumably a good deal of the wheat was of

¹ See Appendix Table XXVI.

² See below, pp. 140-44.

³ *Times of Argentina*, September 22, 1930, p. 321.

⁴ See Appendix Table XXXV C.

rather poor quality, perhaps poor enough so that larger quantities than usual will be carried into the new crop, harvested in December–January 1930–31, for mixing. The reduction of Argentine stocks was apparently more than large enough to offset the increase of North American carryovers.

Australian visible supplies as of August 1 were reported as 33.5 million bushels, the largest in eleven years.¹ According to our own rough calculations stocks on August 1 must have been relatively large, probably the largest since 1921.² The changes in Australian stocks do not appear to be large, and relatively little significance attaches to the small increase in Australian stocks in the course of the crop year 1929–30. The increase, taken in conjunction with the course of Australian exports,³ suggests that wheat was held rather firmly in Australia, at least in the months just prior to July 1930, when the conditions were not favorable for seeding and germination of the crop of 1930.

EUROPEAN STOCKS

Changes in the size of European (ex-Russian) year-end wheat stocks are hardly subject to precise evaluation, though some light is afforded by a study of statistics of domestic utilization, of net imports in the closing months of the crop year, of unofficial opinions, and of such meager data on stocks as are available.

In general, such a study suggests that among the importing countries the situation varied greatly from one to another; that on the whole the level of stocks was about normal on August 1, 1930; and that in the aggregate there was a reduction of stocks in the course of the crop year 1929–30. Stocks on August 1 seem to have stood at an exceptionally high level in France and Austria. The inference seems reasonable as re-

gards France if the crop of 1929 was in fact underestimated by around 30 million bushels, and is corroborated by unofficial opinions and by the official view that a law requiring 90 per cent admixture of domestic wheat can be kept in effect during 1930–31 in spite of the small crop of 1930. Austria must have held relatively heavy stocks on account of heavy imports in June–July 1930 and a relatively high figure for domestic utilization in the crop year 1929–30 as a whole. Possibly year-end stocks stood at a high level in Norway, Sweden, Finland, and Latvia, though here the evidence is less conclusive. So far as concerns the other importing countries of Europe, little evidence appears to suggest that stocks on August 1, 1930, were either notably high or notably low except as regards Germany and Greece. Relatively small June–July net imports and official estimates of stocks on farms point conclusively to a rather low level of year-end stocks in Germany.⁴ Domestic utilization of wheat in Greece in 1929–30 fell far enough below the figures for the three preceding crop years to warrant the inference that stocks were small on August 1, 1930.⁵

So far as concerns the year-end level of aggregate stocks in the European importing countries, it thus seems reasonable to suppose that relatively large stocks in some countries were offset by relatively small ones in others, so that the general level was about a normal or an average one.

The aggregate was probably reduced somewhat in the course of the crop year. Increases, in no instance large except perhaps in France, may have occurred in the British Isles, Spain, France, Switzerland, Austria, Poland, and Latvia. These increases were probably more than offset by decreases in Germany, Italy, Denmark, Norway, and Greece; for other importing countries, we find no convincing evidence of appreciable changes. On the assumptions that consumption fell precisely upon the 1921–30 line of trend of domestic utilization and that the French crop of 1929 was officially underestimated by 30 million bushels, it is possible to conclude that the reduction of stocks approximated 25 million bushels. If the French crop was not underestimated and consumption fell on

¹ See Appendix Table XXVIII.

² See Appendix Table XXXV D.

³ See below, p. 124.

⁴ Net imports of 5.3 million bushels in June and July 1930 were between a fourth and a third as large as average June–July imports in 1925–29. Stocks of winter wheat on farms as of June 15 were only 3.3 per cent of the crop of 1929, whereas these stocks constituted 8.6 and 6.7 per cent of the corresponding crops of 1927 and 1928.

⁵ See Appendix Table XXXIV.

the line of trend, the reduction may have been something like 55 million. If, again, the French crop was underestimated but much more wheat was consumed as feed in 1928-29 than in 1929-30, the reduction can be made practically to disappear. Any inference rests upon debatable grounds; nevertheless the evidence, despite the uncertainty of trends, seems to suggest something of a reduction of stocks in the European importing countries in 1929-30, though not a strikingly large one.

In the Danube basin, stocks were presumably reduced in 1929-30 from a very high level in August 1929 to an average or a normal level in 1930.¹ The reduction may have approximated 35 million bushels; if so, it may have exceeded the reduction in stocks held in European importing countries. But comparisons are likely to be misleading on account of the uncertainty that surrounds the subjects of errors in crop estimates and of fluctuations in wheat consumption from year to year.

For Europe ex-Russia as a whole, it seems probable not only that a reduction of stocks occurred, but also that some of the reduction was in stocks of domestic wheat held on farms. A satisfactory explanation of the upbuilding of stocks in Germany in 1928-29 and a reduction in 1929-30 can be found in the higher price of domestic wheat in 1929-30 than in 1928-29 and the lower prices of the feed grains and rye. Not only did the spreads widen as between the two years, but the price of domestic wheat itself was

higher in 1929-30 than in 1928-29. This was not true of wheat prices in Italy. The disposition of Italian wheat growers to accumulate stocks in 1928-29 and release them in 1929-30 may have been induced partly by a practice, said to be common in Europe, of marketing wheat less freely when the spreads between wheat prices and the prices of other grains are narrow than when these spreads are wide. The spreads were narrow in 1928-29, wider in 1929-30. Although price series are not available for the Danube basin, it seems reasonable to suppose that a similar situation prevailed there in 1928-29 and 1929-30; and perhaps the marketing of wheat was affected by it. In Italy, a factor that made for more rapid marketing in 1929-30 than in 1928-29 was the fact that prices of domestic wheat tended to fall in the last five months of 1928-29, but to rise in 1929-30.

STOCKS IN OTHER COUNTRIES

Too little is known of the stocks position in such areas as India, northern Africa, Russia, China, and Japan to warrant detailed discussion; moreover, it is possible that stocks in these countries are not as significant as stocks in the positions already considered. It is worth while to mention, however, that Japanese wheat domestic-utilization statistics suggest a reduction of stocks in the course of the crop year, and that flour stocks in Tientsin, China, early in the crop year were notably large, but had been greatly reduced at the end of the year.

IV. INTERNATIONAL TRADE IN WHEAT AND FLOUR

An outstanding feature of international trade in 1929-30 was the strikingly small imports of France, Germany, and Italy. Largely because of these small takings, and because some other importing countries had large crops of domestic wheat and chose to draw upon stocks, the total volume of trade was the smallest in post-war years. The decline in trade between 1928-29 and 1929-30 was over 300 million bushels, apparently the largest change between two

successive years that has been witnessed in the twentieth century. Among the major exporting countries, only Argentina seems to have shipped about as freely as the available supplies permitted, and the other countries were left with heavy stocks at the end of the year. The course of trade was unusual, showing concentration of exports not in the middle months, as is usual, but in the opening and closing months. Developments in international trade in 1929-30 perhaps carried more significance than usual for explanation of the movement of wheat prices, and we therefore present a rather detailed description and analysis.

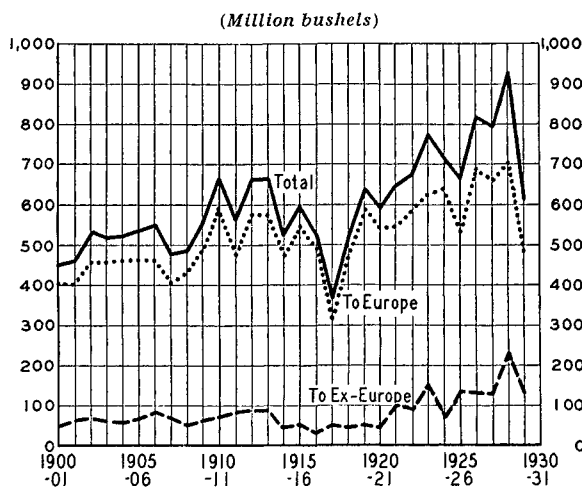
¹ See above, p. 101, for our reasons for considering the large reduction in apparent domestic utilization between 1928-29 and 1929-30 as evidence mainly of changes in stocks rather than of fluctuations in wheat consumption.

VOLUME AND COURSE OF TRADE

According to Broomhall's records of overseas shipments of wheat and flour, the volume of international trade was only 613 million bushels in 1929-30. A summation of net exports from the several exporting countries, containing some estimates, yields a total of about 624 million bushels. To judge from Broomhall's data,¹ as summarized for three decades in Chart 17, the crop year 1929-30 was characterized by the smallest international movement of wheat and flour since 1920-21. Indeed, the volume of trade was not so large as it had been in three pre-war years, 1910-11, 1912-13, and 1913-14. The dominant, though not the only, cause of the relatively small volume of trade in 1929-30 was a geographical distribution of the world wheat crop of 1929 such that the European importing countries required relatively little import wheat. A roughly similar distribution occurred in 1925 also, and that year witnessed a rather small volume of trade; but European import requirements were larger in 1925-26

than in 1929-30 partly because the inward carryover into 1925-26 was considerably smaller than the carryover into 1929-30.

CHART 17.—BROOMHALL'S SHIPMENTS OF WHEAT AND FLOUR, BY CROP YEARS FROM 1900-01*



* Data from Broomhall's *Corn Trade Year Books* and *Corn Trade News*.

The decline in trade between 1928-29 and 1929-30, something over 300 million bushels or around 34 per cent, was apparently the largest change in the volume of trade between two consecutive years that has occurred in the twentieth century, even including the war years. One may reasonably suppose that, as the year progressed, the evidence of such a decline in trade, as it appeared in currently published cumulated totals of shipments in which comparisons between 1929-30 and 1928-29 were prominent, must have proved discouraging to holders of wheat in the exporting countries, especially in North America where wheat stocks were so large. It seems probable that in post-war years the accumulation of trade statistics was never before so bearish, and never so far from the expectations of many North American traders.

The decline in trade between 1928-29 and 1929-30 is clearly traceable not to relative shortage of supplies in exporting countries in 1929-30 as compared with 1928-29, but largely to relative abundance in importing countries. The large stocks remaining in the major exporting countries at the close of the crop year suggest that around 200 million bushels more wheat could have

¹ Summations of net exports in post-war years differ more or less from Broomhall's shipments, as is shown by the following tabulation, in million bushels:

Year August-July	Net exports ^a	Broomhall's shipments ^b
1921-22	701	647
1922-23	714	676
1923-24	826	775 ^c
1924-25	771	715
1925-26	695	668
1926-27	848	818
1927-28	825	793
1928-29	943	928 ^c
1929-30	624	613

^a See Appendix Table XVII. Partially estimated, especially with reference to Russian exports. United States net exports include shipments to possessions.

^b See Appendix Table XIX.

^c Fifty-three weeks.

The differences arise in part because Broomhall's shipments cover 53 rather than 52 weeks in some years; because his tabulation may exclude in some years exports by land frontiers from the Danube countries; because in some years he may include exports in some months from Germany or France, which for the year as a whole may rank as net importing countries; and because there is necessarily a difference between net exports and overseas shipments. The small difference between shipments and net exports in 1929-30 in part reflects Broomhall's inclusion of shipments from France, and in part the fact that Canadian stocks of wheat in lake and Atlantic ports of the United States were reduced in the course of 1929-30; this reduction would increase overseas shipments but not net exports in 1929-30 as compared with 1928-29. For practical purposes, changes in the volume of international trade are sufficiently brought out by either of the measures.

been shipped overseas without reducing carryovers below an average level,¹ in spite of the relatively small wheat crops of 1929. Chart 17 suggests that trade was smaller in 1929-30 than in 1928-29 because both European and ex-European takings were smaller, though the more striking reduction was in the European trade. Among the European countries, a few took a little more wheat in 1929-30 than in 1928-29; many took a little less; a few took a great deal less. Reductions in European importation were most striking in France, Italy, Germany, and Spain. Among the ex-European countries, India and China especially reduced their takings notably in 1929-30. Perhaps it is reasonable to conclude that the reduced takings of these six countries account for something like two-thirds of the total decline in net exports or in shipments.² Of these six countries, all but India and Spain presumably entered the crop year 1929-30 with larger stocks than in 1928-29, and all but Germany and perhaps China harvested strikingly larger crops in 1929 than in 1928. Consequently, the general decline of trade seems attributable in a considerable degree to the crops and stocks situation in importing countries. Nevertheless, other factors—higher wheat prices, a disposition to reduce stocks, abundance and cheapness of wheat substitutes, and various governmental measures—tended to reduce imports, and hence exports, to a lower level than might otherwise have obtained.

The volume of international trade in

¹ See Chart 15, p. 106.

² It is impossible, however, from a study of import statistics to explain precisely fluctuations in exports. Summation of net imports by crop years cannot be made complete; and in any event one would not expect quantitative correspondence between aggregates of net imports and net exports, if only because an import may be reported some weeks later than the same export, and perhaps measured in a different manner. It is also impossible satisfactorily to analyze exports by destinations on account of the volume of exports to "orders," whose final destination is not known or recorded.

³ See Appendix Table XIV.

⁴ See mimeographed report of a speech by Mr. George McIvor, general sales manager, Canadian Wheat Pool, dated Calgary, Alberta, November 30, 1929.

⁵ *Foreign News on Wheat*.

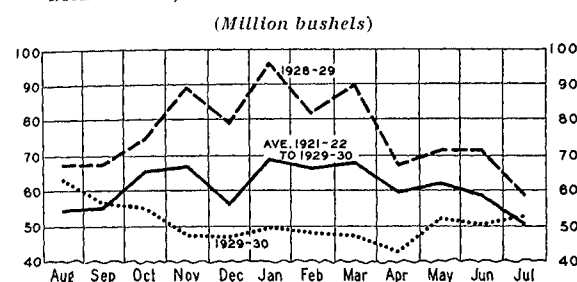
⁶ To us, at least, the crop of 1929 in European importing countries now appears to be around 80 million bushels larger than it seemed to be late in August 1929.

1929-30 fell considerably below expectations expressed in the early months of the crop year. Broomhall's first estimate of import requirements (or probable shipments) was 744 million bushels as of August 21, 1929.³ The Canadian Wheat Pool expressed the view on September 10 and October 8, 1929, that the world's trade in wheat and flour would be larger than Broomhall supposed, or 800 million bushels.⁴ The Bureau of Agricultural Economics of the United States Department of Agriculture issued on September 16, 1929,⁵ a preliminary estimate of net exports (for a July-June crop year) of 730-890 million bushels. Our own approximation to probable August-July net exports, formulated late in August 1929, was 750-850 million bushels. With shipments reported as 613 million bushels, and August-July net exports approximating 624 million, the wide differences between anticipations and realizations are sufficiently apparent. An important reason for these erroneous forecasts was the fact that the true size and good quality of the 1929 wheat crop in the European importing countries was not apparent in August-September 1929,⁶ nor was the good outcome of the European rye, feed grain, and potato crops then clear. So early in the year, it was naturally difficult to foresee a decline in exports from the level of 1928-29 that would prove to be the largest change in the twentieth century. The extraordinary number and variety of governmental measures tending to restrain wheat imports into European countries, especially Germany, could hardly be anticipated. The occurrence of severe business depression, which may have promoted in Europe a disposition to draw upon wheat stocks rather than to maintain imports, was hardly predictable in August-September 1929. The various forecasts of requirements or of net exports were successively revised downward as the year progressed, but even into the spring months of 1930 remained appreciably higher than the reported figures on shipments and exports. A striking feature of the year was the persistence of an opinion, widely voiced in North America, that European import demand must become decidedly more active next week, or next month, or at any rate before very long. Actual developments

in trade now demonstrate that this view was not altogether mistaken, for exports began to increase in volume in the closing months of the year; but the revival of import demand, such as it was, was delayed longer than most students seem to have supposed it would be.

The course of trade during 1929-30 (Broomhall's shipments as monthly data) is shown in Chart 18, in contrast with average monthly shipments in the period 1921-

CHART 18.—BROOMHALL'S TOTAL SHIPMENTS OF WHEAT AND FLOUR, MONTHLY, AUGUST 1928-JULY 1930, COMPARED WITH AVERAGE MONTHLY SHIPMENTS, 1921-22 TO 1929-30*



* Monthly data computed from weekly data in Broomhall's *Corn Trade News*.

22 to 1929-30 and with monthly shipments in 1928-29. The course in 1929-30 contrasts sharply with the average or "typical" course; and more sharply still with the movement in 1928-29. On the average, shipments tend to run relatively high in October, November, January, February, and March, and relatively low in August, September, and July.¹ The course of trade in 1929-30, however, represented almost an inversion of the average seasonal movement. Shipments were relatively large in August-October and in May-July, and were relatively small in the months between. The course of trade in 1929-30 can properly be characterized as unusual, though it happens that shipments in each of the crop years 1921-22 to 1929-30 have

¹ Some difficulties arise, however, in describing the "typical" seasonal movement of wheat and flour in international trade. Net export data, even if adjusted so as to make American and Canadian net export representative of the overseas movement from these countries, show smaller average exports in January than in December, and, as compared with shipments, appreciably larger exports in March, June, and August, and smaller ones in April.

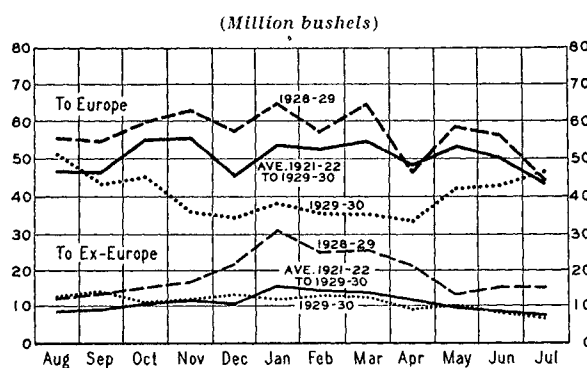
² See above, p. 106.

differed considerably from the average movement over the period as a whole.

In any year, the course of trade is apparently determined in part by the location of exportable surpluses and the time when they become available; and in part by the way in which importers choose or need to draw upon these surpluses. Sometimes wheat is pushed out by exporting countries, sometimes pulled out. Needless to say, it is difficult if not impossible to describe and measure all of the factors which govern the flow of wheat in international trade from month to month in a particular year. Nevertheless, a rough picture can be drawn of the succession of significant events that occurred in 1929-30.

As appears from Chart 19, the movement of shipments to Europe rather than to ex-

CHART 19.—BROOMHALL'S SHIPMENTS OF WHEAT AND FLOUR TO EUROPE AND TO EX-EUROPE, MONTHLY, AUGUST 1928-JULY 1930, COMPARED WITH AVERAGE MONTHLY SHIPMENTS, 1921-22 TO 1929-30*



* Monthly data computed from weekly data in Broomhall's *Corn Trade News*.

Europe was strikingly unusual in 1929-30, though shipments to ex-Europe in August and September 1929 were somewhat the largest in nine years. In general, the course of events was about as follows. The crop year opened with relatively heavy stocks of wheat in North America and Argentina.² At the level of international prices prevailing in August-October 1929, Argentine shippers were apparently willing to sell freely; in the United States and Canada, however, higher prices were anticipated even though stocks were large, and resulting international price relationships encouraged a heavy flow of wheat from Argentina but a

restricted flow from North America.¹ In the course of these months, wheat could be sold only with increasing difficulty to continental European importers as evidence of extremely abundant domestic crops became more and more clear; but English importers were apparently willing to absorb the large arrivals, so that the total movement of wheat remained of fair volume. By December, huge stocks had accumulated in the United Kingdom,² and British buyers were in a position to reduce their purchases. The volume of trade fell to an extremely low level, and this situation persisted until, in the closing months of the crop year, stocks in Europe had been somewhat reduced. Together with moderately unfavorable new-crop prospects, this led to an increased activity of European purchasing, notably in Italy and Great Britain, toward the close of the crop year.

GOVERNMENTAL MEASURES

An interesting feature of the crop year 1929-30 was the appearance of numerous and more or less significant changes in wheat tariffs, milling regulations, and other governmental measures affecting the wheat trade and prices. In order that these may be listed in one place, but chiefly to provide background for discussion of the factors affecting European imports, we may consider the several developments at this point.

Among the exporting countries, governmental measures of some significance may be taken to include the working out of the United States Agricultural Marketing Act as administered through the Federal Farm Board; the operations of the Board, the Stabilization Corporation, and the Farmers National Grain Corporation are considered in another place.³ Another development in the United States was the passage of the new tariff law, effective June 17, 1930, one provision of which required that wheat used in flour milled in bond must be subject to a (compensatory) duty if exported

to a country where United States flour is accorded preferential treatment. In Canada, the governments of the three Prairie Provinces on February 5, 1930, passed legislation guaranteeing in effect that the banks which had loaned money to the Canadian Pool need not press for reduction or liquidation even though prices (then declining) continued to decline; on May 2, 1930, the tariff on wheat was increased. In Hungary a law was passed on July 16, 1930, which, in effect, inaugurated a system of export bounties.⁴

Among the importing countries, tariff duties on wheat were increased in the course of 1929-30 in Germany, France, Italy, Finland, Poland, Austria, Greece, Turkey, Egypt, Mexico, the Union of South Africa, and in other countries or dependencies, less significant as importers, as well. The very number and variety of the devices designed to restrain wheat and flour imports, or to encourage domestic production, or to maintain domestic grain prices, or more generally to help in improving trade balances, preclude discussion of them all. It is perhaps desirable to describe the various devices only so far as concerns the world's larger importers of wheat—the British Isles, Germany, France, Italy, Belgium, the Netherlands, Switzerland, Austria, Czecho-Slovakia, Greece, China, Japan, and Brazil. Among these, it was only in Germany, France, Italy, Austria, Czecho-Slovakia, and Greece that governmental regulations of one kind or another were inaugurated or altered during 1929-30. In Austria, an import-certificate system was introduced on September 27, 1929; and on July 27, 1930, the import duty on wheat was increased (for countries having no commercial treaties with Austria). In Czecho-Slovakia, the import-license system was re-introduced, effective March 3, 1930; as of July 6, importation of bleached flour was prohibited, and a law was passed providing for the imposition of supplementary duties (applicable for countries having no commercial treaties). In Greece, the duty was raised on May 9, 1930. No evidence appears to show that these measures were of particular importance in the general movement of wheat and flour in international trade during 1929-30. Italy increased

¹ See below, Charts 26, 27, 28, pp. 122 and 123.

² See above, Chart 14, p. 106.

³ See below, Section VI, pp. 145 ff.

⁴ See U.S. Department of Commerce, *Foodstuffs 'Round the World: Grain and Grain Products*, August 15, 1930, for a description of the complicated Hungarian system.

her duty on wheat from about 74 to about 87 cents on June 5, 1930, late enough in the crop year to warrant the inference that the change was not an important cause of the small Italian net imports of 1929-30.

In France, the governmental measures were more diverse and more significant. The only increase of the tariff, from 53 to 85 cents per bushel, was made effective on May 19, 1930; it was one aspect of a general effort made in France to maintain producers' prices of wheat in the face of a big inward carryover, a huge crop, and declining international wheat prices. It is unnecessary here to describe in detail all of the other laws and decrees promulgated in execution of the law. One of outstanding significance, inaugurated by a law of December 1, 1929, was that millers must, with minor exceptions, manufacture flour containing at least 97 per cent of domestic wheat, a requirement that was maintained until July 26, 1930, when, in view of the short wheat crop of 1930, the percentage was reduced to 90. Another was that "re-funds of duty" of 53 cents (later 85 cents) per bushel were granted on wheat or flour exported from France, within the quantitative limits of the amounts imported in temporary admission during July and August 1929 and of the fund resulting from the consigned duties on this amount of grain. Later, however, in April 1930, the quantitative limit was raised and special funds were appropriated, though the funds were still described officially as to be used for "reimbursement of duty," not as payment of an export bounty.

In Germany, the duties on wheat were successively raised; changes from 42 to 62, 62 to 78, and 78 to 97 cents per bushel became effective on January 20,¹ March 27, and April 25, 1930. Here the changes in tariff represent, along with other measures, an effort not only to maintain domestic prices of wheat, but also to discourage imports of all grains, and to encourage the use of rye both for food and feed. The

regulations applied to wheat constituted only a part of a broader program to aid German agriculture, which cannot be considered here. In accordance with a law of July 4, 1929, mills were required to use (not necessarily to blend in their flour, as in France) between 30 and 50 per cent of domestic wheat. By successive decrees the percentages to be used were 40 per cent in August-September, 50 per cent in October-June, and 30 per cent in July. The requirement naturally affected the large mills, that ordinarily use mostly imported wheat, more strongly than the numerous small mills, that customarily employ domestic wheat. Another measure was alteration of the import-certificate system, which was finally abandoned late in the crop year.

The device of requiring domestic mills to use designated percentages of domestic wheat seems to have commended itself in other countries. It has been in effect in Spain since September 1928. It was seriously discussed in the United Kingdom and the Netherlands in 1929-30, and also in Austria and Czecho-Slovakia. The crop year 1930-31 witnesses a variation of the scheme effective in Sweden, and discussion in Norway. The device (accompanied, of course, with some scheme to prevent an influx of foreign-milled flour) is one that obviously holds forth attractions to wheat growers in countries where domestic wheat production does not closely approximate wheat consumption (and so continues); for even in the absence of a wheat tariff, compulsory use of domestic wheat in the appropriate proportions is theoretically capable of maintaining domestic wheat prices at levels above international wheat prices. It will be of interest to observe how far and where this device may be adopted, and what effects its adoption may have upon wheat acreage, wheat imports, and wheat consumption, and in turn upon the wheat situation in the exporting countries.²

IMPORTS AND THEIR DISTRIBUTION

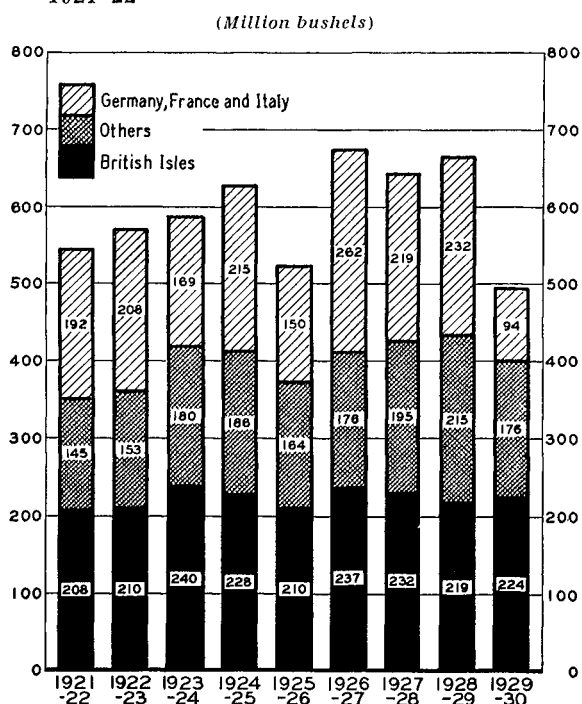
The outstanding feature of European net imports in 1929-30 was the notably small total, some 495 million bushels. This was the smallest total in nine years, as is shown by Chart 20. The chart lends emphasis to the fact that the causes of such small im-

¹ The change was effective as of this date for countries having no commercial treaties with Germany; for other countries, the date was February 11.

² For further discussion of discriminatory regulations applying to import of flour, see "The United States Wheat Flour Export Trade," *WHEAT STUDIES*, November 1930, Vol. VII, No. 1.

ports are to be sought chiefly in the circumstances governing the imports of France, Germany, and Italy. Imports into the British Isles were of average size. Of other European countries aside from the four large importers, only Czecho-Slovakia imported rather strikingly small quantities,

CHART 20.—NET IMPORTS OF WHEAT AND FLOUR INTO THE BRITISH ISLES, INTO GERMANY, FRANCE, AND ITALY, AND INTO OTHER EUROPEAN IMPORTING COUNTRIES, BY CROP YEARS FROM 1921-22*



* Data from Appendix Table XX.

though Spain and Poland, which in some years are net importing countries and in some years net exporting countries, were not net importers in 1929-30.¹ But the net imports of Germany, France, and Italy together were less than half as large as the annual average import over the preceding eight years, and were hardly 63 per cent of the small imports of 1925-26.

It is perhaps impossible accurately to

¹ See Appendix Table XX. Spain may have been a small net importer in 1929-30; official data are not available to us.

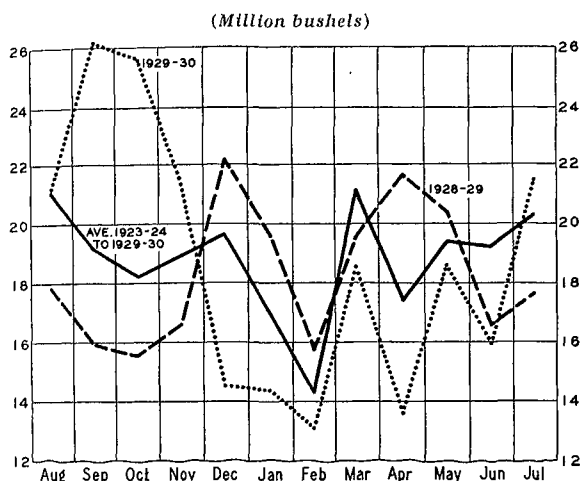
² Stocks were greatly increased from August 1 to December 1, 1929, however, and were thereafter reduced; see above, Chart 14, p. 106.

evaluate the several general factors that resulted in strikingly small aggregate European net imports, for different influences were at work in different countries. The main factors of significance were presumably the big inward carryovers of wheat, the big domestic wheat crops of good quality, and the emergence of a disposition to reduce wheat stocks rather than to maintain or to augment them. In retrospect we see little reason to suppose that substitution of the abundant supplies of rye, potatoes, or the feed grains for wheat was a dominant factor, or that human consumption of wheat was sharply curtailed by business depression and accompanying reduction in the purchasing power of consumers; these aspects of the situation, however, were presumably of some, though of minor, significance. It seems reasonable to say that business depression may have affected wheat importation more by weakening the disposition of merchants to carry stocks, incidentally creating difficulties in the financing of imports, than by tending to restrict wheat consumption. Perhaps the abundant supplies of wheat substitutes were less significant in causing displacement of wheat in consumption than in inducing farmers to market freely the relatively high-priced grain. Changes in tariffs and in milling regulations may have exerted their effect principally by creating spreads between domestic and import wheat prices that made for drafts upon domestic wheat stocks, rather than by moving wheat prices in general to levels such that wheat consumption was notably curtailed.

For the crop year, imports into the British Isles, 224 million bushels, were not strikingly large or small; one is impressed not by the aggregate, but by the fluctuations within the year. We find no convincing evidence that business depression or the feed grain situation could appreciably have affected British imports, or that stocks were either increased or decreased significantly from the beginning of the year to the end.² Chart 21 shows British net imports by months in 1929-30, 1928-29, and on the average over the period 1923-24 to 1929-30. Imports were exceptionally large in September-November, and exceptionally

small in December–June following. In the earlier months, British importers appear to have been willing to accumulate stocks, a willingness not difficult to explain in view of the possibility that prices might rise; naturally enough, the accumulation was made from Argentine wheat, which at the time

CHART 21.—NET IMPORTS OF WHEAT AND FLOUR INTO THE BRITISH ISLES, MONTHLY, AUGUST 1928–JULY 1930, COMPARED WITH AVERAGE MONTHLY NET IMPORTS, 1923–24 TO 1929–30*



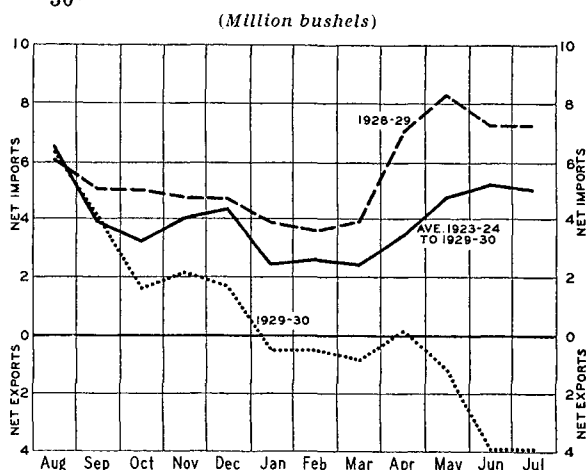
* Data of net imports into the United Kingdom from *Accounts Relating to Trade and Navigation of the United Kingdom*, and data of net imports into the Irish Free State from *Monthly Bulletins of the International Institute of Agriculture*.

was being shipped in extraordinarily large volume from the big supplies available in Argentina, and which could be bought much more cheaply than competing wheats.¹ The quantity of wheat imported from Argentina into the United Kingdom in September–November 1929 was unprecedented. On the average over the period 1921–28, September–November imports from Argentina averaged only 4.7 million bushels, only about 8.7 per cent of all imports; in 1929, however, imports from Argentina were 35.1 million bushels, some

49.3 per cent of the September–November total. A time came when British importers chose to draw upon the great accumulation of stocks rather than to maintain imports at the unprecedentedly high level of September–November, and for the seven months December–June imports were kept at a relatively low level. The change of policy, if it may so be described, seems to have been an important factor in depressing wheat prices in December–March.

French net imports² in 1929–30 were the smallest in post-war years, only 4.8 million bushels. Chart 22 shows monthly net imports in 1929–30, 1928–29, and on the average over the period of 1923–24 to 1929–30. Imports were of average size in August and September; were below average in October–December; and from January to July France was a net exporter.

CHART 22.—NET IMPORTS AND NET EXPORTS OF WHEAT AND FLOUR BY FRANCE, MONTHLY, AUGUST 1928–JULY 1930, COMPARED WITH AVERAGE MONTHLY NET IMPORTS, 1923–24 TO 1929–30*



* French trade data ("commerce général") are from *Statistique mensuelle du commerce extérieur de la France*.

The main explanation of the notably small net imports of France in 1929–30 lies in the large native wheat crop of 1929 and the big inward carryover, though governmental measures³ involving regulation of milling, the inauguration of a system of export bounties, and increases in the tariff on wheat and flour were contributory factors. Little or no significance attaches to the business depression, from which France seems to have suffered but slightly, or to

¹ See below, p. 129.

² Throughout this issue of WHEAT STUDIES we employ for the first time French official statistics of *commerce général*, not of *commerce spécial*. The former, though seldom published in trade journals, seem clearly to indicate arrivals into and departures from France of wheat and flour much more satisfactorily than the latter. The two sets of data show widely different fluctuations as to monthly movements, and even the annual totals differ considerably.

³ See above, p. 115.

the possibility that wheat was widely supplanted by some other grain. There is not much doubt that in France the crop of 1929 plus the inward carryover must have constituted the largest quantity of wheat domestically available in post-war years; for although the crops of 1921 and 1925 were large ones, the inward carryovers could hardly have been, and there is reason to suppose that the crop of 1929, though officially estimated as a little smaller than those of 1921 and 1925, was in fact larger. Apparently, supplies in 1929-30 were so large that pressure on the domestic markets could not be avoided; such pressure was effective enough to bring French domestic wheat prices in December-January 1929-30 below the average level of international prices (British parcels),¹ and it occurred in spite of maintenance or accumulation of domestic wheat stocks. The net exports of January-July 1930 might not have been effected in the absence of the export bounty. The requirement that 97 per cent of the mill mix must consist of domestic wheat doubtless tended to restrict imports, but the weight of domestic supplies was so great, and the tariff was placed so high, that the spread between the prices of domestic and of duty-paid foreign wheat was very wide and would in any event have caused imports to be notably small, as they were previously under roughly similar conditions in 1925-26. It appears probable that the circumstances in France rather more than in any other single country serve to explain the small volume of international trade in 1929-30; and it seems reasonable to regard the mere bulk of domestic wheat supplies as the outstanding feature of the French situation.

Italian net imports in 1929-30 totaled only 42 million bushels, the smallest in post-war years by a considerable margin, and less than half as large as the average annual import of the preceding eight years. Here, as in France, the explanation seems to lie mainly in the huge domestic wheat crop of 1929 and a large inward carryover;

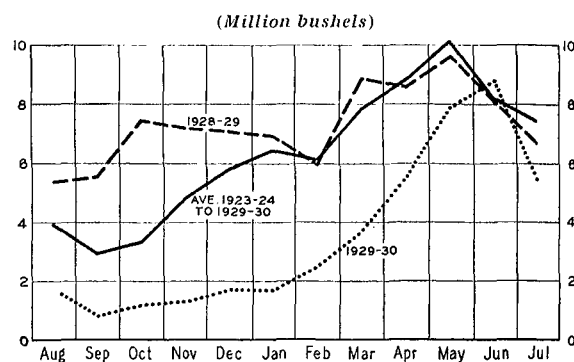
¹ See Chart 34, p. 133.

² See above, p. 110.

³ This average is probably a little low because net imports appear to have been understated in the first four years of the period.

little evidence appears to suggest that there corn was substituted for wheat to an unusual degree, or that business depression significantly affected wheat consumption. In Italy there seems to have been less of a disposition to hold wheat on farms than was evident in 1928-29.² With domestic wheat prices advancing while the prices of duty-paid foreign wheat declined, Italian imports increased from month to month, but attained moderately large volume only in the closing months of the year, as is illustrated by Chart 23. Up to January 1930,

CHART 23.—NET IMPORTS OF WHEAT AND FLOUR INTO ITALY, MONTHLY, AUGUST 1928-JULY 1930, COMPARED WITH AVERAGE MONTHLY NET IMPORTS, 1923-24 TO 1929-30*



* Data from *Monthly Bulletins of the International Institute of Agriculture*.

domestic wheat prices stood unusually low in relation to the prices of duty-paid import wheat; but thereafter the spread narrowed, and in May-July foreign wheat was cheaper than domestic. Governmental measures in Italy were confined to an increase of the tariff on wheat on June 5, 1930; in part, the relatively large imports of May-June were made in anticipation of the change in the tariff.

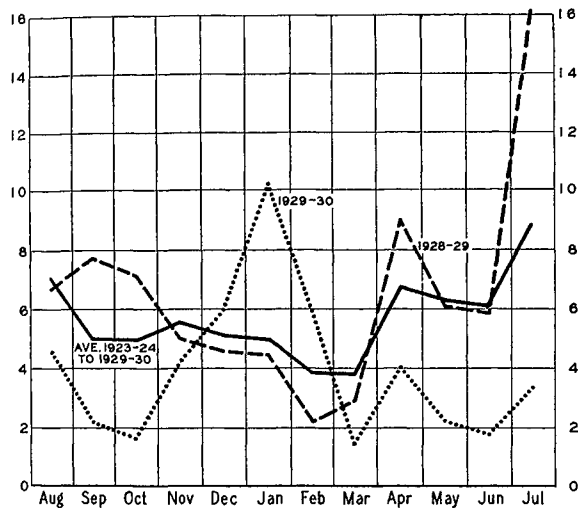
It is in Germany more than in any other European country that governmental measures and displacement of wheat by other grains require emphasis as explanations of the small net imports in 1929-30, which were only 48 million bushels as compared with an annual average of 67 million during the period 1921-22 to 1928-29.³ Apparent domestic utilization of wheat in Germany in 1929-30 (crop plus net imports) fell almost as low as in 1924-25; it was nearly 50 million bushels, or about 22 per cent,

smaller than in 1928-29, and fell below the line of post-war trend probably more than 10 per cent.

In a considerable degree the low figure for 1929-30 can be explained by a reduction of stocks, to which statistical data bear witness; along with other data,¹ Chart 24,

CHART 24.—NET IMPORTS OF WHEAT AND FLOUR INTO GERMANY, MONTHLY, AUGUST 1928-JULY 1930, COMPARED WITH AVERAGE MONTHLY NET IMPORTS, 1923-24 TO 1929-30*

(Million bushels)



* Data from *Monthly Bulletins* of the International Institute of Agriculture.

which gives monthly net imports in 1929-30, 1928-29, and on the average for the period of 1923-24 to 1929-30, shows that net imports in July 1929 were large enough to

¹ See above, p. 109.

