WHEAT STUDIES

OF THE

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SURVEY OF THE WHEAT SITUATION

APRIL TO JULY, 1931

PESSIMISM continued to dominate the principal wheat markets during most of April–July. Wheat prices on the international market and in exporting countries fell to new low levels by the end of July, though in important continental European importing countries prices were maintained by high tariffs and milling regulations. Export and international prices declined in the face of crop developments that now suggest a world wheat crop of 1931 substantially smaller than that of 1930, of an active European demand for wheat in most of the period, and of the maintenance of a large ex-European demand.

The crop year 1931–32 has opened with aggregate stocks of old-crop wheat of record size in the four overseas exporting countries, but rather low in important European importing countries. Recent crop reports suggest a strikingly short crop in Canada, the second largest of post-war years in the United States, and perhaps in Russia, and an aggregate outturn of moderate size in the chief European importing countries. The present outlook for the Argentine and Australian crops is of course obscure; but it appears probable that these countries will not harvest notably large crops from their reduced wheat areas. With such a supply position, total net exports of wheat and flour in 1931–32 may fall within a range of 710 to 800 million bushels; and if stocks are firmly held in exporting countries—a development that now seems more probable than improbable—international wheat prices may tend to rise from the low level of July–August 1931. Presumably a rise could not go far in the presence of the heavy stocks in North America; and at the moment distinct firmness in prices seems more likely to become evident in the second than in the first third of the present crop year.

STANFORD UNIVERSITY, CALIFORNIA
September 1931

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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.

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SURVEY OF THE WHEAT SITUATION

APRIL TO JULY, 1931

The volume of international trade in wheat and flour during 1930–31 was of moderate size as compared with other post-war years; but the course of trade throughout the year was strikingly unusual. In December–March trade was unusually light, in April–July unusually heavy, in proportion to the total for the season. In no other year had the increase in Broomhall's shipments between December–March and April–July been so large; in no other year had shipments during May–June been so heavy; in only one other year had the season's peak in shipments occurred in May. The improvement in trade in April–July 1931 can be traced mainly to an improvement in the demand for wheat in a number of European countries where governmental restrictions upon imports were partially relaxed due to the depletion of native wheat stocks. Moreover, China and Japan continued to take unusually large quantities of wheat during the spring and early summer months. These import demands were supplied in varying amounts by the different exporting countries. The April–July shipments of each of the principal exporters looked unusually large in relation to their December–March shipments. Of the four major exporting countries, however, Australia alone sent out a record amount of wheat during April–July 1931, as compared with earlier years; United States exports overseas were small (largely as a result of the price-pegging activities of the Grain Stabilization Corporation), while Argentine and Canadian exports were of moderate size. The spring peak which many had anticipated would occur in Russian shipments failed to eventuate.

In spite of the notable improvement in trade and of forecasts indicating a striking reduction in the world wheat crop of 1931, wheat prices during April–July remained at the lowest level of the century. Indeed, in July new record low prices for wheat futures were established in Chicago, and Liverpool futures dropped to the lowest points of the season. Uncertainty as to the future policy of the Farm Board regarding liquidation of its enormous stocks of wheat, and pessimism induced by poor business prospects, weakness in the securities markets, and the disturbing political and financial conditions in Europe appear to have been the chief price-depressing factors. An outstanding feature of the price situation in the United States was the drastic decline in cash prices during the latter part of June, the decline representing a transition from the pegged price of the 1930 crop to the open market price of the 1931 crop. Cash–futures price relationships during April–June were such as to create great difficulties for United States millers.

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Aggregate stocks of wheat and flour in the four major exporting countries apparently increased by something like 75 million bushels during the course of 1930–31; on August 1, 1931, they stood at a record high level. Canadian and United States carryovers were probably the largest in history; but the year-end stocks in Australia and in Argentina had apparently been exceeded in at least one other post-war year. While adequate data do not exist to judge the stocks positions in Russia, in the remaining exporting countries, and in European importing countries, the available evidence suggests that Russian wheat stocks probably were not significantly large, and that aggregate stocks in the other countries were relatively low at the end of 1930–31. India may have carried over a moderately large amount of wheat, but these supplies probably will little affect trade or prices in the crop year 1931–32.

The two most striking features of crop development in April–July were the virtual failure of the Canadian crop and the remarkable development of the United States winter-wheat crop. The former is now privately forecast as the smallest of post-war years, and the latter is officially estimated as the largest on record. Spring wheat in the United States, like spring wheat in Canada, deteriorated markedly in April–July; the last government report suggests the smallest spring-wheat harvest since 1893. In total, the United States crop promises to be the second largest of post-war years, exceeded only by the huge crop of 1928. European crop developments were not spectacular during April–July; incomplete preliminary estimates indicate an aggregate crop of moderate size in European importing countries, and a fairly normal outturn, trend considered, in the Danube basin. In view of detailed considerations presented in subsequent pages we infer that despite an increase in wheat acreage in Russia, the Russian crop of 1931 will not exceed, and may even fall short of, the outturn of 1930. All told, the Northern Hemisphere crop ex-Russia promises to be about 140 million bushels smaller in 1931 than in 1930, and about 300 million bushels smaller than the enormous crop of 1928. At the moment the most tenable assumption regarding yields per acre in Southern Hemisphere countries is perhaps that they will be about average; if so, and if wheat areas have been reduced by the percentages reported, the outturn of the Southern Hemisphere will fall about 75 million bushels below last year's harvest, Argentina having a crop approximating 200 million bushels and Australia one approximating 165 million. Under such conditions the total world wheat crop of 1931 (including Russia but excluding China and a number of smaller producers) might turn out to be 275 million bushels or more smaller than the crop of 1930. One must expect, at least in so far as the experience of recent years is a reliable criterion, that final official estimates of the wheat crop of 1931 will differ from the tentative evaluations now current.

Our evaluations of probable carryovers of old-crop wheat, and of the probable size of each of the new crops, suggest that during the season 1931–32 the volume of international trade will be significantly smaller than in the past season. European countries, especially the group of variable importers (France, Italy, and Germany), can probably be counted upon to reduce their takings by a sizable amount. Total probable import requirements would seem to approximate 710–800 million bushels in terms of net exports. Any calculation of exportable surpluses must rest heavily upon assumptions, some of which almost necessarily will prove to be incorrect. If Argentina and Australia have crops of about 200 and 165 million bushels respectively, if Russia finds that her crop and collecting campaign are such as to warrant exports of only 75–100 million bushels, if the Grain Stabilization Corporation does not offer for export over 85 million bushels of its huge wheat stocks, if unusually large amounts of wheat are fed to livestock and wasted, if standing crop estimates are not strikingly changed, then the total exportable surplus for 1931–32 may be expressed in terms of the range 630–850 million bushels. We take it that to set import requirements of 710–800 bushels against exportable surpluses of 630–850 million is not to suggest a prospective tight international statistical position, since exportable surpluses, if calculated on the assumption that the major exporting countries will desire to hold only normal carryovers at the close of 1931–32, would sum up to much more than 850 million bushels. Neither, however, do these figures suggest such a strikingly easy position as existed last year. Under the assumed conditions, wheat prices might be expected to remain at a relatively low average level in 1931–32 as compared with most other post-war years, but perhaps to move upward from the strikingly low level of late July and early August. Especially would an upward movement appear to be in prospect if (as seems more probable than improbable) the trade cycle definitely should appear to be entering upon its upward phase. The prospects for rising prices, however, seem to be less favorable in the first than in the second third of the crop year.

I. NEW-CROP DEVELOPMENTS

India and Northern Africa

The Indian wheat crop of 1931 is now estimated at 347 million bushels. Although about 44 million bushels smaller than last year's bumper crop, it is larger than any of the crops of 1925–29, and about 13 million bushels larger than the ten-year post-war average. The large size of the crop must be attributed chiefly to a rather large acreage, 32.2 million acres as compared with 31.7 million last year and a ten-year average of 30.5 million. The indicated yield per acre, 10.8 bushels, is slightly below the ten-year average, although better than any of the last six years except 1930.

Preliminary official reports from northern Africa, so far as they are available, show decreased acreage and increased production, as compared with last year, thus indicating large acre-yields. The preliminary forecasts of production for Morocco and Tunis appear to establish new high records for those countries, but preliminary forecasts often differ widely from final estimates. News from Algeria points to a less favorable outturn there, on account of damage by hot winds and drought. Earlier reports from Morocco and Tunis also mentioned droughty conditions, but later news was generally favorable. Broomhall on June 17 reported good quality and bushel weights as high as 65 pounds and over in the Tunisian crop.

The United States

The winter-wheat crop of the United States made excellent progress throughout the period April–July, culminating in what now appears to be a crop of record size. The latest official estimate indicates an outturn of 775 million bushels, as compared with 760 million in 1919, when the largest winter-wheat crop previously recorded was harvested. The large crop, some 205 million bushels above the 1921–30 average, may be attributed partly to a fairly large acreage, but chiefly to an excellent acre-yield, promoted by favoring conditions over the main producing areas during the whole period of growth, and perhaps particularly during the later stages of growth.

The autumn-sown wheat acreage was the smallest of post-war years, 42.0 million acres as compared with an average of 43.4 million acres for the preceding ten years. However, the unusually small percentage of abandonment induced by the mild winter left for harvest an acreage that is somewhat the largest of post-war years. The latest official figure for harvested acreage, 40.7 million acres, indicates about 3.1 per cent abandonment as against a ten-year average of 11.8 per cent. As a result the harvested area in 1931 is 3.0 per cent larger than that of 1930. The estimated yield per acre, 19 bushels, is as high as any recorded in more than forty years. It was equaled in 1914.

The course of the crop season reveals a marked absence of setbacks or striking reversals of crop prospects. Except in certain districts which were affected by continued drought, the crop entered the winter in good condition, particularly in the Great Plains. The official condition estimate for all winter wheat as of December 1 was 86.3 per cent, or about 3 points above the December average. However, last year's crop entered the winter in almost equally good condition, 86.0 per cent, but was reported at 77.4 per cent as of April 1, in contrast with an April condition of 88.8 per cent for this year's crop, a figure 9 points higher than the average April condition. This clearly indicates a very favorable winter and early spring; and the superiority over average conditions was fairly well maintained during April and May, official estimates remaining from 8 to 9 points above the 1921–30 average. Some apprehension was felt that the growth might be too rank, developing straw at the expense of heads, but the favorable growing weather was succeeded by favorable conditions for heading, ripening, and harvesting throughout most of the winter-wheat belt. Official estimates as of July 1 raised the forecast for yield per acre from 16.1 to 17.5 bushels, and for total winter wheat from 649 to 713 million bushels. This was a huge in-

crease, but August estimates were raised by approximately an equal amount, the production estimate being placed at 775 million bushels, indicating an acre-yield of 19 bushels on an unchanged acreage of 40.7 million acres. Early indications point to fair quality, but lower protein content and weight per measured bushel than in 1930.

By contrast with the good crops of the East and the Southwest, winter wheat in the Rocky Mountain and Pacific areas and the more northerly plains fared very poorly, being affected by the prevailing drought in those regions. This is evidenced by the poor showing of fall-sown white wheats in the official estimates. Official June figures forecast a decrease from last year's outturn of 11 per cent for this class of wheats, as compared with increases in the production of both hard and soft red winter varieties. July condition was from 19 to 32 points below the average for the states of Montana, Wyoming, Utah, Washington, Oregon, and California, while for the states of Missouri, Illinois, Indiana, Ohio, Kentucky, Tennessee, Oklahoma, and Texas it was 20 points or more above the average. Kansas produced a record crop of over 200 million bushels, with a very good acre-yield on a slightly increased acreage; Nebraska, lying to the north, on the other hand, with a slightly below-average yield on a reduced acreage produced a crop of about average size, much smaller than the good crop of last year.

In sharp contrast with the favorable progress of the winter-wheat crop and its record outturn, the United States spring-wheat crop has developed under progressively unfavorable conditions toward a harvest which promises to be the smallest, certainly since 1910, and probably since 1893. The official figure for spring-wheat acreage stands at 17.0 million acres, representing a reduction of 19.2 per cent from last year's harvested acreage. Undoubtedly this low figure is due partly to abandonment of acreage in drought-ridden areas. Condition estimates as of June 1 showed spring wheat 18 points below average while winter wheat was 9 points above average. July crop reports indicated a still lower condition for spring wheat, with durum 20 points, and other spring wheat 27 points, below the July average. Thus the development of spring wheat was even more strikingly unfavorable than the development of winter wheat was strikingly favorable. Only the preponderance of winter wheat in the total acreage has kept at a high level the estimate of the total wheat crop.

Lack of subsoil moisture, due to previous drought, was noticeable in the leading spring-wheat regions at seeding time, although timely rains aided in the preparation of the surface soil. Drought and high winds, with consequent soil-blowing, hindered germination and made some reseeding necessary. Frost damage was reported during May, but apparently there was considerable recovery in areas which received good rains afterward. Although moderate rains relieved the general drought from time to time, subsoil reserves were never replenished, and the scanty supply of surface moisture was further dissipated by extreme heat in late June and the latter half of July. The results of these adverse conditions have been thin stands, backward growth, short straw, premature ripening, poorly filled heads, and light bushel-weight. Many fields have been cut for fodder or pastured. Damage from grasshoppers began to receive mention in reports from South Dakota during July, and increased in range and severity, some fields having been cut prematurely in order to save them from the pests.

Conditions have frequently been described as spotted, some localities being more favored by local showers than others. However, the only important spring-wheat state which showed on the whole an average condition as of July 1 was Minnesota; the most disastrous conditions were recorded in Montana and North Dakota, where the July condition was reported at 35 and at 47 per cent, respectively, while Washington and South Dakota fared but little better. The yield per acre forecast as of July 1 was 9.1 bushels for durum and 9.2 bushels for bread wheats, as compared with average yields of 12.4 and 12.8 bushels per acre. August estimates of production, however, indicate a yield of only

about 7 bushels per acre on the average for this year's spring crop; for durum it is only 6.5 bushels per acre, while for other spring wheat it is 7.1 bushels.

As of August 1, the official estimate of the United States crop as a whole is 894 million bushels, private estimates averaging about 20 million bushels lower. This is a large but not a record crop; the government's estimate is exceeded by the crop of 1928 and by the crops of 1915, 1918, and 1919, while the lower private estimates are equaled or exceeded by the crops of 1927 and 1914 as well. It is interesting to observe the part played by winter and spring crops in these years. Only in 1915 were both crops strikingly large; in 1914 and 1919 large winter crops combined with average spring crops to produce large totals; in 1918, 1927, and 1928, on the other hand, average winter crops were augmented by large spring crops. The 1931 outturn shows a greater disparity between the two components than any other year of large total production.

Canada

Crop prospects in western Canada, perhaps more than in the spring-wheat belt of the United States, have been poor throughout the period under review. Official estimates of production are not yet available, but private estimates for the Prairie Provinces as of August 1 average about 220 million bushels, a shorter crop than any harvested during the past decade. Although a few favored districts, chiefly in the northern park belt, will probably harvest average to good yields, the prospects over most of the three Prairie Provinces range from a poor average to complete crop failure. It is reported that many farmers in drought-stricken areas will not even recover seed.

The official report of planting intentions indicated a reduction of about 8 per cent from last year's acreage; official acreage statistics published August 12 indicate only 3.3 per cent reduction. But unfavorable seeding conditions and the blowing out of seed after planting caused a greater reduction, and acreage has since been cut for feed or ploughed under, so that an acreage for harvest of roughly 18 million acres is perhaps a reasonable estimate.[1] This would place the probable acre-yield for the three provinces at about 12 bushels per harvested acre. The yield per sown acre promises to be no more than 10 bushels, as compared with an average of 17.4 bushels for the last ten years and 18.2 bushels for the last five years.[2]

In April and May a decided lack of subsoil moisture and the occurrence of high winds, drought, and soil-blowing made seeding precarious. Sowing was delayed in some districts by the fear of cutworm damage or by the hope of rain, and much reseeding of early-sown fields appears to have been necessary. Early reports, while fairly unanimous in describing the growing crop as backward or only fair, were usually optimistic as to the possibility of a good yield if general soaking rains should arrive within a short time. Adequate rains failed to arrive; the outlook became increasingly bad; and by June 6 the *Manitoba Free Press* reported that an unspecified percentage of the wheat was beyond recovery.

The month of June brought the most drastic declines in prospects, official condition figures showing a decline of 29 points in Manitoba, 32 points in Saskatchewan, and 7 points in Alberta. By the end of June large areas were conceded to be past recovery, although the month had brought some good rains. Frost and insect damage, as well as continued high winds, helped to lower the condition, but most observers agree that the chief cause of deterioration was the lack of moisture. The Dominion Bureau of Statistics stated on July 9 that a study of condition figures at June 30 in the years back to 1908 revealed nothing comparable to the critical crop situation on the prairies this year; an extreme drought had occurred in June 1910, but at June 30 that year crop prospects were 50 per cent higher than at the end of June 1931. According to the official report, wheat crop conditions declined during June in every crop district of Manitoba and Saskatche-

[1] Calculation based on estimates by the Pool of percentages of sown areas not to be harvested as sources of threshed or marketable grain.

[2] Averages for all Canada.

wan, and in the most important districts of Alberta. Central and southern Saskatchewan and southeastern Manitoba were the regions most severely affected, while the best condition reports came from northern Alberta.

More favorable weather early in July came too late to benefit the wheat crop materially, though it helped the filling of kernels. Later reports have mentioned excessive heat, considerable hail damage, and some destruction by grasshoppers; stem rust is reported prevalent in Manitoba. Northern Alberta, heretofore the most promising region, has suffered from cold weather, and a late harvest is in prospect there.

In eastern Canada crop development has been generally good, and an average outturn or better may be expected; however, as the winter-wheat crop of Canada is officially estimated at 23.3 million bushels, a total crop estimate of around 240 million bushels for the Canadian crop of 1931 may prove not to be too low, and the final production figure is practically certain to be the smallest since 1919.

Europe Ex-Russia

The outlook in Europe ex-Russia during the growing season appeared to indicate about an average outturn for the region as a whole. Unfavorable weather for ripening and harvesting in several countries has probably reduced the prospect somewhat below the average. The standing official estimates of production now available are shown in the following tabulation in million bushels, with comparisons for the two preceding years. However, the general trade opinion now seems to consider the current official estimates for Germany and for Spain too high.

Country	1929	1930	1931
Roumania	99.8	130.8	112.4
Hungary	75.0	84.3	65.6
Bulgaria	33.2	58.3	57.1
Jugo-Slavia	95.0	80.3	85.0
Germany	123.1	139.2	165.0
Italy	260.1	210.8	238.8
Austria	11.6	11.4	12.1
Spain	154.2	146.0	145.3
Holland	5.5	6.1	8.0
Belgium	13.2	13.5	15.1[a]
Finland	1.1	1.2	1.0
Greece	8.5	12.0	18.4
England and Wales	47.5	40.0	37.7
Total	927.8	933.9	961.5

[a] Winter wheat only.

The four countries of the Lower Danube promise a combined outturn of about 320 million bushels. This is smaller than the large combined crops of 1930 and 1928 but larger than any other crop of recent years. The indicated acre-yield for Jugo-Slavia is only 16.3 bushels as compared with an average of 17.0 for the last five years. Bulgaria, on the contrary, shows a really good acre-yield, 19.9 bushels as compared with a five-year average of 15.9. Roumania appears to have good average yields on a reduced acreage. Since Bessarabia and some other parts of Roumania suffered from drought, the remaining areas must have enjoyed excellent yields. Hungary has had the poorest outlook of all the Danubian countries, and the yield is light, about 15.9 bushels to the acre as compared with a five-year average of 20.6 bushels. The short crop is attributed largely to drought, excessive heat, and insect damage. The quality of Hungarian grain, however, is reported to be good.

Of the other southern European crops, those of Greece and perhaps Italy appear to be large, and that of Spain perhaps less than average. According to an official figure quoted by the United States Department of Agriculture, 239 million bushels, a better than average acre-yield, has been obtained in Italy on a slightly increased acreage. The forecast may be too high, in view of the fact that there were many early reports of damage by drought and storms and of troublesome weed growth and Broomhall mentions a possible outturn of 228 million. A crop of 239 million bushels would be the largest harvested in post-war years with the exception of 1929 and possibly 1925. Early crop reports from Greece were conflicting, but the official estimate of 18.4 million bushels indicates a crop of record size for post-war years. Crop news from Spain during the growing period repeatedly mentioned droughty conditions, especially in the South, and in the latter part of the period heat damage was re-

ported. The preliminary official estimate of 145.3 million bushels represents about an average crop, but late reports are to the effect that private observers consider this too high. A Canadian Trade Commissioner suggests 128 million bushels or less as the probable outturn.[1]

An increase in acreage of 21.2 per cent over last year is the most striking feature of the German crop situation. Very cold spring weather retarded growth, but favorable warm weather in the second half of May and in June gave rise to optimistic views of the crop prospect. The official estimate indicates an acre-yield of 31.0 bushels, which is higher than any post-war year except 1928, but recent reports anticipate a reduction below this estimate because of damage by heavy rains in June and July. Of neighboring countries in Central Europe, Austria reports a crop half a million bushels larger than last year's despite rather low condition figures, apparently indicating a large increase of acreage;[2] Czecho-Slovakia and Poland, so far as can be ascertained, have yields average or below on areas little changed from last year.

The acreage officially reported for the French wheat crop of 1931 is 5.4 per cent smaller than the revised acreage figure for 1930. The tentative forecast of outturn published by the United States Department of Agriculture, 272 million bushels, would indicate a yield of 21.8 bushels per acre, which is a good average. There were many complaints of cold and excessively rainy weather in May and the early part of June, but with warm, clear weather in the latter half of June and the first half of July prospects improved and were generally described as about average. However, another period of rainy weather has been reported as delaying the harvest, and endangering quality as well as yields; trade opinion seems now to favor a crop smaller than 272 million bushels.

Preliminary official estimates show comparatively large crops in Holland and Belgium. The British Isles apparently will harvest the smallest crop in over twenty-five years, as a result of large acreage reductions combined with rather poor yields; an official forecast for England and Wales gives 37.7 million bushels as the probable production on an area of 1.2 million acres, which represents a reduction in acreage from last year of about 10 per cent. For the remaining countries of northern and western Europe, except Finland, no official figures are available, but the tentative forecasts by the United States Department of Agriculture indicate that total production for these countries including the British Isles and the Low Countries will be about equal to that of 1928, with average-sized crops in Scandinavia, and fairly large crops in the Baltic states. These estimates may be subject to extensive revisions which seem more likely to be downward than upward in view of the cold, backward spring and heavy rains over much of northern Europe this year.

