



**AgEcon** SEARCH  
RESEARCH IN AGRICULTURAL & APPLIED ECONOMICS

*The World's Largest Open Access Agricultural & Applied Economics Digital Library*

**This document is discoverable and free to researchers across the globe due to the work of AgEcon Search.**

**Help ensure our sustainability.**

Give to AgEcon Search

AgEcon Search  
<http://ageconsearch.umn.edu>  
[aesearch@umn.edu](mailto:aesearch@umn.edu)

*Papers downloaded from **AgEcon Search** may be used for non-commercial purposes and personal study only. No other use, including posting to another Internet site, is permitted without permission from the copyright owner (not AgEcon Search), or as allowed under the provisions of Fair Use, U.S. Copyright Act, Title 17 U.S.C.*

# W H E A T   S T U D I E S

## *of the* FOOD RESEARCH INSTITUTE

VOL. XVIII, NO. 4

(Price \$1.25)

DECEMBER 1941

### THE WORLD WHEAT SITUATION, 1940-41

#### A REVIEW OF THE CROP YEAR

*Helen C. Farnsworth*

War influenced every phase of the wheat situation in 1940-41. It resulted in artificial shortage of wheat in Continental Europe and in reduced consumption there. It restricted wheat exports and augmented the wheat surplus carried by the overseas exporting countries. It stimulated many governments to assume full or partial control over wheat supplies, distribution, and prices.

Britain's tightened naval blockade in the Atlantic kept overseas wheat from going to the Axis-area of the Continent. European neutrals had limited access to overseas grain, but their imports were restricted by scarcity of shipping space as well as by British controls. In total, the bread-grain supplies of Continental Europe were distinctly short. And since they were also unevenly distributed and in part hoarded or reserved, hunger was widespread and intense in certain countries. In contrast, British imports of wheat were heavy—adequate not only for unrestricted consumption but to add to the country's reserves.

The overseas exporting countries continued to struggle with the problem of surplus wheat stocks. Australia alone was little troubled, since she had suffered a virtual crop failure in 1940. Canada's wheat supplies were relatively the largest; but Canada was favored in the export field by nearness to the British market. Her exports were apparently larger than those of the other three major exporters combined and represented almost half of the estimated world total. At the end of the crop year, exporters' stocks of old-crop wheat were larger than ever before. Under normal circumstances such stocks would constitute a serious burden. But under war conditions, with a reduced new crop in Canada and with the recent extension of the war to the United States, these stocks may eventually prove an asset to the Allied cause.

STANFORD UNIVERSITY, CALIFORNIA

**WHEAT STUDIES**  
**OF THE**  
**FOOD RESEARCH INSTITUTE**

Entered as second-class matter February 11, 1925, at the Post Office at Palo Alto, Stanford University Branch, California, under the Act of August 24, 1912.

Published eight times a year by Stanford University for the Food Research Institute.

*Copyright 1941, by the Board of Trustees of the Leland Stanford Junior University*

# THE WORLD WHEAT SITUATION, 1940-41

## A REVIEW OF THE CROP YEAR

*Helen C. Farnsworth*

The unified "wheat world" of prewar days was dissolved by warfare and naval blockades before the close of 1939-40. For 1940-41, "world" wheat production and supply figures held little meaning. Although the aggregate supplies of the world ex-Russia were of near-record size, one could no longer speak appropriately of a "world" wheat surplus. The surplus that existed was an overseas exporters' surplus, confined to North America and Argentina. In Europe and neighboring Mediterranean lands, and in the Orient as well, the pressing wheat problem was one of shortage—shortage intensified by private hoarding and governmental maintenance of reserves.

Both surplus and shortage were met by extension of governmental controls over wheat supplies, prices, distribution, and future production. Wheat price levels and developments were to a large extent officially determined, and they had less influence than usual upon other aspects of the wheat situation. Throughout Europe ex-Russia, the wheat prices officially established for 1940-41 were generally higher than those for any other recent year. But in many countries, the price increases were not passed on to bread consumers, but were met through direct or indirect governmental subsidies.

In the British Isles, bread consumption was expanded in 1940-41, as the joint result of scarcity of other foods and abundance of imported wheat. In Continental Europe ex-Russia, bread consumption and, more strikingly, wheat utilization were sharply reduced for want of sufficient bread-grain supplies and because of governmental attempts to maintain reserves. Wheat-milling regulations and bread-rationing provisions in Continental Europe were strongly reminiscent of measures

adopted during World War I. In spite of these grain-stretching regulations, several Continental countries had to combat widespread hunger before the close of the crop year. Large-scale starvation seems to have been generally averted. This was due partly to British-sponsored shipments of overseas grain to neutral nations, and partly to German-sponsored exports to several of the occupied countries from which Germany had earlier taken substantial supplies of food.

