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

OF THE FOOD RESEARCH INSTITUTE

VOL. V, NO. 6

MAY 1929

SURVEY OF THE WHEAT SITUATION

DECEMBER 1928 TO APRIL 1929

ALTHOUGH the international statistical position continued easy and changed but little during December-April, wheat prices fluctuated rather widely, but remained at the lowest level since 1923-24. Hopes and fears centering about an extraordinarily cold winter throughout the Northern Hemisphere, which seemed likely to have damaged winter-wheat sowings, led to an increase of prices from early January to mid-February. It was more marked in Chicago and Winnipeg than in Liverpool and Buenos Aires. Thereafter a decline occurred, more extensive than the advance; it continued through the first third of May, and was nearly as great in Liverpool as in Chicago. The decline seems to have been due not only to an accumulation of evidence tending to show that winter wheat had not suffered unusual damage in most countries, but also to the pressure of extraordinarily heavy stocks in exporting countries, especially after the new Argentine crop began to move in large volume.

International trade was of record volume for the season. Low prices encouraged importation and consumption, especially in ex-European countries, which imported more wheat and flour than ever before. But in spite of the record shipments, the accumulation of stocks in exporting countries remained extraordinarily large. The prices of representative wheats in the United States were relatively too high to permit exportation in a volume consistent with the available supplies, and here the accumulation of stocks, principally in commercial channels, was most noteworthy. The volume of world trade for the crop year, as measured by net exports, now seems likely to approximate 950 million bushels, by far the largest total in history; but year-end stocks also seem likely to be of record size. Increased wheat consumption seems not to have caught up with increased production.

STANFORD UNIVERSITY, CALIFORNIA

May 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.

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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

DECEMBER 1928 TO APRIL 1929

The international statistical position remained distinctly easy during the period under review, and apparently became slightly more easy. By late April exportable surpluses for the crop year as a whole appeared much the same in size as they seemed to be in mid-December, though probably somewhat larger in view of the record crop harvested in Argentina, which is not yet officially estimated. Import requirements also now seem slightly larger than they looked to be in mid-December, but not enough larger to offset increased surpluses.

If this analysis is correct, international wheat prices might well have declined slightly from their December level. In fact they rose a little in January and early February, but declined steadily thereafter. The advance was considerably smaller than the subsequent decline. Advancing prices now appear to have been due chiefly to exceptionally cold winter weather throughout the Northern Hemisphere, which aroused apprehension of abnormal damage to winter wheat; the upward movement was much smaller in Liverpool than in Chicago. Bullish enthusiasm was more pronounced in the United States than elsewhere, partly because many traders hoped for the passage of legislation which would raise domestic wheat prices. The March-April decline was coincident with increasingly favorable reports of the manner in which winter-wheat sowings had withstood the severe winter; it was greatest in Chicago, just as the earlier advance had been. By the end of April Liverpool futures prices had fallen to the lowest point of the crop year, and were close to the lowest point reached in post-war years, in 1923-24.

Relatively low prices and abundant supplies seem to have encouraged consumption

of wheat for food, especially in ex-European countries; and wheat consumption for feed in Europe was encouraged also by the European shortage of corn. The volume of international trade was of record size. Ex-European takings accounted for an exceptional proportion of the heavy shipments, in part because the usual list of ex-European importing countries was increased by the addition of India. Canada, Argentina, and Australia furnished the bulk of the exports; despite our good crop and large visible supplies, the United States exported

little. For the crop year as a whole, the volume of trade now promises to approximate 950 million bushels, 50 million more than our December estimate. Despite the heavy trade and consumption, world stocks of wheat at the beginning of April were exceptionally large. The United States, Canada, and Argentina held the largest stocks by comparison with other years;

but only in the United Kingdom, Spain, Portugal, Asia Minor, and India can March stocks be described as distinctly low, while in other countries they appear to have been average or above. The extraordinarily high level of visible supplies in North America constituted one of the outstanding features of the period under review. The outlook is for continued heavy trade and consumption in May-July, and also for the largest world carryover of post-war years.

The outlook for the crop of 1929 is of course not clear at this season. The area to be harvested bids fair to exceed even that of 1928, except possibly in Russia; abandonment seems to be below average in the United States and apparently not much above average in Europe. With only an average yield per acre, the world wheat crop of 1929 may therefore be fairly large, and a crop as small as those of 1920-22 and

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1924 seems improbable. But unless yield per acre is again distinctly exceptional, it can hardly exceed the huge crop of 1928. Weather conditions in June and July, which are not predictable, will determine whether production in 1929 is to prove above or below the average of recent years. International prices in the closing months of the crop year will fluctuate with changing prospects for new crops; but existing heavy

stocks in exporting countries will continue to act as a drag upon upward movements.

The present survey is written on the basis of information available to us on May 10. It covers the period December–March with respect to developments in international trade and stocks, but material for another month is included in the discussion of prices and of prospects for the crops of wheat to be harvested in 1929.

I. SUPPLY AND DEMAND FOR THE CROP YEAR

The international statistical position in 1928–29 remains unmistakably easy. Accumulated evidence on wheat supplies and “requirements” suggests that it differs little in early May from what it appeared to be in mid-December. The margin between exportable surpluses and import “requirements” remains the widest of post-war years except 1923–24, and lies somewhere between those of 1923–24 and 1927–28. Exportable surpluses now seem slightly larger than they did in December; but import “requirements” may be a little larger also. If the statistical position has changed at all, it appears to have become slightly more easy; but the change is not susceptible of precise measurement.

Changes in official estimates of crops during the period were unimportant in their effect upon the markets. The Canadian estimate was raised from 501 to 534 million bushels, the Australian from 154 to 159 million, the Czecho-Slovakian from 41 to 48 million, the Polish from 54 to 59 million. The Jugo-Slavian estimate was reduced from 105 to 96 million, the Spanish from 130 to 123, and the Algerian from 34.0 to 31.5. Other changes were trifling in amount. The first official estimates of the Danish and Swedish crops were 12.1 and 19.5 million bushels respectively, the largest outturns in history; the crop of Uruguay was placed at 15.2 million bushels, the largest in any year except 1927; and the crop of New Zealand was unofficially estimated at about 8 million bushels, some 1.5 million below the good crop of 1927. No official estimate of the Argentine crop has yet appeared, apparently because of changes in the staff of the ministry of agriculture, following the

inauguration of a new political administration.

Table 1 summarizes the latest available official estimates of the wheat crops of 1928 in comparison with those of earlier years. Italicized figures represent our own adjustments of official data, except that, in the complete absence of official reports, the figure for the Argentine crop of 1928 has been reached on other grounds. According to these data, the world crop (ex-Russia, China, and Asia Minor) approximates 3,795 million bushels, over 200 million bushels larger than that of 1927, which was previously the largest post-war crop. India and Spain are the only large wheat-producing countries which had short crops in 1928; most countries harvested crops above average in size, and many (including Canada, Argentina, and possibly Australia) secured record outturns. Of the several continents, North and South America and Australia secured the biggest harvests as compared with earlier years. Europe had a distinctly good one; Asia and Africa had poor ones. The zone of comparatively poor yield per acre ran across northern Africa and Asia Minor, and eastward into India and apparently China.

The crop estimates for 1928 included in the table are subject to revision in later months. No striking alterations are in prospect, but the world wheat crop of 1928 may finally prove slightly larger than is indicated by Table 1. Preliminary estimates of disposition for 1928–29 afford no grounds for questioning the substantial accuracy of the standing official estimate for the United States crop, 903 million bushels. The Australian estimate of 159 million bushels,

however, is perhaps nearly 10 million bushels too low, according to apparently official advices¹ not yet confirmed by the United States Department of Agriculture, whose figures are employed in Table 1. The figures for Argentina and Canada require more detailed comment.

The crop of Argentina, which we carry at 300 million bushels, may vary consider-

million bushels. Since the export data do not afford convincing indications that Argentina produced as much as 320 million bushels, but suggest a crop larger than 275 million, we employ the intermediate rounded figure of 300 million.²

The Canadian official estimate of 534 million bushels seems likely to prove too low. From August 1 to March 31 about 450

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	480	749	278	983	106	335	40	3,115	275	117	460 ^c	3,575 ^c
1928.....	903	534	860	355	1,036	103	289	42	3,275	300	159	520 ^d	3,795 ^d
Average 1909-13...	690	197	759 ^e	330	1,017	93	352	32	2,725	147	90	280	3,004
1923-27...	822	415	638	266	964	98	345	38	2,960	225	136	418	3,380

* 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 figure for Argentina in 1928 represents our approximation. Totals exclude China, Asia Minor, Brazil, and a number of small producers. All estimates are for areas within post-war boundaries.

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

^b Rounded figures.

^c Includes our estimate for Peru.

^d Includes our estimate for Peru and Chile.

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

ably from that figure. Early in January Broomhall's agent in Argentina placed the crop at 312 to 320 million bushels. The *Times of Argentina*, as late as March 11, estimated the exportable surplus as around 6.75 million tons, which would imply a crop of around 320 million bushels. Shipments from Argentina during February-March, when most of the wheat must have come from the new crop, were of almost the same size this year as last. Since lower prices must have served to curtail exportation this year in so far as they affected it at all, one may infer from these data that this year's crop was larger than that of 1927, which appears to have reached or exceeded 275

million bushels had been delivered to railways by farmers in the Prairie Provinces; there were 60.5 million bushels left on farms; and at least 40 million bushels must be allowed for wheat fed on farms, delivered to country mills, and delivered in the other provinces of Canada during August-March. The total is 550 million bushels presumably accounted for out of a crop placed at 534 million. A similar result appears if one bases the calculation upon the inward carryover, net exports to March 31, disappearance for food and feed to March 31, and stocks on March 31. One may reasonably expect that the Canadian official crop estimate for 1928 will be revised upward; but the increase is not likely to be as large as that for the 1927 crop, which was raised from 440 to 480 million bushels on the first occasion that a Canadian "final" (January) estimate has ever been altered.

¹ Reported in *Northwestern Miller*, April 3, 1929.

² The United States Department of Agriculture estimate of the Argentine crop, as secured from analyses of weather conditions, yield, and acreage, stands at 255 million bushels.

With respect to quality, crops appear much as they did in December, distinctly good in most countries except Canada. In the United States, the spring bread-wheat crop was of especially good quality, though good milling qualities of amber durum were scarce; winter wheat was moderately good, though there was much bleached and some bin-burnt grain. European countries generally had crops of good quality, much better than those of 1927. The new Argentine crop is reported to be of excellent quality, and wheat weighing 64 pounds to the measured bushel is distinctly common. The new Australian crop is apparently even better in quality than that of 1927. F.a.q. standards of $61\frac{3}{4}$ and 62 pounds per measured bushel were established in Victoria and South Australia, the same as in 1927; but the standard for New South Wales was set at 63 pounds for 1928 as against 60 pounds for 1927.

The Canadian crop has consisted of the lower grades to a slightly greater extent even than in September-November; wheat grading No. 5, No. 6, and feed has constituted 39 per cent of inspections in September-March, as against the previously highest percentage of 13.1 in 1924-25. But so far as may be judged by a comparison of the distribution by grades in the total inspections with the distribution by grades of the wheat remaining in store at the end of March, the lower grades have moved into consumption about as rapidly as the higher grades. The evidence suggests that markets have been found for these lower grades even at rather smaller price discounts than prevailed in the preceding four years, and that most of this wheat has been used to make flour rather than animal feed. Most European countries have imported liberal quantities of No. 5; many have imported No. 6; and Japan and China have imported much No. 6 and feed as well as much flour made largely from these grades. The Oriental market for No. 6 was sufficiently active to give rise to higher prices at Vancouver than could be obtained at Winnipeg. The official estimate of wheat unmerchantable, issued April 16, was 5 per cent of the crop of 1928 as against 6 per cent of the crop of 1927. Thus wheat presumably fed to animals on Canadian farms amounts to

much the same figure this year as last, since this year a smaller percentage was unmerchantable while the crop was larger. The view (expressed in our December survey) that the great bulk of the lower grades of wheat must be regarded as a part of the world's supply of bread wheat, and a part capable of affecting bread-wheat prices, now seems to be confirmed.

CHANGES IN THE STATISTICAL POSITION

During the period under review, the trade press both in the United States and in Europe has occasionally sought to ascribe the firmness of prices in January and February in part to increasing tightness (or diminishing ease) in the international statistical position—to a reduction in the apparent margin between exportable surpluses and import "requirements," a reduction due to the appearance of larger "requirements" than had earlier been anticipated. It is of course impossible to trace with precision changes in traders' opinions respecting the international statistical position, though opinions doubtless have their effect upon short-time fluctuations in wheat prices. So far as the statistical evidence itself is a criterion, there seems to be little reason to suppose that the international statistical position has undergone any marked change between mid-December and mid-April.

During the intervening months the accumulation of data has tended to confirm our mid-December analysis of supplies available in the major exporting countries. The crops of Canada and the United States still appear to approximate 1,450 million bushels; and the view that most of Canada's crop is millable for one purpose or another is now more generally accepted. The Australian crop still seems to be 160 million bushels, perhaps a little larger. The Argentine crop, however, which we placed at a figure (then described as distinctly conservative) of 250 million bushels, now seems nearer to 300 million. In our judgment the total 1928-29 exportable surplus in these four countries may be said to appear somewhere around 25 million bushels larger than it did in mid-December. Apparently some reduction has occurred in

the probable exportable surpluses of the minor exporting countries. The crop estimates of Jugo-Slavia and Algeria were reduced, though reduction of the former was allowed for in our mid-December analysis; and the evidence suggests that domestic consumption of wheat for food and feed has proved larger throughout the Danube countries than seemed likely four months ago. All told, reductions in the surpluses of the minor exporting countries now appear partially to have offset increases in the apparent surpluses of the major exporting countries. Thus, the international position has not significantly changed with respect to total exportable surpluses, though these appear a little larger than they did in mid-December, in part because slightly smaller allowances ought now to be made for domestic utilization of wheat for feed in Canada and the United States than were made in our December survey.