Russia[3]

At the moment, neither official nor reliable unofficial estimates are available with regard to the Russian wheat crop of 1931. Because of the general necessity of students to patch together information from many sources, some of which may not represent accurate quotation of official statistics, we undertake to present and discuss here material gathered in the course of careful inquiry and comparison. More can be said of acreage than of crop and weather conditions, prospective yield per acre, and prospective production in 1931.

It should be observed that this year we are unable to find, in a fairly wide range of publications, either official Russian percentage estimates of the areas of fall-sown wheat and rye that were abandoned in the winter of 1930–31, or numerical estimates

[1] *Canadian Grain Statistics*, July 31, 1931.

[2] No official acreage figure has been issued to date.

[3] The official statistical data presented in this section are to be found in three principal sources: *Pravda*, July 8, 1931; *Agricultural Statistics of the Union of Socialist Soviet Republics*, published by the Lenin Academy of Agricultural Sciences in Moscow, 1930; and press reports of the statements made in London by M. Lubimoff, Russian delegate to the Conference of Wheat Exporting Countries held in London, May 1931. Areas originally stated in hectares are converted throughout to areas in acres at 2.471 acres per hectare.

of the condition of grain crops in the spring and summer of 1931. We are not in a position to say whether or not publication of such statistics has been discontinued, though it is certain that these figures this year have not appeared in the newspaper *Pravda*, where they were available in 1930. It should be observed further that data for acreage in 1931 are preliminary rather than final official statistics; that in considerable part the data for 1930 were calculated from official reports giving the areas for 1931 and the percentage relationship of these areas to the areas of 1930; that some items have had to be calculated by addition or subtraction of others; but that the only figure employed for which no official basis can be found is that of the area sown to winter barley in the fall of 1929 and 1930—a relatively small acreage to judge by the areas of 1924–28.

The following tabulation, in million acres, shows the allocation of the total Russian crop acreage in 1930 and 1931 to three main categories:

Crop	1930	1931	Change in million acres	Change in percentage
Wheat and rye	155.8	162.9	+ 7.1	+ 4.5
Other grains	96.3	97.8	+ 1.5	+ 1.6
All grains	252.1	260.7	+ 8.6	+ 3.4
Other crops than grain	63.2	79.1	+15.9	+25.1
Total	315.3	339.8	+24.5	+ 7.5

About half of the total Russian crop acreage was planted to the bread grains in each of these two years; the grains taken as a group occupied around four-fifths of the total area, and other crops around one-fifth. The enlargement of acreage in 1931 as compared with 1930 appears in total to have amounted to about 24.5 million acres, or 7.5 per cent. Most of this increase, some 15.9 million acres, was apparently in the acreage of crops other than grains; the area in wheat and rye shows an increase of about 7.1 million acres, and the area in other grains an increase of only 1.5 million.

It is of interest to consider briefly the areas sown for the crops of 1931 in relation to the areas contemplated in the plan. The following tabulation shows, in million acres, the bread-grain areas and the areas in other crops than bread grains for 1930 and 1931, in contrast with the "planned" areas; the classification is a little inexact because the bread-grain areas include around a million acres sown to winter barley.

Crop	1930	1931	Plan for 1931
Bread grains	156.8	163.9	176.5
Other crops	158.5	176.9	176.0
Total	315.3	340.8	352.5

It is apparent that the plan was a little more than fulfilled with regard to other crops than the bread grains, wheat and rye; but that it failed to be executed with regard to the bread grains, of which the area was planned to be over 12 million acres larger than eventuated. A good deal of this deficiency is doubtless attributable to a late cold spring that delayed the seeding of spring-sown wheat, but some of it at least was due to other causes since the sowings of winter wheat and rye together fell over 6 million acres below the plan. Except for millet, the plan was not fulfilled with regard to any of the important spring-sown grains (spring wheat, oats, barley, millet, corn, legumes, and buckwheat).[1] The plan was exceeded, however, with regard to several important spring-sown, non-grain

[1] Available official data on the areas of spring-sown grain crops are as follows, in million acres, for 1930 and 1931:

Crop	1930	1931	Change
Wheat	58.62	62.90	+4.28
Oats	44.27	42.50	—1.77
Barley	17.38	15.83	—1.55
Millet	12.57	12.99	+ .42
Corn	9.68	9.74	+ .06
Buckwheat	4.91	4.70	— .21
Legumes	4.83	5.80	+ .97
Rye	1.08	.90	— .18
Rice	.39	.33	— .06
Vetch	.....	2.43	....
Spelt	.....	.07	....
Other grains	.....	2.34	....

Data from *Pravda*, July 8, 1931; areas for 1930 calculated from official statistics giving absolute areas for 1931 and the percentages which 1931 areas were of 1930 areas.

crops,[1] including seeded hay, flax, cotton, sugar beets, garden vegetables, and dark tobacco; of this group of important non-grain crops, the plan was not executed so far as concerns hemp, sunflowers, soy beans, potatoes, roots, melon vines, and light tobacco. In general, therefore, the plan for 1931 seems to have been most successful in so far as it contemplated increase of area in non-grain crops which include principally seeded hay, the several oil-seeds, cotton, and vegetables; least successful with regard to the fodder-grain crops; and intermediately successful with regard to the bread grains.

The figures given above are such, however, that the stated increase of bread-grain area between 1930 and 1931 (some 7.1 million acres) cannot be taken without reservation or qualification. The statistics for 1930 apply to acreage after deduction for the areas of fall-sown wheat and rye that were winterkilled; the statistics for 1931 include no allowance for winterkilling. During the preceding five years the winterkilling of wheat averaged about 1.5 million acres, of rye about 3.5 million. With average winterkilling of the area sown for harvest in 1931, there would be an increase in bread-grain area of only about 2.1 million acres rather than 7.1 million.

The bread-grain areas for 1930 and 1931 compare as follows, in million acres, if allowance is made for winterkilling of average extent in the winter of 1930–31:

Crop	1930	1931	Change
Winter wheat	23.27	29.63	+ 6.36
Spring wheat	58.62	62.90	+ 4.28
Total wheat	81.89	92.53	+10.64
Winter rye	72.87	64.45	— 8.42
Spring rye	1.08	.90	— .18
Total rye	73.95	65.35	— 8.60
Total bread grains.	155.84	157.88	+ 2.04

Thus the year 1931 witnesses a probable increase in the wheat area of about 10 million acres, but a decrease in the rye area of about 8 million; and in considerable part, one may suppose, the general increase in wheat area was achieved through replacement of winter-rye sowings by winter-wheat sowings. Taken alone, the increase in the total area of wheat is probably less significant in its bearing on the probable Russian export surplus of wheat than it would be in the absence of a decrease in the area of rye.

We are unable to ascertain with precision how far the increase in total wheat acreage took place on the state grain farms as compared with collective and individual farms, or what were the geographical regions in which the increase took place. The state farms, however, are said to have increased their sowings of spring wheat by 5 million acres or more in 1931 as compared with 1930; if so, this would more than account for the total increase in spring-wheat acreage, and there must have been a decline in the spring-wheat area sown by collectives and individuals taken together. Of the seven regions where the spring-wheat area is large (Ukrainia, North Caucasia, Lower Volga, Middle Volga, Ural, Western Siberia, and Kazakstan), it seems probable that increases in the area sown occurred especially in the two Volga regions, Kazakstan, and possibly Western Siberia; the increases in Ukrainia, North Caucasia, and the Ural regions were probably smaller. An increase of about 4.11 million acres (apparently without allowance for winterkilling in the winter of 1930–31) seems to have occurred in the winter-wheat area of Ukrainia—more than 52 per cent of the increase in Soviet Russia, although Ukrainia contained only 42 per cent of the harvested winter-wheat acreage in 1930, and 44 per cent of the sown winter-wheat acreage in 1931. Presumably most of the remainder of the increase in total Russian

[1] Available official data on the areas of spring-sown non-grain crops are as follows, in million acres, for 1930 and 1931 (sources and method of calculation as given in the footnote on p. 484):

Crop	1930	1931	Change
Seeded hay	15.03	17.73	+2.70
Potatoes	14.38	14.84	+ .46
Sunflower	8.57	11.35	+2.78
Flax	5.55	7.49	+1.94
Cotton	3.87	5.82	+1.95
Garden vegetables ...	2.83	5.00	+2.17
Sugar beets	2.82	3.69	+ .87
Hemp	1.85	2.28	+ .43
Melon vines	2.63	2.05	— .57
Roots	.92	1.39	+ .47
Soy beans	.82	1.11	+ .29
Dark tobacco	.11	.22	+ .11
Light tobacco	.14	.19	+ .05

winter-wheat acreage occurred in North Caucasia, which with Ukrainia is the principal area where winter wheat is grown.

If the wheat crop of 1931 is harvested from an area some 10.64 million acres, or 11.3 per cent, larger than the area harvested in 1930, with equal yields per acre in both years one could expect the wheat crop of 1931 to approximate the huge total of 1,206 million bushels as compared with 1,084 million in 1930. But so far as we can ascertain, the wheat yield per acre of 1930 (13.2 bushels) was exceptionally high, the average for 1923–30 being about 11 bushels, the lowest (in 1924) about 9 bushels, and the highest before 1930 (in 1925 and 1926) about 12.4 bushels. An average yield per acre of 11 bushels would, if the acreage for 1931 approximates 92.53 million acres, result in a crop of about 1,018 million bushels, a crop that would be smaller than the crop of 1930. On the stated acreage, it would require a yield per acre of 11.7 bushels to produce in 1931 a crop equal in size to the crop of 1930, if in fact that crop was 1,084 million bushels; a yield per acre of 11.7 bushels would be about 6.4 per cent above the average for 1923–30. In the judgment of many commentators, the late sowing of spring wheat, combined with reports or rumors of prolonged dry weather in the Volga basin particularly, and also of premature ripening, do not suggest a yield per acre of all wheat in excess of an average yield, but rather a yield somewhat below average; there appears to be a promise of a yield per acre about of average size or perhaps a little above for winter wheat, but more or less below average for spring wheat, which covers more than twice as large an area. We are not in a position to evaluate the opinions of commentators otherwise than to state that we have not seen, up to August 25, evidence or authoritative statements which controvert this point of view.

If Russian wheat production in 1931 may reasonably be expected, on the somewhat slender basis of data now available, to fall near or below 1,000 million bushels, and if, further, the rye crop (both through reduction of acreage and perhaps through reduction of yield per acre) falls below that of 1930, the harvested bread-grain crop of 1931 must fall substantially below that of 1930. The wheat crop, indeed, might not much exceed that of 1926 (914 million bushels). It is difficult to see—or at least would be difficult to see if Russia were a country where economic activity were less subject to governmental controls—how the outlook at the moment involves prospective large exports of wheat from Russia during the crop year 1931–32. As a matter of fact the outturn of crops, at least within fairly wide limits of fluctuation, may be less significant in the development of the export movement of wheat than several other factors, which are discussed below.[1]

China

The Bureau of Statistics of the National Government at Nanking, after two years of experiment, has issued the first official "preliminary forecast" of the Chinese wheat crop. The production for 1931 is forecast at 605 million bushels, as compared with an estimated average of 633 million. Of this total the Manchurian, or spring-wheat crop, is forecast at 143 million bushels, a high figure in comparison with some private estimates of Manchurian production. Disastrous floods have occurred in central and northern China since this forecast was issued.

The Southern Hemisphere

At this season the oncoming wheat crops of Argentina and Australia are still in the early stages of growth; yield per acre and to a considerable extent production will be determined by the weather during the growing season. According to an official statement, the sown area in Argentina has been reduced by 20 per cent as compared with the preceding year. Drought made seeding hazardous; many farmers were hampered by lack of money; there has possibly been something of a disposition to regard wheat cultivation as potentially less profitable than production of grass and feedstuffs. At the moment there appears to be little evidence suggesting either high or

[1] See pp. 512–13.

low yields per acre, and for the time being an average post-war yield per acre is perhaps to be regarded as the reasonable expectation. Such a yield might result in a crop of about 200 million bushels, which would fall substantially below the crops of 1923, 1926–28, and 1930, but well above the poor crop of 1929. The Australian area sown is supposed by unofficial observers to have fallen 25–30 per cent below the area of 1930. Here the weather was extraordinarily wet, with floods in many areas. Adequate reserves of moisture usually point toward relatively good yields per acre in Australia; but since observers seem to regard the moisture as excessive this year, it may be that an average post-war yield per acre is to be regarded at the moment as the reasonable expectation. Even on an area reduced by about 25 per cent from the high figure of 1930, an average yield per acre could result in a crop of about 165 million bushels, which would rank with the relatively large post-war crops of 1924, 1926, and 1928, but would fall nearly 50 million bushels short of the big crop of 1930.

II. INTERNATIONAL TRADE

Volume and Course of Trade

As compared with earlier post-war years, the volume of trade in 1930–31, 787 million bushels as measured by Broomhall's shipments and around 825 million as measured by preliminary net export figures, appears to have been of moderate size or slightly larger. In two years, 1926–27 and 1928–29, the volume of trade was notably larger, and in five years it was notably smaller; these comparisons are apparent from the following data which show annual shipments and net exports of wheat in million bushels:

August–July	Broomhall's shipments	Net exports
1921–22	647	697
1922–23	676	711
1923–24	775[a]	823
1924–25	715	768
1925–26	668	692
1926–27	814	846
1927–28	793	815
1928–29	928[a]	940
1929–30	613	625
1930–31	787	825

[a] Fifty-three weeks.

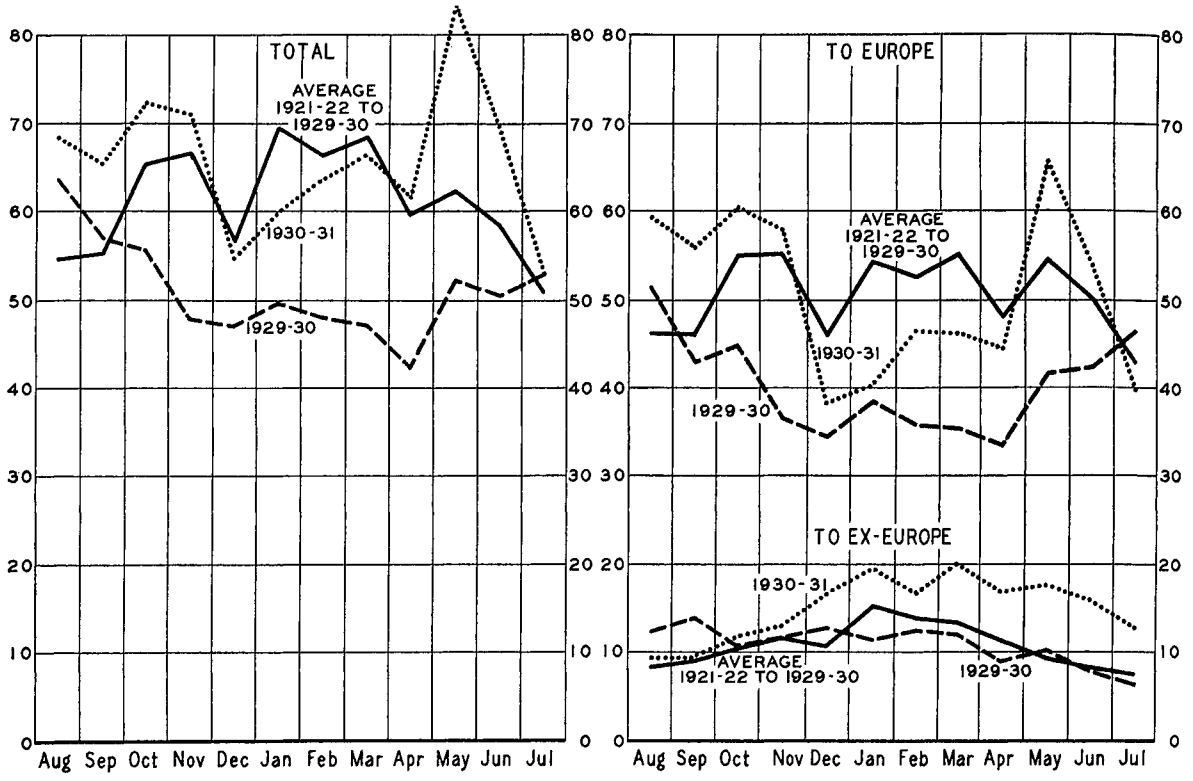
With exporting countries in possession of unusually large supplies of wheat and the principal net importing countries in possession of rather small supplies at the beginning of the crop year, total shipments might well have reached a higher figure in 1930–31 if governmental measures in certain European importing countries had not tended to restrict wheat consumption and further to reduce stocks, if general business conditions had been such as to encourage optimism instead of pessimism in the wheat markets, and if a larger proportion of the world's available supplies of wheat had been in the less conspicuous positions rather than in the visible supplies of North America and Australia.

On the whole, however, the total volume of trade in 1930–31 did not differ greatly from the estimates of trade published earlier in the season. At the end of December Broomhall's estimate of probable shipments stood at 736 million bushels, an estimate of probable net exports published by the International Institute of Agriculture stood at 825 million, and our estimate of probable net exports stood at the same figure. Before the middle of April it seemed likely that Broomhall's earlier estimate of shipments was somewhat too low and that our estimate of net exports was somewhat too high; accordingly, Broomhall's estimate was raised to 784 million and our estimate of net exports was lowered to 805 million. The discrepancy between shipments and net exports was apparently rather large.

The course of trade in 1930–31 was more strikingly unusual as compared with earlier years than was the total volume of trade. A relatively large proportion of the total shipments for the year was made in August–November, a strikingly small proportion in December–March, and an unusually large proportion in April–July. The following tabulation shows the percentage of shipments made in each of the

CHART 1.—INTERNATIONAL SHIPMENTS OF WHEAT AND FLOUR IN TOTAL, TO EUROPE, AND TO EX-EUROPE, BY MONTHS, AUGUST 1929—JULY 1931, AS COMPARED WITH AVERAGE SHIPMENTS 1921–22 TO 1929–30*

(*Million bushels*)



* Compiled from Broomhall's weekly shipments published in the *Corn Trade News*. July shipments to Europe and to ex-Europe are partly estimated. Appendix Table VII presents weekly shipments during April–July, 1931.

four-month periods during the past ten years:

	Percentage shipped in Aug.–Nov.[a]	Percentage shipped in Dec.–Mar.[a]	Percentage shipped in Apr.–July[b]
1921–22	33.6	34.5	31.9
1922–23	32.3	33.5	34.2
1923–24	28.6	34.9	36.5
1924–25	35.7	38.0	26.3
1925–26	31.1	35.2	33.7
1926–27	28.6	36.8	34.8
1927–28	31.8	34.4	33.8
1928–29	30.7	39.3	30.1
1929–30	35.8	30.7	33.4
1930–31	34.4	30.7	34.9

[a] Seventeen weeks.
[b] Eighteen weeks.

Only in 1929–30 did shipments in December–March represent such a small proportion of the total as they did in 1930–31; and in no year except 1923–24 did April–July shipments appear larger in percentage terms than they did during the past four months. Moreover, in absolute terms the increase in trade between December–March and April–July was larger than in any other post-war year.[1] The unusual increase in shipments during April–July, which seemed in prospect in April,[2] appears attributable chiefly to the policies adopted by European countries to influence the consumption and price of their native wheats, to the reluctance of foreign importers to build up stocks of wheat in the face of the uncertainty which they felt regarding the

[1] Changes in the volume of world shipments between December–March and April–July are shown below in terms of million bushels:

	Shipments		Shipments
1921–22	−17.5	1926–27	−16.6
1922–23	+ 5.8	1927–28	− 4.5
1923–24	+13.3	1928–29	−67.2
1924–25	−83.8	1929–30	+16.2
1925–26	− 9.3	1930–31	+32.9

[2] See WHEAT STUDIES, May 1931, VII, 333.

future disposal of the supplies of wheat held in the United States by the Grain Stabilization Corporation and perhaps to a relative strengthening of feed grain prices in certain countries. The quota or other milling provisions in force in many European countries presumably caused native wheat to be used in relatively larger quantities than usual during the early part of the crop year and imported wheat to be used in relatively larger amounts during the later months. Moreover, importers were inclined to buy wheat only as it was needed because of the possibilities that their governments might lower import duties and that the Stabilization Corporation might sell considerable quantities of wheat abroad, thus depressing prices.

In Chart 1, which shows shipments by months for the past two years and average monthly shipments for the period 1921–22 to 1929–30, the outstanding feature of the international movement of wheat during 1930–31 appears to have been the strikingly large May and June shipments. In no preceding post-war year have aggregate shipments in these two months been so large as in 1931. Shipments of over 83 million bushels in May 1931 were exceeded only in 1927 when over 84 million bushels were exported; and June shipments of almost 70 million bushels were surpassed only in 1929 when the total was about 2 million larger. Moreover, it is significant that a May peak in world shipments has occurred in only one other year, 1926–27; in that year May shipments were but slightly over one million bushels larger than in the preceding month of heaviest trade, whereas in 1930–31 May shipments were over 11 million bushels larger than shipments in October, the month ranking second in volume of trade. An explanation of the heavy trade in the closing months of the past crop year is apparently to be found mainly, as our later discussion will indicate, in the unusual situation prevailing in the major European importing countries.