In view of the restrictive barriers to trade that existed in 1940-41 in the form of naval blockades, shortage of shipping space, high freight rates, and foreign exchange controls, the

volume of international trade in wheat was surprisingly well maintained. World net exports, predominantly from Canada, apparently approached 500 million bushels—the smallest since 1917-18, but only slightly lower than in 1935-36. Non-European imports were well up to the average for other recent years; British takings were unusually large; the net imports of Continental "neutral" countries were of about average size; and only the imports of the Axis-dominated area of Europe (most notably the Low Countries and Scandinavia) were far below normal.

At the end of the crop year, wheat stocks were unprecedentedly large in the overseas exporting countries and in the world ex-Russia as a whole. In Europe, wheat reserves were of record size in the British Isles, but only average or below average in Continental Europe. The Continent's wheat stocks were very unevenly distributed, with sizable reserves in Germany and in part of the Danube basin, and carryovers of minimum size or smaller in Spain, Greece, Belgium, Poland, and a number of other countries.

### CONTENTS

	PAGE
<i>War and Wheat Controls...</i>	110
<i>Supplies and Marketings...</i>	123
<i>Prices and Price Relations...</i>	137
<i>International Trade .....</i>	147
<i>Utilization and Carryovers...</i>	160
<i>Appendix Tables .....</i>	175

## I. WAR AND WHEAT CONTROLS

Concurrent war developments exerted a marked influence upon various aspects of the wheat situation in 1940-41. Even more important, however, was the course of the war in the preceding spring and summer which had resulted in extension of the British naval blockade to most of the larger grain-importing countries of Continental Europe. Until April 1940, overseas grain had been allowed to flow more or less freely to all of Continental Europe ex-Russia except Germany and German-dominated Czechoslovakia and Poland. But after Germany occupied Denmark, Norway, and the Low Countries in April-May, and France capitulated to Germany in June—the same month that Italy entered the war—the British naval blockade was greatly extended and tightened.

The British navicert system, under which neutral nations have been permitted to import limited quantities of overseas food supplies and certain types of industrial goods, was fairly well organized by the beginning of 1940-41, though substantial modifications and improvements continued to be introduced in the early months of the crop year. Only six Continental countries outside the Danube basin (Spain, Portugal, Switzerland, Greece, Sweden, and Finland) were qualified in August 1940 to receive imports under the navicert system; and two of these countries—Greece and Finland—as well as the remaining neutrals of the Danube basin became disqualified by war and political developments during the ensuing twelve months.

## WAR DEVELOPMENTS

As the crop year 1940-41 opened, the Battle of Britain seemed about to begin. August 11 witnessed the first mass air raids on England. The following weeks and months were marked by even more intensive and damaging raids on London, Coventry, Bristol, Plymouth, Liverpool, and other industrial centers and ports. The world marveled at the British spirit—at the ability of Britons of all classes “to take it.” Everywhere people were impressed, too, with the showing of the Royal Air Force, which, though outnumbered in men and ma-

chines, retained command of the air over the British Isles and gradually extended the range and intensity of its bombing on the Continent. In spite of the fact that the German people were promised in the spring and summer of 1940 that England would soon be invaded and conquered, the months passed without any confirmed attempt at invasion.

Meanwhile, Germany and Italy were working to extend their control over southeastern Europe and the Mediterranean region. Under Axis pressure, Rumania agreed in August 1940 to cede southern Dobrudja to Bulgaria and to turn over a major portion of Transylvania to Hungary. King Carol abdicated on September 6, and, with the consent of the new Rumanian government, German troops entered Rumania on October 8 to “help control order” and to “protect Germany’s interests” in the Rumanian oil wells. Influenced partly by this bloodless victory, Italy made heavy demands upon Greece, which were followed on October 27 by the invasion of Greece by Italian troops. The Greeks, however, saw fit to resist, and they were soon reporting substantial victories.

