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

OF THE FOOD RESEARCH INSTITUTE

VOL. IV, NO. 10

SEPTEMBER 1928

SURVEY OF THE WHEAT SITUATION

APRIL TO JULY, 1928

A SHARP advance and still more extensive recession of wheat prices, more marked in Chicago than in foreign markets, featured the period under review. Poor prospects for winter wheat in the Northern Hemisphere, especially the United States, were changed into good prospects as the season advanced. Spring-wheat crops made consistently good progress, especially in Canada. These developments and the weight of exceedingly high Canadian visible supplies brought wheat prices at the end of July to about the lowest levels recorded since the trough of post-war prices in 1923-24.

All the important wheat producers in the Northern Hemisphere except India now appear to have harvested crops of average size or better; and in Canada, the Danube countries, and northern Africa the crops are of record size for post-war years. Exclusive of Russia, China, and Asia Minor, the Northern Hemisphere crop is apparently over 3,200 million bushels, the largest since the war. Exportable surpluses promise to be the largest in post-war years even if Argentina and Australia should have only average yields.

The international statistical position is clearly easier than in 1927-28, and apparently nearly as easy as in 1923-24. Taken at their present face value, the data suggest that a world wheat price level the lowest since 1923-24 seems likely to prevail in the coming months, even if weather conditions should prove somewhat unfavorable for later harvests in the Northern Hemisphere and for further development in Argentina and Australia. Under these circumstances, international trade in 1928-29 ought to be heavy, perhaps of record size.

STANFORD UNIVERSITY, CALIFORNIA

September 1928

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

OF THE

FOOD RESEARCH INSTITUTE

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

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

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

Volumes I-III are now available, bound in red buckram, at \$10.00 each, and Volume IV will be similarly available about October 1, 1928. The ten issues of Volume V will be published monthly from November 1928 to September 1929, except in April 1929. Ordinarily each issue will reach subscribers in North America early in the month designated. The subscription price for the volume, including a temporary binder, is \$10.00. Individual issues may also be purchased separately. Orders, subscriptions, and other communications should be addressed to FOOD RESEARCH INSTITUTE, STANFORD UNIVERSITY, CALIFORNIA, or, for Great Britain, to P. S. King & Son, Ltd., Orchard House, 14, Great Smith Street, Westminster, S.W. 1, London.

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

SURVEY OF THE WHEAT SITUATION

APRIL TO JULY, 1928

The crop year 1927-28, in most respects less eventful than the preceding four years in the first two-thirds of its course, closed spectacularly. During March and April average cash wheat prices advanced in the United States from mid-winter levels the lowest in the past four years to a peak in early May higher than had been recorded on a similar date in five years. A steady and extensive decline ensued; and by the end of July prices in the leading markets of the world had reached about the lowest levels recorded since the trough of prices in the year 1923-24.

The advance was due chiefly to the bad outlook for winter wheat in the United States, especially east of the Mississippi, and in several countries of Europe; it was achieved in the face of exceptionally high visible supplies in the United States and Canada. The abrupt decline was caused in part by a striking reversal in the outlook for winter-wheat crops, especially in the United States but also in Europe; in part by practically undisturbed good progress of the Canadian spring-wheat crop; and in part to pressure of visible supplies turned burdensome as the crop outlook improved. These changes in prices were more extreme in the United States than elsewhere, and greater in Canada than in the United Kingdom or Argentina. The crop year closed with wheat stocks of record size in Canada despite liberal offers and very heavy exportation from that country in June and July.

Total net exports of approximately 821 million bushels in 1927-28 now appear to have fallen slightly below our advance estimates, rather because Russia now seems to have imported about as much as she exported than because the export movement was curtailed by unforeseen developments. Principally because the bad crop outlook followed by keen Canadian

competition restricted American exports, partly because the crop of 1927 may have been overestimated, net exports from the United States fell below our December forecast. Canadian and Argentine net exports proved higher; the crops of both countries appear to have been underestimated, though other factors contributed to the divergence of reported movements from those anticipated.

The broad outlines of the international statistical position likely to prevail in 1928-29 are fairly clear, in spite of incom-

plete knowledge of wheat production in the Northern Hemisphere and the fact that south of the equator the harvests are still distant. This hemisphere, excluding Russia, China, and Asia Minor, now appears likely to harvest the largest crop of post-war years. The exporting countries of the Northern Hemisphere, India and Russia

excepted, almost certainly have larger crops this year than last; European importing countries have crops of wheat little if any smaller, though the rye crop is short. With India a net importer in 1928-29, both European and ex-European importing countries may be expected to "require" more wheat than in 1927-28. But exportable surpluses seem clearly to be larger by comparison with those of 1927-28 than are the "necessary" requirements of importing countries. On the assumption that the Southern Hemisphere crops will prove at least of average size, we anticipate a distinctly easy international statistical position in 1928-29—if the Argentine and Australian crops prove distinctly good, perhaps almost as easy a position as prevailed in 1923-24. Hence the reasonable prospect is for a year characterized by a corresponding level of wheat prices, relatively small fluctuations, and a very heavy, perhaps a record, volume of international trade.

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I. NEW CROP DEVELOPMENTS

The notable reversal in the wheat-crop outlook was the outstanding feature of the four months under review. Last April winter-wheat crops were commonly expected to be poor, or at least below average, in the United States, western Europe, and in Russia as well. With spring-wheat seeding scarcely begun, there was no basis for expecting the spring-wheat crops to be above average. Expectations of a short world crop sent prices up. Early in May, however, conditions began to change, and as the weeks passed the crop prospects appeared better and better. In most countries, from May through August, the weather proved distinctly favorable for growing and harvesting. Winter wheat recovered remarkably, especially in the United States; and spring wheat came forward, especially in Canada, under consistently favorable weather conditions. By mid-August almost all of the winter-wheat crops of the Northern Hemisphere outside of Russia no longer appeared poor but of average size or better, and the spring-wheat crop promised to be distinctly large. Moreover, accumulating evidence from Argentina and Australia indicated large acreages sown under favorable conditions, and unusually satisfactory growing conditions, thus presaging good outturns in the Southern Hemisphere. The changes in crop prospects exerted a prompt and profound influence on prices and trade.

INDIA AND NORTHERN AFRICA

India's crop alone now appears materially below earlier expectations. The acreage sown was increased; the winter was fairly favorable; and average conditions or better prevailed as late as March. The April official forecast pointed to an average crop of 331 million bushels. In its later stages, however, the crop suffered from rust damage and unfavorable harvesting weather, and the final estimate is only 290 million. This is a small crop for India—apparently the smallest since 1921, and less than India usually consumes. Since it follows three years of moderate crops, India seems likely to export little wheat in

1928-29 and to import substantial quantities from Australia in the winter months.

In the French dependencies of northern Africa, an increase in the acreage sown and exceptionally heavy winter rains apparently resulted in a bumper crop. Although no official estimate for Morocco has yet appeared, the combined crop of Morocco, Algeria, and Tunis seems to be about 75 million bushels, the largest in post-war years, and some 14 million larger than the crop of 1927. Production of bread wheat as contrasted with durum is said to be increasing in this region, and the present crop is thought to contain more soft wheat than ever before. France will presumably obtain larger duty-free imports than usual from this source. The Egyptian crop is unofficially reported to fall below last year's exceptionally large outturn, but is apparently of average size.

THE UNITED STATES

The winter-wheat crop of the United States, as a result of extraordinarily favorable weather during the later part of the growing season, turned out much larger than seemed probable in April and early May. The area sown, tentatively estimated in December 1927 as 47.9 million acres, was one of the three largest in history. The winter, however, was unfavorable; and official figures as of May 1 showed abandonment of 25.1 per cent, the highest figure except that of 1917 since estimates of abandonment were instituted in 1900. Private estimators had anticipated some such figure a month earlier. The soft red winter-wheat areas suffered the heaviest winter-killing. In Ohio, Indiana, Illinois, and Kentucky the abandonment ranged between 65 and 67 per cent, by far the highest ever recorded in these states and indeed close to the highest ever recorded in any state.¹ This reduction brought the acreage remaining for harvest to a relatively low figure,

¹ Higher abandonment in individual states since 1901 has been reported only in Montana, New Mexico, Washington, and Oregon in 1925, when the figures ranged from 70 to 72 per cent.

35.9 million acres,¹ the smallest in post-war years except 1924 and 1925, when the areas sown were only 38.9 and 39.8 million acres, respectively.

Condition as of April 1, officially placed at 68.8 per cent, was the lowest since 1879, except for 1917 and 1925. The trade regarded the official report issued on April 12 as distinctly bullish. The month of April brought no general improvement in prospects, but rather the reverse. The Pacific northwest enjoyed favorable weather, but elsewhere there was deterioration. In most regions cold weather retarded growth, and drought caused complaints in Nebraska and Oklahoma especially.²

After April, however, the progress was generally satisfactory. Warm weather prevailed during May; there were generous rains in the dry areas of the hard winter-wheat belt; and crops showed good progress everywhere except in the Pacific northwest, which suffered from heat and drought. June weather also was favorable on the whole, though rains were rather heavy and frequent for harvesting operations during the latter half of the month, and drought continued in the Pacific region. July brought no reversals aside from some heavy rains. There was little damage from disease or pests, and weather conditions apparently favored the filling of heads to

an exceptional degree. The harvest was begun and completed at about the usual dates, despite the late spring. Receipts at United States primary markets attained large volume in the third week of July, a little earlier than in 1923-25, a little later than in 1926, and at about the same time as in 1927.³

The foregoing summary of weather conditions inadequately portrays the remarkable reversal of winter-wheat crop prospects in the course of April-August. At the beginning of April, observers anticipated (tentatively in view of the early date) a crop only a little below average. No official estimate was made, but unofficial forecasts of production ranged from 510 to 556 million bushels,⁴ and averaged 536 million. That the figures were put as high as this was due not to even moderately favorable reports of condition, but to the large acreage sown and doubts respecting the extent of abandonment. Developments in April led to sharp reductions in expectations.

Unofficial forecasts appearing around May 1 ranged from 455 to 487 million bushels, and averaged 471 million. This was 65 million below the April 1 average, but since many traders had anticipated still greater reductions these forecasts were commonly construed as bearish. The official forecast, appearing May 9 and corrected upward on May 11, was 486 million bushels.⁵ Since it reflected still less deterioration than traders were counting upon, it too was given a bearish interpretation.

In short, late in April, before weather conditions had changed for the better, the trade in general anticipated a smaller winter-wheat crop than the expert forecasters predicted as of May 1. The favorable weather of May-July led to successive increases in both official and private estimates, as shown by Table 1 (p. 360).

The official estimate as of July 1, showing an increase of 32 million bushels over the June 1 estimate while private estimates had shown an average increase of only 7 million bushels, took traders by surprise. Private estimates as of August 1 averaged 92 million bushels above those of May 1; the official estimate as of August 1 was 93 million bushels above the May forecast, reflecting a change in prospects quite as

¹ As of July 1, however, the area remaining for harvest was officially given as 36.1 million acres.

² The official estimate of condition as of May 1 showed a higher figure than that of April 1, but May condition figures apply to areas remaining for harvest, while April condition figures apply to areas sown. Hence the higher May figure (73.8 per cent as compared with the April figure of 68.8 per cent) cannot be regarded as indicating improvement in the crop during April. The official production forecast, not the condition figure, was regarded as bearish by the trade.

³ See Appendix Table II.

⁴ Private estimates of United States winter-wheat production, in million bushels as of about the first of the month indicated, were as follows:

Estimator	Apr. 1	May 1	June 1	July 1	Aug. 1
Bryant	556	487	507	509	540
Cromwell	529	485	505	516	561
Donovan	540	460	510	525	565
Murray	543	468	512	522	552
Snow	510	455	531	528	595
Average	536	471	513	520	563

⁵ In the report issued on May 9, the production forecast was erroneously given as 479 million bushels. This was corrected on May 11, and the insignificant addition of 7.4 million bushels was said to have contributed to a sharp break in Chicago futures.

striking as that shown by private estimates. No such pronounced reversal in prospects occurred in any other year of the period 1922-28, as the table shows. Even in 1926, a year when May-July weather conditions altered the expectation from an average crop in May to a bumper crop in August, the increase in both private and official

TABLE 1.—COURSE OF OFFICIAL FORECASTS OF UNITED STATES WINTER-WHEAT PRODUCTION, MAY-AUGUST, 1922-28, AND OF UNOFFICIAL FORECASTS FOR 1926-28*

Year	Forecast	May	June	July	August	Net Change
1922...	Official	585	607	569	542	-43
1923...	Official	578	581	586	568	-10
1924...	Official	553	509	543	589	+36
1925...	Official	445	407	404	416	-29
1926...	Official	549	543	568	626	+77
	Private	552 ^a	566 ^a	562 ^a	618 ^a	+66
1927...	Official	594	537	579	553	-41
	Private	597 ^a	560 ^a	559 ^a	551 ^a	-46
1928...	Official	486	512	544	579	+93
	Private	471 ^b	513 ^b	520 ^b	563 ^b	+92

* Official data from *Crops and Markets* and press releases; unofficial data compiled from *Daily Market Record*. Unofficial estimates appear about the first of the month, official estimates about the tenth.

^a Averages of estimates by Messrs. Bryant, Cromwell, Murray, and Snow.

^b Averages of estimates by Messrs. Bryant, Cromwell, Donovan, Murray, and Snow.

estimates was smaller. Comparable occurrences, in both instances involving deterioration rather than improvement, are to be found only in 1919 and 1921.¹ The gradual addition of over 90 million bushels—nearly 19 per cent, using official figures—to the prospective winter-wheat crop was a bearish factor of much influence both here and abroad.

¹ In 1919 the May forecast was 185 million bushels above the August estimate; and in 1921 the May forecast was 85 million above the August estimate. Subsequently, however, both of these August estimates were revised upward so substantially that they fell below the May forecasts by only 140 and 29 million bushels, respectively.

² Official and private forecasts were as follows, in million bushels:

Estimator	June 1	July 1	August 1
Bryant	248	240	272
Cromwell	245	254	282
Donovan	255	250	290
Murray	264	245	301
Snow	260	250	302
Average	254	248	290
Official .....	...	256	313

Prospects for the American spring-wheat crop also improved during the period, especially after July 1. Cold weather in April was not favorable for seeding and germination. But May weather was satisfactory except for drought in an area centering in northeastern South Dakota. Private forecasts as of June 1 averaged 254 million bushels, a crop of fair size but much below the 319 million bushel crop of 1927.

During early June there was deterioration from drought, especially in South Dakota, but beneficial rains came in the latter part of the month, except in the Pacific northwest. Private estimates as of July 1 mostly pointed to a slight reduction, and averaged 248 million bushels. The first official estimate was 256 million. Weather in July and August appears to have been exceptionally favorable for filling heads. There was ample rainfall everywhere, though the Pacific northwest benefited least. Private estimates as of August 1 averaged 42 million above the July 1 average. The official forecast, 313 million bushels, was 23 million above the average of the unofficial forecasts, and more than confirmed a substantial improvement in the outlook during July.²

Crop estimates now standing are of course subject to further revision, especially with regard to spring wheat, and definitive comparisons cannot yet be made. According to the latest official estimates, however, the winter-wheat crop of 1928 does not rank with the small crops of 1925 and 1917, as seemed probable in early May, but is well above average in size. At 579 million bushels, it is distinctly smaller than the fine crop of 1926, but larger than that of 1927. The average yield per acre indicated, 16.0 bushels, is rather high, though not an extraordinary figure. The spring-wheat crop appears to be one of the five largest crops since 1910, and about as large as the excellent crop of last year. The area sown, reported as over 21.6 million acres, is larger than any harvested area since 1910 except those of 1918 and 1919, and nearly a million acres larger than the acreage of 1927. The area sown to durum wheat, reported as 6.1 million acres, appears to be the largest in history.

The total United States crop, according to the official August estimate, reaches 891 million bushels. It is clearly one of the largest crops in history, being distinctly exceeded by only those of 1915, 1918, and 1919. It equals the excellent crop of 1914, and exceeds the crop of 1927 by 19 million bushels. Four months ago many, probably most, observers anticipated a distinctly small outturn, perhaps not much more than 700 million bushels. The difficulty of predicting final outturns from spring condition and acreage estimates has rarely been illustrated more forcibly.