Sources of Exports

The sources of international shipments during April–July 1922–31 are shown in Table 1, together with data of net exports from the four principal exporting countries. Chart 2 (p. 490) shows the course of shipments in 1930–31 from North America, Argentina, and Australia. Of the four major exporters only Australia shipped a notably large amount of wheat in April–July 1931 as compared with earlier years; exports from Canada, Argentina, and the United States were of moderate size or smaller. As regards other countries, it is noteworthy that Russia shipped a larger amount of

Table 1.—International Shipments and Net Exports of Wheat and Flour from Principal Export Areas, April–July, 1922–31*

(Million bushels)

April–July	International shipments (Broomhall)								Net exports from			
	Total	North America	Argentina	Australia	Russia	Balkans	India	Others[a]	United States	Canada	Argentina	Australia
1922	206.4	105.6	61.2	36.8	...	2.8[b]	....	...	55.7	47.8	58.1	32.3
1923	231.6	131.9	60.7	15.8	...	4.7[b]	18.5	...	45.1	66.2	57.1	18.0
1924	283.3	144.0	86.4	29.9	4.0	7.1[b]	11.8	...	28.4	103.0	75.6	28.8
1925	188.0	104.2	31.0	44.3	...	4.0[b]	4.5	...	43.4	54.2	31.8	48.9
1926	224.8	138.8	42.0	22.8	7.6	7.6	3.4	3.0	45.9	83.9	38.7	22.8
1927	283.2	141.6	71.2	48.8	8.0	5.6	7.6	.4	50.7	82.6	65.7	44.6
1928	268.0	144.8	74.4	33.2	0.0	7.2	3.6	4.8	25.9	106.4	62.4	30.4
1929	278.9	144.8	89.1	33.4	0.0	9.1[c]	.2	3.3[c]	42.8	92.0	89.2	31.0
1930	204.6	121.2	34.8	22.3	3.9	9.8	3.9	8.7	41.6	65.9	33.0	20.7
1931	274.5	119.0	63.1	67.1	9.9	10.3	.5	4.6	41.0	74.9	64.9[d]	65.2[d]

* Shipments figures are Broomhall's cumulative totals for eighteen weeks from the *Corn Trade News*. These totals and their distribution differ slightly from the totals in Table 2, p. 493, and the weekly data given in Appendix Table VIII. Net exports are official data.

[a] North Africa, Chile, Germany, France, etc.

[b] Includes also shipments from other areas.

[c] Approximate distribution.

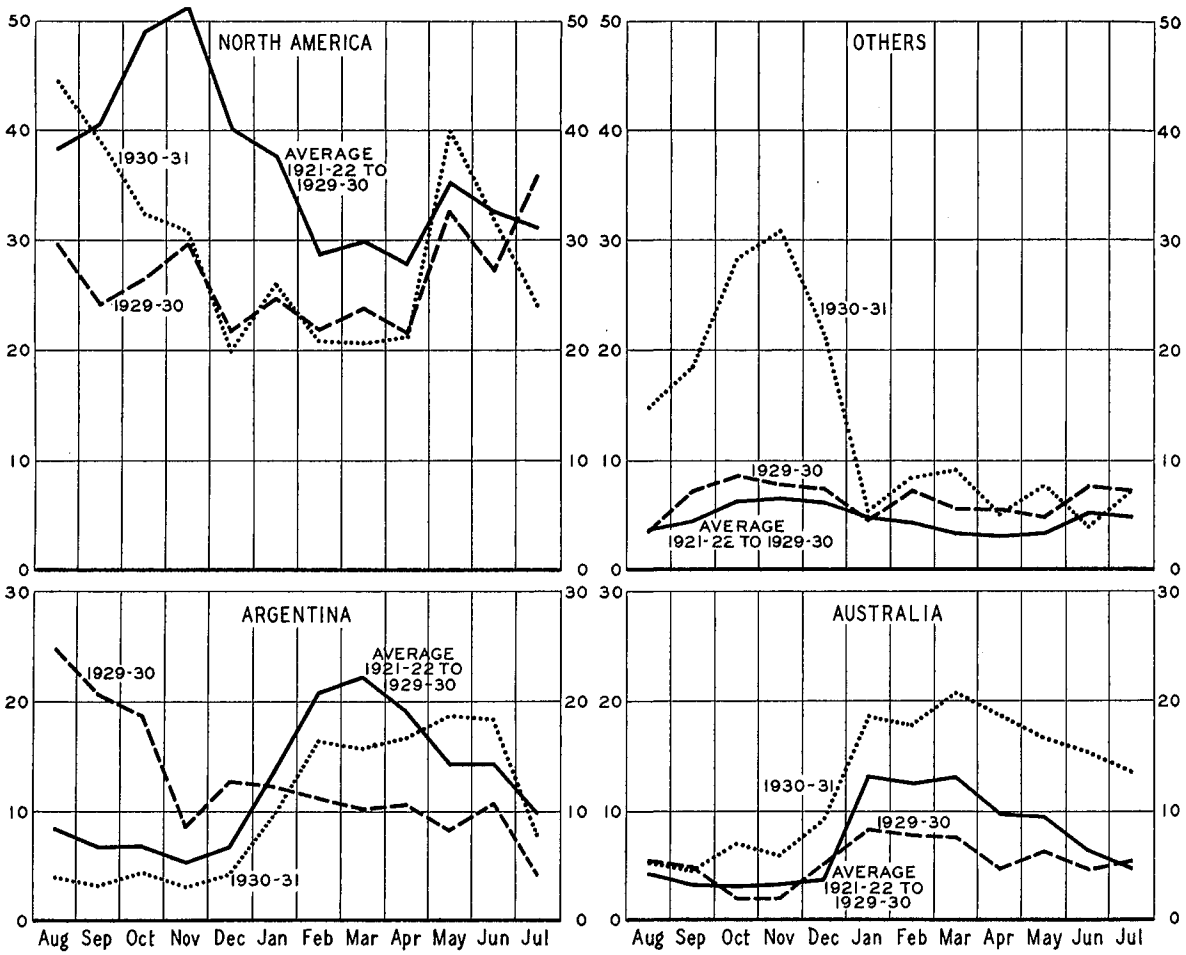
[d] Partially estimated from Broomhall's shipments.

wheat during April–July 1931 than in the corresponding period of any other post-war year; and that the movement of wheat from the Balkans (including Hungary) approximated the large shipments of April–July 1930. Shipments from Russia, however, did not increase sharply in the spring, as was thought probable by some commentators during the winter.

North American shipments during April–July, though small as compared with most post-war years, represented an unusually large proportion of the years' shipments from North America; moreover, they were larger in relation to December–March shipments than in any other year of the decade. That exports from the United States and Canada were somewhat smaller than usual during April–July does not appear strange in view of the narrow spreads which prevailed between Liverpool futures prices on the one hand, and Chicago and Winnipeg prices on the other. There can be little question that the restricted export movement from the United States is to be attributed mainly to the buying activities of the Grain Stabilization Corporation, which during most of the period kept cash wheat

CHART 2.—INTERNATIONAL SHIPMENTS OF WHEAT AND FLOUR FROM NORTH AMERICA, ARGENTINA, AUSTRALIA, AND OTHER COUNTRIES, BY MONTHS, AUGUST 1929—JULY 1931, AS COMPARED WITH AVERAGE SHIPMENTS 1921–22 TO 1929–30*

(*Million bushels*)



* Compiled from Broomhall's weekly shipments published in *Corn Trade News*. See Appendix Table VII for weekly shipments during April–July, 1931.

prices and the price of the May future in United States markets considerably above corresponding prices in the United Kingdom. It likewise seems reasonable to attribute the unusual seasonal distribution of United States exports to the policies of the Farm Board and the activities of the Grain Stabilization Corporation; for presumably most of the wheat exported in April–July (a quantity large in relation to the amount exported in December–March) represented Stabilization Corporation wheat which was moved either to Canada for storage, or to foreign markets in accordance with the announcement of export policy made by Mr. Milnor on February 26. In stating the new export policy of the Corporation, Mr. Milnor declared that it was deemed advisable to sell in the export markets during March–June something like 35 million bushels of wheat then in export positions. It is now interesting to observe that gross wheat exports during those months amounted only to 19 million bushels, and of this amount something like half went to increase United States stocks in Canadian ports.

In Canada, however, the greater freedom of the export movement during April–July than during December–March does not appear explicable on the basis of factors operating within that country itself. The Liverpool–Winnipeg (futures) price-spreads were on the whole narrower during April–July than during December–March; moreover, no notable change or at least no public announcement of change appears to have been made in the export policy of the Canadian Pool. It is possible, of course, that an unusually large portion of the April–July shipments from Canada represented forward sales of wheat made in December and January when the price-spreads between the markets appear to have been more conducive to large exports, but no adequate statistical evidence exists to judge this matter. In general, therefore, it seems reasonable to attribute the unusually large increase in Canadian trade during April–July to the notable improvement in European demand which occurred during those months, the demand for strong wheat being such as to encourage the consumption of high-grade Canadian wheat at prices appreciably higher than those prevailing for the lower-quality Argentine wheats and for the wheats of Australia, Russia, and the minor exporting countries. It should be observed that part of the price-preference for high-quality wheat probably arose out of the quota provisions and the high tariff laws in force in European countries.[1]

Argentine shipments of 63 million bushels during April–July 1931 appear neither strikingly large nor strikingly small in relation to shipments for the corresponding period of other post-war years or to the size of the Argentine crop harvested in December–January. Yet in proportion to total Argentine shipments for the year, and in relation to Argentine shipments during January–March, the exports of April–July were larger in 1931 than in any other year of the decade. The notable increase in the wheat movement was presumably due primarily to a general improvement in European demand, but also in part to a widening of the Liverpool–Buenos Aires price-spread during April–May, a widening which to some extent may perhaps be attributed to a rapid depreciation in the Argentine exchange.[2]

Huge Argentine corn shipments took place during April–July apparently without, as we had deemed possible in April, curtailing wheat shipments; the peak in Argentine corn shipments came in June at a time when the wheat export trade was exceedingly heavy.

Australian shipments were of record or near-record size in each of the four-month periods of the past crop year; during April–July 1931 exports exceeded those for the corresponding months of 1927 (the year which previously held the record for large April–July shipments) by almost 20 million bushels. It is readily apparent that the

[1] For the argument involved see WHEAT STUDIES, May 1931, VII, 306.

[2] Weekly averages of noon buying rates in New York for cable transfers to Argentina during April–July were as follows in cents per gold peso:

	April	May	June	July
First week	79.0	72.6	68.9	72.6
Second week	79.0	71.4	68.9	72.1
Third week	77.0	71.3	69.7	69.7
Fourth week	74.3	70.3	69.5	68.8
Fifth week	....	....	72.0	....

chief factor responsible for the large shipments from Australia during the past four months, also during the past eight months, was the bumper wheat crop of 1930. Yet, even in view of the size of the 1930 crop, April–July shipments appear to have been strikingly large. In retrospect, it seems noteworthy that the Australian crop flowed to export more freely during April–July than during January–March. Only in one other year, 1928, did April–July shipments exceed those of January–March. To what extent the unusual distribution of exports during January–July 1931 was due to political, economic, and weather factors operating in Australia is not yet entirely clear; but it appears reasonable to infer that some of these factors may have been important. There seems to be little reason to suppose that farmers or exporters would optimistically have held much wheat for higher prices during any part of the year; on the other hand discouragement over the price situation may well have become more pronounced as the season advanced. Depreciation in the Australian exchange may have encouraged exports during the period, but this factor was probably as important in January–March as in April–July, if not more so; the exchange declined in January, and remained stable at a relatively low level during February–July. Improvement in the European demand for wheat during April–July probably played some part in causing Australian exports to be notably large during those months. This factor, however, was probably less important in Australia than in the other exporting countries, since approximately half of the Australian shipments during April–July, as well as during January–March, were destined for ex-European countries. In this connection it appears significant that, as is apparent in Chart 2, total shipments from Australia declined from April to May, whereas shipments from North America, from Argentina, and from other countries showed appreciable increases, reflecting the increase in European demand. Consequently, one must look mainly to the ex-European situation for an explanation of the unusually large Australian shipments of April–July.

The outstanding feature of the chart showing monthly shipments from other countries is that no striking spring bulge occurred in 1931. During the winter of 1930–31 a number of commentators expressed the opinion that shipments from Russia would probably become large again in the spring months, as was customary in pre-war years. But Russian exports did not increase notably during April–July: the weekly average of shipments in August–December was 3.5 million bushels; in January–March, 1.1 million; in April–July, .6 million. Presumably Russian exports failed to revive in the spring and summer of 1931 because available supplies of old-crop wheat were too low to permit large exports. In the absence of reliable stocks figures, however, such a conclusion must rest upon uncertain assumptions and theoretical considerations rather than upon statistical evidence. For the season 1930–31 Russian wheat exports were strikingly large as compared with other post-war years; a figure presumably official, recently published by the International Institute of Agriculture, places total exports during August–April at 103.2 million bushels, a figure which appears large as compared with Broomhall's estimate of 91 million bushels for shipments during the same period.

The Balkans and Hungary continued to export large quantities of wheat during April–July, shipments during those months of over 10 million bushels approximately equaling December–March shipments—an unusual relationship. It seems probable that the Danubian countries, especially Hungary and Roumania, responded to the increased demand in European importing countries during April–July just as North America and Argentina responded. Moreover, farmers, exporters, and government agencies in those countries[1] presumably did not feel inclined in April–July, even if they did during December–March, to hold their wheat for a rise in prices.

Northern African exports appear to have increased markedly since the harvesting of

[1] In Jugo-Slavia and Bulgaria government agencies have been handling grain surpluses with a view to maintaining prices of native wheat.

the new crop; this was to be expected in view of the apparent size of the crop and of the premium placed upon northern African wheats in France as a result of the operation of the quota law in that country. Shipments from India were notably small during the last four months of the year despite the harvesting of a good-sized wheat crop, the continuation of reduced freight rates on wheat transported to Karachi,[1] and the introduction in June of reduced wharfage charges at Karachi. The export stimulus of a good international price was lacking.

Distribution of Imports

As may be seen from Table 2, shipments to Europe during April–July, and also August–July, were of moderate size as compared with earlier post-war years; whereas

Table 2.—International Shipments of Wheat and Flour by Destination*

(Million bushels)

Year	April–July (18 weeks)			August–July (52 weeks)		
	Total	To Europe	To ex-Europe	Total	To Europe	To ex-Europe
1921–22.....	206.1	181.3	24.8	647.1	546.7	100.4
1922–23.....	231.7	200.7	31.0	676.4	585.9	90.5
1923–24.....	283.3	246.0	37.3	775.3[a]	626.5[a]	148.8[a]
1924–25.....	188.2	169.2	19.0	715.2	639.7	75.5
1925–26.....	225.4	190.0	35.4	667.6	532.3	135.3
1926–27.....	282.5	233.3	49.2	814.4	682.4	132.0
1927–28.....	268.2	218.0	50.2	792.8	661.8	131.0
1928–29.....	278.9	213.7	65.2	928.1[a]	703.1[a]	225.0[a]
1929–30.....	204.6	170.3	34.3	612.9	483.1	129.8
1930–31.....	274.5	209.9	64.6	786.5	607.5	179.8
Average 1909–14.....	218.2	189.7	28.5	624.7	542.7	82.0

* Data from Broomhall's *Corn Trade News*.
[a] Fifty-three weeks.

shipments to ex-European countries were notably large during the same two intervals, larger than in any year other than 1928–29. Although April–July shipments to Europe of 210 million bushels were only of moderate size as compared with other years, they were strikingly large in comparison with shipments during December–March. The change in the volume of wheat shipped to Europe between December–March and April–July was about 33 million bushels, the largest positive change of post-war years. A somewhat similar increase in European shipments had occurred in April–July 1929–30; but the corresponding change in that period amounted only to 21 million bushels. Shipments to ex-European countries were, as usual, smaller in April–July than in the preceding four months. It is interesting to note, however, that the decline during the latter part of the past season, 10 million bushels, was not nearly so great as in the other two years of large ex-European shipments, 1923–24 and 1928–29, when the declines were 33 and 38 million bushels respectively.

The high level at which the ex-European demand for wheat was maintained during April–July is one of the most striking features of the trade situation during the period under review. Shipments to China and Japan, which generally decrease appreciably during the last third of the crop year, increased in April–July 1931 to a record post-war height of 27 million bushels. Table 3 (p. 494) shows the quantities of wheat shipped to specific ex-European destinations in April–July and in August–July of the years 1926–27 to 1930–31. Precisely why China and Japan, especially China, should have taken such large quantities of wheat during 1930–31, and particularly during the last four months of the season, is not clear at the moment. Presumably the low international price of wheat was one factor of importance; a low international price-level prevailed in each of the other two years of large shipments to China, 1923–24 and 1928–29. Moreover, it appears probable that the large supplies of relatively low-grade wheat available in Australia since January tended to encourage purchases; in 1923–24 the Orient took the lower grades of the huge American crop and in 1928–29 the lower grades of the Canadian crop. Low ocean freight rates and a depreciated Australian exchange probably helped to keep the price of imported wheat low in China during 1930–31. Yet depreciation in the

[1] According to *Foreign Crops and Markets* (July 6, 1931) rail rates on wheat, which represented reductions of about 40 per cent, were renewed on June 20 to be operative until September 14. On June 22 wharfage charges at Karachi were reduced by about 30 per cent.

Chinese exchange must have offset to some extent the advantage of the low prices asked by exporting countries for wheat suitable for consumption in the Orient; and the problem of explaining the large shipments of 1930–31 is further complicated by the lack of adequate price indexes for native Chinese produce (native wheat and commodities used as substitutes for wheat).

None of the other ex-European countries or groups of countries demanded a strikingly large amount of wheat during either April–July or August–July of the past season. Shipments to Central America were moderately large; but the total had been considerably larger in 1928–29, while April–July shipments had been exceeded in corresponding months of 1927, 1928, and 1929. Brazil, Egypt, Chile, India, and Peru took quantities of wheat which likewise appear of moderate size as compared with shipments to those same destinations in other recent years. Presumably several of these countries would have taken somewhat more wheat during the past season in the absence of legislative restrictions,[1] but in no case for which data are available did strikingly small shipments appear definitely to result from such restrictions. The only one of the ex-European countries aside from China and Japan whose shipments seem to be of any special interest in view of the prevailing circumstances is India. Shipments of about 11 million bushels to India during August–July impress one as being somewhat large in view of the record Indian wheat crop of 1930, of the good-sized crop of 1931, of a wheat import duty of 66 per cent,[2] and of enforced reductions in the transportation rates on wheat—reductions which seem to have been planned partly for the purpose of encouraging the use of native wheat in some of the more densely populated sections of India which are relatively remote from the major wheat-growing areas. A completely satisfactory expla-

TABLE 3.—BROOMHALL'S SHIPMENTS OF WHEAT AND FLOUR BY EX-EUROPEAN DESTINATIONS, APRIL–JULY AND AUGUST–JULY, 1926–31*

(*Million bushels*)

Destination	April–July (18 weeks)					August–July (52 weeks)				
	1927	1928	1929	1930	1931	1926–27	1927–28	1928–29[a]	1929–30	1930–31
Central America[b]	19.91	25.18	24.94	13.67	18.94	55.62	55.62	70.37	50.07	58.05
China and Japan	9.59	10.18	17.21	7.05	27.15	30.73	31.39	69.48	33.61	67.36
Brazil	8.78	8.71	10.87	8.64	9.40	22.73	26.68	30.26	38.17	26.54
Egypt	4.73	3.77	4.98	2.62	3.91	10.98	9.16	17.85	7.60	11.06
North and South Africa	2.70	2.20	1.60	1.01	1.23	7.04	5.94	7.29	2.68	4.09
Chile	.21	.03	...	.01	.06	.34	.10	.03	.01	.06
India	2.97	...	4.67	1.03	3.74	4.05	1.50	27.64	6.28	11.00
Syria	.10	.10	.09	.....	.....	.21	.25	.53	.....	.....
Peru	.26	...	.51	.30	.41	.26	.38	.75	1.41	.88
Palestine	...	...	.32	.....	.....	...	...	.72	.....	.....
New Zealand	...	...	.04	.....	.....	.10	...	.06	.....	.....
Total	49.25	50.17	65.23	34.33	85.85	132.05	131.02	224.98	129.83	179.03

* Data from the *Corn Trade News*.

[a] Fifty-three weeks.

[b] Includes Venezuela, West Indies, Dutch East Indies, etc.

[1] Many of these restrictions have been mentioned in previous *Surveys of the Wheat Situation*. Several changes made during April–July, or made earlier and not previously recorded, may be noted here. Tariff rates were increased in the Dominican Republic during February; in Mexico during April; and in the Union of South Africa and in Syria during May. In Mexico imports were prohibited until August; and in the Union of South Africa and Persia imports may be made only on the basis of permits. A quota law was established in Peru in November 1930, the requirement during part of the period at least being 30 per cent native wheat. In Tunis, the quota provisions called for 80 per cent native wheat at least during parts of March and April. For restrictions in India see the footnote 2 below.

[2] A duty of 2 rupees per hundredweight (about 39 cents per bushel) was collected provisionally in March pending the passage of a bill authorizing the duty. The bill, passed early in April, provided for an import duty of 66 per cent of the price of wheat. At prevailing wheat prices this amounts to approximately 2 rupees per hundredweight.

nation of the moderately large shipments to India is not easy to find. Presumably, however, smaller shipments would have occurred if Australian exporters had not been in a position to offer large supplies of wheat at extremely low c.i.f. prices, and if the generally low level of world prices had not encouraged unusually heavy consumption and perhaps storage of wheat by the Indian wheat producers themselves.

The analysis of April–July shipments to Europe shown in Table 4 reveals strikingly large shipments direct to France and to Austria, moderately large orders shipments, fair-sized shipments to the British Isles, Scandinavia, and Greece, and relatively small shipments to the remaining countries or groups of countries usually designated by Broomhall—to Germany, Italy, Holland, Belgium, and Spain. With orders shipments as large as 55 million bushels, however, it is readily apparent that the above summary may present a notably inaccurate picture of the final destinations of European shipments. In the present instance such appears to be the case.

Net import data are still incomplete for this period, but for most European countries the figures are available through May or June. Moreover, Broomhall's record of arrivals at principal European ports may be used to supplement the import data in such a way as presumably to give a fairly accurate though rough picture of the distribution of European takings. On the basis of these figures it seems that, as compared with other post-war years, imports in 1931 were notably large in Holland and Belgium; moderately large in France, the United Kingdom, Scandinavia, and Austria; and notably small in Germany and Czecho-Slovakia. Other countries appear to have taken imports of moderate size.