In Africa, too, the Italian army met reverses. It suffered serious losses in men, equipment, and territory after December 9, when the British started a major offensive that pushed the Italians well back into Libya and subsequently resulted in complete British victories in Italian Somaliland, Eritrea, and Abyssinia. Although the territorial gains made by the British in Egypt and Libya were mostly lost during the Italian-German counter offensive of March-April, Britain’s total gains in Africa during the crop year 1940-41 more than offset her losses there.

Still larger net gains, however, went to Germany in the Balkan area. With Hungary and Rumania in the Axis camp (and with German troops in Rumania), Germany’s next move was to win domination over Bulgaria and Yugoslavia and to gain a strong foothold in Greece, which would be a major asset in any struggle in the Eastern Mediterranean. After considerable diplomatic maneuvering, the Bulgarian government permitted German troops to enter Bulgaria on March 1, 1941.

Some three weeks later, the Yugoslav government signed the Axis Pact—a step immediately followed by anti-Axis demonstrations and the outbreak of revolution in Yugoslavia. After it became clear that Yugoslavia would fight rather than yield peaceably to Hitler's demands, German troops were ordered to invade both Yugoslavia and Greece on April 6. The German war machine moved rapidly, taking Salonika and Belgrade on April 9, 12, and completing the general conquest of Yugoslavia and Greece on April 23, when the major portion of the Greek army surrendered and the Greek government moved to Crete. Scarcely a month later, on May 20, Germany began an all-out attack on Crete. In spite of planned defense by British troops, the Germans were able to gain complete control of the island by June 1.

Elsewhere in the Near East the gains went mainly to Britain. In Iraq, an Axis-sponsored *coup d'état* in early April was followed a month later by an attack by Iraqi troops on a local British aerodrome. British soldiers promptly moved against the Iraqi forces and on June 1 entered Bagdad under the terms of an armistice signed that day in Britain's favor. A week later British and Allied forces invaded Syria, with Free French troops taking the lead. In Syria, the fighting continued until July 11–12, when the final armistice negotiations began. Iran was the last of the Near Eastern countries to yield to British pressure—after the end of the crop year 1940–41.

The outstanding military development of the year was unquestionably Germany's invasion of Russia on June 22, 1941. In spite of staunch Russian resistance and heavy German losses, the German army made large territorial gains before the end of July; and costly additional gains were made before the tide of conquest ebbed in December 1941.

In the Far East, the continued heavy financial drain of the Sino-Japanese conflict led to a further tightening of import restrictions, partly effected through foreign exchange controls in Japan, Manchukuo, and northern China. Various moves on the part of Japan to expand her empire through diplomatic pressure and conquest were met by increasingly strong economic countermeasures by the United States and Britain. On September 23,

1940, French officials in Indo-China were finally forced to permit the entry of Japanese troops, and only four days later Japan signed an agreement with the Axis powers. On September 26, effective October 16, the United States placed an embargo on exports of iron and steel scrap to destinations outside the Western Hemisphere and Great Britain; and three weeks thereafter Britain reopened the Burma Road to China. In November–December 1940, China received further help from the democracies in the form of a loan of \$100,000,000 from the United States and one of £10,000,000 from the United Kingdom.<sup>1</sup>

The late winter and spring passed without any startling new developments in the Far East; but on July 26, three days after Japan's demands for bases in Indo-China were granted by the Vichy government, American and British officials announced the freezing of all Japanese assets in their respective countries. This step, as well as the countermove of Japan in freezing American and British assets in the Japanese Empire, came too late to have any effect upon the wheat situation of 1940–41. But they counted heavily among the developments that finally led to the outbreak of war between Japan and the United States and Britain on December 7, 1941.

There were but few important naval encounters during the crop year. On several occasions—notably at Taranto and off Sardinia in November 1940 and at Cape Matapan in March 1941—the British naval and air forces inflicted fairly heavy losses on the Italian fleet, but the latter generally succeeded in avoiding direct conflict with the British. In May 1941 the British navy suffered a severe blow through the loss of the "Hood"—a loss that was partly offset by the subsequent sinking of Germany's "Bismarck." Perhaps most important in the naval field was the fact that the British continued to rule the oceans and to maintain an increasingly tight naval blockade of Continental Europe.

