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

OF THE FOOD RESEARCH INSTITUTE

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SURVEY OF THE WHEAT SITUATION AUGUST TO NOVEMBER, 1928

LOW and comparatively stable prices, heavy international trade, and exceptionally large stocks have characterized the world wheat situation in recent months. In international markets and exporting countries, prices have ranged considerably lower than in any year since 1923-24. Canada has exported unprecedented quantities, of old wheat and new; Argentine and Australian exports of old wheat have been relatively large; elsewhere exports have been light in proportion to the crops. Ex-European countries in particular have purchased liberally at low prices. Especially in Canada, but also in the United States, visible supplies have risen to extraordinary peaks.

This is a year of wheat surplus, roughly analogous to 1923-24. From a record acreage, high average yields were obtained. The world crop ex-Russia is about 3,750 million bushels, exceeding the best previous crops of 1915, 1923, and 1927. Except in Canada, Japan, and portions of other countries, the quality is generally good. Canada has a record crop; United States, Argentine, and Australian crops are among the best ever harvested; the Danube countries have the largest crops since the war. Without counting upon Russia and India, world export surpluses are unprecedentedly high. Net importing countries generally have at least fair wheat crops. Europe has good crops of rye, potatoes, oats, and barley, but the shortest corn crop since the war.

The international statistical position, therefore, is easy. But trends of seed requirements, population, and per capita consumption are upward, and low prices will encourage heavy utilization. Disappearance, international trade, and outward carryovers will probably all rise to new high levels. Total net exports may reach or exceed 900 million bushels, but United States exports bid fair to be small in proportion to the size of our crop.

STANFORD UNIVERSITY, CALIFORNIA

January 1929

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

OF THE

FOOD RESEARCH INSTITUTE

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

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

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

Volumes I-IV are now available, bound in red buckram, at \$10.00 each. The ten issues of Volume V will be published monthly from November 1928 to September 1929, except in April 1929. 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

AUGUST TO NOVEMBER, 1928

Extraordinarily high visible supplies, and a relatively low level of wheat prices, were the outstanding features of the period under review. Except in certain continental European countries, wheat prices approached the previously lowest post-war level, that of 1923-24; and weighted average cash prices in the United States were about as low as in that year. After the sharp decline of May-July came to an end by the middle of August, prices fluctuated within narrow limits. Stability prevailed chiefly because a bumper crop in Canada was in prospect even as early as July, and because nothing occurred fundamentally to alter the general supply position.

Low prices reflect a record crop of wheat in the world (including or excluding Russia), so distributed as to result in an easy international statistical position. Table 1 (p. 114) summarizes world production in 1928 in comparison with earlier years, in figures which include our adjustments of standing official crop estimates. The wheat crop of 1928, ex-Russia, probably exceeds 3,750 million bushels, some 180 million more than in 1927 and 275 million more than in 1923, the two post-war years of largest crops. This year Canada, the Danube countries, and Russia have record post-war crops; the United States crop is the largest since 1919; and only India, Spain, Portugal, and Asia Minor have short crops. In Europe wheat is of better quality this year than last; but a record proportion of Canada's crop is grading below No. 3 Northern.

Import requirements at equivalent prices are larger this year than last, principally on account of the needs of Spain, Portugal, India, and certain other ex-European countries; but greatly increased exportable surpluses make for an easier international statistical position. The position is probably not so easy as in 1923-24, despite a

much larger crop in 1928-29; for import requirements have grown rapidly over the interval of years.

With huge crops in North America, visible supplies have run extraordinarily high during August-November. Farmers in most countries have tended to market slowly because of low prices. International trade was of record volume for the period, especially the movement to ex-European destinations. Canada and Argentina, where inward carryovers were exceptionally large, exported record quantities; but the export movement from the United States was restricted, size of crop considered, by relatively high prices induced by heavy mill buying and a shortage of soft red winter wheat.

During the ensuing winter months, we anticipate

a continuation of the low level of international wheat prices prevailing in October-December, with relatively small fluctuations; but seasonal movements usually occur, downward in the Southern Hemisphere, and upward in North America. Some pressure from the Southern Hemisphere crops perhaps remains to be felt; and no sudden and protracted increase in demand seems in prospect. The principal hope for higher international prices in the mid-winter months appears to lie in the possible emergence of Russia as an importer on a large scale; her heavy crop is poorly distributed geographically. When new-crop prospects come to exert their influence in the spring, rising prices are possible simply because such generally high average yields per acre as occurred in 1928 are statistically unlikely to occur in 1929.

We estimate the probable volume of international trade in wheat and flour for 1928-29 as about 900 million bushels, with an unusual proportion of the total passing to ex-European destinations. Canada and

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the Danube countries may make record exports, but the movement from the United States will probably prove small, size of and Australia, and possibly some decrease in Canada. Low prices promise to encourage heavy disappearance of wheat for food and

TABLE 1—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 ^b	Argentina	Australia	Southern Hemisphere	World ex-Russia ^b
1920.....	833	263	...	172	774	71	378	41	2,550	156	146	350	2,900
1921.....	815	301	...	212	1,002	98	250	40	2,725	191	129	376	3,100
1922.....	868	400	...	224	815	71	367	40	2,800	196	109	354	3,155
1923.....	797	474	419	260	989	106	372	35	3,050	248	125	427	3,475
1924.....	864	275	472	204	846	85	361	35	2,685	191	165	407	3,090
1925.....	700	430	730	296	1,094	105	331	40	3,010	191	115	360 ^c	3,370 ^c
1926.....	870	415	820	294	910	90	325	39	2,955	221	161	435 ^c	3,390 ^c
1927.....	878	475	749	278	982	106	335	40	3,110	275	117	460 ^c	3,570 ^c
1928.....	903	550	860	364	1,020	106	290	42	3,285	250	160	465	3,750
Average													
1909-13...	690	197	759 ^d	330	1,017	93	352	32	2,725	147	90	280	3,004
1923-27...	842	414	638	266	964	98	345	38	2,962	225	136	418	3,379

* Summarized from most recent official data for individual countries (see Appendix Table I), as reported by the U.S. Department of Agriculture, but figures in italics represent our adjustments for apparent underestimates of crops, as shown in Appendix Table XI, for years prior to 1928. Italicized figures for 1928 represent our approximations, largely as explained in the text, pp. 115, 119. Totals exclude China, Asia Minor, Brazil, and a number of small producers. All estimates are for territory within post-war boundaries.

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

^b Rounded figures.

^c Includes our estimate for Peru.

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

crop considered. The carryover will probably be built up greatly in the United States, but there may be little change in Argentina

feed throughout the world, more particularly in ex-European countries, and in the Danube basin, where the corn crop is short.

I. CROP DEVELOPMENTS

The four months under review witnessed an exceptionally favorable season for late growth of wheat and harvesting in most countries of the Northern Hemisphere. In the United States and many countries of Europe, crop estimates were raised somewhat during August–November. But frosts during August did unexpected damage to the quality of Canadian wheat, and somewhat reduced the quantity. Early anticipations of huge crops in Argentina and Australia were not confirmed by later developments, especially in Australia; but both countries obtained crops well above average in size. In Europe, including or excluding Russia, and in the United States, the crops appear somewhat larger than they did four months ago, but such improvement is approximately counterbalanced by decreased expectations of outturns in the Southern Hemisphere and perhaps in Canada. On the whole, then, the world supply situation in mid-December is much the

same as it appeared to be in mid-August. Large alterations in official Canadian and Russian estimates exerted surprisingly little market influence.

THE UNITED STATES

The United States clearly has a large crop of all types except soft red winter wheat. The official estimate of winter-wheat production remained, as usual, unaltered during August–November; that of the spring-wheat crop was raised from 312 million bushels as of August 1 to 323 million as of September 1, and again slightly to 325 million as of October 1.¹ Only negligible

¹ The course of official and private estimates of spring-wheat production, in million bushels, was as follows:

Date	Official	Bryant	Cromwell	Murray	Snow
Aug. 1	312	272	282	301	302
Sept. 1	323	310	314	319	325
Oct. 1	325	301	314	315	333
Dec. 1	324	...	...	...	...

changes were made in the estimate as of December 1. The standing estimate for the total crop, 903 million bushels, thus exceeds the estimate as of July 1 by 103 million bushels. The increase illustrates the importance of late growing and of harvesting weather in determining the size of the wheat crop. An even larger increase occurred in 1924; but such occurrences are uncommon.

According to official figures, the crop is the fourth largest ever harvested in the United States, smaller only than those of 1915, 1918, and 1919. Neither acreage harvested nor yield per acre was so exceptional as production. The harvested area of 57.72 million acres was exceeded in 8 of the preceding 62 years, and yield per acre of 15.6 bushels was equaled or exceeded in 7 of these, notably in 1914, 1915, and 1924. As earlier indications suggested, the crop of soft red winter wheat is the smallest in the nine years for which records are available, while that of durum is the largest in history.

Quality, always difficult to evaluate, appears on the whole average or better, but only the spring-sown bread wheat ranks above average by all the common tests. Weight per measured bushel of winter wheat is placed officially at 58.6 pounds, the same as in 1927 and slightly above the 10-year average of 58.2. But the official index number of winter-wheat quality, in which 100 indicates a high medium grade of wheat, is only 88.7 as compared with a 1918-27 average of 89.8 and 94.5 for the high-quality crop of 1926. There is much bleached grain and some bin-burnt grain in the Southwest, a result of heavy rains at harvest and wide use of the combine. Protein content of winter wheat, so far as can be judged by prevailing premiums, is about average, apparently higher than in 1927-28. Low-protein and bleached hard winter wheats are being employed as substitutes for soft red winter wheats to an unusual degree. Spring wheat averages 58.4 pounds per measured bushel as against 58.3 pounds in 1927 and a 10-year average of 57.2 pounds. The official estimate of spring-wheat quality, 89.6 for durum and 90.9 for other spring wheat, compares favorably with the 1918-27 average of 86.1 for the two varieties combined. Bread wheat in the

Northwest appears to be of distinctly good quality, with good protein content, high test weight, high yield of flour per bushel of wheat, and comparative freedom from dockage; but amber durum of satisfactory milling qualities is hard to find.

CANADA

Canada undoubtedly harvested the largest crop in her history in 1928; but opinions differ widely as to its precise size and as to its relative quality. The progress of the crop appeared to be distinctly favorable throughout June, July, and most of August. Frost was reported on August 13, and again on August 20-23, but these reports exerted comparatively little market influence, since the earlier frost was light and confined to restricted areas, while the later frosts came at a period when the crop as a whole was far advanced toward maturity. Aside from these frosts, weather was on the whole favorable both during the late growing season and during harvest, though hail did local damage and there were some heavy rains early in September.

The course of official and unofficial estimates of production in the Prairie Provinces were as follows, in million bushels:

Estimate	August 1	September 1	October 1	November 1
Official . . . . .	...	527	...	480
Bryant	412	470	476	...
Cromwell	479	538	...	527
Murray	513	508	512	...
M.F.P. ^a . . . . .	...	535	...	...
N.W.G.D.A. ^b . . . . .	...	...	558	...
Evans . . . . .	...	...	...	547

^a Manitoba Free Press.

^b Northwest Grain Dealers' Association.

As these figures show, considerable differences of opinion regarding the size of the crop have prevailed since mid-summer. As a rule, the November estimates ought to approach the truth more closely than September or October estimates, since actual threshing returns can be used more extensively in determining average yield per acre, the factor which gives rise to most of the differences in production estimates. But this year the official estimate as of November 1, issued November 13, falls far below the three Canadian unofficial

estimates, those of the *Manitoba Free Press* (issued September 11), the Northwest Grain Dealers' Association (issued October 8), and the Sanford Evans Statistical Service (issued November 10). It is difficult to understand why the official figure is so low, especially by comparison with the two unofficial estimates issued in October and November, for the differences between them arise chiefly from differences in yields per acre reported by correspondents.¹ We are disposed provisionally to assume that of the three similar samples of yield per acre based on threshing returns, the two most closely in agreement—the Grain Dealers' and Evans' estimates—lie nearer to the truth than does the official estimate. A later (January 4, 1929) estimate by the Grain Dealers' was 441 million bushels. Official estimates in recent years, both as of November 1 and as of January 1 following, have understated the actual crop as judged by subsequent data on disposition.

Marketings in August–November, moreover, were extraordinarily large. One is not altogether justified in assuming that the large marketings necessarily imply a crop larger than that officially estimated, for favorable harvest weather and general enlargement of transport and terminal handling facilities made for relatively heavy marketings, and it is impossible to ascertain how far these factors, rather than the large crop, were responsible for the high figures. Nevertheless, if one reasons that receipts at the big terminal markets (Fort William and Port Arthur, Vancouver and Prince Rupert) in August–November are unlikely to have exceeded 45 per cent of the crop of the Prairie Provinces,² then

¹ The estimate of the Northwest Grain Dealers' Association, however, is based upon an estimate of area some 400,000 acres larger than the official estimate.

² Receipts at these points were 45, 42, and 45 per cent of the total crops of the Prairie Provinces (adjusted for underestimates) in 1922–23, 1925–26, and 1926–27, respectively, but only 37 and 33 per cent in 1923–24 and 1927–28 respectively. These are the only recent years in which the crops were sufficiently large to compare with the crop of 1928. If the August–November receipts this year should prove to be 45 per cent of the crop in the Prairie Provinces, the crop would be 507 million bushels. A similar calculation based on receipts at country elevators and platform loadings gives a higher figure, since unusual quantities of wheat remained in country and interior elevators this year.

the crop of this region in 1928 would seem to exceed 500 million bushels, and the total crop to exceed 520 million.

Altogether, on present evidence we are disposed to expect the total Canadian crop of 1928 to lie between 525 and 575 million, and we employ the round figure of 550 million in the belief that it is as reasonable an approximation as any. On any basis the crop of 1928 is the largest ever harvested in Canada; on this basis it is some 110 million bushels larger than that of 1927 if the official estimate for 1927 be employed, or some 75 million larger with a reasonable correction of the estimate of 1927. The largest previous crops, those of 1927 and 1923, were about 475 million bushels each.

Quality, however, at least so far as can be judged from grading, is poor as compared with earlier years. Table 2 illustrates

TABLE 2.—PERCENTAGES OF VARIOUS GRADES OF CANADIAN HARD RED SPRING WHEAT TO TOTAL WHEAT INSPECTED IN THE WESTERN DIVISION, SEPTEMBER–NOVEMBER, 1923–28*

Grading	1923	1924	1925	1926	1927	1928
No. 1	40.2	22.8	28.4	14.1	1.7	1.1
No. 2	24.6	19.8	30.8	24.2	10.1	13.5
No. 3	20.5	19.1	13.7	9.3	24.2	20.1
No. 4	6.0	16.0	3.2	3.0	13.3	18.2
No. 5	1.8	7.7	0.8	1.1	4.6	15.5
No. 6	1.2	3.4	0.2	0.6	2.3	14.6
Feed	0.8	1.4	0.1	0.3	1.1	5.9
No grade" . . .	1.1	7.2	17.8	38.4	36.1	1.8
Other ^b	3.8	2.6	5.0	9.0	6.6	9.3

* Data from *Canadian Grain Statistics*.

^a Wheat grading Nos. 1, 2, and 3 except that it contains a higher proportion of moisture. Aside from higher moisture content, it may be of as good quality as these three grades, and is almost always better than grades Nos. 5 and 6, and feed.

^b Largely durum.

the point. Much more wheat than usual has graded commercial Nos. 4, 5, 6, and feed, chiefly on account of the high proportion of green and frosted kernels. Conversely, the amounts of Nos. 1, 2, and 3 and of "no grade" (moist but otherwise Nos. 1–3 wheat) are in combination smaller than in any of the preceding years. But protein content of all grades, and weight per measured bushel as well, are relatively high.