The distribution of the United States wheat crop between the various classes is distinctly peculiar. The outturn of soft red winter wheat is far below the average of the past five years, much smaller even than the distinctly short crops of 1927 and 1925. Production was relatively most curtailed in Ohio, Indiana, and Illinois. The hard red winter-wheat crop, on the other hand, is distinctly large. Kansas, Nebraska, and Oklahoma have crops of exceptional size, and that of Kansas now appears the largest in history. The Pacific white wheat crop is apparently not so large as that of 1927, but is still well above average. The same is true of hard red spring. The durum crop appears to be the largest since 1922. Hence there is an abundance of all types of wheat except soft red winter, and of this the shortage is more pronounced than in any other post-war year.

As to quality, it is too early to say much with certainty. Rain at harvest appears to have resulted in large quantities of hard red winter wheat of rather low weight per measured bushel; and protein content seems to be low. Early marketings of spring wheat have been favorably commented upon. It now seems improbable that the high premiums for protein content on hard red spring wheat prevailing in 1927-28 will be maintained in 1928-29, though the reverse may be true of hard winter, which now carries substantial premiums.

CANADA

Canadian crop developments, unlike the American, did not represent a progression from poor prospects to excellent, but rather

an unusual maintenance of excellent prospects which was practically undisturbed at least to the date of writing (August 25). Spring-wheat sowing did not begin early. According to official data, only 10 per cent of intended sowing had been accomplished by April 30. This was the lowest figure in fourteen years except that of 1927, though only a little lower than those for 1917, 1920, 1923, and 1924. But progress was apparently very rapid in early May; and the *Manitoba Free Press*, usually a reliable authority, stated on May 19 that the largest area since 1921 had been seeded by May 10 in the Prairie Provinces, while 90 per cent of the sowing had been accomplished by May 18. The seedbed was described as one of the best in fourteen years, and the percentages of summer fallow and new breaking were said to be exceptionally high.

The crop was favored by opportune rains in early June, just at the time when moisture was most desired. Ample moisture became available throughout June and early July. Warm dry weather prevailed when it was desired in late July and early August. There were no serious complaints of rust, frost, or insect damage throughout the growing season, though hail caused some damage in restricted areas. The progress of the crop differed sharply from last year, when seeding was late and frost and rust damage threatened almost continuously in July and August to reduce the outturn, which nevertheless proved exceptionally large. Last year during May-August a large crop seemed possible only if weather conditions proved exceptionally favorable; this year a large crop has seemed increasingly probable unless weather conditions turned exceptionally unfavorable.

Opinions differ with respect to acreage. All observers agree that the acreage sown to spring wheat in the three Prairie Provinces exceeds that harvested in 1927; but there is a considerable range of opinion respecting the extent of the increase. Unofficial estimates published after June 1 ranged from 21,700,000 acres (Bryant) to 23,666,000 (Cromwell). The first official preliminary estimate, issued July 10, was 22,440,000 acres. The second official estimate, issued August 11, was 23,099,000 acres, still somewhat below the highest

unofficial figures.¹ For all Canada, winter and spring wheat, later official figures suggest an area of about 24.1 million acres, the largest in history.

Unofficial forecasts of the spring-wheat crop of the Prairie Provinces, by leading American estimators, were as follows, in million bushels:

Estimator	June 1	July 1	August 1
Bryant	399	404	412
Cromwell	389	427	479
Murray	405	456	513

The later figures illustrate the prevailing wide differences of opinion respecting the probable outturn; but they are in harmony in suggesting a distinctly large crop and in showing increases from month to month. Contrary to the usual practice, no official forecast of production was issued in July or August, and an official view of the outturn will presumably be delayed until mid-September. Interpretations of the condition figure for July 31 (107 per cent of the 10-year average yield per acre of spring wheat) differ considerably, and need not be attempted here.

The total Canadian crop may conceivably range anywhere from 450 to over 600 million bushels. In view of the good progress of the crop in early August (despite light frosts on several days between the 14th and 25th), a crop of less than 500 million bushels seems improbable, and a crop of 600 million is a possibility. Rust damage appears to have been negligible. Frost can still cut down yields, but not greatly because the crop is too far advanced, and the damage would affect quality more than quantity. Harvest rains, such as occurred in the past two seasons, would lower quality and might somewhat reduce merchantizable volume. On the whole a record Canadian crop seems to be expected at the date of writing (August 25); and average quality—better than in 1926 or 1927—must be anticipated if later weather conditions do not prove extremely unfavorable, as they seem to have been in the two preced-

ing years. So far as the world market is concerned, the crop developments in Canada have been even more weighty than those in the United States.

EUROPE, EXCLUDING RUSSIA

As in the United States, though to a much less marked degree, unfavorable spring prospects for European winter-wheat crops turned into favorable prospects in most countries as the growing season advanced. An unfavorable winter led to considerable winterkilling, especially in Poland and France but in other countries of central and eastern Europe as well. April weather was variable, but mostly cold. By the beginning of May winter-wheat crops were backward and rather poorer than usual. In May also cool weather with night frosts prevailed in many countries, and crop conditions seem not to have improved greatly except in Italy and the Danube countries. Three weeks of warmth at the end of May and early June greatly improved prospects in France, Germany, and England. The last two weeks in June were rather too cold and rainy in western Europe, but favorable elsewhere. July weather in general, however, appears to have been exceptionally suitable for the ripening and harvesting of wheat, thus largely compensating for the retarded development of April-May.

So far as can be judged from unofficial advices and published official reports, southeastern European countries are almost assured of wheat crops of exceptional size and quality. The Italian crop, estimated at 235 million bushels in July, appears to be the second largest in history, nearly 40 million above the crop of 1927. On the basis of present indications, the Hungarian, Bulgarian, and Roumanian crops of 89.5 million, 51.1 million, and 113.9 million bushels, respectively, are of record size. The Jugo-Slavian crop, officially estimated as 105.4 million bushels, is similarly large. The Greek crop of 16.5 million is by far the largest of post-war years. These countries enjoyed more favorable spring weather than more westerly and northerly countries, and for the most part harvested under ideal conditions. The combined crop of Italy, Hungary, Jugo-

¹ This estimate apparently applies to all wheat in the Prairie Provinces, not to spring wheat alone. The area there sown to fall wheat, however, is small.

Slavia, Roumania, Bulgaria, and Greece, about 612 million bushels, now appears to be the largest of post-war years. It exceeds the crop of 1927 by about 125 million bushels, and the best previous post-war crop, that of 1925, by about 63 million. In all of these countries quality is reported to be distinctly good.

The situation is less clear in western and northern Europe, since harvesting has not progressed so far and official estimates for many countries have not been issued. The important wheat-producing countries of this region are Spain, France, Germany, Great Britain, Czecho-Slovakia, and Poland. Official preliminary estimates of production are available only for Spain, where the crop of 141 million bushels is slightly below last year's average crop. Observers agree fairly well in anticipating for France a crop of about 240-260 million bushels—somewhat below average in quantity, but fair in quality, especially in comparison with the crops of 1925 and 1927. On account of a reduced acreage and many fields with thin stands, the British crop is expected to fall below last year's and below average. In Germany an outturn equal to the large crop of 1927 is not anticipated, though the crop is commonly expected to exceed the 5-year average of 106 million bushels. In Poland, where winterkilling reduced the acreage by over 9 per cent (according to official data), the crop is expected to prove rather small. In Czecho-Slovakia prospects are apparently better, though most of the acreage is spring-sown wheat which is more susceptible to reverses than is winter-sown. Among the smaller producers, official estimates point to the smallest crop of post-war years in Portugal, only 6.6 million bushels, and to a good crop of 6 million in Holland. A large crop is anticipated in Austria.

Comparisons of European wheat production in 1928 with that of 1927 remain uncertain at least for the northwestern countries. But April-July crop developments, particularly those of June and July, seem clearly to have resulted in larger crops in southern and southeastern Europe than were anticipated in the spring; and they appear to have improved the situation elsewhere practically without exception.

Northern and western Europe perhaps has a smaller crop than that of 1927, though still of average size. The first half of August was mostly favorable for harvesting, and improved the outlook further. It seems reasonable to suppose that a considerable proportion of the crop of western Europe has been gathered under much more favorable circumstances than prevailed last year, and hence that, even in the event of a rainy September, there will be a larger proportion of good milling wheat.

RUSSIA

Crop developments in Russia cannot be described with any precision. Official statements, almost without exception, have tended toward optimism; unofficial comments of uncertain origin have tended toward pessimism. It is only natural that crop prospects over so large a territory should be difficult to summarize with precision, and that misinterpretation of either official statements or private messages should commonly occur.

According to official statements, the area sown to winter wheat was 27,794,000 acres, some 737,000 more than in the preceding year. Winterkilling was said to have been exceptionally heavy; the extent has not been specified, but may have reached 4 million acres.¹ Whether or not the sowings of spring wheat made up for this deficiency is not yet a matter of record, but in June it was stated that sowings of bread grains were smaller than in 1927. April was characterized as a cold month in which growth was retarded. Early in June, however, the condition of winter wheat was described as favorable, and that of spring wheat as 15 per cent above average. Early in July, June was described as a month of good progress, and prospects were said to indicate a larger harvest than that of 1927. Later in July winter-wheat condition as of July 1 in all Russia was placed at 96 per cent (100 per cent equals an average yield), spring-wheat

¹ In July it was stated that 13 million acres of *all* fall-sown grain had been winterkilled; some 29 per cent of the total sown was sown to wheat; and if wheat and other grains suffered in the same proportion the area of wheat winterkilled would be 3.77 million acres.

condition at 143 per cent. Still later it was stated that wheat production in European Russia would reach 648 million bushels as compared with 584 million in 1927. The *London Grain, Seed and Oil Reporter* of July 27 characterized a higher outturn this year than last as "most unlikely," because "preparations are in hand for supplying the peasants with seed for sowing in the coming Autumn," and spoke of the official estimates as "questionable."

From such information as can be gathered from diverse sources, it seems probable that the Russian crop may prove fairly small in the heavy surplus-producing regions of the Ukraine and North Caucasia, but that farther north and east the crop may be of exceptional size. Apparently it is the winter-wheat crop, largely concentrated in the southern areas, which shows least promise. No convincing reason appears for questioning the official view that the total wheat crop may exceed last year's. The official plan to supply peasants with seed appears to apply to winter wheat, not spring, and it may apply to particular areas; and Russian purchasing of wheat in July may have been caused by other factors than an outlook for a deficient wheat harvest. Among these, the difficulties in collecting grain in the south for transportation to urban centers in the north have received mention, and also the possibility that wheat was imported at low prices in order that more higher-priced Russian

wheat might be exported later. The official forecast may prove correct, and is not in itself unbelievable; but the Russian crop is not yet harvested. Meanwhile it is well to take with reserve the view expressed in some quarters that Russia must import heavily in 1928-29 or in any event will have no surplus for export.

THE SOUTHERN HEMISPHERE

Last year, during April-July, drought in Australia and Argentina was a bullish factor on world markets, though not one of great effectiveness. This year Southern Hemisphere prospects have tended to exert a bearish influence, though again not of great significance. Both Australia and Argentina received liberal rains during the period of sowing and germination. Most reports indicate considerable increases in acreage in both countries. The official Argentine estimate of acreage sown, issued August 17, showed an area in 1928 of 20.25 million acres in comparison with 19.7 million sown last year. Conditions for growth have thus far been favorable, in both countries. Accordingly the developments well into August have consistently pointed to the possibility that large crops in the exporting countries of the Southern Hemisphere will be added to the large crops in North America, northern Africa, and the Danube countries; but this prospect may be altered at any time.

II. VISIBLE SUPPLIES AND OUTWARD CARRYOVERS

Throughout the latter half of the crop year 1927-28, commercial visible supplies in the Northern Hemisphere have run extraordinarily high. In the face of these large and readily available stocks of wheat, European importers were obviously in a position more comfortable than usual. The existence of such visible supplies apparently served to restrain the upward movement of wheat prices in March-April, when crop prospects seemed increasingly unfavorable; but it seems to have been more influential in Liverpool than in Winnipeg, and in Winnipeg than in Chicago. It tended to accentuate the decline of May-August, and to do so in all markets. Practically without exception traders at-

tributed the upward course of prices in March-April to the changing outlook for new crops; but much weight was given to visible supplies as a cause of decline in May-July. "It is a little difficult to tell," says the *London Grain, Seed and Oil Reporter* of July 27, "whether the pressure to sell old crop Manitoba or the good prospects of the new crop has been the more depressing factor on the wheat markets, but both have had influence, though the over-burdening weight of the old crop and the necessity to clear some of the excessive visible supply before the new crop begins to move has probably been accountable for most of the fall in values."

At the close of the crop year, carryovers

of old-crop wheat appear to have been exceptionally large in Canada, about average in the United States and Argentina, somewhat low in Australia and western Europe, and distinctly low in eastern Europe. Stocks in the principal exporting countries and afloat were higher, in the main, than in 1927, while stocks in the principal importing countries were lower.

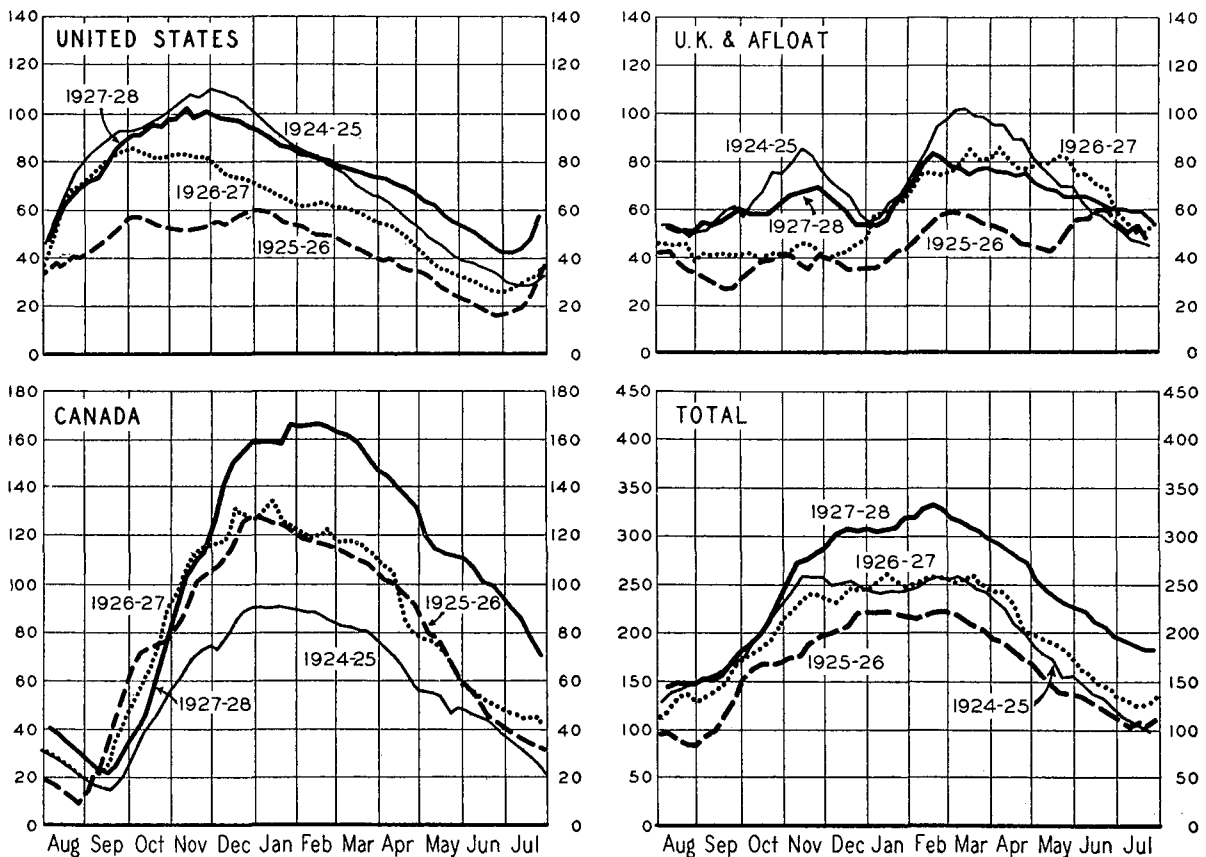
VISIBLE SUPPLIES

Data bearing chiefly on Northern Hemisphere visibles are summarized in Chart 1.