² See above, Chart 19, p. 113, and Appendix Tables XX, XXI, and XXII. Broomhall's record of shipments to ex-Europe by destinations are as follows, in million bushels, for the four crop years for which such data are available:

Destination	August-July (52 weeks)			
	1926-27	1927-28	1928-29*	1929-30
Central America ^b	55.62	55.62	70.37	50.07
China and Japan	30.73	31.39	69.48	33.61
Brazil	22.73	26.68	30.26	28.17
Egypt	10.98	9.16	17.85	7.60
North and South Africa	7.04	5.94	7.29	2.68
Chile	.34	.10	.03	.01
India	4.05	1.50	27.64	6.28
Syria	.21	.25	.53	....
Peru	.26	.38	.75	1.41
Palestine	....	....	.72	....
New Zealand	.10	....	.06	....
Total	132.05	131.02	224.98	129.83

^a Fifty-three weeks.

^b Includes Venezuela, West Indies, Dutch East Indies, etc.

have provided for some accumulation of stocks of import wheat. But the general effect of governmental measures in Germany—compulsory admixture of designated percentages of native wheat in the mill mix, propaganda advocating the use of rye rather than wheat for human consumption, and successive increases in the duties of wheat—must have been to reduce wheat consumption. Further grounds for believing that wheat consumption may have been reduced lie in the exceptionally wide spread between rye and wheat prices, the facility with which one can supplant the other in the rye-wheat breads, the onset of business depression, and the fact that toward the end of the crop year the prices of wheat, both domestic and imported (duty-paid), became notably high by comparison with earlier years, whereas the price of rye did not. Duty-paid foreign wheat was made expensive by the increases in tariff duties; domestic wheat was made expensive largely because its use in milling was compulsory; the wheat price level and relationships, themselves affected by governmental measures, were such as to give rise to a notable reduction of stocks. Consequently it seems reasonable to suppose that German net imports in 1929-30 were appreciably smaller than they would have been in the absence of governmental measures. Some, but less, substitution of rye for wheat might have occurred in any event; some, but less, reduction of wheat stocks might have been witnessed.

The striking feature of the course of net imports into Germany in 1929-30 was the relatively heavy imports in the months of December-February; these were large in anticipation of increases in the wheat tariff duties.

The data concerning the net imports of ex-European countries are fragmentary and in some respects contradictory.² Broomhall's shipments to ex-Europe, 130 million bushels in 1929-30, were not the smallest in post-war years, as were shipments to Europe and net imports of European countries; for ex-European shipments had been smaller in 1921-22, 1922-23, and 1924-25. Nevertheless, the total for 1929-30 appears surprisingly low in view of the moderately low general average level of

wheat prices in 1929-30 as compared with earlier years, especially 1925-26 to 1927-28; for low prices seem in general to accompany a large movement of wheat to ex-European destinations, particularly the Orient.

Shipments to ex-Europe were strikingly small in 1929-30 in contrast with those of 1928-29; the reduction of around 95 million bushels is partly accounted for, however, by the facts that India was a net importer in 1928-29 but not in 1929-30, and that shipments in 1928-29 are for 53 weeks but for 52 weeks in 1929-30. Perhaps these facts explain over a fourth of the decline in ex-European trade between the two years. Even so, trade in 1928-29 was extremely large; it probably represented partly an accumulation of stocks, and partly an unusually high level of wheat consumption, induced by the low prices. Ex-European trade in 1929-30 would probably have been larger if stocks of wheat and flour had not been drawn down in the course of the crop year. Particular circumstances in several important ex-European importing countries also served to reduce the total imports of 1929-30 to a level that seems rather low.

According to official export statistics, exports to China, Japan, Hong Kong, and Kwantung from the United States, Canada, and Australia in July-June 1929-30 were about 36 million bushels as compared with an average (1921-22 to 1928-29) of about 45 million. An important factor in restricting Chinese imports was undoubtedly a severe world-wide decline in the price of silver, which brought in its train drastic depreciation of Chinese currency; wheat importers, as well as importers of other commodities, practically throughout the year faced serious losses through the exchange factor alone. At the opening of the crop year, stocks of flour appear to have been unusually large in coastal China, and apparently reduction of stocks occurred both in China and Japan. Exports to Brazil, and shipments also, were not strikingly small. The West Indies appear to have imported less wheat and flour in 1929-30 than in 1928-29, but the figure is not strikingly small; here there may have been some reduction of stocks, and the low price of sugar may have tended to restrict imports.

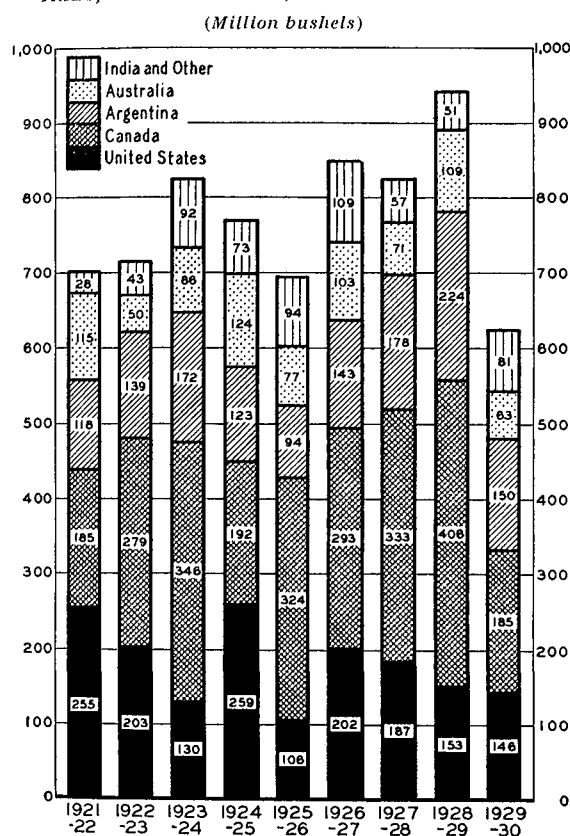
Egypt and South Africa, the other large importers of the ex-European group, took notably small quantities of wheat. In both of these countries the domestic wheat crops of 1929 were of record post-war size, and in Egypt stocks at the opening of the crop year were probably heavy.

SOURCES OF EXPORTS

At 624 million bushels, total net exports of wheat and flour were smaller in 1929-30 than in any other post-war year. Comparisons between the various crop years since 1921-22 as regards both total net exports and the portion contributed by each of the four major exporting countries are shown in Chart 25. The chart indicates that total net exports from North America and Australia were small in 1929-30; net exports from both Argentina and the minor exporting countries ranked above average in size. But in spite of the exceedingly small total volume of trade, and the small volume sent from the United States, Canada, and Australia, none of the major countries established a new low post-war record of net exports in 1929-30. In 1920-21 Canada shipped a smaller quantity of wheat (including flour) than in 1929-30, and in 1921-22 she shipped about an equal quantity; the United States had smaller net exports in 1923-24 and 1925-26, while the Australian net exports of 1929-30 exceeded those of 1922-23 by over 10 million bushels. One feature of the export movement of 1929-30 stands out in sharp contrast to the situation in the other years of small net exports; in both of the North American countries and in Australia supplies available were considerably larger in 1929-30 than in the other years when net exports were as small or smaller, and stocks of wheat and flour were presumably larger in each of those countries at the end of the season 1929-30 than at the end of any other crop year since the war. Argentina appeared unusually important as a source of exports in 1929-30, exporting, as she did, a fractionally larger proportion of the total world net exports than she had ever exported before, larger even than in 1928-29, the year of her record exports. Of the minor exporting countries, Jugo-Slavia, Hungary, and perhaps Tunis exported net

larger amounts of wheat than in any other year of the decade; the three French dependencies of northern Africa as a group made fairly large net exports; Russia and Roumania supplied net exports that were relatively small in comparison with previous years; and India furnished an almost negligible quantity. Bulgaria was a net importer.

CHART 25.—NET EXPORTS OF WHEAT AND FLOUR FROM EACH OF THE FOUR MAJOR EXPORTING COUNTRIES AND THE MINOR EXPORTING COUNTRIES, BY CROP YEARS, FROM 1921-22*



* Data from Appendix Table XVII; "other countries" here includes India, Russia, the Danube basin, and "other countries" as shown in that table.

The net exports of the United States were notably small in 1929-30 in view of the large available supplies; and stocks of wheat at the end of the season stood markedly higher than in any other post-war year. A similar restriction of net exports had been accompanied by a striking up-building of stocks only in one other year of the decade, 1928-29. In that year, as in

1929-30, traders in the United States appear to have held wheat in anticipation of higher prices.

The flour exports of the United States in 1929-30 (about 64 million bushels, in terms of wheat)¹ were maintained at a fairly normal level in spite of the small total net exports of wheat and flour. Only in a couple of years have flour exports fluctuated markedly in the same direction as fluctuations in the total net exports; in only one (1925-26) of the four years of strikingly small total exports did the net exports of flour fall decidedly low,² and in that year the small flour exports (only 48 million bushels) were presumably due mainly to an absolute scarcity of hard winter wheat in the United States, and to relatively high wheat prices.

Data showing the distribution of United States exports of wheat grain by classes (July-June season) disclose no outstanding feature of the distribution in 1929-30 except the smallness of the exports of durum wheat. Exports of durum wheat were smaller in 1929-30, both in absolute terms and in terms of percentage of total annual grain exports, than in any of the preceding six years.³ Small durum wheat exports were to be expected in 1929-30 because of the small size of the durum crop of 1929; but smaller crops in 1923 and 1926 afforded larger exports than did the crop of 1929. The extremely small exports of 1929-30 appear to have been at least partly due to the foreign rather than to the domestic supply situation. The large wheat crop in Italy was of particular significance.

Chart 26 indicates that while net exports in 1929-30 tended to run more or less consistently below average throughout the sea-

¹ Including shipments to possessions.

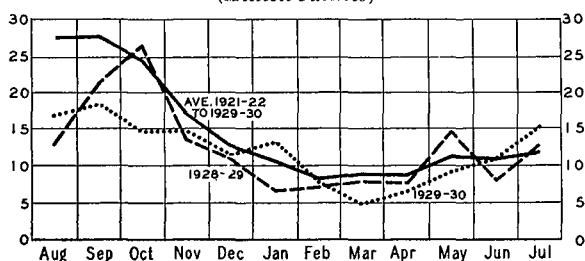
² See Appendix Table XXI.

³ Estimates of the distribution of wheat-grain exports by classes, published by the U.S. Department of Agriculture for the years 1923-24 to 1929-30 (*Foreign News on Wheat*, October 21, 1929, p. 11; and *World Wheat Prospects*, August 22, 1930, p. 16) are as follows in million bushels:

	Hard red spring	Durum	Hard red winter	Soft red winter	White	Total
1923-24 ...	2	19	27	11	20	79
1924-25 ...	21	34	121	8	11	195
1925-26 ...	5	27	10	2	19	63
1926-27 ...	2	22	73	31	28	156
1927-28 ...	6	31	65	14	30	146
1928-29 ...	2	45	38	3	15	103
1929-30 ...	2	12	57	3	18	92

son, they fell much farther below average during the early months, August, September, and October, than during the later months; and in January and July they even exceeded the average. The restricted movement of exports during the fall months of 1929 was presumably due, in the main, to the fact that American traders were more bullishly inclined than traders in Great Britain or Argentina. The narrow spread

CHART 26.—NET EXPORTS OF WHEAT AND FLOUR FROM THE UNITED STATES, MONTHLY, AUGUST 1928-JULY 1930, COMPARED WITH AVERAGE MONTHLY NET EXPORTS, 1921-22 TO 1929-30*
(Million bushels)



* Data from *Monthly Summary of Foreign Commerce of the United States*.

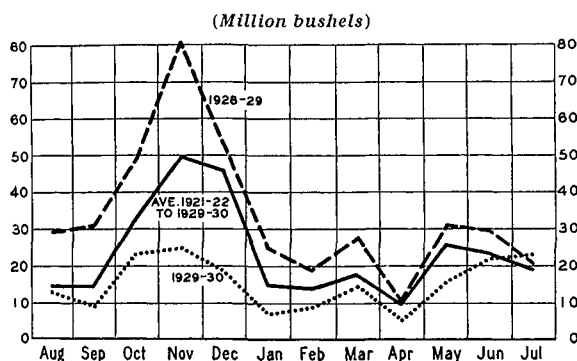
which prevailed between the Chicago and Liverpool wheat futures prices in spite of the record size of stocks in the United States reflects this attitude. Data of total net exports shown in the chart above tend to underemphasize rather than overemphasize the strength of the holding movement in the United States, for in the fall of 1929 the net exports from the United States would have been strikingly small had it not been for the abnormally large exports which went to Canadian ports for storage, not for immediate shipment. As a result, stocks of American wheat in Canada were of record size in the fall months of 1929, and during those months the exports of American wheat overseas fell even farther below the average for 1921-22 to 1929-30 than did the total exports. The Chicago-Liverpool price spread gradually widened during November, December, and January; and exports tended more closely to approach the average exports for those months. The January net exports of 1930 were, in fact, above average, and were larger than the net exports for the same month in any of the preceding eight years.

During February the Chicago-Liverpool price spread narrowed again, and in March and the first part of April it was strikingly small; thus, the Chicago-Liverpool price relationship appears to have been one of the factors responsible for the exceedingly small March exports, the smallest monthly net exports of the season. In April, May, June, and July, the Chicago market weakened relative to Liverpool, and larger amounts of wheat were exported from the United States, the July net exports being over three million bushels above average.

Canadian net exports of wheat and flour in 1929-30 were restricted in much the same manner as were exports from the United States; the total movement from Canada, about 185 million bushels, was smaller than in any of the preceding eight years, though only fractionally smaller than the exports of 1921-22. The Canadian crop of 1929 was so far below average size that the supplies available for the succeeding season were relatively small in spite of the record carryover from 1928-29. This naturally predicated relatively small exports; but the quantity of wheat actually exported was strikingly smaller than the available exportable surplus, and stocks of wheat and flour at the end of the season were of record size. In Canada, as in the United States, the failure of wheat to flow freely to export in 1929-30 is mainly attributable to the fact that traders were apparently holding wheat in anticipation of higher prices, an anticipation which appears to have been considerably stronger in Canada, at least if one judges by the Chicago-Liverpool and Winnipeg-Liverpool price spreads, than it was in the United States. The effect of the unusual Winnipeg-Liverpool price spread upon the movement of wheat exports is apparent from Chart 27, which shows the monthly net exports of Canadian wheat and flour during 1929-30 as compared with the monthly net exports of 1928-29 and the average for the years 1921-22 to 1929-30. Net exports from Canada during the first half of the season not only fell markedly below average in 1929-30, but even represented a smaller proportion of the annual movement in 1929-30 than in any of the preceding eight years. After January the monthly exports of 1930 approached more

closely the average exports for the corresponding months than they had earlier in the season; moreover, in March, June, and July, net exports represented larger proportions of the annual total than exports for those months represented in any of the preceding eight years. In July, when the Winnipeg future fell to an appreciable discount under the Liverpool future, net exports from Canada exceeded the average for the first time during the season, and for the first time in nine years approximately equaled the net exports made in the peak months, October and November.

CHART 27.—NET EXPORTS OF WHEAT AND FLOUR FROM CANADA, MONTHLY, AUGUST 1928–JULY 1930, COMPARED WITH AVERAGE MONTHLY NET EXPORTS, 1921–22 TO 1929–30*

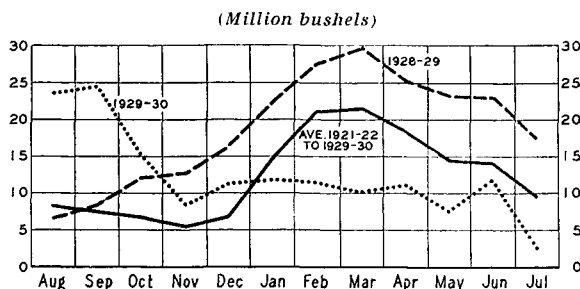


* Data from monthly *Summary of the Trade of Canada*.

Argentine net exports of 150 million bushels in 1929–30 were of moderate size, though considerably smaller than those of the preceding two years. Since the crop of 1929 was the smallest in post-war years, the net exports of 1929–30 would have been considerably smaller had it not been for the abnormally large stocks remaining in Argentina at the end of July 1929. The seasonal movement of the Argentine net exports of 1929–30, shown in Chart 28, appears in sharp contrast to the average seasonal movement from that country and also in contrast to the movement of net exports from the United States and Canada in 1929–30. Argentine net exports, which are ordinarily much larger during January–July than during the preceding five months, were in 1929–30 notably larger in August–December;¹ in August, September, and October 1929 net exports were of unprece-

dent size and the monthly peak of the year's movement occurred in September, whereas it usually occurs in February or March. Exports from Argentina were large in the autumn of 1929 because the carry-over from the 1928 crop was large, and because Argentine exporters (usually weak

CHART 28.—NET EXPORTS OF WHEAT AND FLOUR FROM ARGENTINA, MONTHLY, AUGUST 1928–JULY 1930, COMPARED WITH AVERAGE MONTHLY NET EXPORTS, 1921–22 TO 1929–30*



* Data from *Monthly Bulletins of the International Institute of Agriculture*.

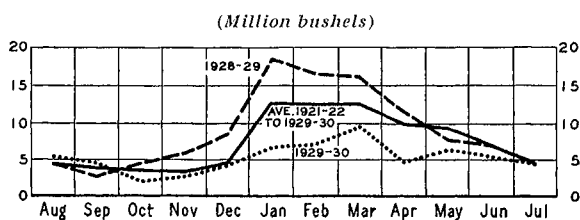
holders) were willing to accept prices lower than those acceptable to the exporters of other countries; January–July exports were unusually small, primarily because the new crop was small and not of very good quality. Stocks of wheat remaining in Argentina at the beginning of August 1930 have been estimated as about normal, or slightly above; hence it appears that wheat flowed to export relatively freely during 1929–30, though not so freely as perhaps it might have flowed had the quality been better. The export movement from Argentina may have been stimulated by depreciation of the Argentine exchange; but no evidence appears to show that this stimulus was of particular significance.

Australian net exports of wheat and flour in 1929–30, approximately 63 million bushels in terms of wheat, were distinctly small—the smallest, in fact, of the decade with the exception of the exports of 1922–23. The smallness of the Australian exports may be attributed in part to the fact that the available wheat supplies were only of average size, but the large stocks of wheat

¹ In normal years approximately 75 per cent or more of the annual exports are made during January–July, while in 1929–30 only about 45 per cent were made during that period.

remaining in Australia on August 1, 1930,¹ suggest that the flow of wheat to export was somewhat restricted during 1929-30 and that larger net exports could have been made. Chart 29 indicates that the net exports of 1929-30 deviated most strikingly from average in the period from January to May. Curiously enough, this was a

CHART 29.—NET EXPORTS OF WHEAT AND FLOUR FROM AUSTRALIA, MONTHLY, AUGUST 1928-JULY 1930, COMPARED WITH AVERAGE MONTHLY NET EXPORTS, 1921-22 TO 1929-30*



* Data from *Monthly Bulletins* of the International Institute of Agriculture.

period during which the Australian exchange was depreciating most rapidly—a situation which should have encouraged net exports of wheat among other commodities.² At least one factor of importance during this period was the drought in the wheat belt of Australia which delayed seeding and made the outlook for the new crop appear uncertain until rains came in July.

Net exports from “other” countries of about 81 million bushels were of fairly good size in comparison with those of other post-war years, although exports from the same sources had been larger in 1923-24, 1925-26, and 1926-27. Over 70 per cent of the exports from “other” countries in 1929-30 was supplied by the group of Danubian countries. Both Jugo-Slavia and Hungary exported larger quantities of wheat than in any other year of the decade; together they furnished about 53 of the 56 million bushels exported net from the Danube basin. Neither Jugo-Slavia nor Hungary

harvested a record crop in 1929; an appreciable proportion of their exports was apparently drawn from the large stocks which they carried over from 1928-29. The distribution of Danubian exports by months indicates that during the early months of the season, when traders in Canada and the United States were holding for higher prices, the Danubian exporters shipped freely, taking advantage of the fairly high prices which prevailed in the first half of the crop year.

The countries of northern Africa as a group apparently exported as much, if not more, wheat than in any other post-war year; their exports, probably some 14 million bushels, were accordingly in line with the exports which might have been forecast on the basis of the size of the 1929 crop. Of the three countries, however, Tunis alone had larger net exports in 1929-30 than in any other year of the decade.

In 1929-30 Russia appeared in the international market as a net exporter of wheat, though she had not been a net exporter in the preceding year, when she harvested a larger wheat crop than in 1929. Although Russian exports in 1929-30 were relatively small, even as compared with those of 1923-24, 1925-26, and 1926-27, the very facts that Russia was exporting at all from a small wheat crop and that no one knew (except within wide limits) how much wheat she might choose to export, induced traders to attach a good deal of significance to the Russian exports.

Of the remaining exporting countries, none exported any appreciable quantity of wheat. India was a net importer of wheat in August-April 1929-30, but in May-July 1930 exported sufficiently large quantities from her bumper crop of 1930 to establish her as a net exporter of almost a million bushels for the crop year as a whole. Poland's exports of wheat and flour during the later part of the season slightly more than offset her imports during the early part; and Spain was presumably a very small net exporter, if, indeed, she was a net exporter at all.

INTERNATIONAL TRADE IN WHEAT FLOUR

The volume of international trade in wheat flour was smaller in 1929-30 than in

¹ See Appendix Table XXXV D.

² The following rates are selling rates for telegraphic transfer, Australia on London (taken from the first issue of each month of the *London Economist*):

August	101 1/4	February	102 3/4
September	101 1/2	March	103 1/4
October	101 1/2	April	106 1/2
November	101 3/4	May	106 1/2
December	101 3/4	June	106 1/2
January	102 1/2	July	106 1/2

any recent year. According to somewhat incomplete data, mostly as reported by the International Institute of Agriculture, gross exports of wheat flour totaled 37.8 million barrels, in contrast with an annual average of 42.0 million in the preceding five years. The data are as follows, in million barrels:¹

1922-23	40.0	1926-27	39.0
1923-24	50.9	1927-28	38.6
1924-25	48.0	1928-29	45.1
1925-26	40.6	1929-30	37.8

The relatively small volume of trade in 1929-30 represents in some part a downward trend that arises from the raising of tariff and other barriers by many importing countries in order to foster their milling industries and to secure mill offals for feed. As between 1929-30 and 1928-29, the decline in the volume of trade in flour, about 16 per cent, was considerably smaller than the decline of trade in wheat and flour combined, about 34 per cent. This would be expected if only because a much larger fraction of flour exports goes to countries that produce little or no wheat than is true of the wheat exports; hence the imports of flour are less subjected to variation by reason of fluctuations in the domestic wheat crops of importing countries.

So far as concerns the net flour imports of particular countries,² few instances can be found of countries whose net imports were as large in 1929-30 as they were in 1928-29; although the data do not cover all countries, it seems probable that only the United Kingdom, the Irish Free State, Belgium, and Austria took more flour in 1929-30 than in 1928-29. The tendency to reduce stocks and to employ the abundant supplies of native wheat seems to have been fairly general. The relatively large net flour imports of the British Isles and Belgium probably represent principally large takings of cheap French flour. The country which

stands out most conspicuously for smaller takings of flour in 1929-30 than in 1928-29 is apparently China. Shipments of flour to China, Hong Kong, and Kwantung from North America and Australia³ were about 2.3 million barrels smaller in July-June 1929-30 than in July-June 1928-29; and since Japanese net exports that go largely to China declined about 1.3 million barrels between 1928-29 and 1929-30, it is reasonable to infer that Chinese flour imports from this source also declined notably. In China, as well as in other countries, stocks that were large at the beginning of the year seem to have been drawn down; in addition, depreciation of the Chinese silver exchanges was presumably important in restricting flour imports.

The net flour exports of the several leading flour-exporting countries are of interest. The following figures show these, in thousand barrels, for 1929-30 in contrast with 1928-29 and with the five-year average 1924-25 to 1928-29:⁴

Country	Average 1924-25 to 1928-29	1928-29	1929-30
United States . . .	12,563	13,326	12,886
Canada	10,343	11,730	6,696
Australia	5,034	5,845	4,676
Argentina	1,698	1,658	1,215
Japan	1,087	2,309	982
India	692	497	567
Hungary	2,031	2,615	2,890
France	1,856	1,752	3,198
Total	35,304	39,732	33,110

Exports from the United States in 1929-30 were fairly well maintained, presumably because it was possible to sell United States flour in some markets, where Canadian flour competes especially with American, relatively more cheaply in 1929-30 than in 1928-29—a situation arising not only because Canadian wheat prices were held farther out of line for export than American prices in 1929-30 but not in 1928-29, but also because Canada did not have in 1929-30 the huge volume of cheap low-grade wheat that she had in 1928-29. This set of circumstances constitutes the principal explanation of the notably small net exports of flour from Canada, only 6,696 thousand barrels in 1929-30 as compared with 11,730 thousand in 1928-29 and an average of 10,343 thousand.⁵ The small volume of

¹ These figures differ from those formerly published by us because we now employ "commerce général" figures for France instead of "commerce spécial."

² See Appendix Table XXI.

³ See Appendix Table XXII.

⁴ Summarized from data in Appendix Table XXI.

⁵ Relatively high prices of Canadian wheat caused the exports of flour milled in bond in the United States from Canadian wheat to be smaller in 1929-30 than in any of the four preceding years. See Appendix Table XXIV.

Canadian flour exports was the outstanding feature of the flour trade in 1929-30. Japanese net exports were affected not only by reduced demand from China, but also by the lack of low-grade wheat that had been so abundant in the Canadian crop of 1928. Australian net exports were moderately small, being reduced partly by weak demand from Egypt and the Union of South Africa. Argentine net exports fell below average largely on account of the short wheat crop of 1929. Hungary and France were the only two of the principal countries to export more flour in 1929-30 than in 1928-29. In Hungary, the relatively high figure probably represents in part a continuation of post-war recovery in the milling industry; exports were large partly because Budapest wheat prices did not follow fully the advance of prices in North America in the summer of 1929. The heavy exports from France are of course traceable largely to the big French crop; but without the bounty French flour exports presumably would have been smaller.

In general, circumstances were such as to make the year 1929-30 a less favorable one for millers than was 1928-29. Canadian millers, who as a group lean heavily on exports, must have encountered a distinctly unfavorable year; the fact is clear from financial reports of several of the large milling concerns. Japanese millers

also must have faced a rather severe reduction in flour output, and in Australia the difficulties encountered in flour exports presumably reacted unfavorably on millers. So far as millers in such countries as Canada, the United States, and the United Kingdom were in a position to benefit from the high premiums of the distant over the near futures, these spreads worked to their advantage, more so in the first than in the second half of the year. In the United States, partly because of this situation, partly because exports and flour output were well maintained (especially in the hard red winter-wheat area), the year appears to have been a satisfactory one, though in 1928-29 output was larger and millfeed prices higher relative to wheat. It is probable in many countries of western Europe (but not in France) that flour output was smaller in 1929-30 than in 1928-29, and that millfeed prices were lower in relation to wheat and flour prices. These were unfavorable factors; moreover, international wheat prices tended downward, and in so far as operations were not hedged, this would be an unfavorable factor, though an offsetting advantage appears if flour prices tended to decline less rapidly than wheat prices. Some British, Belgian, and Dutch millers were disturbed by unaccustomed competition from imported French flour.

V. WHEAT PRICES IN 1929-30

The behavior of wheat prices in 1929-30 exhibited features of peculiar interest. Despite the facts that the wheat crop of 1929 was notably short in relation to the trend of world production, and that stocks had to be drawn down in the course of the year, the general average level of international wheat prices was a little lower than the relatively low level that characterized a year of bumper wheat crops, 1928-29. At no time in 1929-30 did prices attain strikingly high levels; and, after a downward course that was most marked in the winter months, the level at the end of the year was the lowest to be recorded since before the war. The outcome was far different from expectations that were widely expressed in

the early months of the year, especially in North America.

In general, the actual price movements seemed to many not to accord with precedent; and current explanations attributed more or less influence to the Federal Farm Board, to the Canadian Wheat Pool, to the business depression and declining wholesale prices, to imposition of tariffs and of milling regulations in Europe, to the rye and feed grain situations. But in retrospect it appears that wheat prices behaved in a manner that seems for the most part explicable by reference to the influences that have been effective in other years. Wheat prices averaged relatively low, and declined in the course of the year, principally be-

cause wheat supplies, including the great accumulation of stocks from earlier years, were large enough, and were so distributed geographically, that severe pressure arose on the British market. It is possible that the wheat situation itself was such that prices would have moved much as they did even in the absence of general business depression; that is, the disposition to hold stocks might have been weakened as it was even if business depression in its several aspects had not appeared, and if the passing months had not witnessed a succession of governmental measures affecting the wheat trade in Europe. Nevertheless, some significance attaches to business depression and the governmental measures as factors tending to depress wheat prices; and, on the other hand, the Federal Farm Board and the Canadian Pool must on the whole be reckoned as bullish influences of some significance. Yet even so much can be said only with the qualification that no single and obviously correct way appears for ascribing weights to the numerous factors that seem to have affected prices.

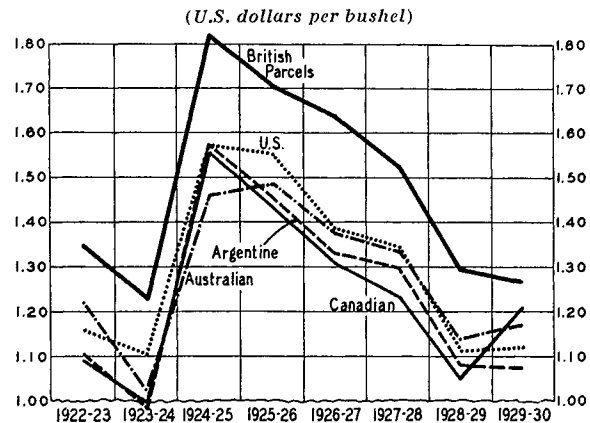
The fact that most North American traders and students early in the crop year were anticipating a generally high level of prices in 1929-30, and perhaps a rising course of prices as in 1924-25, is so readily apparent from the trade journals as hardly to be open to dispute. Errors in judgment and in forecasting were made. It should be said, however, that the errors were not mere blunders. The outlook for wheat prices is never altogether clear: and the course is always easier to explain after the event than it is to anticipate. The factors that caused prices to move not up but down in 1929-30, and to average lower in 1929-30 than in 1928-29, were the intangible about as much as the tangible ones, and the statistical information available in the earlier months was significantly different from the information now current.

THE WHEAT PRICE STRUCTURE

Charts 30 and 31, showing annual averages from 1922-23 of wheat prices in various countries, serve to emphasize certain significant features of the world wheat price structure in 1929-30.

The spread between British prices (par-

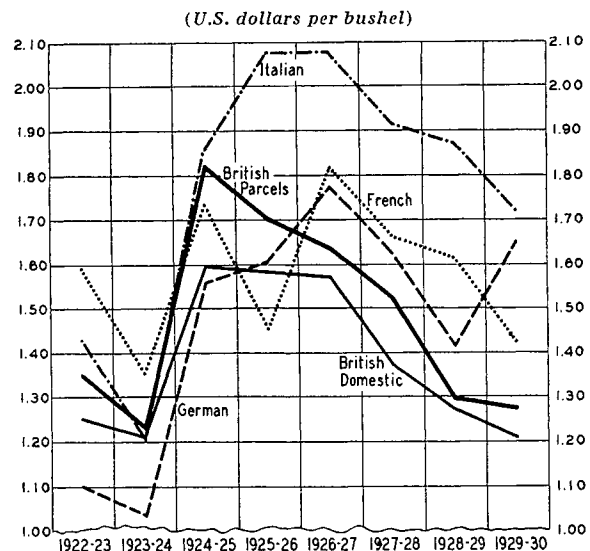
CHART 30.—AVERAGE WHEAT PRICES IN THE PRINCIPAL EXPORTING COUNTRIES, AND AVERAGE BRITISH PARCELS PRICES, BY CROP YEARS, FROM 1922-23*



* Simple averages of monthly average prices of series described in Appendix Table XXXI. The United States and Canadian series are the weighted average prices there given.

cels) and prices in the four major exporting countries was somewhat the narrowest in eight years, reflecting the generally low average level of ocean freight rates. The

CHART 31.—AVERAGE PRICES OF DOMESTIC WHEATS IN FOUR IMPORTING COUNTRIES, AND BRITISH PARCELS PRICES, BY CROP YEARS, FROM 1922-23*



* Simple averages of monthly average prices of series described in Appendix Tables XXXI and XXXII.

contrast with 1926-27 is particularly striking. In that year, as Chart 30 shows, the spread between British parcels prices and prices in exporting countries was the

widest in the eight years considered: ocean freight rates,¹ averaging 19.9 cents per bushel (La Plata down river to the United Kingdom), were the highest in the period. In 1929-30, these rates were the lowest in the period, about 8.3 cents per bushel.

A second rather striking feature of the price structure was the fact that Canadian wheat at Winnipeg, which in other years sold at relatively the lowest or next to the lowest prices among the wheats whose prices are given in Chart 30 for the exporting countries, sold at relatively the highest prices in 1929-30. In part this anomalous situation represents nothing more than the fact that the Canadian crop of 1929 contained a larger proportion of the highest grades than ever before; but in part it represents a disposition in Canada to hold for higher prices, a situation for which there appears to be no precedent in post-war years. That a "holding movement" existed in Canada in the early months of the year, at least if one defines it as unwillingness to sell wheat for export at competitive prices, is well enough attested by the fact that Argentina exported freely in months when Canadian exports were relatively small,² though Canada had plenty of wheat available for export. It is a different matter to say precisely who was responsible for the holding movement, who made it evident by purchases of Winnipeg futures or by export-sales policy; but so far as one can judge from published discussion, the notion that international wheat prices must move upward was almost universal in Canada in the first three or four months of the crop year.

In Europe, several features of the price structure were of interest. German prices of domestic wheat in 1929-30 averaged far higher in relation to prices elsewhere than had been true in any of the preceding seven years. With the domestic crop not large enough to eliminate the necessity of sizable imports, successive increases of the tariff to extremely high levels, and enforcement of the policy of requiring fixed percentages of domestic wheat to be milled with imported, were effective measures in maintaining and increasing domestic wheat

prices. In France, similar measures were less effective because the domestic wheat crop was too large in relation to requirements; perhaps, however, these measures helped to prevent French prices from falling below international prices, as they did in 1925-26. Exports from France occurred, with aid of subsidy, in spite of the fact that French prices ruled higher than international prices. These exports presumably helped to bring the British prices of domestic wheat lower than otherwise they would have been. In Italy, the highest tariff of post-war years was in force, but the domestic wheat crop of 1929 was so large that the spread between Italian domestic and British parcels prices was smaller than it had been in 1928-29, when the duty was lower; and in 1926-27, when the duty was lower still, the spread was practically as wide as in 1929-30.

Certain features of the price structure on the British import market in 1929-30 are of interest. Chart 32 shows c.i.f. monthly average prices of competing wheats in the United Kingdom, in terms of spreads above or below the average prices of British parcels. For the first half of the crop year, the price range between the dearest and the cheapest wheats was exceptionally large, the largest, indeed, in at least nine years. At its maximum in August 1929, Rosafé wheat from Argentina was over 30 cents a bushel cheaper than No. 3 Northern Manitoba wheat from Canada. Under these circumstances it is easy to understand why British buyers preferred Argentine to Canadian wheat in the early months, and why Argentina exported freely while Canada did not. Even though it is impossible to say precisely by how much Canadian wheat excelled Argentine wheat in its value for British flour making, one can say with assurance that for several months the spread substantially exceeded the difference. The chart suggests that British buyers were hardly involved in a boycott of Canadian wheat, as was alleged by some Canadians; rather, they were presumably following the common and readily comprehensible practice of buying the cheaper of two competing products more freely than the dearer.

In the course of 1929-30, the spread be-

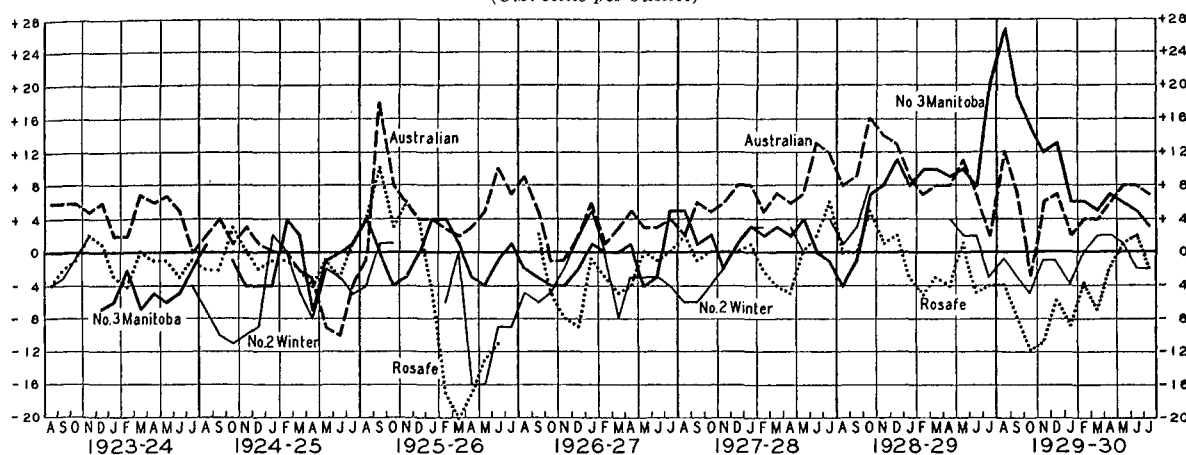
¹ See Appendix Table XXV.

² See above, Charts 27 and 28, p. 123.

tween Canadian and Argentine wheat narrowed; in May-July 1930 it averaged less than 5 cents per bushel, as compared with about 27 cents in August-November 1929. On the one hand, the holding movement in Canada weakened as prices declined, as exports remained small, and as the burden of stocks became heavier; on the other hand, the big Argentine initial stocks were

curried in 1924-25, when the United States and Australia harvested fairly large crops, and Argentina and Canada did not; in that year first United States wheat and later Australian wheat tended to sell at relatively low prices on the British import market. In 1928-29 both Canada and Argentina harvested bumper crops, while Australia and the United States did not. Argentine wheat

CHART 32.—RELATIONS BETWEEN AVERAGE PRICES OF REPRESENTATIVE IMPORT WHEATS AT LIVERPOOL, IN TERMS OF DEVIATIONS FROM BRITISH PARCELS PRICES, MONTHLY, AUGUST 1923-JULY 1930*
(U.S. cents per bushel)



* Data from price series described in Appendix Table XXXI.

reduced by heavy exports, and the crop harvested in December-January was a relatively small one. In May 1930 Argentine wheat ceased to rank as the cheapest of the competing wheats on the British market, after having held this position without interruption for a period of eighteen months. Like 1928-29, the crop year 1929-30 was characterized by long-continued relative cheapness of Argentine wheat on the British import market.

This persistent relative cheapness of Argentine wheat, a significant aspect of the world wheat situation, deserves further comment. In some part it represents merely what one would expect to happen: if, for example, one of the four major exporting countries harvests a bumper crop when the others harvest average or small crops, it would be expected that wheat from the bumper crop would be sold cheaper than wheat from the average or small crops. But so simplified a situation seldom arises, though an instance somewhat like this oc-

was relatively cheaper than others after October 1928; Canadian, however, was the cheapest only in August-September 1928, and was in fact (at least so far as concerns No. 3 Northern Manitoba) the dearest in February-April 1929, and again in June-July. Given the big Canadian crop of 1928, one would hardly expect Canadian prices to rule so much higher than Argentine prices in the second half of the crop year 1928-29, unless a holding movement had developed in Canada and not in Argentina. This movement was more or less fostered by an unfavorable new-crop outlook in Canada in January-April 1929, and of course was greatly accentuated by the unfavorable developments of the Canadian crop during June-July 1929. But the holding movement went too far, in the sense that the Canadian carryover into 1929-30 and the crop of 1929 proved too large in relation to the Argentine carryover into 1929-30, the Argentine crop of 1929, and the small requirements of importers, for the

premiums of Canadian wheat prevailing in August 1929 to be maintained. Under other circumstances—a sufficiently small Canadian crop of 1929—it is at least conceivable that such premiums could have been maintained. It is pertinent to observe that in one other post-war year, 1923-24, Canada and Argentina harvested big crops, and that a holding movement did not develop in Canada in 1923-24, and continue into 1924-25, as was true in 1928-29 and 1929-30. One is struck by the fact that the Pool was active in the latter pair of years, and not in the former. It would be improper, however, to infer that in the absence of the Pool there would have been no Canadian holding movement in parts of 1928-29 and 1929-30. Canadian traders outside of the Pool are known to have joined the holding movement; and in many respects, unnecessary to particularize here, the situation as between the two pairs of years was different.