A good deal of discussion has appeared regarding the milling and baking qualities

of the lower grades especially.¹ It is beyond the scope of this survey to discuss in detail the varying opinions expressed. The evidence now suggests, however, that Nos. 4

¹ See especially a statement by F. J. Birchard and T. R. Aitken, chemists in charge of the Dominion grain research laboratory, reported in *Northwestern Miller*, October 24, 1928, which suggests that the lower grades including No. 6 are not far inferior to the higher grades in milling and baking qualities; a statement by Secretary Jardine of the United States Department of Agriculture, issued October 27, which states that a considerable proportion of wheat grading Nos. 5, 6, and feed "will not enter the market for good milling wheats," so that the official Canadian crop estimate may reasonably be scaled down by about 50 million bushels; and a statement by A. Cairns, statistician of the Canadian Pool, issued November 10, which states that No. 5 wheat is satisfactory, but that No. 6 and feed are so poor that "frost reduced the millable volume of Canada's 1928 wheat crop by many millions of bushels."

² These figures do not precisely reflect the situation, of course; for there may have been mixing of No. 6 with higher grades at terminal elevators.

³ From experienced, large-scale millers in the United States, Canada, and Europe we have been able to secure reports on the milling of Nos. 5 and 6 commercial grades of Canadian spring wheat. Some spring-wheat mills are grinding No. 5 straight, others use equal parts of Nos. 5 and 6, others add one part of No. 5 to three parts of No. 6, and still others grind straight No. 6 wheat. The yields per bushel are low, from 5 bushels upward being required to produce the barrel of straight flour. The wheats are refractory to milling and the power consumption is high per barrel. The high price of millfeed has been a significant advantage in the transaction. The flours are dark in color, with high ash and high acidity, and are prone to decompose, especially the flour ground from No. 6. These flours are relatively high in protein content, but (largely on account of green kernels) the protein is of inferior quality in baking tests. The straight flour thus milled from Nos. 5 and 6 wheats is regarded as better than a second spring-wheat clear but not as good as a first spring-wheat clear flour. Apparently the North American mills do not ship such flour under mill brands into the European trade. Like clear spring-wheat flour in general, this flour is suited to the low grade Asiatic and Mediterranean market, but would not keep well enough for the South American market. The flour is peculiarly adapted, as of quality, to the Asiatic trade; its defects stand out most sharply when it is used straight for making yeast-risen bread, and are of little account when it is used for making noodles, dumplings, or steam bread. To a small extent Nos. 5 and 6 wheat can be mixed with high-grade spring wheat to make mill brand flour, under heavy bleaching. Skillfully blended with other wheats in the manufacture of flour in Europe, No. 5 Canadian wheat is apparently finding extensive use. One large European miller informs us that No. 5 wheat, when purchased at the head of the lakes under personal inspection of his representative, for purposes of blending is being found equal or superior to No. 3 wheat of the crop of 1927, as judged on the basis of price. From the available information it is becoming clear that Nos. 5 and 6, and even feed grade, wheat is to be regarded as a part of the millable Canadian crop, and is passing into consumption as foodstuff to a much greater extent than as feeding stuff.

and 5 are adaptable milling wheats—rather better than usual of the grade, indeed, because of high protein content and weight per measured bushel. There is more doubt about No. 6 and feed. Together they appear to constitute about 20 or 21 per cent of the crop of the Prairie Provinces, over 100 million bushels. It is interesting to speculate upon how much of this quantity will be employed for flour making, how much for feed; but at present precise measurement is hardly possible. Certainly a great deal of No. 6 wheat has already moved into export and has been milled in Canada into flour for export. Approximately 15 per cent of total receipts at Fort William and Port Arthur in August–November must have graded No. 6, or about 29 million bushels, while only 6.6 million bushels of this grade remained in terminal elevators at these points as of November 30; hence something like three-fourths of the receipts of this grade thus far may have found an export or eastern Canadian market.² Japanese and (in some countries) European millers can and have imported No. 6 wheat, and Canadian millers have found remunerative markets for straight flour milled from No. 6 wheat,³ especially in view of high prices for mill offals. The great bulk of the lower grades of Canadian wheat must, in our opinion, be regarded as a part of the world's supply of bread grain, a part which must be reckoned with as affecting prices. Nevertheless an unusual quantity of Canadian wheat will be utilized as feed, both domestically and abroad.

EUROPE

Most countries of Europe (ex-Russia) were favored by unusually dry weather in the later stages of wheat growth and at harvest, though the drought proved detrimental to wheat in Spain and Portugal, and to corn generally. By the end of November official and unofficial crop estimates in many countries were higher than those standing in mid-August, the most noteworthy increases being in France and Germany. Total increases more than offset decreases, which were largest in Spain and Italy. In sharp contrast with last year, practically all European countries harvested wheat crops of good quality in 1928. Rye

crops also turned out larger than was earlier anticipated, and proved of good quality.

There are eleven European countries which ordinarily produce more than 20 million bushels of wheat. Of these, six—Hungary, Bulgaria, Jugo-Slavia, Roumania, Czecho-Slovakia, and Germany—secured in 1928 the largest crops of post-war years. Of the remaining five, Italy appears to have harvested a larger crop only in 1925, while the Polish crop was larger in 1925 and 1927. France had larger crops in 1921, 1924, and 1925. The crop of the British Isles was the smallest in post-war years on account of a reduced acreage, while that of Spain was smaller than any except those of 1922 and 1924, the result of low yield per acre. Among the smaller producers, Belgium, Holland, Switzerland, Austria, Lithuania, and Greece have record crops for post-war years, and only Portugal has a distinctly small one. These generally excellent outturns were obtained despite an unfavorable winter and a late and cold spring; not until July, in fact, did European crop prospects become distinctly good.

Production is more notably large in the four exporting countries of the Danube basin than elsewhere in Europe. Standing estimates for these countries total 364 million bushels, nearly 70 million more than in 1925, when the previously largest crop was harvested. Some reduction is possible; an earlier Roumanian estimate has already been reduced by 15 million bushels, and the standing Jugo-Slavian estimate, based upon a yield per acre 29 per cent larger than in any of the preceding eight years, looks rather high.

The crop of Europe outside Russia and the Danube countries approximates 1,020 million bushels, somewhat above those of 1921, 1923, and 1927, but 74 million below the big crop of 1925. The chief difference between 1928 and 1925 is the smaller crops in France and in Spain, which totaled 493 million bushels in 1925 but only 407 million in 1928. In Europe, exclusive of Russia and the Danube countries, the crop of 1928 exceeds that of 1927 by around 38 million bushels according to present estimates, but by less if the French crop of 1927 was in fact underestimated, as many observers be-

lieve. These two crops differed little in distribution, though Italy and Germany especially have larger outturns this year, while the British Isles, Spain, and Portugal have smaller ones. European crops of millable wheat, however, are larger than last year's to a greater extent than crop figures suggest, for the crop of 1927 contained considerably more unmillable grain.

Table 3 shows European (ex-Russian) crops of wheat, rye, potatoes, and the feed grains for the past nine years. The European rye crop of 1928, like the wheat crop, is larger than any except that of 1925; it exceeds the crop of 1927 by over 90 million bushels, and is of much better quality. The potato crop also is distinctly large, though complete statistics are not available. The barley crop is the largest in nine years, and

TABLE 3.—EUROPEAN (EX-RUSSIA) CEREAL AND POTATO CROPS, 1920-28*

(Million bushels)

Year	Wheat	Rye	Potatoes	Corn	Barley	Oats
1920	946	533	3,351	520	551	1,478
1921	1,215	758	3,078	393	566	1,509
1922	1,038	713	4,803	423	599	1,544
1923	1,249	823	3,864	467	663	1,756
1924	1,050	651	4,201	590	577	1,628
1925	1,390	937	4,745	622	691	1,792
1926	1,204	745	3,840	667	689	1,922
1927	1,260	800	4,735	482	680	1,843
1928	1,384	894	.....	380	746	1,934
Average						
1909-13 . .	1,347	977	4,162	528	701	1,931
1923-27 . .	1,231	791	4,277	566	660	1,788

* Summarized from most recent official data for individual countries, as reported by the U.S. Department of Agriculture. Excludes a few minor European producers. Pre-war averages are estimates for territory within present boundaries, and include 2-year or 4-year averages for a few countries.

so also is the European crop of oats. But the corn crop was seriously reduced by the dry weather which proved so favorable to wheat harvesting, and is the shortest since the war. All countries obtained poor corn yields, but Roumania and Italy suffered most. European gross supplies of bread grains and potatoes seem larger, on the whole, than in any post-war year except 1925. The combined supplies of feed grains, while large, are relatively less ample, in view of the larger count of animals; in terms of weight, larger crops were secured in 1925 and 1926.

The Russian wheat crop, earlier placed at 750 million bushels, is now officially estimated at 860 million bushels, the largest crop since the war—40 million above the large crop of 1926 and 110 million above the crop of 1927. Production is said to be heavy in the northerly spring-wheat regions, but deficient in the winter-wheat regions adjacent to the Black Sea. Much grain was damaged by wet harvesting weather in the spring-wheat regions. The rye crop is estimated as 783 million bushels, the smallest in four years and 150 million below the excellent crop of 1927. Considering these facts, and difficulties encountered in collecting and transporting grain, together with rapid growth in consumption of wheat, the possibility of appreciable exports of wheat from Russia now appears remote.

THE SOUTHERN HEMISPHERE

In both Argentina and Australia the seeding season was favorable, with ample supplies of subsoil moisture. In both countries record areas were sown, in continuation of upward trends. The latest official figures are 14.0 million acres in Australia, 20.9 million in Argentina—an increase over 1927 of more than 5 per cent in Argentina, and nearly 20 per cent in Australia.

Early progress was favorable in Australia; but in August and September the rainfall was exceptionally scanty, and by mid-September a crop failure seemed imminent on late-sown fields in many regions. In South Australia at least, rainfall during the first three weeks in August was the shortest in eighty-nine years. But heavy rains in late September "saved nine out of ten crops from partial or total failure."¹ October was an abnormally rainy month, and benefited the crop further. Early in August, before the drought had progressed far, observers were anticipating a record Australian crop; many considered 200 million bushels a rea-

sonable forecast. The first official forecast, issued in November, however, placed the probable outturn at 154 million, though unofficial observers tended to increase their estimates as harvest progressed in November and December. At 154 million bushels, the crop is above average in size, the largest since the war except those of 1924 and 1926, and 37 million larger than that of 1927.

In Argentina, weather conditions appear to have been distinctly favorable except for dry weather in the region centering around Bahia Blanca in the southern portion of the wheat-growing area, though toward the end of November there were complaints that rain was hindering harvest in the northern regions. Precipitation was subnormal from June to the end of November, especially in the southern districts; but a comparatively dry winter is said to favor the growth of wheat in Argentina. On November 12, the *Times of Argentina*, usually a reliable authority, stated that "conditions throughout 90 per cent of the wheat and linseed area are magnificent." All told, reports from various sources have consistently suggested a distinctly large crop. In earlier months the large acreage alone indicated a large crop if yield per acre proved only average. On November 21 the United States Department of Agriculture forecast the crop at 230 million bushels (plus or minus 19 million) on the basis of an analysis of weather conditions in relation to yield per acre in past years. The reports emanating from Argentina suggested that this figure might prove too low.

The usual official December forecast was not issued this year. We employ a figure of 250 million bushels, and regard it as conservative in the light of recent advices. On this basis the crop is the largest ever harvested, except perhaps for that of 1927, which was officially placed at 239 million bushels but seems actually to have been some 30 million larger.

II. MARKETING AND STOCKS

Largely as a result of the exceptional crops, coupled with large inward carryovers, stocks of wheat in North America at-

tained and maintained unprecedented size during August–November. Marketings by farmers may have been somewhat curtailed in the United States, but restraint in exporting was a larger factor in keeping visible

¹ *Wheat and Grain Review* (Melbourne), October 6, 1928.

supplies high. In Canada the movement from farms, favored by good weather for threshing, was the heaviest in history; and the export movement, though rapid, was not rapid enough to prevent great accumulation of supplies. In Europe the new crop moved from farms rather slowly, in part because farmers were dissatisfied with prevailing prices. European stocks of import wheat appear not to have accumulated in ports, despite heavy importations, but they probably ran high in other channels. Argentine supplies of old-crop wheat remained high. All told, wheat and flour stocks throughout the world stood at a relatively high level on December 1 because of the large crop of 1928 and the high carry-over at the end of the preceding crop year. Wheat has doubtless been consumed in greater volume than usual, but not rapidly enough to prevent exceptional accumulations. The quantity of wheat held by farmers is probably somewhat larger than usual, but the striking increase has been in visible supplies.

EUROPEAN MARKETING

Precise comparisons of rates of marketing from farms in various European countries cannot be made for lack of statistics. This year, however, trade reports have almost consistently mentioned the general tendency of farmers to restrict sales in the hope of obtaining higher prices later. The tendency has perhaps been most noteworthy in France, where millers, at least during many weeks in the earlier part of the period, found import wheats offered more cheaply and more plentifully than domestic wheats. In England, farmers' deliveries during August–November totaled 7,399 thousand bushels, a considerably smaller amount than in 1925 and 1926 when higher prices prevailed, but larger than in 1924 and 1927, when crops were late and contained much damp grain. In Germany, the percentage of the total winter-wheat crop remaining on farms on September 15 and intended for sale was 75.2 per cent, as compared with 71.0 per cent last year. Farmers in southern Italy appear to have chosen to store much of their wheat. In several other countries a tendency to market somewhat

slowly, though by no means with marked reluctance, has been observed.

The situation was peculiar in the Danube countries, especially Roumania and Hungary. Here early marketings after harvest were light. Later, however, as wheat prices, influenced by high prices for corn, stood higher than in world markets, marketings became more liberal. Thereupon large stocks of wheat seem to have accumulated at terminal markets, since wheat could not be exported freely while domestic prices remained relatively high. In Russia the collecting campaign was distinctly unsatisfactory in August, when grain was sought in the southern districts where crops were short; but September and October collections, largely from more northerly areas, compared favorably with those of 1927. Less grain has been collected than in 1926, when the largest exports of post-war years were made.

NORTH AMERICAN MARKETING

For the United States as a whole, there is no altogether satisfactory measure of the seasonal movement of grain from farms to market. Receipts at primary markets¹ during July–November, 358 million bushels, were the largest in eight years except 1924, and Murray estimates, on the basis of returns from correspondents, that 69.0 per cent of the "marketable" supply of wheat had moved from farms by December 1, as compared with 72.7 per cent in 1927 and a "normal" of 67.1 per cent. But statistics of receipts at primary markets are likely to be misleading, for three principal reasons: first, a much larger proportion of the spring-wheat than of the winter-wheat crop is normally sent to "primary markets"; second, wheat moving direct to Gulf ports and to Pacific ports escapes recording; and third, a variable part of the wheat shipped to terminals remains the property of the farmer-shipper. All of these factors have made for heavy receipts this year, without necessarily indicating rapid *sale* from the farms. In particular the export movement from Gulf and Pacific ports has been relatively small, size of tributary crops consid-

¹ See Appendix Table III.

ered; and an unusually large amount of this wheat has been moved to central terminal markets, thus swelling the figures for receipts.