Import "requirements" are far more difficult to evaluate. The term itself is ambiguous, as we have often had occasion to observe. In the present year its ambiguity is particularly unfortunate. The demand for wheat is always partially inelastic, or of such a nature that approximately the same quantities will be purchased whatever the price; and it is partially elastic, or of such a nature that much larger quantities will be purchased at low than at high prices. In the usage of the trade, the term "requirements" seldom carries this significant distinction; "requirements," indeed, are usually estimated by reference to the volume of international trade, actually recorded or in prospect. Thus the record volume of trade which had already transpired in 1928-29 was often referred to as evidence that higher prices were in prospect, despite the fact that this exceptionally large movement was clearly in great part the result of heavy shipments to ex-European countries where demand for wheat may be described with assurance as relatively elastic.

Some evidence has appeared which suggests that, in so far as import "requirements" for the crop year have changed during the past four months, they have become somewhat larger. About the only tangible new factor making for a decrease in apparent world import requirements was the

appearance of revised estimates of wheat and rye crops in Europe. Net increases in the estimates of the wheat crop in Europe outside of Russia and the Danube countries amounted to 16 million bushels; estimates of the rye crop now stand only 7 million bushels higher than they stood in mid-December, reductions in the estimates for Spain and the Baltic states being offset by increases in the Polish and Czecho-Slovakian estimates. A more intangible factor making for smaller requirements is the fact that Russia has failed to appear as an importer, despite frequently reiterated statements in the trade press that she must be expected to do so.

Against these developments can be set a group of influences making for larger import requirements than seemed probable in December. The extraordinarily cold winter in Europe perhaps stimulated bread consumption generally, though prevalence of influenza in France at least may have acted in the contrary direction. A secondary result of the extreme cold was unusually extensive damage to potatoes stored in pits throughout central Europe, and hence some indirect encouragement to wheat consumption; but recent advices from Germany state that damage proved much less than had been feared. Another factor was the modification of milling restrictions or tariff duties by several countries. In December Spanish regulations were altered to permit admixture in flour of a greater proportion of imported with domestic wheat; Syria and Poland lowered duties or relaxed restrictions on imported wheat; and in March the Greek duties were reduced. These encouragements to wheat consumption were in addition to the relaxation of milling regulations in France and Italy which was mentioned in our December survey. Again, the mediocre prospects for the new Argentine corn crop may have acted to tighten the European situation, somewhat furthering substitution of wheat for corn and other feed grains; and net decreases in the estimates of European crops of corn, barley, and oats were 70 million bushels. Finally, the outlook for India's wheat crop now being harvested turned rather unfavorable, and perhaps served to increase the quantity of wheat which India could be expected

to import in the crop year 1928-29, or at least to diminish the possibility that she might export appreciable quantities in June and July 1929.

Obviously one cannot assign to any of these factors a numerical effect on import requirements for 1928-29. But their effect was doubtless somewhat to increase apparent demand for wheat in the technical economic sense, presumably by more than net upward revisions of wheat and rye crop estimates in importing countries would tend to decrease it. Hence we conclude that, while both exportable surpluses and import requirements have increased slightly during the period under review, the margin between them appears not much different in mid-April from what it appeared in mid-December. Conceivably the margin may have widened slightly, but certainly not appreciably enough to justify decidedly lower international wheat prices than have prevailed. The upward course of prices in January and February is in our judgment to be ascribed to other factors than a change in the international statistical position.

PROBABLE NET EXPORTS

Even with accumulated data upon trade, stocks, and crops in the exporting countries, estimates of probable net exports for the crop year 1928-29 remain subject to a fairly wide margin of error. Enough information is available, however, to suggest that revisions of our December estimates are desirable. These appear in Table 2 in comparison with Broomhall's estimates of probable shipments and with the United States Department of Agriculture's estimates of net exports for the crop year July-June.

Despite the large crop and huge visible supplies, net exports from the United States (July-June) now seem likely to reach only about 140 million bushels, some 15 million less than our December estimate. During the preceding seven years April-June net exports have constituted from 91 to 182 per cent of January-March net exports, or 91 to 136 per cent if we exclude the year 1926, when the transition from a distinctly short crop to a distinctly good one gave rise to unusually heavy exportation in April-June. Net exports in January-March 1929 were

21.8 million bushels. In so far as the seasonal movement of net exports in recent years is a useful criterion, one may expect April-June net exports in 1929 to range between 20 and 40 (more probably between 20 and 30) million bushels. In view of the small exports thus far reported for April, heavy exportable surpluses available in Canada and Argentina, the continued low

TABLE 2.—FORECASTS OF PROBABLE NET EXPORTS BY EXPORTING COUNTRIES IN 1928-29*

(Million bushels)

Exporting area	Broomhall		U.S.D.A.		F.R.I.	
	Dec. 20	Feb. 12	Oct. 20	Feb. 26	Dec. 20	May 1
United States .	136	136	200-220	150-175	155	140
Canada	368	400	345-390	375-400	420	430
Argentina	184	192	125-160	160-185	160	215
Australia	96	96	75-85	90-100	100	115
Russia . . . . .	...^a	... ^a	... ^a	... ^a	...	...
Danube basin ^b .	40	40	65-90	31-47	50	40
India . . . . .	...^a	... ^a	... ^a	... ^a	... ^a	... ^a
Others	16	16	2-5 ^c	2-5 ^d	15 ^e	10 ^e
Total	840	880	812-950	808-912	900	950

* For crop year August-July, except U.S.D.A. estimates and F.R.I. estimates for United States exports, which are for the year July-June. Broomhall's figures are for probable shipments. Dots (...) indicate items for which no estimate was made.

^a Net import.

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

^c Algeria and Tunis.

^d Algeria only.

^e Algeria, Morocco, Tunis, Chile.

level of prices with United States prices still out of line with import markets, we assume that April-June net exports bid fair to fall in about the middle of the indicated range, probably not much exceeding 25 million bushels. Since July-March net exports were only 113 million, total net exports (including an allowance of 2 or 3 million bushels shipped to possessions) will probably approximate 140 million for the July-June crop year. The figure may run higher if American prices quickly return to a level facilitating exportation, especially because railway freight rates on wheat destined for export have been reduced. August-July net exports may well exceed the July-June figure because exports in July 1928 were unusually small, and because stocks in commercial channels are exceptionally large.

Canadian net exports, on the other hand, seem likely to reach about 430 million bushels, some 10 million more than our December estimate. The seasonal movement of Canadian net exports seems to afford a less satisfactory basis for estimating the size of the end-year movement than is true of the United States; but the relation between Canadian stocks on March 31 and April-July net exports has proved fairly constant during post-war years of large Canadian wheat crops. During such years April-July net exports have ranged from 47 to 52 per cent of total Canadian stocks on March 31, and these figures suggest that net exports of 115 to 127 million bushels may be expected in April-July this year. Since 314 million had been exported during August-March, the total for the year will probably lie between 429 and 441 million bushels; and we employ 430 million as a reasonable figure. Canadian railway freight rates were also reduced to meet the American; but existing congestion at Montreal and canals feeding this port suggests that the outward movement in May at least will perhaps prove moderate, size of crop and stocks considered.

Any estimate of the probable April-July movement from Argentina must remain scarcely more than a guess, in the absence of an official estimate of the crop, and of official net export statistics for the months of December, January, and March. Moreover, the seasonal movement in past years has been far from consistent, with variations attributable to an extremely complex group of circumstances. During the preceding six years, net exports during the months of January-March have constituted anywhere from 45 to 64 per cent of net exports during January-July. On this basis, since January-March exports were about 85 million bushels this year, one may expect January-July exports to range between 135 and 190 million, and April-July exports between 50 and 105 million. Perhaps something like the middle of this range, around 77 million, is as appropriate an estimate as the data justify. Net exports during August-March have approximated 140 million bushels, perhaps a little more; hence the total for August-July may reach 215 million bushels, or 55 more than our December

estimate. Our earlier estimate, however, was admittedly conservative; and our present estimate is to be regarded merely as the middle of a wide range. Argentina may export fully 10 per cent more or 10 per cent less than 215 million bushels of wheat during the crop year 1928-29; in either event the total would constitute a new record.

Australia may usually be counted upon to export a little less wheat and flour in April-July than in January-March. In 1925 and 1927, when available supplies were similar in size to those of the present year, January-March exports were 56 and 45 million bushels respectively, and April-July exports were 49 and 45 million. This year, however, lower prices have prevailed and the harvest was somewhat early; hence April-July net exports will probably prove smaller in relation to January-March exports than was true in those years. Some 35 million bushels more or less—probably more, so far as the seasonal movement of past years is a satisfactory guide—may be exported in April-July, as against 53 million in January-March. Since exports in August-March were about 79 million bushels, the probable total movement for the crop year, in rounded figures, may reach 115 million or more. This figure is 15 million above our December estimate. It implies either stocks on August 1 improbably low in view of the low level of international wheat prices, or (more probably in the light of recent advices) a crop larger than 159 million bushels.

Among the minor exporting countries, India and Russia seem certain to furnish no net exports in 1928-29. The Danube countries, in spite of wheat crops apparently no smaller than they appeared to be in mid-December, have exported less than seemed probable at that time. Although net export data are incomplete, less than 30 million bushels of wheat and flour seem to have been exported from Hungary, Yugoslavia, Roumania, and Bulgaria in the first seven months of the crop year. Since exports from these countries tend to decline in the latter months of each year, net exports in 1928-29 seem unlikely to exceed 40 million bushels, a figure 10 million below our December estimate. Fragmentary data suggest further that net exports from Al-

geria, Morocco, Tunis, and Chile are more likely to approximate 10 than 15 million bushels.

All told, world net exports now appear likely to approximate 950 million bushels rather than 900 million, our December estimate—which, however, was set forth as a conservative one, especially with regard to the probable exports of Argentina and Australia. The total is much higher than Broomhall's standing estimate (published February 12) of probable shipments, 880 million bushels; but net exports always exceed shipments, and Broomhall has recently expressed the opinion that his estimate might be moderately exceeded.¹ Our estimate exceeds the middle of the range of the United States Department of Agriculture's estimate of July-June net exports (as published on February 26) by 90 million bushels. The differences arise princi-

pally from the fact that we regard the crops of Argentina, Australia, and Canada as considerably larger than the Department seems to do; but our methods of estimation also differ. Despite differences in detail, all observers substantially agree that the volume of international trade in 1928-29 will prove by far the largest in history. If net exports approximate 950 million bushels, the total will exceed that of 1927-28 by around 130 million bushels and that of 1926-27, when net exports were previously largest, by about 100 million. Approximately 675 million bushels had been exported between August 1 and March 31. The movement in the last third of the crop year is likely, as usual, to fall below a third of the year's total; and trade is not likely to prove so large in contrast with earlier years (especially 1923-24 and 1926-27) as it was in August-November and December-March.

II. INTERNATIONAL TRADE

International trade during December-March displayed much the same striking features as appeared in August-November. Exporting countries as a whole shipped record quantities of wheat and flour. An unusual proportion of the shipments came from Canada, Argentina, and Australia. The United States exported very little considering the size of her crop. The same was true of the Danube countries. India was a net importer rather than a net exporter, and Russia shipped practically nothing. Prevailing low prices furnished a stimulus to importation—most considerably in ex-European countries, where demand is relatively elastic, and least noticeably in western Europe, where demand is less elastic.

According to Broomhall's shipments data summarized in Table 3, some 346 million bushels of wheat and flour were shipped overseas in 17 weeks of the December-March period. This is over 15 per cent more than was shipped in 1926-27, when the movement in December-March was previously largest. In that year, moreover, shipments in the second third of the year received a stimulus not present this year; for the August-November movement had

been curtailed by exceptionally high ocean freight rates, so that shipments in subsequent months in part represented the mak-

TABLE 3.—INTERNATIONAL WHEAT AND FLOUR SHIPMENTS (BROOMHALL) BY DESTINATIONS*
(Million bushels)

Year	December-March (17 weeks)			August-March (34 weeks)		
	Total	To Europe	To ex-Europe	Total	To Europe	To ex-Europe
1920-21..	181.4	164.9	16.5	355.6	326.9	28.7
1921-22..	223.6	180.8	42.8	441.0	365.4	75.6
1922-23..	225.9	196.0	29.9	444.7	385.2	59.5
1923-24..	270.1	203.0	67.1	492.0	380.5	111.5
1924-25..	272.0	242.1	29.9	527.0	470.5	56.5
1925-26..	234.7	175.6	59.1	442.2	342.3	99.9
1926-27..	299.1	252.8	46.3	531.9	449.1	82.8
1927-28..	272.7	222.9	49.8	524.6	443.8	80.8
1928-29..	346.1	245.3	100.8	649.2 ^a	489.5 ^a	159.7 ^a
Average 1909-14..	189.9	161.9	28.0	406.5	353.0	53.5
1923-28..	269.7	219.3	50.4	503.5	417.2	86.3

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

^a Thirty-five weeks.

ing up of arrears. Shipments to Europe of 245 million bushels in December-March 1928-29 were decidedly large, but not so strikingly so as total shipments. In 1926-27, indeed, more wheat was sent to Europe,

¹ *Corn Trade News*, April 3, 1929.

and in 1924-25 almost as much. The exceedingly large total movement in December-March was due principally to record shipments of 101 million bushels to ex-European countries—34 million bushels more than in 1923-24, when these countries previously imported most heavily, and 51 million more than in 1927-28.

If we employ trade figures covering two-thirds rather than one-third of the crop year, the huge volume of trade in 1928-29 is even more striking, even with allowance for the fact that we include shipments for 35 weeks in 1928-29 as against 34 weeks in other years. Total shipments of nearly 650 million bushels have already been recorded. This is a larger quantity than was shipped during the whole crop year in 1920-21 or 1921-22, and it is within 30 million bushels of the total quantities shipped during twelve months in 1922-23 or in 1925-26.

Certain contrasts with August-March shipments in earlier years are illuminating. This year prices were somewhat higher than in 1923-24, and the wheat crops of European importing countries in the aggregate were somewhat larger; hence if other things were equal, one would expect European imports to be smaller in 1928-29 than in 1923-24. But Europe has already taken over 100 million bushels more wheat in August-March than in the same period of 1923-24. "Other things" have not been equal. In particular, population and per capita consumption of wheat, which has increased partly because of increasing prosperity, have increased. Nearly 50 million bushels more of wheat and flour were shipped to ex-European countries in August-March 1928-29 than in the same period of 1923-24. This increase is attributable in part to similar factors difficult of measurement, but in part to the fact that India (shipments to which totaled 23 million bushels this year) was a net exporter in 1923-24, but a net importer in 1928-29.