TABLE 4.—BROOMHALL'S SHIPMENTS OF WHEAT AND FLOUR BY DESTINATIONS IN EUROPE, APRIL–JULY AND AUGUST–JULY, 1925–31*

(*Million bushels*)

Destination	April–July (18 weeks)						August–July (52 weeks)					
	1926	1927	1928	1929	1930	1931	1925–26	1926–27	1927–28	1928–29[a]	1929–30	1930–31
Orders	37.7	60.9	53.7	45.8	30.7	55.5	109.4	151.3	145.0	145.1	120.4	193.7
United Kingdom	58.7	65.1	55.0	49.2	53.3	53.2	162.8	176.5	164.7	158.8	137.4	131.0
France	4.3	13.1	10.4	15.2	5.4	25.2	21.3	50.6	30.0	45.3	18.7	56.3
Belgium	21.0	23.5	20.2	23.9	17.1	16.8	51.4	57.9	63.1	63.2	44.2	44.4
Holland	17.7	18.3	17.2	19.3	14.7	12.8	42.5	62.6	70.7	69.3	36.4	38.1
Germany[b]	18.0	20.3	19.7	19.7	11.8	11.0	44.1	59.7	67.1	67.3	34.9	33.4
Italy	21.2	20.6	24.4	21.2	21.3	16.1	56.2	74.9	69.3	73.0	36.0	58.0
Greece[c]	3.7	2.9	5.8	5.7	5.4	5.3	15.3	14.5	15.6	20.3	15.7	14.8
Scandinavia	3.3	5.0	5.1	6.1	4.6	4.9	14.0	18.0	18.9	25.5	15.8	14.9
Austria[d]	2.4	2.4	4.5	4.5	4.5	7.7	11.5	12.4	13.7	16.5	19.2	19.7
Spain[e]	2.0	1.8	2.0	3.1	1.4	1.4	3.8	4.6	3.7	18.7	4.3	3.2
Total	190.0	233.9	218.0	213.7	170.2	209.8	532.3	683.0	661.8	703.1	483.0	607.5

* Data from the *Corn Trade News*.
[a] Fifty-three weeks.
[b] Includes Poland and Czecho-Slovakia.
[c] Includes Turkey.
[d] Includes Malta.
[e] Includes Spanish Colonies and Portugal.

The sizable French imports of April–July are probably attributable to a depletion of native wheat stocks and the consequent relaxation of the quota requirements.[1] It is still too early to know what proportion of the French imports originated in northern Africa, but it appears reasonable to believe that in July, at least, exporters in northern Africa might profitably have shipped an unusually large quantity of new-crop wheat to the French markets.

[1] In France, mills were allowed to use foreign wheat in the following proportions: February to mid-April, 10 per cent; mid-April to the end of April, successively 15 per cent, 20 per cent; end of April to mid-June, 25 per cent; mid-June to the end of June, 30 per cent; during July, successively 25 per cent, 20 per cent, 15 per cent, 10 per cent.

Imports into Holland and Belgium were relatively large during August–March as well as during April–July; hence one must look mainly to general factors for an explanation of the large April–July imports, and not to factors operating only in those specific months. Such general factors are not difficult to find. The relatively small crops harvested by Holland and Belgium in 1930, following similarly small crops in 1929, suggest that the demand for import wheat was large partly because of the small size of native supplies. Probably also of importance was the fact that Netherlands and Belgium were both unusually free, as compared with other Continental countries, from governmental restrictions upon imports. Neither country enforced a definite quota system;[1] Holland maintained no import duty on wheat, and Belgium a strikingly low duty.[2] Thus, these countries could secure the advantages of low world wheat prices to a greater degree than could most other Continental countries, a factor which may have encouraged wheat consumption especially during March–May when relative tightness developed in the feed grain markets. Moreover, some of the large wheat imports into Holland and Belgium during the past season may have been in response to the reputed demand for "bootleg" flour and bread in neighboring countries which had quota laws in force. Unfortunately there is no way of estimating the amount of trade done on this basis. Finally, Holland's unusually large imports of April–June may in part have represented a preparation for the inauguration of a quota law early in July.[3]

German net imports during April–July were strikingly smaller than in the same period of any of the past seven years except 1930; while imports for the season 1930–31 were the smallest in a decade with the exception of the early post-war years 1921–22 and 1923–24. The small size of German imports is presumably attributable primarily to large native wheat supplies, to the enforcement of a quota system involving the compulsory use of a high percentage of native wheat in mill mixtures, and to a notably high tariff on wheat.[4] The tariff was reduced and the quota for native wheat lowered during April–July; but these relaxations apparently were not sufficient to increase wheat imports to the levels maintained in the years 1924–25 to 1928–29. A good-sized crop and governmental restrictions on the use of foreign wheat probably likewise account for the relatively small Czecho-Slovakian imports of April–June and August–June.[5]

As noted before, one of the outstanding features of European wheat trade in 1930–31 was the large increase in shipments to Europe during the last four months of the crop year. According to Broomhall's shipments data this large increase represented mainly increases in shipments to France and to the United Kingdom. But shipments direct to a number of other European countries, Holland, Scandinavia, Greece, and Austria, likewise increased more than usual during the later months of the season, and

[1] Belgian millers, however, agreed in April to employ at least 5 per cent native wheat in their mixtures.

[2] The license system of Belgium operated against Russian imports during part of the season, but seems not to have been used to curtail total imports.

[3] The quota law of Netherlands became effective July 4. Under the new provisions the quota for domestic wheat is 20 per cent. Unmixed imported flour may be used in the manufacture of commodities for export and also in the manufacture of a limited number of special commodities for home consumptions. Stocks of unmixed flour in store early in July could be used until August 3.

[4] Throughout February–July the official German tariff on wheat stood at 25 reichmarks per 100 kilograms ($1.62 per bushel); but the government decreed that between May 15 and August 1 German millers might import at a net rate of 20 reichmarks per 100 kilograms ($1.30 per bushel) limited quantities of wheat based on the volume of mill grindings during April–June 1930. From May 15 to June 15, later extended to July 15, each miller who had used foreign wheat during April–June 1930 was allowed to import at the reduced rate a quantity equal to 20 per cent of his total grindings of wheat and spelt during April–June 1930, from July 16 to August 1 he could import 5 per cent at the net rate of 20 reichmarks.

The German quota provisions allowed 25 per cent foreign wheat during February and March, and 50 per cent during April–July. Effective August 15 the proportion of foreign wheat allowed will be only 3 per cent.

[5] From mid-December to mid-May 75 per cent native wheat was required in mill mixtures in Czecho-Slovakia; thereafter the quota was maintained at 50 per cent. No change occurred in the wheat import duty during April–July, but the duty on wheat flour was reduced three times: from $3.82 per barrel prior to April 9 to $3.79 per barrel on April 9, to $3.55 per barrel on May 5, and finally to $3.18 on June 3.

in the aggregate these increases represent an appreciable part of the total. Net import data for April–June, in contrast with shipments data, fail to disclose any unusually large increase or any unusually small decrease in net imports during these months as compared with December–March except in Belgium and the group of Baltic states. July net imports were large in the United Kingdom, and probably in France and several other countries; consequently aggregate net imports into Europe during April–July may prove to have been relatively large as compared with December–March imports. Relaxation of trade restrictions and reduction of native wheat stocks during April–July suggest that such may prove to have been the case.[1]

III. WHEAT PRICE MOVEMENTS

The Course of Futures Prices

As of April 30 we expressed the view that "the outlook at the moment may reasonably be said to favor rising international wheat prices in May–July, though it seems improbable that under these circumstances (which do not include as probable the appearance of a crop scare) an advance in prices could go far in the presence of the heavy stocks in the major exporting countries."[2] Yet, in the face of sensational reports of deterioration of the Canadian crop, of credited statements suggesting a large acreage reduction in the Southern Hemisphere, and of reports indicating an aggregate Northern Hemisphere crop over 100 million bushels smaller in 1931 than in 1930, wheat prices in the leading futures markets and on the British import market drifted downward during May–July. The net decline in futures prices was relatively small, as is shown in Chart 3 (p. 498); that a decline and not a rise of prices was registered appears significant in view of the low level of wheat prices during the preceding months and of world crop and trade developments. Moreover, it is worth noting that a 10-cent decline in wheat prices from a 60-cent level is as large in percentage terms as a 20-cent decline from a level of $1.20.

In retrospect, the view expressed in April appears not to have included adequate allowance for the extreme pessimism which now seems to have prevailed in the wheat markets during May–July, pessimism which induced the markets to give little weight to the bullish features in the situation. It is perhaps impossible definitely to discover the causes of general pessimism; but it seems reasonable to suggest that among the factors responsible for the pessimism apparent in the wheat markets in April–July were uncertainty regarding the future disposal of the stocks of wheat held by the United States Farm Board, the depressed state of business, weakness in the securities markets, and the disturbing political and financial situation abroad. In Europe, probably more than in the United States, the large holdings of the Farm Board appeared menacing. A number of European trade journals expressed the opinion that the Farm Board might at any time dump its large supplies upon the market with a consequent demoralization of prices.[3] Even the most conservative for-

[1] Reductions in quotas for native wheat in France, Germany, and Czecho-Slovakia, as well as reductions in import duties in those countries have already been mentioned.

According to the Canadian Trade Commissioner at Athens, Greek millers and importers were relieved in April of the obligation to buy domestic wheat in a proportion equal to 10 per cent of their imports. Sweden maintained her quota provisions unchanged, and permitted wheat imports in May only by special license; and from June 1 the Swedish Grain Association was given monopoly powers over wheat. In Portugal the government established specific limits for imports in May–July. The State Monopoly in Estonia continued to regulate the wheat quotas so that all domestic wheat would be used by the end of the season. In Austria, the tariff on wheat and wheat flour was raised on July 1.

Italy had no quota law in effect for the crop of 1930, but from the beginning of July 95 per cent native wheat was required in all mill mixtures.

[2] See Wheat Studies, May 1931, VII, 331.

[3] Broomhall's *Corn Trade News*, April 8 and April 22, contained the following statements:

". . . . the big stocks held by the United States Farm Board are a constant check upon any upward tendency of prices. It is safe to say all buyers in Europe and elsewhere are watching the U.S. stocks with keenest interest. . . . It is true that the wheat is being held above the level of values on this side, and that very definite statements have been made that there will be no 'dumping,' but can anyone feel certain that force of circumstance will not compel a change of selling policy?"

"The weight of exporters' supplies is too great to permit of a rapid advance, besides, it is very probable

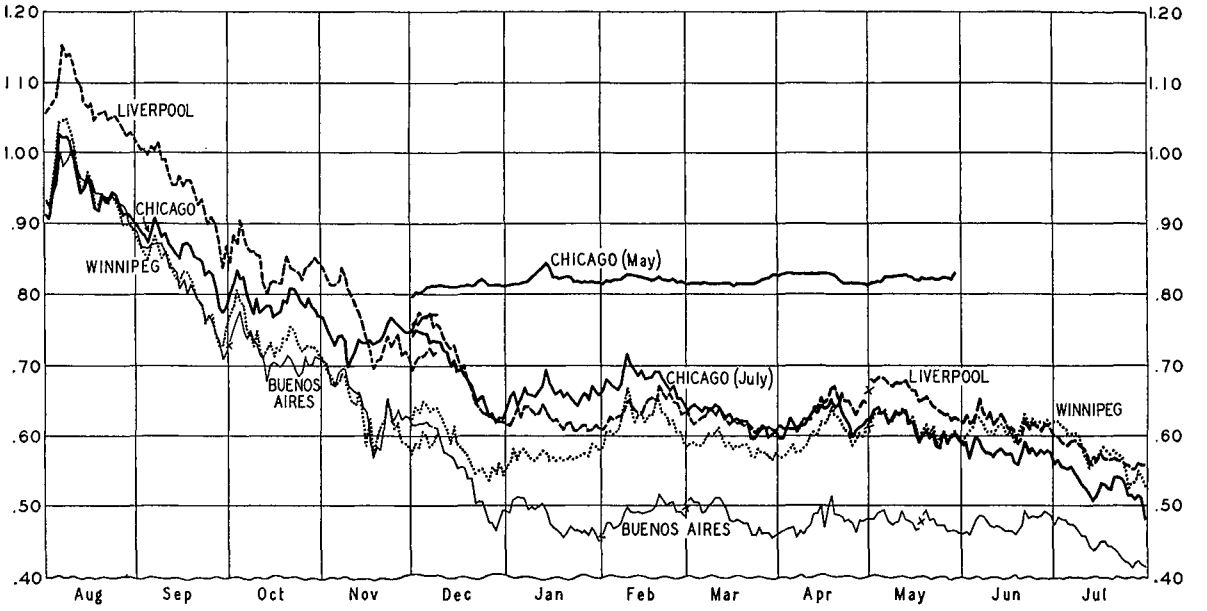
eign papers apparently held the view that the wheat stocks of the Farm Board would probably be liquidated if prices tended to rise above the prevailing level. As regards the general business and financial situation, it is noteworthy that during this period the Dow-Jones average of industrial stock prices in New York declined from 188 on March 20 to a low point of 122 on June 2, and stood at 135 on July 31.

While the factors mentioned above probably account in the main for the low level and the relative stability of prices during the closing months of the crop year 1930–31, it seems desirable to consider the course of futures prices in more detail. During the first three weeks of April a minor upward movement of prices occurred in the leading futures markets. After remaining fairly stable until the end of the second week of May prices weakened, the decline continuing to the end of the month. Throughout June the price-level changed little, with relative strength apparent at Winnipeg and Buenos Aires; but during July, prices again drifted downward, resulting in the establishment of new lows for the season in both Chicago and Liverpool.

The April bulge in wheat prices was apparently caused mainly by a striking improvement in European demand, the continuance of small Russian shipments, and reports of dry weather in North American

CHART 3.—COURSE OF WHEAT FUTURES PRICES IN FOUR LEADING MARKETS, DAILY, AUGUST–JULY, 1930–31*

(*U.S. dollars per bushel*)



* Data from *Daily Trade Bulletin*. Prices (closing) are for December, May, and July futures in Liverpool, Winnipeg, and Chicago, and for September, October, February, March, May, June, and August futures successively in Buenos Aires. The x indicates a change of future.

that the U.S. Farm Board would not hesitate to meet freely a demand at substantially higher prices. Our American cables of Saturday mentioned a report that the Board is offering large quantities to New York brokers, and today we learn that the 'Times,' of New York, publishes a statement that the Farm Board has decided to dump abroad its entire Wheat holdings before 1st July."

Coté Bodenheimer, July 3, 1931, published the following comment: "Nous rappelons que nous avons constamment prétendu que l'avenir immédiat du marché du blé dépendra des dispositions que prendra le Farm Board concernant les env. 200 millions de bushels de blé vieux qu'il détient actuellement. . . . . Nous croyons qu'aussitôt que la menace de submersion des marchés européens par ces stocks aura disparu, la confiance renaîtra et les producteurs américains obtiendront pour leurs blés cette année des prix plus rémunérateurs."

In *Foreign Crops and Markets*, published by the U.S. Department of Agriculture July 20, 1931 (p. 79), appeared the statement: "In the chief continental markets buying activity is generally restricted due to uncertainty of Russian exports and the U.S. Farm Board policy, according to Mr. Steere."

spring-wheat areas. Of these factors the improvement in European demand was presumably the most important. Rumors, and in some instances final confirmation, of more lenient milling laws in European countries,[1] exerted considerable influence upon the markets.

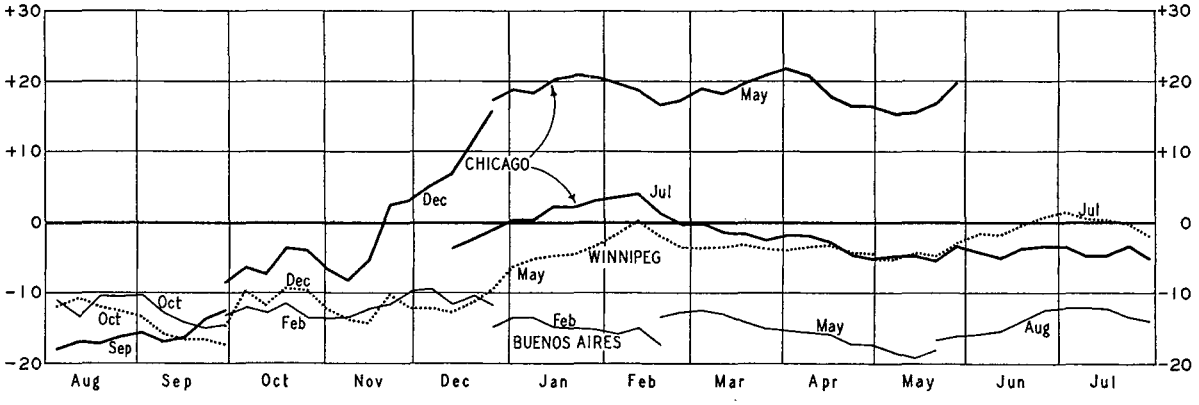
In May world shipments increased markedly, the total being larger than in the same month of any year of the past decade with the exception of 1927. The large shipments during the early weeks of May and competition among the exporting countries during the entire month (competition probably led by Argentina, whose exchange was depreciating) seem to have been major price-weakening factors. Extreme weakness in the securities markets and the favorable development of the winter-wheat crop of the United States likewise influenced traders to take a bearish view of the situation. In retrospect, it is interesting that traders appear to have focused so much attention upon the progress of the winter-wheat crop at a time when crop reports were suggesting that deterioration in North American spring wheat was the worst in years.

Futures prices fluctuated appreciably in June, but no general advance or decline was apparent. Of chief significance were changes in the price-spreads among the various futures markets; these changes are shown in Chart 4. The Liverpool–Chicago spread altered only slightly during the month; but both Winnipeg and Buenos Aires showed considerable strength relative to Liverpool and Chicago. Continued dry weather in the Prairie Provinces and adverse Canadian crop reports were probably the major source of the strength at Winnipeg; while the narrowing of the Liverpool–Buenos Aires spread may probably be ascribed mainly to a diminution of the supplies of the better grades of Argentine wheat, to improvement in the Argentine exchange, and to reports of insufficient moisture and a probable acreage reduction in some of the wheat regions of that country.

The July decline in prices culminated in the establishment of a new record low price for wheat futures at Chicago,[2] and a new low for the season at Liverpool. The de-

CHART 4.—SPREADS BETWEEN FUTURES PRICES AT CHICAGO, WINNIPEG, AND BUENOS AIRES AND FUTURES PRICES AT LIVERPOOL, AUGUST–JULY, 1930–31*

(U.S. cents per bushel)



* Spreads calculated from closing prices published in the *Daily Trade Bulletin*. October, December, May, and July futures at Liverpool used as the base. In December–April the Liverpool July future serves as the base for the spreads of the July future at Chicago, while the Liverpool May future serves as the base for all other spreads. Spreads shown for October, December, May, and July futures at Winnipeg; September, December, May, and July futures at Chicago; and October, February, May, and August futures at Buenos Aires.

[1] See pp. 495–96.

[2] The new low established in Chicago was 48 cents for the July future on July 31. This price was even below the low cash price (48⅞ cents) for contract wheat in Chicago reached in January 1895. Previous low prices quoted for cash wheat are somewhat in doubt; apparently prices were still lower during the years 1842 to 1852, the lowest reported for that period being 28 cents in November, April, and May 1851–52 (*Chicago Wheat Prices for Eighty-one Years*, by James E. Boyle). Since the Chicago Board of Trade was organized in 1848 it seems probable that its early records show comparable cash prices below 48 cents. On July 31, 1931, contract wheat sold as low as 49 cents in Chicago.

cline apparently was brought about by a combination of several bearish factors which made more impression on the world markets than did such bullish elements as the outlook for the new world wheat crop and strength in corn prices.[1] At least six bearish factors may be listed as among the important market features. First, European demand for import wheat tended to fall off in July as a result of previous large takings and of the harvesting of new native crops.[2] Second, the movement of new winter wheat to market in the United States was unusually heavy; this caused hedging pressure at Chicago[3] and resulted in lower export offers from the United States. Third, rains in Canada appeared to suggest the arrest of deterioration in the spring-wheat crop of that country, though not to warrant any change in the forecast for a strikingly small outturn. Fourth, Russian offers of new-crop wheat for forward shipment and Russian charterings produced an uneasy feeling regarding the probable size of the Russian wheat surplus for 1931–32. Fifth, the Argentine exchange again declined and Argentine export offers were lowered. And finally, uncertainty in regard to the political and financial situation in central Europe apparently helped to influence the markets to take a downward course.

Closing prices reflected continued weakness in the leading futures markets during the first week of August, with some slight recovery and general stability during the following two weeks. On August 6 the September future in Chicago sold as low as 47⅝ cents—a new all-time low record for Chicago futures. In total, however, price changes to August 25 were relatively small, as no striking market factors appeared. The general weakness apparent during the first week appears to be ascribable mainly to cheaper Russian and Danubian export offers and to large Russian shipments.

[1] During the last days of July a squeeze developed in July corn, and the price rose to 72½ cents per bushel.

[2] The decline in import demand presumably partially reflected reductions in the quotas of foreign wheat legally allowed in milling mixtures in France, Germany, and other countries. See pp. 495–96.

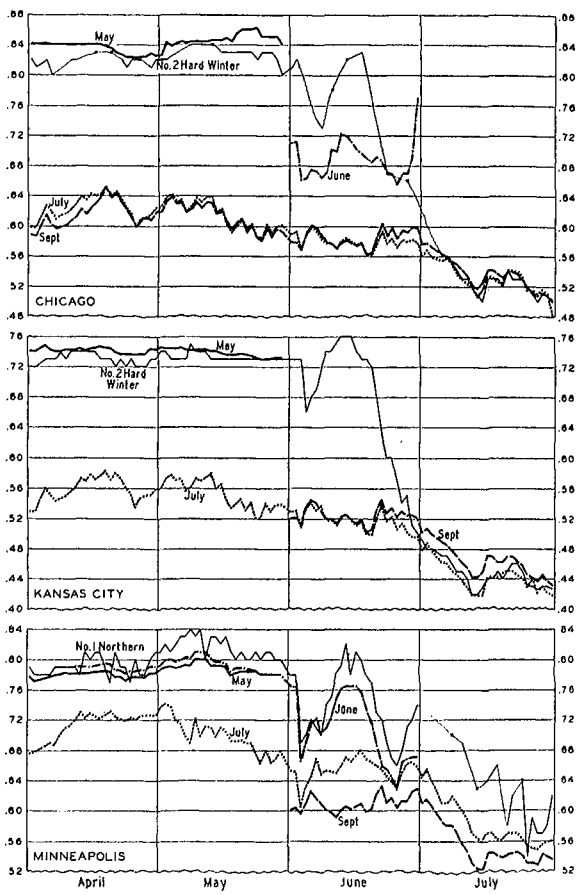
[3] While numerous market reports stressed the importance of hedging pressure during July, the relatively low open interest figures for that month suggest that the difficulty probably lay not in the placement of an unusually large volume of hedges, but in the absence of an active speculative demand for the moderate volume of hedges offered.