All reports from the Pacific Northwest indicate that an unusual proportion of the crop remains on farms: although mills have bought heavily and some wheat has moved eastward by rail, exports have been exceptionally small, size of crop considered. In the hard spring-wheat belt, as may be judged with some accuracy by receipts at Duluth and Minneapolis, wheat has flowed freely to terminal markets, though not so freely as in 1927; but large numbers of farmers have taken storage tickets rather than cash payment, thus reserving the privilege of naming the date at which they choose to receive payment at the price on the day chosen. Much of the wheat received at country elevators has been moved forward by elevator operators under the protection of a hedge; but in the merchandising sense if not in the physical sense farmers are holding their grain. The situation is less clear in the central and southwestern states; here, apparently, marketing has been relatively more liberal, but probably not so liberal as statistics of receipts would seem to indicate. Non-statistical evidence thus suggests that, for the United States as a whole, farmers have been inclined to heed Secretary Jardine's advice,¹ or on their own initiative, to hold their wheat in order to obtain higher prices; but the tendency has not been strikingly pronounced.

Increasing use of the combined harvester-thresher apparently led to an early movement to terminal markets in the hard wheat belt—earlier than in any recent year except 1926-27. Of the quantity of wheat still on farms in this area, much is said to be bin-burnt as a result of combine harvesting of grain with high moisture content. In the hard spring-wheat belt, however, the early movement (late August and early September) was slightly delayed by rainy weather.

Canadian wheat moved from farms to market in exceptional volume during Au-

gust–November. Receipts at country elevators in the Prairie Provinces totaled 334 million bushels during the period, 26 per cent more than in any similar period of the past six years, and 116 million bushels, or 53 per cent, more than in 1927, when the late and rainy harvest period delayed the movement. Receipts at Fort William and Port Arthur totaled 197 million bushels as against the previous record figure of 170 million in 1923; and receipts of 31 million bushels at Vancouver and Prince Rupert were over 13 million larger than in any other year.² These huge receipts were of course in large part the result of the huge crop, but were due in part to exceptionally favorable harvesting weather and to increased facilities for transportation and storage. The movement from farms became large much earlier than in 1927 and somewhat earlier than in 1926, years when rain caused exceptional delay; but the weather appears not to have been more favorable in 1928 than in several earlier years.

VISIBLE SUPPLIES

Exceptionally high visible supplies of wheat have constituted one of the most notable features of the period under review. Chart 1 (p. 122) summarizes visibles in the United States, Canada, and afloat for Europe and in ports of the United Kingdom. Comparisons are shown with earlier years of exceptionally high visibles—1923-24, 1926-27, and 1927-28.

In the United States, the crop year began with relatively high visibles, largely as a result of restricted exportation during the latter half of 1927-28. The large crop, continued restriction of exports, and heavy receipts at terminal markets combined to cause the most rapid increase in visibles witnessed in many years, despite the fact that domestic milling demand was heavy and that mills accumulated more wheat than usual in their own storage elevators, thus removing it from the commercial visible. By the end of October visible supplies alone totaled 142 million bushels, nearly 45 million more than in 1927, previously the record post-war year; and approximately this level was maintained throughout November.

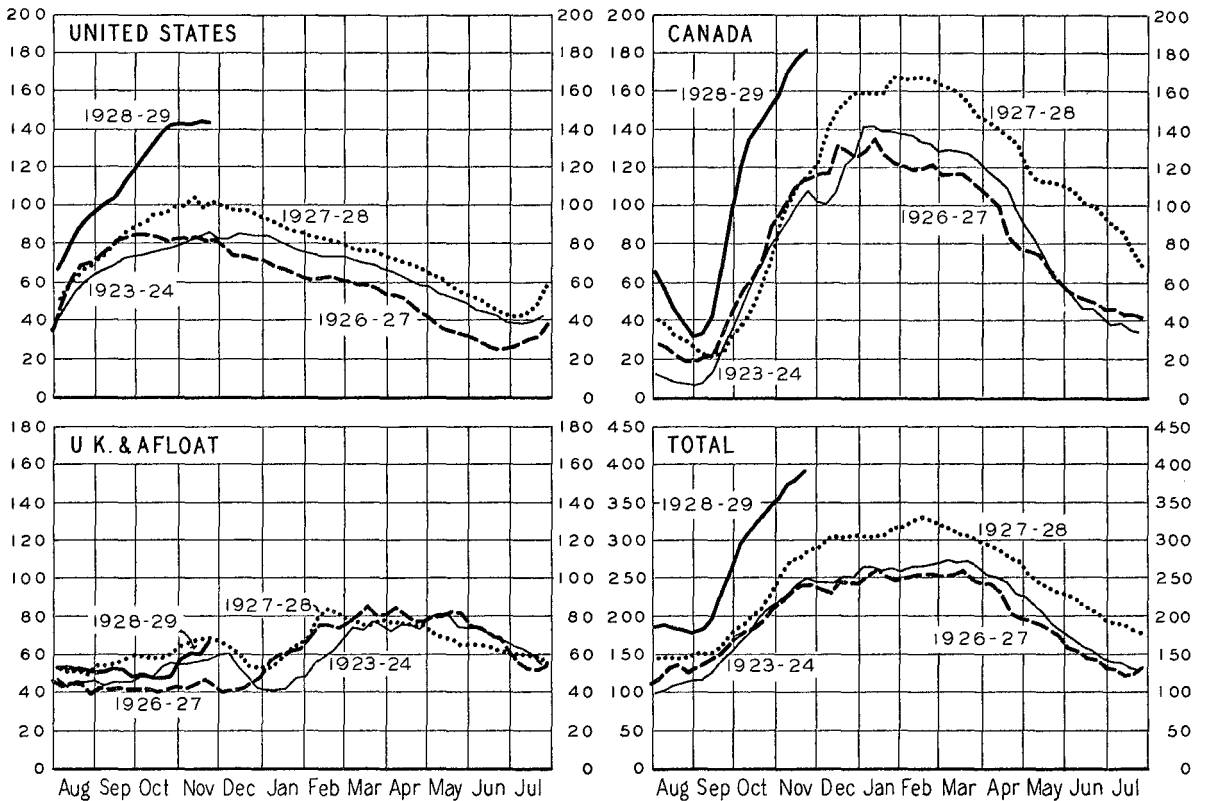
¹ See press releases of the U.S. Department of Agriculture, August 23, September 12, and October 27, 1928.

² See Appendix Table III.

At the end of November the increase in visible supplies over 1927 was distributed as follows among the principal points of

Boston, New York, Philadelphia, New Orleans, and Detroit, Indianapolis, and Toledo actually had smaller visibles this year than

CHART 1.—VISIBLE WHEAT SUPPLIES IN THE UNITED STATES, CANADA, AND UNITED KINGDOM PORTS AND AFLOAT TO EUROPE, WEEKLY, 1923-24, AND FROM AUGUST 1926*



* Data from Grain World and Canadian Grain Statistics.

accumulation, according to data of the Chicago Board of Trade, in thousand bushels:

Terminal	1927	1928	Increase
Buffalo	14,302	15,661	1,359
Chicago	6,563	13,190	6,627
Duluth	12,123	20,596	8,473
Kansas City	14,216	19,533	5,317
Minneapolis	20,081	29,692	9,611
Omaha	2,147	9,055	6,908
St. Louis	2,106	4,454	2,348
Wichita	3,697	5,706	2,009
Others	15,801	18,890	3,089
Total	91,036	136,777	45,741

Increases tended to be small at export terminals (except Duluth) and at terminals located in the soft red winter-wheat belt;

last. This concentration of supplies in interior markets and Duluth suggests that exports from lake ports, where navigation is closed, and from Atlantic and Gulf ports, will not assume large proportions during the winter months.

Canadian visible supplies also were exceptionally large on August 1, as a result of the late harvest and restricted exports in certain portions of the preceding year.¹ They were rapidly reduced during August and September by exports unusually heavy for these months, but failed to reach as low a point as in earlier years. The heavy marketings led to the most rapid increase in history, despite a record export movement in each of the three months September-

¹ See WHEAT STUDIES, December 1928, V, 64.

November. By the end of November the Canadian visible had reached 184 million bushels, some 60 million or 49 per cent more than in 1927, the next highest year.

The distribution of these stocks, with comparisons for earlier years, is shown in Table 4. Stocks at all points except Fort William and Port Arthur were distinctly larger than in any of the preceding five years; but the extraordinarily heavy movement appears not to have resulted in decided congestion at any point except country elevators. Interior and country elevators showed the greatest increase in stocks over 1927, some 32 million bushels out of the

TABLE 4.—CANADIAN GRAIN IN STORE LATE IN NOVEMBER, 1923-28*

(Million bushels)

Day nearest November 30	Total	Country elevators Western Division	Interior elevators	Fort William, Port Arthur	Vancouver elevators	Public elevators in the East	U.S. lake and Atlantic ports
1923..	101.6	52.7	.5 ^a	19.8	.8	11.5	16.3
1924..	73.7	24.3	2.5 ^a	25.6	1.3	10.2	9.8
1925..	104.6	44.6	5.8	12.5	5.0	19.0	17.7
1926..	116.1	35.4	7.5	24.6	7.1	15.3	26.2
1927..	123.8	46.2	6.5	13.7	6.5	19.6	31.3
1928..	184.1	68.9	16.3	24.8	9.4	29.5	35.2

* Compiled from *Canadian Grain Statistics*, and adjusted to bring country elevators in Western Division and interior private and manufacturing elevators into the proper week. Stocks at Prince Rupert included in Vancouver figures.

^a Figures prior to 1925 are less comprehensive than for later years.

total of 60 million. Nevertheless, considerably more wheat was available for overseas shipment at the close of lake navigation this year than last; stocks at Vancouver, lake, eastern ports, and the Atlantic seaboard were fully 17 million bushels larger than in 1927.

Unlike stocks in the United States and Canada, visibles afloat and in ports of the United Kingdom have not run exceptionally high, except during August and again in late November, in both instances as a result of exceptional shipments from Canada.

Total visibles, influenced as they are by North American figures, have for the first time in history exceeded 350 million bushels, and indeed approached 400 million at the end of November.¹ This quantity of wheat is enough to supply the needs of im-

porters for about six months in a normal year; and such huge supplies in commercial channels have contributed to create a buyers' market. Importers have been able to purchase at a leisurely rate if they so desired, and at other times to purchase heavily without encountering the usual risk of increasing prices sharply. Their position has been further eased by the emergence of unexpectedly large stocks in Argentina, and pressure of offers of old-crop wheat from that country. The Argentine exportable surplus was officially estimated as only 15.5 million bushels as of October 11, but unofficial estimates, based upon direct enumeration of stocks rather than arithmetical calculations of crop minus exports and consumption, were nearly three times as large.² The unofficial estimates appear to have been corroborated by subsequent heavy shipments³ as well as by noteworthy pressure of offers of old-crop wheat to European importers. Year-end stocks in Australia proved large enough to provide more than the usual volume of exports in August-November.

All told, stocks of wheat in the leading exporting countries have run so extraordinarily high by comparison with earlier years that detailed analysis of the differences is unnecessary.

UNITED STATES MILL STOCKS

Visible supply statistics for Canada approximate the total amount of wheat available in Canada aside from farm stocks much more closely than do visible supply statistics for the United States; they include wheat in country elevators and in mill elevators as well as wheat in terminal elevators, while American statistics do not. The huge stocks of wheat in the United States are made more striking by adding to visible supplies the stocks held by city

¹ A different statement of visibles, including small quantities in Argentina and Australia, shows supplies of 459 million bushels on December 1, as compared with 347 million in 1927, when visibles were previously highest for that date. See date in Appendix Table V.

² See *Times of Argentina*, October 29, 1928, p. 30.

³ From October 13 to December 1, Argentine shipments totaled 23 million bushels. See Appendix Table VIII.

mills, either in their own elevators, in country elevators, or in transit. As of September 30, according to census reports, such stocks totaled 127 million bushels in 1928, as against 100 million in 1927 and 104 million in 1926. Mill stocks probably did not decline in October–November, and were perhaps at least 20 to 30 million bushels larger on December 1 this year than last, despite the fact that flour output ran higher this year than last in July–October. This

year flour buyers purchased heavily in the early months;¹ and mills, after hedging their sales by purchases of futures, transferred their futures rather rapidly into cash wheat. All told, therefore, wheat stocks as of December 1 were exceptionally high not only in terminal elevators, but also in flour mills. The evidence is less clear concerning stocks on farms and in country elevators, but in these positions also stocks are presumably large.

III. INTERNATIONAL TRADE

According to Broomhall's shipments data as summarized in Table 5, the volume of international trade in wheat and flour was of record size for the first 17 weeks of the crop year. Some 285 million bushels were

TABLE 5.—INTERNATIONAL WHEAT AND FLOUR SHIPMENTS (BROOMHALL), AUGUST–NOVEMBER, 1921–28*
(Million bushels)

Aug.–Nov.	To Europe				To ex-Europe	Grand total
	To U.K.	To Continent	To orders	Total		
1921	56.0	97.5	31.1	184.6	32.8	217.4
1922	55.9	112.3	21.0	189.2	29.6	218.8
1923	59.2	97.6	20.7	177.5	44.4	221.9
1924	66.5	114.0	47.8	228.3	26.7	255.0
1925	50.0	94.4	22.3	166.7	40.8	207.5
1926	54.2	117.2	24.9	196.3	36.5	232.8
1927	60.1	130.1	30.7	220.9	31.1	252.0
1928	57.8	148.2	26.1	232.1	53.1	285.2

* Shipments are for 17 weeks, from Broomhall's *Corn Trade News*.

shipped overseas from the leading exporting countries, 30 million bushels more than in 1924, and 33 million more than in 1927. Despite the fact that shipments data omit certain overland exports from the Danube

¹ A bulletin issued by the Millers' National Federation on November 6, 1928, gives flour sales as reported by mills having the indicated capacity as follows for the three months ending September 30, in thousand bushels:

July–September	Daily capacity	Flour sales
1926	363.3	33,283
1927	335.1	27,941
1928	401.4	41,361

The relation of flour sales to capacity for three months was 122.1 per cent in 1926; 108.3 per cent in 1927; and 133.8 per cent in 1928.

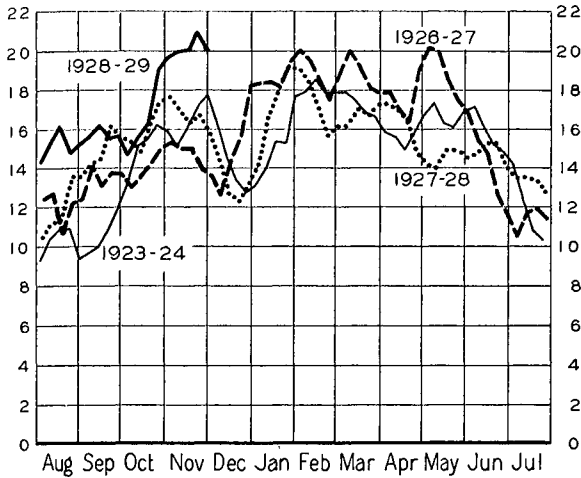
² See Appendix Table VII.

countries and are apparently more comprehensive in recent than in earlier years, the record size of the international movement is apparent. The relatively low and comparatively stable level of wheat prices, the concentration of supplies in exporting countries, and the relatively large requirements of importers account for the heavy movement, despite the fact that European crops were harvested somewhat early and in good condition. By contrast with 1923, trade was heavy this year not because European countries had smaller wheat crops or because prices were lower, but because in Europe generally population, purchasing power, and a taste for white bread all have grown in the interval. By contrast with 1927, trade was heavier this year principally because prices were lower; two-thirds of the increase appears to be accounted for by increased shipments to ex-European countries, which tend to be more responsive to price changes than European countries are. In 1926, an abnormally high level of ocean freight rates tended to curtail the August–November movement.