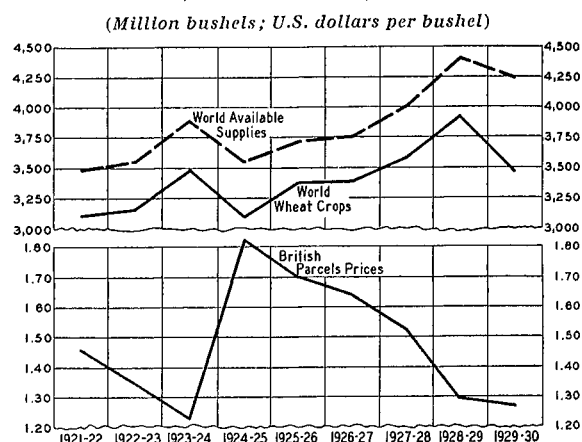
THE LOW LEVEL OF PRICES IN 1929-30

Discussion of changes in the annual average level of wheat prices may often be misleading. The changes of level may differ with different price series and markets (see Charts 30 and 31). And there are years, of which 1929-30 is one, when prices in successive months may not approximate the annual average at all closely. Thus it is proper to say that the annual average level of British parcels prices in 1929-30 was one of the three lowest in eight years; but it is equally true that the average level of August-January 1929-30 was one of the four lowest, and higher than the other three, whereas the level of February-July 1930 was quite the lowest in eight years. However, it remains necessary, partly for purposes of condensation, to analyze the wheat supply situation largely by reference to the crops harvested within a year and the exports and imports recorded within twelve months; and changes in the annual crop-year averages of prices are not altogether meaningless.

Chart 33 shows world wheat crops since 1921 (the upper solid line) in contrast with annual average British parcels prices (the lower solid line) and with crops plus our estimates of inward carryovers (the dash

line). The striking feature of the chart is that, though the crop of 1929 fell about as far below the crop of 1928 as the crop of 1924 fell below the crop of 1923, wheat prices in 1929-30 averaged a cent lower than prices in 1928-29, whereas prices in 1924-25 averaged nearly 60 cents higher than in 1923-24. In one instance fresh in the memory of traders, a reduction in the crop brought a large increase in price; but between 1928-29 and 1929-30, an even larger reduction in crop brought a decline in price.

CHART 33.—WORLD WHEAT PRODUCTION AND AVAILABLE SUPPLIES COMPARED WITH BRITISH PARCELS PRICES, BY CROP YEARS, FROM 1921-22*



* Data on crops and available supplies from Appendix Tables IV and XXVII; parcels prices are the series described in Appendix Table XXXI.

Several aspects of the wheat situation go far toward explaining why the change in crop between 1928 and 1929 failed to induce a large increase in price such as occurred between 1923-24 and 1924-25. First, the stocks of old-crop wheat were known to be distinctly large at the beginning of 1929-30, but were thought to be, and in fact were, fairly small at the beginning of 1924-25. In fear of actual shortage, European importers appear to have purchased wheat almost frantically in the opening months of 1924-25; but no such fear of shortage could emerge in 1929-30, because visible supplies stood at unprecedentedly high figures. Second, urgent buying of wheat by Germany in 1924-25 was made possible by recovery from economic chaos, aided by the inauguration of the Dawes Plan and the extension of foreign loans. No such de-

velopment as this occurred in 1929-30, or was ever in prospect. Third, the European crops of wheat, rye, and the feed grains were short in 1924-25; other things equal, urgent buying was in prospect for this cause alone. All told, selling pressure on the British market was not to be expected in 1924-25 while so much wheat was needed in other importing countries and so little was available in exporting countries. But in 1929-30 urgent buying was hardly probable in view of the big European crops of wheat and the other cereals as well; and selling pressure on the British market was possible, even if not widely anticipated, because relatively little wheat was needed elsewhere and ample supplies were available in exporting countries, partly from stocks of old-crop wheat, to meet the demand. The upper line of Chart 33 serves to illustrate the fact that total available supplies of wheat were, like the crop, notably below the line of trend in 1924-25; but in 1929-30, when the crop may have fallen about as far below the line of trend as did the crop of 1924, the total available supplies did not fall below the line of trend. The accumulation of stocks in earlier years was large enough to make total supplies in 1929-30 not relatively short, but relatively abundant.

In size and geographical distribution, the wheat crop of 1929 resembled that of 1925 rather closely. In both years European importing countries secured relatively large crops of wheat, rye, and the feed grains. But parcels prices averaged some 42 cents higher in 1925-26 than in 1929-30, and this in spite of the fact that demand for wheat must have been quantitatively larger in 1929-30 than in 1925-26. The outstanding difference between the two years lies in the size of initial carryovers, which were by far the larger in 1929-30.

Furthermore, wheat prices presumably averaged lower in 1929-30 than in 1925-26 (or in other post-war years) partly because of the fact that the general level of wholesale prices had tended downward in many countries, a phenomenon that is interpreted in some quarters as reflecting an increase in the value of gold. Other things equal, wheat must decline in price when circumstances in the money and credit situation are causing the value of gold to rise and the

prices of other commodities to fall. A tendency for wheat costs of production to decline with increasing mechanization in agriculture may reasonably be listed as one reason why prices should have averaged lower in 1929-30 than in 1924-25 or 1925-26; but on this subject not much tangible evidence is available.

One further contrast is pertinent. Both the wheat crops and the total world available supplies of wheat were appreciably smaller in 1929-30 than in 1928-29. Seemingly prices, except in so far as they are governed by the monetary situation, ought to have averaged higher in 1929-30 than in 1928-29; yet in fact they averaged lower. As between these two years, it seems proper to say that the effects of a reduction in crop or available supplies were counterbalanced by a change in the disposition to hold surplus stocks.

It is perhaps impossible to demonstrate conclusively that such a change in sentiment occurred, or to locate and fix the timing of the change. Yet it is impossible to avoid the inference that the crop year 1928-29 was on the whole characterized by a spirit of optimism, especially in the latter part of the year. Wheat prices had remained stable in the first five months of the year, in the face of accumulating evidence that the world wheat crop of 1928 was the largest in history. The volume of international trade then passing was of record size, and the inference was generally made that world consumption was extraordinarily heavy. General business conditions were favorable. There is reason to suppose that, given these developments, and in spite of the big stocks known to exist, a great many traders felt in the winter of 1928-29 that "wheat prices had given a good account of themselves," and that the chances favored a smaller wheat crop in 1929 than the huge one of 1928, to be accompanied by higher prices. The argument was supported by an extremely cold winter, and later by the crop scare in Canada. The result was that the average level of prices in 1928-29 was maintained as high as it was partly by a tendency to discount in advance the developments that seemed probable in 1929-30; on the whole, wheat was firmly held, though pressure from stocks appeared in

March-May 1929. It seems probable that the disposition to hold was unusually strong, notably in North America; but the point cannot be proved. If wheat in fact was strongly held in 1928-29, then the average level of wheat prices in 1928-29 was higher than otherwise it would have been; and, other things remaining the same, the average level of 1929-30 might have been appreciably higher than that of 1928-29, and hence easier to explain.

The events of 1929-30 were distinctly such as to weaken the disposition to hold wheat stocks. The crop of 1929 turned out to be larger than was anticipated early in the crop year; initial carryovers proved to be larger than was thought; the volume of trade became strikingly small; business depression in its various aspects began to attract attention; the broad chances favored not a smaller wheat crop in 1930 than in 1929 but a larger one, merely because that of 1929 had been unusually small, trend considered. In short, outstanding features of the wheat situation seemed in the winter of 1928-29 to favor holders of wheat, but in the winter of 1929-30 practically the reverse was true. Although, again, the point cannot be proved, it seems reasonable to suppose that the disposition to hold wheat was unusually weak in 1929-30. The change in sentiment was probably more significant than any that has occurred between two successive post-war years except 1923-24 and 1924-25. Perhaps, if the disposition to hold had been the same in 1928-29 and in 1929-30, international wheat prices would have averaged appreciably higher in 1929-30 than in 1928-29, according more closely with the change in available supplies.

THE GENERAL COURSE OF PRICES

As usual, the movement of wheat prices throughout the crop year differed from market to market and from country to country. The extent of the differences is illustrated by Chart 34, which shows monthly average cash prices in the four major exporting countries, on the British import market, and of domestic wheats in four European countries. In Germany, the upward course represents the effect of the milling regulations, successive increases of the tariff, and in some part a usual seasonal

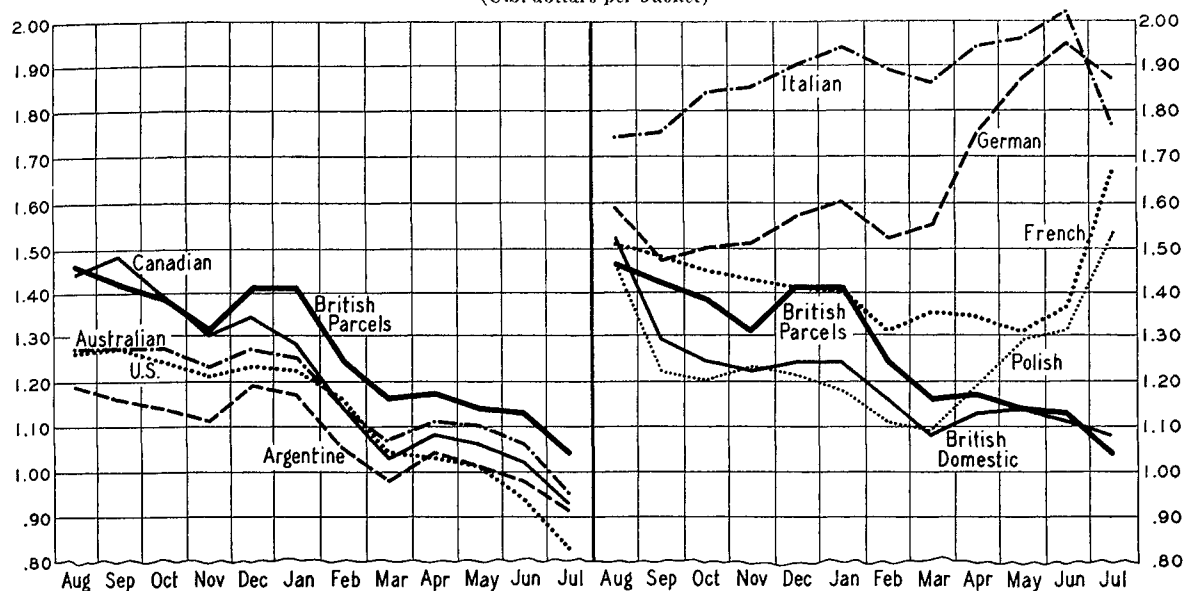
movement. Seasonal movement partly determined the course of Italian prices, but toward the end of the year an increase in the tariff and an unfavorable outlook for new crops were influential. Unfavorable new-crop prospects and an increase in the tariff also were important in causing the firmness of French prices in June and July 1930; seasonal movement was a factor during the year as a whole. Polish prices and British domestic wheat prices reflect principally the influence of seasonal movement, though in these countries also the new-crop outlook was not favorable late in the crop year.

The movement of prices as between the four exporting countries and the United Kingdom was less diverse, but exhibited several striking features. Ordinarily, Argentine prices tend to stand higher in relation to British import prices in the early months of the crop year than in the later months; in 1929-30, however, the unusually big Argentine inward carryover followed by the relatively short crop of 1929, together with a decline in ocean freight rates, combined to reverse this relationship. The relationship between Australian and British prices was not strikingly unusual. Ordinarily Canadian prices tend to stand lower in relation to British import prices in September-December than in May-July following; but the holding movement in Canada in the fall of 1929 (subsequently weakened) disturbed this relationship. Striking features of the United States-British price relationship were the relatively narrow spread in August-October, the months when it is often widest; the widening in December-January; the narrow spread in February, when the Stabilization Corporation became active; and the widening in June and July.

The general course of wheat prices during 1929-30 may be discussed by reference to Charts 35 and 36. Chart 35 shows three-week moving averages of cash prices in the United States, Canada, Argentina, and (imported wheat) the United Kingdom, and serves to show in broad outlines price fluctuations in recent years. Chart 36 (p. 134) shows for 1929-30 the daily closing prices of December and July futures in Chicago, Winnipeg, and Liverpool (with overlapping in December), and of successive futures in

Buenos Aires; it serves to emphasize the short-time fluctuations that are obscured when the record of price changes more complete.

CHART 34.—THE COURSE OF WHEAT PRICES IN TEN MARKETS, AUGUST-1929-30*
(U.S. dollars per bushel)

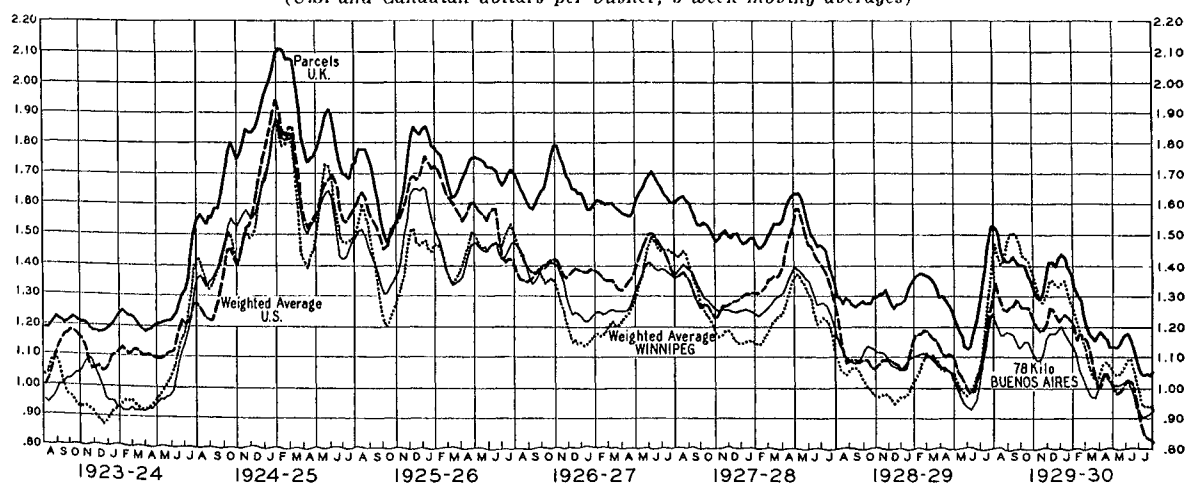


* Data from Appendix Tables XXXI and XXXII. The United States and Canadian prices are the weighted averages there shown.

in the three-week moving averages summarized in Chart 35. Chart 37 (p. 135), The general course of prices can be described differently as one or another of the

CHART 35.—BRITISH PARCELS PRICES, AND WINNIPEG, BUENOS AIRES, AND UNITED STATES CASH WHEAT PRICES, WEEKLY, AUGUST 1923-JULY 1930*

(U.S. and Canadian dollars per bushel; 3-week moving averages)



* Weekly data of price series shown in Appendix Table XXXI. The United States series is the weighted average, five markets prior to December 1926 and six markets thereafter. The Canadian series is the Winnipeg weighted average.

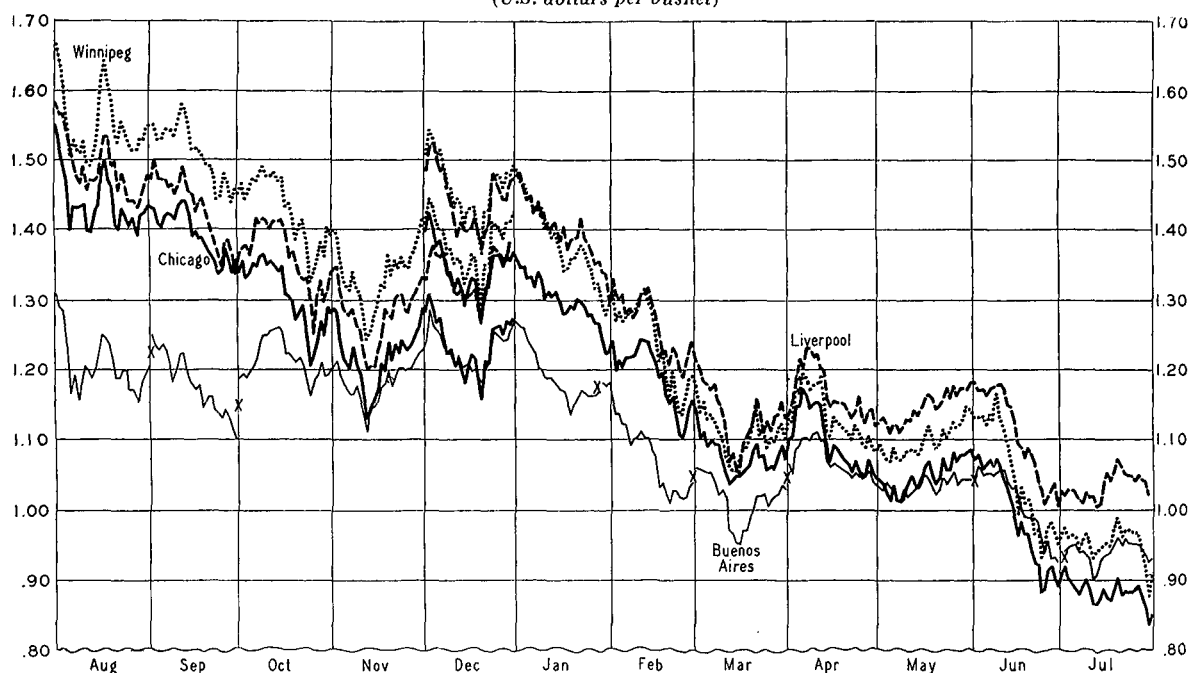
which shows the prices of all futures in the four principal markets in 1929-30, is in several series is chosen as representative, and as greater or less emphasis is placed

upon the short-time fluctuations. It can be described as unusual or as not unusual, depending upon the price series one employs and upon the length of the period through which one chooses to search for analogies. Here we shall restrict our analysis to post-war years, and some attention will be given to relatively small fluctuations which appear more or less prominently in

comparisons between the two years seem to contribute little. The general decline of wholesale prices in 1920-21 was largely a credit phenomenon, a true deflation; that of 1929-30 was much smaller in magnitude, and is not to be classified with certainty as dominantly a credit phenomenon. Moreover, the wheat price decline of 1920-21 represents in considerable part the relaxa-

CHART 36.—THE COURSE OF WHEAT FUTURES PRICES IN FOUR IMPORTANT MARKETS, AUGUST-JULY 1929-30*

(U.S. dollars per bushel)



* Daily closing prices from *Chicago Journal of Commerce* and *Daily Trade Bulletin*, Chicago. The X indicates a change in the future. December and July futures in Winnipeg, Liverpool, and Chicago; and September, October, February, March, May, June, July, August futures in Buenos Aires.

all of the price series shown in Charts 35 and 36.

The crop year 1929-30 as a whole was characterized by a decided downward drift of prices. No decline of equal magnitude—some 50 cents in parcels prices in the United Kingdom—between August and the following July has occurred in post-war years since 1921-22. In 1920-21, however, prices declined much more than this, though the general course was notably different. In spite of the fact that the year 1920-21, like 1929-30, witnessed the onset of business depression and a striking decline in the index numbers of wholesale prices, detailed

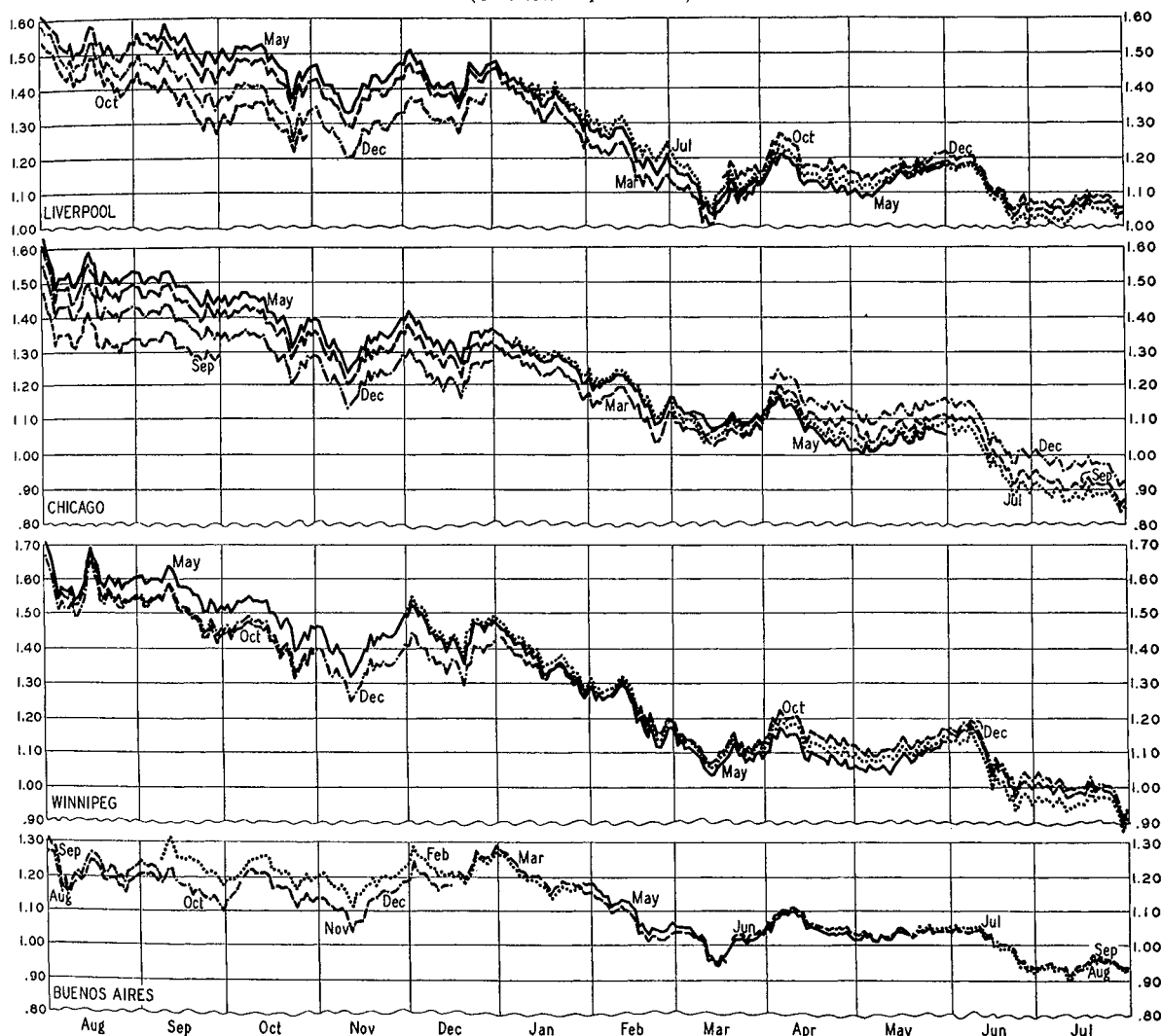
tion of war-time controls, and the resumption of price registration on the wheat futures markets. We are unable to perceive that the wheat price decline of 1929-30 resulted from causes closely resembling the factors that were operative in 1920-21, though the business depression of 1929-30 with its attendant phenomena was presumably a factor that contributed to the decline of wheat prices.

In our judgment the business depression of 1929-30, the crash of stock prices, the decline of wholesale prices in general, had only a minor effect on wheat consumption, and this only in northern Europe. We take

it that their principal effect was to weaken the confidence of holders of wheat, who throughout 1928-29 and at the beginning of 1929-30 were carrying a heavy burden of

pression and declining wholesale prices in general; but the facts can hardly be regarded as established. We are inclined on the whole to suppose that a weakening of

CHART 37.—DAILY CLOSING PRICES OF PRINCIPAL WHEAT FUTURES IN FOUR IMPORTANT MARKETS, AUGUST-JULY 1929-30*
(U.S. dollars per bushel)



* Data from *Chicago Journal of Commerce* and *Daily Trade Bulletin*, Chicago.

stocks. Even in the absence of business depression the burden might have become unbearably heavy; but it is impossible to demonstrate this. If wheat prices were bound to decline because of circumstances in the wheat situation itself, it is reasonable to argue that the decline in wheat prices was a factor contributing to business de-

the disposition to hold stocks was a significant factor in the decline of wheat prices in 1929-30, and that business depression and its attendant features served more or less to weaken the confidence of wheat traders. But we see no way of ascertaining how important the onset and progress of depression may have been. If one examines

several phases of the price movement of wheat in 1929-30, some reason appears to suppose that at least a large fraction of the decline in wheat prices is to be attributed to developments that would be expected to depress wheat prices even in a year of business prosperity.

In retrospect, it seems fairly clear that the crop year 1929-30 was in the first place one in which traders in general, but particularly in North America, had appraised the world wheat situation erroneously early in the crop year, and in the second place one which was characterized by an unusual cumulating flow of bearish news into the markets, without strikingly bullish news convincing enough to offset the bearish.

Erroneous appraisal of the situation early in the crop year seems to have involved current underestimation of the world wheat crops of 1929 and of initial stocks in Argentina, the Danube basin, and the European importing countries, and overestimation of import requirements. As the weeks passed, the trade, crop, and visible-supply statistics demonstrated that on these points the early appraisals had erred on the bullish side. Cumulative totals of weekly trade statistics compared less and less favorably with the totals of 1928-29 as the year wore on; and in the early months Argentine shipments proved to be astonishingly large. Revisions of 1929 wheat crop estimates were almost all larger than the early estimates, except for Argentina. Current statistics of visible supplies in North America particularly, instead of falling below the figures for 1928-29, remained persistently above, at the highest level of post-war years. Perhaps these three sets of statistics, commonly watched closely by the trade, were in combination more discouraging than they had been in any other post-war year, though the point cannot be proved. In addition, the statistics on general business conditions, wholesale prices, and the stock market were more discouraging than any that had appeared in post-war years since the collapse of 1920-21. To offset the bearish news, not much of a bullish cast was in evidence. The Argentine wheat crop, however, progressed unfavorably in August, part of September, and November 1929; in the spring of 1930,

the new-crop developments in the United States, Canada, and France were at times unfavorable; from time to time there were rallies in the stock market, and the declines in wholesale prices and in business activity were occasionally arrested; and toward the end of the crop year the wheat export statistics began to compare more favorably with those of earlier years. With the news that filters into the wheat market from day to day what it was, and the early-season appraisal what it was, the general downward drift of prices in 1929-30 seems comprehensible.

As appears from Chart 36, the movement of futures prices was not the same in the four principal markets throughout the year. It was an unprecedented occurrence for the Winnipeg December future to sell for higher prices than the Liverpool future, as was true in August-December; this circumstance suggests that Canadian traders were more bullishly inclined than traders elsewhere, not unnaturally because the Canadian crop of 1929 was so small. In 1924, when the crop was smaller, no such relationship of futures prices in Winnipeg and Liverpool prevailed; but in that year Argentina did not hold stocks large enough to warrant British traders in ignoring the developments in Canada to the extent that they could in 1929. The large stocks existing in Argentina on August 1, 1929, explain why the Buenos Aires futures stood well below the Liverpool futures; taken in conjunction with the short crop of 1929 in Canada, these stocks help to explain why the Winnipeg future could stand as it did in relation to the Liverpool future.

As the year progressed, Winnipeg futures tended to move into a more normal relationship to Liverpool futures, falling to a discount. Canadian traders found the burden of stocks increasingly heavy, the necessity for larger exports increasingly pressing, the hope and expectation of forcing Liverpool futures to higher levels progressively less likely to be realized.

During most of the year the Chicago futures prices ruled less than 10 cents below the corresponding Liverpool futures. Such a relationship in itself cannot be described as distinctly unusual, for the position was similar in parts of 1923-24 and 1928-29,

most of 1925-26, and some months of other post-war years. It was unusual only in the sense that on other occasions except 1928-29 the amount of wheat available for export was not so large as in 1929-30. It is noteworthy that in January-March 1930, when prices declined sharply, the decline was apparently resisted more strongly in Chicago than elsewhere, except perhaps in Buenos Aires, where the facts cannot be appraised accurately in the absence of quotations for a single future over the entire period. Relative firmness in Chicago is perhaps not an unusual occurrence in mid-winter, but one may infer that the operations of the Grain Stabilization Corporation were of some influence. It is impossible to determine whether or not the Chicago futures would have displayed relative strength in this period in the absence of the agencies operating under the Agricultural Marketing Act; but fairly clear proof that their presence and operations had a tangible effect lies in the fact that the March and May futures were driven above the July for a time in March¹—a position hardly to be thought of as possible under normal operation of the markets and at a time when domestic wheat stocks were so large.

At the end of the crop year, in July 1930, the relationships between futures prices in the several markets became more like normal ones. It is perhaps unnecessary to say that a precise definition of "normal" relationships of futures prices is not available. The relationships differ from time to time, and ought to differ with circumstances of supply and costs of transportation. If a "normal" spread is one large enough to permit wheat to flow freely to export from a country that has wheat to export, then the relationships between Liverpool and Buenos Aires futures were apparently normal throughout the crop year 1929-30, even though they were smaller in the last half of the crop year than in the first; whereas the Liverpool-Winnipeg and Liverpool-Chicago spreads were abnormally small practically throughout the year.

For the year as a whole, the movement of wheat futures prices was erratic; the

day-to-day fluctuations were on the whole of fairly large magnitude, at least by comparison with the three preceding crop years and with 1922-23 and 1923-24. In 1924-25 and 1925-26, however, fluctuations were even greater. The short-time movements of prices in 1929-30 which seem to warrant comment in some detail were the interrupted decline from August 1 to November 11; the advance from November 11 to December 5; the sharp and striking decline, interrupted by a sizable bulge, from December 5, 1929, to March 14, 1930; the advance from March 14 to April 6; and the steep but brief decline in the middle weeks of June. It is pertinent to summarize briefly for these particular periods the developments in the wheat situation which seem to have influenced the price movements; but it is impossible to say precisely how much any single influence affected prices, or even to list with assurance all of the price-making influences.

In some part the interrupted decline of prices from August 1 to November 11 probably represents a period of hesitancy such as often occurs after a sharp advance. Until about the middle of September, prices showed no strongly marked tendency to decline; reports of drought in Argentina and of low yields in Canada perhaps served to offset heavy receipts of wheat at terminal markets in the United States, sharp increases in North American visible supplies, the accumulation of evidence that the European crop was a very large one, and the continuation of heavy exports from Argentina. Directly after the middle of September, when the Canadian crop situation had become more clear, a break in the Argentine drought seems to have been important in depressing prices. The Argentine crop progressed fairly favorably until a little before the middle of November; at the same time visible supplies were increasing, though this usually occurs; the weakness of European demand for import wheat became increasingly apparent as data on exports appeared; stocks were accumulating in British ports; and the American stock market broke sharply. There was little in the news to offset these developments aside from statements in North America that the price of wheat ought to

¹ See Chart 37, p. 135.

improve, the Federal Farm Board's announcement on October 26 of its plans for loans to wheat co-operative associations, and occasional unfavorable crop reports from Argentina.

Between November 11 and December 4, a stream of reports depicting the spread of rust infestation in Argentina seems to have been the major factor in the advance of prices; some strength may have been afforded by recovery in the stock market in the United States.

The interrupted but steep and persistent decline of prices between December 5 and March 14 was the most spectacular price movement of the year. A decline of prices in the mid-winter months is not a strikingly unusual occurrence; but no decline of equal magnitude (over 45 cents a bushel in Liverpool), from a moderately low to a distinctly low level, is to be found in these months of the preceding eight years. It was apparently in this period that the disposition to hold wheat began to be weakened. The outcome of the Argentine crop became moderately well known in December (it was an extraordinarily small official estimate of the Argentine crop that helped the bulge of prices late in December); further crop scares were hardly to be anticipated before spring. The extremely small shipments of wheat in international trade began to assume increasing significance. It was in this period that business depression in Europe began to attract attention, and that the indexes of wholesale prices in many countries began to fall more sharply. Russia began to export wheat. The quantities were not large, but no one knew what to expect, and earlier in the year exports from this source had not been anticipated; indeed, Russia had been regarded as a possible importer. The winter in Europe was very mild, permitting pasturage, restraining the use of the abundant supplies of the feed grains, and giving little cause to anticipate heavy winterkilling of wheat. The Indian wheat crop, soon to be harvested, was progressing favorably. About the only items of news favorable to price increases were the evidence that visible supplies were declining to a level close to that of 1928-29 (though that level itself was extremely high); the operations of the Grain Stabilization Cor-

poration; firmness in the New York stock market; and the relatively small size of the new Argentine crop.

Perhaps it is reasonable to say that the feature of the wheat situation most discouraging to holders of wheat in December-March may be summed up in the term "failure of European demand to develop." Behind this lay, of course, many different developments which we have been considering; for various reasons, the European importing countries were able and chose to import less than seemed probable to many early in the crop year. A particular aspect of the failure of demand to develop seems to deserve special comment. As we have seen, huge stocks of old Argentine wheat piled up in Great Britain in the course of September-November; in these months the British were absorbing a large proportion of the wheat exported to Europe—made willing to do so, perhaps, in some part by the fact that the new Argentine crop was not then made, and because the situation on the Continent remained somewhat obscure. At some time in December or January these uncertainties were removed; and then the British buyers, secure for a time because of their huge stocks, seem practically to have withdrawn from the market. With the outlet for wheat continuing notably small on the Continent, this withdrawal may have been a major factor in forcing a decline of prices.

In time, as British stocks grew smaller, British importers began to buy more willingly. The volume of international trade grew larger, partly because Italy also began to buy, though this is a normal seasonal occurrence. Late in March and early in April severe drought in the United States lent firmness to prices; this seems to have been the principal reason for the advance of prices in late March and early April. Later, the spring reports of European crops were not favorable, especially in France and Italy. The volume of Russian exports proved after all to be insignificant as the weeks passed, and some fears were thereby dispelled. The new Argentine crop proved to be of poor quality. Attention began to fall upon reduction in the world visible supply. The passing days in May and early June 1930 suggested that the Canadian

spring-wheat crop, seeded under favorable conditions except as regards subsoil moisture, was suffering seriously from drought. All of these factors at least help to explain the relative firmness of prices from mid-March to early June, in the face of further decline of business activity and of wholesale prices in general.

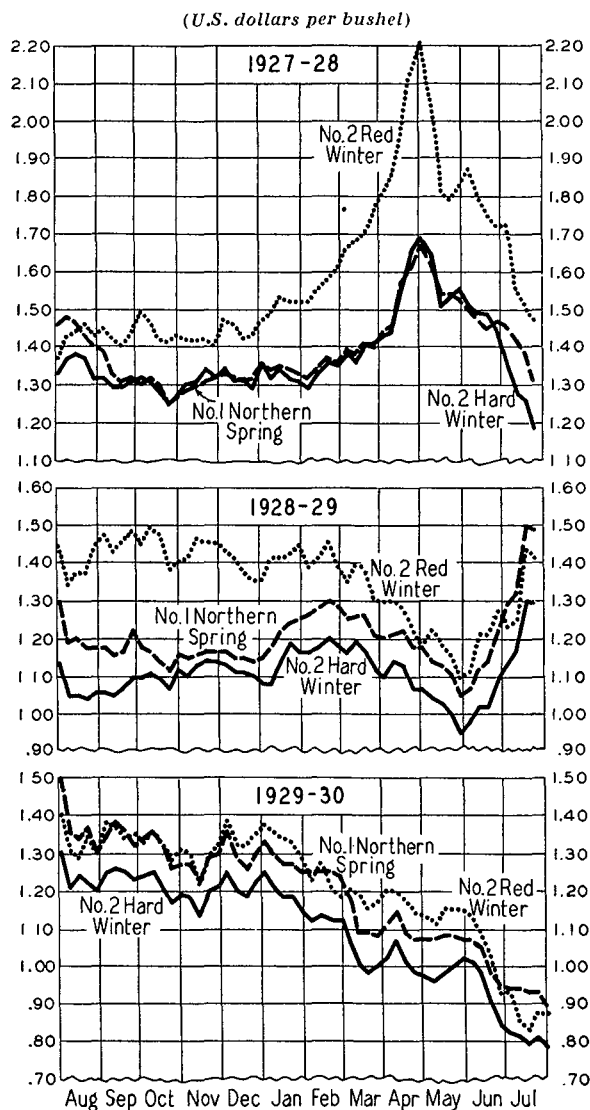
The sharp drop in prices in the middle of June was coincident with timely rains in Canada, that were interpreted to assure a moderate rather than a distinctly small crop in 1930; in the same weeks the prices of industrial stocks on the New York market declined sharply. There was also improvement in the outlook for winter wheat in the United States, and the Grain Stabilization Corporation intimated that it would not employ in the crop year 1930-31 such price-sustaining measures as it had employed in February-April 1930. On the international market, subsidized French exports seem to have exerted pressure. The decline of wholesale prices and of business activity was not arrested.

UNITED STATES CASH PRICES

Price spreads between the three principal types of United States wheat were relatively narrow in 1929-30 as compared with price spreads in the preceding two years. Chart 38, which shows weekly average cash prices of No. 1 Northern wheat at Minneapolis, No. 2 Red Winter at St. Louis, and No. 2 Hard Winter at Kansas City, indicates that in 1929-30 none of the three types commanded such a high premium as did No. 2 Red Winter during the course of 1927-28 and most of 1928-29. Throughout 1929-30 the prices of No. 2 Red Winter and No. 1 Northern were maintained at a somewhat higher level than the price of No. 2 Hard Winter; and during most of the season No. 2 Red Winter slightly exceeded No. 1 Northern in price. However, neither of these price relationships may be considered as strikingly unusual. Only in the spring months of 1930 did the spread between No. 1 Northern and No. 2 Red Winter become at all marked; the widening of the spread during that period was presumably due, at least in part, to relatively unfavorable reports of the progress of the 1930 crop of soft red winter wheat. Toward the close of

the season the price relationship which had prevailed between No. 1 Northern and No. 2 Red Winter was reversed, and No. 1 Northern stood at a premium over both the other

CHART 38.—WEEKLY AVERAGE CASH PRICES OF TYPICAL WHEATS IN UNITED STATES MARKETS, MONTHLY, AUGUST 1927-JULY 1930*



* No. 2 Red Winter at St. Louis, No. 2 Hard Winter at Kansas City, and No. 1 Northern Spring at Minneapolis. Data from *Crops and Markets*.

types of wheat throughout July—the month when uncertainty in regard to the spring-wheat crop was greatest. July premiums for No. 1 Northern have been very common in post-war years; and it has likewise been very common for the spring-wheat pre-

miums to decline, as they did in 1930, during the following August and September.

The relationships prevailing between cash and futures prices in the various markets were distinctly unusual in 1929-30, notably in the months of August-October. At the end of the crop year 1928-29 stocks of old-crop wheat remaining in terminal elevators were unusually large. During the early months of 1929-30 wheat moved rapidly from the farms to the primary markets but moved slowly from those markets to export. Congestion resulted; and a number of the railroads placed embargoes upon shipments of grain to certain of the terminals. These were the major factors which operated to induce traders to put much lower valuations upon cash grain than upon grain futures during the first three months of the season.

Protein premiums were relatively small in 1929-30, as a result of the high protein content of the hard red winter- and hard red spring-wheat crops of 1929.