The Price Situation and Mill Operations

It is of interest to trace the operations of flour mills in the United States during April–July in conformity with the exigencies of their business. Chart 5, showing futures prices in relation to cash prices on the principal United States markets, serves to illustrate the difficult situation faced by millers in these months. The mills entered April with extensive adaptations under way, especially in respect to wheat and

Chart 5.—Cash-Futures Price Relationships at Chicago, Kansas City, and Minneapolis, April–July, 1930–31*

(*U.S. dollars per bushel*)



* Futures prices from Chicago *Daily Trade Bulletin*, and Minneapolis *Daily Market Record*; cash prices are weighted average prices of the U.S. Department of Agriculture. Waved line denotes absence of quotation.

flour stocks, which could not be hedged. From April into June the mills could purchase wheat in significant amounts only at prices based on the pegged or arranged price of the Grain Stabilization Corporation. Indeed, over much of this interval a schedule of selling prices was announced by the Corporation. By the first of July the price of wheat became free on the open market. During April–June the July and September futures were being dealt in on the Chicago exchange, but the September future was not dealt in on the Kansas City and Minneapolis exchanges until the end of May. Minneapolis and Chicago had June futures. In preparation for the transition from the pegged price of the 1930 crop to the open price of the 1931 crop, millers and grain merchants had built down their stocks and tried to confine themselves to a hand-to-mouth business, since they were deprived of their customary form of hedging. Both expected a sharp increase of new business on the first of July, the grain merchants anticipating a rush of new winter wheat and the mills expecting a rush of flour orders. Such stocks of wheat as the mills carried were adapted to their customary blends, and uniformity of flour was fairly well maintained.

Mills purchase wheat and carry stocks in varying amounts from season to season and within a season from month to month, in accordance with the characteristics of the crop, the current and prospective prices, and the prospect of the market. The purchases of wheat have both immediate and deferred objectives. Wheat may be purchased for flour already sold, for flour to be sold immediately, and for flour to be sold several months later. Mills accept orders for flour when they do not possess the wheat out of which it is to be ground, just as they accept flour orders when they do possess the wheat out of which it is to be ground. The varying adaptive bilateral relations of purchase of wheat and sale of flour are dependent for their efficiency on the possession of adequate hedging facilities. When hedging is effective, mills tend to be liberal in the enforcement of their flour contracts; during this period, however, it was necessary for the mills to keep their flour position checked to the day, and buyers had to keep their contracts.

In the absence of the customary hedging facilities during April–June, each purchase of wheat and sale of flour carried more than usual risk and bore more or less the complexion of trial and error. The mills need to grind a certain amount every day, apart from daily new orders or fulfilment of earlier orders, because they must keep their flours on the shelves and in the windows of purveyors. Mills regard it as more advisable to lose money than to have their brands off the market. During April–June the mills endeavored to sell flours at prices comparable with the costs of the wheat, as determined by the Grain Stabilization Corporation. The flour buyers were fully aware of the wheat prices, and it may be taken for granted that the large buyers drove sharp bargains with the mills.

On the last day of June, at the close of a light milling quarter, the mill stocks of wheat and flour were low, the flour stocks in the hands of dealers and bakers were low, and the unfilled flour orders on the books of the mills were the lowest on record. On the first of July the mills held very small stocks, but it must be inferred that much of this wheat was carried over at a loss.

Pronounced regional differences developed in the adaptations of the mills. On the Pacific Coast, unless the mills hedged in Chicago, where hedging has not been customary, the problem of the mills was merely an intensification of their customary problem of adjusting their stocks of wheat to their sales of flour in the transition from one crop year into the next. In Buffalo, the stocks of wheat were reduced to the very minimum, with the mills marking time between flour sales, grinding operations, and cargo arrivals; some of these mills hedged in Chicago, others did not hedge. In the upper Mississippi region, the operations of the mills were considerably facilitated by the use of the Minneapolis June future; here the Stabilization Corporation exchanged futures with the mills to cover flour sales, and since the June future was not supported by the Corporation, it acted naturally as a sort of a step-ladder down

to the July price. In the Southwest, the early arrival of the new crop shortened the difficult period for the mills which could not hedge; this was the position of the majority of the southwestern mills, though some mills hedged in the June future in Minneapolis and others in Chicago. The interior mills had a harder period than the mills located at terminals. When one reviews the regional adjustments, it is clear that the Grain Stabilization Corporation assisted the mills to some extent in descending to the July price; but it still remains true that an adjustable program of exchange of futures for wheat to cover the period under review would have afforded a better protection to the mills. As it was, many of the mills almost approached a temporary liquidation of their business.

Beginning with the first of July, the behavior of cash and futures prices was such as deserves the term "normal." The expected rush of orders for new-crop flour did not materialize, and it was possibly the modest pace of mill grindings during July, together with the large marketings of new-crop wheat, which permitted cash and future prices to resume the behaviors to be expected on a free market.

The losses of the mills directly and indirectly contingent on the pegged price of wheat during April–June and the transition to free prices on the open market during July cannot be adjudged. The mills have not all the same fiscal years, their accounting methods are not identical nor always comparable, and the separation of the functions of grain buying and flour milling are not carried out in all mills with equal definition. The published accounts of the mills may or may not reveal the losses, or reduction of profits otherwise anticipated, which have been experienced. But there can be no question that, when the milling returns for the wheat crop of 1930 are later contrasted with the returns for the crops of 1929 and 1931, it will be found that the pegged-price policy of the Farm Board during December 1930—June 1931 inadvertently placed on millers untoward risks which, to some extent, became losses under the conditions of operations carried through by the Stabilization Corporation.

European Cash Prices

At no time in the past decade have spreads among the wheat prices of various European countries been so wide as during the past six months. The following tabulation, which serves as partial illustration, presents monthly average cash prices of British wheat parcels, and of native British, French, German, and Italian wheats during February–July 1931, in terms of United States dollars:[1]

Month	British parcels (imported)	Domestic wheats			
		British	French	German	Italian
February	.69	.67	1.82	1.77	1.54
March	.68	.67	1.85	1.86	1.49
April	.70	.69	1.89	1.87	1.52
May	.71	.75	1.84	1.83	1.60
June	.67	.78	1.91	1.76	1.51[a]
July	.62	.82	1.73[a]	1.52	1.37[b]

[a] Three weeks.
[b] Soft wheat, Rome.

As usual, one finds British prices of domestic wheat running close to the c.i.f. price of imported wheat. But prices of domestic wheats in France, Germany, and Italy have ruled between twice and three times as high as (one may infer) the c.i.f. prices of imported wheats in those countries. Such a relationship is not to be found in the records of other post-war years,[2] or probably in the records of pre-war years. Adequate comparisons cannot at present be made between c.i.f. and domestic wheat prices in other European countries. Such evidence as is available points to a level of domestic wheat prices comparable to the British level at least in Denmark, Holland, and Belgium, and a level not much higher in Austria. The international wheat price level had to be met or nearly met in Roumania and Hungary among the exporting countries of the Danube basin, and here wheat prices were roughly comparable with the extremely low levels prevailing in overseas exporting countries.

The wide spreads among European wheat prices appear primarily to have resulted from diverse governmental policies in re-

[1] Data from Appendix Table X.
[2] See Chart 7, Wheat Studies, May 1931, VII, 317.

gard to wheat tariffs and milling restrictions. Great Britain, Holland, Denmark, and Belgium admitted foreign wheat practically free of duty[1] and had no quota laws in force[2] during the period under consideration. On the other hand, France maintained a tariff of approximately 85 cents per bushel on wheat; Italy maintained one of about 87 cents per bushel; and Germany one of approximately $1.30 to $1.62 per bushel.[3] Not only tariffs but quota laws in some of these countries kept the price of wheat relatively high.

No general statement may be made in regard to the course of European wheat prices during April–July; for the price movements in the various countries were quite diverse. British domestic wheat prices advanced during April–June, while German prices declined and French and Italian prices fluctuated from month to month without showing any consistent trend. In general, prices appear to have been strikingly lower in July, influenced, no doubt, by the advent of new-crop wheat in the markets. It is worth noting, however, that part of the decline in German prices (in American currency) is attributable to depreciation in the German exchange.

On the British import market, price-spreads among the various imported wheats showed no notably unusual feature during the period under review. The price of Australian wheat, which usually rules above the average price of British parcels, fell below British parcels prices in March and April 1931—a situation which has not occurred since 1924–25. No. 2 Winter and Pacific White wheats from the United States both averaged higher during the period than did British parcels, but the spreads were not so wide as in 1928–29. Argentine Rosafé continued to sell at a considerable discount, a tendency which has continued this year for a longer period than usual, but has not resulted in as wide spreads as existed in 1925–26 when the quality of Argentine wheat was so strikingly poor, or as in 1929–30 when the average price for British parcels was raised by the high premiums on Canadian wheat and Argentina had a huge exportable surplus. Canadian wheats, at least Nos. 1 and 2 Northern Manitoba, commanded moderately large premiums throughout April–July. The prices of No. 3 Manitoba, however, averaged only slightly higher than did British parcels prices.

IV. VISIBLE SUPPLIES AND OUTWARD CARRYOVERS

Level and Course of Visible Supplies

Of outstanding importance as a price-influence during April–July 1931 was the record high level of visible supplies in North America, and in United Kingdom ports and afloat to Europe. Chart 6 (p. 504) shows the weekly course of visible supplies in these positions during the past three years. During August–February 1930–31 total visibles were maintained at approximately the same level as in 1929–30; but during most of April–July they stood about 75 million bushels above the large supplies of 1930.

That total visibles failed to decline as much as usual during the last four months of 1930–31 was obviously due to the unusual situation which prevailed in the United States. For the first time in post-war years commercial wheat stocks in the United States showed practically no reduction during April–July. In view of the buying, price-pegging, and restricted marketing policies of the Stabilization Corporation, this was to be expected. Receipts at primary markets in the United States were notably heavy during the period as compared with other recent years, a situation resulting at least in part from the desire of farmers to market their old grain before the Stabilization Corporation ceased to support wheat prices. In July, United States visibles did not rise as rapidly as in 1929 and 1930; but the increase was no smaller than in most other post-war years. Nevertheless, it appears noteworthy that the July increase

[1] Belgium apparently maintained a wheat duty of 1 per cent ad valorem.

[2] As noted in footnote 1, p. 496, Belgian millers were supposed to use at least 5 per cent native wheat.

[3] Conversions based upon pars of exchange.

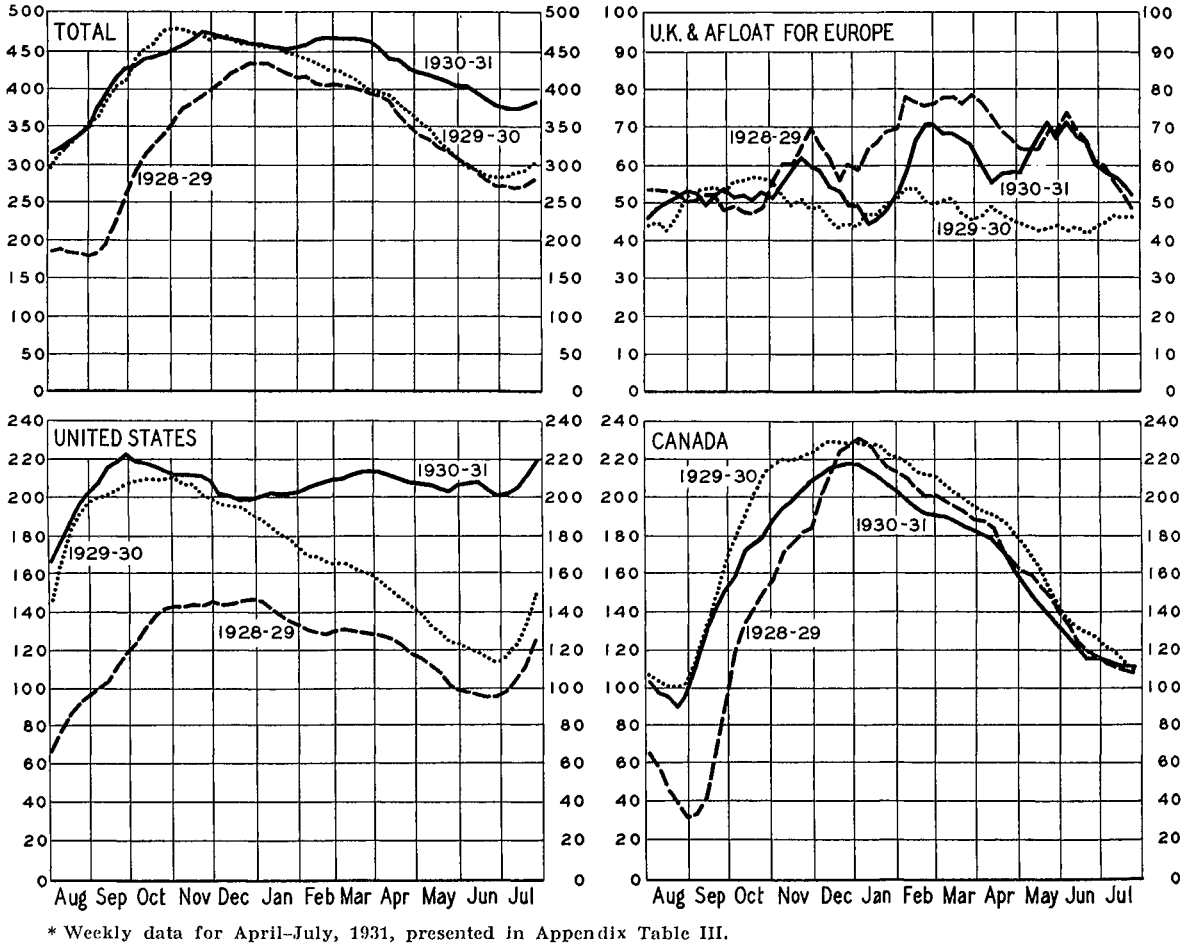
was not larger, since the new winter-wheat crop was of record size, domestic marketings were the heaviest in post-war years, and United States exports were not strikingly large. If exports to Canadian ports (for storage) had not been unusually heavy in July, the increase in United States visibles might have been at least 4 or 5 million bushels larger.

stood as high as they have ever stood at that time of the year.

Stocks of wheat afloat to Europe and in ports of the United Kingdom followed a course in May–July 1931 strikingly similar to the course in 1929. The increase from mid-April to mid-May 1931 contrasted markedly, however, with the decline during the same weeks in 1929, the increase in

CHART 6.—VISIBLE WHEAT SUPPLIES IN THE UNITED STATES, IN CANADA, AND IN UNITED KINGDOM PORTS AND AFLOAT TO EUROPE, WEEKLY, AUGUST 1928—JULY 1931*

(*Million bushels*)



* Weekly data for April–July, 1931, presented in Appendix Table III.

The normal course of Canadian visibles (which do not include United States wheat in Canada) was not disturbed as it was in the United States. However, the decline in July appears somewhat small in comparison with other years, a result of the slowing down of the export movement; and at the end of July 1931 Canadian visibles

the past season reflecting the unusual improvement in European demand for wheat during May.

YEAR-END STOCKS

Some of the main features of the world situation with regard to year-end stocks of old-crop wheat are fairly clear at this time.

But some important features and many details cannot be evaluated on the basis of information now available, and the following conclusions must be regarded in large part as tentative.

It seems clear that the crop year 1930–31 witnessed an increase of wheat stocks in the four major overseas exporting countries. The following tabulation, in million bushels, shows the approximate stocks position in these countries at the end of each of the past three crop years; for the United States and Canada the figures are mostly official, but the figures for Argentina and Australia represent our tentative estimates:

Position	1929	1930	1931
United States[a]	247	294	315[b]
United States in Canada[a]	3	5	15
Canada	104	112	133
Canadian in United States	23	16	6
North America	377	427	469
Argentina	135	70	90
Australia	26	35	45
Southern Hemisphere	161	105	140
Grand total	538	532	604

[a] As of July 1; others as of August 1.
[b] This figure differs from one published by the U.S. Department of Agriculture on August 12, 1931, because, in order to permit comparison with earlier years, we have employed Bradstreet's statement of the visible supply rather than the Department's statement.

Aggregate stocks increased by perhaps 75 million bushels in the course of 1930–31, not a large increase in view of the fact that the aggregate wheat crop of the four countries was some 300 million bushels larger in 1930 than in 1929. Heavy domestic disappearance of wheat for feeding purposes in the United States and Canada—perhaps as much as 160 million bushels—helped to prevent a larger increase of stocks; on the other hand, it is possible that there would have been no increase in the absence of exports of over 100 million bushels from Russia, or in the absence of restrictions on imports in important European importing countries. Writing in August 1930, we anticipated a decline of aggregate stocks in these exporting countries; but at that time our calculations involved the use of a figure for the 1930 wheat crop some 125 million bushels smaller than the official estimates now standing, and we failed to foresee exports of as much as 100 million bushels from Russia in 1930–31.[1] The increase of stocks brought the level to much the highest figure on record, and presumably the highest in history. Of these four countries, the United States and Canada seem clearly to have held larger stocks than ever before at the closing of the crop year 1930–31; Australia may have held slightly larger stocks in August 1921, and Argentina appreciably larger stocks in August 1929.[2]

So far as concerns stocks of old-crop wheat, the crop year 1931–32 therefore has opened with the quantitative position in these four exporting countries even more unfavorable for advance or maintenance of wheat prices than it has been in the preceding two years, which have witnessed a decline in prices properly to be described as catastrophic. The quantitative stocks position in the major overseas exporting countries, however, is only one element in the outlook for prices in 1931–32.

Unofficial estimates show that stocks of wheat afloat to Europe and in ports of the United Kingdom, which totaled 49 million bushels on August 1, 1931, were neither strikingly large nor strikingly small; the port stocks were 3.6 million bushels above the average of the past five years, the stocks afloat 3.3 million below.

No direct estimates are available of stocks in India, the Danube countries, and the three French dependencies of northern Africa. To judge by preliminary statistics of domestic utilization and by the comments of observers, the year-end stocks in the Danube countries are to be described as small or moderately small, not as large. India, on the other hand, would have held heavy stocks of old and new wheat combined on August 1 if one adjudges the stocks position by reference to her bumper crop of 1930, net imports during 1930–31, and the sizable crop of 1931 harvested in March–May; but it seems impossible to say whether large domestic supplies have tended to enlarge consumption or to en-

[1] See WHEAT STUDIES, September 1930, VI, 412.
[2] See Appendix Table XII.

large stocks. In any event the stocks position in India seems rather unimportant for the international situation, except that the existence of large stocks might serve eventually to check an extreme rise of international wheat prices; we take it that a distinctly large price increase would be required to pull exports from India if the stocks exist. So far as concerns the exporting countries of northern Africa, the year-end stocks position probably involved rather small stocks, in view of the relatively high price that could be obtained for wheat exported to France.

The stocks position in Russia is difficult to evaluate. If one assumes that domestic consumption of wheat per capita has remained about constant in the last few years, it would be reasonable to suppose that, since the wheat crop of 1930 minus the exports of 1930–31 would have left in Russia more wheat than in any other recent year, aggregate stocks may have been built up. But there is no assurance that per capita consumption was not enlarged in 1930–31, partly on account of an increase in the ration of bread; and it might be that the large quantity of wheat domestically retained was almost entirely consumed. At the London Wheat Conference held in May 1931 the official Russian delegate, Mr. Lubimoff, spoke of a wheat crop in 1930 of 1,084 million bushels; "consumption within the country" of 860 million bushels, and a "surplus of last year's harvest" of 224 million. It would be possible to interpret these statements to mean that since exports have somewhat exceeded 100 million bushels, year-end stocks on August 1, 1931 were larger (by something more than 100 million bushels) than were the stocks on August 1, 1930. We take it, however, that Mr. Lubimoff was speaking of a theoretical or statistical surplus, obtained by subtracting what must be an exceedingly rough estimate of consumption from a more precise estimate of the crop; we take it that these statements are not to be interpreted as meaning that about 224 million bushels of wheat were actually in a position to be exported or to be employed as a state reserve, as policy might dictate. In view of the necessity of Russia to export in order to pay for imports, we are inclined to suppose that wheat exports in 1930–31 were about as heavy as they could be made to be, though perhaps some relatively unimportant reserves were held under official control. We assume that a sudden outpouring of large supplies of old-crop Russian wheat is not to be included as part of the outlook for the crop year 1931–32.

Although little direct statistical evidence is available on the year-end stocks in European importing countries, it seems reasonable at this time to describe such stocks as low. The effect of governmental measures in France was undoubtedly to reduce stocks from a distinctly high level at the opening of the year to a distinctly low one at the end; in Germany, though there may not have been much reduction, the level must have remained low. In Italy reduction seems more likely to have occurred than increase; the level may not have been low, but could hardly have been high. Poland may have held rather large stocks at the end of the crop year; but aggregate stocks in other European countries except the four mentioned were presumably only of about average size, neither strikingly large nor strikingly small. Detailed discussion of the stocks position in European importing countries, however, cannot be attempted until more substantial evidence accumulates, particularly with regard to net imports in the closing month of the crop year.[1]

Year-end stocks are said not to have been large in Japan, but (of imported flour at Tientsin) were apparently sizable in China. We have seen no useful evidence regarding stocks in other ex-European importing countries, but here the stocks position is of relatively little importance.

All told, then, the year closed with stocks high in the overseas exporting countries, low or moderately low in importing countries. Other things equal, such a distribution of stocks would indicate a relatively large volume of international trade in 1931–32; but actual developments must be conditioned particularly by the geographical distribution of the crop of 1931 and by

[1] We shall return to this subject in our review of the crop year, to be published in December.

the willingness or unwillingness of many importing countries to relax the existing governmental measures tending to curtail imports. The outlook for wheat prices in 1931–32 seems to depend in considerable part upon the degree to which the exporting countries choose to press wheat, consisting partly of old-crop supplies, upon unwilling importers.

North American Carryovers

Certain features of the distribution of carryovers in the United States and Canada are of peculiar interest; comparisons with earlier years appear in Appendix Table IX.

Total stocks of Canadian wheat in store in Canada, 133 million bushels on July 31, were about 22 million bushels larger than the huge stocks carried into the crop year. By contrast with earlier years, stocks in transit were rather small, and stocks in flour mills not large. The heavy supplies were in elevators, and on farms. Stocks on farms had not reached 6 million bushels in any of the preceding six years for which data are available; this year the total was 19 million bushels. Apparently low wheat prices combined with the poor outlook for the new crop have induced farmers to hold wheat to a degree perhaps unprecedented in Canada. It is difficult to demonstrate why stocks in transit in Canada, and also stocks of Canadian wheat in store in lake and Atlantic ports[1] of the United States should have constituted so small a fraction of total stocks of Canadian wheat; perhaps because of relatively small forward sales for export, small stocks held for or en route to Buffalo mills, and perhaps because of a change in the marketing policy following a change in the administration of the central selling agency of the Pool.