The course of shipments, in terms of three-week moving averages of weekly data, is shown in Chart 2 for 1923–24, 1926–27, 1927–28, and 1928–29 through November. The usual seasonal trough of July–August was much less marked than usual this year on account of the exceptional exports from Canada out of her record year-end stocks. In November, with Canadian exports moving in unprecedented volume, the usual seasonal peak of shipments became higher than ever before. In the week ending November 24, Broomhall recorded shipments of 22 million bushels,² the highest in history.

CHART 2.—INTERNATIONAL SHIPMENTS OF WHEAT AND FLOUR, WEEKLY, 1923-24, AND FROM AUGUST 1926 TO NOVEMBER 1928*

(Million bushels; 3-week moving average)



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

DISTRIBUTION OF IMPORTS

As usual, a satisfactory insight into the distribution of imports cannot be obtained at this season of the year. Official statistics of net imports of European countries are not available for November, nor of ex-European countries except Egypt and Japan for any month. One must depend chiefly upon Broomhall's shipments data, which do not provide altogether trustworthy comparisons, especially with regard to ex-European trade in earlier years.¹

Shipments to the United Kingdom, 57.8 million bushels, were below those of 1927, 1924, and 1923, but by no means distinctly small. Net imports (including those of the Irish Free State) during August–November totaled about 67 million as against 82 million last year. Since the August and September figures rather than those of October and November were relatively low, the decline was presumably due partly to the early harvest and good condition of the native wheat crop, and partly—in August at least—to a tendency to restrict purchases on a falling market.

Broomhall's data on shipments of wheat

and flour, in million bushels, by continental European countries of destination, are as follows for August–November in the past two years:

Country	1927	1928
France	12.0	14.6
Belgium	24.6	18.1
Holland	30.4	29.4
Germany ^a	24.6	27.2
Italy	20.3	27.8
Greece ^b	5.0	8.0
Scandinavia	7.2	7.8
Austria ^c	4.8	5.1
Spain ^d	1.1	10.1

^a Includes also Poland and Czecho-Slovakia.

^b Includes Turkey.

^c Includes Malta.

^d Includes Spanish colonies and Portugal.

These data do not disclose the full quantities of wheat carried to the designated destinations, for each country presumably secures some of the wheat and flour reported as shipped to orders. Nevertheless they serve roughly to indicate, if supplemented by official net import statistics appearing in Appendix Table VI, which countries have absorbed the record quantities of wheat exported to Europe in August–November 1928. All these countries except Belgium and Holland appear to have taken more wheat and flour this year than last. Net export statistics for August–October do not altogether support this conclusion. Belgium and Holland were net importers of almost the same quantities in the two years; the decline in shipments to these countries perhaps represents a decline in the transit trade. German net imports, probably as a result of her large crop, were somewhat smaller this year than last. Under the import certificate system, Germany has exported considerable quantities of wheat to England, France, Italy, and other countries this year; hence shipments of foreign wheat to Germany to replace these exports may partially account for the fact that Broomhall's shipments to Germany exceed those of last year.

Net import and shipment data alike confirm larger takings in Czecho-Slovakia, Poland, Austria, and the Scandinavian countries; in these countries low prices of wheat and relatively high prices of feed-stuffs seem already to have encouraged heavy importation of wheat. Somewhat the

¹ For comparisons of official net export data with Broomhall's shipments data, see *WHEAT STUDIES*, November 1927, IV, 11, and August 1928, IV, 340.

same situation prevails in Italy, where the corn crop is short; but the exceptionally heavy imports of the first four months of 1928 in the face of a large domestic wheat crop, were perhaps due in part to the tendency of farmers to hold their wheat, thus keeping domestic wheat prices out of line with foreign wheat prices until the duty was increased on September 12 from 7.5 to 11 gold lire per quintal.

The marked increase in shipments to Greece and Turkey was probably due to a notably short wheat crop in Asia Minor. This year Spain and Portugal, where crops were decidedly short, have apparently taken nearly ten times as much wheat and flour as in 1927. The short crop in Spain induced the government to permit admixture of 30 per cent of imported wheat with the native after September 26; and the figure was raised to 50 per cent on November 11.

Broomhall reports total shipments to ex-European countries in August–November as 53 million bushels, nearly 22 million more than in 1927, and some 9 million more than in 1923–24, the year when post-war prices were lowest and the volume of ex-European trade for the year as a whole reached record proportions. By destination, shipments to ex-Europe in the first 17 weeks of 1927–28 and 1928–29 were reported as follows, in thousand bushels:

Destination	1927–28	1928–29
Central America ^a	11,184	20,624
China and Japan.....	6,600	11,280
Brazil	8,520	9,648
Egypt	2,856	4,872
North and South Africa..	1,544	2,192
Chile	56	....
India	56	3,744
Syria	152	440
Peru	112	128
Palestine .....	....	128

^a Includes also Venezuela, West Indies, Dutch East Indies, etc.

The striking features of this tabulation are the heavy shipments to "Central America," to China and Japan, to Egypt, and to India, though increases of minor significance appear with respect to all other countries. Broadly speaking, increases in ex-European imports are to be ascribed to lower prices, especially of flour. But the heavy imports of Japan and China reflect also the poor quality of the Japanese wheat crop, a poor

rice crop in China, and apparently a short wheat crop in the province of Shansi and parts of Chihli, tributary to the port of Tientsin. Egypt requires more wheat this year than last because her domestic crop is smaller; and the same is true of Syria and Palestine. Shipments to India of 3.7 million bushels may be taken to represent net imports, for shipments from India have been negligible on account of her short crop. This year India has imported from Canada and Argentina, but Australia remains the major source of her imports.

SOURCES OF EXPORTS

The movement of wheat and flour from exporting countries during August–November 1928 was in several respects distinctly unusual. Table 6 summarizes Broomhall's shipments data, together with official net export data for the four principal exporting countries. Canadian exports bulked exceptionally large; her net exports reached 189 million bushels, as compared with the previous high figure of 129 million in 1922.¹ This was the result partly of the exceptionally large carryover out of 1927–28, which made net exports in August and September, 60 million bushels, the largest in history by some 23 million bushels; and partly of the large new crop and heavy marketings, which permitted November net exports to reach the record total of 81 million bushels. October exports, though the largest recorded, show a less marked contrast with earlier years. The exports of August–November were of record size with respect to flour as well as to wheat, and from Pacific Coast ports as well as from Atlantic and lake ports.

Argentina also exported a larger quantity than in any of the past seven years—some 41 million bushels as compared with only 22 million in 1927 and 32 million in 1923, previously the year of record movement. This heavy movement resulted from heavy stocks on August 1 following the record crop (officially underestimated) of 1927, in

¹ Not all of these net exports, however, pass overseas in August–November. The quantity of wheat held in lake and Atlantic ports of the United States, while recorded as a net export from Canada, is built up between August 1 and November 30; and some of the Canadian net export of wheat goes to the United States for milling in bond.

combination with prospects for another large crop in 1928.

Australia exported a relatively large quantity for the season, though less than in 1923. It is of interest to observe that the crops of 1922 and 1927, although the two smallest of post-war years, permitted the largest August–November net exports following their harvest. Such heavy exports in August–November 1928 suggest that stocks on August 1 must have stood at a rather high level, as in 1923.¹ In years of low prices, Australian farmers apparently tend to market slowly immediately after a

tended to restrict their marketings. But this year the crop is 100 million bushels larger, farmers have marketed their wheat more freely, and visible supplies have run much higher; and since domestic use of wheat for seed, human consumption, and animal feed appear not to have increased in the interval of years by more than half of the increase in the crop, at most, the smallness of the August–November exports is surprising. Exports have been restrained, of course, by prices maintained above a free export basis; and prices seem to have been supported by active mill buying and the

TABLE 6.—INTERNATIONAL SHIPMENTS AND NET EXPORTS OF WHEAT AND FLOUR FROM PRINCIPAL EXPORT AREAS, AUGUST–NOVEMBER, 1922–28*

(Million bushels)

Aug.–Nov.	International shipments (Broomhall)								Net exports from			
	Total	North America	Argentina	Australia	Russia	Balkans	India	North Africa and Chile	United States	Canada	Argentina	Australia
1922	218.8	183.6	24.8	7.2	....	2.4	.8	....	106.2	128.8	27.3	7.3
1923	222.0	151.2	32.0	14.8	8.8	10.4	4.8	....	64.3	126.2	31.5	18.0
1924	255.2	201.6	24.4	12.4	.4	4.0	12.4	....	149.0	76.0	26.7	14.7
1925	207.6	145.6	18.4	10.4	11.2	9.2	1.6	11.2	35.2	123.9	20.3	12.2
1926	232.8	183.2	7.2	5.6	16.0	15.2	2.4	3.2	104.8	109.3	7.8	6.8
1927	252.0	195.2	20.8	13.6	4.0	12.0	3.2	3.2	126.1	112.9	21.7	12.2
1928	284.8	213.6	35.2	16.0	....	14.0	....	6.0	75.4	189.0	40.6 ^a	16.0 ^a

* Shipments figures are Broomhall's cumulative totals for 17 weeks from the *Corn Trade News*. These totals for the Balkans, Russia, North Africa, and Chile, do not agree with the weekly data given in Appendix Table VII. Net exports are official data.

^a November net exports estimated from Broomhall's shipments data.

short crop, and to release their wheat later if and when new crop prospects are good.

The United States, with a crop of over 900 million bushels, the largest since 1919, exported only 75 million bushels of wheat and flour in the first four months of the year. Smaller exports were made in 1925, when the crop of about 700 million bushels was distinctly short and prices of representative wheats were thereby raised above an export basis. In 1923, when the crop was about 800 million bushels, August–November exports totaled 64 million bushels. The situation then was similar to that in 1928: Canada and Argentina harvested huge crops, wheat prices throughout the world were distinctly low, and American farmers

unusual shortage of soft red winter wheat.² Whether these influences will be modified so that prices will decline and exports increase beyond their normal seasonal levels, or whether prices will remain firm, exports continue relatively small, and stocks be maintained at extraordinarily high levels, is perhaps the most interesting problem in the outlook at the date of writing. In so far as the year 1923–24 provides a criterion, the latter course of events seems the more probable; but it must be remembered that the present crop year differs from 1923–24 in that the weight of supplies seems somewhat heavier.

The outstanding fact requiring emphasis this year is that the United States is a country in which domestic conditions of demand are capable of exerting a more profound influence than they are in Argentina, Australia, or Canada, so that prices at least

¹ See Appendix Table X; cf. WHEAT STUDIES, December 1928, V, Appendix Table XXXI.

² See below, p. 132.

of some grades of wheat may be maintained above export parity for long periods, even in years of abundant crops. Important contributing factors are relatively ample storage space, agricultural development involving less production of wheat as the sole cash crop of farmers, and the existence of a tariff on wheat.

Precisely what classes of exports have been most affected by the general situation is not yet entirely certain. Thus far in the crop year, exports of flour have been relatively small—the smallest, indeed, in six years, 1925–26 excepted. Clearly the amount of soft red winter wheat available for export has been negligible in view of the short crop. Exports of flour from Pacific Coast customs districts, however, have run exceptionally high because low prices have stimulated purchases for China. Exports of soft wheats from the Pacific Northwest have been curtailed by demand from soft wheat millers in the East to supplement the short crop of soft red winter, and also by local milling demand and by a tendency for farmers to hold their wheat. All told, exports of all flour and of Pacific Coast wheats account for about 36 million bushels of the total American net exports of 75 million during August–November. The balance of 39 million bushels has probably consisted largely of durum. Size of crops considered, exports of all classes of wheat with the possible exception of durum seem to have been unusually small, and even durum perhaps moved less freely than it

would have done if excellent crops had not been harvested in northern Africa, southern Italy, and Canada.

Little need be said of the exports of minor exporting countries aside from mention of their small size in absolute terms. According to Broomhall's figures, Russia has made no shipments whatever, though from other sources it appears that a trifling quantity of Siberian wheat shipped from the port of Archangel appeared in England. The concentration of the large Russian crop in the northerly districts apparently precludes exportation; and importation may occur if extreme difficulties arise in collecting grain in these regions and transporting it west and south to consuming centers. India also has exported practically nothing, and indeed has been a net importer; her short crop of 1928 followed three mediocre crops. The Danube countries have exported fairly liberal quantities (14 million bushels according to Broomhall's data, rather more so far as can be judged by incomplete statistics of net exports);¹ but the quantities are small in relation to the reported record wheat crops. High prices of feed grains, due chiefly to the short corn crop, have apparently encouraged the use of wheat as food and feed and curtailed exportation; and farmers have been reluctant to sell at prevailing prices. Chile and the French dependencies of northern Africa have exported liberal quantities from their ample crops, but only a small fraction of world shipments.

IV. WHEAT PRICE MOVEMENTS

THE LEVEL OF WHEAT PRICES

Cash wheat prices in the leading markets of the world, in the four months here under review, reached the lowest levels recorded in any year since the beginning of the war, 1923–24 alone excepted. This is partially illustrated by Table 7, which shows August–November averages of selected series of prices in the four great exporting and the four leading importing countries, and of international (British parcels) prices.

As we have previously had occasion to point out, prices do not change their levels from year to year to the same extent in different countries. Thus international

prices were higher in August–November 1926 than in any other of the six years, but this was because high ocean freight rates increased c.i.f. prices rather than because the international statistical position was relatively tight. Weighted average prices in the United States were highest in 1925, being affected by an unusually short crop, the influence of which was accentuated because of tariff protection. Argentina had exceptionally high prices in 1925 because the oncoming crop promised poorly.

¹ Net exports from Roumania and Jugo-Slavia in August–September, and from Hungary in August–October totaled 12.8 million bushels.

French prices were relatively low in 1925 because her crop was so large that the tariff was only partially effective.

TABLE 7.—AVERAGE WHEAT PRICES IN LEADING EXPORTING AND IMPORTING COUNTRIES, AUGUST–NOVEMBER, 1923–28*
(Cents per bushel)

	1923	1924	1925	1926	1927	1928
British parcels..	120	167	163	168	155	129
United States...	106	136	151	137	129	108
Canada	96	143	138	135	132	109
Argentina	108	152	160	158	142	119
Australia	104	138	144	152	136	117 ^a
Great Britain...	112	152	145	158	144	126
France	134	159	151	181	159	160
Germany	100	140	145	174	166	141 ^b
Italy	109	162	194	207	179	181 ^b

* For importing countries, Argentina, and Canada, prices are from sources noted in Appendix Tables IX and X. British parcels, United States, and Australian prices from sources described in note to Chart 3.

^a August–September average.

^b August–October average.

Even with these qualifications, August–November 1923 and 1928 stand out as periods of distinctly low prices. International prices and prices in all four of the leading exporting countries have run distinctly lower in these two years than in any others of the six; and this is true also of British prices of domestic wheat, which are less influenced by changes in the domestic crop or by tariff regulations than are prices in France, Germany, and Italy. In these three countries, largely because tariffs have been raised from year to year, prices in 1928 compare less unfavorably with those of the preceding years; and the comparison would probably be still less unfavorable had not prices in 1926 been raised fortuitously because extraordinarily high ocean freight rates created an exceptional temporary demand for native wheats. Moreover, the average prices of native European wheats in 1928 would presumably be higher if data for November were available, for the seasonal movement is upward.