Lower prices constitute an important (though not the only) reason why August-March shipments to Europe in 1928-29 have proved around 10 per cent larger than in 1927-28. Even with liberal allowance for the unknown annual increment in "requirements" due to population growth and

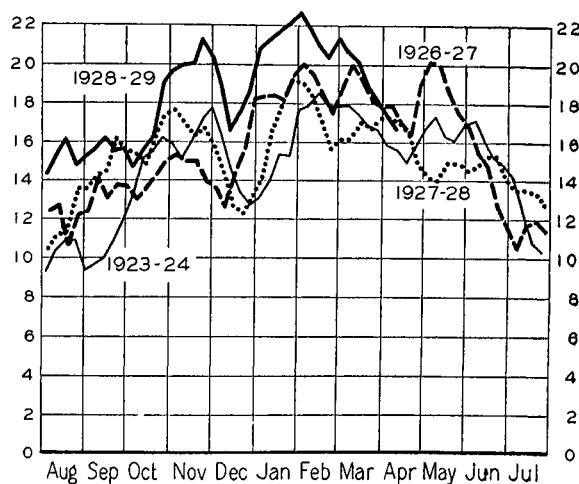
increasing per capita consumption, one could hardly expect European countries to import more wheat this year than last at equivalent prices; for this year's wheat crop was both larger and of better quality, and so was the crop of rye. Lower prices undoubtedly account for a moderate proportion of the increased takings of Europe thus far in 1928-29. But another factor was the smaller crops of corn and of potatoes, their aggregate decrease (around 450 million bushels) being more than sufficient to offset the aggregate increase (around 75 million bushels) in the crops of barley and oats. One cannot describe the European feed grain situation as distinctly tight this year, except with respect to corn; but it was presumably such as to encourage more feeding of wheat to animals this year than last. A third factor is the greater need of Turkey for wheat; Broomhall's figures include shipments to Turkey, though the country as a whole should appear among the list of ex-European nations.

Heavier ex-European importations in 1928-29 have been due in considerable part to India's short crop, which accounts for around a fourth of the increase; somewhat to the shorter crop in Egypt, Asia Minor, and possibly China; to a smaller rice crop in the Orient; to growth of population and per capita consumption; but above all, so far as one can measure the various influences, to lower prices. Lower prices seem clearly to have exerted a greater influence on ex-European than on European trade.

The course of trade, expressed in the three-week moving averages of Broomhall's weekly shipments data, is shown in Chart 1 (p. 216). The usual decline occurred in December with the close of navigation on the Great Lakes. The subsequent rise was timed a little earlier than usual, but seems to have reflected an unusually large overseas movement from Canadian stocks stored in eastern lake and Atlantic ports rather than an unusually heavy seasonal movement from Argentina or Australia, though these countries both shipped exceptionally large quantities, and in Australia at least the harvest was early. Shipments reached their greatest height in the first two weeks of February, in each of which the total was 23 million bushels. Until the

present year weekly shipments of more than 20 million bushels were distinctly uncommon; but in the 18 weeks ending March 30, shipments exceeded 20 million bushels in each of 12 weeks.¹

CHART 1.—INTERNATIONAL SHIPMENTS OF WHEAT AND FLOUR, WEEKLY, 1923-24, AND FROM AUGUST 1926*
(Million bushels; 3-week moving average)



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

DISTRIBUTION OF IMPORTS

The effect of lower wheat prices in increasing imports in 1928-29 over those of 1927-28 may be analyzed in more detail by reference to statistics of net imports, of crop production, and of Broomhall's shipments by destinations.

Broomhall's shipments by European destinations in August-March² 1927-28 and 1928-29 were as follows, in million bushels.

Destination	August-March	
	1927-28 (34 weeks)	1928-29 (35 weeks)
Orders	91.3	99.4
United Kingdom	109.7	109.6
France	19.5	30.1
Italy	44.9	51.9
Germany ^a	47.3	47.6
Belgium	43.0	39.3
Holland	53.5	49.9
Scandinavia	13.8	19.4
Greece ^b	9.8	14.7
Spain ^c	1.7	15.6
Austria ^d	9.2	12.0
Total	443.8	489.7

^a Includes Poland and Czecho-Slovakia.

^b Includes Turkey.

^c Includes Spanish colonies and Portugal.

^d Includes Malta.

These data constitute a somewhat unsatisfactory guide, since there is no way of ascertaining the final destination of wheat shipped to Europe for orders. They serve, however, to emphasize the significant facts. According to these data, considerable increases in imports have occurred in France, Italy, the Scandinavian countries, Greece and Turkey, Spain and Portugal, and Austria. There appears to have been little change in the imports of the United Kingdom and Germany (including Poland and Czecho-Slovakia), and a moderate decrease in the imports of Belgium and Holland.

Net import statistics covering the period August-February in the main confirm Broomhall's data, but with some qualifications. Such data show that Germany, Czecho-Slovakia, Poland, Switzerland, Holland, and Belgium have all imported (net) less wheat and flour this year than last; for these countries August-February net imports totaled 101.5 million bushels as against 124.6 million in 1927-28. But the fact that lower prices have encouraged importation is apparent when we consider that wheat and rye crops in these countries were over 140 million bushels larger this year than last, and of much better quality. The stimulus of low prices is also apparent with regard to the Scandinavian and Baltic countries. Here the wheat crops totaled 43.0 million bushels in 1928 and only 31.4 million in 1927; but net imports in August-March 1928-29 have reached 25.1 million bushels as against 20.4 million in the same period of 1927-28. In part, however, increased imports in these countries were due to slightly smaller crops of rye.

French imports also appear to have been stimulated by lower prices, though in the absence of comparable net import statistics³ the conclusion that August-March imports were larger this year than last must rest upon Broomhall's shipments data. France had a domestic wheat crop of about the

¹ See Appendix Table V.

² Analysis of December-March data is hardly necessary since these show much the same features as August-March data.

³ Data are available only for August-December. These show net imports of only 21.2 million bushels this year as against 29.3 million in 1927-28. But net imports were overstated in early 1927-28; see *WHEAT STUDIES*, May 1928, IV, 244.

same size in 1928 and 1927, but much better in quality this year. Imports and consumption may have been stimulated not only by lower prices, but also by relaxation of milling restrictions. One cannot ascertain how far larger available supplies indicate increased consumption, how far upbuilding of stocks.¹ In Italy also other forces as well as lower prices acted to increase net imports in 1928-29 over those of 1927-28. Although the Italian crop of 1928 was over 30 million bushels larger than that of 1927, her net imports in August-February were 10 million bushels larger also. The short corn crop and the relaxation of milling restrictions have doubtless stimulated consumption of wheat. Competent observers, however, are of the opinion that net imports in April-July will prove considerably smaller this year than last, so that by the end of the year the contrast of net imports and total available supplies as between the two years may be less striking.

Net import statistics are not available for Spain, Portugal, Austria, and Greece. Spain and Portugal, however, have undoubtedly imported much more heavily this year than last, as Broomhall's shipments data suggest; but the increase has probably been due more to much shorter wheat crops than to lower wheat prices. The stimulus of lower prices appears scarcely to have affected British imports; these were about 143 million bushels in August-March 1928-29 as against 156 million in the same period of 1927-28, despite a smaller domestic wheat crop of 1928, which was, however, of far better quality than that of 1927. British importers appear to have waited patiently this year for still lower prices than those prevailing in the first half of the year; and with the recent extensive decline of prices they may choose to make up arrears. All told, lower wheat prices appear to have had the least effect in stimulating net imports in

the British Isles, Spain, Portugal, France, Switzerland, Belgium, and Holland, and their greatest effect in Germany, Czechoslovakia, Poland, the Scandinavian countries, and the Baltic countries. The situation in Italy, Greece, and Austria is not yet clear.

Practically all groups of ex-European importing countries imported far more wheat this year than last. The distribution of Broomhall's shipments to ex-Europe in August-March is as follows, in million bushels.

Destination	August-March	
	1927-28 (34 weeks)	1928-29 (35 weeks)
Central America ^a	30.4	45.4
China and Japan.....	21.2	52.2
Brazil	18.0	19.4
Egypt	5.4	12.9
North and South Africa.....	3.7	5.7
India	1.5	23.0
Others ^b .....	.6	1.1
Total	80.8	159.7

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

^b Chile, Peru, Syria, Palestine, New Zealand.

The small increase in takings of the "others" group is probably to be ascribed to smaller wheat crops in Asia Minor and New Zealand. The moderate increase in Egyptian takings is also to be ascribed in some part to smaller native wheat supplies; and the large increase in Indian takings is undoubtedly due to the same factor. But Brazil, the group called "Central America," and North and South Africa must have increased their imports principally on account of lower prices, since little wheat is produced in Brazil or "Central America," while the South African crop was larger in 1928 than in 1927. The greatly increased imports of China and Japan are less readily explained. They were due in part, perhaps, to a shorter rice crop in both countries, and in China to a shorter wheat crop in the neighborhood of Tientsin, as well as to a more stable social order which seems to have resulted in better conditions of domestic transportation; but lower wheat prices were probably the dominating influence.

SOURCES OF EXPORTS

In their distribution by countries of origin, exports of wheat and flour during

¹ Our correspondent, M. Augé-Laribé, states that the decree of December 4, 1928, permitting millers to manufacture pure wheat flour of any extraction, could hardly have had any effect on bread consumption for six or eight weeks thereafter because bakers first chose to dispose of their accumulated stocks of flour containing admixtures of other cereals. Later, although the extreme cold weather may have tended to increase bread consumption, an epidemic of influenza may have acted in the contrary direction. The situation can become clear only in later months.

December-March displayed much the same characteristics as they did in August-November. Broomhall's shipments by countries of origin, together with official data on net exports from the four principal exporting countries, appear in Table 4.

India shipped practically nothing, and was indeed a net importer of over 12 million bushels of wheat in the three months

of the good crops. In the Danube countries the shortage of corn has led to an increase in both the feed and the food use of wheat. But this is not measurable and may not have been heavy. Farmers, dissatisfied with low wheat prices, have apparently kept their stocks at unusually high levels.

Of the four major exporters, all except the United States exported record quanti-

TABLE 4.—INTERNATIONAL SHIPMENTS AND NET EXPORTS OF WHEAT AND FLOUR FROM PRINCIPAL EXPORT AREAS, DECEMBER-MARCH, 1922-29*
(Million bushels)

Dec.-Mar.	International shipments (Broomhall)								Net exports from			
	Total	North America	Argentina	Australia	Russia	Balkans	India	North Africa and Chile	United States	Canada	Argentina	Australia
1922-23.....	226.0	139.6	52.8	24.8	....	2.0 ^a	6.8	...	49.0	84.3	56.6	25.1
1923-24.....	270.0	159.2	56.0	33.2	10.4	10.4 ^b	.8	...	34.6	117.0	65.2	38.9
1924-25.....	272.0	116.8	66.0	60.4	....	14.0 ^b	14.8	...	63.4	61.9	65.0	60.0
1925-26.....	234.8	128.8	33.6	40.8	4.8	12.0	14.8 ^c	...	21.8	116.4	35.5	42.2
1926-27.....	301.6	159.2	60.8	49.6	20.4	10.4	.4	.8	42.3	100.6	69.5	51.3
1927-28.....	272.8	149.6	82.4	27.6	.8	10.0	.4	2.0	32.1	113.2	93.9	27.1
1928-29.....	346.4	176.0	93.6	60.4	....	14.4	....	2.0	32.8	124.7	100.0 ^d	60.8 ^e

* Shipments figures are Broomhall's cumulative totals for seventeen 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 V. Net exports are official data.

^a Includes some shipments from Manchuria.

^b Includes some shipments from Mesopotamia.

^c German shipments of 14.4 million bushels included.

^d Rough estimate based on Broomhall's shipments data, which usually understate Argentine net exports in December-March.

^e March exports estimated from Broomhall's shipments.

of December-February, the result of the short crop of 1928. Russia also has shipped next to nothing, despite her record post-war wheat crop of 860 million bushels. There may not be a true shortage of wheat in Russia as a whole; but, thus far in the year at least, collections of grain have proved so small that rationing of bread was put in force in several of the principal cities, and exports were impossible. The prices paid by official collecting agencies for grain are for various reasons regarded as too low by the peasants, who choose either to store or to consume their produce in the face of active official efforts to obtain it. Despite the shortage of bread grain in the consuming centers, Russia has thus far disappointed confident expectations, repeatedly and prominently expressed, that she would import heavily. Chile, the French dependencies of northern Africa, and the Danube countries have exported fair quantities of wheat, but not large ones in view

ties for the season in December-March. So much was to be expected in view of the huge crops secured in Canada, Argentina, and Australia. In some part, however, the record movement from both Argentina and Australia occurred because exceptional supplies of old-crop wheat were available for export in December, before the excellent new crops began to be marketed in volume. Size of crops considered, the December-March movement from these two countries was not exceptionally rapid. If, as seems probable, the Argentine crop of 1928 exceeds that of 1927, she could have exported much more in January-March 1929 than in the corresponding months of 1928; but the actual difference was small. Similarly Australia could have exported in these months more than she did in 1925, but in fact the exports were a little smaller this year. Canada, however, exported rather more rapidly this year than last; last year the damp condition retarded the movement.

Low prices, which have stimulated imports, have served somewhat to reduce efforts toward export, though not markedly.

December-March net exports from the United States were only 32.8 million bushels, the smallest quantity exported in any similar period of recent years except 1927-28 and 1925-26. Such small exports were all the more remarkable this year on account of the large crop and visible supplies of record size. Some 22.5 million bushels of the total consisted of flour as wheat, the remainder of Pacific wheat, durum, and other unrepresentative types. United States prices of representative wheats were maintained above export parity, a situation resulting principally from a broad outlook for higher prices which was based partly on a

crop scare in mid-winter and the possibility of governmental price-raising measures,¹ and perhaps also the expectation of lower yields in 1929.