United Kingdom ports, and afloat for Europe reached 330 million bushels, over 50 million higher than the previous peak of 275 million occurring in March 1924. The high figures of 1927-28 were due principally to the large size, late harvest, and rapid marketing of the Canadian crop, influences not counteracted by an export movement proportionately rapid.

The same factors that were operative in December-March kept United States visibles during April-June at the highest level for these months of any year since 1919.¹ The unusually large spring-wheat crop of

CHART 1.—VISIBLE WHEAT SUPPLIES IN THE UNITED STATES, CANADA, AND UNITED KINGDOM PORTS AND AFLOAT TO EUROPE, WEEKLY FROM AUGUST 1924*
(Million bushels)



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

From late November onward these supplies have run higher than in any other post-war year, even 1923-24. In mid-February combined visibles in the United States, Canada,

1927 made for very high visibles, for spring wheat tends to bulk larger in the visible

¹ See *WHEAT STUDIES*, May 1928, IV, 248.

supply than winter wheat.¹ Exportation of wheat was unusually small, especially from ports east of the Rocky Mountains, the region to which the data on visible supplies apply. The high prices of April and May brought heavier farm marketing and larger receipts at primary markets than occurred during the corresponding period of any of the preceding four years.² The low point always reached before receipts of new-crop wheat become large came a little later this year, despite increased use of the combine, than in 1927 or 1926, but not so late as in 1925 and 1924. The increase during July was the largest of any July since the war except 1926.

Canadian visible supplies remained extraordinarily high throughout all of the last third of the year. The movement of wheat to export was heavy,³ but not heavy enough to preclude a large and presumably burdensome carryover at the end of July. Visibles were reduced sharply in late April and early May, partly on account of the opening of lake navigation, as usual, but partly also as a result of exceptionally small receipts at Fort William and Port Arthur.⁴ During late May Canadian visible supplies did not decline so rapidly as usual, since receipts were exceptionally large and the export movement was small. In July, however, large exports reduced the visible rapidly. Nevertheless, at the end of July the Canadian visible of 70 million bushels was still extraordinarily high by comparison with earlier years. The

reduction from April 1 to August 1, some 77 million bushels, was distinctly large, being exceeded only by the reduction of 92 million bushels in 1924; but it was not so large as the record of past years seemed to suggest four months ago. At that time a larger Canadian export movement and a smaller outward carryover than reported figures show seemed probable; but until July importers apparently chose and were able to draw more heavily upon Argentina and Australia than seemed possible in the light of crop estimates and the mid-winter exports of those countries. The Canadian Pool appears not to have pressed its offers very freely in April and May, when prices were high and the outlook for new crops was mostly unfavorable, and hence an opportunity to cut down the huge visible was lost. Subsequently, however, offers appear to have been pressed, and exports in June were large and in July were of record size for the month.

Supplies afloat for Europe and in ports of the United Kingdom ran lower during April-June this year than last, as would be expected on account of the smaller shipments of March-May. In July, however, with shipments running higher than in 1927, these visibles were at an exceptionally high level for this time of year.

The effect of large visible supplies in the several positions was to maintain the total at record figures. Total visibles had been almost the largest of post-war years for the period April-July in 1927, only a little smaller than in 1924. This year, however, April-July visibles ranged approximately 50-60 million bushels higher than last, and during July averaged fully 16 per cent higher. These figures take no account of visible supplies in the Southern Hemisphere. A somewhat different compilation showing visibles in Argentina and Australia⁵ gives the world total on August 1 as 227.5 million bushels. This figure was 46.5 million higher than that of 1927, and indeed the highest of post-war years by 35.3 million. But Argentine and Australian visibles, 5.9 and 9.5 million bushels, respectively, were not so high as last year's; and the ease of the international statistical position is slightly exaggerated by reference only to commercial stocks of the Northern Hemisphere.

¹ Heavy accumulations of spring wheat at Duluth and Minneapolis account for the high total visible this year. The following figures in thousand bushels (Chicago Board of Trade data) for June 30 of the past six years are pertinent:

Year	Duluth and Minneapolis	Total United States	Year	Duluth and Minneapolis	Total United States
1923	16,507	26,313	1926	4,511	12,325
1924	10,456	34,590	1927	8,316	22,107
1925	12,818	29,146	1928	23,116	38,922

² See Appendix Table III; cf. WHEAT STUDIES, September 1925, I, 358.

³ See below, p. 376.

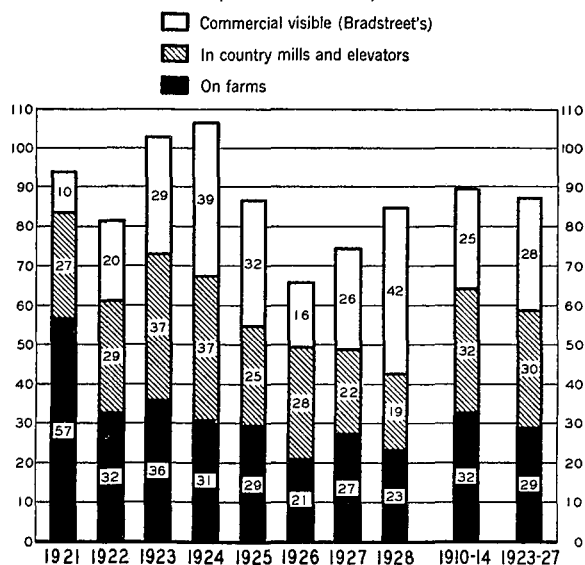
⁴ See Appendix Table III; cf. WHEAT STUDIES, September 1925, I, 358.

⁵ See Appendix Table VII. The Argentine figures, however, are by no means an index of the supplies available for export in that country.

UNITED STATES STOCKS, JUNE 30, 1928

A partial statement of the United States carryover at the end of the crop year is given in Chart 2, which shows the Department of Agriculture's estimates of stocks on farms and in country mills and eleva-

CHART 2.—WHEAT STOCKS IN THE UNITED STATES, JULY 1, 1921-28, WITH COMPARISONS*
(Million bushels)



* Official data except Bradstreet's visible, as tabulated in Appendix Table VIII. Country mill and elevator figures for 1926-28 are estimated on a new basis, and probably are not strictly comparable with figures for earlier years.

tors¹ together with Bradstreet's commercial visible. Stocks on farms were the lowest since 1921, except in 1926, presumably because high prices in April-May led to exceptionally heavy marketings. The exceptionally low stocks in country mills and elevators, only 18.9 million bushels as compared with a 5-year average of 29.9

¹ Estimates of stocks in country mills and elevators for 1926-28 appear not to be strictly comparable with the estimates for earlier years. See WHEAT STUDIES, September 1927, III, 440.

² Apparently, however, the distribution of the crop among its various classes was also effective. Country mill and elevator stocks were exceptionally low in states east of the Mississippi, where the soft red winter-wheat crop of 1927 was distinctly small, rather than in states west of the Mississippi.

³ Sydney Anderson, president of the Millers' National Federation, has calculated the total United States carryover as 175 million bushels. This calculation employs an uncertain figure (40 million bushels) for feed and waste.

million, were perhaps affected by the same factor.² But visible supplies as of June 30 were 42.2 million bushels, larger than in any year since the war. Hence the carryover consisting of these three items was 85 million bushels, some 10 million larger than that of 1927 and about average in size.

A closer approach to the total United States carryover on June 30 is afforded by the addition of the Census Bureau's reports of stocks held by city mills. Data of the four years for which they are available are summarized in Table 2. Flour stocks

TABLE 2.—UNITED STATES CENSUS REPORTS ON MILL STOCKS OF WHEAT AND FLOUR, JUNE 30, 1925-28
(Million bushels)

	1925	1926	1927	1928
Wheat:				
Country elevators	2.16	2.52	2.56	1.91
Public terminals	3.44	3.00	3.88	3.68
Private terminals, in transit, and in mills.	26.72	30.32	46.15	40.49
Total	32.31	35.83	52.59	46.08
Flour as wheat*	15.73	14.67	16.76	17.08
Grand total	48.04	50.51	69.35	63.16

* Barrels of flour converted at 4.7 bushels per barrel.

were slightly higher than in any of the preceding three years. Wheat stocks of 46 million bushels were somewhat lower than those of 1927, but higher than those of 1925 and 1926, as were total stocks of 63 million. The total United States carryover calculated to include city mill stocks (except those in country elevators and public terminal elevators, in order to avoid duplication with country mill and elevator stocks and visible supplies elsewhere reported) reaches 142 million bushels. As compared with 138 million in 1927, 111 million in 1926, and 135 million in 1925, the figure does not appear remarkably high.³

The appearance of fairly definitive figures on year-end stocks and net exports provides some ground for adjudging the accuracy of the official estimate of 1927. According to our calculations shown in Appendix Table XI, the residual ("feed and waste") item in disposition reached about 77 million bushels, as compared with 31 and 14 million in 1925 and 1926, respec-

tively. In our judgment the crops of 1925 and 1926 were underestimated, since the amounts of wheat available for feed and waste in the following crop years seem unbelievably low. The crop of 1927 seems clearly not to have been underestimated. It may have been slightly overestimated, as may the crops of 1923 and 1924. But the evidence is not altogether clear in the absence of definite estimates of wheat fed and wasted, and in the presence of some uncertainty respecting consumption and changes in unrecorded stocks.

CANADIAN CARRYOVER, JULY 31

The outward carryover of Canadian wheat (exclusive of flour) on July 31 is officially placed at 76.5 million bushels in all positions.¹ This is by far the largest figure since data have been compiled, presumably the largest in history, and 26 million bushels larger than the heavy carryover of last year. Stocks in elevators and in transit, 67.3 million bushels, were distinctly large. The reduction in total stocks from the March 31² figure of 220 million bushels was apparently the largest of post-war years except 1924.

With the more important and variable of the several items of disposition now officially reported at least in preliminary form,³ a notion may be obtained of the extent to which the Canadian crop of 1927 appears to have been officially underestimated. Net exports during the crop year totaled 332 million bushels; seed requirements and human consumption about 86 million; grain unmerchantable, lost in cleaning, and fed on farms about 49 million. These items, plus the outward carryover, total 542 million bushels. But according to official data, only 488 million bushels were available if the crop was 440 million and the inward carryover 48 million. Hence there is a discrepancy of 54 million bushels more or less which can be accounted for

most reasonably on the hypothesis of an underestimated crop. The figures are subject to a margin of error, but the underestimate of the crop must have reached something like 40 to 60 million bushels. According to our calculations based chiefly on official data, underestimates of considerable magnitude have occurred in each of the past five years.

SOUTHERN HEMISPHERE SUPPLIES, AUGUST 1

As of June 30, Argentine wheat stocks held in stations on the leading railways were directly estimated by the railway authorities as 1,384,000 tons. The *Times of Argentina*,⁴ commenting on these figures, suggested that perhaps another million tons lay in ports and on farms. On this basis total stocks were in the neighborhood of 88 million bushels. Exports of 9 million bushels and domestic disappearance of some 5 million bushels (one-twelfth of our estimate for the quantity used for food and feed in 1927-28) may have brought the total stocks to about 74 million bushels on August 1. This figure is higher than our calculations of stocks for any of the preceding five years, which range from 56 to 67 million.⁵ It does not necessarily imply, however, that August 1 stocks were exceptionally high this year; for our calculations have heretofore included no specific allowance for a carryover out of the Argentine crop year ending December 31, whereas the new estimate may be supposed to include this item. The data as they appear in the *Times of Argentina* do not lend themselves to thorough analysis because certain items are not fully described and there appears to be an arithmetical error. Nevertheless they suggest that Argentine stocks on August 1 were not distinctly below average, or below those of last year, as might be inferred from the exceptionally heavy exportation of January-July, but were of average size or above. If so, there is reason to believe that the crop of 1927 was officially underestimated, and that Argentine exports during August-December are not likely to prove exceptionally small. In our disposition table (p. 390) we have retained the stocks figure which results when stocks are calculated as a residual item in disposition;

¹ See Appendix Table VIII.

² Canadian wheat stocks as of March 31 are given in WHEAT STUDIES, May 1928, IV, 265.

³ See Appendix Table XI.

⁴ The estimates are reproduced in the issue of July 16, 1928, p. 34.

⁵ See Appendix Table XI.

at 37 million bushels, it seems considerably below the truth.

Australian stocks on August 1 were apparently somewhat lower than usual. Exports during January-July were heavier than seemed probable in view of the small crop and the record of earlier years. Stocks (calculated as the residual item in disposition) appear to have been about 35 million bushels as compared with 41 million a year ago, when the figure was exceptionally high.

EUROPEAN STOCKS

Little is known definitely of European stocks either of import or domestic wheats at the end of the crop year. The *London Grain, Seed and Oil Reporter* of July 27 stated that "stocks of old wheat in Europe are believed to be very small." The situation presumably differs from country to country. Port stocks in the United King-

dom, 10.1 million bushels on August 1, were fairly high, about the same as last year. With the heavy shipments of July, it seems probable that continental stocks of import wheats must be of fair size. In Germany farm stocks of native wheat appear larger than last year, as has been true ever since the last harvest. Elsewhere in western Europe, however, stocks of domestic wheat are thought to be lower than a year ago; such is the case especially in Italy and France, where stocks on August 1, 1927, were exceptionally high. Poland, Czecho-Slovakia, and the Danube countries appear to have had small stocks for several months. The Russian situation is not clear, but it seems probable that stocks are moderate to low. Europe as a whole apparently carried somewhat smaller stocks out of 1927-28 than out of 1926-27; but the remaining reserves are probably not extraordinarily small except in central and eastern European countries.

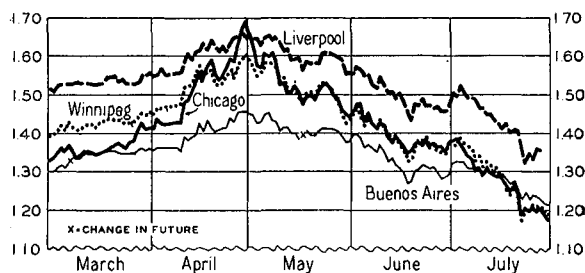
III. WHEAT PRICE MOVEMENTS

THE COURSE OF PRICES

The last third of the crop year witnessed one of the most extreme recessions in wheat prices recorded since the crash of prices in 1920-21. Chart 3 shows the course

CHART 3.—DAILY CLOSING PRICES OF JULY WHEAT FUTURES IN LIVERPOOL, CHICAGO, AND WINNIPEG, AND OF SUCCESSIVE FUTURES IN BUENOS AIRES, MARCH-JULY 1928*

(U.S. dollars per bushel)



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

of July futures prices on the world's leading markets (successive futures at Buenos Aires). From the peak of \$1.69 per bushel on April 30, the July future at Chicago fell to a low point of \$1.17 on July 31, a

decline of 52 cents in three months. The widest April-July fluctuation of this future during the preceding five years occurred in 1925, when from April 3 to June 6 prices increased from \$1.29 to \$1.69 per bushel, or 40 cents in about nine weeks. A decline of equal magnitude in April-July had not been witnessed since the war, though it was less precipitous than the decline in February-March 1925. The recession was less drastic elsewhere than in Chicago.

Two principal movements appear common to all markets. Throughout the month of April prices tended fairly steadily upward, continuing and accelerating a movement begun in February. From early May to the end of July the trend was distinctly downward except for a period of stability and slightly rising prices around June 20 to July 5.

The upward movement of April was due chiefly to accumulating evidence that winterkilling in the United States had been exceedingly heavy; a large proportion of the increase was registered during a few days following the official condition report issued April 11. Unfavorably cold weather, and drought in the southwestern states, contributed to the rise, especially to the

large gains recorded in the last three days of the month. Speculative activity ran high; the average daily volume of trading in United States markets during April, 66.2 million bushels, was the largest for any April since the war,¹ though well below the extremely high figures recorded in January-March and December 1925.² Unfavorable European crop reports were also a factor contributing to the advance of prices in April.

The beginning of the subsequent extensive decline occurred on May 1, when unofficial forecasts of American winter-wheat crops ran higher than had generally been expected. Profit-taking by "longs" probably was influential; and foreign markets had refused to follow at all closely the ten-cent bulge occurring at Chicago on April 27-30. The official report of condition and abandonment, issued May 9, occasioned a sharp decline on the following day; unfavorable though it was, it was less so than had been expected. Subsequently rains visited the southwest, and further declines occurred as prospects there improved. Reports of dry weather in the spring-wheat belt, however, supported the market during the second half of the month. Improving prospects for spring wheat, both in the United States and Canada, were the principal cause of the weakness of prices in the first half of June, though the heavy visible supplies also began to exert pressure. Stable or rising prices from about June 20 to July 5 were due in part to frequent rains

hampering the winter-wheat harvest in the United States, and in part to reports that Russia had purchased for import large quantities of wheat in continental ports or afloat positions. But excellent crop prospects almost everywhere, hedging pressure, and the weight of visible supplies combined to force a precipitous decline throughout the remainder of the month, which continued in the first half of August.