Chart 3 (p. 130) gives further comparisons; prices in the international market and the leading exporting countries during August–November 1928 are contrasted with prices in 1923–24 and 1927–28. In Great Britain, the United States, Canada, Argentina, and Australia alike, prices have ruled

much lower than during any period of 1927–28 except the last week of the crop year. On the whole the level of recent prices is above that which prevailed in 1923–24 until the closing months, though not so far above this level as it is below the level of 1927–28. Some exceptions appear. Weighted average prices in six markets of the United States during September and October were below the level of the same months of 1923, and to a lesser degree this was true of the prices of No. 2 Hard Winter in Kansas City. In 1923–24 the United States crop was smaller, and the country appears to have been nearer to a domestic basis. The prices of No. 3 Northern Manitoba at Winnipeg, at least in late October and November 1928, were closer to the prices prevailing in 1927 than to those prevailing in 1923; for in 1923 No. 3 wheat was one of the three higher grades which were extremely plentiful, while this year those grades are relatively scarce. A weighted average Canadian price, in which sales of the large quantities of Nos. 4–6 wheat exerted their influence, would presumably show the level of Canadian prices to be little above that of 1923. Prices of Barletta wheat in Buenos Aires, which in August were about midway between 1927 and 1923 prices, were much closer to 1923 prices in November. In 1923 the usual seasonal advance occurred toward the end of the year; but this year it was apparently counteracted by the presence of exceptionally large exportable stocks.

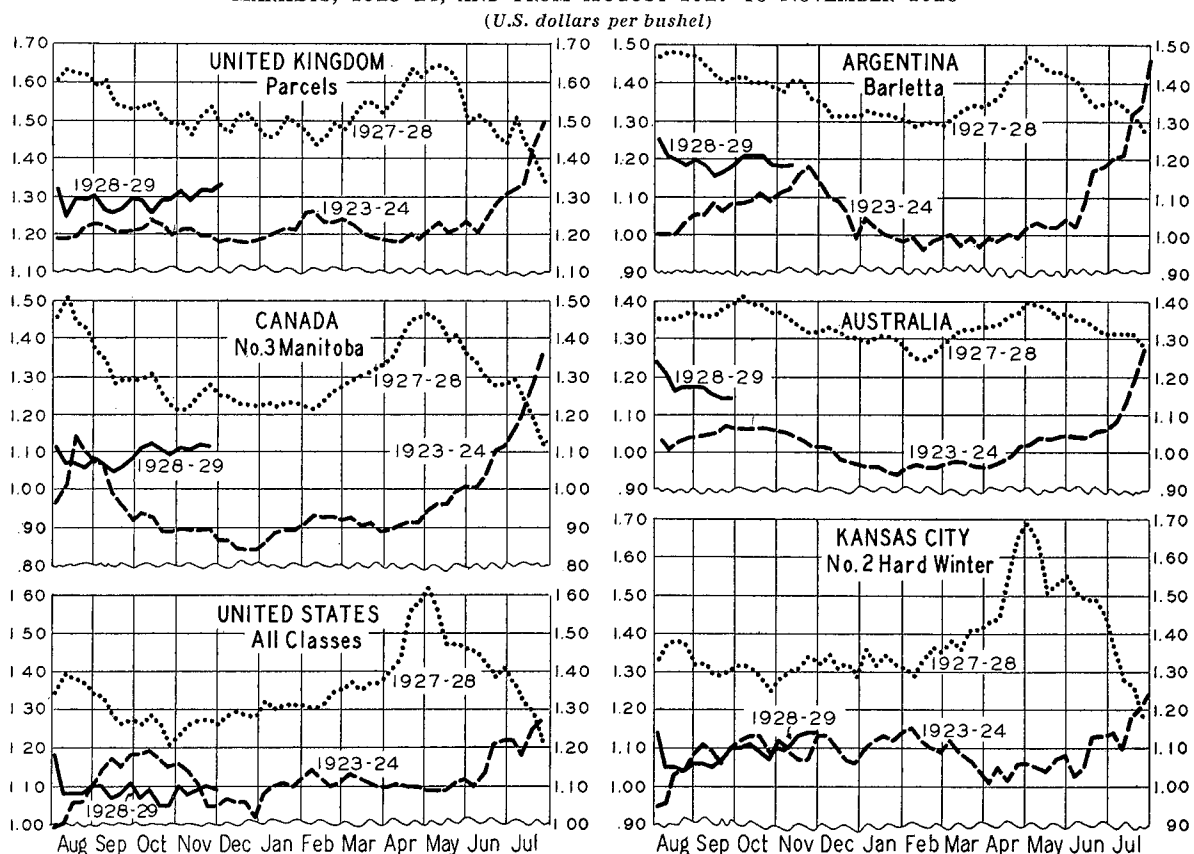
In our judgment the low level of prices thus far in the crop year 1928–29 is a natural reflection of an easy international statistical position, certainly the easiest of any of the past six years except possibly 1923–24. Comparisons of the differences between 1923–24, 1927–28, and 1928–29 are given further consideration below.

With wheat prices generally so low, producers in many countries have complained. In response, little specific governmental action has been taken. In Italy the tariff was increased; and in late October the regulation requiring that millers obtain an extraction of 82 per cent was withdrawn. French producers have requested relaxation of restrictive milling regulations, and admixture of rye with wheat by millers was

rendered optional in early December. In Argentina there has been agitation for governmental fixation of minimum prices, and the President has exhorted grain traders to attempt to secure higher prices for Argentine wheat. On the whole, price-raising tactics seem to have been confined chiefly to

November. Chart 4 shows daily fluctuations in futures prices at Liverpool, Chicago, Winnipeg, and Buenos Aires; the movements of cash prices appear in Chart 5 (p. 133) and in Appendix Tables VIII and IX. In Italy, as usual, the seasonal tendency of domestic wheat prices was upward after

CHART 3.—WEEKLY AVERAGE PRICES OF REPRESENTATIVE WHEAT IN LEADING EXPORTING AND IMPORTING MARKETS, 1923-24, AND FROM AUGUST 1927 TO NOVEMBER 1928*



* United Kingdom prices are averages of sales of wheat parcels in British markets, from *London Grain, Seed and Oil Reporter*; Canadian prices are weekly average cash closing prices of No. 3 Northern Manitoba at Winnipeg, from *Canadian Grain Statistics*; United States prices are weighted averages of all classes and grades of wheat in six markets (five markets in 1923-24) and No. 2 Hard Winter at Kansas City, from *Crops and Markets*; Argentine prices are Friday quotations from *International Crop Report and Agricultural Statistics*, for 1923-24, and averages of daily prices from *Revista Semanal* from August 1927; Australian prices are averages of weekly quotations for export wheat at Melbourne furnished directly by an Australian correspondent.

restricted marketing by farmers, and, in the United States at least, to reduction of winter-wheat acreage sown for the crop of 1929. Acreage may have been reduced also in western European countries, especially France; but the evidence is not yet clear.

THE GENERAL COURSE OF PRICES

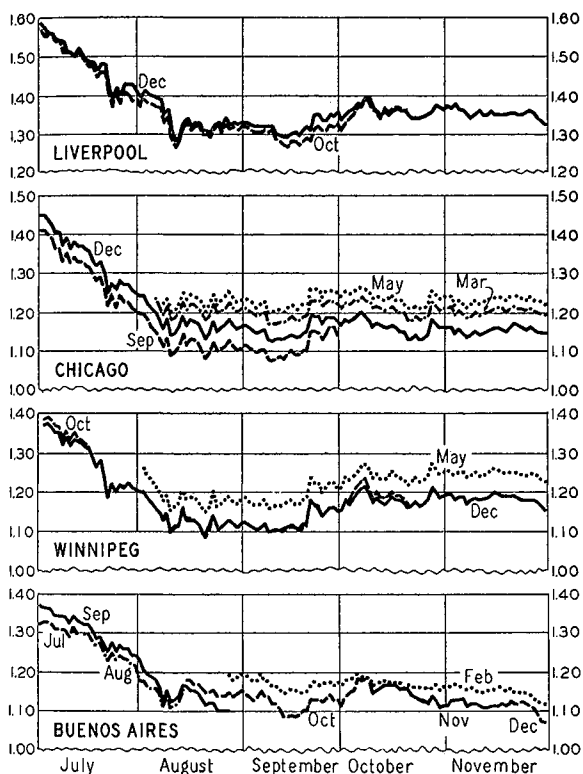
Wheat prices in most important markets showed no decided trend during August-

the low level was reached in August, following heavy marketings. In England, France, and Germany, where harvest is later, the low point for the four months was reached in September.

The relative stability of futures prices was the outstanding feature of the period; it is seldom indeed, in a period ordinarily characterized by uncertainty regarding outturns in the North American spring-wheat

belt and in many European countries, that futures prices fluctuate within such narrow limits. This year Canadian crop developments were so consistently favorable that a large crop appeared distinctly probable as early as July. The crop approached maturity rather early, so that fears of frost damage were less prevalent than usual, and rust was never in evidence sufficiently to

CHART 4.—DAILY CLOSING PRICES OF PRINCIPAL WHEAT FUTURES IN FOUR LEADING MARKETS, JULY–NOVEMBER 1928*
(U.S. dollars per bushel)



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

cause alarm. In Europe and in the United States all early indications of large crops were substantiated by subsequent developments. On the other hand, general expectations were not raised appreciably, since the August–September drought in Australia and the unexpectedly poor grading of Canadian wheat in September and October served roughly to offset favorable developments elsewhere.

The principal movements common to

prices in all four of the leading futures markets were a sharp decline in early August, and a moderate upswing from mid-September to early October. The August decline was a continuation of the sharp break begun early in May. With the crop outlook improving from week to week, practically throughout the Northern Hemisphere, and with the large Canadian stocks pressing upon the world markets, some such decline was inevitable. It was checked on August 13 and 14 partly by the appearance of the official Canadian report of condition, which was interpreted by some to indicate a crop of only 450 million bushels in the Prairie Provinces, as compared with generally expressed belief that nearer 550 million bushels would be harvested; and partly by forecasts of a frost in Canada. Again on August 22 and 23 frosts in Canada gave rise to a bulge in prices, but for a time thereafter movements were slight in all markets.

After September 10, however, the tendency was slightly upward; and a sharp upturn, amounting to as much as 6 cents in Winnipeg, occurred on September 21. Nothing appeared in the news of the day respecting an alteration in the crop outlook; and the upturn appears to have been due to nothing more tangible than a general tendency for short sellers to "cover." One cannot ascertain what caused this short covering—continued reports of drought in Australia, or low grading of new Canadian wheat, or a rumor that a prominent Chicago speculator had "gone long." After a brief reaction, the advance continued; since it was more marked in Winnipeg and Liverpool than in Chicago, we infer that the poor grading of wheat in Canada was the principal cause. The spread between cash prices of No. 1 and No. 6 Northern Manitoba at Winnipeg, 29 cents on September 10, had widened to 42 cents on October 6, when the advance was checked; the grading of new-crop receipts suggested that grades deliverable on futures contracts would be less plentiful than had been supposed, and futures prices tended as usual to move with the prices of deliverable grades. Prices fell sharply on October 8, following the issuance of the Northwest Grain Dealers' Association's estimate of a

crop of 558 million bushels for the Prairie Provinces; and thereafter prices tended to sag. A temporary upturn occurred on October 27, most marked in Chicago. For this advance, so far as one can learn from the trade press, no better reason appears than further short covering, in this instance perhaps induced by Mr. Hoover's announcement of his intention, if elected, to convene a special session of Congress to deal in part with farm relief, or perhaps by Secretary Jardine's statement further urging farmers to hold their wheat, or perhaps by news of drought in the Bahia Blanca region of Argentina.

Many American traders expressed surprise at the firmness of prices during September–November in the face of what was termed bearish news. But in retrospect the general situation, at least as applied to markets outside the United States, appears not to have grown distinctly more bearish after mid-August except as concerns the increase of visible supplies in North America. If crop prospects improved in some countries, they deteriorated in others.

The firmness of prices in the United States in the face of her huge crop is another matter. That prices of representative wheats remained high relative to foreign markets is sufficiently obvious from the fact that such wheats could not be exported in a volume proportionate to the size of the crop; similar wheats could be obtained more cheaply elsewhere. But they could not consistently have been obtained more cheaply elsewhere if some factor had not tended to restrain American prices from declining. Two factors seem to have operated. Exceptionally heavy purchases by domestic mills kept prices of hard red winter wheat out of line with prices of comparable Canadian and Argentine wheats, especially in July and August; this was possible partly because the Canadian and Argentine carryovers were exceptionally large and importers were able to satisfy their demands in those markets. Again, the short crop of soft red winter wheat gave rise to an unusual demand for substitute soft wheats from the Pacific Northwest, and raised prices there out of line with foreign markets. The tendency of farmers to market their wheat slowly seems to have been a contributory factor of some importance.

Throughout August–November, speculative activity as measured by the average daily volume of futures trading remained at a relatively low level, at least in the United States,¹ and so far as can be determined, in foreign markets as well. The persisting bearishness of the supply situation has discouraged speculation everywhere, as was the case in 1923 and to a lesser extent in 1927. Trading in stocks and perhaps in corn may have appeared to many as more attractive than trading in wheat. The relatively small volume of trading may perhaps be said to have contributed to the stability of wheat prices; but inactive trading was probably a reflection of the consistently bearish statistical position which caused stability of prices, rather than an independent factor which directly tended in any appreciable degree to minimize price fluctuations.

The relations of near and distant futures in the several markets showed few peculiarities. Most striking, perhaps, were the discounts of near futures under the distant in Buenos Aires, an unusual situation reflecting the abundance of old-crop wheat in the closing months of the Argentine crop year. With visible supplies exceptionally heavy, the discounts of near futures under distant ones were also unusually large in Chicago. The October future in Winnipeg usually commands a higher premium over the December than was true this year, a circumstance probably due to the fact that early harvest assured plentiful supplies of wheat for delivery on October contracts. The premium of the Winnipeg May over the December was also larger than usual, a reflection of the exceptional quantity of wheat which must be carried in Canada throughout the winter months.

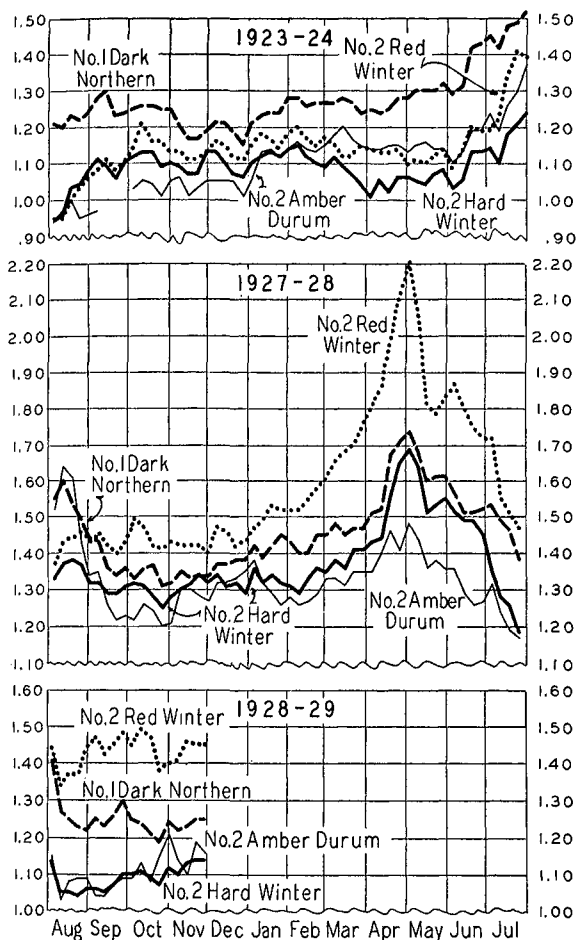
UNITED STATES CASH PRICES

Cash wheat prices of four important types of American wheats for the years

¹ The average daily volume of future trading in all United States markets in the four months of the period has run as follows in the past six years, in million bushels:

	August	September	October	November
1923.....	31	28	30	27
1924.....	50	43	61	61
1925.....	60	59	60	65
1926.....	47	46	44	53
1927.....	42	37	37	35
1928.....	42	34	35	33

CHART 5.—WEEKLY AVERAGE CASH PRICES OF TYPICAL WHEATS IN UNITED STATES MARKETS, 1923-24, AND FROM AUGUST 1927*
(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*.