Several minor features of the recent export movement are of interest. Under the import certificate system, eastern Germany continued to export fairly large quantities of domestic wheat. Exports of flour from the Pacific Coast ports of the United States, chiefly to the Orient, were of the largest volume since 1923-24. The Pacific ports of Canada exported larger quantities of wheat and flour than ever before. Shipments from Argentina to "orders" were much larger this year than last, and at times unsold cargoes in this category exerted considerable pressure on European markets.

III. VISIBLE SUPPLIES AND OTHER STOCKS

Statistical data on stocks in most countries are insufficient to permit either a detailed comparison of the position as of the end of March 1929 with earlier years, or a comparison of the reduction of stocks in December-March 1928-29 with the reductions of earlier years. In the major exporting countries and the Danube basin, but not in India, stocks have persisted at extraordinarily high levels throughout the period under review. In ex-European importing countries, consumption for food and feed has undoubtedly been unusually heavy, even considering the trend; but there is no evidence to suggest that the increase of consumption in 1928-29 has thus far been of sufficient magnitude to offset the large crops and heavy imports. With some exceptions, notably Spain, Portugal, and the British Isles, stocks at the end of March seem to have stood relatively high in most European and ex-European countries as well, but by no means so remarkably high as in North America and in Argentina. Throughout the period under review the presence of exceptionally large stocks in various positions has acted as a depressing influence on wheat markets.

EXPORTING COUNTRIES

Visible supplies in North America and afloat for European destinations are shown

in Chart 2 (p. 220). The total has run above 400 million bushels in most of the period, higher by 100 million bushels or more than in the previous year of highest visibles, 1927-28. Visibles in Canada and the United States, not visibles afloat, were responsible for the high total figures. Despite extraordinarily heavy total shipments overseas, reported figures for stocks afloat have not run exceptionally high. They might have done so if they were calculated to include stocks afloat for ex-European countries; as we have seen, shipments to these countries were relatively larger than shipments to Europe by comparison with earlier years.

The extraordinarily large visible supplies in the United States were due primarily to the restricted flow of wheat to export from a distinctly large crop and inward carry-over. Yet a relatively rapid movement from farms to terminal markets was partly responsible. Stocks on farms and in country mills and elevators were officially estimated at 227 million bushels on March 1 this year, following the largest crop (except that of 1919) in the ten years 1919-28. In four of the nine years of smaller crops, March 1 stocks in these two positions were larger than they were this year; and farm stocks were larger in three. The movement from farms this year, size of crop considered, is

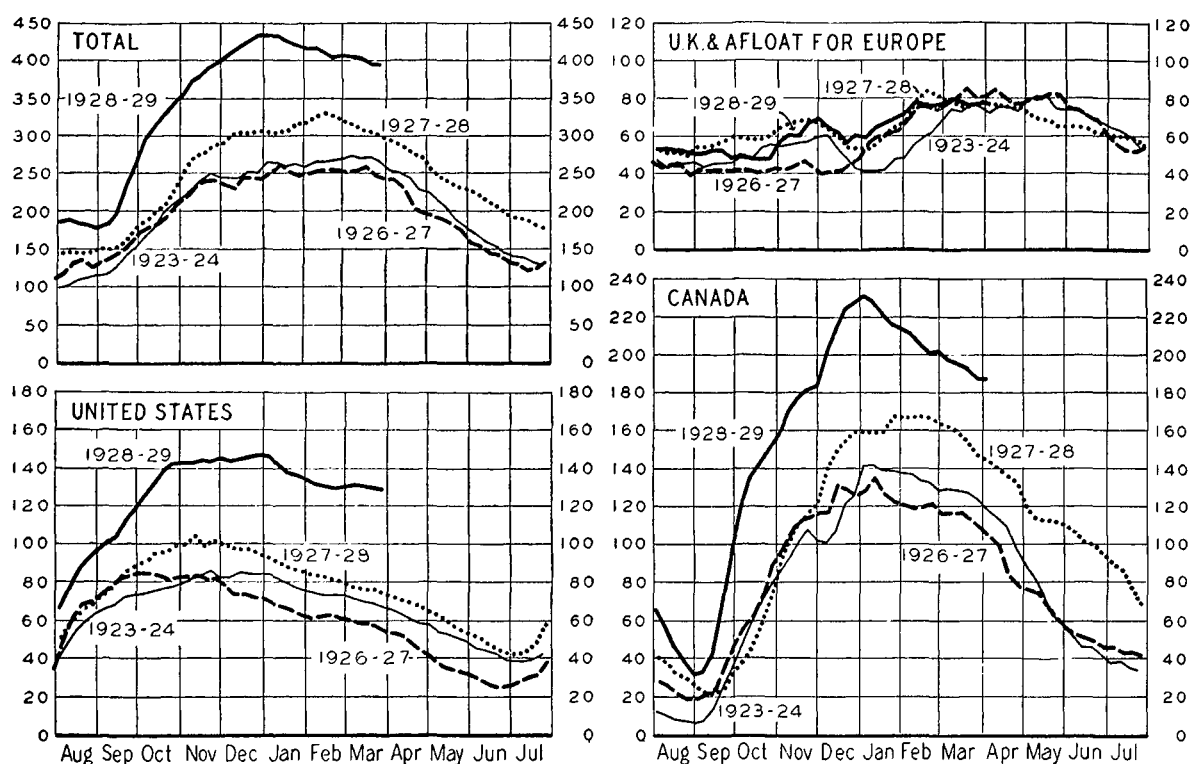
¹ See below, p. 225.

better described as about normal than as slow. Visible supplies might have run even higher if mills had not chosen to maintain their stocks at a high level. On December 31, 1928, according to census estimates, stocks held by city mills (excluding wheat stored in public terminal elevators and in country elevators) were 138 million bush-

holdings were in Duluth, Minneapolis, Chicago, Kansas City, and various points in the interior. Farm stocks, totaling 149 million bushels as against 130 million in 1928, were distinctly larger only in the states of Kansas, Oklahoma, Nebraska, North Dakota, and Minnesota, and were considerably smaller in most states east of the Mississippi.

CHART 2.—VISIBLE WHEAT SUPPLIES IN THE UNITED STATES, CANADA, AND UNITED KINGDOM PORTS AND AFLOAT TO EUROPE, WEEKLY, 1923-24, AND FROM AUGUST, 1926*

(Million bushels)



* Data from Canadian Grain Statistics and Northwestern Miller.

els, over 20 million more than in any of the preceding three years for which comparable data are available. On March 31 these stocks reached 107 million bushels, more than 15 million bushels higher than in any of the three preceding years.

All told, stocks in the United States comprised in the visible supply (Bradstreet's), in country mills and elevators, and in the hands of farmers on March 1 reached 357 million bushels, some 70 million bushels more than the year before, and the largest since 1919. Of the visible supply, little was concentrated at the seaboard; the large

The enormous Canadian visible supplies reached their peak of 231 million bushels in the first week in January, a peak some 65 million bushels higher than the highest point reached in 1927-28, late in January. This year the earlier harvest and drier condition of the grain permitted more wheat to be moved to lake and Atlantic ports of the United States before lake navigation closed in mid-December; and the sharper decline in visibles during January was due partly to heavier shipments overseas from these stocks. Moreover, marketings from farms in January-February were considerably

smaller this year than last, though they became larger in March.¹ At the end of March, Canadian visible supplies of 188 million bushels were 40 million larger in 1929 than those of 1928—a figure high by comparison with earlier years, but not a high one in view of the fact that the crop plus carry-over in 1928–29 appears to have been nearly 100 million bushels larger than that of 1927–28, while stocks on farms on March 31 (which are not included in visible supplies) were smaller this year than last. The export movement appears to have been relatively more rapid this year than last, despite the immense quantities of wheat grading No. 5 and below. Total stocks of Canadian wheat in Canadian positions² on March 31 were officially placed at 244 million bushels as compared with 225 million in 1928; hence total stocks were only 20 million above those of 1928, though visibles were 40 million above. This discrepancy may be explained in part by the fact that the visible supply includes wheat in United States lake and Atlantic ports, while the statement of March 31 stocks does not; and this year stocks in the United States were around 10 million bushels larger than they were a year ago.

Wheat stocks in other exporting countries are less easy to evaluate. Argentine stocks of old-crop wheat were thought to approximate 13–16 million bushels as of December 31, 1928, about a normal amount.³ Since the export movement during January–March was no larger than in 1928, while the new crop appears to be larger, stocks in Argentina at the end of March presumably stood at a record height; the crop of 1927 was much the largest up to that year, and that of 1928 seemingly exceeds it. The whole subject of Argentine stocks, however, is obscure. Visible supplies in Australia were unofficially placed at 53 million bushels on April 1, 1929—some 17 million bushels higher than on the same

date in 1928, but the same as in 1927 and 10 million lower than in 1925. Data on farm stocks are not available, but there is no reason to suppose that these were small. Presumably total stocks in Australia at the end of March were well above average in size, but not so strikingly large as those in the United States, Canada, and Argentina.

In view of their bumper crops and moderate exports, the Danube countries presumably hold the largest stocks in post-war years, although much more wheat than usual has undoubtedly been used for food and feed. In India, on the other hand, stocks of old-crop domestic wheat presumably stand at a very low level, for net imports have not been large enough to bring total available supplies within 20 million bushels of the average domestic utilization in 1922–27. A somewhat similar situation occurred in 1922 following the short crop of 1921. In Russia the situation is entirely obscure. Since the 1928 crops of wheat and rye combined were smaller than those of 1927 (though the crop of wheat alone was larger), there has probably been a reduction of total bread-grain supplies. Peasants in the northeastern sections of the producing regions may have ample wheat stocks, but apparently stocks in the consuming regions and probably in the southern producing regions are small.

Thus the major exporting countries held aggregate stocks of record size at the end of March 1929. If we disregard Russia and assume that heavy supplies in the Danube countries about balance the deficiency in India, it is possible to conclude that total stocks in exporting countries stand at the highest figure of post-war years. An unofficial compilation of visible supplies in North America, Argentina, Australia, ports of the United Kingdom, and afloat to Europe gives a figure of 497 million bushels on April 1, 1929, 115 million more than in 1928, when these stocks were the highest in the period 1920–28.⁴ The statement is at best incomplete, but it suffices to emphasize the extraordinarily large stocks in commercial channels this year.

IMPORTING COUNTRIES

During the period under review, the European trade press has referred fairly con-

¹ See Appendix Tables II and III, which show receipts at Port William and Port Arthur and Vancouver. These figures, however, do not constitute a clear picture of the movement from farms.

² See Appendix Table X.

³ See estimates by *Times of Argentina*, issue of January 14, 1929, p. 30.

⁴ See Appendix Table VII.

sistently to a supposedly low level of stocks in European importing countries. It is practically impossible, however, to ascertain how far these references were intended to apply to port stocks, to mill stocks, or to farm stocks. So far as stocks of import wheat are concerned, it is reasonable to suppose that these have run fairly small at least in the United Kingdom, France, Belgium, Holland, and Germany, except for a period in February–March when the cold weather closed navigation by canal and river and caused heavy accumulations at Antwerp, Rotterdam, and Hamburg.

Evaluation of the general stocks position in European importing countries, however, must begin with recognition of the fact that these countries secured distinctly large crops of wheat and rye of good quality in 1928, and that imports have been larger than ever before. It is safe to say that available supplies of bread grain in European importing countries thus far in the year have been larger than in any other post-war year, 1925–26 possibly excepted. In that year the wheat and rye crops were larger; but they were of poorer quality, initial stocks were smaller than they were this year, and August–March imports were also smaller. The significant problem is to determine if consumption of wheat for food and feed this year has been heavy enough to bring total available supplies at the end of March to something like an average or a relatively low level. A precise answer is impossible. Doubtless total consumption for food has been larger than ever before, the result not only of low prices but also of growth in population and per capita consumption. Feed use of wheat may also have been relatively heavy on account of the scarcity of corn; but the generally good quality of this year's wheat crop presumably militates against abnormally heavy feeding of wheat to animals. On the general principle that customs change slowly in food consumption, we doubt if, in European importing countries as a whole, the heavy available supplies of wheat can have been reduced so greatly that total supplies at the end of March were below average. Stocks of import wheat may have been low in many countries, and of native wheat in some countries; but in general supplies were probably average or above because

farm stocks remained heavy in many countries.

In a few countries, total stocks were presumably lower than usual at the end of March. Spain and Portugal had small initial stocks and short crops, and imports seem not to have been large enough to compensate the deficiency. The British Isles also appear to have small stocks, for the crop was the smallest of post-war years; farm stocks in England and Wales were apparently not large on January 1;¹ and imports during the first eight months of the year were somewhat smaller than usual. In Germany, farm stocks on March 15 were somewhat lower than in 1928; stocks of wheat and flour in Berlin were lower also, as were stocks of import wheat in the interior; but port stocks were large because of the accumulation caused by closing of canals and rivers.² All told, German stocks of wheat (but not rye) seem to have been somewhat lower at the end of March this year than last, despite the larger wheat crop; but the difference seems not to be striking, and the level of wheat stocks is not to be described as below the average of recent years.

Most other importing countries of Europe presumably hold relatively heavy stocks. Fragmentary information suggests that farmers in many countries have marketed slowly, dissatisfied with the low level of prices; it is broadly probable that low prices encourage holdings as well as consumption of wheat; and, as we have observed above, consumption seems unlikely to have kept pace with increases in available supplies due to exceptional crops and imports. All told, it seems likely that large stocks in Poland, Czecho-Slovakia, Italy, and the Scandinavian countries especially fully offset small stocks in Spain, Portugal, and the United Kingdom. Stocks in European importing countries generally may reasonably be said to stand somewhat higher than they did in 1928, and above average. But the contrast with earlier years is by no means so marked as appears with reference to the major exporting countries.

¹ They were unofficially estimated as about 21 million bushels as against 27 million in 1928 and 21 million in 1927.

² Information from our correspondent, Dr. N. Jasny.