THE CANADIAN WHEAT POOL AND PRICES¹

During the course of the crop year there has been much comment on the relatively high prices at which Canadian wheat was held. One gains the impression that a good many commentators feel that the relatively high prices of Canadian wheat have been attributable almost entirely to a holding policy on the part of the Canadian Wheat Pool. The Pool is likewise commonly credited with a substantial part in maintaining prices in other markets during the autumn and early winter at levels that appear very high by comparison with those reached in the spring.

The existence of strong support of prices in Canada generally is incontestable. It is clearly revealed in an abnormally narrow spread between Winnipeg and Liverpool futures prices, maintained with extraordinary uniformity through most of the season. One of its effects appears in the peculiar seasonal flow of Canadian wheat to export. There was in Canada an overvaluation of the prospective European imports of wheat and flour generally, an overvaluation shared alike by the pools, private

traders, millers, and speculators. There was likewise an overvaluation of the European requirement for Canadian wheat and flour, an overvaluation also shared in by growers, private traders, millers, and speculators. Finally, there was an overvaluation of the proportion of Canadian wheat required in the European mill mix during that crop year, since the high quality of European wheat and the adaptability of millers and bakers was not fully appreciated. These over-expectations provided a basis for confidence in high wheat-price levels and more particularly for confidence that prices on the unusually short Canadian crop might be held high relative to prices of other wheats. On the background of the price of Winnipeg futures, the foreign representatives of the Canadian pools, the Canadian exporters, and the European grain importers conduct a sort of sample market for the European miller. They were all endeavoring to sell Canadian wheat to the European miller by impressing on him the shortage of high-protein spring wheat, its desirability in milling, and its necessity in the European mix to maintain uniformity of flour. The level of prices at which they held Canadian wheat, however, rested on the level of prices of Winnipeg futures rather than on independent opinions of these grain handlers. In the sense that the maintenance of high prices in the face of unusually slow movement of wheat may be regarded as a holding policy, there was a holding policy participated in by practically all factors trading in Canadian wheat, but most significantly by traders in Winnipeg wheat futures.

How far this general Canadian support influenced prices in other markets is a question that probably can never be answered definitively. About all that can be said is that a strong holding movement in any exporting country ought to make for less selling pressure on the international market than would have occurred in the absence of the holding movement, and hence ought to tend to keep prices firmer than otherwise they would be. But we know of no way of ascertaining what Liverpool prices would have been if Canada had been offering wheat freely instead of holding it firmly. In the comments below we

¹ This section was written by Holbrook Working.

are concerned only to examine the notion that the Canadian holding policy was dominantly a Pool policy. The notion that the Canadian support of prices rested almost entirely on a holding policy of the Canadian Pool is largely, if not entirely, erroneous. It is doubtful whether a holding policy on the part of the Pool alone, not shared by others, could strongly influence Canadian market prices except under extraordinary conditions, such as did not obtain in 1929-30. This possibly debatable point need not be pressed, however, since the record of the Pool's carryover and monthly sales, now available, indicates nothing in the way of a holding policy peculiar to the Pool to which a strong price effect might on any reasonable ground be attributed.

The facts regarding the relation between Winnipeg and Liverpool prices may be briefly summarized. The most extreme level of Winnipeg futures prices relative to Liverpool futures was reached before the harvest of the 1929 Canadian crop. The first quotations on the Liverpool October future in the previous March had been at a level about 10 cents above the Winnipeg future and in late May Liverpool was still 8 cents above Winnipeg, but during the sharp rise of prices during June and July 1929 the Winnipeg October future rose over 20 cents more than the Liverpool future, establishing in late July a spread of about 13 cents over Liverpool, which was maintained with minor fluctuations into October. The corresponding spread between the two May futures was about 3 cents. About the middle of October Winnipeg May wheat declined about 3 cents relative to Liverpool, the prices of the two futures remaining close together until early January. Thereafter Winnipeg May wheat ranged uniformly between a fraction of a cent and 4 cents under Liverpool until late April, after which the spread gradually and irregularly widened to 6 or 7 cents in May. Only during July and August 1930 did the two markets return to a more nearly normal relationship when the new Winnipeg October future declined from about 4 cents to about 15 cents under Liverpool October.

The record since 1922 shows Winnipeg October wheat most commonly selling

about 20 cents under Liverpool October, seldom more than 25 cents under, and only once before for any long period less than about 15 cents under Liverpool. During July and the first half of August 1924, under the influence of serious crop damage in Canada, the Winnipeg October future averaged little more than 10 cents under the Liverpool October future, but in later August declined to more than 15 cents under, where it remained through October.

The comparison of prices of the two October futures indicates that in the autumn of 1929 Winnipeg prices were 25-30 cents higher, relative to Liverpool, than they had ever stood for long during previous years since 1922. The comparison of prices of the May futures makes a less extreme showing. When the spread on the October futures in the two markets was 13 cents, the spread on the May futures was only about 3 cents. In each of the previous three years the May future in Winnipeg had risen by February to within about 10 cents of the Liverpool May future and held or improved its position during the period from February to May. In 1928-29 the Winnipeg May future had stood within 2 cents or less of the Liverpool May future through almost the whole of May. In the autumn of 1929, therefore, the Winnipeg May future was only 5-15 cents higher, relative to Liverpool, than it had stood in the late winter and spring months of the previous three years.

Pool policy is not clearly revealed by statements of Pool officials, for, although they have repeatedly denied the maintenance of a holding policy, there is lacking any specific statement of what they would regard as a holding policy. Even President McPhail's definite statement that "all last summer and fall we lost no opportunity to sell wheat"¹ contributes little because it requires to be interpreted in the light of unstated qualifications. It cannot be taken to mean that the Pool sold all the wheat it could during that period even at current market prices. The Pool frequently utilizes the Winnipeg futures market as an avenue for sales and clearly might have leaned much more heavily on that avenue. For an indication of Pool policy it is necessary to

¹ In a speech delivered in Winnipeg, April 10, 1930, and published in mimeographed form by the Pool.

turn to the record of the Pool's carryover and monthly sales.

Pool sales are naturally and necessarily made at or about current market prices. A holding policy, if adopted, must take the form of a curtailment of sales. Actual withdrawal from the market cannot be thought of, for technical reasons, but considerable curtailment of sales is possible and the equivalent of complete withdrawal may be, and has been, approximated by purchasing futures against sales of cash wheat. Evidence of Pool policy is therefore to be found in a comparison of the movement of Pool wheat with the total movement of Canadian wheat to determine whether Pool wheat has been moved more or less freely than Canadian wheat as a whole.

This basis for judging Pool policy carries implications which deserve to be clearly indicated. In a year in which the movement of Canadian wheat as a whole was slow, owing to high prices, but the movement of Pool wheat normal, the movement of Pool wheat would be heavy relative to the total Canadian movement; this basis of judgment would attribute to the Pool in such a case a policy of pressing sales. An alternative interpretation of the same facts would infer a holding policy as regards non-Pool wheat and a normal policy (neither holding nor pressing sales) on the part of the Pool. The latter interpretation might appear sound, viewed abstractly, but it would neglect important facts in the actual situation. The holding of wheat in consequence of maintenance of relatively high prices in the open market, in a country such as Canada or the United States where futures markets set the general level for the wheat price structure, is not the result of a definitely formulated holding policy; the holding is a more or less incidental result of the price opinions of traders in futures. The maintenance of a normal flow of Pool wheat in the face of high Canadian prices restricting the general flow of Canadian wheat requires not a "normal" policy on the part of the Pool, but a specific decision to press sales.

In the reverse case of low prices of Canadian wheat and a rapid general movement, but with the Pool maintaining a normal movement and therefore taking less

than its share of the total Canadian movement, two alternative interpretations would likewise be possible. It might be said that non-Pool wheat was being pressed for sale while the Pool maintained a normal policy, neither pressing nor holding; or it might be said that Canadian prices were being held low, with the more or less incidental result of a rapid movement of Canadian wheat, against which the Pool was maintaining a holding policy. The latter interpretation, which would be implied in judging Pool policy by the ratio of Pool movement to total movement, would again be the more realistic. For the sake of a realistic interpretation, therefore, we prefer to judge Pool sales policy not by the absolute level of Pool wheat movement, but by the ratio of Pool movement to total movement of Canadian wheat.

The simplest basis for comparison is furnished by the outcome of operations for the entire season, as revealed in the stocks remaining at the end. For such a comparison it is more appropriate to include in the Pool stocks both wheat remaining unsold (which alone is designated by the Pool as its "carryover") and stocks held by the Pool against "open sales contracts"—with some possible minor exceptions both contribute to the total Canadian carryover. In the following tabulation are shown, in million bushels, as of August 31 of each year the Pool's reported "carryover," total stocks of wheat held by the Pool, as reported (for 1927 only) or as estimated by us from the valuation placed by the Pool on the stocks held, and the total Canadian carryover of old-crop wheat.¹

Year	Pool stocks		Total Canadian carryover
	Unsold	Total	
1926	10.3	?	22.3
1927	7.4	10.6	33.3
1928	0.0	15.0	45.2
1929	48.4	80.0	87.1
1930	43.3	50.0	87.1

Because in years of early movement of the new crop the Pool stocks probably include a few million bushels of new wheat, direct comparison of the foregoing figures for

¹ The figures for total Canadian carryover on August 31 are reached by subtracting from the official estimates of carryover on July 31 the quantities exported and milled domestically in August.

Pool stocks and Canadian carryover may in some years exaggerate the relative size of Pool holdings. Certain facts, nevertheless, are fairly clear. In 1927 and 1928, year-end stocks held by the Pool were only about one-third of total Canadian stocks, which is perhaps less than might be expected in view of the fact that the Pool handled in each year about half of the wheat moved into commercial channels. At the end of 1929 Pool stocks were tremendous, accounting for the bulk of the Canadian carryover. Whatever may have been the intention of Pool officials in determining sales policy during 1928-29,¹ the effect on year-end stocks was equivalent to that of a strong holding policy—a policy strong, that is, in relation to what the policy of other traders was. Pool stocks on August 31, 1930, were some five or ten million bushels more than what may be estimated as the Pool's natural share of the carryover of Canadian old-crop wheat, but in view of the fact that the Pool stocks may have included several million bushels of new-crop wheat, and especially in view of the great reduction in stocks from the level at the beginning of the year, it is clear that for the year 1929-30 as a whole the Pool cannot be alleged to have taken less than its share of Canadian sales of wheat.

Much more detailed evidence of Pool policy is available from a comparison of

¹ The *Directors' Report* for the year speaks of "the erroneous impression so much circulated that our policy was to hold up supplies."

² The data on Pool sales are taken from successive annual *Directors' Reports* of the Pool, those for Canadian exports and mill grindings from official statistics. The figures, in million bushels, are as follows:

Period	Pool sales				Exports and mill grindings			
	1926-27	1927-28	1928-29	1929-30	1926-27	1927-28	1928-29	1929-30
Sept.	10.4	15.4	30.0	8.6	17.8	21.0	35.5	13.0
Oct.	14.8	19.5	25.0	8.6	40.6	28.5	53.1	27.4
Nov.	20.5	25.2	22.4	11.8	53.4	62.4	85.1	29.4
Dec.	20.1	11.8	22.5	6.9	52.7	52.9	56.7	20.6
Jan.	17.3	13.7	18.3	2.7	19.4	22.4	28.6	10.2
Feb.	13.7	24.2	15.7	.9	17.0	25.1	22.0	11.4
Mar.	14.6	25.6	15.5	8.6	23.0	26.1	28.5	17.1
Apr.	15.7	22.6	13.5	12.2	25.5	14.4	14.5	8.8
May	21.8	17.4	4.5	21.5	35.3	37.4	35.0	19.7
June	14.3	18.1	20.1	9.6	21.9	28.3	32.6	24.2
July	7.4	17.0	13.6	15.1	11.3	39.2	24.2	26.3
Aug.	17.1	12.4	3.8	23.6	17.5	32.4	17.3	24.6
Total	187.6	222.9	204.7	130.0	335.4	300.2	433.2	232.6

the Pool's monthly sales with the total monthly movement of Canadian wheat. The best available figures on total movement of Canadian wheat for such a comparison appear to be those obtainable by adding Canadian wheat grain exports and Canadian mill grindings. The following tabulation shows the Pool's sales, monthly and over longer periods, expressed as a percentage of the total movement of Canadian wheat into consumption and export, for four years, September 1926—August 1930.²

Month and Period	Pool sales as percentages of total Canadian movement			
	1926-27	1927-28	1928-29	1929-30
September	58.4	73.6	84.5	66.0
October	36.5	68.3	47.0	31.5
November	38.3	40.4	26.4	40.0
December	38.2	22.3	39.7	33.6
January	89.4	60.9	64.1	26.5
February	80.6	96.4	71.3	7.7
March	63.2	98.0	54.5	50.6
April	61.5	156.7	92.5	138.0
May	61.6	46.6	12.9	109.0
June	65.4	64.0	61.6	39.6
July	65.2	43.3	55.9	57.2
August	98.1	38.2	21.7	95.9
Sept.-Dec.	40.0	43.7	43.3	39.7
Sept.-May	52.3	60.4	46.6	51.9
Sept.-Aug.	55.9	57.1	47.3	55.9

In general, an unusually low ratio of Pool sales to total Canadian movement may be taken as indicative of a holding policy on the part of the Pool; an unusually high ratio, as indicative of a policy of pressing sales. In September and frequently in October, however, a high ratio of Pool sales to total movement is to be expected with only a normal rate of sale of Pool wheat, since the swelling tide of the autumn movement of wheat is reflected in Pool sales before it appears in the volume of wheat milled and exported. For a similar reason, it is to be expected that the ratio of Pool sales to total movement should be low in November and frequently also in December. Pool policy during the autumn and early winter may be judged with reasonable confidence only from the ratio of Pool sales to total movement for the entire period, September-December.

The record for 1929-30, as revealed in the tabulation above, shows little evidence

prior to January of anything that could be designated as a holding policy on the part of the Pool. The record for June and July 1929 deserves to be brought under consideration since it was in these months that the relatively high level of Canadian prices characterizing most of the season chiefly developed. In these months Pool sales appear to have stood at or above a normal ratio to the total movement. The low ratio of Pool sales for August may represent a temporary holding policy or it may reflect a normal proportion of light total sales of Canadian wheat with exports fairly well sustained on the basis of earlier sales. Pool sales relative to the total movement of Canadian wheat for the four months of September-December were distinctly low, but they were almost equally low in each of the other years. It seems to have been a regular policy of the Pool to restrict sales relatively during the period of heavy crop movement.¹ Pool sales policy for the period September-December 1929 as a whole appears to have diverged little from the policy pursued in earlier years.

During January and February, however, Pool policy diverged widely from the usual: Pool sales were restricted sharply at a time that in previous years had witnessed an expansion, relative to general Canadian movement. This holding policy, if such it be called, was short-lived. High sales in March, April, and May brought the seasonal total of Pool sales as of the end of May back to a normal relation to the total Canadian movement.

In brief, then, the record of Pool sales of wheat gives clear evidence of a holding policy, other than the usual moderate restriction of sales in September-December, only in the months of January and February. From other information one may infer that the holding policy was adopted late in January and terminated before the end of February, and that it took the form of purchases of futures against sales of cash wheat rather than of sharp curtailment of cash sales.

¹ Whether Pool wheat is actually moved more slowly in this period than other wheat or whether a similarly heavy movement is partially offset by purchases of futures does not appear from the published data and is unimportant for present purposes.

Little price influence from this short-lived holding policy of the Pool can be discovered. If the dates of Pool buying of futures were known, some temporary price support might be discernible, but January and February as a whole saw some of the severest price declines of the year. There is a suggestion of a small influence on the relative position of Winnipeg and Liverpool wheat futures. Late in January the Winnipeg May future rose from about three cents under the Liverpool May future to one cent under, held this position until near the end of February, and then fell back to three cents under Liverpool. These small changes appear to constitute about all the price influence that may be judged, even rather uncertainly, to have resulted directly from a "holding policy" on the part of the Pool.

In retrospect, it appears that the Pool might have been wise to have pressed sales in the face of the relatively high prices and consequent slow general movement of Canadian wheat during 1929-30. The fact that the Pool was content with approximately its share of the light general Canadian movement and did not press sales in the autumn and early winter may have been an important factor in sustaining Canadian prices. President McPhail suggested this view when he said in April 1930, "If the Pool had taken a more aggressive attitude in deliberately pressing wheat on the market, under the conditions obtaining last fall . . . , we would simply have precipitated the condition which obtained several weeks ago, earlier in the season, and the Pool would have been held up everywhere as the organization responsible for such a condition." The influence of Pool policy on wheat prices in Canada and elsewhere may be as great as is implied by this statement, but the Pool has at various times adopted a policy of pressing sales and at other times a policy of holding, and it is difficult to demonstrate any strong influence of such policies on wheat prices either in Canada or elsewhere. The Pool is not generally looked to as a leader of market opinion in Canada and the Winnipeg futures market is probably too broad to be greatly influenced by such a volume of sales or purchases as the Pool can put upon it.

VI. WHEAT IN THE FIRST YEAR OF THE AGRICULTURAL MARKETING ACT¹

A review of the crop year would be incomplete without a section devoted to the operations in respect to wheat carried out in the United States under the Agricultural Marketing Act. The Act became law on June 15, 1929, and the first year corresponded with the crop year 1929-30. The Agricultural Marketing Act was an innovation and the operations did not get under way until well into the crop year.

Desirable as it is to review the operations undertaken in the first year of the Agricultural Marketing Act, it is impossible to do so with satisfaction. Historical opinion is founded largely on the study of documents. Newspapers have their place in the files of the historian, but the crucial material is contained in the archives of governments. The records of the Federal Farm Board, and of the subsidiaries and agencies created under it to handle wheat, are private and confidential until released. The Farm Board has issued a limited number of releases dealing with wheat. For the most part, these releases have brought out statements of policy rather than descriptions of procedures. The aims of the Federal Farm Board have been portrayed; but the specific methods currently employed to effectuate these aims have not been stated. In short, the specific program and progress of operations through the crop year is not to be found in official reports.

When engaged in more or less embittered trade conflicts with middlemen, agricultural co-operative associations generally have felt it expedient to maintain the same secrecy in the conduct of their affairs which their independent competitors maintain. This point of view seems to have been accepted by the Farm Board. Doubtless the record will sometime be made public, in reports to Congress or otherwise, or possibly developed in Congressional investigations. At this time the commentator is limited to a set of brief official releases, largely exhortative rather than descriptive, and to the recently issued first annual report of the Farm Board. Available also are innumerable press comments, semi-official hearsay, the more or less motivated gossip of

the trades, the more or less biased contentions of supporters and opponents of co-operative marketing, and inferences to be drawn after the facts in respect to occurrences on the market. Lacking for the commentator in particular is a public report of the loans to the several co-operative units in the Farmers' National Grain Corporation and to the Grain Stabilization Corporation. The annual report of the Federal Farm Board may be objectively described as a restrained document. So far as wheat is concerned, the report may fairly be said to represent an *apologia* in respect to the marketing activities and a *pronunciamento* on agricultural doctrines and policies.

MEMBERSHIP AND GENERAL ORGANIZATION
OF AGENCIES

The Federal Farm Board is an independent and autonomous institution operating under the Agricultural Marketing Act. The Secretary of Agriculture is ex officio a member of the Farm Board. The federal Department of Agriculture is not under or over the Federal Farm Board. It lies in the spirit of the Agricultural Marketing Act to regard the Secretary of Agriculture as a liaison between the Department of Agriculture and the Federal Farm Board, and this intent is clearly revealed in the Congressional debates. The Farm Board took over the division of co-operative marketing of the Department of Agriculture, but in other ways has sought to develop co-ordination.

The Farm Board represents the sixth large institution set up by the Congress to supplement, in a sense, the Cabinet departments of the government. The history of the Interstate Commerce Commission, the Federal Trade Commission, the Tariff Commission, the Federal Reserve Board, and the Shipping Board had made it clear that under our form of government the membership of such a board reflects regional and political considerations, class influence, and social philosophy, as well as technical competence. It was the desire of many in the farm bloc in the Congress that the Board should consist of farmers; it was the hope of economists and of students of government that the Board might consist of

¹ This section is the work of Alonzo E. Taylor.

specialists. Every such board represents a choice of expedients and an evaluation of alternatives. In an entirely proper sense, the Farm Board is a balance between the several agricultural elements.

The Chairman of the Board was not supposed to represent a crop, but was selected on the basis of outstanding competence, long leadership, and wide experience in national and international business. In the case of four members of the Board, the appointments went to men who had long been administrative leaders in co-operative marketing and were technically trained specialists. But in the case of the representative of the grains, it was not found possible to secure as member one of long experience in co-operative marketing and a technical specialist in grain. The Chairman of the Board was indeed a specialist in the art of the harvesting of grain; but he possessed no administrative experience in co-operative marketing and was not technically trained in the handling and utilization of grain.

When the Board was set up on July 15, 1929, one place was unfilled, the member to represent the grains. Later, on August 1, S. R. McKelvie was appointed to complete the Board, but did not become an active member until early in September. Like two Secretaries of Agriculture since the war, S. R. McKelvie was a successful journalist: the part-owner and editor of the *Nebraska Farmer*. He had enjoyed a conspicuous political career in his state and became governor of Nebraska in 1919. He had been engaged in agriculture in a large way, but his experiences were rather in the direction of animal husbandry than of wheat culture. He was a member of the Mid-West Grain Growers Association. He was not conversant with the intricacies of grain marketing nor trained in the technicalities of grain milling. In his testimony before the Senate Committee on Agriculture and Forestry, he testified that he did not possess "experience in the management of concerns engaged in marketing of farm products."¹ It was generally recognized that the appointment of

the member to represent the grains was attended with peculiar difficulties, and it was clearly the hope of the Administration that, in an alert, progressive, and sympathetic member of the Board, purely technical qualifications could be dispensed with, since these should be secured in the management of the marketing agencies which would be set up to represent both the Board and the co-operative marketing associations. Nevertheless, it was an unpropitious beginning to undertake the marketing of the wheat crop without having on the Board a member who thought in the language of the professional grain dealer, understood the intricacies of exchange trading, and was familiar with the practices of milling. During the first year of the Farm Board, the member representing the grains has exerted his efforts largely at the grower end of the problem, the extension and expansion of co-operative organization. This immediately pressing development did not, however, bear on the contextual administrative problems of the Farmers' National Grain Corporation and the Grain Stabilization Corporation.

Instead of being able to plan for the new crop year before the harvest of wheat, the agencies established to operate under the Agricultural Marketing Act entered into their activities after the winter-wheat crop was harvested and partly marketed. Indeed, to judge the agencies operating under the Agricultural Marketing Act as they appeared at the close of the crop year ending in June 1930, it is not too much to state that they did not get under way until after the spring-wheat crop had been harvested and partly marketed.

The first meeting of the Farm Board was on July 5, 1929. Discussion on the foundation of a national wheat marketing organization was begun directly after the first meeting of the Board,² with participation of thirty-seven farm organizations, but the articles of incorporation of the Farmers' National Grain Corporation were not filed until October 29.³ The organization included wheat pools, farmers' elevators, and representatives of the national Farmers' Union, the Farm Bureau Federation, the National Grange, and the Farmers' Equity Union. Thus constituted, the Corporation

¹ *Hearings . . . on Confirmation of the Members of the Federal Farm Board*, September 24 to October 4, 1929, p. 266.

² Federal Farm Board press release of July 27, 1929.

³ Federal Farm Board press release of October 29, 1929.

contained heterogeneous and in part inharmonious elements. The Board of Directors for the first year included nineteen men, divided into five districts, representing different co-operative units. The selection of directors, president, and manager was not rapidly effected. The first president was S. J. Cottingham of Iowa. He was succeeded by C. E. Huff, long identified with the co-operative movement in Kansas. On December 20, 1929, W. G. Kellogg, a grain merchant of Minneapolis, was made general manager. On February 1 a wheat advisory commodity committee was formed,¹ which recommended to the Farm Board the creation of a Grain Stabilization Corporation. This was set up by resolution of the Board on February 11, 1930, with W. G. Kellogg as president and manager. On March 8, G. S. Milnor, a miller of Alton, Illinois, was appointed vice-president and manager of the Stabilization Corporation. On April 24 the managements of these two subsidiaries were consolidated, W. G. Kellogg retiring from the Farmers' National Grain Corporation, and G. S. Milnor being installed in the dual position of president of the Grain Stabilization Corporation and general manager of the Farmers' National Grain Corporation. On June 30, 1930, the membership of the Farmers' National Grain Corporation included twenty-five stockholding associations representing farmers' elevators, terminal sales agencies, and pools that embraced more than a quarter of a million producers.²

We regard the working organization of the Farmers' National Grain Corporation and the Grain Stabilization Corporation as having been first effected on April 24, when the two institutions were co-ordinated under unified management. All previous administration of these subsidiaries was experimental and tentative, both as to internal operations and external relations to the trades. This was almost ten months

after the opening of the crop year 1929-30, more than ten months under the Agricultural Marketing Act. We realize that this interpretation of the date of effectuation of organization does not coincide with the views of the grain trade or of the radical members of the farm bloc. The grain trade charges dilatory incapacity in organization; the radical agrarians charge dereliction in the setting up of "price stabilization." The detached observer seems bound to agree that there is some truth in both criticisms. We regard the delays as referable mainly to the innovation in the Agricultural Marketing Act, to the newness of the Farm Board, to the time required for a group of men of divergent interests and experiences to reach a common ground of opinion and confidence, to the time-consuming demands of farm groups pressing for action on individual cases, and to the exceptional circumstances which developed in trade and finance in the fall of 1929. In making this arbitrary qualification we are fully conscious that it represents a broad exculpation of the Farm Board which cannot be sustained from the record. Against it will be urged the rejoinder that trading in wheat has been so long established and is technically so well understood that confusion and indecision ought to have been readily avoided. Also, it is clear that in the matter of purely technical decisions prior to April 1930 the Farm Board and its subsidiary corporations did not make use of expert advice freely available to them in quarters that could not have been suspected of insincerity or motivation.

Inevitably under these circumstances the Federal Farm Board and the several subsidiaries and agencies created under the Act to deal with wheat spent the year trying to catch up with the procession of wheat growers, middlemen, and millers. Since the new agencies started late, developments in the market combined to make them follow rather than lead. The wheat market of the crop year 1929-30 was in many respects the most peculiar and exceptional season since the war, which made the late entrance of the agencies operating under the Agricultural Marketing Act all the more provoking.

Any undertaking to appraise the market-

¹ The committee consisted of F. J. Wilmer of Washington, John Manley of Oklahoma, William Settle of Indiana, J. A. Schnitzler of Montana, E. H. Hodgson of Kansas, representing growers, and W. G. Kellogg of Minnesota and Bert Lang of Missouri representing "processors" and "handlers" of wheat.

² Cf. *First Annual Report of the Federal Farm Board for the Year Ending June 30, 1930* (Washington, 1930), p. 8.

ing of wheat under Farm Board policy encounters the question of the responsibility of the Farm Board. The Farm Board, like the other commissions in the national government, is functionally an autonomous body. The wide powers conferred on the Farm Board in the Agricultural Marketing Act are permissive rather than mandatory; the Board has wide leeway in the determination of policy. The Congress will hold the Board responsible for its policies and acts, and this is a sound attitude to be adopted by the public—the wheat producers, the grain traders, the millers, and the consumers. The responsibility of the Farm Board for the conduct of the several agencies which have been formed under the Agricultural Marketing Act is an important question. So far as we are aware, the Farm Board has never specifically delineated spheres of responsibility. The Farmers' National Grain Corporation represents a centralized merger of a large number of agricultural associations qualifying under the Capper-Volstead Act. In a functional sense it corresponds with the Central Selling Agency of the Canadian Wheat Pools. The directors of the Farmers' National Grain Corporation represent component units, with direct responsibility to them. But it is also the intermediary between the Farm Board and the co-operative associations, and in a sense must be regarded as a subsidiary of the Federal Farm Board. When loans are made by the Federal Farm Board to any of the marketing agencies operating through the Farmers' National Grain Corporation, the policies of the Board must be reflected in these transactions. Whenever a co-operative unit enjoys a commodity loan or a facility loan, the lending body, the Farm Board, carries a responsibility.¹ We therefore feel it justified to make the inference that operations of the Farmers' National Grain Corporation reflect Farm Board policy, that the Board carries responsibility for the central marketing agency it has helped to create, and

must participate in the praise or blame to which the Farmers' National Grain Corporation may be entitled.

In respect to the Grain Stabilization Corporation, the responsibility of the Farm Board is still more direct. A stabilization corporation is a creation from above; it is not built up from below. The Agricultural Marketing Act provides that on recommendation of a legally constituted advisory committee the Farm Board may set up a stabilization corporation which becomes an incorporated entity. It seems impossible to view a stabilization corporation as anything different from a servant of the Board, and this interpretation is reinforced by a reading of the Congressional debates and the report of the hearings of the Senate Committee on Agriculture and Forestry (September 24 to October 4, 1929) before which appeared the newly appointed members of the Farm Board. The loans of the Farm Board to the Stabilization Corporation have a different status and meaning from the commodity loans and facility loans extended to the Farmers' National Grain Corporation and its component units. For a short time the Farmers' National Grain Corporation and the Grain Stabilization Corporation operated without effective co-ordination; but since G. S. Milnor became the head of both organizations their operations have been co-ordinated. The unit management of the two corporations itself speaks for the direct responsibility of the Federal Farm Board for the policies and acts of both.

Three broad statements of policy in respect to wheat were enunciated by the Farm Board during its first year: (a) development of co-operative associations, (b) transfer of distributive functions from the private concerns to co-operative associations, and (c) reduction of wheat acreage in the direction of the level of domestic requirements. In the development of these policies the particular circumstances of the crop year had some influence; but under other circumstances these same policies would still have been formulated. In the interest of objectivity the near view and the far view should be held as discrete as possible. The appraisal of the year may well follow this order.

¹ In the report of the address on April 30, 1930, by Chairman Legge before the United States Chamber of Commerce stands the following statement: "In all these organizations provision is made for the Farm Board having a voice in their policies only so long as they are indebted to it."

ORGANIZATION OF WHEAT GROWERS' CO-OPERATIVE ASSOCIATIONS

The historical course of co-operative association of wheat growers in the United States is strewn with wreckage. The innumerable failures were due in large part to regional circumstances. We have four rather distinct wheat-growing regions. We raise spring wheats and winter wheats, soft wheats and hard wheats, bread wheats and macaroni wheats. In some places wheat is a rotation crop, in other places the sole crop; it is raised both intensively and extensively. From a fourth to a third of the crop in different years does not meet the standard specifications of United States flour mills grinding for the domestic trade. The range of production costs is wide, running from less than 50 cents to over two dollars per bushel. There is competition between regions and between wheats in the same region. Under these circumstances, there is no sentiment of class solidarity among wheat growers in different regions such as exists in Canada. Indeed, it has never been possible to bring into effective expression the sense of solidarity of the wheat growers of any one region.

Co-operative association of wheat growers follows one of two lines: pools or farmers' elevators. Both are well exemplified in Canada where the United Grain Growers, Ltd. (an extensive farmers' elevator organization), operates side by side with the three provincial wheat pools. Wheat pools have been conspicuously unsuccessful in the United States, and when the Farm Board entered the picture the regional southwestern pools were the only ones that could be called successful. There were many small farmers' elevator companies, none as large as in Canada, but some larger sales agencies. The growers' elevator companies usually handled all grains and were sometimes purchasing co-operatives as well. Many of them were not farmer-owned or farmer-controlled, but were under the masked ownership of country merchants or rural banks. Indeed, some of the so-called farmers' elevators were under the masked control of line elevator companies. A third entity has more latterly developed, the terminal sales agency. The Agricultural Marketing Act sponsored no particular form of

co-operative association, and it was obviously the intent of the Congress to admit all organizations which qualified under the Capper-Volstead Act. All three types were brought into the national organization.

In the beginning it seems to have been generally assumed in Canada that the Farm Board would undertake, or at least favor, the organization of regional wheat pools, and this course was urged by many farm leaders in the United States. This, however, the Farm Board has not done, bringing down on its head the criticism of the proponents of wheat pooling as the only effective form of co-operative marketing. Instead, the Farm Board undertook to organize a farmers' national grain corporation (and subsequently a stabilization corporation), supplemented by terminal branches in the principal markets to care for regional needs. From the country, into the terminal agencies, and finally into the Farmers' National Grain Corporation were pointed the existing wheat pools and the large and small farmers' elevator companies qualifying under the Capper-Volstead Act. As the centralizing organization was worked out, the national corporation was grower-owned and grower-controlled. In its first year the Farmers' National Grain Corporation had among its organizers representatives of the following organizations: National Farmers' Elevator Grain Company, Co-operative; Farmers' Co-operative and Educational Union; Northwestern Pools; Central States Pools; Southwestern Pools; Farmers' Union Commission Agencies; Farmers' Co-operative Commission Company of Kansas; Montana, Minnesota, North and South Dakota Farmers' Elevator Associations; Farmers' Equity Union and Grain Commission Agencies; Illinois and Iowa Farmers' Elevator Associations; Ohio, Indiana, and Michigan Farmers' Elevator Associations; American Farm Bureau Federation; National Grange.

Branches of the central corporation were established at Portland and Pendleton, Oregon; Los Angeles, California; Seattle and Spokane, Washington; Ogden, Utah; Denver, Colorado; Minneapolis; St. Paul, and Duluth, Minnesota; Kansas City and St. Louis, Missouri; Wichita, Kansas; Omaha, Nebraska; Enid, Oklahoma; Cedar Rapids,

Iowa; and Indianapolis, Indiana. The affiliations at the beginning of the new crop year included wheat pools with a membership of 80,000 growers and over 2,000 elevator units with a membership estimated at 400,000. There are a number of fairly prominent co-operative grain marketing associations which are not members of the Farmers' National Grain Corporation.

The co-ordination of growers has been weakest east of the Mississippi and west of the Rocky Mountains, strongest in the hard winter-wheat region. The number of wheat growers included has not been placed on public record. As developed during the first year of operations, the growers affiliated with any of the co-operatives joined into the Farmers' National Grain Corporation enjoyed three choices of marketing procedure. The grower could sell his grain on delivery at the price of the day. Or he could store his grain, receive an advance, and later order it sold at his pleasure. Or he could deliver his grain to a pool, receive an advance, and have a final settlement based on pro rata accounting as of the grade. The combination of these several procedures obviously introduced difficulties in the accounting of joint and separate costs.

It has never been announced in what proportion the wheat of the United States has been sold through co-operatives of all types included under the Farmers' National Grain Corporation. In the Farm Board press release of July 26, 1929, it is stated that "at present approximately 40 per cent of all grain grown in the United States is marketed co-operatively at country elevator points." In the Farm Board press release of August 7 was reference to a "meeting of the grain marketing co-operatives of America, representing more than 40 per cent of all the wheat and other grains grown in the United States." In the Farm Board press release of October 29 stands the following statement referring to the Farmers' National Grain Corporation: "The organization will have adequate capital and if given the support of existing farmer-owned grain marketing associations will handle annually a volume considerably in excess of 500 million bushels of all grains."

Just how much wheat of the 1929 wheat crop was handled has not been placed on

public record. Wheat turned in by pools is one thing; wheat disposed of on the cash market for members of the farmers' elevator companies is another thing; wheat obtained in liquidation of loans is another thing; non-member wheat bought on the cash market is another thing; and finally, wheat secured through delivery on wheat futures bought by the Farmers' National Grain Corporation or the Grain Stabilization Corporation is another thing. At the close of the crop year the Grain Stabilization Corporation held possession of something over 60 million bushels of wheat. The highest figure we have heard suggested for the wheat handled on all accounts during 1929-30 is 200 million bushels, which must include the wheat in the carryover held by the Stabilization Corporation. Since the merchandised fraction of the crop must have amounted to over 700 million bushels, it follows that the proportion under Farm Board control was less than a third. While this represents considerable expansion, the proportion under control is far too low to maintain centralized marketing without the active support of the Grain Stabilization Corporation.

We have the impression that it will later be found expedient to separate the wheat pools from the farmer elevator companies. Without entering into detailed discussion, we state the view that the two types of co-operative marketing work well enough side by side but not hand in hand. We have the feeling that representation of the large policy organizations of agriculture, such as the American Farm Bureau Federation and the National Grange, may turn out to be not advantageous in a corporation devoted to the marketing of a single commodity. Be this all as it may, it seems clear that wheat growers' co-operative associations must be greatly expanded if the agencies under the Farm Board are to obtain that control over the crop which is necessary for effective merchandising. The past experiences in co-operative marketing of wheat in the United States make us distrust the outcome of more expanded efforts in this direction, and the marketing of wheat in the first year of the Agricultural Marketing Act has not served to allay this distrust. Also, with respect to the co-operative organization itself,

we cannot take the numerical statements of the co-operative units included in the Farmers' National Grain Corporation at their face value as corresponding evidence of growth in co-operative spirit.

Our views on co-operative marketing of wheat differ from those evidently accepted as guiding policy by the Farm Board during its first year. In joining a co-operative association, the signature must represent individual conviction. Enduring co-operatives cannot be organized on the basis of financial expediency, to take advantage of government loans; such a foundation cannot be expected to last. Whatever the excesses of sentiment and the errors of judgment displayed by the wheat poolers of Canada, these provincial pools sprang from the soil, were built upward from individual farms, and represent the co-ordinated faith of growers who took their own risks in a movement which was at once a social crusade and a commercial venture. This spirit and viewpoint we find lacking as a group characteristic in the wheat growers who have joined the Farmers' National Grain Corporation. Awaiting future developments with objective expectations, we remain unconvinced that enduring co-operative associations can be constructed from the outside.¹

CONTRACTION OF WHEAT ACREAGE

The adjustment of wheat supply to demand came early before the Farm Board, and the position of the Board was formally revealed in the address of Chairman Legge, before the meeting of the American Farm Economic Association late in December 1929. It is the view of the Board that in the United States growing wheat for export cannot be profitable to wheat growers as a class, and that the commercial interests of the group would be advanced by contraction of acreage toward the level of domestic requirements, with the consequent rise in domestic wheat price behind the tariff wall. In the view of the Board, with the return of Russia as wheat exporter on a large scale and with continuation of prob-

able trends in supply and demand in the world, the world price level of wheat cannot be expected to be high enough to make wheat growing for export remunerative as a branch of American agriculture. Since the Farm Board has no faith in any scheme for selling the fraction of the crop to be consumed domestically at a higher level, while selling the fraction to be exported at a lower level, contraction of wheat acreage is the only way of making the tariff on wheat effective. In the beginning, the public statements of the Chairman of the Farm Board were rather broad and statistically somewhat dogmatic. For example:

It isn't a happy thought to the average farmer to think he might have to reduce production, but some day he will get it through his head that four bushels of wheat at \$1.50 a bushel is \$6.00 but five bushels at \$1.00 a bushel is only \$5.00. That percentage of reduced production, 20 per cent less, would easily result in a return of 20 per cent more, could it be applied this minute. A 20 per cent reduction in what he produces would bring his supply within the tariff barriers which today are practically of no use to grain growers. He wouldn't have any trouble in getting 20 per cent more for 20 per cent less grain. [From remarks of Chairman Legge in Farm Board press release of October 23, 1929.]

. . . . A 20 per cent reduction on an average of what the farmer produces would make the tariff on grain effective, and give him a higher level of prices. I think it is conservative to say that 20 per cent less production would bring him 20 per cent more money than he is now getting for what he produces. [From remarks of Chairman Legge in Farm Board press release of January 11, 1930.]

In asking the wheat farmer to reduce his acreage the Board is not asking him to reduce his income. Instead the Board confidently believes his income will be improved. If he could get more money for four bushels of wheat than he now gets for five, what is the incentive for raising the extra bushel, exhausting the fertility of the soil and going to the extra labor of raising it, only in the last analysis to reduce his income, not to increase it?

Another question we have to face is what farmers will do with the land released from wheat production. The most complete answer is that the farmer would be better off and his revenue improved if he didn't do anything with it. Summer fallow of the ground or putting it back into pasture would conserve the fertility of the soil until such time as there was need for it. [From remarks of Chairman Legge in Farm Board press release of April 16, 1930.]