1923-24, 1927-28, and the first four months of 1928-29 are shown in Chart 5. This year, as in 1927-28, No. 2 Red Winter has commanded high premiums on account of the distinctly short crop. No. 1 Dark Northern has commanded about the usual premium over No. 2 Hard Winter, though rather a larger one than in the early months of 1927-28. In 1927 the spring-wheat crop was of about the same size as in 1928, but the winter-wheat crop was smaller. No. 2 Amber Durum has been sold at relatively higher prices this year than last at least in some weeks, despite a larger crop this year; but the price of this grade of amber durum does not reflect the average price of the durum crop, because amber durum of good color is scarce and is commanding considerable premiums over red durum and poorer qualities of amber durum.

In 1923-24 hard spring wheat, not soft red winter, was the premium variety; the crop of spring wheat was smaller than in 1928, that of soft winter larger. It is interesting to observe that, while weighted average cash prices in the United States as a whole were lower in September-October 1923 than in the same months of 1928 (see Chart 3, p. 130), this was not true of any of the four grades shown in Chart 4. Possibly a relatively larger volume of sales of lower grade wheats in 1928 than in 1923, particularly of durums, accounts for the anomaly; but the fact that weighted average prices are built up from sales in six markets in 1928 and five markets in 1923 may also be significant. Prices tend to be relatively low in Omaha, the sixth market.

V. THE INTERNATIONAL POSITION AND OUTLOOK

Evaluation of the international statistical position is essential in forming opinions respecting the outlook for international trade, world prices, and carryovers for ensuing months and the crop year as a whole. No altogether satisfactory method now seems available to afford precise numerical expression to the central feature of the statistical position in different years—the width of the margin between “export surpluses” and “important requirements.” One seeks some method of showing how prices must change as these margins change; but

the difficulty always arises that the price changes affect the margins. For the current as well as past years, moreover, large differences in estimates of margins are possible if different crop estimates are employed. Nevertheless the margin in 1928-29 seems the widest of any in the past six years except 1923-24. It is obviously much wider than in 1924-25 and 1925-26. But to measure the differences between the margins of 1923-24, 1927-28, and 1928-29, all of which are relatively wide, is difficult; and measurement undoubtedly must de-

pend in part upon assumptions. Statistics of production and consumption in particular are imperfect, and permit wide divergences of opinion in their interpretation.

THE INTERNATIONAL STATISTICAL POSITION

We may first undertake comparisons between 1927-28 and 1928-29. Last year, according to the official estimates of production, the four principal exporting countries (the United States, Canada, Argentina, and Australia) secured crops totaling 1,674 million bushels. But the crops of Canada and Argentina were almost certainly underestimated,¹ probably by the large amount of 70 million bushels, more or less. The total crop in the four major exporting countries probably came nearer to 1,745 million bushels. The outturns of 1928 in these countries are still uncertain. Elsewhere we have expressed our view² that standing official estimates for Canada especially, and to a lesser degree Australia, are below the truth, in all by perhaps 60 million bushels. With this allowance, and the assumption that the Argentine crop is at least 250 million bushels,³ and accepting the standing official estimate for the United States, we conclude provisionally that the crop in these four countries combined approximates 1,870 million bushels, or 125 million more than in 1927. The true exportable surplus may perhaps prove larger than last year by somewhat less than 125 million bushels; for domestic utilization for food and feed (probably not for seed) will doubtless be appreciably larger this year than last. But the inward carryover was also appreciably larger, and may about offset this increase.

Exportable surpluses in minor exporting countries apparently differ little between 1927-28 and 1928-29. India and Russia appear to have less wheat available for export, but they had only a little last year. The Danube countries, the French dependencies in northern Africa, and Chile together appear to have domestic crops

enough larger to balance the defections of Russia and India, though exportable surpluses in these minor exporting countries cannot be estimated so satisfactorily as those of the major exporting countries.

This year one of the chief problems is to determine to what extent apparent exportable surpluses in the Danube countries are reduced by short crops of corn, and to what extent, if any, the wheat crops are overestimated. Wheat crops in these countries appear to be 86 million bushels larger than in 1927; even if the 1928 wheat crops are somewhat overestimated, and the corn crops are apparently 70 million bushels smaller than in 1927, the exportable surplus of wheat is presumably larger this year than last. The total increase in wheat production will by no means be employed to make up the domestic deficiency in corn production; rather, less corn will be exported and more not only of wheat, but also of oats, rye, and barley will be employed to replace corn. The barley crops are apparently 19 million bushels larger this year than last; the oats crops 15 million bushels larger; and the rye crops 16 million larger. All told, it seems probable that the Danube countries have exportable surpluses of wheat almost enough larger than those of 1927-28 to balance smaller exportable surpluses in Russia and India. If so, and if exportable surpluses in the four leading exporting countries are as large as we suppose, then world exportable surpluses exceed those of 1927-28 by well over 100 million bushels.

Import requirements are still more difficult to evaluate. Three aspects of the situation are clear: European importing countries have larger crops of wheat and also of its chief substitute, rye; but on the other hand the list of net importers is increased over that of 1927-28 by the addition of Spain and countries in Asia Minor; and growth of population alone increases the quantity of wheat needed. The effect of these three factors on total requirements, *at equivalent prices*, is not susceptible of precise measurement; yet certain rough estimates are helpful.

The 1928 wheat crop of European importing countries (all Europe except Spain and the Danube countries) now appears to

¹ See Appendix Table X.

² See above, pp. 116, 119.

³ This assumption now seems reasonable in view of the large area sown in Argentina and favorable Argentine reports of crop conditions. It implies a yield per acre above average, but perhaps not so high as in 1927.

reach 890 million bushels, as compared with 838 million in 1927. Last year, however, quality was much poorer. An unmeasurable quantity of wheat was unfit for milling, and because of its lighter weight, a given quantity of wheat would produce less flour. How accurate crop estimates are for each of the two years is impossible to say; unofficial observers state that the French crop of 1927 was officially underestimated, but this opinion appears to rest rather upon private crop estimates—presumably not so comprehensive as the official—than upon statistics of French trade, milling, or consumption, not all of which are available. If we accept official crop estimates, and if unmillable and light-weight wheat constituted a larger proportion of the crop in 1927 than in 1928, then domestic wheat supplies in the European importing countries are effectively larger this year than last year, unless carryovers into 1927 were distinctly larger, as appears improbable. The total European (ex-Russian) rye crop of 1928 appears to exceed that of 1927 by 94 million bushels, though some 16 million bushels of this increase occurred in the Danube exporting countries; and rye, like wheat, is of better quality this year. Import wheat requirements this year are somewhat less than last year partly because more rye is available.

The addition of Spain and Asia Minor to the list of European net importers can hardly suffice to turn the balance toward higher European requirements in 1928-29. Demand from Spain is unlikely to bulk large so long as the import duty on wheat remains around 74 cents per bushel; and the demand from Asia Minor is presumably the sort which involves importation quite as much because prices are low as because domestic supplies are short. Nevertheless these countries presumably would take, at equivalent prices, somewhat more wheat in 1928-29 than in 1927-28, perhaps by 25 million bushels. The increase in total European requirements due to increase in population alone serves further to raise the needs of 1928-29 in comparison with those of 1927-28. This increase perhaps amounts to some 15 million bushels per year. One may roughly conclude that growth of population and the addition of Spain and Asia

Minor perhaps increase European import requirements, at equivalent prices, by almost as much as larger and better wheat and rye crops decrease them, and that these requirements will be about the same as last year.

The ex-European requirements, in the same sense, appear to be larger in 1928-29 than in 1927-28. Egypt has a smaller wheat crop, Japan a wheat crop of poorer quality, China a poorer rice crop; and India must import rather than export wheat. Moreover, ex-European requirements tend to increase regardless of price changes. To express them numerically is not feasible. It seems improbable, however, that at equivalent prices ex-Europe would require as much as 50 million bushels more wheat in 1928-29 than in 1927-28. These countries actually may import over 50 million bushels more this year than last, but they will do as much because prices are lower as because they demand more wheat at the same price.

Hence the general position for the crop year 1928-29 appears easier than in 1927-28 because export surpluses are enough larger to do more than counterbalance larger total import requirements (at corresponding price levels), which are increased in ex-Europe rather than in Europe. Our analysis implies that the lower international wheat prices prevailing this year have been the natural result of economic conditions, not the result of an incorrect appraisal of the situation by dealers throughout the world. A contrary view is implied, though not expressly stated, in current analyses of the wheat situation issued by the Bureau of Agricultural Economics of the United States Department of Agriculture;¹ but the many differences of detail need not be considered here. It perhaps suffices to point out that the Department's analysis rests upon prices in relation to world crops and (apparently) world demand, whereas in our view the distribution of crops as well as their size is of fundamental significance; that they probably overstate the extent to which the world demand for wheat (in a

¹ See especially *Foreign News on Wheat*, issues of August 20, September 19, October 20, and November 21, 1928; and statements by Secretary of Agriculture Jardine in press releases issued August 23, October 27, and November 15, 1928.

technical economic sense) is increasing; and that they may have understated the effective crop of Canada.

Comparisons of the international statistical position in 1923-24 and 1928-29 require less attention to details. In 1923 the wheat crops of the four major exporting countries totaled some 1,640 million bushels, about 230 million less than in 1928. But the exportable surplus from these countries was not 230 million bushels smaller in 1923-24 than in 1928-29, for domestic requirements have increased over the interval, probably by more than 65 million bushels for food and seed alone. Among the minor exporters, India, with a crop of 372 million bushels, was able to furnish net exports of 20 million bushels, and Russia, despite a smaller crop, was able to furnish about 21 million; whereas this year these two countries are not likely to make an appreciable net export. Larger exportable surpluses in these countries in 1923-24 about counteracted smaller surpluses in the Danube countries, where the wheat crop was about 100 million bushels smaller than in 1928 but the corn crop was 63 million bushels larger. Total exportable surpluses were probably not much more than 150 million bushels smaller in 1923-24 than in 1928-29.

Over against this, one must set the fact that import requirements were much smaller in 1923-24. The wheat crop in European importing countries was about 30 million bushels smaller in 1923 than in 1928, and the rye crop was about 60 million smaller. But if growth of population alone increases European wheat requirements by around 15 million bushels a year, requirements in 1923-24 must have been some 75 million bushels smaller than in 1928-29. Since Spain and Asia Minor had good crops in 1923, total requirements were thereby lessened by comparison with 1928-29. They were reduced still further, to an unmeasurable but certainly important amount, by comparatively lower purchasing power and a less developed taste for white bread. Ex-European requirements also were considerably smaller in 1923-24 than they appear to be in 1928-29. India was not a net importer in the earlier year, and population in ex-European wheat-importing countries has increased in the interval. Although pre-

cise allowances cannot be made, it seems probable that total import requirements in 1923-24 were a little farther below those of 1928-29 than were exportable surpluses, and hence that the margin between requirements and surpluses was a little larger in the earlier year.

THE PRICE OUTLOOK

Our analysis of the international statistical position implies that international wheat prices—average prices of c.i.f. wheats as recorded in our series of British parcels prices or in prices derived from quantities and values of British imports—may be expected to remain, during the ensuing few months, at a level somewhere between the levels of the corresponding period in 1923-24 and 1927-28—probably nearer to the earlier level than to the later. It is in January-March of each year rather than throughout the crop years, that the statistical position for the year is most clearly the dominant influence on prices, although Southern Hemisphere harvests can reasonably be expected to exert special influences. In earlier months the supply situation is usually less clear, and in later months the crop outlook for the new year begins to exert an influence, especially the winter-wheat crop in the United States.

During these mid-winter months international prices may be expected to fluctuate within fairly narrow limits, probably with no definite trend. A considerable decline might occur if offers of American or Argentine wheat were pressed, but decided pressure of American offers seems improbable. The full weight of the Southern Hemisphere crop movement probably remains to be felt. The Argentine crop, though as yet its size is not definitely known, is clearly a large one; selling pressure always tends to be heaviest at this season; and thus far in the crop year, except in December, forward sales appear to have been relatively small in relation to the large crop—chiefly because sales of the heavy year-end stocks of old-crop wheat rather than of new-crop wheat were pressed in October-November.

A considerable rise in prices might of course occur under the stimulus of a sudden and protracted increase in demand;

but such an increase seems improbable in view of the heavy European and ex-European takings during August–November. Hopes for higher international prices must rest principally upon the emergence of Russia as an importer on a rather large scale. Some imports will perhaps be made, but heavy takings are unlikely unless adequate transport of wheat within Russia is physically impossible or the cost of wheat laid down in consuming centers from the northerly regions of Russia is greater than the cost of wheat transported from Danubian ports.

Seasonal movements of prices in exporting countries may reasonably be expected to alter the relationships with international prices prevailing in August–November. In Argentina and Australia the mid-winter seasonal movement in years of large crops seems to be downward; in the United States and Canada, upward. But this year wide movements seem unlikely.

In the early spring months, prices will be subjected to the influence of new-crop prospects, especially for United States winter wheat; and these cannot be foreseen. On the whole, however, the broad probabilities suggest higher prices in 1929–30, merely on the ground that a repetition of a distinctly high average yield per acre throughout the world is improbable, and that the area sown to winter wheat, certainly in the United States and apparently in western Europe, has decreased.

PROBABLE NET EXPORTS AND OUTWARD CARRYOVERS IN 1928–29

Heavy import requirements, together with low wheat prices and high corn prices tending to encourage the use of wheat for food and feed, promise to raise the volume of international trade this year to the highest level in history. The movement from net exporting countries may reach about 875–925 million bushels, as compared with the record figure of 846 million in 1926–27 and 818 million bushels last year.

Table 8 shows our advance estimates of probable net exports in 1928–29 from the various exporting countries, in comparison with estimates by Broomhall and the United States Department of Agriculture. The three

sets of estimates are not strictly comparable: Broomhall's figures are for probable overseas shipments, which always fall below net exports; and the Department's figures are for net exports in July–June, not in August–July. We regard our estimates for individual countries and in total as approximations to the middle of a range. They are calculated, moreover, on assumptions set forth in the earlier pages respecting the size of 1928 crops.

TABLE 8.—NET EXPORTS OF PRINCIPAL EXPORTING COUNTRIES IN 1927–28, WITH FORECASTS FOR 1928–29*
(Million bushels)

Exporting area	Net exports 1927–28	Forecasts for 1928–29		
		U.S.D.A. Oct. 20	Broomhall Nov. 20	F. R. I. Dec. 20
United States...	184	200–220	136	155
Canada	332	345–390	368	420
Argentina	178	125–160	184	160
Australia	70	75–85	96	100
Russia .....	...	"	"	...
Danube basin ^b ..	33 ^c	65–90	40	50
India	9	"	"	"
Others	12	2–5 ^d	16	15 ^e
Total	818	812–950	840	900

* Net export data are from official sources and International Institute of Agriculture; U.S. Department of Agriculture forecasts from *Foreign News on Wheat: World Wheat Crop and Market Prospects*, October 20, 1928. Figures are for crop year August–July, except U.S. Department of Agriculture estimates which are for the year July–June. Totals are for items listed in table, and are not strictly comparable with each other.