#### AMERICAN ACTIVITY

With every passing month of 1940–41 the United States took a more active part in prepa-

<sup>1</sup> In March and September 1940, China had received smaller American loans totaling \$45,000,000.

ration for military defense and in supplying war materials and foodstuffs to Britain. On September 16, 1940, the President signed the Selective Service Bill, which provided for the first peacetime conscription in this country. On December 17 President Roosevelt, lately re-elected for a third term, proposed that the United States should supply arms and war materials on "loan or lease" to Britain and other democracies fighting against aggression. This proposal, in the form of a Lease-Lend Bill, was introduced into Congress on January 10, 1941, and was signed by the President on March 11. A month later, the President officially proclaimed the Red Sea open to American shipping; on April 25 extension of the Atlantic patrol was announced;<sup>1</sup> on June 6 the Maritime Commission was ordered to take over and equip for American use the foreign ships that had been lying idle in United States ports since the early days of the war;<sup>2</sup> and on June 14 German and Italian assets were frozen in this country.

These various steps influenced the wheat situation of 1940-41 indirectly rather than directly. Virtually no United States wheat or flour was shipped under the lease-lend program to Britain or elsewhere through July 1941. On the other hand, the increased industrial production, reduced unemployment, and advance in commodity prices and wage rates, brought about by these intensified "defense" efforts, presumably helped to gain passage of legislation advancing the loan rate on wheat for 1941-42, and influenced other aspects of the government's wheat program. Moreover, the steps taken late in the year to protect shipping and to widen the area open to American vessels tended to ease the current critical shipping position.

<sup>1</sup> This was partly associated with the movement of American troops into Greenland (announced April 11). Subsequently (July 7) it was announced that American troops were also sent to Iceland.

<sup>2</sup> The bill authorizing the President to order this action was signed the same day.

<sup>3</sup> No exact estimate has been reported for July 1941, but the July figure was officially indicated to be the lowest in more than a year. *Foreign Commerce Weekly*, Oct. 11, 1941, p. 42; and *New York Times*, Aug. 10, 1941, Sec. 4, p. 2.

<sup>4</sup> Statement to Parliament by Prime Minister Churchill; *Economist*, Oct. 4, 1941, p. 405.

#### GENERAL SHIPPING POSITION

The world's merchant shipping position was much tighter during 1940-41 than it had been in the preceding year. Both groups of belligerents apparently suffered heavier losses of merchant tonnage, with the increase in losses for Britain and her Allies far greater than that for the Axis group. New construction, which presumably did not fully offset even the losses of 1939-40, must have fallen much farther short of replacement of the increased losses of 1940-41.

The most widely credited data on shipping losses available for 1940-41 are the published figures of the British Admiralty. These indicate that British, Allied, and neutral shipping losses during August-July 1940-41 amounted to roughly 4,650,000 gross tons<sup>3</sup> as compared with some 2,580,000 in the preceding year (which included only 11 months of active warfare). On this basis, average monthly losses on the British side approximated 235,000 tons in 1939-40 and 385,000 tons in 1940-41.

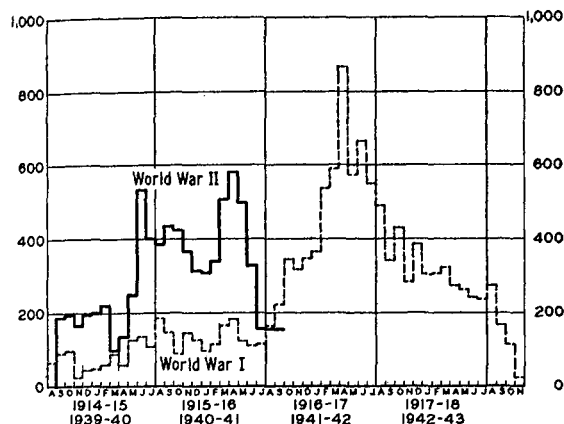
The seasonal distribution of these sinkings as compared with reported monthly sinkings during the World War is shown in Chart 1. Particularly noteworthy is the sharp rise to a monthly average of 528,000 tons in March-May 1941, largely attributable to intensified German raids on shipping in the Atlantic, though partly due to losses in connection with the campaigns in Greece and Crete. Only in the spring and summer of 1916-17 had heavier sinkings been witnessed, and if the new high rate of loss had continued, the tonnage sunk annually would soon have exceeded six million gross tons—over three times what could be replaced at the estimated 1941 rate of construction in Britain and the United States. However, this new threat to Britain's lifeline was apparently met, as in 1916-17, by effective new methods of combat; and in June 1941 the reported tonnage lost was slightly smaller than in the preceding February. Moreover, further improvement was registered during July-September, when enemy sinkings are reported to have declined to only a third of the total in the preceding quarter.<sup>4</sup>