Subsequently, the position of the Farm Board in respect to the degree of reduction of acreage recommended has been some-

¹ Cf. "A National Wheat-Growers' Co-operative: Its Problems, Opportunities, and Limitations," *WHEAT STUDIES*, January 1926, Vol. II, No. 3.

what moderated.¹ The Chairman of the Farm Board made addresses in each of the four main wheat regions, on some occasions personally supported by the Secretary of Agriculture, in furtherance of the policy of adjustment of supply to demand through contraction of acreage.

The reception accorded to this policy outside of agriculture has not been especially critical, since it is accepted that in the adjustment of supply to demand, curtailment by producers is in order, except for goods for which demand is readily susceptible of stimulation through intensification of merchandising efforts. Old-fashioned mercantilists object to any curtailment of exports; some non-mercantilists urge that a continuation of export of wheat will be needed to pay for imports required in the expanding scale of living and to balance the international account. Grain exporters, flour millers, and manufacturers of containers face loss of business with curtailment of wheat acreage. The public discussions have given new illustrations of the familiar fact that producers agree that aggregate production must be adjusted to demand, but that each group or unit tends to find that its business constitutes an exception. That prices tend to follow costs has not been adequately considered in the discussions.

Apart from general considerations, the Farm Board program of contraction of wheat acreage has been rather critically received in some state colleges of agriculture, by some specialists in farm management, by many wheat growers themselves, and by banks and merchants in the regions most likely to be affected. The specialists devoted to farm management, agronomy, and diversified agriculture rightly feel that the pronouncements of the Farm Board contained too much exhortation and too little exposition; the program carried too much the appearance of a blanket reduction, a horizontal contraction without adequate consideration of types, varieties, and qualities of wheats. Each wheat grower has an individual problem in which gross and net income per farm tend to stand out more

prominently than price of wheat per bushel. Low-cost producers, especially in the newer areas being developed under heavy-power machinery, resent being advised to contract a business which they find profitable. Growers who raise high-grade wheats, of which there is often, indeed almost usually, some shortage finding expression in premiums, do not welcome the suggestion of contraction, but instead point to the growers of the lower-grade wheats undesired by American mills, which perforce must seek an export market. Finally, it seems clear that up to the present the Farm Board policy of contraction of wheat acreage has not become class policy. We have the feeling that exhortation of the individual wheat grower has little prospect of success; to be effective the policy must become the program of the wheat growers co-operatively associated.

The effect on the acreage planted for the 1931 crop is conjectural but apparently not promising. Low price at the time of the seeding of the winter-wheat crop may have had some effect on planted acreage and the price at the coming time of the seeding of the spring crop may have some effect. Favorable or unfavorable conditions for seeding have usually a significant effect on the acreage of wheat planted. Whatever the planted acreage turns out to be, it will be difficult to determine to what extent any change has been due to Farm Board policy rather than to decisions reached by growers along individual and accustomed lines of farm policy. The Farm Board apparently hopes for a reduction approaching 5 per cent, regarding this as the first step. But advices from the field do not seem to support so high an estimate.

THE GRAIN TRADE AND THE DISTRIBUTION ACTIVITIES OF WHEAT GROWERS

It was announced in December 1929, on behalf of the Farmers' National Grain Corporation, that it expected to acquire elevators in terminal markets;² that the wheat growers intended to carry out all distributive functions, including collection in terminals, processing and mixing, and selling to domestic mills, to exporters, to grain importers, and to mills in importing coun-

¹ Cf. *First Annual Report*, pp. 34-36.

² See also Federal Farm Board press release of October 29, 1929.

tries.¹ In short, readers of the announcement could infer that the wheat growers included in the co-operative associations under consideration intended to take over from existing middlemen the entire business of handling their products.

This policy, forecast in the earliest activities of the Farm Board and amplified later in the transactions of the Farmers' National Grain Corporation and the Grain Stabilization Corporation, seemed to take some line elevator companies and some terminal elevator concerns by surprise. By the close of the crop year, the independent grain dealers in the country and in the terminals had become thoroughly aroused to the commercial danger to their interests in the evolution of "the invasion of government into private business." Since the subsidiaries of the Farm Board and the co-operative units could borrow money from the revolving fund of the Farm Board more cheaply than independent grain dealers could borrow from banks, this gave the co-operatives an advantage which would be determinative if they were as efficiently managed as the middlemen. The line elevator companies and the terminal elevator concerns felt themselves under pressure to sell out, to reduce their volume of operations, or to shut down. Considering themselves as threatened with dispossession of a long-established business by the Farm Board, they regarded this as "government in business" with a vengeance, an indirect

form of confiscation.² It was in large part this reaction toward the Farm Board which culminated in the resolutions of the United States Chamber of Commerce on May 1, 1930.³

It is difficult to take the counter-campaign of the grain trade at its word value, difficult to avoid questioning the disconcertion of the grain trade when the subsidiaries of the Federal Farm Board took over all the functions of middlemen in handling of grain, difficult to regard the resolutions of the United States Chamber of Commerce as a naïve defense of the prerogative of private business. A reading of the almost innumerable Congressional hearings on agricultural distress, the debates in Congress over the past ten years, the Agricultural Marketing Act, and the hearings of the Senate Committee on Agriculture and Forestry, prior to the confirmation of the Farm Board, makes it clear beyond question that it was the intent of the Congress to have the co-operative associations and their agencies supplant the existing grain trade to whatever extent found expedient, with the use of public money. In an early discussion in "Wheat under the Agricultural Marketing Act"⁴ in August 1929, in a subsection on "Relation of Farm Board to the Grain Trade" we made the following observation:

The implications, for the established grain trade, of the reorganization of marketing of wheat by wheat growers' co-operative associations, operating under a Farm Board and with loans from the public treasury, ought to be frankly faced and not treated with evasion.

At this date it is to be recognized that many in the grain trade did not face the situation frankly and without evasion. In taking over the business of the established grain trade the subsidiaries of the Farm Board have done exactly what they were permitted to do under the Act. Non-recognition of the impending developments is to be explained mainly on the assumption that the Agricultural Marketing Act was regarded as a gesture of the Congress, that the Farm Board would not interpret the Act seriously as a policy. The attitude of the grain trade is all the more difficult to understand in view of the fact that prominent trade papers, for example, the *Chi-*

¹ "It is the intention of the Federal Farm Board to see that marketing machinery is placed in the hands of the farmer, owned and controlled by him, to the end that he may follow the products of his labor from the farm to the last logical outlet for processing or consumption."—S. R. McKelvie, in Federal Farm Board press release (Information Division No. 7), November 20, 1929.

² The grain trade refers to the revolving fund as the Farm Board's exterminating fund, and regards dispossession of their accustomed and legitimate business as an illegal confiscation of property.

³ The resolution of the U.S. Chamber of Commerce contained the following paragraph:

We accordingly express our continued opposition to the use of the Government funds in providing capital for the operation of agricultural co-operatives, and for the buying and selling of commodities for the purpose of attempted stabilization. We condemn as a permanent policy of Government the employment of public funds for the purpose of participation in business in competition with established agencies and support the proposal for an amendment of the Agricultural Marketing Act to repeal the authority of the Federal Farm Board to use Federal funds for such a purpose.

⁴ WHEAT STUDIES, August 1929, V, 367.

cago Journal of Commerce, from the beginning stated baldly the implications of the Act. No matter how pronounced a believer in laissez faire one may be, irrespective of all that has been said about keeping the government out of business, the outstanding fact is that in the enactment of the Agricultural Marketing Act the Congress with premeditation intended to make it possible for wheat growers to borrow money from a revolving governmental fund and with this capital to take over the distribution of their product, which had previously been conducted through middlemen. If this is putting the government into business, then proponents and opponents must face the best or the worst of it. The United States Chamber of Commerce and the grain trade have reasoned on the assumption that the boundary between public business and private business has been established in the United States for all time. On this assumption, to point out that a particular intervention of government in business has never been made, eliminates it. But such an assumption is historically untenable except under the predication that the spirit of American institutions is unchangeable in a sense that holds for no other country. Disregarding the extreme illustrations of "government in business" to be observed in Russia and in Italy, one has but to give regard to developments in England and Germany to observe the gradual extension of "government in business." We deplore this tendency and still regard it as subversive of true progress; but it is not to be questioned that the Congress intended to put the government into the grain business indirectly when it passed the Agricultural Marketing Act.

The right to market his grain is a native right of the producer because he holds original possession. He needs capital to enable him to use this prerogative and Congress has made it available to him in the Agricultural Marketing Act. The position of the far-sighted leaders of the grain trade has been that whenever producers demonstrate that they can market their crop more efficiently than middlemen these will withdraw. But Congress made the innovation independent of such demonstration. Few changes in society are deferred until the

gains can be demonstrated in advance; developments in the commercial world take place largely through experiment rather than through advance demonstration. The disposition of the co-operatives is to take over the marketing of wheat without reference to comparisons of efficiency and to make their showing to their own class later. The extent of the failure in the merchandising operations during the first year, the technical reasons to be assigned to it, and the blame attaching thereto do not bear directly on the co-operative movement as producers see it.

It is now proposed to seek the repeal of the Agricultural Marketing Act; also, what is more to the point at the moment, it is proposed to test in the courts the constitutionality of the Act. More specifically, it is proposed to attack the legality of the operations and commitments of the Farm Board and its subsidiaries as exceeding the powers conferred by the Act. These are from every point of view proper and desirable procedures. From the standpoint both of proponents and of opponents, of wheat growers and of grain dealers, a judicial determination of the several legal and legislative points at issue is desirable and at the earliest possible moment.

The extent to which the middlemen of the grain trade lost business during 1929-30 is not measurable outside of their books and the accounts of the Farmers' National Grain Corporation. Without question, the volume of terminal distribution of wheat conducted by the private grain trade was very heavily reduced. The reduction in volume resulted in increase in costs and lowering of profit on the business retained. Whether the Farmers' National Grain Corporation conducted the business taken from middlemen at lower cost or at greater profit than did the private trade cannot be predicated. We have not heard this affirmed. According to our view, the operative profits of grain trading have been greatly exaggerated and the speculative profits of grain dealers have been grotesquely exaggerated. There has been some overextension of elevators in certain regions and obsolete elevators have been retained in operation; but apart from this, the commercial elevators which have handled the wheat of the coun-

try have constituted an efficient institution. The world over, the wheat trade has operated on a narrow margin of profit under sharp competition. It is not to be believed that during the first year of operation under the Agricultural Marketing Act the Farmers' National Grain Corporation and the co-operative units comprised in it have operated with the technical efficiency of the established grain trade. The wheat grower has the aspiration to market his product even if he does so less efficiently than middlemen; conceding that direct net increase of profits in the handling of grains is not to be secured, wheat growers might still wish to market their wheat for the sake of supposed indirect advantages or on other grounds. What determines mostly the attitude of growers is the circumstance that the grain trade, hedging its transactions, has no direct interest in the price level, whereas a co-operative association whose transactions are unhedged¹ has the entrepreneur's interest in the price level. No objective grain trader would contradict the ambition of the wheat grower; what the middleman objects to is being displaced with the use of government money at a low rate of interest, outside of a competitive determination on the basis of service and efficiency. Assuming that the Farmers' National Grain Corporation and the co-operative units handling wheat (under it and through it) have handled 150-200 million bushels of

wheat of members and non-members during 1929-30, we do not find in the record, or in observation of the trade, indications that the diversion from the accustomed channels has been accomplished at a saving. In fact, in view of the technical mishandling of country and terminal operations that occurred prior to April 1930, it seems to us necessary to infer that the operations as a whole were conducted at a relative (and perhaps absolute) loss.

THE GRAIN STABILIZATION CORPORATION

When the Agricultural Marketing Act was passed without express provision for the equalization fee or export debenture, Congressmen who believed in price legislation expected the Farm Board to undertake formal and systematic "stabilization of price" under a stabilization corporation, for wheat and cotton at least. When the members of the Farm Board testified before the Senate Committee on Agriculture and Forestry prior to the confirmation of the Board by the Senate, surprise was evinced and criticism expressed that the Farm Board had taken no immediate steps toward "stabilization of the price" of wheat. Those who believed in formal stabilization wanted to have it undertaken as early in the crop year 1929-30 as possible, because they wished to take advantage of the rising market which they anticipated. The circumstances leading to the establishment of the Grain Stabilization Corporation in February 1930 cannot now be used to support the interpretation that the Farm Board had all along intended formally to stabilize the price, but that the administrative disorganization attending the establishment of the Farmers' National Grain Corporation had deferred the step.² Instead, on the public record it is to be inferred that measures of so-called stabilization were undertaken in the absence of a stabilization corporation during October-November and in early February, and in conjunction with a stabilization corporation during February-May, for the purpose of checking an untoward (and unexpected) price decline.³

During the harvesting of the North American spring-wheat crop, the Farm Board had apparently accepted the forecast of a rising wheat price.⁴ This was the view es-

¹ Latterly, however, the Farmers' National Grain Corporation is known to have practiced hedging.

² In the Farm Board press release of July 27, 1929, the memorandum on the proposed Farmers' National Grain Corporation, stood the following, among the functions of the Corporation: "(b) To conduct stabilization operations on the open market, if and when such operations have been approved in advance by the Federal Farm Board." We take it "operations on the open market" is to be construed to indicate trading in both cash wheat and futures.

³ Compare the letter of Chairman Legge, *Hearings* . . . , p. 431.

⁴ In an address delivered before the U.S. Chamber of Commerce on April 30, Secretary Hyde was reported in the *United States Daily* of May 1, as follows: "Everybody believed last fall that wheat should go anywhere from \$1.40 up to \$1.60: the grain trade believed it, the economist believed it, we believed it—not on any fictitious price but on the unrestrained utterance of the proposition of the law of supply and demand." This statement does not make out a technical case for the Farm Board. It is true that the mass opinion of speculators expressed in commission house orders anticipated a high wheat price in the fall of 1929; but it is equally true that the reasoned

poused by the Canadian pools, and expressed by the majority of speculators on stock exchanges and grain exchanges. The view was not shared by a goodly minority of observers, which included some of the shrewdest grain traders and flour millers. Also, there was widespread dissent in Europe. The sharp declines of wheat prices during October-November were regarded as reactions in sympathy with the stock market.¹ The schedule of loans on wheat announced on October 28 was in a sense a setting of minimum prices, a support to growers against decline regarded as unwarranted, to enable them to hold their wheat. The later purchases of wheat futures and cash wheat, continuing to the final support of the May future, are likewise to be interpreted as largely defensive. The word panic was applied to trading exchanges in October, in November, and again in February.² The grain trade seems generally to hold the view that the purchases of wheat and wheat futures, following the loan policy on wheat, had primarily for their purpose the checking of price declines regarded as calamitous and later the cushioning of price decline that was believed to result from fortuitous causes lying largely outside of the relation of supply and demand of wheat.

Whatever the Farm Board thought initially of a stabilization corporation, it was

practically forced to establish one when the Farmers' National Grain Corporation came into possession of wheat secured outside of deliveries by co-operatives. To have mingled the wheat bought in defense of price with the wheat acquired in course of co-operative marketing would have implied the reflection to growers of the losses on wheat purchased in furtherance of price policy. Setting up of a stabilization corporation was the appropriate way of removing undeserved losses from individual wheat growers. Thus construed, the establishment in February of the Grain Stabilization Corporation was designed in part for liquidation of prospective losses, in part as the creation of an instrument for the further resistance to price declines regarded as originating largely outside of the wheat market itself. In short, to fend against further loss, not to seek further gain, was the objective.

This interpretation of the measures of so-called price stabilization applied to wheat during 1929-30 implies that the Farm Board did not initially undertake a formal and systematic operation. During the early months of the Grain Stabilization Corporation the grain trade interpreted its activities on the exchanges first as efforts toward checking price decline, later in furtherance of an improved price of wheat. When, through purchase of March and May futures by the Stabilization Corporation, the price of the March and May futures was raised above that of the July future, thus destroying the spread between the immediate and the deferred future which covered the carrying charge and was normal under the circumstances of the carryover, the grain trade regarded the tactics of the Corporation as well-intentioned but misguided, in furtherance of the putative Farm Board policy of declining to extend stabilization into the 1930 crop. Subsequently, the attitude of the grain trade changed and the Grain Stabilization Corporation came to be looked upon as a cold-blooded super-speculator. Grain traders now quite cynically expect the transactions of the Farmers' National Grain Corporation and of the Grain Stabilization Corporation to be conducted with such co-adaptation that the losses fall on the Stabilization Corporation and the

opinion of many men, whose long experience entitled their judgment to receive attention, did not add support to the popular belief. Correspondingly, the mass opinion of speculators in shares expressed in brokers' orders on the stock exchange pictured the country in a "new era," on an enduring level of high prices; it is equally true that this expectation was not held by a large proportion of bankers and investors whose experience entitled their views to respect. It may perhaps be suggested that the Farm Board leaned in the direction of higher wheat price, and possibly searched for reasons to justify their hope, because they felt that high costs, interest charges, and taxes made high wheat prices urgently sought by the majority of American producers. Cf. also *First Annual Report*, pp. 28-29.

¹ Compare the Farm Board press release of October 28, 1929.

² Compare, however, the Farm Board press release of October 28, 1929. The price declines in 1929 and in February 1930 were due in part to a shattering of confidence in the price level, in part to liquidation of open lines that could no longer be carried by speculators, and, to a highly significant extent, to the withdrawal from the market of the inexperienced general public, which is prominent in every bull market. Broadly, it was in part a reaction of the trade cycle.

profits accrue to the Farmers' National Grain Corporation. Through its reserved use of so-called stabilization procedures, the Grain Stabilization Corporation has failed to secure the approval of the believers in price stabilization, while it has lost the approval of opponents of price stabilization.

On page 24 of its annual report the Farm Board has stated briefly, but with precision, its present views on stabilization. The objective is to moderate or eliminate undue or excessive fluctuations in prices and to moderate or eliminate the causes of such fluctuations. "Not stabilization, in the sense of rigid fixation or leveling of prices, but stabilizing, in the sense of limiting fluctuations and cushioning the shocks from severe fluctuations, is regarded as the objective." The Board recognizes four principal groups of stabilizing measures: (1) co-operative marketing; (2) emergency surplus control or stabilizing measures undertaken by the co-operatives; (3) stabilizing operations of a major character, undertaken in stress of emergency by the Farm Board or its subsidiary organizations; and (4) control of production. These are the definitions and tests of stabilization by which the operations of the Farm Board are to be judged.

Since we regard the measures of the Farm Board and its subsidiaries directed toward control of the wheat price during 1929-30 as not meeting the terms of a formal price stabilization, under the circumstances there is little purpose in discussing results secured, since the controlling objective was to avoid losses to wheat growers consequent upon disorganization in the market in the first year of a business depression. Looking backward from December 1930, wheat growers and their representatives who believe in formal price stabilization criticize the Farm Board for not having applied it systematically, directly after their entrance into office. Those who believe in the equalization fee and the export debenture make the comment that the Farm Board could not be expected to accomplish much through measures of price stabilization, because the implement is not suited to the task, which can be accomplished only by separating the domestic wheat price from the world wheat price.

Certainly wheat growers who heard the addresses of the Chairman of the Farm Board on contraction of wheat acreage cannot find in the program of the Farm Board to reduce production to domestic requirements any support for the view that American wheat prices can be significantly improved by "stabilization" so long as we have a large amount of wheat to export.¹ The advocates of the holding movement are beginning to realize that wheat held back in storage is not held back from market influence; it may help to improve price at the time, but is likely to prevent rise of price later. Except on a rising market, the secondary effect is likely to outweigh the first.

The Board tried to check a price decline, thereafter finding itself with a large volume of wheat on its hands, which it held with little attempt at disposal during the crop year, because this could not be done without depression of price. As we see it, the Board deliberately added 60 million bushels of wheat to the wheat supply of 1930-31, without committing itself to a stabilization of price of wheat during the new crop year. As one looks backward from December 1930, the stabilization operations during the 1929-30 crop year take on a distinctly unfavorable appearance. Judged by the second as well as by the first year's operations, it is evidently the policy of the Stabilization Corporation to support the price of wheat futures (when found expedient) during the trading months of the current crop year, allowing the futures of the new crop to go unsupported. This has the effect of basing the price of futures during the current crop on domestic conditions (inclusive of purchases of the Stabilization Corporation), leaving the futures of the new crop to be based largely on world conditions. The net result of such policy, other things equal, is to increase the outward carryover, reducing, however, the customary facilities for effecting the transition into the new crop

¹ The verdict of the Farm Board has been stated as follows, on page 32 of its annual report:

There seems no reason to question that the various actions taken contributed materially to support farm prices of wheat during the crop year 1929-30, and to prevent substantial price declines which otherwise would have occurred. The final effect on the revolving fund cannot be stated until the stabilization corporation has disposed of its holdings.

The Board offered no computation on farm price.

year. In effect, the Grain Stabilization Corporation tries to improve the current price of wheat, allowing the price on the new crop to be determined by developments.

PRICE-INFLUENCING MEASURES

It seems clear from the testimony of the members of the Farm Board before the Senate Committee on Agriculture and Forestry that the Farm Board, when the members entered office, held the view that direct action designed to influence wheat prices should be reserved for emergencies.¹ Broadly stated, it was thus not originally the intention of the Board to buy up the wheat surplus to influence the price, but to make loans to co-operatives to permit them to buy up the surplus, take it off the market, and distribute it later in furtherance of a grower policy of price improvement. At that time nothing approaching an emergency existed. In any event, lack of storage facilities and of effective co-operatives deterred the Board early in the crop year 1929-30. Nevertheless, within the first six months of its tenure, the Board found growers in a situation which led it to the setting up of a Grain Stabilization Corporation. The story of the development of stabilization measures contains also the history of the application of the several specific devices designed to influence the wheat price during the crop year. A descriptive and explanatory account cannot now be written because the data are not on public record. Nevertheless, certain inductions and inferences may be drawn from the public price-influencing procedures of the Farm Board, the Farmers' National Grain Corporation, and the Grain Stabilization Corporation.

At the beginning, it is to be recognized that several anomalous conditions made the position of the Farm Board very difficult. The inward carryover of wheat was large, and with the marketing of the incoming crop developed an elevator congestion of wheat, in terminal facilities especially,

which greatly restricted free movement to market and between markets. The price of wheat at Winnipeg (for reasons which were widely distorted at the time) was higher than in the terminal markets of the United States, which misled growers (in the spring-wheat region especially) to regard the United States price as abnormally low. When the Farm Board entered office the country was engaged in excessive stock exchange speculation. The grain exchanges shared with the stock exchanges the psychology of rising prices and predictions of a higher price level were widely accepted in the markets. Signs were then present which, in retrospect, presaged the business depression which was accelerated by the collapse of prices on the stock exchanges during October-November. The Farm Board, swamped with the details of organization, was perhaps least of all of the official bodies in the country in position to foresee what was coming. The Board acted on the current but mistaken assumption of higher wheat prices. In short, the Board faced a hostile farm bloc on account of the attitude of the Board toward stabilization, a disorganizing congestion of terminal facilities, an anomalous relation between Canadian and United States wheat prices, and the down-turn of a trade cycle—over it all the psychology of the forecast of oncoming higher wheat prices.

The Board may be criticized for accepting the view that prices were bound to rise. There were able and well-informed traders who did not share that view, and whose opinions were known to the Board. Nevertheless, it seems probable that at the time more "experts" (if there are experts in wheat price forecasting) looked for rising than for falling prices. Now that events have proved the Board's view to have been wrong, it is easy to say that it accepted a wrong view on the outlook, and hence blundered seriously. But at the time there seem to have been few who cared to characterize the level of announced loan values as a downright blunder, for the situation was too uncertain to warrant the conclusion.

In August 1929 the Board announced a general program of loans (in relation with the Intermediate Credit Bank System), but the first loan was not made until toward

¹ As stated by S. R. McKelvie: "The Board proposes to place it in the hands of producers' organizations to stabilize prices within the range of natural laws and not apart from that" (p. 321 in *Hearings . . .*). Compare the letter of Chairman Legge on p. 431 of the *Hearings . . .*

the end of September. With the October decline on the stock exchange occurred sharp declines in wheat prices. Regarding the situation as an emergency, the Board announced on October 26, 1929, a schedule of loans on wheat to enable growers to hold their grain, in itself an expedient desirable on account of congestion of storage. The heavy discount of cash wheat under futures was an added reason given for the action.

The program of loans on wheat included a set of differentials based on terminal markets.¹ It turned out that these differentials did not correspond with the milling values of the several wheats in their regional relations, and the technical error in judgment involved in the misleading differentials created confusion in terminal elevators and milling circles. Later, also, regional discriminations developed in respect of elevator charges.

When later the Farmers' National Grain Corporation entered on its functions, wheat loans were extended through it. The wheat loans represented, in effect, a guaranteed minimum price of wheat: the grower could sell his wheat and repay the loan or deliver his wheat in repayment of the loan. These loans were discontinued on wheat billed after April 30, 1930. The amount of these loans has not been announced, so far as we are aware; unannounced also is the amount of wheat acquired by the Farmers' National Grain Corporation in liquidation of these loans. In the broad sense, the effect of these loans was equivalent to buying futures and taking delivery of the grain.

The Farmers' National Grain Corporation (and later the Grain Stabilization Corporation) made wheat purchases outside of

the wheat loans, apparently first in Chicago in January 1930. From the public record, few details of these transactions can be drawn. It was apparently the intention originally to purchase in the country country-run wheat from growers belonging to the units included in the Farmers' National Grain Corporation.² It was seemingly assumed that country wheat would be unmixed wheat, and apparently the purchases were initially made on the loan basis. It developed in the course of time that country wheat did not mean unmixed wheat, nor even country-run wheat; it was sometimes mixed terminal wheat. Indeed, mixed wheat was shipped back from Duluth to Minneapolis to the subsidiary of the Farmers' National Grain Corporation. Later, wheat was purchased at market prices. When purchases were made at market prices, these also included wheat grown outside of membership in co-operatives. In February, wheat was bought on the local basis substantially above market quotations. On March 1, 1930, the purchase of country-run wheat at the loan basis was discontinued. Outright purchases of wheat on behalf of the two corporations (perhaps only one?) apparently continued more or less until toward the close of the crop year, for the account of the Stabilization Corporation. The dealings of the subsidiaries of the Farm Board in cash grain were ineptly conducted prior to April, and augmented the confusion in trading circles that resulted from the misplaced differentials discussed above. The consequence was that for a time at some interior points west of the Mississippi River the price of country wheat was higher to the country miller than was terminal wheat in cities. It was indeed in part the desire for restoration of normal regional relations which prompted the corporations to modify the buying practices and differentials originally employed. So far as we are aware, the amount of wheat purchased outright has not been reported. Early in March the two corporations held about 25 million bushels of wheat (grain, not futures); at the end of April this was over 31 million bushels. By the close of the crop year, the inclusive holdings had risen to over 60 million bushels.³

It is not a matter of official record when

¹ These differentials for wheats east of the Rocky Mountains were as follows:

No. 1 [Dark] Northern	\$1.25 per bushel (basis, Minneapolis)
No. 1 Durum	1.12 per bushel (basis, Duluth)
No. 1 Hard Winter	1.18 per bushel (basis, Chicago)
No. 1 Red Winter	1.25 per bushel (basis, St. Louis)
No. 1 Hard Winter	1.15 per bushel (basis, Kansas City)
No. 1 Hard Winter	1.21 per bushel (basis, Galveston)
No. 1 Hard Winter	1.15 per bushel (basis, Omaha)

On November 15 the loan price on No. 1 Dark Northern was corrected to No. 1 Northern Spring. On March 24 the loan basis for No. 1 Northern Spring was reduced to \$1.20.

² Cf. *United States Daily*, February 27, 1929, p. 1.

³ This figure is much lower than the forecast in the letter of Chairman Legge to Governor Shafer of North Dakota (Farm Board press release, March 11, 1930).

the subsidiaries of the Farm Board entered into trading in wheat futures, directly or indirectly.¹ The trade seems to have made the inference that the Farmers' National Grain Corporation bought wheat futures in December. The Stabilization Corporation openly entered the futures market in Chicago in February, and Secretary Hyde was quoted in the *United States Daily* of February 27 as crediting the Stabilization Corporation with having prevented "an incipient panic in the market" on February 25. At the end of February the Stabilization Corporation apparently held wheat futures in an amount not to exceed 10 million bushels. At the end of April these holdings had risen apparently to 20 million bushels. During this time, the Central Selling Agency of the Canadian Wheat Pools also purchased wheat futures. Presumably the Grain Stabilization Corporation accepted delivery on futures during May, and at the end of the crop year held only wheat in storage, not wheat futures. Of the wheat held, over 60 million bushels, how much was bought cash and how much secured through delivery on futures is not on public record.

In connection with the purchase of wheat futures by the Grain Stabilization Corporation during February-April was evinced a policy widely criticized in milling circles. When the outgoing carryover of wheat is heavy and the prospective crop abundant, during the months preceding May the July future should stand at a premium over the May future; otherwise the carrying charge is not covered. When the Stabilization Corporation began to buy wheat futures, the July future stood above the May future, and the May future above the March future. The Corporation, however, purchased only May futures (apart from some March futures), which had the effect for a number of weeks (aided possibly by other factors) of reversing the relation and putting the May future above the July future, thus erasing the carrying charge for the millers and dealers who held millions of bushels. The hedging of milling operations was disorganized, and mills suffered losses which would not have been sustained if the natural relations of the last old-crop future to

the first new-crop future had been maintained. The explanation commonly inferred and accepted is that the Stabilization Corporation, while desirous of improving the wheat price for the crop of 1929, wished to avoid entrance into price-influencing of the crop of 1930. To have purchased July futures would have meant undertaking to stabilize new-crop wheat, which it is inferred in the trade the Farm Board did not wish to institute.

A necessary part of any scheme for merchandising wheat is to provide a transition from one crop year to the next. Whenever a crop is seasonally produced but continuously processed and consumed, the price transition from the one crop year to the next must reflect the carryover of the old crop and the prospective supply of the new crop. Futures trading in wheat and elevator facilities have combined to permit of price transition from one crop year to the next with practically little disturbance. The futures trading of the Grain Stabilization Corporation during its first year did not conform to this scheme. At the time, observers were at a loss to determine whether the action of the Grain Stabilization Corporation represented an advertency or an inadvertency. The topic was not specifically discussed in the annual report of the Farm Board. The repetition during recent months of the same tactics in futures trading by the Grain Stabilization Corporation apparently reveals that a plan has been decided on to influence wheat prices, which we take it reflects Farm Board policy. What is apparently sought and designed by the Grain Stabilization Corporation is an intraseasonal operation. The futures trading of speculators and hedgers represents an interseasonal operation. The two systems cannot be expected to be harmonious. If intraseasonal operation is Farm Board policy in respect of stabilization of price of wheat, the point is of outstanding significance. In our view, the policy is technically mistaken, unless the Grain Stabilization Corporation assumes responsibility for and control of the carryover of wheat. In the ultimate interest of growers a long-term plan of wheat price stabilization, whatever the objective, cannot be intraseasonal; it must be interseasonal and provide an end-of-the-year

¹ Cf. Farm Board press releases of February 25 and March 6, 1930.

transition of price that is reflective of moving conditions in supply and demand.

The Farm Board in its annual report has recognized the occurrence of injurious reactions on the wheat market in consequence of the operations of the Board and its two subsidiaries. These include an incorrect estimate of the regional differentials, disturbance of the relation of cash price to futures price, and distortion of the relation of the futures of the different trading months to each other. The effects were most pronounced upon processors, like flour millers, who were hedging manufacturing operations, but affected also elevators (private and co-operative) carrying wheat from the old year into the new. The Farm Board apparently inclines to the inference that these untoward effects were inherent in stabilization operations. The trade, however, does not accept this inference but regards the effects in question as having been due in part to the decision of the Farm Board not to enter the 1930 crop, and also to technical blunders. We regard the untoward effects as due to a considerable extent to avoidable technical mistakes.

That the Farmers' National Grain Corporation and/or the Grain Stabilization Corporation should have entered into trading in wheat futures was doubtless a surprise and a shock to many wheat growers and to members standing to the left in the agricultural bloc, to whom speculation in wheat means gambling. But it was expected in the trade, since, so long as the current type of trading on grain exchanges exists in North America, large marketing agencies must deal in wheat futures as well as in cash wheat, a situation fully recognized in the Canadian Pools.¹

At the close of the crop year on June 30 the subsidiaries of the Farm Board owned over 60 million bushels of wheat in storage. The wheat was purchased or accepted at prices ranging all the way from \$1.25 down to \$1.00 probably.² The paper loss must be considerable, to which the carrying charges must be added. This wheat of the 1929 crop has been gradually sold (for export, to mill-

ers, and for feed) and the amounts replaced by purchase of wheat of the 1930 crop, to maintain the understanding that the carry-over in the possession of the subsidiaries of the Farm Board would not be sold in competition with wheat of the 1930 crop marketed by growers. The direct out-of-pocket losses (which will fall on the revolving fund of the Farm Board and cannot be passed back to growers) will probably not be known until the end of the crop year 1930-31 or even later. Against these losses of the Stabilization Corporation must be set putative gains to growers through improvement in farm price.

It is hardly to be questioned that the existence and operations of the Farm Board, the Farmers' National Grain Corporation, and the Grain Stabilization Corporation were bullish and not bearish influences on the wheat market in 1929-30. At the same time it is to be recognized that some experienced observers do not regard the net effect on farm price as bullish. It seems proper to say that the general effect was to prevent or offset some pressure on the markets that might otherwise have appeared. The whole set of statements and operations can reasonably be regarded as bearish only if it can be shown that the several agencies in one way or another drove out of the market speculators who would otherwise have been still more bullishly inclined, or encouraged bearish speculation. The volume of futures trading does not suggest this, nor do we find convincing grounds for believing it in any course of general reasoning. The bearish influence of the Board and its associated agencies could hardly appear until the stocks carried came to be disposed of and this did not occur in 1929-30. As we look back on the price movement from the vantage point of December 1930, we recognize that some temporary aid to wheat prices is to be ascribed to the price-influencing measures which proceeded from the Farm Board and its subsidiaries. But there is no way by which the extent of improvement may be estimated, no way by which the putative gain of the wheat growers may be set against the putative loss of the Stabilization Corporation. It is to be recognized that the carryover out of the crop of 1929 was increased by the stabiliza-

¹ Cf. "Wheat under the Agricultural Marketing Act," *WHEAT STUDIES*, August 1929, V, 393-95.

² We take it that the 60 million bushels of wheat had cost the Farm Board at the end of the crop year around 70 million dollars.

tion measures; had our prices for that crop fallen lower, it seems probable that more American wheat would have been exported, our carryover reduced, and the carryover of other countries (especially Canada) increased. All that can be said at the moment is that the price was improved somewhat, but to what extent, at what cost, and to what effect upon the price during 1930-31 cannot be stated. One cannot say with assurance that the Farm Board and its subsidiary agencies were responsible for the fact that the Chicago-Liverpool price spread was what it was in 1929-30; in the absence of the Board the spreads might well have been different, but how far different it is impossible to say. One cannot say with assurance that the Grain Stabilization Corporation prevented a "panic" in the market at any time during 1929-30; it is not certain that there was in fact a panic, or that the Corporation was the only barrier to ward one off. The precise and detailed effects, in short, are not demonstrable; only the broad effects appear, and these are to be described in general and not in quantitative terms, and the effects were not large.

In so-called stabilization operations lies the tendency to overappraise the immediate effects and underestimate the later effects. A stabilization of price of wheat in one crop year constitutes essentially a wager on the price level in the next crop year. If the carryover out of 1929-30 had entered into a crop year of higher price level, the primary influence on farm price at the time would appear significant despite carrying charges. But since the outward carryover from the 1929-30 crop entered into a crop with a lower wheat price level, it is possible that any improved farm price during 1929-30 will be more than offset by the lowering of the farm price during 1930-31 consequent on the augmentation of supply through the enlarged inward carryover. We suspect, apart from unforeseen developments, that the 60-million-bushel carryover of the Stabilization Corporation will injure the farm price during 1930-31 more than it helped the farm price during 1929-30. Students of the market who, during the crop year 1929-30, looked forward with apprehension to the new crop year, now look forward with greater apprehension to the next crop year.

FACILITATION OF FLOUR EXPORT

In April 1930, the Grain Stabilization Corporation extended to flour millers a contractual proposal designed to facilitate the export of flour. The project was officially described as "a plan of co-operation by which the Corporation will enable the Miller more readily to manufacture wheat products for export, and the Miller in turn will make its storage facilities available to the Corporation and give the Corporation favorable treatment in the purchase of wheat to meet its milling requirements." Divested of legal nomenclature, the Corporation solicited bids from millers "on a parity with the market value for export of similar grade, quality, and position wheat on the day of the bid," the purchases to be used for manufacture of flour to be exported prior to the fifteenth of August, 1930. The terms under which the Corporation proposed to use elevator storage under the control of mills, while advantageous to the Corporation, were not disadvantageous to millers. The proposition was initially and naturally interpreted to embody a recognition of the fact that United States wheat prices stood higher than world wheat prices, costs of transportation considered, and that the higher cost of raw materials constituted an impediment to the export of the finished commodity.

The proposal created considerable stir in milling circles in this country. It is fair to state that it provoked no enthusiasm in Canada and was cynically received in Europe. It was obvious that the proposal was adapted more to mills in certain regions than to others. We interpreted the proposal to have embodied an offer to extend to American mills, for purpose of export of flour, an f.o.b. wheat price parity, milling value considered. It did not involve a reduction of the stock of wheat held by the Corporation; but it did offer the Corporation an opportunity to dispose of wheat in distressed positions. Also, it held promise of reducing congestion in terminals.

In a release issued by the Farm Board on April 11, 1930, the Chairman made the following statement:

It seems to me that some of the press clippings coming in indicate a misunderstanding of the suggested price adjustment to American millers on wheat used to manufacture flour for export, the

matter being referred to as an effort to make the American price competitive with lower priced grain from other countries.

Nothing of this kind has been discussed or contemplated. The suggested adjustment is merely that of putting the miller at interior points on a competitive basis with the miller at seaboard or *the foreign miller buying American wheat at seaboard points*, and is based on the fact that the price of wheat in interior points at the present time is somewhat higher than the value of the same wheat at seaboard, taking into consideration adjustment of freight charges, grades, etc., and has no relation to the value of wheat in any other country.¹

This represented a sharp limitation of the proposed action. In the first place, there is little milling capacity at seaboard (apart from the Pacific Coast) and therefore little need to place the interior miller on a basis of equality with the miller at the seaboard. Second, it is only on occasions that wheat is cheaper at seaboard than in the interior terminal markets. Many millers not unnaturally viewed the proposal as explained in the release as "much ado about nothing." A perusal of the contract of agreement offered to millers, of the press release of the Farm Board, and of the narration in the annual report of the Farm Board gives the impression that the project contained diverse elements, of which the interrelations were not foreseen; and it seems likely that better results would have been obtained if the features of storage and of export had been developed separately. As we read the contract, a miller, so inclined, could have sold wheat to the Grain Stabilization Corporation at a high price and rebought wheat at a low price; we have no way of knowing whether this was done.

On page 31 of the annual report of the Farm Board the proposed arrangement is discussed in such a manner as to permit a still different interpretation, as follows:

The object of this arrangement was to make it possible for a miller to obtain his wheat requirements without the need of resorting to hedging, and to permit the Grain Stabilization Corporation to place wheat in positions where it would presumably be used rather than have it concentrate at terminal markets, such as Chicago. Co-operation under this agreement was an important factor in reducing the volume of wheat on which deliveries had to be accepted in Chicago in May, in preventing uneconomical movements of wheat, and in averting threatened congestion at Chicago.

¹ Italics ours.

Another paragraph in the draft agreement provided that the corporation might accept bids from millers for wheat from its stocks to be manufactured into flour for export before August 15, 1930, when such bids were on a parity with the market value for export of wheat of similar grade, quality, and position on the day of the bid. This paragraph was inserted in recognition of the fact that wheat in certain positions was out of line with export parity, while at other positions it was in line. The objective was equalization of competition between millers at various points. The total volume of wheat thus sold was not large.