The size of the total outward carryover of Canadian wheat in Canada, taken in conjunction with official statistics of inward carryover, crop, net exports, and domestic utilization for food, seed, lost in cleaning, unmerchantable grain, and wheat fed on farms,[2] seems to suggest (on the assumption that the item least easily measured is the crop) that the crop of 1930 was underestimated. The available supply for the crop year totaled 510 million bushels; the disappearance accounted for, some 532 million. A reduction in flour stocks, which probably occurred, could account for some part of the discrepancy of some 22 million bushels, and there would be opportunity for overestimate, particularly of the quantities unmerchantable and fed to livestock on farms. But even so, the data may be taken as evidencing underestimation rather than overestimation of the crop of 1930.

So far as concerns the huge carryover of United States wheat (as of June 30), a feature of particular interest was the quantity stored in Canada, some 15.3 million bushels. In nine earlier post-war years on this date these stocks had not exceeded 4.7 million bushels; and by the end of July 1931 the contrast was more striking, some 22.9 million bushels being in store as compared with a maximum of 4.0 million in earlier years. Trade journals state that arrangements have been made by the Grain Stabilization Corporation to store 30 million bushels of wheat in Canadian elevators; the reasons ascribed are relatively cheap storage space, desire to avoid possible blame for causing congestion on domestic markets, and desire to have wheat in a position for rapid export when demand develops. The wheat is said to consist both of durum from Duluth and of winter wheat from the Southwest.[3] Some of the wheat moved to Canada may apparently represent not an export in the sense of grain sold, but an export for storage; since a shipment out of the country to a foreign destination is recorded as an export, it seems that the export movement from the United States in May–July 1931 has a somewhat different meaning from the export movements of earlier years.

Taken in accordance with the several categories, stocks of wheat held in the United States on June 30 were moderately small on farms and in country mills and elevators, especially in contrast with the two preceding years; stocks of 200 million

[1] See above, tabulation on p. 505.

[2] This item has been officially estimated for the first time; the estimate was 40.7 million bushels for the crop year 1930–31.

[3] See *Northwestern Miller*, August 5, 1931, p. 5; *Southwestern Miller*, July 28, 1931, p. 27.

bushels in the visible supply (Bradstreet's) were of record size, not far from four times the 1926–30 average, ten times larger than the 1910–14 average, and nearly twice as large as in 1930; the stocks held by and owned by city mills were strikingly small, though a considerable quantity of wheat owned by the Grain Stabilization Corporation was stored in city mills.[1] The distribution of stocks suggests that an effect of the pegged price during December–June, with the large discount of July futures under the May, was to induce farmers to market freely rather than to carry heavy stocks; and millers and merchants also were reluctant to carry stocks. Wheat naturally flowed into the ownership of the Grain Stabilization Corporation.

The precise size of the holdings of the Corporation seems not to have been made public.

Particular interest attaches to the amount of wheat that may have been fed to livestock and wasted in the United States during the crop year 1930–31. If one accepts as accurate within a very small margin of error the official estimates of the inward carryover, the wheat crop of 1930, the net exports, the utilization for seed, and the outward carryover, and if one accepts also our estimate of wheat consumed for food, the total available supply for 1930–31 exceeds the disappearance accounted for by about 125 million bushels; and it may be supposed that about this amount would have been fed to animals and wasted. Yet it may well be that, even if the given categories of supply and disappearance are accurately estimated, less than 125 million bushels would have been fed and wasted. There is evidence that flour stocks (not only held in city mills, which are directly estimated, but also in the hands of bakers) were substantially reduced in the course of the year; and, if account could be taken of this reduction, the residual figure in the disposition table (representing not only the wheat fed to animals and wasted, but also errors in estimation of the several items and also changes in unrecorded stocks) could not stand as high as 125 million bushels.[2]

V. SOME ASPECTS OF THE OUTLOOK

Northern Hemisphere Wheat Crops of 1931

Final or semi-final official statistics of the total Northern Hemisphere wheat crops both for 1929 and for 1930 have shown appreciably higher totals than seemed (to us at least) to be suggested by the information available in August 1929 and August 1930. Thus the 1929 crop of the Northern Hemisphere ex-Russia now seems fully 185 million bushels larger than it seemed to be in August 1929; and the 1930 crop now seems to be about 75 million bushels larger than it seemed to be in August 1930. Substantial misjudgments of the size of the crop of 1931 are apparently difficult to avoid at this season because not all of the Northern Hemisphere crops are yet made, because most of the official estimates now available are preliminary in nature, and because no official forecasts or estimates are available of outturns in several countries.

A contrast of standing official estimates of the crop of 1930 in the Northern Hemisphere with preliminary data for 1931 is given in the table on page 509, in million bushels. In compiling this, we have employed official statistics so far as possible, supplemented by tentative evaluations of crop outturns published by the United States Department in *World Wheat Prospects*, July 23, 1931, which in turn have been considered in the light of unofficial advices received during the last week of July and the first three weeks of August. The figure for Russian production in 1931, however, represents merely the probable

[1] The official Census report published August 10, 1931, gave a total of 17.7 million bushels of wheat "stored for others" in reporting city mills and attached elevators; the U.S. Department of Agriculture, raising this figure to account for all mills, reached a total of 18.4 million on June 30, 1931, and further estimated the amount so stored on June 30, 1930, at 12.5 million bushels. We have employed these estimates; and, although the stocks "stored for others" are not officially stated to represent specifically stocks stored for the Grain Stabilization Corporation, we tentatively assume that this was the case.

[2] See Appendix Table XII.

harvested area multiplied by the average yield per acre in the period 1923–30.

Area	1930	1931	Change
United States	863	894	+ 31
Canada	398	240	—158
Lower Danube[a]	354	320	— 34
Germany, France, Italy	589	660	+ 71
Other Europe[b]	437	410	— 27
Northern Africa[c]	64	79	+ 15
India	391	347	— 44
Other Northern Hemisphere[d]	91	97	+ 6
Total	3,187	3,047	—140
Soviet Russia	1,084	1,018	— 66
Grand total	4,271	4,065	—206

[a] Hungary, Roumania, Bulgaria, Jugo-Slavia.
[b] All European countries except Russia, the Danube countries, Germany, France, and Italy.
[c] Algeria, Morocco, Tunis.
[d] Japan, Chosen, Egypt, Mexico.

One may reasonably suppose that the Northern Hemisphere wheat crop of 1931, excluding Russia, at about 3,050 million bushels falls something like 140 million below the crop of 1930. A crop of this size would rather closely resemble those of 1923, 1925, and 1929: it would be around 360 million bushels larger than the notably short crop of 1924, and around 290 million bushels smaller than the bumper crop of 1928. Including Russia, the Northern Hemisphere crop of 1931 may fall something like 200 million bushels below that of 1930 and about 85 million below the crop of 1928, but would rank as the third largest in post-war years. At the moment, crop advices from Europe suggest that for that area, including Russia, recent developments may make the tentative figures given above appear high in contrast with final official estimates.

The outstanding feature of the distribution of the 1931 crop now appears to be the strikingly small outturn in Canada. To consider the Northern Hemisphere by countries grouped as in the tabulation above, Canada is the only one of the seven important areas that appears to have in prospect either the largest or the smallest crop of post-war years. But elsewhere than in Canada the outturns, though not of record size, now seem relatively large rather than relatively small; the United States, and perhaps Russia, may harvest their second largest post-war crops, and the Danube countries, and possibly the European importing countries outside of the Danube countries and Russia, their third largest.

Import Requirements in 1930–31

For purposes of evaluating the prospective wheat import requirements of 1930–31, it is convenient to consider the importing countries of the world in two major groups, the European and the ex-European importers, each of these divisible into what may be called variable importers, invariable importers, and occasional importers, though the terms are not so precise as may be desired. Among the European countries, France, Germany, and Italy constitute the variable importers; the annual net imports of these countries have fluctuated widely in recent years, ranging from as little as 90 million bushels in 1929–30 to as much as 261 million in 1927–28. These fluctuations account for much the greater part of the fluctuations in total European net imports since 1923–24. The occasional importers of Europe are Spain and Poland; in some years these countries are small net exporters, in other years fairly substantial net importers, the largest net imports in the past eight years being about 20 million bushels in 1928–29. Other European countries (excluding of course the net exporters of the Danube basin, and Russia) taken as a group may be regarded as invariable importers; the net imports of this group in the past eight years have ranged from 379 to 425 million bushels, and excluding 1925–26 the range was 400–425 million. The occasional importers of the ex-European group are India and the several countries of western Asia Minor; the notably variable importers are China and Japan; the invariable all others taken as a group, though with regard to this group, and also to the group of European invariable importers, the imports of some countries are much more variable than the imports of other countries.

Since the net imports of the European invariable importers have varied so little in the past eight years, since neither their domestic wheat nor their domestic rye

crops seem to be as large in 1931 as in 1930, since the level of the inward carryover of old-crop wheat seems not to be high, one may reasonably suppose that the net imports of these countries in 1931–32 might range between 400 and 425 million bushels, almost regardless of wheat price developments and in spite of governmental regulations of wheat imports and of wheat milling in several of the smaller importing countries of the group. The net imports of this group of countries were about 415 million bushels in 1930–31; there appears to be reason to suppose that net imports in 1931–32 will not deviate much from this figure. It seems impossible at the moment to predict the consequences on British wheat imports of the advent of a coalition government.

Of the occasional European importers, Spain and Poland, the latter was a small net exporter in 1930–31; Spain appears neither to have exported nor to have imported more than a trifle. Both of these countries appear to have harvested smaller wheat crops in 1931 than in 1930. The decline in production may or may not prove large enough to give rise to appreciable net imports in 1931–32; Poland indeed may continue to export, while Spain may import; for present purposes, we assume that the imports of the one may offset the exports of the other, though imports would probably be somewhat the larger.

Whether or not European import requirements promise to be larger or smaller in 1931–32 than in 1930–31 seems to depend mainly on the situation in the variable importing countries. In Germany and France particularly, and in Italy to a lesser degree, governmental policy in 1930–31 included the adoption of measures that served not only to maintain domestic wheat prices in the face of declining export prices, but also to minimize importation of wheat and flour. Although the aggregate wheat crop of 1930 was a rather small one, the net imports of about 175 million bushels during 1930–31 were so small that the aggregate domestic retention (crop plus net imports) was smaller than in any of the preceding five years, as is shown by the following figures, in million bushels:

Crop year	Domestic retention
1925–26	839
1926–27	810
1927–28	811
1928–29	883
1929–30	828
1930–31	765

There appears to have been a great increase of stocks during 1928–29, and little if any decline during 1929–30 (though this was due to increase in France about offsetting decline in Germany); but in 1930–31 there was reduction of stocks and probably something of a decline in consumption. The immediate outlook suggests that governmental measures to curtail wheat imports will be quite as rigid in 1931–32 as they were in 1930–31; on the whole, probably more rigid because in Italy a régime under which millers for the time being must employ 95 per cent of domestic wheat has barely begun.

To judge by the figures above, the stocks position so far as we are able to evaluate it, and the prospect for continued attempts to restrain imports, one may guess that domestic retention of wheat in these countries may approximate 790 – 830 million bushels in 1931–32; and that, if the crop of 1931 reaches about 660 million bushels, net imports in 1931–32 may approximate 130–170 million. This range, however, represents an extremely rough approximation, since it would be altered downward to the extent that preliminary guesses at the crop of 1931 are altered in the upward direction, and conversely.

If negotiations now under way between the German government and the Grain Stabilization Corporation in the United States result in an arrangement whereby Germany may obtain 20 million bushels or more of wheat on long-term credit, this presumably would not much alter the prospective *net* import position of Germany; efforts would be made to export from Germany for cash a roughly equivalent quantity of soft German wheat.

The influences which cause fluctuations in ex-European imports are not clear, in part because the factual background is decidedly incomplete; even crop statistics and net import statistics by crop years are

lacking for many of these countries. Fluctuations in the takings of China and Japan and of India, however, account for most of the fluctuations in the total takings of ex-European countries. Broomhall's shipments to ex-Europe of about 180 million bushels in 1930–31 were the largest on record except for those of 1928–29; and their relatively large size was due predominatingly to heavy takings (nearly 70 million bushels) by China and Japan. China imported heavily in spite of a large domestic wheat crop and of low and declining prices of silver and hence of Chinese exchange. The heavy imports were probably due to the generally low level of export wheat prices, notably of Australian wheat, which was made the cheaper in terms of Chinese currency by the rather poor quality of part of the large crop and by depreciation of Australian exchange. At the moment it seems impossible to foresee the developments during 1931–32 in the factors that may govern Chinese imports. Other things equal, greater stability or even improvement in the Chinese exchange, smaller domestic wheat and rice crops in 1931 than in 1930, and a tendency for the general level of prices in China to rise would tend to stimulate imports; on the other hand, firm or rising international wheat prices, the advent of a smaller Australian wheat crop of better quality, appreciation of Australian exchange, and something of an enlargement of import wheat and flour stocks during 1930–31, would tend to discourage importation. Tentatively we are inclined to suppose that the situation points to somewhat smaller rather than larger Chinese takings in 1930–31 than in 1931–32; yet the imports of 1931–32 could still prove relatively large as compared with most other post-war years. India, on the other hand, with a smaller domestic wheat crop this year than last, may reasonably be expected to import a little more in 1931–32 than in 1930–31, unless international wheat prices rise substantially. All told, we take it that total ex-European takings in 1931–32 cannot well be counted upon to exceed 175 million bushels (as measured by Broomhall's shipments), but perhaps may not fall below 150 million unless international prices should rise substantially from their present level.

To sum up, it seems reasonable at the moment to suggest import requirements somewhat as follows, in million bushels. The net import requirements of the European invariable importers may be 400–425 million bushels; the net import requirements of the variable European importers may be 130 – 170 million; the occasional European importers seem unlikely to require appreciable net imports; total European net import requirements may therefore approximate 530–595 million bushels. The relationship of total European net imports to Broomhall's shipments to Europe is such that one would expect shipments to Europe to prove 5–10 million bushels larger than net imports; hence the range of probable shipments to Europe is say 540–600 million bushels. If ex-European requirements approximate 150 – 175 million bushels, total probable shipments in 1931–32 may be said to range between 700–775 million bushels, and total net exports, which usually exceed shipments, say from 710 to 800 million. Net exports at the middle of this range (about 755 million bushels) would fall below the reported net exports of six of the past ten post-war years, around 50 million bushels below those of 1930–31.

Exportable Surpluses in 1931–32

Numerical evaluation of the size of exportable surpluses in 1931–32 must rest heavily upon assumptions. The 1931 wheat crops of Argentina and Australia are still in the early stages of growth, subject to the hazards of weather conditions; the position in Russia is obscure; there is no secure basis for anticipating how much wheat will be used for feed in the United States, or what policy may be followed with regard to sale or continued holding of the huge stocks of the Grain Stabilization Corporation. Without further discussion, we assume that the 1931 outturns in Argentina and Australia may be taken, for purposes of evaluating the statistical position, to equal the standing preliminary official forecasts of area multiplied by the post-war average yield per acre in each coun-

try; this implies crops of 200 and 165 million bushels respectively. Available information on crop outturns and the stocks position may reasonably be taken to suggest that India is not likely to rank as one of the net exporters in 1931–32; that Poland and the three French dependencies of northern Africa may be counted upon to export net some 20–25 million bushels; and that the four Danube countries may reasonably be counted upon to export net only about 35–45 million bushels, in spite of governmental measures designed to stimulate exportation. The outlook for the five larger exporting countries warrants more detailed discussion.

As we have seen,[1] the fragmentary information now available on Russian outturns of wheat and rye in 1931 seems to point to wheat exports only of moderate size in 1931–32, at least in so far as exports depend solely upon crop production. But other topics need to be considered if one is to anticipate the development of the export movement. Among these must be listed the size of exportable stocks of old-crop wheat; the location of areas that may produce wheat surpluses in 1931; the capacity of vessels that have already been charted to carry grain from Russia and the probable allocation of this capacity to the several grains; the necessity which the Soviet government may be under to export wheat in payment for imports, largely of machinery; and the probable outcome of the "collecting campaign" in 1930–31. If it so happens that sizable exportable stocks of old-crop wheat remain in the hands of the government; if areas near the Black Sea ports have high yields per acre in 1931; if the collecting campaign is prosecuted vigorously and successfully; if the Soviets require foreign credits as urgently in 1931–32 as in 1930–31; and if the tonnage already chartered is large in capacity and is contemplated chiefly for use in exporting wheat—then one might reasonably suppose that wheat exports from Russia in 1931–32 might exceed those of 1930–31 (some 100 million bushels, according to Broomhall's shipments) even if the yield per acre of wheat turned out to be only average or even somewhat below average in 1931.

We do not possess adequate information on all or on any of these matters. We are inclined to suppose, on decidedly slender evidence, that the necessity to export in payment for imports has been great throughout 1930–31, and will remain so. If this is the fact, it may be that large exportable stocks of old-crop wheat were not held within the country.[2] It is said (*Daily Trade Bulletin*, August 10) that Russian charterings of vessels for July–December shipment had then reached the equivalent of a capacity of about 70 million bushels of grain. This alone would not indicate notably heavy shipments of wheat in August–December, for, to judge by the export movement of 1930–31, not a great deal more than half of the shipping would be allocated to wheat. What the chartering indicates most clearly is that some shipments of wheat, whether of old crop or of new, are to occur—that something of an exportable wheat surplus, and not absence of surplus and not deficiency, is confidently anticipated by Russian officials, who are presumably in a position to know the facts. So far as concerns the geographical distribution of yield per acre of wheat, the fragmentary advices on weather conditions seem to point to relatively higher yields near the Black Sea than distant from it. Official advices from Russia, in the form of a resolution of the Central Committee of the Communist party, suggest rather definitely that the collecting campaign in 1931–32 is to be prosecuted with even more vigor than in 1930–31; and with more wheat producers in the collective farms, with more tractor stations to act as collectors of grain, and with a larger wheat area on the state farms, it may be that the collections of wheat, and subsequently exports, can be enlarged even if the yield per acre in 1931 proves to be only of average size or somewhat below.

Obviously it is difficult to weigh these rather vague impressions of the factors bearing on probable Russian wheat exports in 1931–32 one against the other in such a way as to reach a well-founded numerical estimate of probable exports. An accurate

[1] See above, pp. 483–86.

[2] See also above, p. 506.

evaluation seems to be possible only to those who have adequate knowledge of the stocks of old-crop wheat, of the outcome of the new crop, of the temper of the populace, of the prospects for the collecting campaign, which must rest partly upon the antecedent factors. Our impression is, however, that the domestic gross supply situation points to smaller wheat exports in 1931–32 than in 1930–31, but that on the other hand the general situation points to larger collections of grain, including wheat, and hence to larger exports; and of the two major influences, we are inclined to ascribe somewhat the greater weight to the former. For purposes of evaluating the prospective world statistical position of wheat in 1931–32, we therefore assume that Russian wheat exports will not exceed 100 million bushels, and may range between 75 and 100 million. Such a conclusion, however, does not rest on careful examination of adequate evidence, but on careful examination of inadequate evidence; the difference is obvious. The latest information on wheat shipments from Russia, some 19 million bushels in the first four weeks of August, would suggest crop-year exports in excess of 100 million bushels if the seasonal movement apparent last year is followed; but we find no way of adjudging whether or not this will occur. The recently reported enlargement of bread rations would, other things equal, tend to curtail exports.

It is possible to consider probable exportable surpluses of Australia, Argentina, Canada, and the United States in the light of the disposition that has been made of domestic wheat supplies over the past decade. If for these four countries we take the wheat crops of 1931 as 165, 200, 240, and 894 million bushels respectively, and the stocks carried into the crop year 1931–32 as 45, 90, 133, and 315 million bushels respectively, the total available supplies will equal 210, 290, 373, and 1,209 million bushels respectively. How large the exportable surpluses may be will depend largely upon the manner in which one chooses to estimate probable domestic retention in 1931–32.

The evidence suggests that in all four countries per capita consumption of wheat for human food varies little from year to year; and it would appear reasonable to anticipate utilization in this category of some 32 million bushels in Australia, 67 million in Argentina, 45 million in Canada, and 530 million in the United States. Assuming somewhat of a reduction in acreage sown for the crop of 1932, the use of wheat for seed in 1931–32 may be placed roughly at 13, 20, 42, and 75 million bushels respectively.

On the basis of these calculations, there would remain (1) for export, (2) for domestic utilization as feed and waste, and (3) for year-end stocks about 165 million bushels in Australia, 203 million in Argentina, 286 million in Canada, and 604 million in the United States. The size of exportable surpluses seems to depend upon the allocation of these quantities to the three categories mentioned above.

Not much wheat is fed and wasted in Australia and in Argentina; and, although there is no reliable basis for anticipating how large the quantities so used are likely to be in 1931–32, the calculation of exportable surpluses would not suffer greatly from the assumption that 5 million bushels might be used as feed and waste in each of these countries. Official statistics for Canada suggest that the quantities of grain unmerchantable, fed on farms, and lost in cleaning have not fallen below 20 million bushels in the past decade, and may have exceeded 50 million bushels in 1930–31. On the assumption that the relatively heavy feeding of wheat to farm animals in 1930–31 may continue into 1931–32, we include as a part of the calculation of the Canadian exportable surplus an allowance of 40 million bushels for wheat fed, unmerchantable, and lost in cleaning. So far as concerns the United States, it seems possible that 100–130 million bushels may have been fed and wasted in 1930–31; and with the present relatively high cash prices of corn in relation to wheat that may continue for a few months to come, it seems reasonable to assume that something like 125 million bushels may be fed and wasted in 1931–32. To employ these figures, the supplies available for export and for year-end stocks

would be 160 million bushels in Australia, 198 million in Argentina, 246 million in Canada, and 479 million in the United States; figures as precise as these, of course, have no justification except for the purpose of striking arithmetical balances.