As appears from Chart 3, the price movement was more extreme in Chicago than in Winnipeg, Liverpool, or Buenos Aires. Chicago prices rose 36 cents between March 1 and April 30; but Winnipeg prices rose only 21 cents, Liverpool only 15 cents (between March 2 and April 28), and Buenos Aires about the same as Liverpool. This development is explicable in view of the fact that the April crop outlook suggested to many the possibility that the United States might have no surplus of red winter or hard red spring wheat for export, and hence that domestic prices under tariff protection might stand high in relation to prices in foreign markets, as in 1925-26. With the huge Canadian visible in sight, traders outside the United States saw little reason to follow the Chicago movement to its full extent.³ The spread between Chicago and Liverpool, Chicago and Winnipeg, and Winnipeg and Liverpool futures prices was gradually reduced. On April 30 the Chicago July future stood 4 cents above the Liverpool instead of 19 cents below, as had been the case two months before; and Winnipeg stood only 6 cents below Liverpool as against 12 cents below on March 1. The reduction in the Winnipeg-Liverpool spread was remarkable in the face of the huge Canadian visible.

On the decline of prices in May-July, the spread between both Winnipeg and Liverpool and Chicago and Liverpool widened steadily; but that between Chicago and Winnipeg did not. The change in crop prospects caused abandonment of the belief that the United States would not be able to provide representative wheats for export, and hence that the international statistical position might prove tight enough to justify high prices in 1928-29; the widening of the Chicago-Liverpool spread had to occur if export sales from gulf ports were to become possible.⁴ The possibilities

¹ Cf. the following figures for April-July, 1924 to 1928, in million bushels:

Year	April	May	June	July
1924	18.0	14.4	34.0	53.3
1925	59.3	60.3	67.6	56.2
1926	55.8	48.8	46.3	57.5
1927	33.8	50.4	44.8	40.7
1928	66.2	56.6	36.2	39.8

² See WHEAT STUDIES, May 1928, IV, 253.

³ Neither the Kansas City nor the Minneapolis markets followed Chicago fully; Kansas City prices rose 35 cents, Minneapolis prices 32 cents.

⁴ It is generally understood that Liverpool futures prices must run appreciably above Chicago prices if export sales are to be feasible; but the precise size of the necessary spread is uncertain. Twenty cents is the figure most frequently spoken of by the trade; but the spread necessarily varies, of course, with changes in costs of handling and transportation.

that huge supplies would accumulate in the visible, and that hedging pressure would become severe if export sales were not made, were factors contributing to the decline of Chicago futures. The situation was complicated by the fact that, with improving crop prospects, the Canadian visible assumed an increasingly bearish aspect. Something in the nature of extraordinarily acute competition for export business occurred between Canada and the United States. Whereas in March-April, Chicago led in the upward movement of prices and Winnipeg followed with reserve, no reserve was shown by either market in the decline of May-July. It is seldom that the Winnipeg July future, based upon a deliverable grade of wheat which brings higher prices in cash markets than the grade deliverable at Chicago, sells at prices as low as the Chicago July future. Yet such was the case practically throughout May-July.¹ In effect Canadian wheats during most of the period could be purchased c.i.f. Europe at lower prices than comparable American wheats; and No. 3 Manitoba became cheaper than Argentine Rosafé wheat at Liverpool in June and July.² As a result of these price relationships, themselves due to changing crop prospects and the large supplies in Canada, Canadian exports were unusually heavy in June and July,³ and little United States wheat appears to have been sold for export.

THE LEVEL OF PRICES

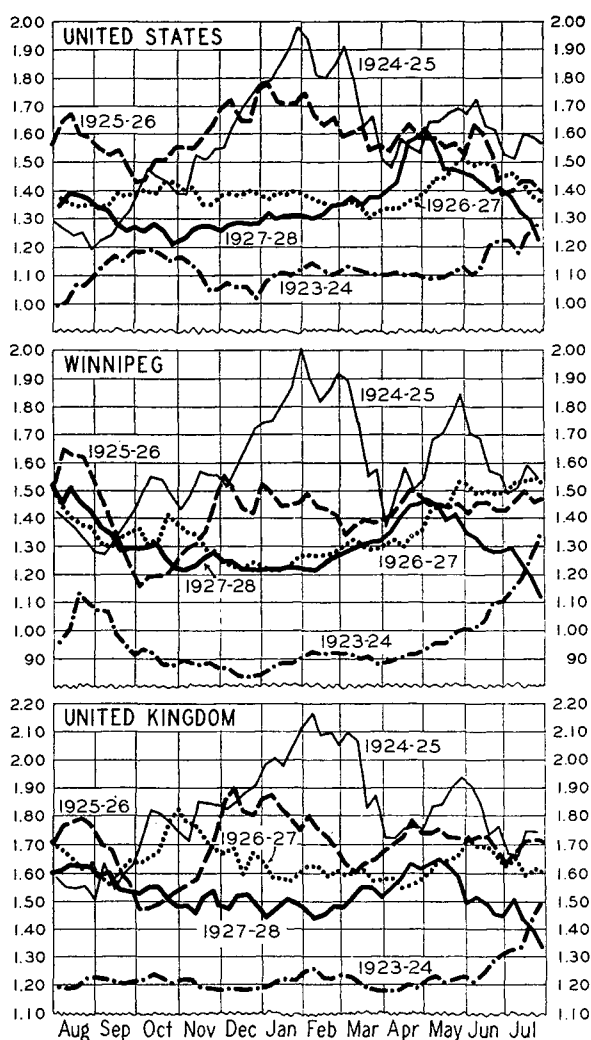
Chart 4 shows average weekly cash wheat prices in the United States, Winnipeg, and the United Kingdom for the past five years. For the year as a whole, the prices of 1927-28 now appear to have been the lowest since 1923-24 in all three countries, but most markedly so in the United Kingdom. Ocean freight rates have been lower this year than last, and United Kingdom prices of 1927-28 were therefore lower by comparison with those of 1926-27 than were prices in the United States and

Canada. The April-July decline brought prices in all three markets to the lowest end-July figures in five years. Since August 1 prices have declined still farther, and the level now prevailing (August 25) is not far from the low post-war level maintained throughout most of the crop year 1923-24.

Certain contrasts with the situation in the last four months of 1926-27 are of

CHART 4.—WEEKLY AVERAGE CASH PRICES OF ALL CLASSES AND GRADES OF WHEAT IN FIVE PRINCIPAL UNITED STATES MARKETS, OF NO. 3 MANITOBA NORTHERN IN WINNIPEG, AND OF SALES OF PARCELS OF ALL CLASSES OF WHEAT IN THE UNITED KINGDOM, FROM AUGUST 1923*

(U.S. dollars per bushel)



¹ The situation was not entirely without precedent, however. In 1923-24 the Winnipeg July future sold below the Chicago July from November until early June, though not in June and July.

² See Appendix Table IX.

³ See below, p. 376, and Appendix Table V.

* Data from *Crops and Markets*, *Canadian Grain Statistics*, and *London Grain, Seed and Oil Reporter*. United States prices are weekly weighted averages for six markets since the first week in January 1927.

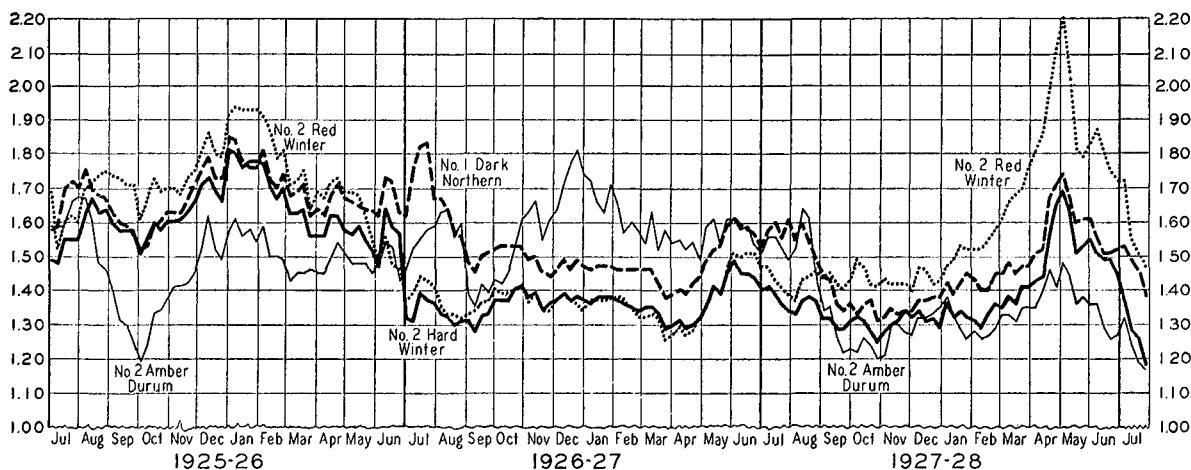
interest. April prices in the United States this year were far above those of April 1927, but in Canada the difference was less marked, and in the United Kingdom still less. This illustrates the greater weight given to the United States crop outlook at home than abroad, and suggests that the American price movement was by no means purely speculative and confined to transactions in futures, because cash wheat prices behaved in much the same manner. July prices of 1928 fell farther below those of 1927 in Canada than in the United Kingdom, and in the United Kingdom than in Chicago. Last year Canadian prices ruled relatively high because of the great uncertainty of crop prospects in that country, and rose while American and British prices were declining.

UNITED STATES CASH PRICES

Neither the Chicago July futures price series shown in Chart 3 (p. 369) nor the weighted average United States cash price series shown in Chart 4 (p. 371) serves

interest. Throughout the year (after the harvesting of spring-wheat crops in September 1927) red winter wheat sold at a considerable premium on account of the short crop. In February, March, and April the premium widened rapidly, because the heavy winterkilling had occurred principally in the regions producing soft red winter. From the beginning of March to the peak about May 1, No. 2 Red Winter advanced 59 cents per bushel in price, while No. 2 Hard Winter advanced only 34 cents and the Chicago July future (see Chart 3, p. 369) only 36 cents. The peak of soft red winter prices in early May, \$2.20 per bushel, was higher even than the unusual figures reached in January 1926 and January 1925,¹ previously the highest figures recorded since the crash of wheat prices in 1920. The May-July decline in prices was more extreme for soft red than for hard red wheat; but at the end of July, with the new crop practically assured, soft red still sold for nearly 30 cents a bushel more than hard red winter wheat. As usual in July, the two grades of winter wheat

CHART 5.—WEEKLY AVERAGE CASH PRICES OF TYPICAL WHEATS IN UNITED STATES MARKETS, FROM JULY 1925*
(U.S. dollars per bushel)



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

fully to portray wheat price movements in the United States. Weighted weekly averages of the prices of four different grades and types of wheat are shown in Chart 5 for the past three years. The extraordinary premiums of No. 2 Red Winter wheat over the other types are of special

have shown movements different from the two grades of spring wheat. Red winter wheat seems certain, in view of the extraordinary short crop, to continue to sell at a premium over other types in 1928-29.

¹ See WHEAT STUDIES, November 1925, II, 42.

RELATIONSHIPS OF NEAR AND DISTANT FUTURES

Certain features of the price relationships of near and distant futures during April–July are of interest, especially at Chicago and Winnipeg. Relevant data are shown in Chart 6.

In Liverpool the nearer future consistently ran below the July and closed below it as well; the July future (except for a brief period in early April) likewise ran below and closed below the October. These relationships are apparently normal for years when ample supplies are immediately available and the situation is not expected to change materially.¹ For a period in late June and early July, the July future sold at a somewhat larger discount under the October than was true in earlier and later weeks; at this time the distant futures responded the more sharply to reports of unfavorably wet weather in the American southwest and of Russian grain purchases.

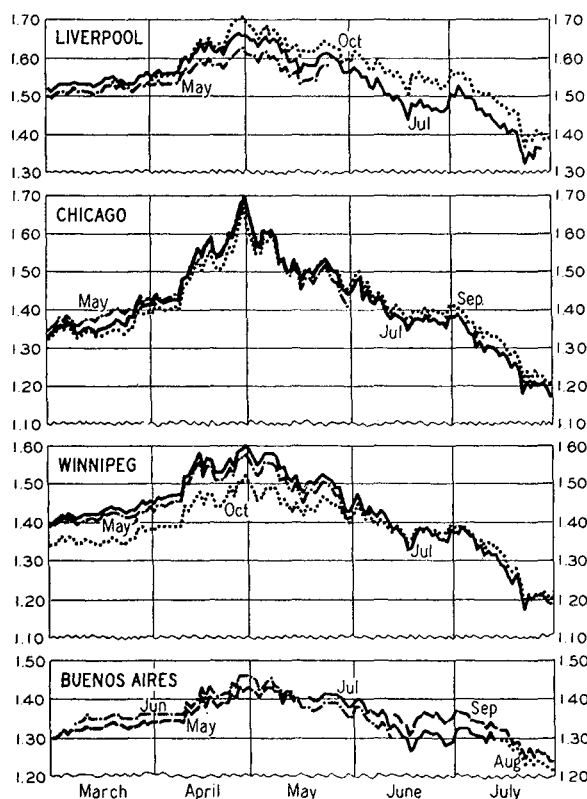
One unusual feature of futures price relationships at Chicago was the small and diminishing discount of the July under the May as prices rose in March–April, and the closing of the May below the July. It is difficult to speak with precision of the normal relationships of May and July futures at Chicago, since the July appears to be more of a new-crop future in one year, and more of an old-crop future in another; and hence a carrying charge between the two may or may not be present. Apparently, however, unfavorable crop prospects caused the July future to advance more rapidly than the May in March–April; but in the subsequent decline the May future lost more heavily because it was affected by the high visible supplies. High visible supplies appear not to have been regarded as especially burdensome while the new-crop prospect was poor, but they

became so when the crop outlook was reversed. To this factor seems attributable also the most unusual circumstance of a September future selling at a premium over the July and even the May.

In Winnipeg the July option sold near or below the October throughout June and July—again a most unusual occurrence.

CHART 6.—DAILY CLOSING PRICES OF PRINCIPAL WHEAT FUTURES IN FOUR LEADING MARKETS, MARCH–JULY 1928*

(U.S. dollars per bushel)



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

¹ Nevertheless spreads between near and distant futures might have been smaller had there not been exceptionally large accumulations of stocks of Argentine wheat at Liverpool. See the *Revue du Marché* of J. A. Goldschmidt & Co. (Paris) for May 9, 1928, quoting a letter from Ross T. Smyth & Co. of London. This letter stated that Liverpool stocks approximated 4 million bushels, and that under existing spreads between May and July futures, the wheat could be carried at a profit for delivery on July options.

The July option is always an old-crop future at Winnipeg, while October is always a new-crop future; since it involves no carrying charge, the October future ordinarily sells below the July. Here also the heavy visible supplies seem not to have been regarded as burdensome until it became fairly clear that the North American crop would prove distinctly large; thereafter they became very burdensome indeed.

IV. INTERNATIONAL TRADE

VOLUME AND COURSE OF TRADE

As most observers had expected, international trade in wheat and flour continued fairly heavy during the last third of the crop year. As shown by Table 3, Broom-

TABLE 3.—INTERNATIONAL WHEAT AND FLOUR SHIPMENTS (BROOMHALL) 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
1920-21..	235.3	214.6	20.8	591.0	541.5	49.5
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	37.2	775.3 ^a	626.5 ^a	148.8 ^a
1924-25..	188.2	169.3	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
Average						
1909-14..	218.2	189.7	28.5	624.7	542.7	82.0
1922-27..	242.2	207.8	34.4	729.8	613.4	116.4

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

^a Fifty-three weeks.

hall's shipments for 18 weeks reached 268 million bushels, a figure much above average for this period and exceeded only twice since the war—last year and in 1924. The movement throughout the year has been more regular than in any other of the past six years except 1922-23. Shipments during April-July averaged about 15 million bushels a week, as compared with about 16 in December-March and about 15 in August-November 1927. Last year high ocean freight rates in September-December restricted the August-November movement and swelled the December-March and April-July totals. In 1925-26 and 1923-24 large European wheat crops made the August-November movement unusually small. In 1924-25 the April-July movement was restricted in view of prevailing high prices and a favorable European crop outlook.