The term of action permitted was rather short, even for mills engaged in the export trade. So far as we are aware, the volume of transactions developed through the proposal has not been publicly recorded. It is known in the trade that certain millers obtained particular parcels of wheat. We gather that it is the inference among English flour importers that some cut-rate flour which appeared upon the London market during the summer had proceeded from wheat furnished by the Grain Stabilization Corporation under this proposal. In domestic milling circles opinion was divided as to the advisability of entering into the proposal, irrespective of commercial considerations. The export of flour was fairly active during the last six months of the crop year 1929-30, aided by the relatively high price of Canadian wheat. We take it that to some extent the Grain Stabilization Corporation effectuated exports which might not otherwise have occurred, but we have no way of estimating how small was the amount officially designated as "not large."

Technically considered, merely to have offered wheat at f.o.b. value was hardly enough to stimulate the export of flour significantly. The exporter had still to face discrimination in ocean freight rates and in import duties in many European countries. A careful reading of the contract makes it clear that the Grain Stabilization Corporation did not offer to sell wheat to American millers at such a figure as would enable them to lay flour down in importing countries at the same figure for which domestic mills in the importing countries could offer the flour ground from the same American wheat. That is, the Corporation did not offer import flour price parity. The Corporation could, however, accept any bid it chose.

Certainly, the Grain Stabilization Corpo-

ration did not contemplate an act of dumping. Nevertheless, had the proposal eventuated in a large increase in export of flour, it would have been stigmatized as dumping, particularly in view of the secrecy surrounding the transactions.¹ If it had been successful, reprisals would have been provoked. Under these circumstances, it seems to us that it is just as well that the proposal did not turn out successfully.

SUMMARIZING OBSERVATIONS

In appraising the first year's administration of the Agricultural Marketing Act, in respect to wheat, a great deal depends on the level of expectation. Those who expected nothing feel surprised at the activities of the Farm Board; those who expected a little are gratified that something more was contributed; those who expected a great deal are disappointed. Those who expected a formal and systematic stabilization of the price of wheat are disappointed. Those who expected specifically a substantial increase in the farm price of wheat are disappointed. Those who regarded farm relief as a long-term problem regard the year as one of orientation.

In conclusion, it seems to us both appropriate and advantageous, in judging of the first year of wheat under the Agricultural Marketing Act, to separate practical operations from development of policies. We regard the practical operations in the merchandising of the 1929 wheat crop to have been, on the whole, unsuccessful from the standpoint of interests of producers. These operations have inflicted commercial injury upon flour millers and independent grain dealers; the effects on millers have been inadvertent, those on independent grain dealers lay inherent in the Act. In our judgment, the form of co-operation developed for wheat growers is not the organization which promises most for the co-operative marketing of wheat, since in effect the difficult but more thorough opera-

tion of pooling has been subordinated to the easier but less effective aggregation of farmers' elevators. We find the contributions of the Farm Board in the first year of its operation in respect of wheat to have been, first, the clear formulation of the policy of contraction of acreage and, second, the outspoken formulation of the policy of taking over the machinery of distribution of wheat. We hold these to be of outstanding significance quite irrespective of whether one supports or opposes the policies. It is a contribution to force a country to face decisions. For ten years the distress and the relief of wheat growers has been debated back and forth. The Farm Board has placed two policies—the contraction of acreage and the substitution of producers' distribution for middlemen's distribution—in a position which will compel definitive reaffirmation or reversal and rejection. It strikes us that, in consequence of the outcome of the first year's merchandising of wheat under the Agricultural Marketing Act, three courses of action will be proposed in the Congress. It will be sought on the one hand so to amend the Act as to prevent the use of public money in supporting co-operative marketing operations. On the other hand, it will be sought to enact legislation making mandatory the stabilization of prices of the major agricultural products. Finally the endeavor will be made to include in the Act either the export debenture or the equalization fee, by which both co-operative marketing in the sense of the present Act, and stabilization, howsoever defined, would be supplanted. Whatever the new Congress does, the issues have been clarified by the first year's operations of the Farm Board under the Agricultural Marketing Act of 1929. The price-influencing policy of the Federal Farm Board and the price-influencing measures of the Grain Stabilization Corporation have become much more phenomenal in the new crop year than in the last, particularly in connection with the evolution of the trade cycle. To these developments we shall give attention in the forthcoming "Survey of the Wheat Situation."

¹ As a sample of foreign reaction, F. W. Hirst, in the *Contemporary Review* of November 30, 1930, practically classes the stabilization of wheat price with valorization of coffee.

This study is the work of M. K. Bennett, Helen C. Farnsworth, and Alonzo E. Taylor, with the aid of P. S. King, Katharine Merriam, Robert F. Lundy, and Holbrook Working

APPENDIX

TABLE I.—WHEAT ACREAGE IN PRINCIPAL PRODUCING COUNTRIES, 1920-30*

(Million acres)

Year	United States	Canada	India	Australia	Argentina	Chile	Uruguay	Hungary	Bulgaria	Jugoslavia	Romania	Soviet Russia	Mexico
1920	61.14	18.23	29.95	9.07	13.22	1.26	.70	2.66	2.17	3.56	5.00	.....	.....
1921	63.70	23.26	25.78	9.72	14.10	1.34	.81	2.89	2.23	3.70	6.15	.....	2.28
1922	62.32	22.42	28.21	9.76	16.06	1.47	.66	3.52	2.30	3.67	6.55	.....	2.62
1923	59.66	21.89	30.85	9.54	17.04	1.54	1.06	3.29	2.38	3.84	6.65	39.16	3.05
1924	52.54	22.06	31.18	10.82	15.98	1.43	.85	3.50	2.49	4.24	7.84	52.73	1.40
1925	52.37	20.79	31.78	10.20	17.62	1.45	.96	3.52	2.55	4.31	8.16	63.12	1.13
1926	56.36	22.90	30.47	11.69	18.95	1.48	.99	3.71	2.62	4.18	8.22	73.90	1.29
1927	58.78	22.46	31.30	12.28	20.20	1.84	1.15	4.02	2.67	4.52	7.66	78.96	1.31
1928	58.27	24.12	32.19	14.84	20.08	1.72	1.26	4.14	2.81	4.68	7.92	71.88	1.28
1929	61.46	25.26	21.97	14.93	16.19	1.76	1.10	3.71	2.66	5.31	6.76	75.72	1.29
1930	59.15	24.89	31.35	18.16	21.32 ^a	1.65	....	4.07	2.90	5.36	7.63	.....	1.21
Average													
1909-13	47.10	9.94	29.22	7.60	14.88	1.00	.79 ^b	3.71	2.41	3.98	9.52 ^b	74.21	2.17 ^c
1924-28	55.66	22.47	31.38	11.97	18.57	1.58	1.04	3.78	2.63	4.39	7.96	68.12	1.28

Year	Morocco	Algeria	Tunisia	Egypt	British Isles	France	Germany	Italy	Belgium	Netherlands	Denmark	Norway	Sweden
1920	1.99	3.45	1.32	1.19	1.98	12.59	3.40	11.38	.306	.152	.180	.040	.358
1921	1.96	3.04	1.50	1.46	2.08	13.30	3.56	11.88	.343	.180	.220	.041	.358
1922	2.07	3.74	1.07	1.52	2.07	13.07	3.40	11.40	.300	.150	.237	.025	.356
1923	2.25	3.12	1.61	1.54	1.84	13.67	3.65	11.45	.350	.154	.205	.030	.362
1924	2.46	3.53	1.32	1.42	1.63	13.62	3.62	11.28	.340	.118	.149	.021	.322
1925	2.62	3.61	1.62	1.38	1.57	13.87	3.84	11.67	.365	.130	.198	.022	.363
1926	2.56	3.74	1.84	1.53	1.68	12.97	3.96	12.15	.354	.132	.249	.022	.381
1927	2.30	3.47	1.38	1.65	1.74	13.06	4.32	12.30	.390	.153	.270	.020	.561
1928	2.66	3.66	2.01	1.59	1.49	12.96	4.27	12.26	.410	.148	.250	.028	.562
1929	3.01	3.77	1.73	1.62	1.41	12.75	3.96	11.80	.360	.112	.260	.030	.574
1930	2.76	3.62	1.66	....	1.40 ^d	12.99	4.38	11.92	.410	.144	....	....	.632
Average													
1909-13	1.70	3.52	1.31	1.31	1.89	16.50	4.03	11.79	.404	.138	.154	.012	.255
1924-28	2.52	3.60	1.63	1.51	1.62	13.30	4.00	11.93	.372	.136	.223	.023	.438

Year	Spain	Portugal	Switzerland	Austria	Czechoslovakia	Poland	Finland	Latvia	Estonia, Lithuania	Greece	Japan, Chosen	South Africa	New Zealand
1920	10.25	1.10	.119	.371	1.57	1.79	.022	.039	.193	1.08	2.18	.875	.220
1921	10.39	1.09	.117	.378	1.56	2.42	.028	.046	.210	.95	2.14	.992	.353
1922	10.31	1.16	.110	.460	1.53	3.02	.038	.070	.246	1.06	2.12	.850	.276
1923	10.49	1.05	.112	.475	1.51	2.99	.040	.106	.258	1.06	2.07	.779	.174
1924	10.38	1.04	.104	.482	1.50	3.16	.037	.106	.254	1.15	2.03	.760	.167
1925	10.72	1.05	.105	.484	1.53	3.20	.038	.119	.328	1.15	2.04	.970	.152
1926	10.78	1.06	.127	.500	1.56	3.25	.039	.122	.362	1.30	2.04	.880	.220
1927	10.83	1.06	.127	.505	1.86	3.36	.044	.145	.360	1.23	2.06	.770	.260
1928	10.48	1.10	.127	.514	1.87	3.19	.050	.164	.463	1.33	2.10	.985	.255
1929	10.62	....	.174 ^{aa}	.515	2.02	3.53	.047	.145	.570	1.13	2.09	.938	.240
1930	10.53	....	.182 ^{aa}	.516	2.11	3.53	.051	.179	.526 ^h	....	1.20 ⁱ	....	....
Average													
1909-13	9.55	1.21 ^f	.105	.635	1.72	3.34	.008	.085	.234	1.13 ^g	1.75	.745 ^b	.241
1924-28	10.64	1.06	.118	.497	1.66	3.23	.042	.131	.353	1.23	2.05	.873	.211

* Data of U.S. Department of Agriculture and International Institute of Agriculture. For 1909-13, including U.S. Department of Agriculture estimates for area within post-war boundaries. Figures for 1930 are preliminary. Dots (....) indicate that data are not available. Estimates are presumably of areas harvested in most instances, Canada being an outstanding exception. Many countries, however, do not distinguish sharply between areas sown and harvested; the estimates above ordinarily represent the final official estimates of area, which are assumed to be harvested areas.

^a Estimate for area sown, not harvested. For estimates of areas sown in earlier years, see Chart 8, p. 97.

^b Four-year average.

^c Two-year average.

^d Excluding Irish Free State.

^e Includes spelt and meslin.

^f Three-year average.

^g One year only.

^h Lithuania only.

ⁱ Japan only.

TABLE II.—WHEAT YIELD PER ACRE IN PRINCIPAL PRODUCING COUNTRIES, 1920-30*

(Bushels per acre)

Year	United States	Canada	India	Australia	Argentina	Chile	Uruguay	Hungary	Bulgaria	Jugoslavia	Romania	Soviet Russia	Mexico
1920	13.6	14.4	12.6	16.1	11.8	18.4	11.1	14.2	13.8	12.1	12.3	....	...
1921	12.8	12.9	9.7	13.3	13.5	17.6	12.3	18.3	13.1	14.0	12.8	....	2.2
1922	13.9	17.8	13.0	11.2	12.2	17.6	7.8	15.5	14.2	12.1	14.1	....	5.2
1923	13.4	21.7	12.1	13.1	14.5	18.2	12.6	20.6	12.2	15.9	15.4	10.7	4.5
1924	16.5	11.9	11.6	15.2	12.0	17.1	11.7	14.7	9.9	13.6	9.0	9.0	7.4
1925	12.9	19.0	10.4	11.2	10.8	18.7	10.4	20.3	16.2	18.2	12.8	12.4	8.1
1926	14.7	17.8	10.7	13.8	12.1	15.9	10.3	20.2	14.0	17.1	13.5	12.4	8.0
1927	14.9	21.4	10.7	9.6	14.0	16.6	13.4	19.1	15.8	12.5	12.6	9.8	9.1
1928	15.7	23.5	9.0	10.8	15.3	17.3	12.1	24.0	17.5	22.1	14.6	11.0	8.6
1929	13.2	12.1	10.0	8.5	8.5	21.1	12.2	20.2	12.5	17.9	14.8	9.3	10.3
1930	14.4	15.9	12.3	11.8	12.7	....	....	18.0	21.0	16.6	17.1	....	...
Average													
1909-13	14.7	19.8	12.0	11.9	9.9	20.0	8.2 ^a	19.3	15.7	15.6	16.7 ^a	10.2	...
1924-28	15.0	18.8	10.5	12.0	12.9	17.1	11.6	19.8	14.8	16.7	12.5	11.0	8.3

Year	Morocco	Algeria	Tunisia	Egypt	British Isles	France	Germany	Italy	Belgium	Netherlands	Denmark	Norway	Sweden
1920	9.0	4.7	4.0	26.6	29.3	18.8	24.3	12.5	33.7	39.5	41.1	25.0	28.8
1921	11.9	9.4	6.0	25.4	37.0	24.3	30.3	16.3	42.3	47.8	50.5	23.7	34.4
1922	6.2	5.1	3.4	23.7	32.0	18.6	21.2	14.2	35.3	41.3	38.8	25.6	26.7
1923	8.9	11.6	6.2	26.5	33.0	20.2	29.1	19.6	38.3	40.3	43.4	19.7	30.4
1924	11.7	3.9	4.2	24.1	33.0	20.6	24.6	15.1	38.2	39.0	39.6	23.3	21.1
1925	9.1	9.1	7.2	26.2	34.2	23.8	30.8	20.6	39.7	43.8	49.0	22.3	36.9
1926	6.3	6.3	7.1	24.3	31.0	17.9	24.1	18.2	36.2	41.7	35.3	26.8	32.0
1927	10.2	8.2	6.0	26.9	32.8	21.1	27.9	15.9	41.8	40.5	34.8	30.0	27.3
1928	9.3	8.3	6.0	23.5	33.9	21.7	33.2	18.6	42.0	49.3	48.8	28.6	34.2
1929	10.6	8.8	7.1	27.9	36.1	25.1	29.2	22.1	36.7	49.1	45.4	25.0	33.1
1930	7.2	8.4	5.8	....	29.8 ^b	17.9	30.0	17.9	33.2	34.0	....	....	34.8
Average													
1909-13	10.0	10.0	4.8	26.0	31.6	19.7	32.6	15.6	37.6	36.2	40.9	25.8	31.8
1924-28	9.3	7.3	6.2	25.0	33.1	21.1	28.2	17.7	39.8	43.4	41.3	25.7	30.6

Year	Spain	Portugal	Switzerland	Austria	Czechoslovakia	Poland	Finland	Latvia	Estonia, Lithuania	Greece	Japan, Chosen	South Africa	New Zealand
1920	13.5	9.4	30.3	14.6	16.8	12.7	12.3	10.0	13.4	10.4	18.1	8.7	31.4
1921	14.0	7.4	32.5	17.2	24.9	16.7	20.7	17.0	15.9	10.8	17.8	8.8	30.0
1922	12.2	8.5	32.7	16.1	22.0	15.5	18.7	13.7	17.0	8.5	18.0	7.4	30.4
1923	15.0	12.5	33.9	18.7	24.0	18.4	17.2	15.5	14.3	8.3	16.2	7.7	24.1
1924	11.7	10.2	29.8	17.6	21.5	11.9	21.4	14.9	15.2	6.7	17.6	9.3	32.3
1925	15.2	11.9	33.3	22.1	25.8	20.0	24.5	18.2	18.5	9.8	19.7	9.5	30.3
1926	13.6	8.1	33.1	18.8	21.9	16.2	23.6	15.2	13.9	9.5	19.0	9.4	36.4
1927	13.4	10.6	32.3	23.8	25.4	18.2	24.1	18.2	17.6	10.5	18.6	7.8	36.5
1928	11.4	6.8	33.9	25.1	27.5	18.6	20.0	15.2	15.9	9.8	18.8	6.8	34.5
1929	14.5	....	33.3 ^c	22.5	26.2	18.7	23.4	16.1	18.6	7.5	18.6	11.0	30.4
1930	13.8	....	29.1 ^c	22.1	25.1	19.9	23.3	20.5	20.2 ^d	....	....	....	....
Average													
1909-13	13.7	....	31.4	20.2	22.0	18.5	17.5	17.4	15.5 ^e	14.4	18.2	8.5 ^e	28.6
1924-28	13.1	9.5	32.2	21.5	24.6	17.0	22.4	16.4	16.4	9.4	18.7	8.6	34.6

* Computed from acreage and production figures in Appendix Tables I and III. Dots (....) indicate that data are not available.

^a Four-year average.

^b England and Wales only.

^c Includes spelt and meslin.

^d Lithuania only.

^e One year only.

TABLE III.—WHEAT PRODUCTION IN PRINCIPAL PRODUCING COUNTRIES, 1920-30*

(Million bushels)

Year	United States	Canada	India	Australia	Argentina	Chile	Uruguay	Hungary	Bulgaria	Jugoslavia	Romania	Soviet Russia	Mexico
1920	833.0	263.2	377.9	145.9	156.1	23.2	7.8	37.9	29.9	43.0	61.3	.....	15.0
1921	814.9	300.9	250.4	129.1	191.0	23.6	10.0	52.7	29.2	51.8	78.6	.....	5.1
1922	867.6	399.8	367.0	109.5	195.8	25.9	5.2	54.7	32.0	44.5	92.0	.....	13.6
1923	797.4	474.2	372.4	125.0	247.8	28.1	13.3	67.7	29.1	61.1	102.1	419.1	13.7
1924	864.4	262.1	360.6	164.6	191.1	24.5	9.9	51.6	24.7	57.8	70.4	472.2	10.4
1925	676.8	395.5	331.0	114.5	191.1	26.7	10.0	71.7	41.4	78.6	104.7	782.3	9.2
1926	831.4	407.1	324.7	160.8	230.1	23.3	10.2	74.9	36.5	71.4	110.9	913.8	10.3
1927	878.4	479.7	335.0	118.2	282.3	30.6	15.4	76.9	42.1	56.6	96.7	776.0	11.9
1928	914.9	566.7	290.9	159.7	307.4	29.7	15.2	99.2	49.2	103.3	115.5	795.2	11.0
1929	809.2	304.5	320.7	126.5	137.4	37.1	13.4	75.0	33.2	95.0	99.8	702.9	11.3
1930	851.0	395.9	386.5	214.0	271.5	....	....	73.3	61.0	89.0	130.8	1,157.4	11.3
Average													
1909-13	690.1	197.1	351.8	90.5	147.1	20.1	6.5 ^a	71.5	37.8	62.0	158.7 ^a	758.3 ^b	11.5 ^a
1924-28	833.2	422.2	328.4	143.6	240.4	27.0	12.1	74.9	38.8	73.5	99.6	747.5	10.6

Year	Morocco	Algeria	Tunis	Egypt	British Isles	France	Germany	Italy	Belgium	Netherlands	Denmark	Norway	Sweden
1920	17.9	16.2	5.2	31.7	58.0	236.9	82.6	142.3	10.3	6.0	7.4	1.00	10.3
1921	23.2	28.5	9.0	37.0	77.1	323.5	107.8	194.1	14.5	8.6	11.1	.97	12.3
1922	12.9	18.9	3.7	36.0	66.4	243.3	71.9	161.6	10.6	6.2	9.2	.64	9.5
1923	20.0	36.2	9.9	40.7	60.6	275.6	106.4	224.8	13.4	6.2	8.9	.59	11.0
1924	28.8	17.3	5.1	34.2	53.9	281.2	89.2	170.1	13.0	4.6	5.9	.49	6.8
1925	23.9	32.7	11.8	36.2	53.7	330.3	118.2	240.8	14.5	5.7	9.7	.49	13.4
1926	16.2	23.6	13.0	37.2	52.2	231.8	95.4	220.6	12.8	5.5	8.8	.59	12.2
1927	23.5	28.3	8.3	44.3	57.2	276.1	120.5	195.8	16.3	6.2	9.4	.60	15.3
1928	24.7	30.3	12.1	37.3	50.9	281.3	141.6	228.6	17.2	7.3	12.2	.80	19.2
1929	31.8	33.2	12.3	45.2	50.9	319.9	123.1	260.8	13.2	5.5	11.8	.75	19.0
1930	19.5	30.6	9.7	41.1	39.7 ^c	232.0	131.2	213.1	13.6	4.9	....	.77	22.0
Average													
1909-13	17.0	35.2	6.2	33.7	59.6	325.6	131.3	184.4	15.2	5.0	6.3	.31	8.1
1924-28	23.4	26.4	10.1	37.8	53.6	280.1	113.0	211.2	14.8	5.9	9.2	.59	13.4

Year	Spain	Portugal	Switzerland	Austria	Czechoslovakia	Poland	Finland	Latvia	Estonia, Lithuania	Greece	Japan, Chosen	South Africa	New Zealand
1920	138.6	10.4	3.6	5.4	26.4	22.7	.27	.39	2.58	11.2	39.4	7.6	6.9
1921	145.1	9.3	3.8	6.5	38.7	40.5	.58	.78	3.34	10.3	38.0	8.7	10.6
1922	125.5	10.0	2.5	7.4	33.6	46.8	.71	.96	4.17	9.0	38.1	6.3	8.4
1923	157.1	13.2	3.8	8.9	36.2	54.9	.69	1.64	3.70	8.8	33.6	6.0	4.2
1924	121.8	10.6	3.1	8.5	32.2	37.5	.79	1.58	3.86	7.7	35.7	7.1	5.4
1925	162.6	12.5	3.5	10.7	39.3	63.9	.93	2.16	6.08	11.2	40.0	9.2	4.6
1926	146.6	8.6	4.2	9.4	34.1	52.5	.92	1.86	5.02	12.4	38.7	8.3	8.0
1927	144.8	11.4	4.1	12.0	47.2	61.1	1.06	2.64	6.35	13.0	38.3	6.0	9.5
1928	119.9	7.5	4.3	12.9	51.5	59.2	1.00	2.50	7.36	13.1	39.4	6.7	8.8
1929	154.2	10.6	5.8 ^d	11.6	52.9	65.9	1.10	2.34	10.60	8.5	38.8	10.3	7.3
1930	145.1	13.2	5.3 ^d	11.4	53.1	70.2	1.19	3.67	10.91 ^e	....	38.4	11.4	...
Average													
1909-13	130.4	11.8 ^f	3.3	12.8	37.9	61.7	.14	1.48	3.63	16.3 ^f	32.0	6.3 ^a	6.9
1924-28	139.1	10.1	3.8	10.7	40.9	54.8	.94	2.15	5.73	11.5	38.4	7.5	7.3

* Data of U.S. Department of Agriculture and International Institute of Agriculture. For 1909-13, including U.S. Department of Agriculture estimates for area within post-war boundaries. Dots (....) indicate that data are not available. See Appendix Table IV for our adjustments of certain official estimates of the four major exporting countries.

^a Four-year average.

^b Regarded as too low by some Soviet officials, whose estimate is 908 million bushels.

^c England and Wales only.

^d Includes spelt and meslin.

^e Lithuania only.

^f One year only.

TABLE IV.—WHEAT PRODUCTION IN PRINCIPAL PRODUCING AREAS, 1920-29*

Year	United States	Canada	Soviet Russia	Lower Danube ^a	Other Europe	North-ern Africa ^b	India	Other North-ern Heml-sphere ^c	North-ern Heml-sphere ex-Russia ^d	Argen-tina	Aus-tralia	Other South-ern Heml-sphere ^e	South-ern Heml-sphere ^d	World ex-Russia ^d
MILLION BUSHELS														
1920.....	833	263	...	172	776	39	378	86	2,550	156	146	48	350	2,900
1921.....	815	301	...	212	1,009	61	250	80	2,730	191	129	56	375	3,105
1922.....	868	400	...	224	820	35	367	88	2,800	196	109	49	355	3,155
1923.....	797	474	419	260	996	66	372	88	3,055	248	125	55	425	3,480
1924.....	864	275	472	204	853	51	361	80	2,690	191	165	50	405	3,095
1925.....	700	430	782	296	1,100	68	331	85	3,010	191	115	54	360	3,370
1926.....	850	415	914	294	915	53	325	86	2,940	230	161	52	445	3,385
1927.....	878	480	776	272	1,001	60	335	94	3,120	290	118	65	475	3,595
1928.....	915	567	795	367	1,038	67	291	88	3,335	350	160	64	575	3,910
1929.....	825	305	703	303	1,158	77	321	95	3,085	175	126	72	375	3,460
Average 1909-13..	690	197	758	330	1,015	58	352	77	2,720	147	90	43	280	3,000
1924-28..	841	433	747	287	981	60	329	87	3,020	250	144	57	450	3,470
PERCENTAGE														
1920.....	28.7	9.1	...	5.9	26.8	1.4	13.1	3.0	87.9	5.4	5.0	1.7	12.1	100.0
1921.....	26.2	9.7	...	6.8	32.5	2.0	8.1	2.6	87.9	6.1	4.2	1.8	12.1	100.0
1922.....	27.5	12.7	...	7.1	26.0	1.1	11.6	2.8	88.8	6.2	3.4	1.6	11.2	100.0
1923.....	22.9	13.6	...	7.5	28.6	1.9	10.7	2.6	87.8	7.1	3.6	1.6	12.2	100.0
1924.....	27.9	8.9	...	6.6	27.6	1.6	11.7	2.6	86.9	6.2	5.3	1.6	13.1	100.0
1925.....	20.8	12.8	...	8.8	32.6	2.0	9.8	2.5	89.3	5.7	3.4	1.6	10.7	100.0
1926.....	25.1	12.3	...	8.7	27.0	1.6	9.6	2.6	86.9	6.8	4.8	1.5	13.1	100.0
1927.....	24.4	13.4	...	7.6	27.8	1.7	9.3	2.6	86.8	8.1	3.3	1.8	13.2	100.0
1928.....	23.4	14.5	...	9.4	26.5	1.7	7.4	2.3	85.3	9.0	4.1	1.6	14.7	100.0
1929.....	23.9	8.8	...	8.8	33.5	2.2	9.3	2.7	89.2	5.0	3.6	2.1	10.8	100.0
Average 1909-13..	23.0	6.6	...	11.0	33.9	1.9	11.7	2.6	90.7	4.9	3.0	1.4	9.3	100.0
1924-28..	24.2	12.5	...	8.3	28.3	1.7	9.5	2.5	87.0	7.2	4.2	1.6	13.0	100.0

* Data summarized from Appendix Table III. The italicized figures represent inclusion of our adjustments of official estimates that seem not to accord with disposition statistics (see Appendix Table XXXV). The French crop of 1929 is carried at 350 million bushels rather than at the official estimate of 320 million.

^a Hungary, Bulgaria, Roumania, and Jugo-Slavia.

^b Algeria, Morocco, and Tunis.

^c Egypt, Mexico, Japan, and Chosen.

^d Rounded figures.

^e Peru, Chile, Uruguay, Union of South Africa, and New Zealand.

TABLE V.—PRODUCTION OF RYE, CORN, BARLEY, AND OATS IN IMPORTANT PRODUCING AREAS, 1920-29*

(Million bushels)

Year	Rye		Corn			Barley				Oats			
	Europe ex-Russia	Other ^a	Europe ex-Russia	United States	Other ^b	Europe ex-Russia	Russia	United States	Other ^c	Europe ex-Russia	Russia	United States	Other ^d
1920.....	532	73	520	3,209	264	551	...	189	67	1,478	...	1,496	578
1921.....	765	85	393	3,069	224	566	...	155	66	1,509	307	1,078	457
1922.....	720	139	423	2,906	247	599	176	182	80	1,544	409	1,216	547
1923.....	831	90	468	3,054	317	649	196	198	89	1,720	405	1,306	640
1924.....	654	81	590	2,309	273	565	181	182	96	1,569	603	1,503	460
1925.....	946	60	626	2,917	361	672	269	214	104	1,708	838	1,488	483
1926.....	752	58	654	2,692	386	674	246	185	118	1,845	1,071	1,247	450
1927.....	813	80	478	2,763	380	659	207	266	111	1,737	917	1,183	520
1928.....	900	66	382	2,819	298	742	252	357	153	1,881	1,135	1,439	546
1929.....	945	58	704	2,614	335	826	338	303	118	2,087	1,144	1,228	369
Average 1909-13..	976	39	581	2,712	225	701	418	185	50	1,931	925	1,143	428
1924-28..	813	69	546	2,700	360	662	231	241	116	1,748	913	1,372	492

* Official data as reported by U.S. Department of Agriculture.

^a Canada, United States, Argentina.

^c Argentina, Canada.

^b Argentina, Union of South Africa.

TABLE VI.—RYE PRODUCTION IN PRINCIPAL PRODUCING COUNTRIES, 1920-30*

(Million bushels)

Year	United States	Canada	Argentina	Hungary	Bulgaria	Jugoslavia	Romania	Soviet Russia	France	Germany	Italy	Belgium	Netherlands
1920	60.5	11.3	0.8	20.2	6.2	6.1	9.4	.....	34.5	194.2	4.5*	18.2	14.8
1921	61.7	21.5	1.7	23.1	6.1	6.2	9.1	.....	44.4	267.6	6.5	21.3	15.0
1922	103.4	32.4	3.5	25.1	6.4	4.5	9.2	.....	38.4	206.0	5.6	18.4	17.1
1923	63.1	23.2	3.9	31.3	5.2	5.9	9.6	.....	36.5	263.0	6.5	20.8	14.6
1924	65.5	13.8	1.5	22.1	4.3	5.5	6.0	737.0	40.2	225.6	6.1	20.7	15.6
1925	46.5	9.2	4.7	32.5	7.2	7.9	8.0	906.2	43.7	317.4	6.7	21.7	16.4
1926	40.7	12.2	5.2	31.4	7.1	7.5	11.2	941.3	30.1	252.2	6.5	20.1	13.6
1927	58.2	15.6	6.6	22.4	7.0	5.9	9.3	961.4	34.0	269.0	5.9	21.9	13.5
1928	43.4	14.6	7.7	32.6	8.1	7.5	11.5	752.7	34.1	335.5	6.5	23.2	17.3
1929	41.9	13.2	4.4	31.4	7.3	8.3	13.3	796.0	39.4	321.0	6.9	22.2	18.3
1930	50.2	22.3	...	26.8	13.0	9.6	19.8	.....	29.3	303.5	6.3	19.8	12.4
Average													
1909-13	36.1	2.1	0.6	31.4	8.3	9.0	20.6*	735.5	52.5	368.3	6.3	22.8	16.4
1924-28	50.9	13.1	5.1	28.2	6.7	6.9	9.2	859.7	36.4	279.9	6.3	21.5	15.3

Year	Denmark, Norway	Sweden	Spain	Portugal	Switzerland	Austria	Czechoslovakia	Poland	Finland	Latvia	Estonia	Lithuania	Greece
1920	14.2	22.4	27.8	5.2	1.6	10.1	32.9	73.7	7.1	4.7	6.2	16.7	1.0
1921	13.2	26.6	28.1	4.6	1.6	13.2	53.7	174.9	11.7	9.8	5.9	21.0	1.1
1922	15.1	22.1	26.3	5.4	1.5	13.6	51.1	203.5	10.5	6.8	5.8	25.4	1.1
1923	15.9	23.4	28.1	5.2	1.6	15.8	53.3	242.8	9.4	10.8	6.5	23.8	0.6
1924	11.1	10.9	26.3	5.2	1.4	16.2	44.7	147.9	11.3	7.8	5.5	18.3	0.9
1925	14.4	26.6	29.9	5.1	1.6	21.7	58.1	265.4	13.7	12.4	7.2	26.1	1.6
1926	13.1	23.1	23.5	3.6	1.6	18.7	45.9	204.0	11.9	6.1	4.5	13.8	1.6
1927	11.0	15.2	26.5	4.7	1.6	20.1	60.0	231.8	12.9	10.2	6.7	21.2	1.5
1928	10.2	17.2	14.4	4.0	1.7	19.9	70.0	240.5	11.0	8.5	5.5	18.7	1.7
1929	12.0	16.3	22.9	5.3	1.6	19.0	72.2	276.0	12.9	9.5	5.7	22.0	1.3
1930 .....	....	19.2	20.7	4.9	1.5	19.3	68.0	268.5	14.1	13.9	8.1	24.8	...
Average													
1909-13	20.1	24.1	27.6	2.3	1.8	23.8	63.5	218.9	10.5	13.1	8.1	24.3	1.1
1924-28	12.0	18.6	24.1	4.5	1.6	19.3	55.7	217.9	12.2	9.0	5.9	19.6	1.5

* See corresponding footnote under Table III.

* Old boundaries.

* Four-year average.

TABLE VII.—POTATOES AND CORN PRODUCTION IN PRINCIPAL EUROPEAN PRODUCING COUNTRIES, 1920-29*

(Million bushels)

Year	Potatoes							Corn (Maize)					
	British Isles	France	Germany	Belgium, Holland	Czechoslovakia	Poland	Soviet Russia*	Hungary	Bulgaria	Jugoslavia	Romania	Soviet Russia	Italy
1920	238	428	1,024	204	184	665	.....	50.2	20.9	101.1	182.0	.....	89.3
1921	245	305	961	179	159	527	.....	31.7	16.4	73.8	110.6	.....	92.3
1922	322	465	1,494	307	333	948	.....	48.7	16.4	89.8	119.8	.....	76.8
1923	223	364	1,197	211	229	825	.....	49.2	21.8	84.8	153.0	.....	89.2
1924	219	564	1,338	208	239	831	1,332	74.1	24.8	149.4	155.5	90.9	105.7
1925	281	558	1,533	230	276	909	1,453	88.0	25.8	149.2	163.7	172.0	110.0
1926	249	409	1,103	220	185	786	1,609	76.5	27.3	134.2	229.9	131.5	118.1
1927	275	644	1,380	214	370	984	1,525	68.3	21.0	83.0	139.1	136.6	83.9
1928	297	414	1,516	276	316	1,016	1,675	49.6	20.3	71.6	108.5	130.7	65.0
1929	331	611	1,473	294	393	1,167	1,758	70.6	37.0	163.3	252.0	165.7	99.7
Average													
1909-13	254	527	1,374	215	245	911	741	60.8	26.3	111.9	193.2	52.2	102.7
1924-28	264	518	1,374	230	277	905	1,519	71.3	23.8	117.5	159.3	132.3	96.5

* See corresponding footnote under Table III.

* Four-year average.

TABLE VIII.—UNITED STATES WHEAT ACREAGE, 1920-30*

(Million acres)

Crop of	Winter wheat			Spring wheat harvested	Total harvested
	Planted	Abandoned	Harvested		
1920.....	44.9	4.84	40.0	21.1	61.1
1921.....	45.6	2.21	43.4	20.3	63.7
1922.....	47.9	5.57	42.4	20.0	62.3
1923.....	46.1	6.58	39.5	20.2	59.7
1924.....	38.9	3.26	35.7	16.9	52.5
1925.....	40.0	8.60	31.3	21.0	52.4
1926.....	39.9	2.90	37.0	19.4	56.4
1927.....	43.4	5.65	37.7	21.1	58.8
1928.....	47.3	11.10	36.2	22.1	58.3
1929.....	42.8	2.66	40.1	21.4	61.5
1930 ^a	43.4	4.83	38.6	20.5	59.1
Average 1909-13..	32.0	3.64	28.3	18.7	47.1
1924-28..	41.9	6.30	35.6	20.1	55.7

* Official data of U.S. Department of Agriculture. See especially *Agriculture Yearbook, 1930*, p. 601, and crop reports.

^a Estimate of December 1, 1930.

TABLE IX.—UNITED STATES WHEAT PRODUCTION BY CLASSES, 1920-30*

(Million bushels)

Crop of	Hard red spring	Durum	Hard red winter	Soft red winter	Pacific white	Total
1920.....	140	52	302	247	91	833
1921.....	131	57	290	237	99	815
1922.....	170	91	280	248	79	868
1923.....	127	55	241	272	102	797
1924.....	192	66	365	189	52	864
1925.....	156	65	206	170	80	676
1926.....	121	48	360	229	73	831
1927.....	202	83	317	181	95	878
1928.....	203	102	384	140	86	915
1929.....	140	56	344	188	78	806
1930.....	149	55	357	194	84	840

* Classification by U.S. Department of Agriculture. See especially *Agriculture Yearbooks* and *Foreign News on Wheat*, October 29, 1929. These are estimates only, and are made on a basis which does not lead to highly reliable results. Preliminary figures for 1930 are as of the October 1 estimate; 1929 figures subject to revision.

TABLE X.—CANADIAN WHEAT PRODUCTION FORECASTS AND ESTIMATES, 1925-30*

(Million bushels)

Date	1925	1926	1927	1928	1929	1930
June 30.....	365	349	325	...	...	...
July 31.....	375	317	357	...	...	...
Aug. 31.....	392	399	459	550	294	385
Oct. 31.....	422	406	444	501	294	396
Dec. 31.....	411	410	440	534	300	...
Final .....	...	...	480	567	305	...

* Canadian Dominion Bureau of Statistics, *Monthly Bulletin of Agricultural Statistics*, and press releases. See Appendix Table XXXV B for evidence respecting apparent errors in crop estimates.

TABLE XI.—UNITED STATES WHEAT CROP FORECASTS AND ESTIMATES, 1929, 1930*

Date	1929					1930
	Donovan	Cromwell	Murray	Snow	Official	Official
WINTER WHEAT						
May 1.....	620	599	617	608	595.3	525.1
June 1.....	625	615	631	649	622.1	532.5
July 1.....	590	594	601	612	582.5	557.7
Aug. 1.....	545	567	553	561	568.2	597.4
Sept. 1.....	545	567	553	561	568.2	597.4
Oct. 1.....	545	567	...	561	568.2	597.4
Dec. 1.....	...	...	...	...	578.3 ^a	604.3
SPRING WHEAT						
June 1.....	260	256	251	263	.....	.....
July 1.....	240	244	247	266	251.4	249.9
Aug. 1.....	195	211	194	209	205.7	233.2
Sept. 1.....	205	211	209	216	217.5	240.4
Oct. 1.....	215	211	...	209	223.5	240.4
Dec. 1.....	...	...	...	...	228.2 ^a	246.7
TOTAL WHEAT						
June 1.....	885	871	882	912	.....	.....
July 1.....	830	838	848	878	833.9	807.6
Aug. 1.....	740	778	747	770	773.9	820.6
Sept. 1.....	750	778	762	777	785.7	837.8
Oct. 1.....	760	778	...	770	791.7	837.8
Dec. 1.....	...	...	...	...	806.5 ^a	851.0

* Data from official and commercial crop reports and *Daily Market Record*, Minneapolis.

^a The figures given are the revisions made as of December 1, 1929. The final estimates for the 1929 crop, published in December 1930, were as follows, in million bushels: winter wheat, 576.2; spring wheat, 233.0; total wheat, 809.2.

TABLE XII.—UNITED STATES WINTER- AND SPRING-WHEAT ACREAGE, PRODUCTION, AND YIELD PER ACRE, 1920-30*

Year	Acreage (Million acres)		Production (Million bushels)		Yield per acre (Bushels per acre)	
	Winter	Spring	Winter	Spring	Winter	Spring
1920.....	40.02	21.13	610.6	222.4	15.3	10.5
1921.....	43.41	20.28	600.3	214.6	13.8	10.6
1922.....	42.36	19.96	586.9	280.7	13.8	14.1
1923.....	39.51	20.15	571.8	225.6	14.5	11.2
1924.....	35.66	16.88	592.3	272.2	16.6	16.1
1925.....	31.35	21.02	402.1	274.7	12.8	13.1
1926.....	36.99	19.37	627.4	203.9	17.0	10.5
1927.....	37.72	21.06	552.7	325.6	14.7	15.5
1928.....	36.21	22.06	578.7	336.2	16.0	15.6
1929.....	40.06	21.41	576.2	233.0	14.4	10.9
1930.....	38.61	20.55	604.3	246.6	15.7	12.0
Average 1924-28..	35.59	20.07	550.6	282.5	15.4	14.2

* Data of U.S. Department of Agriculture. See especially *Agriculture Yearbook, 1930*, p. 601, and press releases.