The stocks position in ex-European importing countries is more obscure even than the position in Europe. On the whole one may suppose that some increase over 1928 and over the average has occurred, if only because imports have been so exceptionally large. But in these countries consumption of wheat for food is probably subject to greater year-to-year variation than it is in Europe; the stimulus of low prices is presumably stronger in increasing actual

consumption. Reports suggest that in Japan stocks of import wheat are noticeably high, and perhaps in Egypt also; but only the most indirect evidence is available for other countries. The fact that most of these except China and South Africa are tropical countries where flour stocks are never accumulated in large volume tends to support the view that the extraordinarily heavy imports of ex-Europe have in large part passed into consumption.

IV. WHEAT PRICE MOVEMENTS

THE LEVEL OF WHEAT PRICES

Cash wheat prices on the international market and on the markets of the principal exporting countries remained on a relatively low level during December-March 1928-29, much as in the preceding four months of the crop year. A broad view of the situation is given in Chart 3 (p. 224), which gives comparisons with 1927-28 and 1923-24.

British parcels prices, which may be taken to represent weekly average c.i.f. prices of wheat moving in international trade except in so far as other countries purchase different grades and varieties of wheat, ranged between the lowest post-war level of 1923-24 and the moderate level of 1927-28, far below the levels (not shown in the chart) of 1924-25, 1925-26, and 1926-27. The present crop year has continued to be one characterized by decidedly low international wheat prices. The level of 1928-29 has ruled above that of 1923-24, we infer principally because import requirements have grown considerably in the interval of years. If size of world crops alone, or size of exportable surpluses alone, determined the relative levels of international prices in different years, the level of 1928-29 would inevitably have fallen below that of 1923-24. By contrast with 1927-28, international prices are lower in 1928-29 principally because exportable surpluses are much larger, while import requirements show a much less marked increase.

In our judgment the margin between exportable surpluses and import requirements has changed only slightly during the winter months, and if anything became a trifle wider. Hence, in so far as interna-

tional prices may be held to be governed solely by the international statistical position, British parcels prices ought to have maintained their December level or to have declined slightly. In fact they rose in January-February, and declined in March. This movement appears to have resulted from factors extraneous to the international statistical position of 1928-29. It is discussed below.

Weighted average cash prices at Winnipeg¹ stood at much the same level relative to 1923-24 and 1927-28, and followed much the same course, as did parcels prices. With allowance for a less marked upward movement in January-February, natural enough because the new crop was then being harvested, Argentine prices were consistent with British and Canadian. Weighted average prices in the United States, however, apparently ran closer to prices in 1923-24 than was true of prices either in Canada, Argentina, or the United Kingdom.

Wheat prices in European countries² have not uniformly run lower in December-March 1928-29 than in 1927-28. In England, for example, native wheat sold at almost the same prices this year and last, despite the fact that prices of domestic and of imported wheat might ordinarily be expected to show similar changes because England imports most of her wheat and imposes no tariff duties. Similar prices in the two years seem chiefly attributable to the poorer quality of English wheat in

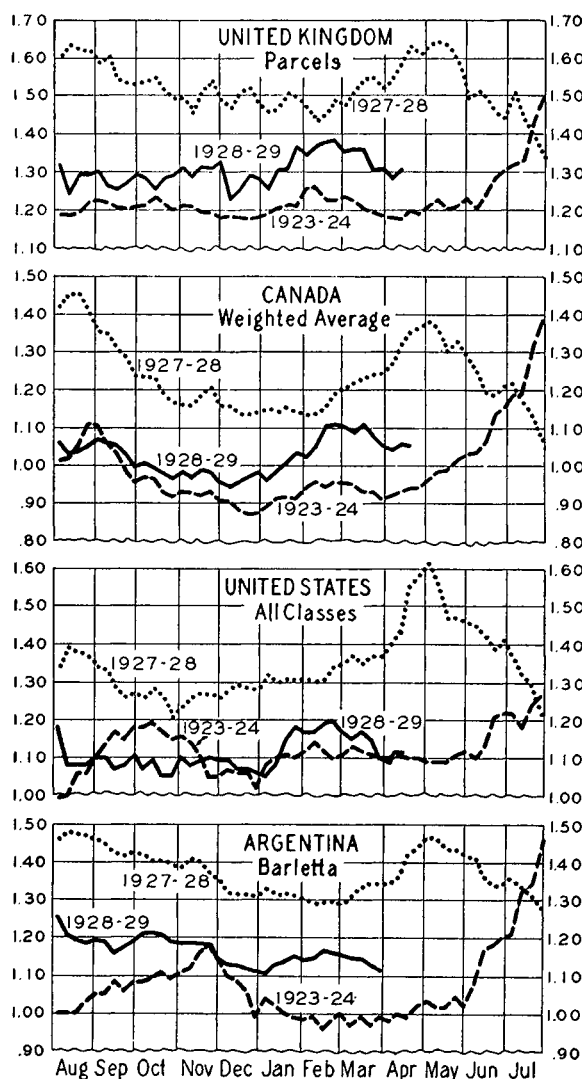
¹ See WHEAT STUDIES, March 1929, V, No. 5, for a description of the methods by which we have computed weighted average cash prices at Winnipeg.

² Monthly averages of domestic wheat prices in England, France, Italy, and Germany are shown in Appendix Table IX.

1927-28. French prices also were no lower this year than last despite lower interna-

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

(U.S. dollars per bushel)



* United Kingdom prices are averages of sales of wheat parcels in British markets, from *London Grain, Seed and Oil Reporter*; Canadian prices are weighted averages of different grades of wheat at Winnipeg (see *WHEAT STUDIES*, March 1929, V, No. 5); United States prices are weighted averages of all classes and grades of wheat in six markets (five markets in 1923-24), 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.

tional prices. Poorer quality in 1927-28 is a partial explanation; an increase in the

tariff is another. Italian prices were only a trifle lower this year, despite a much larger crop; here also an increase in the tariff duty was influential. In Germany, however, wheat prices were noticeably lower this year. There has been no change in the tariff, and domestic crops of both wheat and rye were much larger this year than last.

In Hungary a curious situation seems to prevail. Cash wheat prices during January-March at least were some 30 cents per bushel lower than they were a year ago; this difference is considerably greater than in the major exporting countries and on international markets, and makes Hungarian wheat look relatively cheap. Yet, in spite of a much larger crop Hungary has not been able to export as much wheat this year as last. Perhaps the explanation is that neighboring countries, with large domestic crops of their own, have required less, and have chosen to import Canadian wheat as better suited than Hungarian for mixing, in so far as they have imported at all.

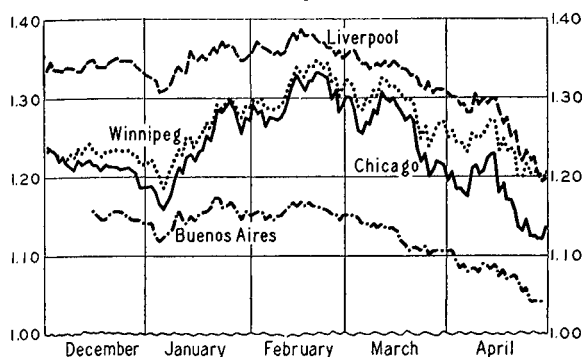
THE COURSE OF PRICES

In somewhat the same way as the level of wheat prices usually shows changes of different magnitude in some markets from what occurs in others, the course of prices over a period of a few months may often be different in one market or in one grade of wheat from what it was in another market or in another grade. The relative movements of prices of all grades and varieties in all markets is of course scarcely susceptible of precise description. Charts 3 and 4, and Chart 5 (p. 226) together suffice to show how diverse the movement of prices has proved to be in December-April of the current year. The outstanding feature was the much greater stability of prices in the United Kingdom and Argentina than in the United States and Canada.

A significant summary view of the movement of prices in December-April is shown in Chart 4, which gives daily closing prices of May futures at Liverpool, Winnipeg, Chicago, and Buenos Aires. Fluctuations were small in all markets during the early weeks of December, but a sharp decline occurred between December 29 and January 5. The

movement was upward during the three ensuing weeks, but much more sharply in Chicago and Winnipeg than in Liverpool and Buenos Aires; the upward movement was continued (with interruptions, and not in Buenos Aires) until February 15 in Liverpool, and February 20 in Winnipeg and Chicago. The advance between January 5 and February 15-20 amounted to 17 cents

CHART 4.—DAILY CLOSING PRICES OF MAY WHEAT FUTURES IN FOUR LEADING MARKETS, DECEMBER-APRIL 1928-29*
(U.S. dollars per bushel)



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

in Chicago, 16 cents in Winnipeg, but only 8 cents in Liverpool; in Buenos Aires, between the low point of January 4 and the high one of January 21/22, the advance was only 5½ cents. From the high points reached around February 15-20, futures prices declined up to the end of April, though there was a noticeable upturn in Chicago and Winnipeg during March 5-12, and another during April 6-15. The decline from mid-February to the end of April was greater than the earlier advance; it amounted to 21 cents in Chicago, 15 cents in Winnipeg, 19½ cents in Liverpool, and 12½ cents in Buenos Aires. Further declines occurred in the first week of May; and futures prices in all four markets stood on May 7-10 at the lowest point thus far in the crop year.

The sharp decline of late December and early January appears to have resulted chiefly from private estimates of a huge crop in Argentina, together with considerable pressure of offers of old-crop Argentine wheat on import markets at the holiday season, when demand was inactive.

The subsequent advance, so far as one can judge from statistical evidence and opinions voiced in the trade press, was due to a variety of factors, some of them decidedly intangible. It was made in the face of continuing ease in the international statistical position, though journals occasionally laid stress upon what was regarded as evidence of unexpectedly heavy consumption of wheat throughout the world. The evidence of heavy consumption may have encouraged many purchasers of futures to bid, and sellers to ask, higher prices than they would have done in its absence, and thus may have been a factor in raising prices; but in our judgment this factor might more reasonably have been regarded as one whose influence was confined to preventing further declines. Again, the Canadian Pool restricted offers for a time after January 5; and firmness in the prices of corn, enhanced by dry weather in Argentina, perhaps gave some support to the prices of wheat.

On the whole, however, the advancing prices of January and the first half of February seem attributable more largely to prospects of one kind or another, imagined or actual, than to actual changes in existing world supplies and requirements. Sellers of wheat received encouragement from the extremely cold weather (with alternations of freezing and thawing in parts of the United States) throughout the Northern Hemisphere, and from the abnormally dry winter in Canada. These developments contributed to a notion already widespread that wheat crops in 1929 must prove considerably smaller than those of 1928, if only because yield per acre in 1928 had been exceptionally large in most of the great wheat-producing countries. In the United States at least, many "longs" may have been encouraged by expectations that domestic wheat prices would be raised through legislation for farm relief apparently to be passed during a special session of Congress convened in April. The several factors resulted in a sharp increase in the volume of futures trading in the United States; the average daily volume in January was 41.7 million bushels as against 21.5 million in December 1928, 15.4 and 28.2 million in January 1928 and 1927 respectively. In

some respects the advance was similar to those which occurred in February–April 1928 and in April–May 1927; but this year the advance was based upon considerably less tangible evidence respecting the new-crop outlook.

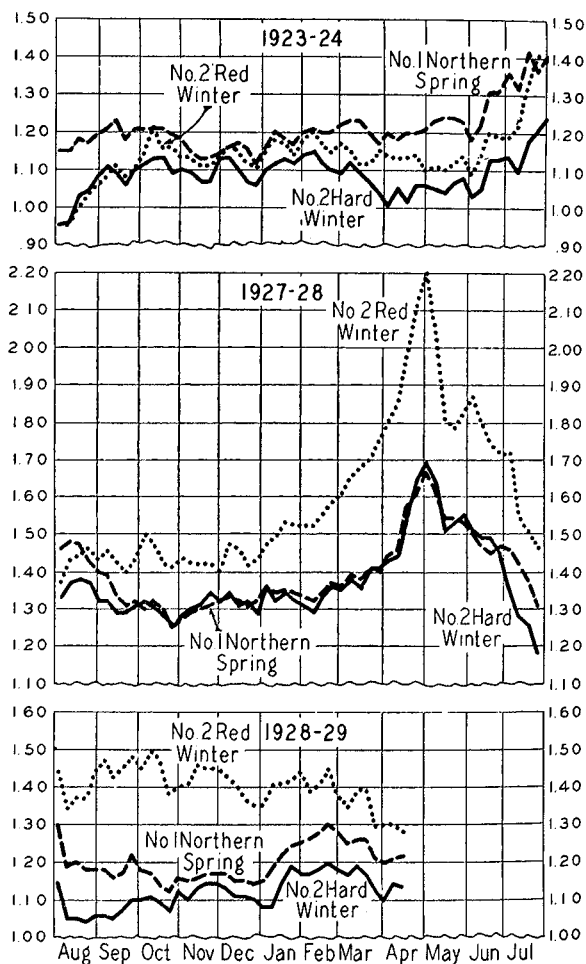
The fact that prices rose more rapidly in Chicago than in Winnipeg, in Winnipeg than in Liverpool, and in Liverpool than in Buenos Aires is broadly explicable on several grounds. American traders naturally were more concerned than others with farm relief legislation. Evidence of possible damage to the oncoming winter-wheat crop seemed more convincing in the United States than elsewhere, and naturally exerted more influence in Chicago than in foreign markets remote from the territory concerned. The markets in Liverpool and Buenos Aires, always largely influenced at this season by the actual movement of the new Argentine crop, could hardly be expected to respond in full to price movements in North America which were based, apparently to an unusual degree, upon somewhat intangible hopes, fears, and expectations.