The course of trade is roughly indicated in Chart 7, in terms of 3-week moving averages of weekly shipments for each of the past six crop years. This year, shipments fell off rather sharply with rising

prices during April. There was no marked increase with the opening of navigation on the Great Lakes on May 4, though huge stocks of Canadian grain were available for shipment. During May, European importers apparently restricted their purchases somewhat in view of declining prices and increasingly favorable crop prospects in North America, and Canadian wheat was not yet offered in large quantities. Shipments during June and July, and especially in July, were exceptionally large for this period of the year. Prices had already fallen to a much lower level than prevailed in late April and early May; European importers bought freely as the decline progressed; and with new-crop prospects increasingly good, Canadian wheat was pressed for sale. Spot prices of No. 3 Northern Manitoba at Liverpool fell below the prices of Argentine Rosafé.¹ Under these influences the course of shipments remained more nearly uniform than might have been expected from the record of past years; the May-June peak was flattened, while the June-July decline was less pronounced than usual.

SOURCES OF EXPORTS

One of the striking features of the trade during April-July was the unusual distribution of exports, as shown by Table 4 (p. 376). While the total was about what we forecast in our last survey,² the distribution of exports from the several exporting countries was different. Less wheat and flour was shipped from the United States, Canada, and India than seemed probable four months ago; and more was shipped from Argentina and Australia. India's shipments in April-July were 3.6 million bushels, almost the smallest since 1922; they were relatively small because the crop harvested in March-June turned out to be considerably smaller than preliminary estimates indicated. As was expected, shipments from Russia and the Danube countries, especially Russia, were very small, though the data given in the table do not show under

¹ See Appendix Table IX.

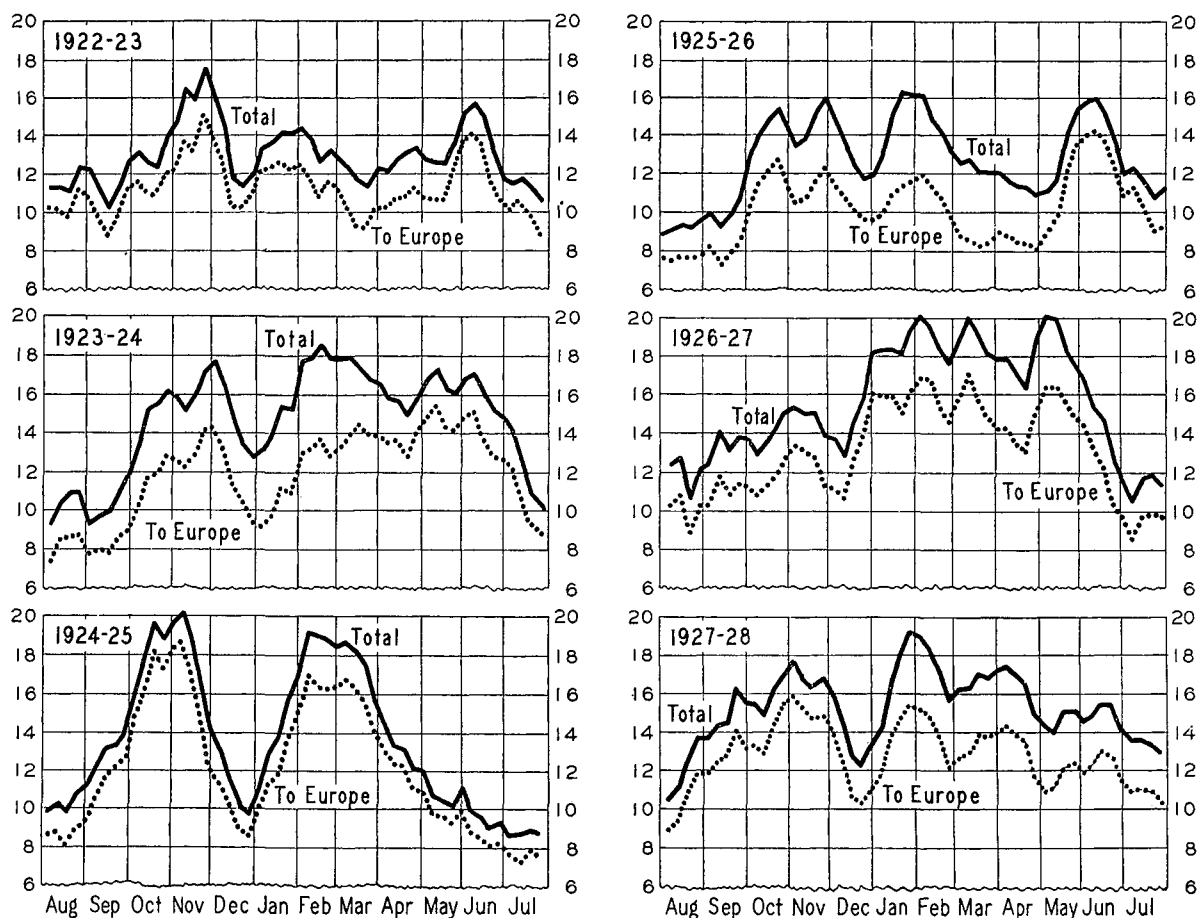
² See WHEAT STUDIES, May 1928, IV, 238 f.

shipments from the Danube some 7.2 million bushels shown by another tabulation of Broomhall's as shipped from that source. Although Russian exports by land are not yet reported, it seems probable that Russia has been a net importer rather than a net exporter, at least for April-July and possibly for the crop year as a whole. Pur-

anticipations based upon good crops in Chile and the French dependencies in northern Africa; but the figures given apparently include some shipments from Russia and the Danube countries in several years.

Shipments from Argentina were of exceptional size, reaching 74.3 million bushels

CHART 7.—INTERNATIONAL SHIPMENTS OF WHEAT AND FLOUR, WEEKLY FROM AUGUST 1922*
(Million bushels: 3-week moving average)



* Broomhall's data, from the *Corn Trade News*.

chases (simultaneously effected in several widely scattered countries of continental Europe) were made early in July. According to conflicting opinions of the trade, these purchases may have ranged anywhere from 7 to 18 million bushels. The group designated by Broomhall as "other countries" made shipments of 10.9 million bushels, the largest quantity in the past eight years. This also was in accord with

in the last 18 weeks of the year. This is the largest figure of the past eight years except 1924. It is exceptional not because of a small crop, but because December-March shipments were also of record size for the period, and even from the relatively large crop so heavy an April-July movement had seemed unlikely unless stocks were to be reduced to distinctly low figures. Net exports during January-July

totalled 147 million bushels from an estimated crop of 239 million; for the same period in 1924, out of the supposedly larger crop of 248 million, net exports were 138 million or 9 million bushels less. Since stocks appear not to have been at all low on August 1,¹ the evidence suggests that the crop of 1927 was underestimated. European importers were thus able to draw more freely upon Argentine supplies than seemed possible four months ago. Hence,

1927 or 1924, while June and July net exports were of record size—71 million bushels. July exports of 35 million bushels were by far the largest of post-war years, over 70 per cent higher than the previous record of 20.7 million bushels in July 1926. Presumably more wheat would have left Canada in April and May and in the April-July period had not lake navigation opened rather late. But the more important restricting factor was probably the combina-

TABLE 4.—INTERNATIONAL SHIPMENTS AND NET EXPORTS OF WHEAT AND FLOUR FROM PRINCIPAL EXPORT AREAS, APRIL-JULY, 1921-28*
(Million bushels)

April-July	International shipments (Broomhall's)							Net exports	
	Total	North America	Argentina	Australia	Russia, Danube	India	Other ^a	United States	Canada
1921	235.3	146.9	37.8	46.5	1.2	2.9	...	112.8	31.7
1922	206.1	106.1	60.5	36.9	1.9	.0	.7	55.7	47.8
1923	231.7	131.8	60.6	16.1	2.8	18.5	2.0	45.1	66.2
1924	283.3	143.6	86.7	30.0	7.4	12.0	3.5	28.4	103.0
1925	188.2	104.1	30.8	44.4	.0	4.4	4.5	44.0	54.2
1926	225.4	139.1	42.1	22.4	11.0	3.6	7.2	46.5	84.0
1927	282.5	141.7	71.1	48.7	8.5	7.5	5.1	51.4	82.8
1928	268.2	145.4	74.3	33.7	.2	3.6	10.9	26.3	106.4

* Shipments are for 18 weeks, from Broomhall's *Corn Trade News*. Net exports are official data.

^a In several years, apparently includes some shipments from Russia and the Danube basin. In another table Broomhall gives the following distribution, in million bushels, for 1926-27: Russia, 8.0; Danube, 5.6; North Africa and Chile, .4; for 1927-28: Russia, 0.0; Danube, 7.2; North Africa and Chile, 4.8.

in spite of a need for large imports, they were not compelled to bid very actively for the more readily perceptible supplies available (but for a time, in April and May, firmly held) in Canada. Australia also seems to have shipped wheat freely in April-July, but there is as yet no evidence that the crop was underestimated; on the contrary, stocks there appear to have been reduced.

During June and July, perhaps somewhat earlier, the huge Canadian stocks came to be much more freely offered in consequence of excellent new-crop prospects and the reversal in the outlook for 1928-29. As Table 4 shows, net exports from Canada totalled 106 million bushels during April-July, the highest figure of post-war years, though not much above that recorded in 1924. But April and May net exports, though large, were not so large as in either

tion of circumstances which enabled European importers to purchase freely from the Southern Hemisphere instead of accepting firm Canadian offers.

Net exports from the United States during April-July were distinctly small, totaling only 26.3 million bushels, smaller even than the low post-war figure of 1924. April-June exports reached only 21.2 million bushels, a somewhat lower figure than had seemed probable in view of relatively large visible supplies. July net exports of 5.1 million bushels were very small, much below those of 1926, when the winter-wheat harvest was earlier. Some 15.4 million bushels of the April-July exports consisted of flour; some 4.0 million bushels consisted of wheat from the Pacific coast; and a good deal of the balance was probably durum. Very little soft or hard red winter or hard red spring was exported, and only negligible quantities of new-crop winter wheat were exported from gulf ports in July. Large

¹ See above, p. 368.

July exports from the gulf ports were apparently prevented by relatively lower prices of Canadian wheat; but the small total exports of April-June are less easy to explain. Exports of hard red spring seldom occur in these months; exports of soft and hard red winter have been almost negligible during the winter and spring because of prevailing high prices. Hence it seems probable that April-June exports fell somewhat below our expectations expressed in April¹ because excellent new crops of durum wheat in northern Africa and Italy restricted the demand for that variety.

ADVANCE ESTIMATES AND REPORTED MOVEMENTS

Although official statistics of net exports and imports for the past crop year are as yet incomplete, enough evidence has accumulated to permit brief comment upon the accuracy of advance estimates of international trade made earlier in the year.

This year the international movement has not provided so many surprises as in 1926-27. Advance estimates made in the course of 1926-27 on the whole proved rather inaccurate. As late as December 14 Broomhall estimated probable shipments for the year (August-July) at 736 million bushels; reported shipments were 814 million. Our own December estimate of probable net exports, 790 million bushels, was exceeded by about 60 million bushels. The center of the range of the United States Department of Agriculture's December estimate of July-June net exports (727-870 million bushels) was 798 million bushels. This year there appears to have been a much smaller discrepancy between advance estimates and reported movements than occurred last year.

Table 5 shows Broomhall's successive estimates of shipments for the crop year

in comparison with reported shipments. Broomhall's first estimate was 772 million bushels; in common with most observers, he anticipated a smaller movement than that of 1926-27 because wheat and rye crops of European importing countries appeared to be somewhat larger. On April 17 he raised his estimate to 792 million bushels, on the basis of import statistics then available and evidence that European crops had proved rather poorer in quality than had been anticipated; as the table shows, the estimate of shipments to Europe was raised by 32 million bushels, while estimated shipments to ex-Europe were lowered by 12 million. Subsequent changes in estimates were small, and reported shipments of 793 million bushels fell very close to his April forecast.

TABLE 5.—BROOMHALL'S SUCCESSIVE ESTIMATES OF SHIPMENTS FOR 1927-28 COMPARED WITH REPORTED SHIPMENTS*

(Million bushels)				
Exporting area	December 20	April 17	June 12	Reported shipments
North America..	488	496	496	490
Argentina	160	168	168	178
Australia	60	64	72	74
Russia	8	8	5	5
Danube basin ..	36	36	28	29
India	12	12	8	7
Other countries.	8	8	12	10
Total	772	792	789	793
To Europe	632	664	661	662
To ex-Europe ..	140	128	128	131

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

As shown by Table 6 (p. 378), the center of the range of probable net exports estimated by the Department of Agriculture was 826 million bushels on November 21, 1927; 830 million on April 18, 1928; and 829 million on June 14, 1928. While the range was successively reduced, there was little change in the center of the range. Our own estimates also changed only slightly in aggregate amount. Reported net exports for August-July now appear to have fallen somewhat below both of our advance estimates,² by some 8 million bushels.

It is possible that more complete information will show a smaller discrepancy.

¹ See WHEAT STUDIES, May 1928, IV, 241.

² We have not attempted to compare July-June net exports with the Department of Agriculture's advance estimates. As we have frequently had occasion to point out (see especially WHEAT STUDIES, IV, No. 9, pp. 312, 340), Broomhall's shipments have appeared to fall below official data on net exports at least in recent years. It is probable that they do not fall so far below this year as last if, as seems likely, Russian exports overland were smaller this year than last.

The net exports shown in Table 6 are known, or can be estimated within a small margin of error, for all countries but Russia. But whether Russia is to be classified

TABLE 6.—FOOD RESEARCH INSTITUTE AND U.S.D.A.
ADVANCE ESTIMATES OF NET EXPORTS OF
WHEAT AND FLOUR FOR 1927-28, COMPARED
WITH REPORTED EXPORTS*
(Million bushels)

Exporting area	U.S.D.A.			F.R.I.		Re- ported
	Nov. 21	April 18	June 14	Dec. 20	Apr. 20	
United States.	220-245	210-230	190-210	225	205	191
Canada	300-330	310-340	305-330	317	343	332
Argentina ...	120-170	140-170	175-185	151	156	178 ^a
Australia	55-80	55-80	70-80	74	65	69 ^a
Russia	5-30	7-15	6-7	20	10	... ^b
Danube basin	22-41 ^c	22-44	25-37 ^d	30 ^d	35 ^d	35 ^{d,e}
India	5-10	8-10	9-12	8	10	7 ^f
Others	3-16 ^g	3-16	3-15 ^g	...	5 ^h	9 ⁱ
Total	730-922	755-905	783-876	825	829	821

* U.S.D.A. estimates are for years ending June 30. F.R.I. estimates and reported exports are for years ending July 31, except United States figures which are for years ending June 30.

^a July net exports estimated from Broomhall's shipments.

^b Data not available; exports may have been balanced by imports.

^c Roumania, Bulgaria, and Hungary. Jugo-Slavia possibly on importing basis.

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

^e Net exports from Hungary in August-June, Roumania in August-March, and Jugo-Slavia in August-April, totaling 29 million bushels, plus an estimate of 6 million bushels for exports not yet reported from these countries and from Bulgaria.

^f Partially estimated from gross exports, net exports, and Broomhall's shipments.

^g Algeria and Chile.

^h North Africa, Chile, and Uruguay.

ⁱ Net exports from Algeria, August-June, were 4.67 million bushels. The total includes our tentative estimate of net exports from Morocco, Chile, and Uruguay for the crop year, and from Algeria in July.

as a net exporting country in 1927-28 is not yet certain. It seems reasonably clear that Russian exports during the crop year were not large—probably not over 10 million bushels.¹ If, as many traders appear to believe, Russian import purchases reached 9

or 10 million bushels, and if all of this wheat passed the border before the end of July, for the year as a whole imports may practically have equaled exports or Russia may have been a net importer. If subsequent information should show that Russia was in fact a net exporter, total net exports may more closely approximate our advance estimates. Certain of our estimates of net exports from other countries may also be in error, but probably not enough to alter the discrepancy appreciably.