^a Net import.

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

^c Partially estimated.

^d Algeria and Tunis.

^e Algeria, Tunis, Morocco, Chile.

Despite the large size of the wheat crop in the United States, we regard our estimate of net exports of 155 million bushels as generous. The seasonal movement of American net exports is fairly well marked. In each of the past seven years except 1925–26, net exports during July–December have constituted between 65 and 77 per cent of total exports for July–June. The year 1925–26, when the crop was short, was an exception; and January–June exports were increased relatively to July–December exports because a favorable new-crop outlook in the spring of 1926 gave rise to exceptional seasonal exports in May and June.

In that year July-December exports were only 54 per cent of the annual total. Since the year 1928-29 resembles 1925-26 less than it resembles others of the past seven years, it seems reasonable to assume that July-December net exports will constitute 65-77 per cent of the annual total. July-November exports totaled 81 million bushels; and from the experience of past years it seems proper to assume that December exports will fall below those of November. If so, July-December exports may reach 93 million bushels, and July-June exports may fall between 120 and 145 million bushels, or, including shipments to possessions, 3 or 4 million bushels more. But in so far as the usual seasonal movement may be altered, it will presumably lead to a larger percentage of exports than usual in the last half of the year, for the crop is so large as to give rise to more than the usual amount of pressure to sell, especially if world prices move upward in the spring months. August-July exports will probably prove larger than July-June exports, since the figure for July 1928 was unusually small.

If net exports and shipments to possessions reach only about 155 million bushels, including wheat and flour, the outward carryover promises to be extremely large. If one allows some 90 million bushels for seed requirements, the relatively large quantity of 95 million bushels for wheat fed and wasted, 507 million bushels for human consumption, and assumes the crop estimate and the inward carryover to be correct, then year-end stocks (including city mill stocks) may reach about 200 million bushels, certainly the largest quantity in recent years.¹

Net exports from Canada may reach some 420 million bushels, on the assumption that the crop approximates 550 million. In reaching so high a figure we assume that the outward carryover will prove smaller than the enormous carryover into 1928-29 (which was in part the result of a delayed harvest in 1927) yet larger than in any other year. Grain unmerchantable and lost in cleaning may approximate 63 million bushels, over 10 per cent of the crop,

because of the large proportion of low-grade grain, but this figure can be scarcely more than a guess. Our estimates both of the carryover and the item for feed and waste are necessarily subject to a wide margin of error. But record exports from Canada of at least 400 million bushels seem certain on account of the record crop, the record carryover in, and the record August-November export movement. Net exports of 190 million bushels passed from Canada in August-November; and if exports in the balance of the year are no larger than those of December-July 1927-28, the total for 1928-29 will exceed 400 million bushels.

If the Argentine crop approximates 250 million bushels, and if stocks on August 1, 1929 are about the same as on August 1, 1928, net exports will probably reach or exceed 160 million bushels. Exports of about 41 million bushels were made in August-November. In December-July, Argentina usually exports between 57 and 60 per cent of her total crop, though for special reasons involving the disaster to the crop of 1925 the percentages were lower in 1924-25 and 1925-26. If the crop of 1928 approximates 250 million bushels, December-July exports may reach 140-150 million bushels, or 180-190 for the crop year August-July. We employ a lower figure because domestic disappearance of wheat in Argentina has been growing rapidly; but our estimate of 160 million bushels is probably too low.

Except in 1922-23, December-July net exports from Australia have in recent years amounted to 52-66 per cent of the total crop, the lower figure being recorded in 1927-28, when the crop was small, and the higher figure in 1924-25, when international prices were distinctly high and the Australian wheat crop was large. Some 60 per cent, or 96 million bushels may be exported in December-July 1928-29, if the crop reaches 160 million bushels. Since August-November exports were 16 million bushels, the indicated total for the year on this basis of calculation is 112 million bushels. We employ a figure of 100 million bushels, on the assumption that stocks may be built up in the course of the year and that low prices will tend to restrict exports; but our estimate appears conservative.

¹ See Appendix Table X for our estimate of disposition in the four principal exporting countries.

Less satisfactory bases appear for estimating the net exports of the minor exporters in 1928-29; the situation is especially confused by the short corn crop of the Danube countries and by uncertainty regarding the crop estimates. If each of these countries were to retain for domestic use no more wheat than in the post-war year of maximum retention, net exports from the four countries together might exceed 95 million bushels. But with growing per capita consumption of wheat, the possibility that standing crop estimates are too high, the short crop of corn, and comparatively small exports in the early months of the year, this figure seems much too high. Exports of approximately 50 million bushels, mostly from Hungary and Jugo-Slavia, seem more probable; and this figure now appears liberal. Algeria, Morocco, Tunis, and Chile together may furnish 15 million bushels more. But India promises to be a net importer, though perhaps not to any considerable extent if the crop to be harvested in March-May is a large one. Russia appears to have no appreciable amount of wheat geographically available for export, and net imports are probable.

With respect to the outlook for total net exports in 1928-29, our estimate differs from those of Broomhall and the United States Department of Agriculture chiefly in being a little higher. But the difference is comparatively small. Broomhall on November 20 expressed the belief that shipments might reach 880 million bushels, and shipments always fall below net exports; and the center of the range of the Department's estimate, 881 million bushels, is only 19 million below our figure. With respect to details, the Department's estimates for United States exports of 200-220 million bushels appear too high; its Canadian, Argentine, and Australian estimates too low, at least the minimum figures; and its maximum for the Danube countries too high. Broomhall's estimates appear low for Canada and somewhat liberal for Argentina; but they differ from our own largely because he accepts the official Canadian crop estimate and assumes an outturn of 260 million bushels in Argentina.

If net exports are to reach 900 million bushels, net importing countries must take

some 80 million bushels more than in 1927-28. Most countries will probably take more, but especially the ex-European. Of the European countries, Spain, Portugal, the Scandinavian countries, the Baltic states, and central European countries appear likely to increase their imports most; Spain and Portugal have short crops, and the others are the European countries which tend most noticeably to import wheat heavily when prices are low. The major importers, Great Britain, Italy, Germany, and France, may take no more wheat this year than last as a group, though the situation is not clear. Great Britain has a smaller domestic wheat crop, her imports in 1927-28 were not large, and low prices may encourage imports; on the other hand, the domestic wheat crop last year was much poorer in quality, and per capita consumption is tending downwards. Larger imports into France in 1928-29 than in 1927-28 are possible because prices are lower even though the millable quantity of domestic wheat is larger this year, and because consumption may be encouraged by the removal of admixture requirements. Germany and Italy, with larger and better quality wheat crops, may import less this year; but in Italy relaxation of milling restrictions may encourage consumption of white bread, and the short crop of corn will tend to expand the use of wheat both for food and feed. Belgium and Holland may import rather less wheat this year, since their native wheat crops are better in size and quality. All told, European countries bid fair to absorb some of the probable 80 million bushel increase in world wheat and flour exports, but perhaps no more than a fourth or a third of it. If Asia Minor is treated as a part of Europe, the proportion taken by Europe may prove larger.

The balance promises to go to ex-European countries, with practically all countries increasing their imports noticeably. Most ex-European countries import a large proportion of wheat as flour, so that international trade in flour promises to run high in 1928-29.

The outlook for international trade is, of course, dependent upon price movements in the latter half of the year. If prices rise sharply at any time, the demand from

many ex-European and some European countries may be expected to drop off sharply; for heavy purchases are to be regarded rather as the result of low prices than as a potential cause for high prices. European purchases might, however, increase if prices rose in the early spring months, though past experience suggests that sharply rising prices shortly before harvest of domestic crops tends to restrict

importations. In general we have tended to estimate probable net exports conservatively, because the broad probabilities suggest that rising rather than stable or declining prices are in prospect in the spring or early summer, and rising prices would on the whole tend to restrict rather than to encourage import purchases, at least among ex-European countries. If prices rise little, net exports may exceed 900 million bushels.

This study is the work of M. K. Bennett, with substantial assistance from Joseph S. Davis and Alonzo E. Taylor, and with the aid of Katharine Merriam and Janet Murray. The Institute is indebted to Mr. P. C. Rutherford of Minneapolis for information on the situation in the United States spring-wheat belt.

APPENDIX

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

(Million bushels)

Year	United States	Canada	India	Australia	Argentina	Chile	Uruguay	Hungary	Bulgaria	Jugo-Slavia	Roumania	Soviet Russia	Mexico
1920.....	833.0	263.2	377.9	145.9	156.1	23.2	7.8	37.9	29.9	43.0	61.3	.....	15.0
1921.....	814.9	300.9	250.4	129.1	191.0	23.6	10.0	52.7	29.2	51.8	78.6	.....	5.1
1922.....	867.6	399.8	367.0	109.5	195.8	25.9	5.2	54.7	32.6	44.5	92.0	.....	13.6
1923.....	797.4	474.2	372.4	125.0	247.8	28.1	13.3	67.7	29.1	61.1	102.1	419.1	13.7
1924.....	864.4	262.1	360.6	164.6	191.1	24.5	9.9	51.6	24.7	57.8	70.4	472.3	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	729.9	9.2
1926.....	831.0	407.1	324.7	160.8	220.8	23.3	10.2	74.9	36.5	71.4	110.9	819.6	10.3
1927.....	878.4	440.0	335.0	116.7	239.2	33.5	13.9	76.9	47.3	56.6	96.7	749.0	11.9
1928.....	902.7	500.6	289.8	.....	.....	.....	.....	92.0	50.7	105.4	115.6	859.8	11.3
Average													
1909-13.....	690.1	197.1	351.8	90.5	147.1	20.1	6.5 ^a	71.5	37.8	62.0	158.7 ^c	758.9 ^b	11.5 ^a
1923-27.....	809.5	395.8	344.7	136.3	218.0	27.2	11.5	68.6	35.8	65.1	97.0	638.0	11.1

Year	Morocco	Algeria	Tunis	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	36.0	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	58.5	275.6	106.4	224.8	13.4	6.2	8.9	.59	11.0
1924.....	28.8	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.....	24.6	28.3	8.3	44.3	57.2	276.1	120.5	195.8	16.3	6.2	9.4	.60	11.3
1928.....	22.2	34.0	12.1	37.3	51.1	277.7	141.6	228.6	17.8	7.6	9.0	.68	11.3
Average													
1909-13.....	17.0	35.2	6.2	34.2	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	106.0	210.5	14.0	5.6	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	39.7	8.7	10.6
1922.....	125.5	10.0	2.5	7.4	33.6	42.4	.71	.96	4.17	9.0	39.8	6.3	8.4
1923.....	157.1	13.2	3.8	8.9	36.2	49.7	.69	1.64	3.70	8.8	35.2	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	9.2	4.6
1926.....	146.6	8.6	4.2	9.4	34.1	47.1	.92	1.86	5.02	12.4	38.9	8.0	8.0
1927.....	144.8	11.4	4.1	12.0	40.4	54.2	1.06	2.64	6.35	13.0	40.4	6.6	9.5
1928.....	129.6	6.6	4.3	12.1	41.4	53.9	.88	2.61	8.28	15.7	41.5	7.0	....
Average													
1909-13.....	130.4	11.8 ^a	3.3	12.8	37.9	63.7	.14	1.48	3.63	16.3 ^c	32.0	6.3 ^a	6.9
1923-27.....	146.6	10.8	3.8	9.9	36.5	48.3	.88	1.98	5.00	10.6	38.0	7.4	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.

^c One year only.

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

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

Month	United States primary markets				Fort William and Port Arthur				Vancouver			
	1925-26	1926-27	1927-28	1928-29	1925-26	1926-27	1927-28	1928-29	1925-26	1926-27	1927-28	1928-29
Aug.	43.3	71.6	81.6	84.2	1.2	1.5	2.4	3.5	.55	.12	.09	1.07
Sept.	57.9	48.7	79.7	73.3	45.7	32.8	8.6	39.1	.28	.29	.32	2.61
Oct.	36.1	37.1	73.3	84.4	53.2	56.1	51.4	81.4	7.04	6.37	6.17	12.69
Nov.	34.1	29.8	44.8	43.6	51.5	60.5	71.0	72.9	9.79	7.22	10.78	14.65
Aug.-Nov.	171.4	187.2	279.4	285.5	151.6	150.9	133.4	196.9	17.66	14.00	17.36	31.02
Dec.	34.9	22.4	26.5	.....	53.5	26.3	41.0	.....	6.14	6.63	11.81	.....
Jan.	21.6	24.6	23.5	.....	10.5	14.0	21.1	.....	10.03	6.83	16.49	.....
Feb.	16.2	21.0	22.5	.....	4.0	8.6	9.5	.....	7.74	4.27	12.54	.....
Mar.	15.1	16.6	26.3	.....	3.2	6.3	3.3	.....	6.98	5.94	10.50	.....
Dec.-Mar.	87.8	84.6	98.8	.....	71.2	55.2	74.9	.....	30.89	23.67	51.34	.....
Apr.	14.0	14.4	18.0	.....	1.8	12.6	.9	.....	3.58	3.58	10.88	.....
May	15.7	19.2	25.9	.....	17.2	17.3	17.6	.....	1.20	1.56	7.43	.....
June	21.0	20.7	15.6	.....	13.6	7.3	20.1	.....	.22	.61	3.66	.....
July	77.0	58.8	72.6	.....	6.4	10.7	14.4	.....	.27	.14	2.44	.....
Apr.-July	127.7	113.1	132.1	.....	39.0	47.9	53.0	.....	5.27	5.89	24.41	.....
Aug.-July	386.9	384.9	510.3	.....	261.8	254.0	261.3	.....	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 III.—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
July	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
	13.77	25.25	26.01	23.93	.97	.92	2.61	3.03	.03	.05	.00	.72
Aug.	11.04	23.63	24.37	24.87	.38	.75	.95	1.80	.28	.03	.07	.50
	10.15	18.84	19.56	20.18	.23	.22	.81	1.07	.23	.02	.00	.32
	8.98	13.92	16.41	18.56	.24	.21	.35	.76	.02	.02	.00	.22
	8.99	10.89	13.84	15.97	.15	.15	.21	.41	.02	.03	.01	.10
Sept.	11.29	12.92	14.88	15.51	.59	1.12	.20	.43	.02	.06	.01	.09
	13.13	12.47	16.09	15.03	6.20	3.02	.23	.96	.01	.10	.03	.13
	14.15	11.73	19.91	17.67	13.27	6.69	1.01	6.28	.09	.07	.07	.15
	14.99	9.77	19.57	18.36	15.83	12.49	3.00	12.84	.17	.03	.15	.52
Oct.	12.37	9.21	20.07	19.68	16.39	13.51	5.19	16.81	.29	.07	.07	1.42
	9.42	8.71	21.20	22.18	15.73	12.48	11.79	19.37	1.12	.24	.33	2.21
	7.53	7.30	17.52	18.36	10.72	10.82	11.54	19.56	1.86	.75	.36	2.97
	6.19	8.68	14.82	22.75	9.85	13.59	8.71	18.38	1.93	1.90	1.61	3.07
	6.72	9.38	14.03	15.00	10.35	14.37	13.30	17.34	1.64	2.92	2.75	2.68
Nov.	7.95	8.27	14.02	12.30	8.88	12.46	19.27	16.05	2.46	3.33	3.38	3.01
	7.18	7.21	10.24	9.28	10.80	14.16	18.21	15.04	2.53	1.45	2.15	3.59
	8.68	6.59	10.54	8.72	13.67	15.00	14.30	17.05	2.10	.92	2.56	3.58
	8.70	5.86	7.91	10.05	14.42	14.92	15.18	18.37	2.69	1.60	2.12	4.04

* 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 figures begin with weeks ending July 4, 1925, July 3, 1926, July 2, 1927, and June 30, 1928; Vancouver figures are for weeks ending one day earlier. Beginning October 1, 1926, Vancouver figures include receipts at Prince Rupert.