If for the moment we define the exportable surplus either (1) as the supply available for export and year-end stocks minus actual *minimum* post-war year-end stocks and (2) as the supply available for export and year-end stocks minus actual *maximum* year-end stocks, the exportable surplus for 1931–32 would cover a range so wide as to be almost meaningless. The following tabulation, in million bushels, shows our assumed crop outturns for 1931; supplies available for export and for year-end stocks as calculated in preceding paragraphs; minimum historical year-end stocks; maximum historical year-end stocks; and the range of remaining exportable surpluses for 1931–32.

Country	Crop of 1931	Available for export and year-end stocks, 1931–32	Post-war year-end stocks		Range of exportable surpluses for 1931–32
			Minimum	Maximum	
Australia	165	160	18	45	115–142
Argentina	200	198	40	135	63–158
Canada	240	246	25	133	113–221
United States ..	894	479	99	315	164–380
Total	1,499	1,083	182	628	455–901

On these definitions, exportable surpluses might range anywhere from 455 to 901 million bushels—a range almost meaningless for evaluating the international statistical position and the outlook for prices, since if importers could count upon no more than 485–625 million bushels to be shipped from exporting countries (455 from the overseas countries and 130–170 from Russia, the Danube countries, and the northern African countries) the statistical position would almost certainly be rather tight, whereas if they could count upon 1,031–1,071 million bushels, the position would inevitably be extremely easy.

There is in fact good reason to suppose that the historical range of year-end stocks in the four overseas exporting countries is not a satisfactory index of the range of reasonable probabilities for year-end stocks at the end of 1931–32. Australian stocks could reasonably be expected to range between 25 and 35 million bushels, Argentine between 70 and 90 million bushels; the higher or lower figures given in the tabulation above represent either early post-war years or unusual crop circumstances not thus far to be classified as part of the outlook for 1931–32. In view of the storage space that has been built in Canada in recent years, and the tendency to hold wheat evidenced by the large farm stocks at the end of 1930–31, we take it that a minimum carryover would be about 70 million bushels. The attitude of the Dominion and provincial governments and of banks toward financing the crop movement in 1931–32 does not suggest that a carryover as large as that of August 1, 1931, is desired at the end of the crop year; hence we assume that under the circumstances about 100 million bushels would be a maximum carryover.

The attitude which farmers, traders, millers, speculators, and officials may take toward holding stocks or pressing them for export will be important in determining the size of the outward carryover of the United States on June 30, 1932. We take it that an outward carryover of historical post-war minimum size, about 100 million bushels, is altogether improbable.

We find it impossible to anticipate from published statements or from statistical data how much wheat the Stabilization Corporation will choose or will be able to move out of the United States in the crop year July–June 1931–32. Announcement was made early in July that not more than 5 million bushels per month would be sold, possibly in addition to "sales to foreign governments or their agencies now being considered"; it was also stated that a radical change in the world situation might give occasion for disposal of the whole surplus, but that disposal would not be undertaken without ample notice or without consulting farmers' representatives. Since early July, press reports have mentioned negotiations with Germany as to the

sale of about 25 million bushels of wheat; prospective negotiations with China with regard to about 15 million bushels of wheat; and a trade of 25 million bushels with Brazil in exchange for coffee. At the moment we are inclined to interpret these reports as suggesting sales during 1931–32 of not more than say 85 million bushels, of which 60 million bushels would represent the stated monthly maximum, and 25 million possible sales to Germany on long-term credits (sales for which, so far as we are aware, arrangements have not yet been consummated). This assumption involves the interpretation that sales to China and Brazil were not contemplated before the announcement of policy early in July.

If the Grain Stabilization Corporation held around 225 million bushels on June 30, 1931, it might in fulfillment of its announced policy hold perhaps 140 million bushels on June 30, 1932. In addition some wheat would be held and owned by farmers, merchants, and millers. If the Stabilization Corporation owned about 225 million bushels of the carryover on June 30, 1931, something like 90 million bushels must have been owned privately; and this quantity was undoubtedly smaller than it would have been in the absence of a domestic price situation which necessarily induced farmers to market freely and millers to hold minimum stocks. Perhaps it would be reasonable to suppose that in the absence of a pegged wheat price in the United States in 1931–32, the quantity of wheat owned privately will have to reach 125 million bushels under almost any circumstances of international wheat prices; this would not include flour stocks, which may well be increased in 1931–32. If 125 million bushels should be owned privately as wheat, it would be reasonable to suppose that the aggregate outward carryover of wheat grain could not fall below 265 million bushels. A maximum outward carryover might possibly exceed even the 315 million bushels held within the country on June 30, 1931. The United States is always relatively a strong holder; the Stabilization Corporation might conceivably be instructed by the Congress to impound all of its holdings; farmers, merchants, millers, and speculators might conceivably decide that prospects of profit lay in holding, and might act on this decision. Importers seem always to be able to count upon something like 100 million bushels of flour as wheat and of the poorer types of wheat to be exported from the United States; if so, and if about 479 million bushels is to be available for export and carryover, one may suppose that a carryover of about 380 million can be described as a maximum for June 30, 1932, or say 20 million bushels less than this in order to allow for an increase of unreported flour stocks which seems reasonably in prospect in the absence of a pegged price in 1931–32.

By employing the ranges of year-end stocks which seem reasonable under current circumstances, we may narrow the range of exportable surpluses in the four overseas exporting countries shown in the tabulation above (p. 514). Importers who count on crops of 894 million bushels in the United States, 240 million in Canada, 200 million in Argentina, and 165 million in Australia may reasonably count on export offerings of anywhere from 120 to 240 million bushels from the United States; 145 to 175 million from Canada; 110 to 130 from Argentina; and 125 to 135 from Australia. If in addition they may reasonably count upon offerings of 75–100 million bushels from Russia, 35–45 million from the Danube countries, and 20–25 million from northern Africa, total offerings might reasonably be expected to range from 630 to 850 million bushels. We take it that importers may at the moment rather confidently expect offerings in this volume. Offerings could considerably exceed 850 million bushels if in particular the situation in Russia provided more than 100 million bushels; if in the United States less than 125 million bushels should be fed to animals, and if merchants, farmers, and the Grain Stabilization Corporation should prove desirous of reducing stocks to a normal level; if Argentina and Australia should secure yields per acre appreciably above the post-war average; or if Canadian wheat should be weakly held. Offerings of substantially less than 630 million bushels would seem to be in prospect if in particu-

lar a strong disposition to carry stocks should appear in the United States and Canada; if there should be short crops in Argentina and Australia; or if Russia should find considerably less than 75 million bushels for export.

Prices

Presumably actual developments in the international statistical position, and in the level and course of international wheat prices from the low level of July–August 1931, will be determined largely by crop developments in the Southern Hemisphere, by the volume of Russian wheat exports, and by the eagerness or unwillingness or inability of Argentina, Australia, Canada, and especially the United States, to hold stocks of wheat.

The size of exportable surpluses in the minor exporting countries seems to be relatively unimportant. On the assumptions that no more than the inevitable relaxations of governmental regulations of trade will occur in Germany, France, and Italy, and that crops in these countries will turn out to be about of the size that we now suppose, the import requirements for 1931–32 seem to be a considerably less variable element in the situation than the probable size of supplies available for export, and hence less significant with regard to the outlook for wheat prices in 1931–32.

If our earlier analysis warrants the inference that at the moment the outlook can be said to involve prospective exports of 75–100 million bushels from Russia, and average yields per acre in Argentina and Australia, it follows that the dominant uncertainty in the present price outlook is the prospective disposition or indisposition to hold stocks in the major exporting countries other than Russia. The emergence of a disposition to hold in Australia and Argentina would have a much less important effect upon aggregate supplies available for export than would be true of Canada and the United States; other things equal, therefore, the outlook for prices seems to depend heavily upon the sentiment of holders of wheat stocks in these last two countries, especially the United States.

It seems proper to say that in North America the sentiment of private traders and farmers in recent months has not been notably favorable toward stock-holding, though evaluation of sentiment is doubtless as yet not subject to scientific method, and Canadian farmers held unusually large stocks on July 31, 1931. In the United States at least, it seems fairly clear that farmers, traders, and speculators alike have inclined to transfer the function of stock-holding to the Grain Stabilization Corporation, though farmers have exhibited some unwillingness to sell their new-crop wheat; and one can hardly interpret the acts and statements of the Corporation itself as evidencing eagerness to perform the function, though doubtless the obligation to growers to do so has been recognized. There appears to be no reliable method of anticipating what sequence of events, if any, would transform rather unenthusiastic holders into willing or even eager ones. Perhaps farmers, traders, and speculators would be encouraged especially by crop damage in the Southern Hemisphere, by a moderate or small volume of Russian exports, by evidence that the trade cycle, either at home or in foreign countries, was entering upon its upward phase, or by a firm holding attitude on the part of the Federal Farm Board. One may rule out the first two influences, since we have postulated average yields per acre in the Southern Hemisphere, and sizable Russian exports. With regard to the third, we again fall back upon what seem to be the views of reputable analysts of the trade cycle—that at least improvement is in prospect in coming months. The alignment of interests in Congress, moreover, seems to be such that withholding of stocks by the Stabilization Corporation may become mandatory, especially if agrarian representatives should (as is not unprobable) occupy a position in which their support of federal measures for relief of urban unemployment is exchanged for urban support of agrarian measures, including perhaps impounding of the wheat surplus in addition to adoption of the equalization fee or the export debenture plan. We believe that improvement in the trade cycle and impounding

of the Stabilization Corporation's stocks are more properly to be regarded as probable than as improbable or remotely possible developments, and hence that in the United States stocks of wheat will tend to be held more firmly as the year progresses, the more so if (as now seems probable), the area sown to winter wheat for the crop of 1932 is substantially reduced as compared with the area sown for the crop of 1931.

One may suppose that if a disposition or compulsion to hold stocks appears in the United States, something of the same disposition might appear in Canada, principally because of the close connection between the Winnipeg and the Chicago futures markets; and in a weaker and less significant manner, holders in Argentina and Australia might receive encouragement.

Under these circumstances (including, of course, average yields per acre in the Southern Hemisphere and exports of 75–100 million bushels from Russia), it would seem to be reasonable to expect international wheat prices to rise from their present exceedingly low level; for importers would probably be compelled to increase their bids in order to fill requirements. Under the same circumstances, however, the prospects for rising prices seem to be less favorable in the first than in the second third of the crop year.[1] Improvement in the trade cycle probably cannot appear suddenly or promptly; Congress in the United States presumably will not meet before December; European countries, especially Germany, France, and Italy, will presumably be utilizing domestic wheat crops in such a way that smaller imports will be needed in the first than in the second third of the year; and at the same time, there will presumably be larger supplies pressed for export in the first than in the second third of the crop year, since in the earlier third one must expect the outflow of a large fraction of the surpluses of Russia, Canada, and the United States, surpluses which are presumably larger than the prospective surpluses of Argentina and Australia that will begin to flow out in the second third of the year.

If international wheat prices should in fact tend to rise, we take it that the advance would be checked before it had attained large dimensions by release of heavy stocks from the overseas exporting countries. If so, there is little likelihood that the average level of international wheat prices in 1931–32 can rank other than as one of the lowest in the past decade, barring a general and severe crop scare in the spring of 1932.

In conclusion, it seems desirable to emphasize the fact that the foregoing analysis rests heavily upon assumptions and upon inadequate and fragmentary information. In particular, it is not at all certain, but is merely as we interpret current information more probable than improbable, that Germany, France, and Italy together will harvest close to 660 million bushels of wheat; that Russia will export 75–100 million bushels; that yields per acre will prove to be of average size in the Southern Hemisphere; that a disposition to hold stocks rather firmly will appear in the overseas exporting countries; and that the trade cycle will enter its upward phase. It remains possible that these important price-influencing factors may develop in such a manner as to cause international wheat prices to decline even below the average level of July–August; presumably, however, a decline could not be of large magnitude, for the level is already so low that it exceeds but slightly the cost of transportation from many farms in exporting countries to Europe. It also remains possible that yields per acre both in the three important continental European importers and in the Southern Hemisphere should fall considerably below average, that Russia should export substantially less than 75 million bushels, that the trade cycle should enter its upward phase more promptly and decisively than many now seem to expect, and that the disposition to hold stocks in exporting countries should be strengthened, in part by such events; if

[1] In view of the effect that the spring progress of the Northern Hemisphere wheat crop of 1932 may exert in April–July 1932, it seems futile at this time to attempt to anticipate wheat price developments in those months under any set of assumptions.

so, a substantial rise in wheat prices might well occur even in the first third of the crop year. In short, the possibilities as usual seem to include price movement in either direction at almost any time; the probabilities as they appear vaguely at the moment (but not necessarily after a month's accumulation of information) seem to include the prospect at least of stable prices, and in the course of a few months, the prospect of something of an advance.

This study is the work of M. K. Bennett, Helen C. Farnsworth, and Ada F. Wyman, with the advice of Alonzo E. Taylor and Holbrook Working. The sections dealing with Russia were written with the advice of V. P. Timoshenko.

APPENDIX

TABLE I.—WHEAT PRODUCTION IN PRINCIPAL PRODUCING COUNTRIES, 1920–31*

(Million bushels)

Year	United States	Canada	India	Australia	Argentina	Chile	Uruguay	Hungary	Bulgaria	Jugo-Slavia	Roumania	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	32.6	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	785.0	11.9
1928	914.9	566.7	290.9	159.7	349.1	29.7	15.2	99.2	49.2	103.3	115.5	795.2	11.0
1929	809.2	304.5	320.7	126.9	162.6	33.5	13.2	75.0	33.2	95.0	99.8	702.9	11.3
1930	863.4	397.9	390.8	212.6	238.8	21.2	8.0	84.3	58.3	80.3	130.8	1,084.0	11.4
1931	893.6	.....	347.3	.....	.....	....	...	65.6	57.1	85.0	112.4	.....	15.2
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]
1925–29	821.5	430.7	320.5	135.9	243.0	29.5	12.8	79.5	40.5	81.0	105.5	795.8	10.7

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	25.0	23.6	13.0	37.2	52.2	231.8	95.4	220.6	12.8	5.5	8.8	.59	12.2
1927	28.2	28.3	8.3	44.3	57.2	276.1	120.5	195.8	16.3	6.2	9.4	.60	15.3
1928	28.1	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	337.3	123.1	260.1	13.2	5.5	11.8	.75	19.0
1930	21.3	32.2	9.7	41.1	43.3	238.8	139.2	210.8	13.5	6.1	10.5	.78	21.5
1931	35.1	29.8	14.0	....	37.7[c]	.....	165.0	238.8	15.1[d]	8.0	....	...	....
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
1925–29	24.7	29.6	11.5	40.0	53.0	287.9	119.8	229.3	14.8	6.0	10.4	.65	15.8

Year	Spain	Portugal	Switzerland	Austria	Czecho-Slovakia	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	39.9	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	52.9	59.2	1.00	2.50	7.36	13.1	39.4	6.7	8.8
1929	154.2	10.8	5.8[e]	11.6	52.9	65.9	1.10	2.34	10.59	8.5	38.8	11.1	7.2
1930	146.0	13.1	5.3[e]	11.4	53.1	82.3	1.19	4.06	12.96	12.0	38.4	10.2	6.5
1931	145.3	....	...	12.1	....	....	1.03	....	.....	18.4	38.5	....	...
Average 1909–13	130.4	11.8[e]	3.3	12.8	37.9	61.7	.14	1.48	3.63	16.3[f]	32.0	6.3[a]	6.9
1925–29	145.6	10.1	4.4	11.3	45.0	60.5	1.00	2.30	7.08	11.6	39.0	8.3	7.6

* 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 II 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] Winter wheat only.

[e] Includes spelt and meslin.

[f] One year only.

TABLE II.—WHEAT PRODUCTION IN PRINCIPAL PRODUCING AREAS, 1920–31*

Year	United States	Canada	Soviet Russia	Lower Danube[a]	Other Europe	Northern Africa[b]	India	Other Northern Hemisphere[c]	Northern Hemisphere ex-Russia[d]	Argentina	Australia	Other Southern Hemisphere[e]	Southern Hemisphere[d]	World ex-Russia[d]
	MILLION BUSHELS													
1920.....	833	263	...	172	776	39	378	86	2,545	156	146	48	350	2,895
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	997	66	372	88	3,055	248	125	55	430	3,485
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	921	62	325	86	*2,955*	230	161	52	445	*3,400*
1927.....	878	480	785	272	1,001	65	335	95	3,125	*290*	118	65	*475*	*3,600*
1928.....	915	567	795	367	1,040	70	291	88	3,340	*350*	160	64	*575*	*3,915*
1929.....	*825*	305	703	303	*1,158*	77	321	95	*3,085*	*175*	127	69	*370*	*3,455*
1930.....	863	398	1,084	354	1,026	64	391	91	3,185	239	213	50	500	3,685
1931.....	894	*240*	*1,018*	320	*1,070*	79	347	*97*	*3,050*	*200*	*165*	*60*	*425*	*3,475*
Average 1909–13..	690	197	758	330	1,015	58	352	77	2,720	147	90	43	280	3,000
1925–29..	834	439	794	306	1,044	68	321	90	*3,100*	247	136	61	445	*3,545*
	PERCENTAGE													
1920.....	28.8	9.1	.....	5.9	26.8	1.3	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	2.5	87.7	7.1	3.6	1.6	12.3	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.....	25.0	12.2	.....	8.7	27.1	1.8	9.6	2.5	86.9	6.8	4.8	1.5	13.1	100.0
1927.....	24.4	13.3	.....	7.6	27.8	1.8	9.3	2.6	86.8	8.1	3.3	1.8	13.2	100.0
1928.....	23.4	14.5	.....	9.4	26.6	1.8	7.4	2.2	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	2.8	89.3	5.1	3.6	2.0	10.7	100.0
1930.....	23.4	10.8	.....	9.6	27.8	1.7	10.6	2.5	86.4	6.5	5.8	1.3	13.6	100.0
1931.....	25.8	6.9	.....	9.2	30.8	2.3	10.0	2.8	87.8	5.8	4.7	1.7	12.2	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
1925–29..	23.5	12.4	.....	8.6	29.4	1.9	9.1	2.5	87.4	7.0	3.9	1.7	12.6	100.0

* Data summarized from Appendix Table I. The italicized figures represent for years prior to 1931 inclusion of our adjustments of official estimates that seem not to accord with disposition statistics (see Appendix Table XII); for 1931, the italicized figures represent our tentative evaluations. 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 III.—WEEKLY VISIBLE SUPPLIES OF WHEAT IN NORTH AMERICA, UNITED KINGDOM PORTS, AND AFLOAT TO EUROPE, APRIL–JULY 1931*

(Million bushels)

Date	United States	Canada	U.K. ports	Afloat to Europe	Total	Date	United States	Canada	U.K. ports	Afloat to Europe	Total
Apr. 4.....	213.1	180.5	12.6	48.0	453.6	June 6.....	207.1	126.3	7.4	63.8	404.6
11.....	210.5	178.2	12.8	43.1	444.4	13.....	207.5	121.4	6.4	61.2	396.4
18.....	209.1	171.3	12.4	45.4	438.1	20.....	203.9	115.5	7.2	59.1	385.6
25.....	207.1	162.1	11.4	46.7	427.3	27.....	200.4	115.6	6.8	53.6	376.3
May 2.....	206.5	155.7	9.9	48.1	420.1	July 4.....	202.0	113.7	8.0	49.8	373.5
9.....	205.4	149.7	8.4	54.4	417.9	11.....	204.8	111.9	7.2	49.6	373.5
16.....	203.4	143.9	7.4	59.8	414.4	18.....	211.9	111.5	8.8	45.5	377.6
23.....	202.8	137.9	7.6	63.7	412.0	25.....	220.2	110.7	8.8	43.2	382.8
30.....	206.2	132.7	7.2	60.4	405.6	Aug. 1.....	226.5	110.9	10.6	37.9	386.0

* United States data are *Bradstreet's;* Canadian data from *Canadian Grain Statistics;* United Kingdom and Afloat data from Broomhall's *Corn Trade News* and *Milling.* Canadian figures are for the days preceding the dates indicated in the table above, and include stocks in some elevators for the preceding week, but are adjusted to bring stocks in western country elevators to the correct week.

TABLE IV.—WORLD VISIBLE WHEAT SUPPLIES, AUGUST 1, 1921–31, AND MONTHLY, 1930–31*

(*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
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	43.9	370.1	350.1
1930 Aug. 1...	221.9	103.5	7.0	33.5	6.5	39.2	325.5	40.5	45.7	411.6	378.1
Sept. 1...	294.2	87.4	6.6	27.0	6.0	47.7	381.6	33.6	53.8	468.9	441.9
Oct. 1...	316.9	154.8	5.9	13.0	9.0	44.2	471.7	18.9	53.2	543.7	530.7
Nov. 1...	289.2	174.1	4.8	7.8	10.0	42.2	463.3	12.5	52.2	528.1	520.3
Dec. 1...	277.7	194.7	4.0	5.0	13.9	45.6	472.4	9.0	59.6	541.0	536.0
1931 Jan. 1...	260.1	209.5	6.6	60.0	19.7	27.3	469.6	66.6	47.0	583.2	523.2
Feb. 1...	253.6	199.2	6.6	87.5	17.4	37.3	452.8	94.1	54.6	601.5	514.0
Mar. 1...	267.2	187.0	9.2	96.0	13.0	57.9	454.3	105.2	70.8	630.3	534.3
Apr. 1...	267.7	178.4	9.2	84.2	12.6	48.0	446.1	93.4	60.6	600.1	515.8
May 1...	242.4	156.9	6.6	67.5	9.9	48.1	399.3	74.1	58.0	531.4	463.9
June 1...	234.9	130.6	5.5	51.5	7.2	60.4	365.4	57.0	67.6	490.0	438.5
July 1...	234.2	113.2	6.6	34.0	6.6	49.8	347.4	40.6	56.5	444.5	410.5
Aug. 1...	275.1	112.4	7.0	20.0	10.6	37.9	387.6	27.0	48.5	463.1	443.1
Average, Aug. 1											
1910–14	58.8	10.8	1.3	5.9[a]	15.4	35.2	69.6	7.2[a]	50.6	127.4[a]	121.5
1926–30	126.1	68.7	7.8	16.4	7.0	41.2	194.8	24.2	48.2	267.2	250.8

* 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.

[a] For Australia, 4-year average 1911–14.