In a sense the close correspondence of advance estimates and reported movements was fortuitous; totals were forecast with reasonable accuracy, but in distribution there were fairly large errors. Most of the latter were due in part to imperfections in the earlier data on exportable supplies. Thus reported net exports from the United States proved lower than our April estimate and lower than the middle of the range of the Department of Agriculture's estimate. This we are tentatively disposed to attribute in part to a possible overestimate of the crop, not perceptible until the year's data on exports and stocks were complete.² Argentine net exports of 178 million bushels were larger than either Broomhall, the Department of Agriculture, or ourselves regarded as probable even so late as mid-April. The evidence now suggests that the crop was officially underestimated.³ Canada's net exports of 332 million bushels fell below our April estimate of 343 million partly because navigation opened late on the Great Lakes, but partly because of the situation which permitted importers to obtain unexpectedly large supplies from Argentina. Since Canadian holders did not press sales until June and July, Canadian stocks available on March 31 were not reduced so rapidly by export as the experience of past years suggested, and the carryover proved higher than we anticipated.⁴ Australia's net exports also exceeded expectations slightly; apparently stocks were reduced to a rather low level. Statistical data are still too deficient to warrant definitive statements respecting net exports of India, Algeria, Morocco, Chile, and Uruguay. It may be said, however, that the Indian crop estimates current in April justified an estimate of net

¹ Broomhall's shipments totaled 5 million bushels for the year; but official net exports totaled 5.2 million in August-November alone. Presumably some wheat not recorded by Broomhall was exported overland; but it seems probable that the quantity could not have been large.

² See above, pp. 367 f. Another factor, already mentioned (p. 377) was probably restricted demand abroad for durum.

³ See above, p. 368.

⁴ See WHEAT STUDIES, IV, 241 f.

exports higher than was reasonable after the revised estimate appeared. The excellent new crop of Algeria made for larger exports in April-July than seemed probable as late as mid-April. The accumulating evidence on available exportable supplies was thus of a compensatory sort; necessary reductions in probable exports from some countries were counterbalanced by increases elsewhere, so that the total movement proved about as large as observers anticipated.

In default of complete statistics of net imports for the crop year, it is premature to attempt any close comparison of net imports with forecasts. Table 7 shows, however, our December advance estimates for leading European countries in comparison with reported net imports of earlier years and reported net imports for eleven months of 1927-28. The picture may be considerably altered when net import data for July become available. But it seems certain that net imports of the United Kingdom will fall below our December estimate of 240 million bushels, probably by about 15 million bushels. Italy also appears likely to import less than seemed probable earlier, although March-June net imports were ex-

ceptionably large.¹ Except Germany as well, the other countries listed in the table bid fair to import a little or considerably more wheat than seemed likely earlier in the year, and (France excepted) more than was imported in 1926-27.

TABLE 7.—NET IMPORTS OF WHEAT AND FLOUR BY LEADING EUROPEAN COUNTRIES, AUGUST-JUNE 1927-28, WITH COMPARISONS*
(Million bushels)

Importing area	Average 1922-27	1925-26	1926-27	F.R.I. Dec. estimate 1927-28	Aug.- June 1927-28
British Isles ^a ..	225.0	209.9	237.0	240	204.1
Italy	85.7	67.7	86.6	100	80.1
Germany	59.7	57.4	91.8	100	82.4
France	45.9	10.3 ^b	62.0	45	43.6
Belgium	39.5	39.2	39.5	40	38.2
Netherlands ..	26.6	27.2	28.4	29	29.3
Scandinavia ^c ..	22.2	18.8	19.6	20	24.4
Switzerland ..	15.9	15.6	16.3	17	17.0
Czecho-Slov'kia	18.9	21.7	20.1	19	20.1
Total	539.4	467.8	601.3	610	539.2

* Data from official sources and International Institute of Agriculture.

^a Includes Irish Free State.

^b International Institute figure for 1925-26 adjusted for wheat imported under decree of December 30, 1924. See WHEAT STUDIES, May 1926, II, 211 n. Figure for 1926-27 probably too low.

^c Norway, Sweden, Denmark.

V. OUTLOOK FOR THE NEW CROP YEAR

WHEAT AND RYE CROPS OF 1928

In its broad outlines, the wheat supply situation in the Northern Hemisphere is perhaps clearer than usual at this season; yet details are unusually obscure. At the date of writing (August 25) official forecasts and estimates of production are available for fewer countries than was the case a year ago,² but there is less uncertainty regarding the distribution of crops and its significance. Table 8 (p. 380) gives this distribution for the past nine years; figures in roman type are official or predominantly so, whereas figures in italics represent estimates which rest more largely on our own approximations based upon recorded production in past years, trade estimates, and available information on crop progress in recent weeks.

Exporting countries of the Northern Hemisphere, India and Russia excepted,

seem reasonably certain to be assured of exceptionally large crops. If the Canadian crop approximates 550 million bushels, Canada and the United States combined have a crop of some 1,440 million, about 125 million more than in 1927, and certainly the largest in history except possibly the bumper crop of 1915. The contrast with the crops of 1925-27 is probably not so marked as the figures suggest, since there is reason to believe that official Canadian estimates were too low in each of these years, and official United States estimates were probably too low in 1925 and 1926, but not in 1927.³ With the huge carryover in Canada and the moderately high carryover in the United States, there is little doubt that

¹ See Appendix Table V.

² See Appendix Table I; cf. a similar table in WHEAT STUDIES, September 1927, III, 446.

³ See Appendix Table XI.

North America has the largest exportable surplus since 1915, possibly in history.

The crop of the exporting countries of the Danube basin, about 360 million bushels, is the largest since the war, and seems to exceed that of 1927 by over 80 million bushels. Northern Africa also appears to have harvested a record post-war crop; and the increase is concentrated in the exporting countries of Morocco, Algeria, and Tunis. India alone among the exporting countries has clearly harvested a small crop, the smallest since the war except for the very low outturn of 1921. Even the approximate size of the Russian crop is unknown as yet,

prevailed in 1927. Italian quality was good last year, and is probably equally good this year. And in France, Germany, England, and other countries of northwestern Europe the harvest appears not to have been hampered by excessive rains such as occurred in August last year, and quality on the whole may be expected to prove better even if abnormally heavy rains come in September. Hence it is likely that the importing countries of Europe will have larger domestic supplies of good milling wheat this year as compared with last, even if the total quantity harvested proves smaller. The favorable weather of July

TABLE 8.—WHEAT PRODUCTION IN PRINCIPAL PRODUCING AREAS, PRE-WAR AND POST-WAR*
(Million bushels)

Year	United States	Canada	Soviet Russia	Lower Danube ^a	Other Europe	North Africa	India	Japan, Chosen	Northern Hemisphere ex-Russia	Argentina	Australia	Southern Hemisphere	World ex-Russia
1920.....	833	263	...	172	775	71	378	41	2,550	156	146	350	2,900
1921.....	815	301	...	212	1,004	98	250	40	2,727	191	129	376	3,103
1922.....	868	400	...	224	815	72	367	40	2,801	196	109	354	3,155
1923.....	797	474	...	260	989	107	372	35	3,051	248	125	427	3,478
1924.....	864	262	...	204	846	85	361	35	2,670	191	165	407	3,077
1925.....	676	395	713	296	1,094	105	331	40	2,949	191	115	359 ^b	3,308 ^b
1926.....	831	407	810	294	909	90	325	39	2,906	221	161	436 ^b	3,342 ^b
1927.....	873	440	750	278	981	106	334	38	3,063	239	109	415 ^b	3,478 ^b
1928.....	891	550	...	360	960	110	290	42	3,225	...	...	...	.....
Average													
1909-13...	690	197	759 ^c	330	1,018	92	352	32	2,724	147	90	280	3,004
1923-27...	808	396	757 ^a	266	964	98	344	37	2,928	218	135	409	3,337

*Summarized from most recent official data for individual countries (see Appendix Table I), as reported by the U.S. Department of Agriculture, supplemented by our own estimates. Totals exclude China, Asia Minor, Brazil, and a number of small producers. All estimates are for territory within post-war boundaries. Figures in italics are made up predominantly from unofficial forecasts and advices.

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

^b Includes our estimate for Peru.

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

^d Three-year average.

though recent indications suggest that it may equal or exceed the fair crop of 1927.

European importing countries appear likely to harvest a crop somewhat smaller than that of 1927, but not so small as those of 1924 and 1926. The French, English, German, Spanish, Portuguese, and Polish crops now seem distinctly smaller than those of 1927, the Italian and Greek distinctly larger; but the situation is still obscure with respect to outturns in England, Germany, and Poland, where harvest returns may alter the outlook considerably. There is reason to anticipate distinctly better quality of wheat in the leading importing countries of western Europe than

and August, moreover, may lead to upward revisions of production estimates; and only a few such would suffice to raise the 1928 production of wheat in importing countries of Europe above that of 1927.

The European rye crop, however, promises to prove small. Official estimates of rye production in 10 European countries, together with the United States Department of Agriculture's forecasts for production in Germany and Poland, total 525 million bushels in comparison with 598 million harvested in these countries in 1927. The corn and potato crops also appear to be smaller, barley and oats larger.

Japan and Chosen together have appar-

ently harvested slightly the largest crop in post-war years, though the Japanese crop is of poor quality. The situation in China, where domestic wheat production is of considerable significance because of its effect on the total volume of ex-European trade, is not clear. But observers report that one of the largest crops in recent years, of good quality, has been secured in the lower Yangtze valley, and that prices at Shanghai are the lowest since 1924,¹ when the Chinese crop also appears to have been distinctly large. Trade reports suggest that crops in Asia Minor are distinctly small.

The Northern Hemisphere wheat crop, of around 3,225 million bushels exclusive of Russia, China, and Asia Minor, now seems to be the largest of post-war years. It appears to be about 160 million bushels larger than the next largest crop, that of 1927, on the basis of official data which for 1927 seem slightly too low. Its large size is due chiefly to crops average or better everywhere except in India, and of record size in Canada. If it were possible to include Chinese and Russian crops in the comparison, the Northern Hemisphere crop of 1928 would probably compare even more favorably with that of 1927.

THE STATISTICAL POSITION

Apparently none of the preceding few years has witnessed a distribution of Northern Hemisphere wheat crops sufficiently similar to that of 1928-29 to warrant drawing close analogies. Supplies in European importing countries are probably less adequate than in 1923-24, especially if weight is given to the smaller rye crop and to growth of population and increases in per capita consumption over the interval of years. India certainly has a smaller crop than in 1923. On the other hand, North America and the Danube countries clearly have larger supplies. By comparison with 1927-28, European importing countries perhaps have equally adequate supplies, of wheat though not of rye, while North America and the Danube countries have more wheat to export and India less. The

year 1923-24 was a year in which the international statistical position was distinctly easy; in 1927-28 somewhat the same situation prevailed, though to a less marked degree. The wheat crops of 1928 are so much larger than those of 1927 in North America, the Danube countries, and northern Africa, and so little smaller in the importing countries of Europe, that the international statistical position bids fair to prove easier than in 1927-28, though probably less easy than in 1923-24.

For the year as a whole, much depends upon the final outturn in the Southern Hemisphere. Thus far weather conditions and reports of acreage suggest crops of more than average size in Australia and Argentina. If such crops are harvested, they will be larger than the crops of 1927-28, and possibly larger than the crops of 1923-24. A distinctly poor crop in the Southern Hemisphere would probably suffice to tighten the statistical position only slightly, since North American supplies are so large; but a distinctly good crop might ease it further.

A fairly easy statistical position for the crop year 1928-29 now seems assured, even in the face of possible crop reversals. A distinctly easy position, not greatly different from that of 1923-24, appears probable. A tight position like those of 1924-25 and 1925-26 seems highly unlikely. Under these circumstances the wheat market bids fair to continue to be a buyer's market, at least until new-crop prospects begin to exert influence toward the spring of 1929.

INTERNATIONAL TRADE

If our analysis of the international statistical position is approximately correct, certain effects upon international trade and prices during 1928-29 may be anticipated with reasonable assurance. European importing countries regarded as a group probably enter the crop year 1928-29 with smaller stocks of old-crop wheat than they held at the beginning of 1927-28. Their crops of rye, potatoes, and corn appear to be smaller this year than last, and this circumstance may cause more extensive substitution of wheat. Their millable wheat crops are perhaps as large as those of 1927.

¹ See U. S. Department of Agriculture, *Foreign News on Wheat*, July 10, 1928.

Their population increases, and per capita consumption seems to be increasing in some countries. On the whole it seems probable that larger imports may be "needed," and still larger imports recorded, in 1928-29 than in 1927-28. If the level of wheat prices proves lower than in 1927-28, wheat consumption both for food and feed may be expected to increase somewhat from this cause alone; this would be the result implied in an easier international statistical position. Hence we anticipate larger net exports to Europe in 1928-29 than in 1927-28. In this view we differ from Broomhall, who on August 7 estimated probable shipments to Europe (or imports of Europe—the distinction is not drawn in Broomhall's calculations) as 640 million bushels, against 662 million shipped to Europe in 1927-28.

Since India has a small crop following three crops of only moderate size, and must be classified as a net importing country in 1928-29, exports to ex-Europe may be swelled over those of 1927-28 by 15-30 million bushels from this cause alone. In most ex-European countries, population and per capita consumption of wheat are apparently increasing. Egypt has a smaller crop this year than last, and some countries of Asia Minor perhaps need larger imports. All of these circumstances make for distinctly larger exports to ex-Europe than in 1927-28. But the Oriental trade bulks large in total ex-European trade, and annual variations in total exports to ex-Europe appear to depend largely upon the Chinese crop. China had a good crop in 1924, and exports to China were very small; but wheat prices were high. She had a poor crop in 1923, and exports to China were very large; but wheat prices were low. This year the combination of circumstances is different: the Chinese crop appears to be large, and prices promise to rule low. It may be that exports to Japan and China will fall below rather than above those of 1927-28; even so, any such decline will hardly counterbalance increased exports to India and other ex-European countries. Hence we anticipate larger exports to all ex-Europe in 1928-29 than were made in 1927-28. But so considerable an increase as Broomhall expects (184 million bushels in

1928-29 as against 131 million in 1927-28) we regard as unlikely on the basis of past experience.¹

Hence exports both to Europe and to ex-Europe, and in total, now promise to exceed last year's. It is too early in the season to fix upon definite figures. Net exports of record size were recorded in 1926-27, when the total reached about 850 million bushels. In that year European countries had smaller crops of wheat but larger crops of rye than present estimates suggest for 1928-29; the principal exporters had smaller wheat crops. There is little doubt that exportable surpluses in total will prove higher in 1928-29 than in 1926-27. The volume of trade will presumably prove higher also unless stocks are built up to extraordinary heights in exporting countries, or unless domestic utilization for food and feed proves extraordinarily large in exporting countries. Some building up of stocks, especially on farms in the United States, may reasonably be expected; but that Canadian stocks should be greatly increased seems improbable, and the record of past years does not suggest that changes in Argentine and Australian stocks are ever large in absolute amount. There seems little reason to suppose that increased stocks or increased consumption in exporting countries will together prove quantitatively as large as the increased exportable surpluses; consequently increased exports will presumably occur. If so, 1928-29 may witness the largest international movement of wheat and flour in history.

Certain details of the general movement may also be foreseen. Exports from Canada will probably prove of record size; as in 1927-28, relatively large shipments will presumably be made from the Pacific ports because of the good crop in Alberta. Exports from the United States bid fair to consist more largely of hard red winter wheat, as compared with last year; even less soft red winter is available, the durum and hard red spring crops are little larger, and the Pacific states have smaller crops. The Danube countries and the exporting countries of northern Africa, with crops of

¹ For more detailed discussion of ex-European trade in recent years, see *WHEAT STUDIES*, August 1928, IV, No. 9, esp. pp. 338-45.

record post-war size, will probably export exceptionally large quantities. India bids fair to draw considerable wheat from Australia in the winter months. To what extent wheat deficiency countries may be expected to increase consumption of wheat at a relatively low price level is conjectural, especially in view of the unclear position of other foodstuffs for which wheat serves as substitute.