TABLE XIII.—PERCENTAGES OF VARIOUS GRADES OF CANADIAN HARD RED SPRING WHEAT TO TOTAL WHEAT INSPECTED IN THE WESTERN DIVISION, SEPTEMBER–AUGUST, 1923–30*

Grading	1923-24	1924-25	1925-26	1926-27	1927-28	1928-29	1929-30
No. 1.....	37.3	19.3	22.4	9.2	.9	1.5	40.0
No. 2.....	25.8	18.3	27.1	17.5	7.7	12.3	35.9
No. 3.....	22.9	18.5	13.9	7.8	22.3	19.7	11.8
No. 4.....	6.3	16.3	3.1	3.2	12.3	19.8	2.0
No. 5.....	1.9	8.1	.9	1.4	5.0	17.4	.6
No. 6.....	1.0	3.2	.2	.9	2.9	15.2	.2
Feed.....	.6	1.2	.1	.3	1.2	5.6	.1
No grade ^a .	1.0	11.7	28.6	51.2	43.0	1.4	1.4
Other ^b ...	3.2	3.4	3.7	8.5	4.7	7.1	8.0

* Data from *Canadian Grain Statistics*.^a Wheat of the straight grades except that it contains a higher proportion of moisture. Aside from higher moisture content, it may be of as good quality as these grades.^b Largely durum.TABLE XV.—UNITED STATES IMPORTS OF WHEAT AND FLOUR FROM CANADA, 1920–21 TO 1929–30*
(Million bushels)

Crop year July–June	Withdrawn for con- sumption, duty-paid	Withdrawn for mil- ling in bond, free	General imports ^a		
			Wheat grain	Flour as wheat	Total
1920–21.....	.....^b	.....^b	51.00	6.39	57.39
1921–22.....	8.46 ^c	6.17 ^d	14.46	2.79	17.25
1922–23.....	7.41	9.28	18.01	1.93	19.94
1923–24.....	13.68	13.90	27.28	0.76	28.04
1924–25.....	0.27	5.81	6.17	0.03	6.20
1925–26.....	1.64	13.47	15.60	0.08	15.68
1926–27.....	0.05	13.17	13.24	0.03	13.27
1927–28.....	0.16	15.04	15.71	0.03	15.74
1928–29.....	0.08	21.68	21.43	0.01	21.44
1929–30.....	0.05	12.90	12.94	0.01	12.95

* Data of U. S. Department of Commerce, in part compiled from *Monthly Summary of Foreign Commerce*, and *Agriculture Yearbook*, 1925, p. 761; in part supplied direct.^a Practically all from Canada. No deduction made for re-exports, which rarely reach 1 million bushels.^b Distinction established by emergency tariff act effective May 28, 1921. Before this date no duties had been in force since April 17, 1917.^c Including June 1921.^d Nine months only (October–June).TABLE XVII.—NET EXPORTS OF WHEAT AND FLOUR FROM PRINCIPAL EXPORTING COUNTRIES, AUG.–JULY, 1921–30*
(Million bushels)

Country	1921–22	1922–23	1923–24	1924–25	1925–26	1926–27	1927–28	1928–29	1929–30
United States ^a	255	203	130	259	106	202	187	153	146
Canada.....	185	279	346	192	324	292	332	406	185
Argentina.....	118	139	172	123	94	143	178	224	150
Australia.....	115	50	86	124	77	103	71	109	63
India.....	... ^b	29	20	38	8	11	9	... ^c	1
Danube basin ^d	21	12	34	26	45	45	32	37	56
Russia ^e.....	...	..	21	..	27	49	7	..	6 ^f
Other countries ^g	7	2	17	9	14	3	9	14	17
Total.....	701	714	826	771	695	848	825	943	624

* Summarized from data in Appendix Table XX.

^a Includes shipments to possessions, which were as follows in million bushels beginning with 1921–22: 2.7, 2.9, 2.8, 2.8, 2.7, 3.0, 2.6, 3.3, 2.9.^b Net imports of 14 million bushels.^c Net imports of 25 million bushels.TABLE XIV.—BROOMHALL'S FORECASTS OF EXPORTERS' SURPLUSES AND IMPORTERS' PURCHASES, 1929–30*
(Million bushels)

Date of report	Available for export	Margin over importers' purchases	Importers' purchases		
			Total	Europe	Ex-Europe
Aug. 21.	928	184	744	584	160
Oct. 23.	904	208	696	536	160
Nov. 27.	872	176	696	536	160
Dec. 24.	816	120	696	536	160
Dec. 31.	824 ^a	128	696	536	160
Mar. 12.	824 ^a	204	620	476	144
Apr. 2.	840 ^a	204	636	492	144

* Data from Broomhall's *Corn Trade News*.^a Argentina, based on official crop estimate; unofficial estimate shows supply 52 million bushels greater.TABLE XVI.—CANADIAN WHEAT AND FLOUR EXPORTS OVERSEAS, 1920–21 TO 1929–30*
(Million bushels)

Crop Year Aug.–July	Total	Through U. S. ports	Through all Canadian ports	Through Vancouver alone
1920–21 ^a	112.3 ^a	63.6 ^a	48.7 ^a	1.1 ^a
1921–22.....	168.0	109.7	58.3	9.4 ^a
1922–23.....	263.3	150.8	112.5	21.5 ^a
1923–24.....	323.6	164.7	158.8	58.4 ^b
1924–25.....	189.5	99.1	90.4	26.0
1925–26.....	314.0	161.3	152.7	58.7
1926–27.....	285.2	150.8	134.4	39.7
1927–28.....	324.5	151.5	173.0	85.7
1928–29.....	397.5	172.2	225.3	108.1
1929–30.....	179.0	77.2	101.8	54.6

* Official data from *Reports on the Grain Trade of Canada* and *Canadian Grain Statistics*. These figures do not include exports by lake and rail to the United States; hence the totals do not represent Canada's gross or net exports.^a September–August.^b Eleven months, September–July.^c September–August.^d Eleven months, September–July.^e September–August.^f Eleven months, September–July.^g September–August.^h Eleven months, September–July.ⁱ September–August.^j Eleven months, September–July.^k September–August.^l Eleven months, September–July.^m September–August.ⁿ Eleven months, September–July.^o September–August.^p Eleven months, September–July.^q September–August.^r Eleven months, September–July.^s September–August.^t Eleven months, September–July.^u September–August.^v Eleven months, September–July.^w September–August.^x Eleven months, September–July.^y September–August.^z Eleven months, September–July.^{aa} September–August.^{ab} Eleven months, September–July.^{ac} September–August.^{ad} Eleven months, September–July.^{ae} September–August.^{af} Eleven months, September–July.^{ag} September–August.^{ah} Eleven months, September–July.^{ai} September–August.^{aj} Eleven months, September–July.^{ak} September–August.^{al} Eleven months, September–July.

TABLE XVIII.—MONTHLY WHEAT RECEIPTS AT PRIMARY MARKETS IN THE UNITED STATES AND CANADA*
(Million bushels)

Month	United States primary markets				Fort William and Port Arthur				Vancouver			
	1926-27	1927-28	1928-29	1929-30	1926-27	1927-28	1928-29	1929-30	1926-27	1927-28	1928-29	1929-30
Aug.	71.6	81.6	84.2	101.7	1.5	2.4	3.5	2.4	.12	.09	1.07	.74
Sept.	48.7	79.7	73.3	47.0	32.8	8.6	39.1	27.7	.29	.32	2.61	4.83
Oct.	37.1	73.3	84.4	36.3	56.1	51.4	81.4	28.9	6.37	6.17	12.69	7.32
Nov.	29.8	44.8	43.6	20.6	60.5	71.0	72.9	17.0	7.22	10.78	14.65	6.19
Aug.-Nov.	187.2	279.4	285.5	205.6	150.9	133.4	196.9	76.0	14.00	17.36	31.02	19.08
Dec.	22.4	26.5	33.0	22.9	26.3	41.0	51.6	6.2	6.63	11.81	13.53	4.73
Jan.	24.6	23.5	22.5	17.5	14.0	21.1	11.0	2.8	6.83	16.49	13.90	4.25
Feb.	21.0	22.5	28.7	19.9	8.6	9.5	2.9	1.8	4.27	12.54	9.25	6.23
Mar.	16.6	26.3	27.2	16.7	6.3	3.3	5.2	1.6	5.94	10.50	15.46	6.89
Dec.-Mar.	84.6	98.8	111.4	77.0	55.2	74.9	70.7	12.4	23.67	51.34	52.14	22.10
Apr.	14.4	18.0	17.5	13.5	12.6	.9	9.7	1.6	3.58	10.88	7.31	4.12
May	19.2	25.9	18.6	16.5	17.3	17.6	13.8	7.4	1.56	7.43	3.91	3.08
June	20.7	15.6	25.7	18.7	7.3	20.1	14.7	23.7	.61	3.66	3.04	3.60
July	58.8	72.6	94.2	98.9	10.7	14.4	14.6	14.2	.14	2.44	3.30	3.31
Apr.-July	113.1	132.1	156.0	147.6	47.9	53.0	52.8	46.9	5.89	24.41	17.56	14.11
Aug.-July	384.9	510.3	552.9	430.2	254.0	261.3	320.4	135.3	43.56	93.11	100.72	55.29

* United States data are unofficial figures compiled from *Survey of Current Business*; Canadian data are official figures from *Reports on the Grain Trade of Canada* and *Canadian Grain Statistics*. Vancouver figures include receipts at Prince Rupert after October 1, 1926.

TABLE XIX.—INTERNATIONAL SHIPMENTS OF WHEAT AND RYE (BROOMHALL), ANNUALLY FROM 1921-22*
(Million bushels)

Crop year ending approximately August 1	Wheat, including wheat flour								Rye including rye flour			
	Total	North America	Argentina	Australia	Russia	Balkans	India	North Africa and Chile	North America	Russia, Danube	Other	Total
1921-22.....	647.2	404.0	118.8	110.4	....	14.0 ^a	....	....	37.4	.03	1.4	38.8
1922-23.....	676.4	455.1	138.3	47.8	....	9.1 ^a	26.1	....	62.9	2.9	1.6	67.4
1923-24 ^b	775.3	454.4	174.4	77.9	23.2	27.9 ^a	17.5	....	28.7	44.3	...	73.0
1924-25.....	715.2	422.6	121.4	117.1	....	13.5	31.7	8.9	62.3	0.4	0.1	66.8
1925-26.....	667.6 ^c	413.2	94.0	74.0	23.6	28.8	4.8	14.8	16.1	4.2	20.6 ^d	40.9
1926-27.....	817.6	484.0	139.2	104.0	44.4	31.2	10.4	4.4	34.8	8.6	7.1	50.5
1927-28.....	792.8	489.6	177.6	74.4	4.8	29.2	7.2	10.0	45.9	3.1	4.8	53.8
1928-29 ^b	927.6	542.9	223.7	112.1	....	37.4 ^c	.2	11.3 ^e	19.1	0.5	12.2	31.8
1929-30.....	612.9	318.7	152.2	64.9	6.4	46.6	4.2	19.8 ^f	2.3	4.8	25.1	32.2

* Data from *Corn Trade News*. These are Broomhall's cumulative totals, presumably revisions of his weekly shipment figures. They do not agree precisely with other figures of Broomhall's, particularly in 1924-25. Dots (...) indicate no shipments reported. Wheat shipments are converted from quarters of 480 pounds on the basis of 60 pounds per bushel, and rye shipments are converted from quarters of 480 pounds on the basis of 56 pounds per bushel.

^a Includes also shipments from other areas.

^b For 53 weeks.

^c Includes 14,400 thousand bushels shipped from Germany.

^d Chiefly Germany.

^e Approximate distribution.

^f Includes shipments from France.

TABLE XX.—INTERNATIONAL TRADE IN WHEAT (INCLUDING FLOUR), ANNUALLY FROM 1920-21*

(Million bushels)

A.—NET EXPORTS

Crop year August-July	United States	Canada	India	Australia	Argentina	Chile	Hungary	Bulgaria	Jugo- Slavia	Rou- mania	Russia	Morocco
1920-21.....	307.9	165.8	15.1	88.9	64.0	2.2 ^a	(.01)	1.77	3.76	1.41	....	0.3 ^a
1921-22.....	251.8	185.4	(13.8)	114.6	118.1	0.1 ^a	9.40	4.52	3.90	3.51	....	0.7 ^a
1922-23.....	200.2	279.0	28.6	50.3	139.4	1.5 ^a	5.15	4.32	1.01	1.64	....	0.2 ^a
1923-24.....	127.4	346.1	20.1	85.6	172.2	5.6	16.79	2.45	5.84	8.98	21.4 ^b	1.7 ^a
1924-25.....	256.4	192.1	38.1	123.6	123.1	7.7	13.54	(1.70)	9.55	3.21	....^{bc}	0.7 ^a
1925-26.....	103.4	324.1	8.0	77.2	94.4	1.0	19.79	4.37	10.81	9.93	27.1 ^b	0.8 ^a
1926-27.....	198.6	292.5	11.5	102.7	143.0	0.3 ^a	21.88	2.25	9.70	11.20	49.2 ^b	2.4 ^a
1927-28.....	184.1	332.5	8.5	70.7	178.1	0.5 ^a	21.84	2.04	.55	7.48 ^d	7.0 ^b	4.0 ^a
1928-29.....	149.8	406.2	(24.8)	108.6	224.0	...	26.00	0.66 ^e	8.81	1.59 ^d	....	...
1929-30.....	142.9	184.9	.7	62.6	150.4	...	30.06	(1.43)	22.92	2.89	....	...
Average												
1909-14.....	110.0	95.6	49.8	55.2	84.7	2.4 ^a	43.14 ^f	11.27 ^f	....	54.62 ^f	164.5 ^f	0.3 ^a
1924-29.....	178.5	309.5	8.3	96.6	154.5	...	20.61	1.52	7.88	6.68	....	...

B.—NET IMPORTS

Crop year August-July	Algeria	Tunis	Egypt	United Kingdom	Irish Free St.	France ^g	Germany	Italy	Belgium	Nether- lands	Denmark	Norway
1920-21.....	5.6	1.3	11.21	200.1		69.7	59.8 ^a	99.4	32.2	18.9	0.35	3.86
1921-22.....	(4.2)	(1.3)	6.84	208.2		21.8	69.5 ^a	100.5	40.5	19.8	4.01	5.16
1922-23.....	2.3	0.7	7.68	205.5 ^f	4.8 ^f	55.0	37.5 ^a	115.7	39.5	23.9	6.28	6.90
1923-24.....	(7.2)	(2.8)	8.52	219.4	20.8	68.1	30.7 ^a	69.9	40.0	26.7	9.28	6.11
1924-25.....	0.5	(0.2)	9.90	208.8	19.1	45.6	80.9 ^a	88.7	39.0	26.8	6.55	5.57
1925-26.....	(4.6)	(2.6)	12.79	191.1	18.8	24.6	57.4	67.9	39.2	27.2	6.00	6.70
1926-27.....	1.6	(0.3)	8.77	217.3	19.9	83.6	91.8	86.6	39.5	28.5	7.24	6.22
1927-28.....	(5.3)	(0.6)	6.60	213.6	18.6	42.5	88.5	87.7	41.8	31.0	10.96	6.78
1928-29.....	(3.7) ^f	(5.3)	13.65	200.8	18.5	66.6	77.6	87.4	41.9	30.0	16.67	9.15
1929-30.....	(4.6)	(5.8)	9.87 ^o	206.1	17.8	4.8	47.5	42.0	42.4	30.6	7.98	6.96
Average												
1909-14.....	(5.3)	0.8	8.32	217.7		43.6 ^f	67.8 ^f	53.0 ^f	50.2 ^f	22.6	6.66 ^f	3.78
1924-29.....	(2.3)	(1.8)	10.34	206.3	19.0	46.5	79.2	83.7	40.3	28.7	9.48	6.88

B.—NET IMPORTS (continued)

Crop year August-July	Sweden	Spain	Portugal	Switzer- land	Austria	Czecho- Slovakia	Poland	Finland	Latvia	Estonia	Greece	Japan
1920-21.....	6.61	19.83	6.6 ^a	12.9	14.6	18.3	....	2.47	0.58	0.61 ^a	10.6	5.8
1921-22.....	3.85	8.02	8.1 ^a	13.2	19.0	11.6	1.20	3.39	0.74	0.76 ^a	13.7	24.9
1922-23.....	8.78	(0.18)	6.5 ^a	16.6	13.4	10.2	2.52	5.12	1.11	1.18 ^a	17.5	14.5
1923-24.....	12.35	(0.32)	3.2 ^a	17.1	18.1	21.2	2.63	5.12	1.80	0.97	18.8	29.1
1924-25.....	10.58	0.80	6.0 ^a	13.9	14.7 ^f	21.5	17.10	4.54	1.94	0.86	20.8	12.2
1925-26.....	6.10	(0.73)	4.3 ^a	15.6	14.7 ^b	21.7	(4.60)	5.23	1.56	0.97	18.8	22.7
1926-27.....	6.02	(1.01)	7.9 ^a	16.3	16.9	20.1	8.07	5.14	1.68	0.91	19.4	15.3
1927-28.....	8.42	2.92	...	18.4	16.5	21.4	8.62	6.04	1.51	1.11	19.5	16.3
1928-29.....	8.05	8.16 ^a	...	16.6	14.6	17.4	2.45	6.93	2.97	1.25	22.2	17.2
1929-30.....	7.32	....	...	16.0	19.6	13.7	(.22)	5.92	2.54	1.19	21.7	13.6
Average												
1909-14.....	7.07	6.19	3.0 ^a	16.9	10.5 ^f	....	....	....	....	....	6.9 ^{af}	4.1
1924-29.....	7.83	2.01	...	16.2	15.5	20.4	6.33	5.58	1.93	1.02	20.1	16.7

* Data from official sources, in large part through International Institute of Agriculture. Figures in parentheses represent, under A, net imports, and under B, net exports. Dots (....) indicate that data are unavailable or that comparable averages cannot be computed.

^a Calendar years 1921 and following; averages for calendar years 1909-13 and 1924-28.

^b July-June figure.

^c Less than half a million bushels. Broomhall's shipments indicate imports of 9.4 million bushels.

^d Gross figure.

^e Ten months.

^f For pre-war boundaries; not comparable with post-war figures.

^g Imports in "commerce général," compiled directly from *Statistique mensuelle du commerce extérieur de la France*,

except the 1909-14 average. These data seem better to represent quantities of wheat and flour arriving in and departing from France than do data in "commerce spécial," which heretofore we have employed, as reported by the International Institute of Agriculture.

^h Data incomplete because of territory occupied by foreign armies.

ⁱ Irish Free State separated after April 1, 1923.

^j Eleven months.

^k Five months.

TABLE XXI.—INTERNATIONAL TRADE IN WHEAT FLOUR, ANNUALLY FROM 1920-21*

(Thousand barrels of 196 pounds)

A.—NET EXPORTS

Crop year August-July	United States	Canada	India	Australia	Argentina	Chile	Hungary	Bulgaria	Jugo- Slavia	Roumania
1920-21.....	13,665	6,688	835	2,281	353	138 ^a	(2)	83	426	150
1921-22.....	14,900	7,701	497	3,677	950	100 ^a	1,863	242	392	115
1922-23.....	14,457	10,936	538	4,081	842	151 ^a	1,137	166	163	293
1923-24.....	17,020	11,933	708	5,222	1,772	181	2,333	147	417	936
1924-25.....	13,882	10,108	892	4,625	1,625	196	2,025	(23)	697	619
1925-26.....	9,551	10,847	685	5,008	1,648	48	1,817	465	310	849
1926-27.....	13,378	9,238	717	5,313	1,730	(14) ^a	1,588	336	302	983
1927-28.....	12,678	9,794	671	4,381	1,828	23 ^a	2,108	115	(28)	441
1928-29.....	13,326	11,730	497	5,845	1,658	..	2,615	51 ^a	23	197 ^d
1929-30.....	12,886	6,696	567	4,676	1,215	..	2,890	14	162	162
Average										
1909-14.....	10,639	3,898	613	1,802	1,307	67 ^a	7,443 ^f	502 ^f	...	1,092 ^f
1924-29.....	12,563	10,343	692	5,034	1,698	..	2,031	189	251	618

B.—NET IMPORTS

Crop year August-July	France ^g	Italy	Belgium	Spain	Algeria	Tunis	Egypt	United Kingdom	Irish Free St.	Germany
1920-21.....	(68)	123	(2)	163	205	(4)	2,046	6,552		306 ^h
1921-22.....	(1,268)	(91)	(237)	(53)	(36)	20	1,478	7,559		61 ^h
1922-23.....	(2,051)	(393)	24	(43)	80	79	1,636	5,579 ⁱ	607 ⁱ	566 ^h
1923-24.....	(3,126)	(1,493)	(480)	(66)	(62)	(34)	1,798	2,764	2,126	4,166 ^h
1924-25.....	(3,295)	(1,245)	(787)	(59)	55	95	1,906	1,465	1,892	5,384 ^h
1925-26.....	(2,309)	(335)	(151)	(157)	5	.. ⁱ	2,436	2,483	1,748	1,411
1926-27.....	(772)	(195)	(64)	(218)	36	(24)	1,891	4,045	1,856	491
1927-28.....	(1,150)	(208)	(145)	(82)	(98)	(9)	1,490	3,161	1,907	2
1928-29.....	(1,752)	(445)	(176)	(36) ^k	110 ^f	(50)	2,586	2,129	1,677	(401)
1929-30.....	(3,198)	(673)	160	..	(40)	(79)	2,130 ^e	3,960	1,815	(258)
Average										
1909-14.....	(133) ^f	(793) ^f	(704)	(12)	(126)	189	1,778	5,193		(1,827) ^f
1924-29.....	(1,856)	(486)	(265)	(110)	22	2	2,062	2,657	1,816	1,377

B.—NET IMPORTS (continued)

Crop year August-July	Nether- lands	Denmark	Norway	Sweden	Austria	Czecho- Slovakia	Poland	Finland	Greece	Japan
1920-21.....	592	45	241	272	1,361	3,135	...	435	229	157
1921-22.....	560	555	456	34	1,811	2,130	115	724	149	559
1922-23.....	659	555	603	75	2,016	1,996	535	1,091	1,099	147
1923-24.....	1,286	476	635	264	2,607	3,584	530	1,098	1,301	37
1924-25.....	698	201	560	146	1,580 ^j	3,094	3,326	973	1,324	(518)
1925-26.....	1,269	495	775	(17)	1,279 ^b	3,252	43	1,115	1,506	(1,016)
1926-27.....	1,751	690	611	76	1,763	1,691	76	1,098	1,194	(591)
1927-28.....	2,008	828	754	136	1,821	2,106	84	1,293	617	(1,000)
1928-29.....	1,639	782	961	150	1,386	1,978	2	1,481	376	(2,309)
1929-30.....	1,305	719	701	147	1,921	1,694	(61)	1,269	252	(982)
Average										
1909-14.....	2,028	586 ^f	639	87	...	...	...	...	92 ^{af}	181
1924-29.....	1,473	599	732	98	1,566	2,424	706	1,192	1,003	(1,087)

* For footnotes, see under Table XX, except as follows: ⁱ Net import of 224 barrels.

TABLE XXII.—EXPORTS OF WHEAT AND FLOUR AS WHEAT FROM SPECIFIED EXPORTING COUNTRIES TO SPECIFIED IMPORTANT EX-EUROPEAN IMPORTING COUNTRIES, ANNUALLY FROM 1921-22*

(Million bushels)

A.—TO JAPAN FROM NORTH AMERICA AND AUSTRALIA

Year July-June	Wheat and flour			Total from			Wheat from			Flour from		
	Total	Wheat	Flour	United States	Canada	Australia	United States	Canada	Australia	United States	Canada	Australia
1921-22.....	25.39	21.85	3.54	13.96	3.62	7.81	11.00	3.35	7.50	2.96	.27	.31
1922-23.....	14.08	12.11	1.97	6.50	3.79	3.79	5.35	3.05	3.71	1.15	.74	.08
1923-24.....	32.12	30.29	1.83	11.06	7.25	13.81	10.26	6.96	13.07	.80	.29	.74
1924-25.....	14.89	14.55	.34	4.35	3.51	7.03	4.10	3.43	7.02	.25	.08	.01
1925-26.....	29.66	29.07	.59	5.28	13.48	10.90	5.18	13.03	10.86	.10	.45	.04
1926-27.....	19.97	19.27	.70	7.34	8.30	4.33	7.34	7.63	4.30	.00	.67	.03
1927-28.....	20.79	20.09	.70	6.30	11.25	3.24	6.30	10.59	3.20	.00	.66	.04
1928-29.....	31.55	31.32	.23	3.78	22.11	5.66	3.78	21.91	5.63	.00	.20	.03
1929-30.....	18.81	18.07	.74	9.17	6.79	2.85	9.17	6.09	2.81	.00	.70	.04

B.—TO CHINA, HONG KONG, AND KWANTUNG FROM NORTH AMERICA AND AUSTRALIA

Year July-June	Wheat and flour			Total from			Wheat from			Flour from		
	Total	Wheat	Flour	United States	Canada	Australia	United States	Canada	Australia	United States	Canada	Australia
1921-22.....	10.50	2.17	8.33	9.30	.37	.83	2.03	.00	.14	7.27	.37	.69
1922-23.....	16.97	1.95	15.02	13.73	2.88	.36	1.11	.80	.04	12.62	2.08	.32
1923-24.....	50.51	20.21	30.30	32.87	11.95	5.69	8.30	7.40	4.51	24.57	4.55	1.18
1924-25.....	5.66	.57	5.09	3.29	1.72	.65	.37	.20	.00	2.92	1.52	.65
1925-26.....	19.91	8.12	11.79	5.29	13.72	.90	.00	7.69	.43	5.29	6.03	.47
1926-27.....	13.23	4.24	8.99	6.06	6.96	.21	.30	3.94	.00	5.76	3.02	.21
1927-28.....	15.12	1.26	13.86	8.72	6.11	.29	.00	1.26	.00	8.72	4.85	.29
1928-29.....	38.50	12.56	25.94	13.18	22.47	2.85	1.25	8.61	2.70	11.93	13.86	.15
1929-30.....	16.72	1.29	15.43	10.52	6.05	.15	.16	1.13	.00	10.36	4.92	.15

C.—TO BRAZIL FROM NORTH AMERICA AND ARGENTINA D.—TO EGYPT FROM NORTH AMERICA AND AUSTRALIA

Year July-June	Wheat and flour			Wheat and flour from			Wheat and flour			Wheat and flour from		
	Total	Wheat	Flour	United States	Canada	Argentina	Total	Wheat ^a	Flour	United States ^a	Canada ^a	Australia ^b
1921-22.....	.....	.....	.....	.....	.....	.....	9.52	3.29	6.23	.89	.13	8.50
1922-23.....	18.38	13.63	4.75	2.24	.11	16.03	8.15	.04	8.11	1.38	.63	6.14
1923-24.....	21.93	15.53	6.40	2.49	.34	19.10	11.40	1.34	10.06	.61	.67	10.12
1924-25.....	20.50	13.16	7.34	3.24	.15	17.11	11.56	1.89	9.67	.92	.46	10.18
1925-26.....	21.94	13.52	8.42	4.06	1.00	16.88	12.28	.67	11.61	1.44	.76	10.08
1926-27.....	24.95	15.91	9.04	4.25	1.20	19.50	15.83	4.62	11.21	1.58	.67	13.58
1927-28.....	31.77	22.64	9.13	4.10	.17	27.50	12.55	3.83	8.72	.82	.62	11.11
1928-29.....	34.25	25.80	8.45	3.91	.05	30.29	19.57	4.94	14.63	1.03	1.65	16.89
1929-30.....	30.79	23.73	7.06	3.67	...	27.12	11.38	1.85	9.53	.99	2.21	8.18

E.—TO WEST INDIES FROM NORTH AMERICA

F.—TO SOUTH AFRICA FROM CANADA AND AUSTRALIA

Year July-June	Total flour ^c	Flour from		Wheat and flour			Total from		Wheat from		Flour from	
		United States	Canada	Total	Wheat	Flour	Canada	Australia	Canada	Australia	Canada	Australia
1921-22.....	11.18	8.18	3.00	2.73	1.35	1.38	.20	2.53	.02	1.33	.18	1.20
1922-23.....	12.85	8.66	4.19	4.94	2.66	2.28	.51	4.43	.11	2.55	.40	1.88
1923-24.....	14.40	9.76	4.64	6.72	4.59	2.13	1.19	5.53	.87	3.72	.32	1.81
1924-25.....	12.65	9.23	3.42	5.60	4.09	1.51	.71	4.89	.42	3.67	.29	1.22
1925-26.....	12.77	8.24	4.53	4.70	3.37	1.33	.49	4.21	.25	3.12	.24	1.09
1926-27.....	13.10	9.19	3.91	3.58	2.36	1.22	.66	2.92	.35	2.01	.31	.91
1927-28.....	13.19	8.93	4.26	8.84	7.44	1.40	.84	8.00	.50	6.94	.34	1.06
1928-29.....	14.52	9.49	5.03	7.78	6.29	1.49	2.46	5.32	2.15	4.14	.31	1.18
1929-30.....	12.62	8.77	3.85	3.23	2.14	1.09	.81	2.42	.60	1.54	.21	.88

* Data from official trade statistics of exporting countries. Exports from Argentina to Brazil in 1921-22 not available.

^a Australia alone exports wheat to Egypt.^b Exports from Australia to Egypt and Sudan.^c Flour only, as wheat exports to the West Indies from these two countries never amounted to more than 150 thousand bushels during this period.

TABLE XXIII.—INTERNATIONAL TRADE IN WHEAT AND FLOUR, MONTHLY, FROM JULY 1929*

(Million bushels)

A.—NET EXPORTS

Month	United States	Canada	India	Australia	Argentina	Romania	Hungary	Jugoslavia	Poland	Algeria	Tunis	Egypt	Greece
July	12.58	20.74	(.90) ^a	4.43	17.52	.02	2.55	1.09	(.11) ^a	...	1.23	(.88) ^a	....
Aug.	16.81	12.98	.33	5.34	23.73	.10	3.65	5.97	(.10) ^a	.35	1.31	(.66) ^a	(1.17) ^a
Sept.	18.18	9.42	(.05) ^a	4.53	24.51	.19	3.70	2.34	(.02) ^a	.38	1.01	(.73) ^a	(1.98) ^a
Oct.	14.57	23.06	.10	1.98	15.12	.06	3.72	5.20	(.01) ^a	.46	.63	(1.06) ^a	(1.54) ^a
Nov.	14.63	24.48	(.80) ^a	2.46	8.25	.06	3.32	2.12	(.02) ^a	.54	.50	(1.03) ^a	(2.18) ^a
Dec.	11.29	18.47	(.37) ^a	4.08	11.16	.06	2.94	2.29	(.05) ^a	.34	.34	(1.00) ^a	(2.41) ^a
Jan.	13.08	7.19	(.80) ^a	6.65	11.88	.20	2.06	1.41	.10	.38	.25	(1.38) ^a	(1.72) ^a
Feb.	7.86	8.84	(.58) ^a	6.99	11.33	.19	1.05	.39	.11	.42	.14	(2.81) ^a	(1.63) ^a
Mar.	4.87	14.60	(1.21) ^a	9.45	9.99	.21	2.38	.54	.06	1.14	.07	(1.19) ^a	(2.69) ^a
Apr.	6.64	5.43	(.01) ^a	4.66	11.06	.24	1.82	.76	.08	.12	.20	(1.37) ^a	(1.50) ^a
May	9.06	15.98	.03	6.27	7.44	.44	2.63	.68	.05	.21	.12	(1.76) ^a	(1.76) ^a
June	10.83	21.65	1.57	5.41	11.86	.80	2.11	.82	.08	.42	1.02	....	(1.78) ^a
July	15.04	22.81	2.48	4.33	2.62	.33	.68	.40	(.09) ^a	.42	1.02	....	(1.78) ^a

B.—NET IMPORTS

Month	Irish Free St.	United Kingdom	France ^b	Germany	Belgium	Italy	Netherlands	Scandinavia	Switzerland	Austria	Czechoslovakia	Baltic states ^c	Japan
July	1.86	15.85	7.28	16.17	3.99	6.63	2.59	2.22	2.53	1.14	1.23	1.24 ^d	.72
Aug.	1.53	19.61	6.36	4.51	4.84	1.58	2.82	2.05	2.50	1.56	1.22	.79	.63
Sept.	1.80	24.35	4.06	2.19	3.25	.84	1.95	2.48	1.63	1.52	1.09	.92	.37
Oct.	1.73	23.95	1.62	1.63	4.03	1.22	3.45	2.33	1.02	1.53	1.16	.95	1.00
Nov.	1.77	19.53	2.16	4.18	3.11	1.29	2.99	2.28	.96	1.57	1.39	1.06	.93
Dec.	1.29	13.21	1.49	5.91	3.72	1.72	1.99	1.71	1.12	1.51	1.37	1.41	1.44
Jan.	1.10	13.26	(1.08) ^e	10.19	2.91	1.67	1.51	1.36	1.23	1.24	1.05	.38	1.40
Feb.	1.31	11.79	(.83) ^e	5.94	2.81	2.47	2.06	1.76	1.06	1.15	1.12	.49	1.09
Mar.	1.61	16.96	.13	1.45	3.58	3.65	3.32	1.32	1.20	.99	1.05	.55	1.69
Apr.	1.34	12.22	(1.20) ^e	4.02	3.16	5.52	1.77	1.68	1.24	1.38	1.21	.62	1.58
May	1.80	16.87	(3.95) ^e	2.19	3.45	7.80	2.41	1.69	1.11	1.50	1.34	.51 ^f	1.42
June ....	.98	14.93	(3.93) ^e	2.02	3.77	8.76	3.50	1.56	1.33	3.59	.85	.57 ^f	1.30
July	1.53	19.41	(3.93) ^e	3.29	3.84	5.46	2.82	2.02	1.60	2.08	.88	.95	.77

* Data from official sources and International Institute of Agriculture.

^a Net import.^b Net imports or exports in "commerce général."^c Finland, Estonia, Latvia.^d Imports into Latvia partially estimated.^e Net export.^f Excluding Latvia.

TABLE XXIV.—UNITED STATES WHEAT AND FLOUR EXPORTS, ANNUALLY FROM 1920-21*

(Thousand bushels)

Crop year June-June	Wheat inspected for export						Unclassified wheat	Total wheat exports	Flour as wheat	Total exports	Total imports (less re-exports)	Net exports
	Hard red spring	Durum ^a	Hard red winter	Soft red winter	White (Pacific)	Mixed ^b						
1920-21.....	10,081	4,872	132,701	34,281	27,729	68,615	14,989	293,268	76,046	369,314	56,404	312,910
1921-22.....	20,145	8,697	78,477	18,998	43,652	18,963	19,389	208,321	74,245	282,566	16,852	265,714
1922-23.....	8,718	12,271	51,654	20,846	13,602	25,047	22,813	154,951	69,949	224,900	19,735	205,165
1923-24.....	1,022	4,908	19,640	9,810	18,653	5,435	19,325	78,793	81,087	159,880	27,954	131,926
1924-25.....	16,760	5,945	90,840	6,944	10,063	9,386	55,552	195,490	65,313	260,803	6,106	254,697
1925-26.....	3,338	4,170	7,358	2,282	16,914	5,944	23,183	63,189	44,846	108,035	15,363	92,672
1926-27.....	1,829	611	66,874	29,980	26,615	1,398	28,943	156,250	62,910	219,160	13,164	205,996
1927-28.....	5,209	3,496	41,603	9,915	28,150	1,874	55,752	145,999	60,260	206,259	15,679	190,580
1928-29.....	1,766	1,045	30,660	2,782	14,710	1,473	50,678	103,114	60,556	163,670	21,387	142,283
1929-30.....	1,490	360	49,290	2,547	17,527	751	20,210	92,175	61,141	153,316	12,874	140,442

* Data of U.S. Departments of Agriculture and Commerce. See especially *Agriculture Yearbook*, 1924, p. 579, and 1930, p. 609. Data for 1929-30 received direct. See text, p. 00, for new official estimates of wheat exports by classes.^a Durum exports are materially understated, in earlier years chiefly as explained in note b, in later years chiefly because inspections for export are limited to Atlantic, Gulf, and Pacific ports, so that large quantities of durum wheat that are exported from lake ports via Montreal escape classification.^b It was estimated that 20,030,000 bushels of durum were mixed with spring wheat in 1920-21. Other mixed wheat exports in 1920-21 were largely soft and hard winter wheat shipped through Gulf ports. In 1921-22 and 1922-23, 70 per cent of the exports of mixed wheat is estimated as durum. See *Agriculture Yearbook*, 1924, p. 579.

TABLE XXV.—OCEAN FREIGHT RATES ON WHEAT, 1913 AND CROP YEARS 1921-22 TO 1929-30*

(Cents per bushel)

Period	Canada to United Kingdom	New York to Liverpool	Northern Range to United Kingdom	Northern Range to Genoa	Northern Pacific to United Kingdom	La Plata down river to United Kingdom	Karachi to United Kingdom	Australia to United Kingdom
1913 (Jan.-Dec.)	8.3	5.8	8.0	11.9	25.7	10.6	12.2	20.4
1921-22 (Aug.-July)	10.7	8.5	10.3	12.5	25.3	14.6	12.8	28.6
1922-23 (Aug.-July)	9.2	5.5	8.0	11.0	22.2	14.3	15.4	23.6
1923-24 (Aug.-July)	9.4	6.8	8.6	10.4	21.2	13.7	15.0	21.8
1924-25 (Aug.-July)	9.4	6.3	8.8	10.5	21.3	12.0	14.7	25.2
1925-26 (Aug.-July)	9.0	7.0	8.0	9.2	20.0	10.9	13.1	22.3
1926-27 (Aug.-July)	12.0	9.7	12.1	13.3	23.9	19.9	15.8	28.5
1927-28 (Aug.-July)	7.7	5.6	7.7	10.1 ^a	19.5	13.9	13.2	23.2
1928-29 (Aug.-July)	8.5	6.1	9.1	10.8 ^b	19.6	14.9	13.1	23.1
1929-30 (Aug.-July)	5.5 ^c	4.7	5.4 ^d	n.q.	14.7	8.3	9.9 ^e	16.7
1929 July	n.q.	4.6	n.q.	n.q.	18.5 ^f	15.3	10.4 ^g	17.6
Aug.	n.q.	4.5	n.q.	n.q.	18.5	13.5	n.q.	19.1
Sept.	n.q.	4.5	n.q.	n.q.	18.5	10.2	n.q.	20.0
Oct.	n.q.	4.6	n.q.	n.q.	16.0 ^h	8.1	n.q.	19.6 ^h
Nov.	n.q.	4.7	5.3 ⁱ	n.q.	16.2 ^h	7.9	n.q.	16.6 ⁱ
Dec.	n.q.	5.3	5.5	n.q.	16.0	8.4	n.q.	16.3
1930 Jan.	n.q.	4.7	5.6	n.q.	14.7	8.4	n.q.	16.0
Feb.	n.q.	4.0	5.3	n.q.	12.0	6.8	n.q.	14.0
Mar.	n.q.	4.2	5.3	n.q.	12.2	6.4	n.q.	13.6
Apr.	6.1 ^h	4.6	5.3	n.q.	12.8	8.1	n.q.	15.5
May	5.6	4.6	5.3 ^f	n.q.	13.3	6.7	8.9 ^f	16.0
June	5.3	4.6	n.q.	n.q.	13.5	6.3	10.3	17.1
July	5.1	4.6	n.q.	n.q.	13.2	9.0	10.5	16.8

*Averages of Friday rates published in *International Crop Report and Agricultural Statistics*. New York-Liverpool rates are for parcels in liners; others for cargoes. No quotation is signified by "n.q."