TABLE V.—WEEKLY WHEAT RECEIPTS AT PRIMARY MARKETS IN THE UNITED STATES AND CANADA*

(*Million bushels*)

Month	United States				Fort William and Port Arthur				Vancouver[a]			
	1928	1929	1930	1931	1928	1929	1930	1931	1928	1929	1930	1931
Apr.	5.48	5.35	3.08	3.97	.48	1.59	.41	1.13	2.78	3.06	1.14	.60
	4.42	4.86	2.60	5.77	.23	1.50	.35	1.28	1.96	2.69	1.23	1.23
	4.48	4.12	2.34	4.35	.26	1.17	.29	1.41	2.77	2.00	.62	1.64
	4.17	3.55	4.08	4.81	.26	.51	.36	2.62	2.92	1.37	.96	1.52
	4.07	3.66	3.73	5.48	.09	4.80	.78	2.77	2.81	1.41	.82	1.58
May	4.86	3.84	3.05	6.16	.25	4.10	1.53	3.35	2.41	1.47	.59	1.54
	6.70	4.03	3.06	5.89	3.13	3.11	1.23	2.74	1.95	1.09	.66	1.30
	7.46	4.08	4.72	8.16	6.56	3.54	.96	2.39	1.45	.74	.62	1.24
	4.83	4.16	3.84	8.83	4.72	2.51	3.19	3.24	1.39	.58	.79	1.10
June	4.32	4.56	4.55	10.17	4.22	2.43	4.03	4.22	1.56	.77	.86	.99
	3.87	5.45	3.69	5.79	4.54	2.60	5.60	4.48	.72	.66	.74	.75
	3.10	5.67	4.56	4.64	5.08	3.32	6.29	5.41	1.21	.49	.78	.74
	2.89	6.30	4.94	5.21	4.38	4.16	6.80	6.21	.64	.67	.90	.70
July	4.24	7.51	5.85	11.50	4.93	4.46	4.15	3.61	.46	.98	.93	.51
	7.40	11.45	18.30	20.73	4.28	3.25	3.49	2.84	.69	.75	1.09	.87
	14.24	16.49	23.57	29.10	3.14	3.61	2.49	2.50	.50	.57	.90	1.10
	18.76	17.84	32.35	26.20	3.07	3.42	2.47	2.05	.46	.85	.62	.81
	23.93	29.69	29.76	24.43	3.03	2.89	3.53	2.67	.72	1.00	.29	.59

* United States data are unofficial figures compiled from *Daily Trade Bulletin;* Fort William and Port Arthur data are official figures for *net* receipts furnished by Canadian Board of Grain Commissioners; Vancouver data are official figures compiled from *Canadian Grain Statistics*. United States and Fort William and Port Arthur data begin with figures for weeks ending March 31, 1928, March 30, 1929, April 5, 1930, and April 3, 1931; Vancouver figures are for weeks ending one day earlier.

[a] Receipts at Prince Rupert included.

TABLE VI.—MONTHLY WHEAT RECEIPTS AT PRIMARY MARKETS IN THE UNITED STATES AND CANADA*

(*Million bushels*)

Month	United States primary markets				Port William and Port Arthur				Vancouver			
	1927-28	1928-29	1929-30	1930-31	1927-28	1928-29	1929-30	1930-31	1927-28	1928-29	1929-30	1930-31
Aug.	81.6	84.2	101.7	85.5	2.4	3.5	2.4	11.1	.09	1.07	.74	4.98
Sept.	79.7	73.3	47.0	62.6	8.6	39.1	27.7	49.0	.32	2.61	4.83	6.12
Oct.	73.3	84.4	36.3	28.9	51.4	81.4	28.9	29.7	6.17	12.69	7.32	6.94
Nov.	44.8	43.6	20.6	24.6	71.0	72.9	17.0	14.6	10.78	14.62	6.19	10.18
Aug.–Nov.	279.4	285.5	205.6	201.6	133.4	196.9	76.0	104.4	17.36	31.02	19.08	28.22
Dec.	26.5	33.0	22.9	21.5	41.0	51.6	6.2	12.4	11.81	13.53	4.73	7.76
Jan.	23.5	22.5	17.5	29.5	21.1	11.0	2.8	4.9	16.49	13.90	4.25	7.83
Feb.	22.5	28.7	19.9	30.7	9.5	2.9	1.8	4.5	12.54	9.25	6.23	8.36
Mar.	26.3	27.2	16.7	30.8	3.3	5.2	1.6	5.1	10.50	15.46	6.89	5.41
Dec.–Mar.	98.8	111.4	77.0	112.5	74.9	70.7	12.4	26.9	51.34	52.14	22.10	29.36
Apr.	18.0	17.5	13.4	21.2	.9	9.7	1.6	7.6	10.88	7.31	4.12	5.70
May	25.9	18.6	16.5	30.9	17.6	13.8	7.4	12.6	7.43	3.91	3.08	5.61
June	15.6	25.7	18.7	29.7	20.1	14.7	23.7	22.1	3.66	3.04	3.60	3.27
July	72.6	94.2	99.0	104.0	14.4	14.6	14.2	11.7	2.44	3.30	3.31	3.62
Apr.–July	132.1	156.0	147.6	185.8	53.0	52.8	46.9	54.0	24.41	17.56	14.11	18.20
Aug.–July	510.3	552.9	430.2	499.9	261.3	320.4	135.3	185.3	93.11	100.72	55.29	75.78

* 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.

TABLE VII.—WEEKLY WHEAT AND FLOUR SHIPMENTS BY AREAS OF ORIGIN AND DESTINATION, APRIL–JULY, 1930–31*

(*Million bushels*)

Week ending	North America	Argentina, Uruguay	Australia	Russia, Danube[a]	India	Other Countries[b]	Total	To Europe	To Ex-Europe
April 4	4.18	3.10	5.01	1.54	...	.12	13.96	10.06	3.90
11	3.86	3.46	3.84	.72	...	.06	11.94	8.31	3.63
18	5.03	4.67	3.76	1.77	...	.02	15.25	11.40	3.85
25	4.43	3.71	5.60	.98	...	.07	14.79	10.20	4.59
May 2	7.52	4.27	3.78	.68	...	.10	16.36	12.68	3.68
9	10.62	3.74	4.22	1.74	...	.07	20.41	15.90	4.50
16	8.73	3.80	5.29	2.12	...	.08	20.02	15.44	4.58
23	10.21	5.38	2.73	2.12	...	.14	20.58	16.91	3.67
30	6.88	3.98	2.82	1.06	...	.08	14.82	11.43	3.39
June 6	9.73	4.51	3.87	.99	...	.03	19.14	16.12	3.02
13	6.68	4.67	3.11	.68	.01	.09	15.24	11.53	3.71
20	7.54	5.50	3.51	.48	.06	.26	17.34	14.01	3.33
27	6.56	3.13	3.79	.66	.02	.23	14.39	9.74	4.65
July 4	6.24	2.98	3.98	.54	.22	.69	14.66	10.90	3.76
11	5.64	1.49	4.05	.73	.01	.90	12.81	10.51	2.30
18	5.10	1.62	2.30	.78	.07	.80	10.66	7.33	3.33
25	5.74	2.04	3.07	.99	...	.48	12.32	9.60	2.72
Aug. 1	4.34	1.22	2.38	1.47	.01	.52	9.93	7.68	2.25

* Here converted from data in Broomhall's *Corn Trade News.* Broomhall's weekly figures do not always check with his cumulative totals, which presumably include later revisions. Shipments from "Other Countries" apparently include a part of the shipments from the Danube and Russia in most weeks.

[a] Russia-Danube, and Black Sea.

[b] Northern Africa, Chile, Germany, Persia, etc.

TABLE VIII.—INTERNATIONAL TRADE IN WHEAT AND FLOUR, MONTHLY FROM JULY 1930*

(*Million bushels*)

A.—NET EXPORTS

Month	United States	Canada	India	Australia	Argentina	Roumania	Hungary	Jugo-Slavia	Bulgaria	Poland	Algeria, Tunis	Egypt	Greece
July	15.04	22.81	2.48	4.33	2.62	.33	.68	.40	.03	(.09)[a]	1.44	...	(1.78)[a]
Aug.	23.06	20.45	1.71	5.91	3.76	3.10	2.42	1.89	.71	.04	2.22	(.68)[a]	(1.86)[a]
Sept.	16.57	31.10	.71	4.41	2.90	3.12	2.17	.78	.46	.54	3.18	(1.08)[a]	(2.04)[a]
Oct.	9.80	33.42	.14	7.00	4.97	2.28	2.28	.65	.12	.58	1.78	(.56)[a]	(2.53)[a]
Nov.	7.09	34.76	(.32)[a]	6.58	2.85	1.68	2.98	1.09	.13	.71	1.13	(.97)[a]	(1.31)[a]
Dec.	5.58	24.93	(.39)[a]	7.59	4.97	.87	2.25	.30	.07	.49	3.59	(1.03)[a]	(1.66)[a]
Jan.	4.25	11.35	(.66)[a]	17.91	9.41	...	.88	.07	.02	.24	.01[b]	(1.63)[a]	(1.67)[a]
Feb.	2.62	12.14	(2.24)[a]	17.81	16.53	...	.76	.01	.02	.32	(.06)[ab]	...	(1.69)[a]
Mar.	3.52	15.49	(1.34)[a]	17.76	14.45	...	1.44	.01	.51	.38	.08[b]	...	(1.98)[a]
Apr.	5.34	6.14	(1.02)[a]	....	19.01	...	.56	.13	.80	.38	.07	...	(2.22)[a]
May	9.05	31.66	(.44)[a]	15.95	17.12	...	.92	.02	1.45	.22	(.02)[ab]	...	(2.40)[a]
June	10.66	22.98	(.52)[a]	16.72	20.92	...	1.33	.00	.67	.24	2.23[b]	(.58)[a]	(2.96)[a]
July	...	14.08	...	...	...	...	...	...	...	...	....	...	....

B.—NET IMPORTS

Month	Irish Free St.	United Kingdom	France[c]	Germany	Belgium	Italy	Netherlands	Scandinavia	Switzerland	Austria	Czecho-Slovakia	Baltic States[d]	Japan
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
Aug.	.86	17.15	1.78	3.23	4.54	4.50	2.96	2.01	1.56	.41	1.59	.87	.42
Sept.	1.64	22.69	5.15	4.42	4.27	6.06	4.55	2.45	1.90	1.08	1.90	.87	(.08)[e]
Oct.	1.84	20.42	5.79	3.59	3.70	8.45	3.41	2.75	2.20	1.07	1.84	1.42	.65
Nov.	1.63	20.64	3.60	1.45	3.66	8.52	3.24	2.35	1.87	1.09	3.72	1.14	.81
Dec.	1.88	27.56	3.31	1.01	4.03	5.85	2.18	2.20	1.34	1.56	4.00	.24	1.45
Jan.	1.45	14.57	4.14	1.94	1.82	5.62	4.34	1.87	1.74	1.15	.13	.32	2.21
Feb.	1.14	10.57	3.21	1.65	2.95	5.20	1.95	1.34	1.19	1.17	.08	.37	1.74
Mar.	2.12	18.80	4.65	1.25	3.86	7.25	1.69	1.37	1.46	1.16	.20	.42	1.90
Apr.	...	16.97	4.90	1.70	4.68	7.63	3.23	1.81	1.15	1.38	.51	.36	2.05
May	1.37	16.02	5.82	2.18	2.76	8.24	2.22	2.22	1.16	1.50	1.00	.47	2.56
June	1.41	16.70	7.92[f]	4.34	5.02	10.76	3.04	2.70	1.22	1.78	1.37	.55	2.70
July	...	23.86	...	...	...	...	...	...	...	....	....	...	....

* Data from official sources and International Institute of Agriculture.

[a] Net import.
[b] Tunis only.
[c] Net imports in "commerce général."
[d] Finland, Estonia, Latvia.
[e] Net export.
[f] "Commerce spécial."

TABLE IX.—UNITED STATES AND CANADIAN CARRYOVERS OF WHEAT, 1921–31*

(*Million bushels*)

Year	United States (July 1)					Canada (August 31, 1921–23; July 31, 1924–31)				
	Total	On farms	In country mills and elevators	Commercial visible (Bradstreet's)	In city mills[a]	Total	On farms	In elevators	In transit	In flour mills
1921	....[b]	56.7	27.2	10.0	....[b]	13.7	2.14	4.8	6.03	0.72
1922	....[b]	32.4	28.8	20.3	....[b]	20.6	2.36	11.0	4.58	2.63
1923	....[b]	35.9	37.1	29.4	....[b]	11.7	1.44	5.1	2.76	2.44
1924	....[b]	31.0	36.6	38.6	....[b]	45.2[c]	7.36[d]	27.4[c]	5.86[c]	4.54[c]
1925	118.1	29.4	25.3	31.8	31.6	26.5	2.71	17.9	3.84	2.00
1926	98.9	21.0	29.5	16.5	31.9	36.5	3.99	25.5	3.16	3.87
1927	122.8	27.2	21.8	25.5	48.3	50.8	4.26	37.1	5.24	4.20
1928	128.0	23.7	19.3	42.2	42.8	77.6	4.19	53.6	13.73	6.14
1929	238.2	45.5	41.5	95.7	55.5	104.4	5.62	82.6	8.67	7.46
1930	294.1	47.2	60.2	112.8	73.9	111.7	5.33	86.1	12.78	7.50
1931	315.5	32.1	30.6	200.4	52.4	133.4	19.46	109.0[e]	4.89	....[b]
Average 1910–14	....[b]	32.5	31.6	25.3	....[b]	....[b]	....[b]	....[b]	....[b]	....[b]
1926–30	176.4	32.9	34.5	58.5	50.5	76.2	4.68	57.0	8.72	5.84

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

[a] Census reports of stocks held in city mills and attached elevators plus stocks in transit to these mills, the total raised to account for stocks held by mills not reporting to the census. The figures for July 1, 1930 and 1931, include official estimates of 12.5 and 18.4 million bushels of stocks stored in city mills but owned by "others," presumably the Grain Stabilization Corporation.

[b] Not available.
[c] July 31, as for later years.
[d] For 1924 quantities in farmers' hands relate to August 31; for subsequent years to July 31.
[e] Includes stocks in flour mills.

TABLE X.—WEEKLY CASH PRICES OF REPRESENTATIVE WHEATS IN LEADING EXPORTING AND IMPORTING MARKETS, APRIL–JULY 1931*

(*U.S. dollars per bushel*)

Month	United Kingdom	United States				Canada		Argentina	Liverpool			
	British parcels	All classes and grades[a]	No. 2 Red Winter (St. Louis)	No. 2 Hard Winter (Kansas City)	No. 1 Northern (Minneapolis)	Weighted Average (Winnipeg)	No. 3 Manitoba (Winnipeg)	78 Kilo (Buenos Aires)	No. 1 Manitoba	No. 3 Manitoba	Argentine Rosafe	Australian
Apr. 4	.66	.74	.79	.72	.78	.52	.49	.44	.75	.68[b]	.59	.65
11	.68	.74	.80	.73	.79	.54	.52	.45	.75	.70[b]	.60	.66
18	.70	.75	.80	.74	.80	.57	.56	.48	.78	.71[b]	.64	.66
25	.72	.74	.80	.73	.79	.56	.55	.47	.80	.75[b]	.66	.71
May 2	.71	.75	.79	.73	.80	.56	.54	.46	.78	.71[b]	.64	.68
9	.72	.76	.80	.73	.82	.58	.54	.48	.81	.74[c]	.68	.73
16	.71	.76	.80	.73	.82	.58	.54	.47	.80	.74[c]	.65	.73
23	.70	.75	.82	.73	.81	.57	.52	.46	.77	.70	.64	.72
30	.68	.75	.79	.73	.81	.56	.51	.45	.74	.65	.64	.71
June 6	.67	.71	.76	.73	.75	.58	.52	.45	.74	.65	.62	.70
13	.67	.68	.74	.73	.73	.58	.52	.46	.75	.68	.63	.69
20	.65	.71	.82	.74	.80	.57	.52	.45	.74	.67	.61	.69
27	.68	.64	.74	.60	.70	.60	.54	.47	.77	.69	.62	.70
July 4	.65	.52	.57	.49	.72	.58	.54	.46	.76	.68	.60	.68
11	.64	.48	.50	.46	.69	.55	.51	.45	.73	.66	.58	.68
18	.61	.45	.48	.43	.64	.54	.49	.43	.69	.62	.57	.66
25	.61	.47	.49	.45	.63	.53	.48	.42	.71	.63	.58	.63
Aug. 1	.60	.46	.47	.43	.58	.51	.46	...	.68	.60	.56	.60

* United Kingdom prices are averages of sales of wheat parcels in British markets for weeks ending Saturday, from *London Grain, Seed and Oil Reporter*. United States prices are weekly averages of daily weighted 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, V, No. 5. 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] No. 3 Northern Manitoba (Vancouver), parcels to Liverpool.
[c] No. 3 Northern Manitoba (Vancouver), parcels to London.

TABLE XI.—MONTHLY PRICES OF DOMESTIC WHEAT IN EUROPE, FROM AUGUST 1928*

(*U.S. dollars per bushel*)

Month	Great Britain			France (Chartres)			Italy (Milan)			Germany (Berlin)		
	1928–29	1929–30	1930–31	1928–29	1929–30	1930–31	1928–29	1929–30	1930–31	1928–29	1929–30	1930–31
Aug.	1.33	1.52	1.09	1.60	1.51	1.66	1.72	1.74	1.80	1.49	1.59	1.63
Sept.	1.19	1.29	.95	1.58	1.48	1.69	1.81	1.75	1.77	1.36	1.47	1.55
Oct.	1.24	1.24	.91	1.61	1.45	1.64	1.88	1.84	1.70	1.38	1.50	1.47
Nov.	1.28	1.22	.87	1.60	1.43	1.69	1.87	1.85	1.63	1.37	1.51	1.60
Dec.	1.25	1.24	.80	1.56	1.41	1.67[a]	1.87	1.90	1.46	1.33	1.57	1.61
Jan.	1.25	1.24	.73	1.59	1.40[a]	1.72	1.92	1.94	1.49	1.35	1.60	1.68
Feb.	1.27	1.16	.67	1.64	1.31	1.82	1.96	1.89	1.54	1.40	1.52	1.77
Mar.	1.27	1.08	.67	1.68	1.37	1.85	1.95	1.86	1.49	1.44	1.55	1.86
Apr.	1.28	1.13	.69	1.60	1.36[a]	1.89	1.93	1.94	1.52	1.45	1.75	1.87
May	1.29	1.14	.75	1.65	1.31	1.84	1.89	1.96	1.60	1.41	1.87	1.83
June	1.25	1.11	.78	1.62	1.36	1.91	1.91[a]	2.02	1.51[b]	1.39	1.95	1.76
July	1.35	1.08	.82	1.62	1.66[a]	1.73[a]	1.77	1.77	1.37[c]	1.62	1.87	1.52

* 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 (Saturday prices after August 23, 1930) 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] Preliminary. [c] Soft wheat, Rome.

TABLE XII.—APPROXIMATE DISPOSITION OF WHEAT SUPPLIES IN THE PRINCIPAL EXPORTING COUNTRIES, BY CROP YEARS FROM 1921–22*

(*Million bushels*)

A.—UNITED STATES (July–June)

Item	1921–22	1922–23	1923–24	1924–25	1925–26	1926–27	1927–28	1928–29	1929–30	1930–31
Initial stocks	124	117	152	146	117	99	123	128	247	294
New crop	815	868	797	864	677	831	878	915	809	863
Total supplies	939	985	949	1,010	794	930	1,001	1,043	1,056	1,157
Net exports	269	208	135	257	96	209	194	146	143	115
Seed requirements	93	88	76	81	79	84	90	84	85	77
Consumed for food	463	468	477	479	493	494	505	506	514	522
Stocks at end	117	152	146	117	99	123	128	247	294	315
Calculable disappearance	942	916	834	934	767	910	917	983	1,036	1,029
Discrepancy	−3	+69	+115	+76	+27	+20	+84	+60	+20	+128

B.—CANADA (August–July)

Item	1921–22	1922–23	1923–24	1924–25	1925–26	1926–27	1927–28	1928–29	1929–30	1930–31
Initial stocks	25	40	32	45	27	37	51	78	104	112
New crop	301	400	474	262	396	407	480	567	305	398
Total supplies	326	440	506	307	423	444	531	645	409	510
Net exports	184	279	346	192	324	293	333	406	185	259
Seed requirements	39	40	39	38	40	39	43	44	45	43
Milled for food	37	41	42	42	42	43	42	44	44	44
Unmerchantable	12	10	19	12	11	12	28	30	7	4
Lost in cleaning	9	12	12	10	6	19	7	13	9	8
Stocks at end	40	32	45	27	37	51	78	104	112	133
Calculable disappearance	321	414	503	321	460	457	530	641	402	491
Discrepancy	+5	+26	+3	−14	−37	−13	+1	+4	+7	+19

C.—ARGENTINA (August–July)

Item	1921–22	1922–23	1923–24	1924–25	1925–26	1926–27	1927–28	1928–29	1929–30	1930–31
Initial stocks	40	53	64	66	57	51	69	90	135	70
New crop	191	196	248	191	191	230	282	349	163	239
Total supplies	231	249	312	257	248	281	351	439	298	309
Net exports	118	139	172	123	94	143	178	224	150	125
Seed requirements	20	19	21	23	25	24	25	23	24	20
Consumed for food	47	48	49	53	54	57	59	61	63	65
Stocks at end	53	64	66	57	51	69	90	135	70	90
Calculable disappearance	238	270	308	256	224	293	352	443	307	300
Discrepancy	−7	−21	+4	+1	+24	−12	−1	−4	−9	+9

D.—AUSTRALIA (August–July)

Item	1921–22	1922–23	1923–24	1924–25	1925–26	1926–27	1927–28	1928–29	1929–30	1930–31
Initial stocks	47	18	28	26	23	17	23	29	26	35
New crop	129	110	125	165	115	161	118	160	126	213
Total supplies	176	128	153	191	138	178	141	189	152	248
Net exports	115	50	86	124	77	103	71	109	63	150
Seed requirements	10	10	10	11	11	12	14	14	17	13
Consumed for food	27	28	28	29	29	30	30	31	31	32
Stocks at end	18	28	26	23	17	23	29	26	35	45
Calculable disappearance	170	116	150	187	134	168	144	180	146	240
Discrepancy	+6	+12	+3	+4	+4	+10	−3	+9	+6	+8

* Based so far as possible upon official estimates. For explanation of the several items, see footnotes to Appendix Table XXXV, WHEAT STUDIES, Vol. VI, No. 2, pp. 184–85.

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