PRICES

Crop developments in the last four months suggest that the general level of wheat prices characteristic of the crop year has probably already been fixed below the level of 1927-28, and even more below the levels of 1924-25, 1925-26, and 1926-27. A sustained rise in prices to a higher level than that of 1927-28 seems possible only in the event of a near crop failure in Argentina and/or Australia; and at present no such occurrence can reasonably be anticipated. During August, prices have closely approached the lowest post-war level maintained through most of 1923-24. Radical shifts from current levels now seem improbable, at least until next spring. Continued excellent progress of the later Northern Hemisphere crops might cause slight declines from the level of mid-August, and poor progress might cause slight increases; but further changes in crop prospects in the Northern Hemisphere seem unlikely to exert great influence unless Russia should spring a surprise. The good prospects in the Southern Hemisphere appear

thus far not to have affected the markets appreciably. If these prospects are borne out by the harvests, the unusual concurrence of large crops in all the major wheat-exporting countries could result in world prices below the level of 1923-24, even though Europe's demand will be stronger than it was six years ago. A serious reversal, such as occurred in Argentina in 1925, would have the opposite effect. With the statistical position already easy, there is reason to suppose that price fluctuations, especially in the winter months, will prove relatively small.

As a consequence of the short crop, soft red winter wheat in the United States will doubtless carry high premiums, as in 1925-26 and 1927-28. Some Pacific white wheat will presumably move by rail to the central United States, reducing supplies available for export from Pacific ports. Durum wheat is likely again to be sold at a considerable discount. Premiums for protein content on hard red spring wheat bid fair to rule lower than was the case in 1927-28; but higher protein premiums on hard red winter, now prevailing, are likely to be maintained.

The higher grades of Canadian wheat now promise to command smaller premiums than in 1926-27 and 1927-28, since the harvest is proceeding somewhat earlier and under more favorable conditions. Under the weight of heavy visible supplies, the relationships of near and distant futures in Liverpool, Winnipeg, and Chicago promise to furnish some interesting developments.

This study is the work of M. K. Bennett, with the advice of Joseph S. Davis and Alonzo E. Taylor, and the aid of Janet Murray and Katharine Merriam

APPENDIX

TABLE I.—WHEAT PRODUCTION IN PRINCIPAL PRODUCING AREAS, 1920-28*

(Million bushels)

Year	United States	Canada	India	Australia	Argentina	Chile	Uruguay	Hungary	Bulgaria	Jugoslavia	Romania	Soviet Russia	Mexico
1920	833.0	263.2	377.9	145.9	156.1	23.2	7.8	37.9	30.0	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	.....	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	.....	10.4
1925	676.4	395.5	331.0	114.5	191.1	26.7	10.0	71.7	41.4	78.6	104.7	713.0	9.4
1926	831.0	407.1	324.7	160.8	220.8	23.3	10.2	74.9	36.5	71.4	110.9	809.6	10.3
1927	872.6	440.0	333.8	109.9	239.2	33.5	13.9	76.9	47.3	56.6	96.7	749.6	11.5
1928	891.3	.....	289.8	.....	.....	.....	.....	89.5	51.1	105.4	113.9	.....	11.0
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	758.9 ^b	11.5 ^a
1923-27	808.4	395.8	344.5	135.0	218.0	27.2	11.5	68.6	35.8	65.1	97.0	757.4 ^c	11.1

Year	Morocco	Algeria	Tunisi	Egypt	British Isles	France	Germany	Italy	Belgium	Netherlands	Denmark	Norway	Sweden
1920	17.9	16.2	5.2	31.7	56.8	236.9	82.6	141.3	10.3	6.0	7.4	1.00	10.3
1921	23.2	28.5	9.0	37.0	73.8	323.5	107.8	194.1	14.5	8.6	11.1	.97	12.3
1922	12.9	18.9	3.7	36.6	65.2	243.3	71.9	161.6	10.6	6.2	9.2	.64	9.5
1923	20.0	35.8	9.9	40.7	58.4	275.6	106.4	224.8	13.4	6.2	8.9	.59	11.0
1924	28.7	17.3	5.2	34.2	53.9	281.2	89.2	170.1	13.0	4.7	5.9	.49	6.8
1925	23.9	32.7	11.8	36.2	53.7	330.8	118.2	240.8	14.5	5.6	9.7	.49	13.4
1926	16.2	23.6	13.0	37.2	52.2	231.8	95.4	220.6	12.8	5.5	8.8	.59	12.2
1927	24.8	28.3	8.3	44.3	57.2	276.1	120.5	195.8	16.3	5.1	9.4	.60	11.3
1928 .....	....	35.1	11.9	....	44.8 ^d	.....	.....	235.2	....	6.0	....	....	....
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
1923-27	22.7	27.5	9.6	38.5	55.1	279.1	105.9	210.4	14.0	5.4	8.5	.55	10.9

Year	Spain	Portugal	Switzerland	Austria	Czechoslovakia	Poland	Finland	Latvia	Estonia, Lithuania	Greece	Japan, Chosen	South Africa	New Zealand
1920	138.6	10.4	3.6	5.4	26.4	22.7	.27	.39	2.58	11.2	41.1	7.6	6.9
1921	145.1	9.3	3.8	6.5	38.7	37.4	.58	.78	3.34	10.3	39.8	8.7	10.6
1922	125.5	10.0	2.5	7.4	33.6	42.4	.71	.96	4.17	9.0	39.2	6.3	8.4
1923	157.1	13.2	3.8	8.9	36.2	49.7	.69	1.64	3.70	8.8	34.7	6.0	4.2
1924	121.8	8.6	3.1	8.5	32.2	32.5	.79	1.58	3.86	7.7	35.3	7.1	5.4
1925	162.6	12.1	3.5	10.7	39.3	57.8	.93	2.16	6.08	11.2	40.0	7.8	4.6
1926	146.6	8.6	4.2	9.4	34.1	47.1	.92	1.86	5.02	11.2	38.9	9.0	8.0
1927	144.8	11.4	4.3	11.9	40.4	54.2	.81	2.64	6.35	13.3	40.4	6.6	9.2
1928	141.1	6.6	...	12.0 ^e	....	....	.83	....	....	16.5	41.5	...	...
Average													
1909-13	130.4	11.8 ^f	3.3	12.8	37.9	63.7	.14	1.48	3.63	16.3 ^f	32.0	6.0 ^f	6.9
1923-27	146.6	10.8	3.8	9.9	36.4	48.3	.83	1.98	5.00	10.4	37.9	7.3	6.3

* Data of U.S. Department 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.

^a Four-year average.

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

^c Three-year average.

^d England and Wales only.

^e Official estimate for winter wheat plus an allowance for spring wheat.

^f One year only.

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

(Million bushels)

Month	United States				Fort William and Port Arthur				Vancouver			
	1925	1926	1927	1928	1925	1926	1927	1928	1925	1926	1927*	1928*
Apr.	2.90	2.61	3.78	5.48	1.30	.51	.83	.48	.14	1.19	1.15	2.78
	1.80	3.27	3.49	4.42	.74	.68	.64	.23	.38	1.10	1.27	1.96
	2.84	2.79	2.98	4.48	.77	.52	.59	.26	.24	.93	.54	2.77
	1.95	3.52	3.41	4.17	3.50	.29	4.34	.26	.28	.69	.77	2.92
May	2.85	3.75	3.28	4.07	3.08	.18	6.86	.09	.44	.86	.94	2.81
	3.19	3.51	3.60	4.86	2.33	2.17	6.42	.25	.49	.56	.34	2.41
	2.88	3.09	3.89	6.70	1.12	4.00	3.87	3.13	.43	.35	.14	1.95
	5.19	3.60	5.20	7.46	1.09	4.75	2.96	6.56	.39	.22	.49	1.45
June	5.45	4.83	4.92	4.83	1.68	5.13	2.82	4.72	.34	.07	.50	1.39
	5.75	3.68	4.93	4.32	.90	4.89	2.49	4.22	.28	.06	.23	1.56
	4.83	3.71	4.09	3.87	.83	2.81	1.99	4.54	.38	.04	.11	.72
	4.61	3.51	4.03	3.10	.89	2.94	1.48	5.08	.21	.04	.17	1.21
July	5.02	5.67	4.15	2.89	1.01	2.74	1.33	4.38	.03	.08	.18	.64
	4.95	8.80	7.65	4.24	1.33	1.95	1.33	4.93	.05	.05	.06	.46
	7.59	13.79	8.54	7.40	1.80	2.04	2.07	4.28	.05	.10	.07	.69
	7.75	14.25	10.35	14.24	1.90	1.63	2.89	3.14	.06	.06	.04	.50
	11.67	19.26	11.35	18.76	1.31	1.19	3.10	3.07	.03	.01	.02	.46
	25.25	26.01	23.93			.92	2.61	3.03	.03	.05	.00	.72

* United States data are unofficial figures compiled from *Grain World*; 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 April 4, 1925, April 3, 1926, April 2, 1927, and March 31, 1928; Vancouver figures are for weeks ending one day earlier.

* Receipts at Prince Rupert included.

TABLE III.—MONTHLY WHEAT RECEIPTS AT PRIMARY MARKETS IN THE UNITED STATES AND CANADA FROM AUGUST 1924*

(Million bushels)

Month	United States primary markets				Fort William and Port Arthur				Vancouver			
	1924-25	1925-26	1926-27	1927-28	1924-25	1925-26	1926-27	1927-28	1924-25	1925-26	1926-27	1927-28
Aug.	93.0	43.3	71.6	81.6	1.3	1.2	1.5	2.4	.21	.55	.12	.09
Sept.	82.1	57.9	48.7	79.7	7.1	45.7	32.8	8.6	.41	.28	.29	.32
Oct.	88.0	36.1	37.1	73.2	40.9	53.2	56.1	51.4	3.98	7.04	6.37	6.17
Nov.	60.5	34.1	29.8	44.8	42.7	51.5	60.5	71.0	5.05	9.79	7.22	10.78
Aug.-Nov.	323.6	171.4	187.2	279.3	92.0	151.6	150.9	133.4	9.65	17.66	14.00	17.36
Dec.	36.3	34.9	22.4	26.5	20.3	53.5	26.3	41.0	4.21	6.14	6.63	11.81
Jan.	24.7	21.6	24.6	23.5	4.1	10.5	14.0	21.1	3.84	10.03	6.83	16.49
Feb.	19.9	16.2	21.0	22.5	6.2	4.0	8.6	9.5	2.08	7.74	4.27	12.54
Mar.	17.3	15.1	16.6	26.3	8.5	3.2	6.3	3.3	.74	6.98	5.94	10.50
Dec.-Mar.	98.2	87.8	84.6	98.8	39.1	71.2	55.2	74.9	10.87	30.89	23.67	51.34
Apr.	10.4	14.0	14.4	17.9	8.1	1.8	12.6	.9	1.02	3.58	3.58	10.88
May	17.6	15.7	19.2	25.9	7.0	17.2	17.3	17.6	1.54	1.20	1.56	7.43
June	21.9	21.0	20.7	15.5	4.1	13.6	7.3	20.1	.74	.22	.61	3.66
July	41.8	77.0	58.8	....	6.7	6.4	10.7	14.4	.11	.27	.14	2.44
Apr.-July	91.7	127.7	113.1	....	25.9	39.0	47.9	53.0	3.41	5.27	5.89	24.41
Aug.-July	513.5	386.9	384.9	....	157.0	261.8	254.0	261.3	23.93	53.82	43.56	93.11

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

TABLE IV.—WEEKLY WHEAT AND FLOUR SHIPMENTS BY AREAS OF ORIGIN AND DESTINATION, APRIL–JULY, 1928*

(Million bushels)

Week ending	North America	Argentina, Uruguay	Australia	Russia	Danube	India	Other countries	Total	To Europe	To ex-Europe
Apr. 7.....	8.02	5.99	2.30	...	.14	.02	.39	16.86	13.49	3.37
14.....	8.93	6.94	1.21	...	...	...	.58 ^a	17.66	15.32	2.34
21.....	8.73	5.48	1.65	...	...	.04	.41 ^b	16.31	12.86	3.45
28.....	6.91	5.79	2.22	...	...	...	.37	15.29	12.03	3.26
May 5.....	8.24	2.33	1.50	...	.03	.38	.50	12.98	9.87	3.11
12.....	5.58	4.50	3.34	...	...	.08	.67 ^a	14.17	11.01	3.16
19.....	8.88	2.72	2.50	...	...	...	.69 ^b	14.79	12.57	2.22
26.....	8.52	3.78	3.05	...	...	.09	.50	15.94	12.76	3.18
June 2.....	8.78	2.68	1.77	...	...	.09	.86	14.18	11.72	2.46
9.....	8.39	3.65	.66	...	...	.25	.54	13.49	11.25	2.24
16.....	8.57	5.75	.86	...	...	.70	.73 ^a	16.61	14.05	2.56
23.....	6.67	4.17	3.06	...	...	1.00	.89	15.79	13.41	2.38
30.....	6.62	3.36	2.66	...	...	.22	.64	13.50	10.58	2.92
July 7.....	7.65	2.89	1.70	.01	...	.12	.66 ^a	13.03	10.41	2.62
14.....	9.23	3.01	.75	...	...	.31	.73 ^a	14.03	11.59	2.44
21.....	8.36	2.51	1.55	...	...	.33	.82 ^c	13.57	11.05	2.52
28.....	9.60	1.71	.67	...	...	.02	.54	12.54	10.09	2.45
Aug. 4.....	9.07	.99	1.11	...	.04	.17	.80	12.18	10.23	1.95

* 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 Includes 20 thousand bushels shipped from Chile.

^b Includes 10 thousand bushels shipped from Chile.

^c Includes 30 thousand bushels shipped from Chile.

TABLE V.—INTERNATIONAL TRADE IN WHEAT AND FLOUR, MONTHLY FROM JULY 1927*

(Million bushels)

A.—NET EXPORTS

Month	United States	Canada	India	Australia	Argentina	Roumania	Hungary	Jugo-Slavia	Poland	Algeria	Tunis	Egypt
July	11.6	8.6	5.12 ^a	8.1	9.9	.56	1.26	.06	(.42) ^b	(.26) ^b	(.10) ^b	(.47) ^b
Aug.	27.5	14.5	1.57 ^a	4.1	5.9	1.34	2.99	.23	(.08) ^b	.51	(.09) ^b	(.51) ^b
Sept.	39.0	17.1	.81 ^a	4.2	5.4	1.88	3.28	.16	(.10) ^b	.26	(.18) ^b	(.56) ^b
Oct.	34.7	23.4	.74	2.3	5.3	1.14	2.57	.15	(.45) ^b	(.19) ^b	(.27) ^b	(.60) ^b
Nov.	24.8	57.9	.79 ^a	1.6	5.0	1.24	2.26	.22	(.58) ^b	.56	(.02) ^b	(.64) ^b
Dec.	10.2	49.1	.35 ^a	2.3	8.7	.95	1.71	.18	(.64) ^b	.16	(.03) ^b	(.52) ^b
Jan.	11.1	18.6	.25 ^a	9.3	24.1	.29	1.14	.00 ^c	(.21) ^b	.34	.00 ^d	(.57) ^b
Feb.	5.0	21.8	(.60) ^b	6.4	29.7	.16	1.46	(.09) ^b	(.09) ^b	.54	(.02) ^b	(.59) ^b
Mar.	5.8	23.7	.41 ^a	9.1	31.6	.25	1.87	(.13) ^b	(.07) ^b	.52	(.04) ^b	(.60) ^b
Apr.	7.4	11.1	.48 ^a	7.3	21.3	....	1.42	(.16) ^b	(.47) ^b	.70	(.06) ^b	(.49) ^b
May	6.7	34.2	.68 ^a	9.5	14.9	....	1.54	...	(2.47) ^b	.65	...	(.66) ^b
June	7.1	25.2	2.50	8.6	16.5	....	.96	...	(2.04) ^b	.63	...	(.42) ^b
July	5.1	35.9	....	...	....	....	....	...	....	....	....	...