A considerable part of the decline from mid-February to the end of April may be taken to represent the gradual reversal of these intangible hopes, fears, or expectations. Toward the end of February and in early March, Argentina shipped exceptional quantities of wheat, much of which was unsold and pressed all the more heavily upon European markets because heavy port stocks had already accumulated on account of the frozen inland waterways. Milder temperatures, with accompanying disappearance of snow and renewal of the growth of winter wheat, resulted in an accumulation of evidence tending to show that winterkilling promised to prove less extensive than had been hoped (or feared) either in the United States or in Europe. Hopes that American wheat prices during the present crop year would be raised by legislation were apparently dampened when proposals to introduce the "debenture plan" into the Senate bill threatened to delay legislation indefinitely. A new factor which appears to have contributed to a sharp break in Chicago prices on March 26 was a break in the stock mar-

ket, accompanied by exceedingly high call money rates. Under all these developments, prices fell to a level more in accord with the existing ease in the international statistical position. If, as seems probable, the actual change in the statistical position was such as to make it only slightly easier in April than it was in December, a part of the decline in prices may have been due to the fact that new-crop prospects seemed favorable enough to suggest the possibility of a still easier position in 1929–30. It is always impossible, of course, precisely to separate the effects of

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, and No. 1 Northern Spring at Minneapolis. Data from *Crops and Markets*.

changes in the cash wheat situation from the effects of changes in the outlook for new crops. The less rapid decline of the May future in Winnipeg than in Chicago and Liverpool was perhaps due to the fact that the outlook for new crops remained more precarious in Canada than in the United States or Europe; but in part it may have represented merely a normal seasonal movement.

The prices of other futures than the May in the several markets are not shown in Chart 4. This year, however, as a result of the exceedingly heavy visible supplies, near futures have stood at exceptionally heavy discounts under the distant. In Chicago, Winnipeg, and Liverpool alike the more distant futures (October or September) have stood above the July, the July above the May, the May above the March. Ordinarily no carrying charge exists between the May future (old-crop) and the September or October (new-crop). During the period 1900-28 (excluding 1915-21), the July and September futures were quoted in May at a premium over the May future in only four years. The premiums were never so large as they have been thus far in May 1929.

UNITED STATES CASH PRICES

Chart 5 (opposite) shows weighted average cash prices of representative grades of wheat in the United States. The outstanding development during December-April was the reduction of the premium of No. 2 Red Winter over No. 1 Northern Spring or No. 2 Hard Winter. Last year during the same period the premium was increasing rapidly, principally because the outlook was increasingly unfavorable for the soft red winter-wheat crop of 1928. A decidedly small crop was harvested, and premiums remained high in the first half of 1928-29. Since December 1928, however, the outlook for the winter-wheat crop of 1929 has proved relatively more favorable in the soft red winter-wheat belt than in the hard red winter-wheat belt, and partly for this reason No. 2 Red Winter has sold at smaller premiums. Another factor, however, was the fact that the hard red winter-wheat crop of 1928 contained a considerable proportion of bleached wheat relatively low in protein content; this wheat, like yellow hard winter wheat, seems to have been employed in increasing quantities by millers to replace the higher-priced soft red winter wheat.

V. PROSPECTS FOR 1929 CROPS

At this season the prospects for the oncoming world wheat crop are highly uncertain, and the present year is no exception. Of Southern Hemisphere winter-wheat crops which are not yet planted in full, no more can be said than that acreage is tending upward, and that a recurrence in 1929 of the huge crops of 1928 both in Argentina and Australia is statistically improbable, though by no means impossible. Little can be foreseen respecting the size of the spring-wheat crops in the United States and Canada; here also acreage has tended upward, though the trend may be interrupted in the United States at least. The seeding of spring wheat is not yet complete, and much depends upon rainfall in June and July especially; an average yield per acre is now the most reasonable expectation. If yield prove no greater than average, spring-wheat crops smaller than those of 1928 will be harvested.

Acreage sown, abandonment, and spring condition of winter-wheat crops in the Northern Hemisphere are fairly clear. The acreage to be harvested now seems larger than in 1928 in both Europe and the United States; since condition is not far from average, a small crop is improbable, a good crop probable, a large one possible. But that the European winter-wheat crop of 1929 should exceed the crop of 1928 seems somewhat unlikely because a repetition of the extraordinarily favorable late growing season last year cannot be counted upon. The winter-wheat crop of the United States, however, may equal that of 1928. India seems assured of a small crop, though larger than the poor one of 1928; and northern Africa promises to secure about as good a crop as that of 1928. All told, the statistical expectation at the moment is for a total Northern Hemisphere crop of winter and spring wheat (excluding China, Russia,

and Asia Minor) smaller than that of 1928, but not small by comparison with most earlier years because of enlargement in acreage. Much the same may be said of the probable world crop excluding Russia, China, and Asia Minor. But statistical expectations are often proved faulty. In May 1928, for example, these suggested that a smaller Northern Hemisphere crop was in prospect than had been harvested in 1927, but the crop of 1928 proved the larger by over 150 million bushels.

INDIA AND NORTH AFRICA

The Indian wheat crop of 1929, the earliest to be harvested in the Northern Hemisphere, now appears to be another short one, 308 million bushels according to the first official estimate issued on April 25. Unless later estimates raise the figure, this is the third smallest outturn in a decade. In 1920 and 1922-24 the Indian crops ranged from 361 to 378 million bushels; in 1925-27, from 325 to 335 million; in 1921 the crop was only 250 million, and in 1928 it was 289 million. This year the outlook turned unfavorable in January and February; winter rains were scanty, and some damage was caused by exceptionally cold weather.

The crops of Algeria, Morocco, Tunis, and Egypt are less far advanced. The area sown for the crop of 1929 in the first three dependencies was half a million acres larger than the area harvested in 1928. Crop conditions appear to have been rather more favorable than usual throughout northern Africa; rainfall has been ample, though low temperatures somewhat retarded development of the plant. Outturns average or above, and perhaps not far different from those of 1928, now seem in prospect.

EUROPE, INCLUDING RUSSIA

So far as may be judged from preliminary official estimates and from unofficial advices, the area sown to winter wheat in Europe (ex-Russia) in 1929 seems to have continued its upward trend. According to data published by the United States Department of Agriculture on April 29, the area sown in 11 European countries for the crop of 1929 was 56.15 million acres as against 55.34 million sown for the crop of 1928. The list included Spain, France, Italy,

Jugo-Slavia, Roumania, Bulgaria, Poland, and Czecho-Slovakia, so that the only large wheat-producing countries not included were Hungary, Germany, and the British Isles. The principal increases in areas sown occurred in Spain and Jugo-Slavia. Unofficial reports suggest that the areas sown for the crop of 1929 in countries not included in the list were no smaller than those sown for the crop of 1928, and were probably somewhat larger. Hence, so far as acreage sown to winter wheat alone determines European (ex-Russian) production, the European crop of 1929 promises to exceed even that of 1928.

Areas abandoned need also to be considered, and of this factor little is known as yet. Extraordinarily cold weather prevailed practically throughout Europe from the first week of January to the first week of March, though conditions naturally differed somewhat from country to country, and there were spells of milder weather, especially in mid-February. The snows were heavy, disturbing traffic by rail; and inland waterways normally open to traffic, especially in Belgium, Holland, and Germany, were frozen and closed to traffic for about a month. The Rhine was reopened only on March 15. During most of the period of extreme cold, the snow cover appears to have been good; nevertheless the very intensity of cold gave rise to fears that an abnormal amount of winterkilling was almost inevitable. More extensive damage was feared in parts of the Danube countries and in France than elsewhere; here the snow cover seemed less satisfactory. But normal spring weather prevailed in March; and as the snow cover disappeared and wheat resumed its growth, evidence of abnormal winterkilling failed to appear in most countries. The situation is not yet clear, partly because the weather turned unseasonably cold in April and retarded the growth which would make clearer the effects of the winter. But so far as can be judged from official and unofficial advices, only the normal amount of winterkilling occurred in the principal wheat-producing countries of Europe, parts of the Danube countries excepted. Precise comparisons are impossible; the normal amount is not known. Nevertheless, the prospects are for a good

wheat crop in Europe in 1929 not only because the area sown was large, but also because abandonment was not exceptional.

Again, condition as of April 1 appears to have been average or above in most countries, though reports are scattered and fragmentary. At least there were no reports of distinctly bad condition in any important wheat-producing region. The effects of the unseasonably cold weather of early April are not yet clear, but trade reports suggest some deterioration. All told, the evidence now available suggests a European wheat crop in 1929 of average size or larger—certainly not a small one. But the critical period of growth remains to be encountered. Frost, drought, or abnormally wet weather in May–July may reverse the present outlook; favorable weather may improve it distinctly. It is worth while to point out, however, that the largest European crops of recent years, those of 1925 and 1928, were characterized by exceptionally favorable weather in the latter part of the growing season. On general statistical principles it is reasonable to expect that the abnormally high yields per acre obtained in many European countries in these two years will not be recorded in 1929. On the other hand, the high acreage and normal abandonment in 1929 create the presumption that crops as small as those of 1922 and 1924 (1,038 and 1,050 million bushels respectively) are unlikely. A reasonable forecast of the European crop of 1929 made on the basis of information now available is perhaps 1,200 to 1,350 million bushels, a wide range; but any prediction must rest upon uncertain grounds, and may easily prove widely in error if unpredictable weather conditions prove in any way distinctly unusual. The most that can be said at present is that the statistical probabilities favor a crop average or better in size, but not so large as the crop of 1928. A further probability is that the importing countries of Europe will have crops in the aggregate more nearly similar in size to those of 1928 than will be true in the Danube countries; for the crop of 1928 was more unusual with respect to yield per acre in the Danube countries than elsewhere in Europe, and it is in these countries that the severe winter appears to have caused the most damage.

Little can be said of the outlook in Russia. Sowings of winter wheat for the crop of 1929 appear to have been considerably smaller than the sowings for 1928 or 1927.¹ Russia, however, produces more spring than winter wheat, and an increase in the area sown to spring could repair this loss. Whether or not this will occur is not clear; but most observers are skeptical of the possibility because the spring is late and because the wealthier peasants seem to express their grievances against the government by curtailing the areas sown to grain. Estimates now available on production and acreage of wheat in 1928 (both of which may be subject to revision) indicate that yield per acre in 1928 was the highest of the past six years; and if total acreage proves considerably smaller this year than last, production may prove smaller also on the assumption that a second year of exceptional yield per acre is improbable.

UNITED STATES WINTER WHEAT

The area sown to winter wheat last autumn was officially estimated (subject to later revisions) at 43.2 million acres, smaller than the areas sown for the crops of 1919–23, larger than the areas sown for the crops of 1924–26, and fully 4.1 million acres smaller than the sowings for the crop of 1928. All of the principal wheat-producing states sowed smaller areas for 1929 than for 1928; but the reduction was most noticeable in the soft red winter-wheat belt where the crop of 1928 was so short. Illinois, Indiana, and Ohio sowed an area 1.82 million acres smaller this year than last.

The crop entered the winter under average condition—84.4 per cent of normal on December 1 as compared with the 1918–27 average condition of 84.6 per cent. Toward the end of December there was some alternation of freezing and thawing weather in Indiana and Illinois. A severe cold wave prevailed during the first two weeks of January, but snow cover was good except in northwestern Kansas and east of Illinois. For three weeks following the weather was mostly unfavorable; snow cover largely melted, and ice formed over the wheat

¹ See *Foreign Crops and Markets*, April 22 and 29, 1929, XVIII, 551, 574.

fields in parts of Illinois, Indiana, and Missouri. February, like January, was an abnormally cold month, but snow preceded the sharpest weather in most of the important wheat-growing sections. Despite the good snow cover and the moderate tone of official and many unofficial weather reports, the cold weather of these two months apparently caused many to believe that abandonment must prove distinctly heavy. March was abnormally warm; and as the wheat plant resumed its growth, little evidence of unusual damage became apparent. There was abundant moisture except in western Kansas, southern Nebraska, and the Pacific Northwest.

On April 9, condition as of April 1 was officially placed at 82.7 per cent of normal, as compared with a 1919-28 average of 80.9 per cent on April 1. At the same time in 1928, condition was only 68.8 per cent of normal. The official report further suggested that abandoned acreage seemed likely to fall below the ten-year average of about 12 per cent, and might be expected to approximate only 7 per cent. Private statisticians, in estimates issued earlier in the month, had given broadly similar pictures of the situation with respect to condition and abandonment; their forecasts of production ranged from 534 to 580 million bushels, and suggested a crop about average in size. Of the 9 winter-wheat crops harvested since 1920, only one (that of 1925) has fallen below this range; only three (those of 1920, 1921, and 1926) appreciably above it.

In April also weather conditions were favorable, especially because good rains fell in the portions of Kansas and Nebraska where moisture was most needed. Unofficial reports issued on May 1 reflected improved prospects. Estimates of abandonment of winter-wheat area (4 reports) ranged from 6.3 to 7.6 per cent; of area remaining for harvest (5 reports) from 39.94 to 40.92 million acres; of condition (5 reports) from 83.2 to 89.7 per cent; and of probable production (5 reports) from 599 to 646 million bushels. The official report issued May 9 confirmed this picture of low abandonment, high acreage and good condition, and large probable outturn. Abandonment was placed at 6.4 per cent;

acreage at 40.47 million acres; condition at 83.6 per cent; and probable outturn at 595 million bushels.

During the preceding nine years, the final estimate of production fell farthest below the May 1 forecast by about 10 per cent, in 1925. If deterioration proves as great this year, a crop of some 535 million bushels is still in prospect—a fair crop; and if conditions improve as in 1926 and 1928, a bumper crop will be harvested. The outlook at the moment is for a large crop, especially of soft red winter wheat; a distinctly short crop is decidedly improbable. Frost was reported over a considerable area in the Southwest on the night of May 1, but no complaints of serious damage appeared in the following week.

NORTH AMERICAN SPRING WHEAT

The outlook for spring-wheat crops in the United States and Canada is of course more uncertain, since in some districts seeding is not yet completed, while total acreage sown is uncertain, and in most districts the plant has hardly begun its growth.

In the United States, farmers expressed on March 1 intentions to plant some 21,463 thousand acres to spring wheat in 1929, an area only 82,000 acres smaller than was harvested in 1928. A reduction of 1.3 million acres in durum wheat was to be offset by increased sowings of bread wheat. Weather conditions seem to have been favorable for the fulfilment of plans, though there was some delay in mid-April owing to rain and snow. Subsoil and surface moisture conditions alike are said to be satisfactory. The declining prices of March-April, however, may have tended to curtail the area sown.

In the Prairie Provinces of Canada, only about half of the normal supply of moisture appears to have fallen up to the end of March. There were good rains in April, however. Seeding began at a normal date, with more land prepared for crops in the fall than was true last year; subsequently it progressed favorably, but it is not yet completed. Recent advices suggest that acreage bids fair to exceed that of 1928; Murray's report of May 1, based on returns from correspondents, placed the probable increase at 5.6 per cent. Reserves of mois-

ture in many regions are said to be short, so that rainfall in June and July, always

important in its effects upon yield, may be of unusual importance this year.