^a July-February.

^d November-May.

^g One week only.

^b October-November.

^e May-July.

^h Three-week average.

^c April-July.

^f Two-week average.

ⁱ Four-week average.

TABLE XXVI.—UNITED STATES AND CANADIAN CARRYOVERS OF WHEAT, 1919-30*

(Thousand bushels)

Year	United States (July 1)				Canada (August 31, 1919-23; July 31, 1924-30)				
	Total	On farms	In country mills and elevators	Commercial visible (Bradstreet's)	Total	On farms	In elevators	In transit	In flour mills
1919	49,806	19,261	19,672	10,873	.....^a	2,149	3,305	.....^a	... ^a
1920	110,254	49,546	37,304	23,404	.....^a	2,122	6,930	.....^a	238
1921	93,840	56,707	27,467	9,966	13,727	2,144	4,831	6,032	720
1922	81,457	32,359	28,756	20,342	20,590	2,360	11,024	4,578	2,628
1923	102,414	35,894	37,117	29,403	11,690	1,441	5,051	2,758	2,440
1924	106,204	30,981	36,626	38,597	45,159 ^b	7,363 ^c	27,400 ^b	5,856 ^b	4,539 ^b
1925	86,447	29,357	25,287	31,803	26,483	2,709	17,939	3,835	2,000
1926	66,969	20,982	29,501	16,486	36,474	3,987	25,451	3,163	3,873
1927	74,514	27,222	21,776	25,516	50,787	4,264	37,079	5,243	4,201
1928	85,214	23,729	19,277	42,208	77,626	4,186	53,570	13,728	6,142
1929	182,713	45,483	41,546	95,684	104,383	5,617	82,640	8,669	7,457
1930	213,620	46,834	54,031	112,755	111,692	5,326	86,087	12,779	7,500
Average									
1910-14	89,411	32,485	31,600	25,326	.....^a	.....^a	.....^a	.....^a	... ^a
1925-29	99,171	29,355	27,477	42,339	59,151	4,153	43,336	6,927	4,735

*Bradstreet's visible, and official data of U.S. Department of Agriculture and Dominion Bureau of Statistics. See especially *Agriculture Yearbooks*, *Canada Yearbooks*, *Grain Dealers Journal*, and press releases.

^a Not available.

^b July 31, as for later years.

^c For 1924 quantities in farmers' hands relate to August 31; for subsequent years to July 31.

TABLE XXVII.—APPROXIMATE WHEAT STOCKS IN THE FOUR MAJOR EXPORTING COUNTRIES, AFLOAT TO EUROPE, IN THE DANUBE BASIN, AND IN EUROPEAN IMPORTING COUNTRIES, AUGUST 1, 1921-30*

(Million bushels)

Position	1921	1922	1923	1924	1925	1926	1927	1928	1929	1930
United States ^a	124	117	152	146	117	99	113	128	247	275
Canada ^b	25	40	32	45	27	37	51	78	104	112
Canadian in United States ^c	1	1	1	3	3	4	5	14	23	16
United States in Canada ^d	1	1	2	1	2	1	1	2	2	4
Argentina ^e	40	53	64	66	57	51	69	90	135	70
Australia ^f	47	18	28	26	23	17	23	29	26	35
Afloat to Europe ^g	58	49	39	42	33	39	46	45	38	39
United Kingdom ports ^h	8	7	8	10	9	4	8	10	6	7
Danube basin ⁱ	5	10	15	20	5	20	21	3	63	28
European importing countries ^j	65	100	65	100	65	96	79	93	139	112
Total	374	396	406	459	341	368	416	492	783	698

* Based so far as possible upon stocks reported either officially or unofficially. United States stocks as of July 1; others as of August 1 or the nearest dates possible.

^a Data from Appendix Table XXXV A.

^b Data from Appendix Table XXXV B.

^c Official data from *Canadian Grain Statistics* on stocks of Canadian wheat in lake and Atlantic ports of the United States.

^d Official data from *Canadian Grain Statistics* on United States wheat in Canadian ports.

^e Data from Appendix Table XXXV C.

^f Data from Appendix Table XXXV D.

^g Data from Appendix Table XXVIII.

^h Rough estimates of stocks in Hungary, Jugo-Slavia, Roumania, and Bulgaria. We have assumed that stocks stood at a very low level on August 1, 1925, and August 1, 1921. The larger stocks in August, 1922, 1923, and 1924 represent changes smaller than the deviations from trend of domestic utilization (1921-22 to 1929-30), on the assumption that in these early post-war years variations in actual consumption of wheat, rather than in stocks, must have caused most of the variations in apparent domestic utilization. From 1925-26, when a higher average level of per capita consumption was attained, we assume that variations in domestic utilization represent changes in wheat stocks rather than in actual wheat consumption, and the estimates of stocks are based upon deviations of domestic utilization from trend (1921-22 to 1929-30). These assumptions are necessarily of uncertain validity, and better bases will probably appear only with the passage of years. We present these tentative estimates for what they may be worth, principally because the subject of European wheat stocks must receive some consideration, and a quantitative basis for discussion is helpful.

ⁱ Rough estimates of stocks in Europe excluding Russia, the Danube countries, and Portugal. Based on the same assumptions as governed the estimates of Danubian stocks, except that stocks are assumed to have stood at their lowest levels in 1921, 1923, and 1925, to have increased not only between August 1923 and August 1924, but also between August 1921 and August 1922. The domestic utilization statistics employed are adjusted to allow for understatement of the German wheat crops and net imports of 1921-22 to 1923-24, and for understatement of the French crop of 1929. The stocks estimates are subject to qualifications as serious as is true of the estimates of Danubian stocks.

TABLE XXVIII.—WORLD VISIBLE WHEAT SUPPLIES, AUGUST 1, 1920-30, AND MONTHLY, 1929-30*

(Million bushels)

Date	United States	Canada	Argentina	Australia	United Kingdom ports	Afloat to Europe	North America	Argentina, Australia	U.K. and afloat	Grand total	Total ex-Australia
1920 Aug. 1.....	42.7	8.2	3.7	27.5	12.8	76.2	50.9	31.2	89.0	171.1	143.6
1921 Aug. 1.....	56.2	8.9	3.7	30.0	7.6	57.9	65.1	33.7	65.5	164.3	134.3
1922 Aug. 1.....	43.1	19.3	2.2	3.0	7.1	48.9	62.4	5.2	56.0	123.6	120.6
1923 Aug. 1.....	73.3	14.1	4.4	18.0	8.2	39.0	87.4	22.4	47.2	157.0	139.0
1924 Aug. 1.....	72.1	31.6	6.8	30.0	9.9	41.8	103.7	36.8	51.7	192.2	162.2
1925 Aug. 1.....	57.3	23.4	7.7	8.4	9.2	33.3	80.7	16.1	42.5	139.3	130.9
1926 Aug. 1.....	64.2	28.3	4.1	6.2	4.3	38.6	92.5	10.3	42.9	145.7	139.5
1927 Aug. 1.....	65.9	42.7	5.9	12.7	7.8	46.1	108.6	18.6	53.9	181.1	168.3
1928 Aug. 1.....	88.1	69.2	5.9	9.5	10.1	44.7	157.3	15.4	54.8	227.5	218.0
1929 Aug. 1.....	190.3	99.8	16.2	20.0	6.2	37.6	290.1	36.2	43.8	370.1	350.1
Sept. 1.....	265.0	92.4	12.9	13.5	6.5	46.5	357.4	26.4	53.0	436.8	423.3
Oct. 1.....	285.2	153.6	9.2	6.2	11.4	42.3	438.8	15.4	53.7	507.9	501.7
Nov. 1.....	288.5	206.9	9.0	2.8	16.8	39.0	495.4	11.8	55.8	563.0	560.2
Dec. 1.....	274.3	220.7	7.4	1.8	20.6	28.6	495.0	9.2	49.2	553.4	551.6
1930 Jan. 1.....	264.0	223.1	7.4	44.0	16.8	28.2	487.1	51.4	45.0	583.5	539.5
Feb. 1.....	240.7	214.0	9.2	60.5	15.1	37.6	454.7	69.7	52.7	577.1	516.6
Mar. 1.....	221.6	210.0	9.5	59.5	13.6	36.7	431.6	69.0	50.3	550.9	491.4
Apr. 1.....	212.0	192.4	10.3	56.0	13.1	34.2	404.4	66.3	47.3	518.0	462.0
May 1.....	191.9	174.4	10.3	50.0	9.9	34.6	366.3	60.3	44.5	471.1	421.1
June 1.....	170.6	143.1	7.4	47.5	7.9	35.6	313.7	54.9	43.5	412.1	364.6
July 1.....	161.1	124.8	6.6	42.5	6.4	37.9	285.9	49.1	44.3	379.3	336.8
Aug. 1.....	221.9	103.5	7.0	33.5	6.5	39.2	325.4	40.5	45.7	411.6	378.1

* A joint compilation by Broomhall, the *Daily Market Record*, Minneapolis, and the *Daily Trade Bulletin*, Chicago, here summarized from Broomhall's *Corn Trade News* and the *Daily Trade Bulletin*. Includes some flour stocks.

TABLE XXIX.—UNITED STATES CENSUS REPORTS ON CITY MILL STOCKS OF WHEAT AND FLOUR, 1925-30*
(Million bushels)

Date	U.S. flour output represented %	Wheat stocks in						Flour as wheat ^c	Grand total
		Country elevators	Public terminals	Private terminals ^a	Transit	Mills ^b	Total		
1925 June 30.....	87.4 ^d	2.16	3.44	26.72			32.31	15.73	48.04
Dec. 31.....	88.0 ^d	7.55	12.70	82.86			103.11	21.55	124.66
1926 Mar. 31.....	88.4 ^d	4.67	7.10	3.65	3.29	45.93	64.64	18.28	82.92
June 30.....	87.4 ^d	2.52	3.00	1.14	6.73	22.45	35.83	14.67	50.50
Sept. 30.....	87.4 ^d	8.92	12.04	8.57	15.38	79.87	124.77	19.82	144.59
Dec. 31.....	87.5 ^d	8.47	11.95	10.66	13.49	71.84	116.41	20.38	136.79
1927 Mar. 31.....	90.5 ^e	6.06	6.85	5.84	6.45	60.57	85.77	19.40	105.17
June 30.....	90.1 ^e	2.56	3.88	1.61	10.39	34.15	52.59	16.76	69.35
Sept. 30.....	89.1 ^e	6.23	12.15	3.98	16.12	77.25	115.73	20.05	135.78
Dec. 31.....	89.5 ^e	8.84	14.11	3.64	18.59	70.46	115.64	21.34	136.98
1928 Mar. 31.....	91.2 ^e	5.48	9.33	2.11	9.41	59.05	85.38	19.69	105.07
June 30.....	90.4 ^e	1.91	3.68	.55	10.16	29.78	46.08	17.08	63.16
Sept. 30.....	90.8 ^e	10.60	20.21	3.89	23.87	92.66	151.23	19.65	170.88
Dec. 31.....	92.8 ^f	9.94	27.78	5.08	22.84	88.23	153.87	21.61	175.48
1929 Mar. 31.....	93.1 ^f	5.76	14.45	3.99	8.67	74.35	107.22	20.47	127.69
June 30.....	93.6 ^f	3.52	8.32	2.16	15.44	45.91	75.35	17.98	93.33
Sept. 30.....	93.2 ^f	12.78	19.65	15.06	17.94	109.34	174.78	21.05	195.83
Dec. 31.....	93.2 ^f	10.79	15.04	14.15	9.98	100.09	150.05	22.20	172.25
1930 Mar. 31.....	92.8 ^f	4.63	7.35	7.35	8.06	69.18	96.57	19.92	116.49
June 30.....	91.8 ^f	3.50	3.80	1.79	13.79	43.78	66.66	16.61	83.27

* Data from press releases of U.S. Department of Commerce.

^a In private terminal elevators not attached to mills.^b In mills and elevators attached to mills.^c Wheat-flour stocks in wheat equivalent (4.7 bu. = 1 bbl.).^d Based on total output (114,438,544 barrels) of wheat flour reported at the census of manufactures, 1923.^e Based on total output (114,689,930 barrels) of wheat flour reported at the census of manufactures, 1925.^f Based on total output (118,174,812 barrels, preliminary figures) of wheat flour reported at the census of manufactures, 1927.

TABLE XXX.—AVERAGE DAILY VOLUME OF TRADING IN WHEAT FUTURES IN UNITED STATES MARKETS, MONTHLY FROM JANUARY 1921*

(Million bushels)

Year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	Year
1920-21.....	....	....	....	....	....	....	39.1	44.1	39.5	52.5	46.1	49.8	45.2 ^a
1921-22.....	45.5	39.6	57.1	54.0	53.7	43.3	36.5	67.9	61.3	48.9	37.4	41.8	48.7
1922-23.....	34.4	36.2	33.5	32.5	37.6	42.1	36.6	37.0	27.9	48.0	41.0	40.9	37.3
1923-24.....	32.3	31.4	28.3	30.2	27.1	21.1	14.3	18.1	22.8	18.0	14.4	34.0	24.3
1924-25.....	53.3	50.0	42.7	61.4	60.9	58.8	73.4	81.0	87.4	59.3	60.3	67.6	62.9
1925-26.....	56.2	60.0	59.0	60.4	65.2	90.3	60.6	58.3	69.0	55.8	48.8	46.3	60.9
1926-27.....	57.5	47.1	46.2	43.6	53.3	37.4	28.2	26.4	34.1	33.8	50.4	44.8	41.9
1927-28.....	40.7	42.4	36.9	36.7	34.9	20.9	15.4	22.1	34.2	66.2	56.6	36.2	37.0
1928-29.....	39.8	42.0	34.1	35.2	32.6	21.5	41.7	40.6	43.3	52.4	48.2	55.6	40.8
1929-30.....	111.1	83.9	58.4	66.8	75.2	64.3	51.3	67.4	46.2	60.0	38.6	55.1	64.9
1930-31.....	52.2	61.2	48.6	44.6	49.7	....	....	....	....	....	....	....	....

* Data of Grain Futures Administration, U.S. Department of Agriculture. Not compiled prior to January 1921.

^a Six-month average.

TABLE XXXI.—AVERAGE PRICES OF REPRESENTATIVE WHEATS IN LEADING EXPORTING AND IMPORTING MARKETS, MONTHLY, 1929-30*

(U.S. dollars per bushel)

Month	United Kingdom	United States			Canada		Argentina	Australia	Liverpool				
	British parcels	All classes and grades ^a	No. 2 Hard Winter (Kansas City)	No. 1 Northern (Minneapolis)	Weighted average (Winnipeg)	No. 3 Manitoba (Winnipeg)	78 Kilos (Buenos Aires)	Australian (Melbourne)	No. 1 (Manitoba)	No. 3 (Manitoba)	No. 2 Winter	Argentine Rosaflo	Australian
Aug.	1.46	1.26	1.23	1.35	1.44	1.53	1.19	1.27	1.77 ^b	1.71	1.43	1.40	1.56
Sept.	1.42	1.27	1.24	1.35	1.48	1.44	1.16	1.27	1.67	1.59	1.38	1.32	1.44
Oct.	1.38	1.24	1.22	1.31	1.39	1.34	1.14	1.27	1.59	1.52	1.33	1.27	1.35
Nov.	1.31	1.21	1.19	1.28	1.30	1.26	1.11	1.23	1.49	1.43	1.30	1.20	1.37
Dec.	1.41	1.23	1.21	1.31	1.34	1.30	1.19	1.27	1.60	1.54	1.40	1.35	1.48
Jan.	1.41	1.22	1.19	1.27	1.28	1.24	1.17	1.25	1.53	1.47	1.37	1.32	1.43
Feb.	1.24	1.16	1.13	1.25	1.14	1.09	1.05	1.14	1.37	1.30	1.24	1.20	1.28
Mar.	1.16	1.04	1.02	1.12	1.03	.99	.98	1.07	1.26	1.21	1.17	1.09	1.20
Apr.	1.17	1.03	1.01	1.11	1.08	1.04	1.04	1.11	1.28	1.23	1.19	1.15	1.23
May	1.14	1.01	.99	1.07	1.06	1.04	1.01	1.10	1.25	1.21	1.16	1.16	1.23
June	1.13	.94	.89	1.00	1.02	.99	.98	1.06	1.20	1.16	1.10	1.12	1.19
July	1.04	.83	.80	.92	.93	.91	.90	.95	1.12	1.08	1.02	1.03	1.11

* United Kingdom prices are averages of sales of wheat parcels in British markets for weeks ending Saturday, from *London Grain, Seed and Oil Reporter*; see WHEAT STUDIES, July 1928, Vol. IV, No. 8. United States prices are weekly averages of daily weighted average prices for weeks ending Friday, from *Crops and Markets*. Prices of No. 3 Manitoba at Winnipeg are averages for weeks ending Saturday, from *Canadian Grain Statistics*; for the Canadian weighted averages see WHEAT STUDIES, March 1929, Vol. V, No. 5. Australian prices at Melbourne are averages of weekly prices furnished direct. Argentine prices are averages for weeks ending Saturday, from *Revista Semanal*. Liverpool prices are for Tuesday of the same week, parcels to Liverpool or London, and are from Broomhall's *Corn Trade News*.

^a Six markets.^b Two-week average.

TABLE XXXII.—MONTHLY PRICES OF DOMESTIC WHEAT IN EUROPE, FROM AUGUST 1927*

(U.S. dollars per bushel)

Month	Great Britain			France (Chartres)			Italy (Milan)			Germany (Berlin)		
	1927-28	1928-29	1929-30	1927-28	1928-29	1929-30	1927-28	1928-29	1929-30	1927-28	1928-29	1929-30
Aug.	1.63	1.33	1.52	1.75	1.60	1.51	1.75 ^a	1.72	1.74	1.78 ^b	1.49	1.59
Sept.	1.43	1.19	1.29	1.57	1.58	1.48	1.73	1.81	1.75	1.68	1.36	1.47
Oct.	1.37	1.24	1.24	1.54	1.61	1.45	1.77	1.88	1.84	1.62	1.38	1.50
Nov.	1.32	1.28	1.22	1.48	1.60	1.43	1.90	1.87	1.85	1.57	1.37	1.51
Dec.	1.29	1.25	1.24	1.58	1.56	1.41	1.88	1.87	1.90	1.53	1.33	1.57
Jan.	1.29	1.25	1.24	1.58	1.59	1.40 ^a	1.93	1.92	1.94	1.52	1.35	1.60
Feb.	1.26	1.27	1.16	1.56	1.64	1.31	1.94	1.96	1.89	1.49	1.40	1.52
Mar.	1.27	1.27	1.08	1.65	1.68	1.37	2.00	1.95	1.86	1.59	1.44	1.55
Apr.	1.34	1.28	1.13	1.74	1.60	1.36 ^a	2.09	1.93	1.94	1.72	1.45	1.75
May	1.43	1.29	1.14	1.87	1.65	1.31	2.14	1.89	1.96	1.73	1.41	1.87
June	1.43	1.25	1.11	1.85	1.62	1.36	2.10	1.91 ^a	2.02	1.66	1.39	1.95
July	1.41	1.35	1.08	1.76	1.62	1.66 ^a	1.77	1.77	1.77	1.60	1.62	1.87

* Data for Great Britain are averages of weekly average *Gazette* prices as given in the *Economist*; for France, averages of Saturday prices furnished directly by Federal Reserve Board through November 1929, after which they are taken from *Bulletin des Halles*; for Italy, averages of Friday prices of soft wheat as given in *International Crop Report and Agricultural Statistics*; for Germany, monthly average prices as given in *Wirtschaft und Statistik*. All data are converted, for convenience, from the domestic currency in which they are quoted in the sources above into U.S. money by monthly average exchange rates.

^a Three-week average.^b Second half of August.

TABLE XXXIII.—UNITED STATES FLOUR PRODUCTION, NET EXPORTS AND SHIPMENTS, AND DOMESTIC DISAPPEARANCE, MONTHLY FROM JULY 1923*

(Thousand barrels)

Years	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	Total
A.—REPORTED PRODUCTION, ALL REPORTING MILLS													
1923-24	7,805	9,642	9,760	10,983	9,403	8,137	8,970	8,433	8,355	7,682	7,896	7,797	104,863
1924-25	8,465	9,842	10,459	11,371	9,187	8,855	9,853	8,248	7,347	6,781	6,942	7,745	105,095
1925-26	8,840	9,293	9,938	10,728	9,128	8,948	8,679	7,429	8,289	7,589	7,418	8,005	104,284
1926-27	9,570	10,447	10,843	10,678	9,618	8,909	8,624	8,023	8,936	8,309	8,497	8,528	110,982
1927-28	8,388	9,617	10,470	10,817	9,735	9,235	9,242	8,975	9,772	8,507	8,712	7,758	111,228
1928-29	8,516	10,370	10,512	11,587	9,909	9,269	10,014	9,026	9,207	8,636	9,334	8,912	115,292
1929-30	9,337	11,058	10,372	10,968	9,538	8,905	9,510	8,783	9,347	9,071	8,981	8,687	114,557
B.—ESTIMATED TOTAL UNITED STATES PRODUCTION													
1923-24	8,965	11,069	11,123	12,442	10,604	9,184	10,081	9,477	9,394	8,657	8,898	8,780	118,674
1924-25	9,503	11,022	11,694	12,691	10,249	9,870	10,968	9,215	8,217	7,606	7,780	8,655	117,470
1925-26	9,869	10,374	11,094	11,957	10,181	9,974	9,671	8,276	9,213	8,438	8,242	8,868	116,157
1926-27	10,572	11,520	11,940	11,761	10,582	9,800	9,471	8,809	9,801	9,100	9,334	9,358	122,048
1927-28	9,196	10,506	11,417	11,766	10,565	10,009	9,971	9,696	10,526	9,166	9,365	8,377	120,560
1928-29	9,186	11,164	11,327	12,449	10,577	9,905	10,682	9,648	9,840	9,236	9,974	9,568	123,556
1929-30	9,988	11,810	11,084	11,715	10,179	9,510	10,182	9,411	9,993	9,690	9,602	9,289	122,453
C.—NET EXPORTS AND SHIPMENTS TO POSSESSIONS													
1923-24	918	1,289	1,592	2,118	1,817	1,853	1,765	1,572	1,450	1,095	1,011	1,227	17,707
1924-25	831	993	1,511	1,909	1,653	1,510	1,060	976	1,425	1,012	746	859	14,485
1925-26	820	910	854	1,062	935	1,048	727	696	733	884	737	699	10,105
1926-27	848	1,403	1,617	1,429	1,400	1,270	1,084	905	929	1,062	1,162	914	14,023
1927-28	836	1,096	1,317	1,558	1,383	1,175	1,289	1,000	1,053	1,044	905	724	13,380
1928-29	683	1,001	1,066	1,436	1,261	998	1,429	1,273	1,312	1,156	986	1,051	13,652
1929-30	1,128	1,121	1,200	1,376	1,204	1,165	1,297	971	1,101	985	1,098	998	13,644
D.—CALCULATED DOMESTIC DISAPPEARANCE													
1923-24	8,047	9,780	9,531	10,324	8,787	7,331	8,316	7,905	7,944	7,562	7,887	7,553	100,967
1924-25	8,672	10,029	10,183	10,782	8,596	8,360	9,908	8,239	6,792	6,594	7,034	7,796	102,985
1925-26	9,049	9,464	10,240	10,895	9,246	8,926	8,944	7,580	8,480	7,554	7,505	8,169	106,052
1926-27	9,724	10,117	10,323	10,332	9,182	8,530	8,387	7,904	8,872	8,038	8,172	8,444	108,025
1927-28	8,360	9,410	10,100	10,208	9,182	8,834	8,682	8,696	9,473	8,122	8,460	7,653	107,180
1928-29	8,503	10,163	10,261	11,013	9,316	8,907	9,253	8,375	8,528	8,080	8,988	8,517	109,904
1929-30	8,860	10,689	9,884	10,339	8,975	8,345	8,885	8,440	8,892	8,705	8,504	8,291	108,809

* Reported production and trade data from U.S. Department of Commerce press releases, *Monthly Summary of Foreign Commerce*, and *Foodstuffs Round the World*. The estimates of total United States production are based on a detailed, but still partially incomplete, study of relations between monthly reported output and census totals and are subject to minor revisions.

TABLE XXXIV.—APPARENT DOMESTIC UTILIZATION OF WHEAT (CARRYOVERS DISREGARDED), ANNUALLY FROM 1920-21*

(Million bushels)

Crop year August-July	United States	Canada	India	Aus- tralia	Argen- tina	Chile	Hungary	Bulgaria	Jugo- Slavia	Rou- mania	Morocco
1920-21.....	525.1	97.4	362.8	29.4 ^a	90.2 ^a	21.0 ^a	37.9	28.1	39.2	59.9	17.9 ^b
1921-22.....	563.1	115.5	264.2	44.0	45.4	23.6	43.3	24.7	47.9	75.0	22.9
1922-23.....	667.4	120.8	338.4	46.5	55.4	24.4	49.6	28.3	43.5	90.4	12.2
1923-24.....	670.0	128.1	352.3	42.7	77.6	20.9	50.9	26.7	55.2	93.1	19.9
1924-25.....	608.0	70.0	322.5	44.4	73.9	19.3	38.0	26.4	48.2	67.2	27.1
1925-26.....	573.0	71.4	323.0	39.3	108.9	25.6	51.9	37.0	67.8	94.8	23.2
1926-27.....	632.4	114.7	313.2	54.7	65.9	23.6	53.0	34.3	61.7	99.7	15.4
1927-28.....	694.3	147.2	326.5	37.0	78.8	30.1	55.1	40.1	56.0	89.3	22.2
1928-29.....	765.1	160.5	315.7	58.8	56.4	....	73.2	48.4 ^c	94.5	114.0	20.7
1929-30.....	666.3	119.6	320.0	....	....	....	44.9	34.6	72.1	96.9	....
Average											
1909-14.....	580.1	101.5	302.1	35.9 ^a	63.4 ^a	19.0 ^a	....	....	....	....	16.7 ^b
1924-29.....	654.6	112.7	320.2	46.8	76.8	....	54.2	37.2	65.7	93.0	21.5

Crop year August-July	Algeria	Tunis	Egypt	British Isles	France	Germany	Italy	Belgium	Nether- lands	Denmark	Norway	Sweden
1920-21.....	21.8	6.5	42.9	258.1	306.6	142.4 ^d	241.7	42.4	24.9	7.7	4.9	16.9
1921-22.....	24.3	7.7	43.8	285.3	345.2	177.3 ^d	294.6	55.0	28.3	15.2	6.1	16.2
1922-23.....	21.2	4.4	43.7	276.7	298.3	109.4 ^d	277.3	50.3 ^e	30.0	15.5	7.5	18.3
1923-24.....	29.0	7.1	49.2	300.3	343.7	137.2 ^d	294.7	53.7 ^e	33.0	18.1	6.7	23.4
1924-25.....	17.7	4.9	44.1	281.8	326.8	170.1 ^d	258.8	52.4 ^e	31.4	12.4	6.1	17.4
1925-26.....	28.2	9.1	49.0	263.6	354.9	175.6	308.7	54.2 ^e	32.9	15.8	7.2	19.5
1926-27.....	25.2	12.7	46.0	289.3	315.3	187.2	307.2	53.0 ^e	33.9	16.0	6.8	18.2
1927-28.....	23.0	7.7	50.9	289.4	318.6	209.1	283.5	58.8 ^e	37.1	20.4	7.4	23.7
1928-29.....	26.2	6.8	50.9	270.3	347.9	219.2	316.0	59.9 ^e	37.3	28.9	10.0	27.2
1929-30.....	28.5	6.5	55.1 ^f	274.8	324.7	170.6	302.8	55.9 ^e	36.1	19.8	7.7	26.3
Average												
1909-14.....	29.8	7.0	42.0	277.3	361.2 ^g	219.9 ^g	236.3 ^g	65.4	27.6	11.8 ^g	4.1	15.2
1924-29.....	24.1	8.3	48.2	278.9	332.7	192.2	294.9	55.2 ^e	34.5	18.7	7.5	21.2

Crop year August-July	Spain	Portugal	Switzer- land	Austria	Czecho- Slovakia	Poland	Finland	Latvia	Estonia	Greece	Japan
1920-21.....	158.4	16.9 ^h	16.5	20.0	44.7	....	2.7	.97	....	21.8	35.9
1921-22.....	153.1	17.4	17.0	25.5	50.2	41.7	4.0	1.53	....	24.0	53.4
1922-23.....	125.3	16.5	19.1	20.8	43.9	49.3	5.8	2.06	....	26.5	43.8
1923-24.....	156.8	16.4	20.9	27.0	57.4	57.5	5.8	3.44	1.70	27.6	55.7
1924-25.....	122.6	16.5	17.0	23.2	53.8	54.6	5.3	3.52	1.40	28.5	37.3
1925-26.....	161.9	16.8	19.1	25.4	61.0	59.3	6.2	3.72	1.76	30.1	52.2
1926-27.....	145.6	16.5	20.6	26.4	54.2	60.6	6.1	3.54	1.75	31.8	43.8
1927-28.....	147.7	15.4 ⁱ	22.5	28.4	68.6	69.7	7.1	4.15	2.20	32.5	45.5
1928-29.....	139.5 ^j	16.5 ^k	20.9	27.5	68.9	61.7	7.9	5.47	2.28	35.2	48.5
1929-30.....	....	....	21.8	31.2	66.6	65.6	7.0	4.88	2.46	30.2	44.1
Average											
1909-14.....	136.6	....	20.2	71.4 ^l	....	....	...	....	....	....	29.2
1929-30.....	143.4	16.4	20.0	26.2	61.3	61.2	6.5	4.08	1.88	31.6	45.4

* Computed from production and trade data given in Tables III and XX. Dots (...) indicate that comparable production or trade figures are not available.

^a Crop of 1920-21 minus exports of 1921, and similarly for other years. Averages are for calendar years 1910-14 and 1925-29.

^b Crop of 1920 minus exports of 1920, and similarly for other years. Averages are for calendar years 1909-13 and 1924-28.

^c Trade figures partially estimated.

^d These figures are too low, as crops in earlier post-war years are underestimated and net imports, at least to 1924-

25, are incomplete. See WHEAT STUDIES, December 1924, I, 17-18.

^e Luxemburg included with Belgium after May 1922.

^f Net imports for only 10 months accounted for.

^g Pre-war boundaries.

^h Crop of 1920 minus exports of 1921 or plus imports of 1921, and similarly for other years. Averages are for calendar years 1910-14 and 1924-28.

TABLE XXXV A.—APPROXIMATE DISPOSITION OF WHEAT SUPPLIES IN THE UNITED STATES,
JULY-JUNE 1921-22 TO JULY-JUNE 1929-30*

(Million bushels)

Item	1921-22	1922-23	1923-24	1924-25	1925-26	1926-27	1927-28	1928-29	1929-30	1930-31
Initial stocks ^a	124	117	152	146	117	99	113	128	247	275
New crop ^b	815	868	797	864	677	831	878	915	809	851
Total supplies	939	985	949	1,010	794	930	991	1,043	1,056	1,126
Net exports ^c	269	208	135	257	96	209	194	146	143	...
Seed requirements ^d	93	88	76	81	79	84	90	84	83	...
Consumed for food ^e	463	468	477	479	493	494	505	506	514	...
Stocks at end ^f	117	152	146	117	99	113	128	247	275	...
Calculable disappearance....	942	916	834	934	767	900	917	983	1,015	...
Discrepancy ^g	-3	+69	+115	+76	+27	+30	+74	+60	+41	...

* Based so far as possible on official data.

^a Stocks include (a) official estimates of farm stocks (see Appendix Table XXVI); (b) official estimates of stocks in country mills and elevators (see Appendix Table XXVI); (c) Bradstreet's commercial visible (see Appendix Table XXVI); and (d) stocks of wheat held in and by and in transit to city mills (see Appendix Table XXIX), as raised by the U.S. Department of Agriculture to 100 per cent to include such stocks held by mills not reporting to the Census. These city mill stocks were first reported in 1925; and we have supplied rough estimates of 30, 35, 50, and 40 million bushels, respectively, for the years 1921-24.

^b Official figures.

^c Official data for domestic exports, plus re-exports, less imports. Includes shipments to possessions.

^d Official data for 1924-25 to 1929-30; figures for earlier years represent our adjustment of standing unrevised official estimates to render these consistent with revised official estimates in the later years.

^e Estimated directly on the basis of the trend of domestic disposition of flour, and adjusted official data on wheat milled per barrel of flour.

^f The "discrepancy" in each year is the difference between total supplies and total calculable disappearance. As

such, it represents (1) errors in the estimates of each of the calculable items; (2) wheat fed, lost, and wasted; and (3) changes in stocks of wheat and flour that are not accounted for in the stocks estimates that enter into the computation. If, as we believe, the items of calculable disappearance are moderately accurate, and if the official crop estimate is correct, the discrepancy ought each year to be a positive item, large enough to cover the quantity of wheat fed, lost, and wasted. According to estimates of the U.S. Department of Agriculture, the (a) loss, waste, and shrinkage of wheat and (b) the amount of wheat fed to livestock on farms where grown was as follows in 1924-25 to 1929-30, in million bushels: 42.7, 37.2, 39.5, 50.0, 56.7, and 58.2. More or less wheat is also fed to livestock elsewhere than on the farms where it is grown; the Department has estimated that 32.1 million bushels was so fed in 1929-30. When the "discrepancy" falls far below 50 million bushels, there is some reason to question the accuracy of the official crop estimate. For example, the estimates of the crops of 1921, 1925, and 1926, and apparently 1929, may be too low. That of 1923 may be too high, though there is reason to believe that the amount of wheat fed to livestock in 1923-24 was exceptionally large.

TABLE XXXV B.—APPROXIMATE DISPOSITION OF WHEAT SUPPLIES IN CANADA, AUGUST-JULY 1921-22 TO
AUGUST-JULY 1929-30*

(Million bushels)

Item	1921-22	1922-23	1923-24	1924-25	1925-26	1926-27	1927-28	1928-29	1929-30	1930-31
Initial stocks ^a	25	40	32	45	27	37	51	78	104	112
New crop ^b	301	400	474	262	396	407	480	567	305	396
Total supplies	326	440	506	307	423	444	531	645	409	508
Net exports ^b	184	279	346	192	324	293	333	406	185	...
Seed requirements ^b	39	40	39	38	40	39	42	44	45	...
Milled for food ^b	37	41	42	42	42	43	42	44	44	...
Unmerchantable ^b	12	10	19	12	11	12	28	30	7	...
Lost in cleaning ^b	9	12	12	10	6	19	7	13	9	...
Stocks at end ^c	40	32	45	27	37	51	78	104	112	...
Calculable disappearance ...	321	414	503	321	460	457	530	641	402	...
Discrepancy ^d	+5	+26	+3	-14	-37	-13	+1	+4	+7	...

* Based so far as possible upon official data.

^a Official estimates since August 1924 (see Appendix Table XXVI), though the figures for August 1924-27 run a little lower than figures on carryovers employed by the Dominion Bureau of Statistics in some of its disposition tables. Figures for August 1921-23 represent our adjustment to a July 31 basis of official estimates of carryover as of August 31.

^b Official figures.

^c The "discrepancy" in each year is the difference between total supplies and total calculable disappearance. When the discrepancy is negative by a rather large amount, as in 1925-26, and probably 1924-25 and 1926-27, there is reason to suspect that the crop estimate may be too low; and a large positive discrepancy, as in 1922-23, suggests that the crop estimate may be too high.

TABLE XXXV C.—APPROXIMATE DISPOSITION OF WHEAT SUPPLIES IN ARGENTINA,
AUGUST-JULY 1921-22 TO AUGUST-JULY 1929-30*

(Million bushels)

Item	1921-22	1922-23	1923-24	1924-25	1925-26	1926-27	1927-28	1928-29	1929-30	1930-31
Initial stocks ^a	40	53	64	66	57	51	69	90	135	70
New crop ^b	191	196	248	191	191	230	282	307	137	271
Total supplies	231	249	312	257	248	281	351	397	272	341
Net exports ^b	118	139	172	123	94	143	178	224	150	..
Seed requirements ^c	20	19	21	23	25	24	25	23	24	..
Consumed for food ^d	47	48	49	53	54	57	59	61	63	..
Stocks at end ^a	53	64	66	57	51	69	90	135	70	..
Calculable disappearance ...	238	270	308	256	224	293	352	443	307	..
Discrepancy ^e	-7	-21	+4	+1	+24	-12	-1	-46	-35	..

* Based so far as possible upon official data.

^a Our estimates of August 1 stocks are reached as follows. It is assumed that stocks on the following December 31 equaled 10 million bushels except in 1926 and 1929, when we use 20 and 25 million bushels. To these stocks are added net exports in August-December and estimates (5/12 of the annual total) of Argentine consumption of wheat for food in these months. The estimate for stocks on August 1, 1930, is necessarily tentative, though it is based upon a direct estimate of stocks published by the *Times of Argentina*, issue of September 22, 1930; and all estimates are subject to a much wider margin of error than is true of the United States and Canada.

^b Official data.

^c Based on official data for acreage sown and average seed requirements per acre.

^d Based on official data on flour milled less flour exported in calendar years.

^e The "discrepancy" for each year is the difference between total available supplies and total calculable disappearance. If the calculable estimates of disappearance and the official crop estimates are accurate, the discrepancy ought in each year to be a positive item of a few million bushels. The negative discrepancies in 1922-23, 1928-29, and 1929-30 seem large enough to suggest official underestimation of crops in those years. The large positive discrepancy in 1925-26 suggests either overestimation of the crop or exceptional use for feed and waste; the crop of 1925 was of exceptionally poor quality.

TABLE XXXV D.—APPROXIMATE DISPOSITION OF WHEAT SUPPLIES IN AUSTRALIA,
AUGUST-JULY 1921-22 TO AUGUST-JULY 1929-30*

(Million bushels)

Item	1921-22	1922-23	1923-24	1924-25	1925-26	1926-27	1927-28	1928-29	1929-30	1930-31
Initial stocks ^a	47	18	28	26	23	17	23	29	26	35
New crop ^b	129	110	125	165	115	161	118	160	126	215
Total supplies	176	128	153	191	138	178	141	189	152	250
Net exports ^b	115	50	86	124	77	103	71	109	63	..
Seed requirements ^c	10	10	10	11	11	12	14	14	17	..
Consumed for food ^d	27	28	28	29	29	30	30	31	31	..
Stocks at end ^a	18	28	26	23	17	23	29	26	35	..
Calculable disappearance ...	170	116	150	187	134	168	144	180	146	..
Discrepancy ^e	+6	+12	+3	+4	+4	+10	-3	+9	+6	..

* Based so far as possible upon official data.

^a Stocks on August 1 are calculated by adding to the Australian visible supply as of December 1 following (see Appendix Table XXVIII) the net exports of August-November and estimated quantities of wheat consumed for food in these months. Since, however, there is evidence that the visible supply on December 1 contained mostly new-crop wheat in 1922, 1926, and 1928, we have employed figures of 1, 0, and 1 million bushels, respectively, for these years in place of 10, 2, and 8 million. Like our estimates of August 1 stocks in Argentina, the estimates for Australia are subject to a much wider margin of error than are those for the United States and Canada; and the estimate for August 1, 1930, is necessarily preliminary.

^b Official data.

^c Official data prior to 1926-27; for later years estimates are based on acreage sown and average sowings per acre. The figures include wheat sown for hay as well as for grain.

^d Based on official monthly data on flour production, less exports of flour. Figures since 1927-28 estimated.

^e The "discrepancy" in each year is the difference between total supplies and total calculable disappearance. If the calculable estimates of disappearance and the official crop estimates are accurate, the discrepancy ought in each year to be a positive item of a few million bushels. In general the discrepancies are too small to warrant the inference that the crops may have been wrongly estimated, as is improbable because the final estimates of Australian production are in effect censuses; the errors may well lie in our estimates of stocks, in fluctuations in the use of wheat for feed, or in changes in other stocks than are considered in our calculation.

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