B.—NET IMPORTS

Month	Irish Free St.	United Kingdom	France	Germany	Belgium	Italy	Netherlands	Scandinavia	Switzerland	Czecho-Slovakia	Baltic States ^e	Japan
July	1.70	17.33	10.00	10.19	3.62	7.59	2.02	2.06	1.43	1.56	.63	1.16 ^a
Aug.	1.10	20.78	7.74	6.48	3.50	3.92	2.10	1.86	1.45	2.26	.57	.27 ^a
Sept.	1.82	19.59	7.20	6.96	3.67	2.96	2.80	2.35	1.30	1.62	.70	.34 ^a
Oct.	1.70	15.18	5.14	9.23	4.12	3.04	3.39	2.18	1.67	1.82	.78	.24
Nov.	2.24	19.13	5.33	8.96	3.60	4.86	3.60	2.45	2.05	1.80	.81	.89 ^a
Dec.	1.93	15.74	3.93	8.06	3.62	6.19	2.96	2.89	1.80	2.83	.42	.89 ^a
Jan.	1.34	6.78	3.02	7.84	3.02	7.45	2.30	1.77	2.28	1.35	1.16	1.90 ^a
Feb.	1.55	14.85	2.80	6.11	2.95	6.98	2.02	1.89	1.59	1.30	.59	1.55
Mar.	1.54	23.61	2.13	6.99	3.94	9.33	2.96	2.39	1.68	2.12	.77	2.55 ^a
Apr.	1.64	16.80	2.02	8.88	3.56	11.98	2.11	2.40	1.43	1.95	.70	2.33 ^a
May ....	.50	17.03	1.82	6.88	2.62	13.74	2.19	2.26	1.05	1.98	.64 ^f	3.53 ^a
June	1.64	17.59	2.47	6.00	3.64	9.60	2.86	1.94	.70	1.02	.70 ^f	1.38
July ....	....	19.36	....	....	....	....	....	...	....	....	....	...

* Data from official sources and International Institute of Agriculture.

^a Gross, not net.^c Net export of 500 bushels.^e Finland, Esthonia, Latvia.^b Net import.^d Net export of 3,300 bushels.^f Excluding Latvia.

TABLE VI.—WEEKLY VISIBLE SUPPLIES OF WHEAT IN NORTH AMERICA, UNITED KINGDOM, AND AFLOAT, APRIL-JULY, 1928*

(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. 7.....	71.9	144.5	7.2	68.4	292.0	June 2.....	52.5	109.7	10.0	55.0	227.2
14.....	69.9	140.2	7.4	68.3	285.8	9.....	50.6	106.4	9.6	55.7	222.3
21.....	68.2	136.1	7.2	67.1	278.6	16.....	47.1	100.9	9.8	54.3	212.1
28.....	66.2	131.9	8.8	66.4	273.3	23.....	44.2	99.5	9.4	52.7	205.8
						30.....	42.2	94.2	10.4	50.2	197.0
May 5.....	63.7	119.7	9.6	61.7	254.7	July 7.....	42.2	89.6	10.6	49.5	191.9
12.....	61.7	113.8	8.4	60.3	244.2	14.....	43.3	85.6	9.8	50.0	188.7
19.....	58.1	112.0	7.6	60.3	238.0	21.....	47.6	76.3	10.2	49.1	183.2
26.....	54.7	110.9	7.6	56.3	229.5	28.....	57.1	69.7	10.4	44.7	181.9

* United States data from *Bradstreet's*; Canadian data from *Canadian Grain Statistics*; U.K. and afloat data from *Broomhall's Corn Trade News*. Canadian figures are for days preceding dates indicated in the above table, and are adjusted to bring stocks in western country elevators into the correct week.

TABLE VII.—WORLD VISIBLE WHEAT SUPPLIES, AUGUST 1, 1920-28, AND MONTHLY, 1927-28*

(Million bushels)

Date	United States	Canada	Argentina	Australia	United Kingdom ports	Afloat to Europe	North America	Argentina, Australia	U.K. and afloat	Grand total	Total ex-Australia
1920 Aug. 1.....	42.7	8.2	3.7	27.5	12.8	76.2	50.9	31.2	89.0	171.1	143.6
1921 Aug. 1.....	56.2	8.9	3.7	30.0	7.6	57.9	65.1	33.7	65.5	164.3	134.3
1922 Aug. 1.....	43.1	19.3	2.2	3.0	7.1	48.9	62.4	5.2	56.0	123.6	120.6
1923 Aug. 1.....	73.3	14.1	4.4	18.0	8.2	39.0	87.4	22.4	47.2	157.0	139.0
1924 Aug. 1.....	72.1	31.6	6.8	30.0	9.9	41.8	103.7	36.8	51.7	192.2	162.2
1925 Aug. 1.....	57.3	23.4	7.7	8.4	9.2	33.3	80.7	16.1	42.5	139.3	130.9
1926 Aug. 1.....	64.2	28.3	4.1	6.2	4.3	38.6	92.5	10.3	42.9	145.7	139.5
1927 Aug. 1.....	65.9	42.7	5.9	12.7	7.8	46.1	108.6	18.6	53.9	181.1	168.3
Sept. 1.....	108.7	27.4	4.8	9.7	10.4	44.0	136.1	14.5	54.4	205.0	195.3
Oct. 1.....	143.7	22.2	4.4	6.8	10.0	50.0	165.9	11.2	60.0	237.1	230.3
Nov. 1.....	156.0	72.0	3.6	3.0	8.6	56.1	228.0	6.6	64.7	299.3	296.3
Dec. 1.....	154.7	120.9	3.6	.7	9.6	57.1	275.6	4.3	66.7	346.6	345.9
1928 Jan. 1.....	143.4	157.8	3.7	41.0	8.0	46.1	301.2	44.7	54.1	400.0	359.0
Feb. 1.....	128.9	162.8	8.0	51.0	6.4	65.5	291.7	59.0	71.9	422.6	371.6
Mar. 1.....	118.6	156.5	11.8	43.5	5.8	66.9	275.1	55.3	72.7	403.1	359.6
Apr. 1.....	110.1	146.6	12.8	36.0	7.7	68.4	256.7	48.8	76.1	381.6	345.6
May 1.....	97.8	131.1	11.0	24.5	9.8	65.7	228.9	35.5	75.5	339.9	315.4
June 1.....	75.1	107.3	9.9	26.0	10.1	55.0	182.4	35.9	65.1	283.4	257.4
July 1.....	61.1	95.6	7.7	19.5	10.4	50.2	156.7	27.2	60.6	244.5	225.0
Aug. 1.....	88.1	69.2	5.9	9.5	10.1	44.7	157.3	15.4	54.8	227.5	218.0
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
1923-27.....	66.5	28.0	5.8	15.1	7.9	39.7	94.5	20.9	47.6	163.0	147.9

*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 VIII.—UNITED STATES AND CANADIAN CARRYOVERS OF WHEAT, 1919-28*

(Thousand bushels)

Year	United States (July 1)				Canada (August 31, 1919-23; July 31, 1924-27)				
	Total	On farms	In country mills and elevators	Commercial visible (Bradstreet's)	Total	On farms	In elevators	In transit	In flour mills
1919.....	49,806	19,261	19,672	10,873	.....^a	2,149	3,305	.....^a	.....^a
1920.....	110,254	49,546	37,304	23,404	.....^a	2,122	6,930	.....^a	238
1921.....	93,840	56,707	27,167	9,966	13,727	2,144	4,831	6,032	720
1922.....	81,457	32,359	28,756	20,342	20,590	2,360	11,024	4,578	2,628
1923.....	102,414	35,894	37,117	29,403	11,690	1,441	5,051	2,758	2,440
1924.....	106,204	30,981	36,626	38,597	45,159 ^b	7,363 ^b	27,400 ^b	5,856 ^b	4,539 ^b
1925.....	86,447	29,357	25,287	31,803	26,483	2,709	17,939	3,835	2,000
1926.....	65,949	20,973	28,490	16,486	35,601	3,987	25,451	3,163	3,000
1927.....	74,507	27,215	21,776	25,516	50,586	4,264	37,079	5,243	4,000
1928.....	84,514	23,450	18,856	42,208	76,484	4,186	53,570	13,728	5,000
Average									
1910-14.....	89,411	32,485	31,600	25,326	.....^a	.....^a	.....^a	.....^a	.....^a
1923-27.....	87,164	28,884	29,919	28,361					

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

^a Not available.

^b July 31, as for later years.

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

TABLE IX.—WEEKLY CASH PRICES OF REPRESENTATIVE WHEATS IN LEADING EXPORTING AND IMPORTING MARKETS, MARCH–JULY, 1928*

(U.S. dollars per bushel)

Month	United States				Canada		Argentina	Liverpool					
	No. 2 Red Winter (St. Louis)	No. 2 Hard Winter (Kansas City)	No. 1 Dark Northern (Minneapolis)	No. 2 Amber Durum (Minneapolis)	No. 1 Manitoba (Winnipeg)	No. 3 Manitoba (Winnipeg)	Spot (Buenos Aires)	No. 1 Manitoba	No. 3 Manitoba	Pacific White	No. 2 Winter	Argentine Rosafé	Australian
Mar.	1.61	1.35	1.45	1.33	1.45	1.28	1.25	1.60	1.51	1.54	n.q.	1.44	1.56
	1.66	1.38	1.48	1.33	1.47	1.29	1.28	1.63	1.56	n.q.	n.q.	1.46	1.60
	1.68	1.36	1.45	1.31	1.48	1.30	1.30	1.64	1.56	1.58	n.q.	1.48	1.62
	1.70	1.41	1.47	1.35	1.49	1.32	1.31	n.q.	1.56	1.61	n.q.	1.51	1.61
	1.76	1.41	1.47	1.35	1.50	1.33	1.30	n.q.	1.56	1.62	n.q.	1.51	1.61
Apr.	1.81	1.43	1.51	1.35	1.51	1.35	1.31	n.q.	1.56	1.63	n.q.	1.51	1.61
	1.86	1.44	1.52	1.40	1.54	1.40	1.33	1.67	1.58	1.62	n.q.	1.52	1.62
	1.99	1.56	1.67	1.46	1.58	1.44	1.38	1.72	1.66	n.q.	n.q.	1.59	1.68
	2.12	1.65	1.71	1.41	1.60	1.45	1.39	1.71	1.64	n.q.	n.q.	1.56	1.66
May	2.20	1.69	1.74	1.48	1.63	1.47	1.42	1.75	1.67	n.q.	n.q.	1.62	1.70
	2.04	1.64	1.68	1.44	1.61	1.45	1.42	1.75	1.65	n.q.	n.q.	1.60	1.69
	1.81	1.51	1.60	1.36	1.55	1.40	1.38	1.68	1.61	n.q.	n.q.	1.57	1.67
	1.79	1.53	1.61	1.38	1.56	1.41	1.38	n.q.	n.q.	n.q.	n.q.	1.61	n.q.
June	1.83	1.55	1.61	1.36	1.50	1.36	1.37	n.q.	n.q.	n.q.	n.q.	1.58	n.q.
	1.87	1.51	1.56	1.36	1.48	1.33	1.35	n.q.	1.54	1.65	n.q.	1.55	1.65
	1.80	1.49	1.51	1.29	1.42	1.29	1.30	n.q.	1.50	1.63	n.q.	1.49	1.63
	1.75	1.49	1.51	1.26	1.39	1.28	1.27	n.q.	1.42	1.59	1.53	1.43	1.60
July	1.72	1.45	1.52	1.27	1.39	1.28	1.28	n.q.	1.46	1.55	n.q.	1.46	1.57
	1.72	1.36	1.53	1.32	1.40	1.29	1.32	n.q.	1.52	1.58	n.q.	1.54	1.59
	1.55	1.28	1.49	1.24	1.35	1.24	1.30	n.q.	1.44	1.57	1.47	1.51	1.59
	1.51	1.26	1.46	1.19	1.29	1.18	1.27	n.q.	1.41	1.53	1.46	1.45	1.56
	1.47	1.18	1.38	1.17	1.24	1.12	1.22	n.q.	1.28	1.44	n.q.	1.44	1.48

* United States prices are weekly averages of daily weighted prices for weeks ending Friday, compiled from *Crops and Markets*. Canadian prices are averages for weeks ending Saturday, compiled from *Canadian Grain Statistics*. Liverpool prices are for Tuesday of the same week and are from Broomhall's *Corn Trade News*. Argentine prices are averages for weeks ending Saturday, from *Times of Argentina*. No quotation is signified by "n.q."

TABLE X.—MONTHLY PRICES OF DOMESTIC WHEAT IN EUROPE, FROM AUGUST, 1925*

(U.S. dollars per bushel)

Month	Great Britain			France (Chartres)			Italy (Milan)			Germany (Berlin)		
	1925-26	1926-27	1927-28	1925-26	1926-27	1927-28	1925-26	1926-27	1927-28	1925-26	1926-27	1927-28
Aug.	1.53	1.76	1.63	1.62	1.61	1.75	1.88	1.85	1.75 ^a	1.55	1.75	1.78 ^b
Sept.	1.48	1.46	1.43	1.57	1.77	1.57	1.94	2.03	1.73	1.38	1.71	1.68
Oct.	1.34	1.48	1.37	1.48	1.88	1.54	1.94	2.21	1.77	1.37	1.72	1.62
Nov.	1.45	1.62	1.32	1.37	1.96	1.48	1.99	2.20	1.90	1.49	1.78	1.57
Dec.	1.60	1.55	1.29	1.33	1.78	1.58	2.12	2.31	1.88	1.62	1.74	1.53
Jan.	1.60	1.55	1.29	1.39	1.88	1.58	2.17	2.13	1.93	1.61	1.72	1.52
Feb.	1.54	1.54	1.26	1.42	1.81	1.56	2.16	2.11	1.94 ^c	1.60	1.72	1.49
Mar.	1.51	1.52	1.27	1.39	1.70	1.65	2.14	2.11	....	1.66	1.73	1.59
Apr.	1.57	1.50	1.34	1.40	1.82	1.74	2.20	2.02	....	1.87	1.76	1.72
May	1.75	1.58	1.43	1.39	1.91	1.87	2.19	2.16	....	1.92 ^d	1.92	1.73
June	1.77	1.65	1.43	1.52	1.88	1.85	2.20	1.99	....	n.q.	1.96 ^e	1.66
July	1.84	1.64	1.41	1.53	1.81	1.76	1.98	1.80	....	n.q.	n.q.	....

* 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; for Italy, averages of Friday prices of soft wheat as given in *International Crop Report and Agricultural Statistics*; for Germany, monthly average prices as given in *Wirtschaft und Statistik*. All data are converted, for convenience, from the domestic currency in which they are quoted in the above sources into U.S. money by monthly average exchange rates. No quotation is signified by "n.q."

^a Three-week average.^b Second half of August.^c First half of February.^d First half of May.^e First half of June.

TABLE XI.—APPROXIMATE DISPOSITION OF WHEAT SUPPLIES IN FOUR LEADING EXPORTING COUNTRIES, 1923-24 TO 1927-28*

(Million bushels)

Item	United States (July-June)					Canada (August-July)				
	1923-24	1924-25	1925-26	1926-27	1927-28	1923-24	1924-25	1925-26	1926-27	1927-28
Initial stocks.....	151 ^a	165 ^b	135	111	138	29	41	26	35	48
New crop.....	797	864	676	831	873	474	262	395	407	440
Total supplies.....	948	1,029	811	942	1,011	503	303	421	442	488
Net exports.....	135	258	95	209	194	346	192	324	292	332
Seed requirements.....	79	84	82	89	96	39	39	40	39	41
Consumed for food.....	477	479	492	492	502	42	42	42	44	45
Unmerchantable and lost in cleaning.....	92	73	31	14	77	31	22	18	31	39
Fed on farms.....						15	5	5	10	10
Apparent error in crop estimate.....						-11	-23	-43	-22	-54
Stocks at end.....	165 ^b	135	111	138	142	41	26	35	48	75
Total disappearance.....	948	1,029	811	942	1,011	503	303	421	442	488

Item	Argentina (August-July)					Australia (August-July)				
	1923-24	1924-25	1925-26	1926-27	1927-28	1923-24	1924-25	1925-26	1926-27	1927-28
Initial stocks.....	56	63	57	67	61	42	38	36	30	41
New crop.....	248	191	191	221	239	125	165	115	161	110
Total supplies.....	304	254	248	288	300	167	203	151	191	151
Net exports.....	172	123	94	143	178	86	124	77	103	69
Seed requirements.....	21	23	25	24	25	10	11	11	12	12
Consumed for food.....	45	49	54	55	56	28	29	29	30	30
Feed and waste.....	3	2	8	5	4	5	3	4	5	5
Stocks at end.....	63	57	67	61	37 ^c	38	36	30	41	35
Total disappearance.....	304	254	248	288	300	167	203	151	191	151

* Based so far as possible upon official estimates for the various items of supply and disposition. Estimates for 1927-28 are preliminary. For detailed explanation of our method of estimation and adjustment of items in the disposition table, see notes in WHEAT STUDIES, IV, 61 f.

^a This estimate perhaps too low. See WHEAT STUDIES, February 1928, IV, 169-70, 180.

^b This estimate perhaps too high. See *loc. cit.*

^c Presumably too low. See text, p. 368.

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