VI. OUTLOOK FOR TRADE, PRICES, AND CARRYOVERS

Wheat price movements during the three closing months of the crop year 1928-29 may be expected, as usual at this season, to depend chiefly upon changing prospects for the oncoming wheat crops, and in turn to affect the movement of wheat in international trade and the magnitude of carryovers in different positions at the end of the crop year. Nevertheless, since the physical movement of wheat always displays certain seasonal characteristics which are modified but not reversed by price movements, the outlook for trade during the closing months of the year and for outward carryovers may be set forth with more assurance than the outlook for prices.

THE PRICE OUTLOOK

The price outlook is always obscure. If normal weather prevails, international cash wheat prices, as judged by the British parcels prices, may reasonably be expected to lie fairly close to the level prevailing in the first third of May. The expectation, as usual, is for normal temperature and rainfall in the Northern Hemisphere as a whole, not for extreme heat, drought, frost, hail, rainfall, or damage from plant diseases, and also not for an exceptionally favorable growing season. In 1924, British parcels prices rose over 30 cents during May-July; in 1928, they declined over 30 cents during May-July. Such extreme movements are improbable, but of course not impossible, this year. The growing season in 1924 was one properly to be described as distinctly unfavorable; winterkilling had been heavy and areas sown to spring wheat had been considerably reduced, as is not the case this year; and stocks, though large, were smaller than those of 1929. Seemingly only an even more unfavorable growing season would need to supervene if British parcels prices are to be increased by 30 cents this year; and, though it may occur, there is at present no reason to regard its occurrence as probable. Similarly, the May-July decline in 1928 was fundamentally due to extraordi-

narily favorable growing weather; and, though there may be another such season in 1929, its occurrence is hardly to be regarded as probable. Between these extremes, the price movement may be in either direction. But the existing heavy stocks will continue to act as a drag upon any upward movement. Whatever the movement of international cash prices, the movements of particular grades of wheat and of prices in particular countries may be expected to be more or less different. Winter wheat may progress favorably, spring wheat poorly; Europe may enjoy favorable weather while the United States does not, or the reverse. The possibilities hardly bear enumeration, much less evaluation with reference to their possible or probable effect on price relationships.

INTERNATIONAL TRADE

We have already considered certain aspects of the outlook for international trade.¹ Despite her heavy stocks, the United States may now hardly be expected to furnish net exports of much more than 25 million bushels in April-June, for prices apparently remain out of line with import markets at least to the date of writing (May 10). July exports, however, may prove fairly large if the winter-wheat crop in Texas and Oklahoma proves to be of good size and fair quality and is not harvested late. Canada has more wheat to export even than she had in 1928, when record exports of 106 million bushels were made in April-July, and she may export more than this unless the carryover is built up still higher than it was on July 31, 1928, as now seems improbable; net exports in April and May may considerably exceed those of April and May 1928, while exports in June and July may prove little if any larger.² Argentina

¹ See above, pp. 212-14.

² Recent reports of congestion at Montreal, with wheat moving into the port rapidly and vessels apparently not chartered to transport it overseas in equivalent volume, suggest that this statement requires qualification. It is impossible to foresee, however, whether this congestion is to be of short or of long duration.

bids fair to export a record quantity in April-July from supplies apparently the largest in history; and the seasonal decline may be less marked this year than last because the requirements for tonnage to move corn will be smaller. Australia also may ship fairly large quantities in view of her large stocks, though perhaps not so much as in 1925 and 1927, when available supplies were of much the same size, but prices were higher. Railway freight rates on wheat destined for export were recently reduced from Missouri and Mississippi points to the Gulf and Atlantic seaboard, and from lake ports to seaboard. These reductions were met in Canada by reductions in the rates to Montreal, so that the net effect is probably not to encourage United States exports at the expense of Canadian. Unless the total rates from Argentina and Australia are reduced to meet the lower charges from North America, these changes may tend to encourage shipments from North America at the expense of shipments from the Southern Hemisphere.

The probable shipments from these four countries alone are sufficiently large to warrant the inference that the volume of international trade in April-July promises to be of large size for these months though probably not so large as in April-July 1927. India cannot be expected to furnish appreciable quantities because her new crop is small; as late as mid-April, indeed, further purchases were made of Australian wheat. Russia cannot be expected to become a net exporter, and indeed may possibly import, though expectations that imports would be made have been disappointed thus far in the year. Other countries, which in the first two-thirds of the crop year exported only moderate quantities in view of the wheat supplies available, seem unlikely to become heavy shippers. Even if heavy shipments are made from the major exporting countries, year-end stocks promise to be of record size. Among the importing countries, the United Kingdom especially will probably take exceptional quantities for the season.

Financial conditions in Europe are at present in a somewhat disturbed status. The high rate for call money in the United States and the present position of the

American rediscount rate have had the effect of checking American credits to Europe, resulting in higher rediscount rates in European countries, with a tendency in the direction of export of gold to the United States. Such monetary developments are likely to have some influence on movements of goods in international commerce, and it is possible that trade in wheat in the near future may be somewhat affected.

OUTWARD CARRYOVERS

Estimates of outward carryovers must always rest, at this season, upon assumptions respecting old and new crops, exports, and domestic utilization of wheat in various countries. Appendix Table XI shows our present estimates of wheat supplies and disposition in the four major exporting countries; probable carryovers constitute one of the items of disposition there shown.

The carryover in the United States may be estimated upon a somewhat more satisfactory basis than is possible for other countries. The total comprising visible supplies (Bradstreet's), farm stocks, country mill and elevator stocks, and stocks held by city mills, may be expected to range somewhere between 195 and 240 million bushels on June 30, 1929. During the past three years, the period for which data are available, city mill stocks¹ have declined about 55 million bushels between December 31 and June 30, and about 30 million bushels between March 31 and June 30. This year city mill stocks stood at the high figures of 138 and 107 million bushels on December 31 and March 31 respectively; and if normal reductions occur, stocks of around 80 million bushels are probable on June 30. If the total of visible supplies, farm stocks, and country mill and elevator stocks on March 1, some 357 million bushels, declines as has occurred on the average in 1920-28, about 115 million bushels would remain on June 30, 1929, making a total of about 195 million bushels. But on other bases of estimation this total seems too low if the several components of the carryover are considered separately. If visible supplies de-

¹ Calculated to exclude mill stocks in country elevators and in public terminal elevators, in order to avoid duplication with estimates of visible supplies and country mill and elevator stocks.

cline from their end-March level even at the most rapid rate in the past five years, they must still stand at about 95 million bushels on June 30; and if one counts upon farm and country mill and elevator stocks reaching the lowest in the past nine years, these items together must reach about 45 million bushels, a distinctly low figure. On this basis the total carryover seems likely to approximate at least 220 million bushels, probably more. A decline in American wheat prices relative to international prices might permit additional exports which would reduce visible supplies and cause the carryover to be smaller than this, but not much smaller because such a price adjustment has now (May 10) less than two months in which to achieve its effect. A figure of 220 million bushels for the outward carryover in the United States is extremely high by comparison with earlier years. Nevertheless the final returns seem quite as likely to prove higher as to prove lower.

Over the period 1922-28, Canadian carryovers on July 31 have constituted from 20 to 34 per cent of the stocks existing on March 31. On this basis, one may expect the carryover on July 31, 1929, to range anywhere between 50 and 83 million bushels, higher than in any earlier year except 1928, when stocks of 75 million bushels remained in Canada on July 31. In our judgment a carryover as low as 50 million bushels is improbable: the low level of prices can hardly have encouraged exceptional efforts to make heavy forward sales for export; and there is probably an upward trend in carryovers due in part to growth of storage space. On the other hand, a rate of reduction of March 31 stocks as slow as that which occurred last year seems somewhat unlikely. Prospects of obtaining higher prices toward the end of the year have been considerably less bright in March-April this year than last. We therefore anticipate that the carryover on July 31 will constitute about the average proportion of stocks on March 31, say 26 per cent, or 65 million bushels in rounded figures. The actual carryover may well prove 5-10 million bushels more or less than this, probably more rather than less. Size of crop considered, 65 million bushels is not

an exceptionally large Canadian carryover; but it would exceed any other carryover except that of 1928 by more than 15 million bushels. If the carryover approximates 65 million, and if our estimates of other items of disposition prove close to the facts, the standing Canadian crop estimate for 1928 would seem to be at least 15 million bushels too low.

Argentine and Australian year-end stocks can be estimated only as residual items in disposition. For Argentina, our estimates of net exports and domestic utilization for 1928-29 subtracted from available supplies suggest a figure of 64 million bushels for year-end stocks. In the preceding five years Argentine year-end stocks have ranged, so far as we are able to ascertain, from about 55 to 70 million bushels. Hence our figure for 1929 seems about an average one; but it looks somewhat too low in view of the high stocks (70 million bushels) of 1928, the huge crop, and the low level of prices. If stocks on August 1, 1929, considerably exceed 64 million bushels, and if net exports for the crop year reach or exceed 215 million bushels, there will be reason to suppose that the crop of 1928 was larger than 300 million bushels.

Similar calculations for Australia suggest year-end stocks of only 34 million bushels, a figure which appears somewhat low in view of the large crop and low level of prices. The Australian crop of 1928, however, may exceed 159 million bushels;¹ and, if so, and if our estimates of net exports, seed requirements, food, and feed prove correct, year-end stocks calculated as the residual item in disposition would exceed 34 million bushels.

All told, stocks in the four principal exporting countries now seem likely to exceed 380 million bushels at the end of the crop year. Last year, when such stocks were previously the largest of post-war years, the total fell below 330 million. Hence the present crop year promises to end, as it has proved throughout its course, a year of extraordinarily heavy accumulations of wheat stocks in the major exporting countries.

The outlook for year-end stocks in the minor exporting countries and in importing

¹ See above, p. 209.

countries is far less clear, in the absence of statistical information. There can be little doubt, however, that carryovers will prove of exceptional size in the aggregate. Europe ex-Russia as a whole harvested larger wheat crops in 1928 than in 1927, and bids fair to import more wheat in 1928-29 than in 1927-28. One cannot at present determine whether or not actual consumption, under the stimulus of low wheat prices and a short crop of corn, may have increased so greatly as to exceed the increase in crop

and imports of wheat. But this seems improbable, and on the whole one is justified in assuming that European stocks, and presumably ex-European as well, will stand higher at the end than at the beginning of the year 1928-29. If so, world stocks are likely to prove of record size for post-war years; but the situation must differ greatly from country to country. The upbuilding of stocks in 1928-29 now promises to appear more striking in the United States than elsewhere.

This study is the work of M. K. Bennett, with the advice of Joseph S. Davis and Alonzo E. Taylor, and with the aid of Katherine 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	Jugoslavia	Romania	Soviet Russia	Mexico
1920.....	833.0	263.2	377.9	145.9	156.1	23.2	7.8	37.9	29.9	43.0	61.3	.....	15.0
1921.....	814.9	300.9	250.4	129.1	191.0	23.6	10.0	52.7	29.2	51.8	78.6	.....	5.1
1922.....	867.6	399.8	367.0	109.5	195.8	25.9	5.2	54.7	32.6	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	479.7	335.0	116.7	239.2	33.5	15.4	76.9	47.3	56.6	96.7	749.0	11.9
1928.....	902.7	533.6	288.8	159.0	.....	.....	15.2	92.0	50.7	96.4	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 ^a	758.9 ^b	11.5 ^a
1923-27.....	809.5	403.7	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	31.4	12.1	37.3	51.2	277.7	141.6	228.6	17.8	7.6	12.1	.68	19.5
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	2.6	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.....	122.6	6.6	4.3	12.1	48.2	59.2	.88	2.50	7.36	15.7	41.6	6.9	...
Average													
1909-13.....	130.4	11.8 ^c	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 some 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	33.0	53.5	26.3	41.0	51.6	6.14	6.63	11.81	13.53
Jan.	21.6	24.6	23.5	22.5	10.5	14.0	21.1	11.0	10.03	6.83	16.49	13.90
Feb.	16.2	21.0	22.5	28.7	4.0	8.6	9.5	2.9	7.74	4.27	12.54	9.25
Mar.	15.1	16.6	26.3	27.2	3.2	6.3	3.3	5.2	6.98	5.94	10.50	15.46
Dec.-Mar.	87.8	84.6	98.8	111.4	71.2	55.2	74.9	70.7	30.89	23.67	51.34	52.14
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			
	1925-26	1926-27	1927-28	1928-29	1925-26	1926-27	1927-28	1928-29	1925-26	1926-27 ^a	1927-28 ^a	1928-29 ^a
Dec.	9.74	5.44	8.90	11.19	14.64	10.55	14.95	17.83	1.94	.95	2.57	2.44
	9.66	5.67	6.41	8.18	14.77	7.14	11.05	16.33	1.30	1.02	2.26	3.40
	8.64	4.91	5.81	8.92	14.56	4.99	9.60	15.36	.74	1.52	2.46	3.78
	6.18	3.98	5.11	7.84	8.82	3.87	8.62	8.98	2.15	1.86	3.08	2.99
Jan.	3.45	4.21	4.74	5.41	4.98	4.66	5.91	7.57	.60	1.76	2.75	2.57
	6.22	4.69	4.56	4.49	4.32	5.21	5.28	3.96	1.86	1.75	3.16	3.32
	5.23	4.76	4.96	4.51	2.73	3.71	6.20	2.91	1.99	1.76	3.18	2.48
	4.64	4.64	6.18	4.20	1.63	2.81	4.95	2.10	2.73	1.11	3.45	2.84
Feb.	4.39	5.26	5.96	5.71	1.31	1.98	3.55	1.77	2.78	1.76	4.98	3.41
	4.31	6.16	5.67	6.57	1.21	1.98	2.69	1.34	2.42	1.33	4.49	2.88
	4.06	4.96	5.67	6.50	1.09	2.27	2.97	.90	1.93	1.35	3.68	1.54
	5.05	5.76	5.02	6.03	.83	2.37	2.52	.56	1.88	.74	3.49	1.55
Mar.	3.37	4.33	5.08	6.28	.84	1.97	1.64	.60	1.51	.88	1.88	3.08
	3.79	4.58	5.87	8.41	.69	1.61	1.31	.69	1.69	1.28	1.88	3.92
	3.01	4.91	6.55	6.68	.71	1.54	.95	.63	1.43	1.32	2.38	3.46
	3.50	4.06	6.22	6.33	.80	1.50	.86	1.11	1.27	1.47	2.04	3.41
	3.50	3.59	5.07	6.06	.66	1.25	.50	1.75	1.40	1.14	2.28	3.32

* United States data are unofficial figures compiled from *Price Current-Grain Reporter*; 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 Dec. 5, 1925, Dec. 4, 1926, Dec. 3, 1927, Dec. 1, 1928; Vancouver figures are for weeks ending one day earlier.