TABLE IV.—WEEKLY VISIBLE SUPPLIES OF WHEAT IN NORTH AMERICA, UNITED KINGDOM PORTS, AND AFLOAT TO EUROPE, AUGUST–DECEMBER, 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
Aug. 4.....	66.8	65.6	9.7	43.6	185.7	Oct. 6.....	124.5	119.5	7.0	42.3	293.3
11.....	77.6	56.7	7.4	45.8	187.5	13.....	131.7	134.8	6.2	41.4	314.1
18.....	86.4	45.4	7.3	45.5	184.6	20.....	138.6	141.8	6.0	41.4	327.8
25.....	92.4	38.1	6.8	44.9	182.2	27.....	142.4	150.1	5.6	43.0	341.1
Sept. 1.....	96.8	31.4	9.5	43.7	181.4	Nov. 3.....	143.0	157.3	5.9	50.2	356.4
8.....	100.4	32.8	8.0	42.6	183.8	10.....	142.7	170.3	5.8	54.9	373.7
15.....	103.8	42.2	8.4	43.8	198.2	17.....	144.2	176.2	5.2	56.1	381.7
22.....	111.7	66.8	8.4	41.8	228.7	24.....	143.5	181.9	5.2	60.7	391.3
29.....	118.3	92.9	7.4	41.0	259.6	Dec. 1.....	145.2	184.3	5.7	63.5	398.7

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

TABLE V.—WORLD VISIBLE WHEAT SUPPLIES, DECEMBER 1, 1920–27, AND MONTHLY, AUGUST–DECEMBER 1928*

(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 Dec. 1...	92.2	51.9	.1	6.5	31.6	36.6	144.1	6.6	68.2	218.9	212.4
1921 Dec. 1...	107.9	76.6	3.1	6.7	11.1	42.4	184.5	9.8	53.5	247.8	241.1
1922 Dec. 1...	125.4	89.3	2.9	10.0	4.5	56.2	214.7	12.9	60.7	288.3	278.3
1923 Dec. 1...	139.2	110.5	2.9	1.0	7.8	51.8	249.7	3.9	59.6	313.2	312.2
1924 Dec. 1...	168.7	77.1	4.4	2.0	14.3	59.2	245.8	6.4	73.5	325.7	323.7
1925 Dec. 1...	109.6	104.5	3.7	.7	3.8	35.1	214.1	4.4	38.9	257.4	256.7
1926 Dec. 1...	133.0	123.0	1.8	2.0	3.6	36.9	256.0	3.8	40.5	300.3	298.3
1927 Dec. 1...	154.7	120.9	3.6	.7	9.6	57.1	275.6	4.3	66.7	346.6	345.9
1928 Aug. 1...	88.1	69.2	5.9	9.5	10.1	44.7	157.3	15.4	54.8	227.5	218.0
Sept. 1...	135.9	30.5	8.5	5.2	9.5	43.7	166.4	13.7	53.2	233.3	228.1
Oct. 1...	181.8	76.5	7.3	3.4	7.8	41.1	258.3	10.7	48.9	317.9	314.5
Nov. 1...	204.4	155.1	7.3	1.3	5.9	50.3	359.5	8.6	56.2	424.3	423.0
Dec. 1...	208.0	169.5	4.4	8.0	5.7	63.5	377.5	12.4	69.2	459.1	451.1
Average, Dec. 1											
1910–14.....	111.7	35.2	.5	.6 ^a	18.6	36.0	146.9	....	54.6	.....	202.0
1923–27.....	141.0	107.2	3.3	1.3	7.8	48.0	248.2	4.6	55.8	308.6	307.3

* 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 Australian figure for one year only.

TABLE VI.—INTERNATIONAL TRADE IN WHEAT AND FLOUR, MONTHLY, JULY–NOVEMBER, 1928*

(Million bushels)

A.—NET EXPORTS

Month	United States	Canada	India	Australia	Argentina	Roumania	Hungary	Jugoslavia	Poland	Algeria	Tunis	Egypt
July	5.13	35.92	1.19 ^a	5.02	9.56	.04	.62	.17	(1.41) ^b	.58	.96	(.44) ^b
Aug.	13.94	29.18	.51 ^a	4.43	6.51	.36	2.46	2.96	(.53) ^b	...	1.05	(.74) ^b
Sept.	21.25	30.89	.25 ^a	2.79	8.29	.29	2.38	2.03	(.53) ^b	.74	.78	(.73) ^b
Oct.	26.64	48.89	.05	4.55	12.00	...	2.32	....	(.20) ^b	.42	.56	(.75) ^b
Nov.	13.61	80.58	....	....	....	...	....	....	....	...	....	...

B.—NET IMPORTS

Month	Irish Free St.	United Kingdom	France	Germany	Belgium	Italy	Netherlands	Scandinavia	Switzerland	Czechoslovakia	Baltic States ^c	Japan
July	1.37	19.36	3.26	6.96	3.68	8.57	1.71	1.78	1.41	1.33	.64	.63 ^a
Aug.	1.42	16.44	4.41	6.67	3.73	5.33	2.25	2.67	1.12	1.57	.88	.45 ^a
Sept.	1.77	14.17	5.13	7.71	3.95	5.56	3.52	2.87	1.24	1.88	.90	.43 ^a
Oct.	2.08	13.44	4.31	7.15	3.39	7.44	2.52	2.55	1.50	2.52	1.09 ^d	.85
Nov. ....	....	15.92	....	....	....	....	....	....	....	....	....	....

* Data from official sources and International Institute of Agriculture.

^a Gross, not net.^b Net import.^c Finland, Esthonia, Latvia.^d Excluding Latvia.

TABLE VII.—WEEKLY WHEAT AND FLOUR SHIPMENTS BY AREAS OF ORIGIN AND DESTINATION, AUGUST–NOVEMBER, 1928*

(Million bushels)

Week ending	North America	Argentina, Uruguay	Australia	Russia	Danube	India	Other countries	Total	To Europe	To ex-Europe
Aug. 4	9.07	.99	1.11	....	.04	.17	.80	12.18	10.23	1.95
11	13.23	2.55	1.48	....	...	.03	1.03 ^c	18.32	15.08	3.24
18	11.75	1.16	1.06	....	.02	.02	1.20	15.21	13.09	2.12
25	10.65	1.43	1.21	....	.05	...	1.48	14.82	12.03	2.79
Sept. 1	11.36	.83	.97	....	.07	.04	1.08	14.35	11.22	3.13
8	13.86	1.33	.68	....	.03	...	.84	16.74	14.00	2.74
15	12.32	1.52	1.02	....	.10	...	.96	15.92	12.36	3.56
22	11.61	2.67	.28	....	.15	...	1.16	15.87	12.96	2.91
29	11.41	2.11	.51	....	.02	...	.86	14.91	11.81	3.10
Oct. 6	13.06	1.54	.26	....	.31	...	.96	16.13	13.55	2.58
13	9.41	2.09	.59	....	.04	.02	.85	13.00	10.47	2.53
20	12.86	2.52	1.27	....	.03	...	1.08	17.76	13.93	3.83
27	12.02	3.65	1.30	....	.19	...	.88	18.04	13.98	4.06
Nov. 3	15.95	2.18	1.82	....	.10	...	1.19	21.24	17.38	3.86
10	14.47	3.15	1.00	....	.12	...	1.02	19.76	16.73	3.03
17	13.81	3.08	.93	....	.17	...	.89	18.88	15.02	3.86
24	17.07	2.53	.87	....	.23	...	1.30	22.00	18.24	3.76
Dec. 1	15.42	3.96	1.17	....	...	...	2.18	22.73	18.15	4.58

* 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. Some wheat actually shipped from the Danube countries is apparently here recorded as shipped from "Other countries."^c Includes 30 thousand bushels shipped from Chile.

TABLE VIII.—WEEKLY CASH PRICES OF REPRESENTATIVE WHEATS IN LEADING EXPORTING AND IMPORTING MARKETS, AUGUST–NOVEMBER, 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)	Barletta (Buenos Aires)	No. 1 Manitoba	No. 3 Manitoba	Pacific White	No. 2 Winter	Argentine Rosafe	Australian
Aug.	1.44	1.14	1.41	1.15	1.25	1.12	1.26	1.47	1.30	1.41	1.36	1.34	1.44
	1.34	1.05	1.27	1.03	1.20	1.07	1.20	1.44	1.28	1.36	1.26	1.32	1.36
	1.37	1.05	1.25	1.08	1.19	1.07	1.20	1.38	1.24	1.35	1.29	1.24	1.35
	1.37	1.04	1.23	1.09	1.16	1.06	1.18	1.36	1.23	1.34	1.29	1.29	1.34
	1.44	1.06	1.22	1.09	1.17	1.08	1.19	1.38	1.26	1.35	1.28	1.30	1.35
Sept.	1.47	1.06	1.25	1.04	1.15	1.07	1.19	1.37	1.24	1.36	1.31	1.28	1.36
	1.43	1.05	1.23	1.04	1.14	1.05	1.16	1.36	1.25	1.36	1.27	1.26	1.33
	1.45	1.07	1.26	1.07	1.18	1.06	1.17	1.36	1.25	1.38	1.27	1.25	1.36
	1.48	1.10	1.30	1.09	1.21	1.08	1.18	1.39	1.30	1.40	1.35	1.27	1.39
Oct.	1.45	1.10	1.25	1.09	1.25	1.12	1.20	1.46	1.31	1.42	1.36	1.29	1.41
	1.49	1.11	1.24	1.13	1.25	1.12	1.21	1.51	1.38	1.46	1.36	1.34	1.42
	1.47	1.09	1.21	1.08	1.24	1.11	1.21	1.47	1.36	n. q. ^a	1.36 ^a	1.33	1.47 ^a
	1.38	1.07	1.19	1.15	1.22	1.10	1.18	1.44	1.34	1.42 ^a	1.33 ^a	1.33	1.46 ^a
Nov.	1.40	1.12	1.24	1.21	1.21	1.11	1.18	1.47	1.38	1.44 ^a	n. q. ^a	1.33	1.46 ^a
	1.41	1.10	1.22	1.14	1.21	1.10	1.18	1.48	1.38	1.42 ^a	n. q.	1.33	1.46 ^a
	1.46	1.13	1.23	1.10	1.24	1.12	1.18	1.46	1.37	1.42 ^a	n. q.	1.32	1.45 ^a
	1.45	1.14	1.25	1.18	1.21	1.12	1.18	1.51	1.40	1.43 ^a	n. q.	1.33	1.45 ^a
	1.45	1.14	1.25	1.16	1.18	1.09	1.14	1.48	1.40	1.44 ^a	n. q.	1.32	1.46 ^a

* 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, parcels to Liverpool or London, and are from Broomhall's *Corn Trade News*, except Pacific White, No. 2 winter and Australian, which are Friday prices furnished by the International Institute of Agriculture. Argentine prices are averages for weeks ending Saturday, from *Revista Semanal*. No quotation is signified by "n. q."

^a Tuesday prices from Broomhall's *Corn Trade News*.

TABLE IX.—MONTHLY PRICES OF DOMESTIC WHEAT IN EUROPE, FROM AUGUST 1926*

(U.S. dollars per bushel)

Month	Great Britain			France (Chartres)			Italy (Milan)			Germany (Berlin)		
	1926-27	1927-28	1928-29	1926-27	1927-28	1928-29	1926-27	1927-28	1928-29	1926-27	1927-28	1928-29
Aug.	1.76	1.63	1.33	1.61	1.75	1.60	1.85	1.75 ^a	1.72	1.75	1.78 ^b	1.49
Sept.	1.46	1.43	1.19	1.77	1.57	1.58	2.03	1.73	1.81	1.71	1.68	1.36
Oct.	1.48	1.37	1.24	1.88	1.54	1.61	2.21	1.77	1.89 ^c	1.72	1.62	1.38
Nov.	1.62	1.32	1.28	1.96	1.48	1.60	2.20	1.90	....	1.78	1.57	....
Dec.	1.55	1.29	....	1.78	1.58	....	2.31	1.88	....	1.74	1.53	....
Jan.	1.55	1.29	....	1.88	1.58	....	2.13	1.93	....	1.72	1.52	....
Feb.	1.54	1.26	....	1.81	1.56	....	2.11	1.94	....	1.72	1.49	....
Mar.	1.52	1.27	....	1.70	1.65	....	2.11	2.00	....	1.73	1.59	....
Apr.	1.50	1.34	....	1.82	1.74	....	2.02	2.09	....	1.76	1.72	....
May	1.58	1.43	....	1.91	1.87	....	2.16	2.14	....	1.92	1.73	....
June	1.65	1.43	....	1.88	1.85	....	1.99	2.10	....	1.96 ^d	1.66	....
July	1.64	1.41	....	1.81	1.76	....	1.80	1.77	....	n. q.	1.60	....

* 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 Two-week average.

^d First half of June.

TABLE X.—APPROXIMATE DISPOSITION OF WHEAT SUPPLIES IN FOUR LEADING EXPORTING COUNTRIES, 1924-25 TO 1928-29*

(Million bushels)

Item	United States (July-June)					(Canada (August-July)				
	1924-25	1925-26	1926-27	1927-28	1928-29	1924-25	1925-26	1926-27	1927-28	1928-29
Initial stocks.....	165	135	111	138	142	41	26	35	48	75
New crop.....	864	676	831	878	903	262	395	407	440	550
Total supplies.....	1,029	811	942	1,016	1,045	303	421	442	488	625
Net exports.....	258	95	209	194	155	192	324	292	332	420
Seed requirements.....	84	82	88	94	90	38	40	39	41	42
Consumed for food.....	479	492	492	505	507	42	42	43	44	45
Unmerchantable, lost in cleaning, fed on farms.....	73	31	15	81	94	22	18	31	39	63
Apparent error in crop estimate	—17	—38	—11	—43						
Stocks at end.....	135	111	138	142	199	26	35	48	75	55
Total disappearance.....	1,029	811	942	1,016	1,045	303	421	442	488	625

Item	Argentina (August-July)					Australia (August-July)				
	1924-25	1925-26	1926-27	1927-28	1928-29	1924-25	1925-26	1926-27	1927-28	1928-29
Initial stocks.....	66	56	61	65	70	38	36	30	41	40
New crop.....	191	191	221	239	250	165	115	161	117	160
Total supplies.....	257	247	282	304	320	203	151	191	158	200
Net exports.....	123	94	143	178	160	124	77	103	70	100
Seed requirements.....	23	25	24	25	26	11	11	12	14	14
Consumed for food.....	53	54	57	59	61	29	29	30	30	31
Feed and waste.....	2	10	3	3	5	3	4	5	4	5
Apparent error in crop estimate	...	+3	—10	—31		...	...	...	...	...
Stocks at end.....	56	61	65	70	68	36	30	41	40	50
Total disappearance.....	257	247	282	304	320	203	151	191	151	200

* Based so far as possible upon official estimates for the various items of supply and disposition. Estimates for 1928-29 are preliminary. For detailed explanation of our method of estimation and adjustment of items in the disposition table, see notes in WHEAT STUDIES, V, 111f. Crop figures for 1928, except for the United States, are our own approximations.

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