^a Receipts at Prince Rupert included.

TABLE IV.—INTERNATIONAL TRADE IN WHEAT AND FLOUR, MONTHLY, JULY–MARCH, 1928–29*

(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	.70	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.	26.65	48.89	.05	4.55	12.00	.47	2.32	.58	(.20) ^b	.42	.56	(.75) ^b
Nov.	13.62	80.56	(1.36) ^b	5.93	12.73	.18	2.14	.22	(.13) ^b	.47	.41	(1.10) ^b
Dec.	10.97	53.22	(1.29) ^b	8.39	.....	.09	2.44	.06	(.20) ^b	.45	...	(1.37) ^b
Jan.	6.70	24.93	(6.50) ^b	18.66	.....	...	1.58	....	(.18) ^b	...	...	(1.60) ^b
Feb.	7.18	19.19	(4.82) ^b	16.67	27.25	...	1.55	....	(.18) ^b	...	...	(1.50) ^b
Mar.	7.90	27.37	....	.....	.....	...	....	....	....	...	...	.....

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.	2.09	13.44	4.31	7.15	3.39	7.44	2.52	2.55	1.50	2.52	1.31	.85
Nov. ....	.73	15.92	3.83	4.99	3.79	7.21	2.55	2.85	1.14	1.73	1.17	.64
Dec.	1.57	20.54	3.47	4.54	3.65	7.09	2.54	3.16	1.69	1.36	.81	1.40
Jan.	1.44	18.13	....	4.43	2.89	6.96	2.80	2.78	1.30	1.25	.61 ^d	1.96
Feb.	1.59	14.14	....	2.18	2.90	5.94	1.69	1.70	.46	.94	.54 ^d	2.56
Mar. ....	....	18.14	....	....	....	....	....	....	....	....	....	....

* Data from official sources and International Institute of Agriculture.

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

TABLE V.—WEEKLY WHEAT AND FLOUR SHIPMENTS BY AREAS OF ORIGIN AND DESTINATION, DECEMBER–MARCH 1928–29*

(Million bushels)

Week ending	North America	Argentina, Uruguay	Australia	Russia	Danube	India	Other countries	Total	To Europe	To ex-Europe
Dec. 1	15.42	3.96	1.17	.....	...	.....	2.18	22.73	18.15	4.58
8	9.90	3.27	1.48	.....	.10	.....	1.91	16.66	12.44	4.22
15	10.91	3.46	1.54	.....	.06	.....	1.51	17.48	13.14	4.34
22	8.43	3.42	2.86	.....	...	.....	.86	15.57	10.03	5.54
29	13.57	3.62	1.92	.....	...	.....	1.18	20.29	15.40	4.89
Jan. 5	11.17	3.46	4.42	.....	.06	.....	1.06	20.17	12.78	7.39
12	11.11	4.98	4.96	.....	...	.....	.92	21.97	15.64	6.33
19	12.83	4.21	3.93	.....	.11	.....	.78	21.86	14.09	7.77
26	10.38	5.62	4.75	.....	...	.....	.62	21.37	14.83	6.54
Feb. 2	11.33	6.17	4.54	.....	...	.....	.94	22.98	15.57	7.41
9	11.26	7.01	4.40	.....	...	.....	.66	23.33	15.12	8.21
16	8.11	6.24	3.79	.....	...	.....	.90	19.04	14.28	4.76
23	9.39	6.76	3.78	.....	...	.....	.58	20.51	14.69	5.82
Mar. 2	9.69	7.26	4.12	.....	...	.....	.57	21.64	14.66	6.98
9	7.10	10.30	3.98	.....	...	.....	.46	21.84	16.37	5.47
16	7.07	5.64	4.76	.....	.10	.....	.62	18.19	12.42	5.77
23	8.14	8.15	3.63	.....	...	.....	.50	20.42	15.63	4.79
30	8.69	5.45	3.46	.....	.05	.....	.41	18.06	12.15	5.91

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

TABLE VI.—WEEKLY VISIBLE SUPPLIES OF WHEAT IN NORTH AMERICA, UNITED KINGDOM PORTS, AND AFLOAT TO EUROPE, DECEMBER–MARCH 1928–29*

(Million bushels)

Date	United States	Canada	U.K. ports	Afloat to Europe	Total	Date	United States	Canada	U.K. ports	Afloat to Europe	Total
Dec. 1.....	145.2	184.3	5.7	63.5	398.7	Feb. 2.....	133.8	212.9	6.6	64.8	418.1
8.....	143.8	201.9	6.0	59.0	410.7	9.....	130.9	210.0	5.6	71.4	417.9
15.....	144.9	213.0	6.8	55.0	419.7	16.....	130.0	204.9	6.4	70.1	411.4
22.....	145.9	224.5	6.9	49.2	426.5	23.....	129.0	210.0	5.8	69.9	414.7
29.....	146.8	227.3	6.2	54.4	434.7	Mar. 2.....	130.0	201.6	6.0	70.0	407.6
Jan. 5.....	146.0	230.8	6.1	53.2	436.1	9.....	130.9	197.5	6.0	73.6	408.0
12.....	142.3	228.3	6.6	57.6	434.8	16.....	130.0	195.2	6.4	71.3	402.9
19.....	138.1	221.5	6.2	60.4	426.2	23.....	129.3	192.5	7.1	68.9	397.8
26.....	136.2	215.7	5.8	63.0	420.7	30.....	128.3	187.9	7.4	70.9	394.5

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

TABLE VII.—WORLD VISIBLE WHEAT SUPPLIES, APRIL 1, 1920–29, AND MONTHLY, 1928–29*

(Million bushels)

Date	United States	Canada	Argentina	Australia	United Kingdom	Afloat to Europe	North America	Argentina, Australia	U.K. and afloat	Grand total	Total ex-Australia
1920 Apr. 1.....	94.9	28.2	6.6	60.0	10.9	59.7	123.1	66.6	70.6	260.3	200.3
1921 Apr. 1.....	51.7	40.6	3.7	73.0	18.4	58.2	92.3	76.7	76.6	245.6	172.6
1922 Apr. 1.....	69.4	63.3	4.8	50.0	6.5	65.9	132.7	54.8	72.4	259.9	209.9
1923 Apr. 1.....	102.1	81.8	9.2	56.5	7.8	52.8	183.9	65.7	60.6	310.2	253.7
1924 Apr. 1.....	111.3	123.3	10.6	40.0	8.5	65.8	234.6	50.6	74.3	359.5	319.5
1925 Apr. 1.....	108.8	80.0	11.4	63.0	11.7	84.1	188.8	74.4	95.8	359.0	296.0
1926 Apr. 1.....	82.0	99.0	6.6	30.5	7.7	46.0	181.0	37.1	53.7	271.8	241.3
1927 Apr. 1.....	88.7	107.3	14.7	53.0	5.0	75.7	196.0	67.7	80.6	344.3	291.3
1928 Apr. 1.....	110.1	146.6	12.8	36.0	7.7	68.4	256.7	48.8	76.1	381.6	345.6
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
1929 Jan. 1.....	204.7	218.6	5.9	75.0	6.2	54.4	423.3	80.9	60.6	564.8	489.8
Feb. 1.....	186.7	208.2	10.3	76.5	6.5	64.8	394.9	86.8	71.3	553.0	476.5
Mar. 1.....	179.8	195.2	12.8	63.0	5.8	70.1	375.0	75.8	75.9	526.7	463.7
Apr. 1.....	173.1	177.1	14.7	53.0	8.0	71.0	350.2	67.7	79.0	496.9	443.9
Average, Apr. 1											
1910–14.....	84.0	37.6	4.3	14.8	12.4	53.2	121.6	19.1	65.6	206.3	191.5
1924–28.....	100.1	111.3	11.3	44.5	8.1	68.0	211.4	55.8	76.1	343.3	298.8

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

TABLE VIII.—WEEKLY CASH PRICES OF REPRESENTATIVE WHEATS IN LEADING EXPORTING AND IMPORTING MARKETS, DECEMBER–MARCH 1928–29*

(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 Northern Spring (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	Argentine Rosafé	Australian
Dec.	1.43	1.13	1.17	1.17	1.17	1.09	1.13	1.48	1.37	1.43	1.28	1.44
	1.41	1.11	1.15	1.07	1.17	1.09	1.12	1.47	1.37	1.42	1.28	1.31
	1.37	1.11	1.15	1.10	1.17	1.09	1.12	1.47	1.37	1.41	1.27	1.41
	1.35	1.10	1.14	1.09	1.17	1.09	1.11	1.47	1.37	1.41	1.27	1.40
Jan.	1.35	1.08	1.15	1.11	1.16	1.07	1.10	1.48	1.36	1.39	1.27	1.38
	1.41	1.08	1.18	....	1.18	1.10	1.12	1.46	1.36	1.40	1.25	1.40
	1.41	1.14	1.22	1.22	1.21	1.13	1.14	1.49	1.41	1.42	1.30	1.42
	1.42	1.19	1.24	1.38	1.25	1.16	1.15	1.52	1.43	1.43	1.31	1.43
Feb.	1.44	1.17	1.25	1.32	1.25	1.16	1.14	1.53	1.44	1.44	1.31	1.42
	1.39	1.17	1.26	1.32	1.25	1.17	1.14	1.55	1.45	1.43	1.33	1.43
	1.41	1.18	1.28	1.29	1.28	1.20	1.16	1.54	1.46	1.46	1.31	1.46
	1.45	1.20	1.30	1.30	1.31	1.23	1.16	1.55	1.49	1.45	1.34	1.46
Mar.	1.38	1.18	1.28	1.26	1.28	1.20	1.15	1.54	1.46	1.42	1.32	1.44
	1.35	1.17	1.25	1.29	1.27	1.19	1.15	1.53	1.45	1.40	1.32	1.43
	1.39	1.19	1.26	1.23	1.29	1.21	1.15	1.52	1.44	1.40	1.30	1.41
	1.39	1.17	1.26	1.23	1.26	1.19	1.12	1.52	1.43	1.41 ^a	1.29	1.41 ^a
	1.30	1.12	1.21	1.17	1.24	1.16	1.12	1.49	1.40	1.38 ^a	1.30	1.38 ^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 and Australian, which are Friday prices furnished by the International Institute of Agriculture. Argentine prices are averages for weeks ending Saturday, from *Revista Semanal*.

^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 (Charters)			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	1.88	1.72	1.62	1.38
Nov.	1.62	1.32	1.28	1.96	1.48	1.60	2.20	1.90	1.87	1.78	1.57	1.37
Dec.	1.55	1.29	1.25	1.78	1.58	1.56	2.31	1.88	1.87	1.74	1.53	1.33
Jan.	1.55	1.29	1.25	1.88	1.58	1.59	2.13	1.93	1.92	1.72	1.52	1.35
Feb.	1.54	1.26	1.27	1.81	1.56	1.64	2.11	1.94	1.96	1.72	1.49	1.40
Mar.	1.52	1.27	1.27	1.70	1.65	1.69	2.11	2.00	1.96 ^a	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 ^c	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 First half of June.

TABLE X.—WHEAT STOCKS IN THE UNITED STATES AND CANADA, MARCH 1919-29*
(Thousand bushels)

Year	United States (March 1)				Canada (March 31)				
	Total	On farms	In country mills and elevators	Commercial visible (Bradstreet's)	Total	On farms	In elevators	In transit	In flour mills
1919	362,947	128,703	107,037	127,207	118,543	32,315	69,983	10,855	5,390
1920	351,769	169,904	123,233	58,632	77,306	34,837	30,622	6,272	5,575
1921	336,057	217,037	87,075	31,945	95,477	48,919	35,802	7,120	3,636
1922	256,038	134,253	75,071	46,714	114,986	41,649	58,338	10,999	4,000
1923	313,557	156,087	102,908	54,562	139,788	54,771	69,620	8,397	7,000
1924	308,919	137,721	98,284	72,914	202,493	70,755	111,589	14,149	6,000
1925	256,205	112,095	67,673	76,437	121,084	39,225	68,555	8,304	5,000
1926	224,575	100,137	76,333	48,105	161,376	50,878	95,691	8,307	6,500
1927	277,473	130,274	85,928	61,271	175,978	51,366	103,372	14,740	6,500
1928	286,559	130,944	75,428	80,187	224,699	69,807	130,055	19,037	5,800
1929	357,258	148,813	78,411	130,034	244,423	60,517	164,291	12,615	7,000

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

TABLE XI.—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	480	534
Total supplies	1,029	811	942	1,016	1,045	303	421	442	528	609
Net exports	258	95	209	194	140	192	324	292	332	430
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	88	22	18	31	43	43
Apparent error in crop estimate	—17	—38	—11	—7	—16	—17	—38	—11	—7	—16
Stocks at end	135	111	138	142	220	26	35	48	75	65
Total disappearance	1,029	811	942	1,016	1,045	303	421	442	528	609

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	300	165	115	161	117	159
Total supplies	257	247	282	304	370	203	151	191	158	199
Net exports	123	94	143	178	215	124	77	103	70	115
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	4	3	4	5	4	5
Apparent error in crop estimate .....	...	+3	—10	—31	64	...	...	...	...	34
Stocks at end	56	61	65	70	64	36	30	41	40	34
Total disappearance	257	247	282	304	370	203	151	191	158	199

* 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, 111 f. The Argentine crop figure for 1928 is our own approximation.

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