Considerably less is known about the merchant losses of the Axis powers. According

to British Admiralty figures, Axis vessels definitely known to have been sunk and captured totaled only about 765,000 gross tons during August-June 1940-41 (detailed data not available for July) as compared with almost 900,000 tons in the preceding 11 months of

CHART 1.—REPORTED LOSSES OF BRITISH, ALLIED, AND NEUTRAL MERCHANT SHIPPING, MONTHLY, IN WORLD WARS I AND II\*

(Thousand gross tons)



\* Data for World War I from J. A. Salter, *Allied Shipping Control: An Experiment in International Administration* (Oxford, England, 1921), pp. 355-56. Data for World War II (as reported by the British Admiralty) from *Foreign Commerce Weekly*, Oct. 11, 1941, p. 42. Figure for July-September 1941 is a three-months average.

warfare. On the other hand, a much larger tonnage of Axis vessels was reported "probably sunk" during the more recent period—roughly 1,525,000 tons as against only 320,000 tons in 1939-40.<sup>1</sup> Even if only about 25 per cent of the tonnage "probably sunk" was in actual fact so lost, the average monthly rate of Axis losses would have been slightly heavier in 1940-41 than in the preceding year.

It is conceivable that Germany, Italy, and the Axis-controlled countries of Europe constructed enough new merchant tonnage in 1940-41 to offset or more than offset their total losses through sinking and capture. However, it must not be forgotten that the reported loss figures for these countries are small partly because the tonnage that remains available to the Axis countries is small, and partly because even that small tonnage cannot be used efficiently under the British blockade. In addition to their shipping "losses," the Axis countries suffered indirectly through the

requisitioning of Axis-dominated merchant tonnage that had been lying idle in ports of neutral countries in the Western Hemisphere. Under the Ship Requisition Act of June 1941,<sup>2</sup> the United States took over more than 440,000 gross tons of Danish, German, Italian, French, and other vessels; a little later Argentina commandeered about 140,000 tons of similar idle tonnage;<sup>3</sup> and in recent months other South American countries have followed suit.

The addition of these vessels to the shipping fleets of North and South America will somewhat ease the general shipping position. As the months pass, however, more will be done in this respect by the expansion of shipbuilding in the United States. This country, which produced no more than 201,000 and 241,000 gross tons of shipping in 1938 and 1939, respectively, and only 447,000 tons in 1940, is expected to deliver at least one million gross tons before the end of 1941 and probably well over four million during 1942.<sup>4</sup> Such a rapid expansion in shipbuilding has never before been witnessed.

The heavy losses of merchant shipping tonnage during 1940-41 were reflected in further substantial advances in various freight rates. Diversity in freight rate increase, however,

<sup>1</sup> The reported figures are distributed as follows for September-July 1939-40 and August-June 1940-41 in thousand gross tons:

Country	Sunk		Captured		Probably sunk		Total	
	1939-40	1940-41	1939-40	1940-41	1939-40	1940-41	1939-40	1940-41
Germany .....	388	245	258	16	280	736	926	907
Italy .....	70	386	149	52	40	790	259	1,228
Other Axis .....	...	...	...	...	...	...	30	64
Total .....	458	631	407	68	320	1,526	1,215	2,289

\* Not reported separately, but probably the totals indicated in the last column mainly represent vessels captured or known to have been sunk.

<sup>2</sup> *Foreign Commerce Weekly*, Sept. 20, 1941, p. 33. The total tonnage of foreign ships immobilized in American ports was reported at 443,470 gross tons in April 1941; U.S. Congress, House Committee on Merchant Marine and Fisheries, *Purchase and Charter of Foreign Owned Vessels*, Hearings, 77th Cong., 1st sess., Apr. 17, 22, and 23, 1941, esp. p. 138.

<sup>3</sup> *New York Times*, Aug. 14, 1941, p. 3.

<sup>4</sup> In recent months forecasts of deliveries have been revised upward time after time. Statements worth noting on this subject are Warren Wilhelm, "The American Shipping Situation," *Survey of Current Business*, April 1941, pp. 13-16, and Rear-Admiral Emory S. Land, Press Conference Statement, Sept. 3, 1941.



continues to be an outstanding feature. Over half of the shipping space of the world is now under the control of the British government, which pays fixed rates lower than those on the free neutral market. Moreover, in the neutral market, liner rates have advanced considerably less since the prewar period than have tramp rates. Some idea of the differences in freight rate advances on different routes may be obtained from the following table:

REPRESENTATIVE FREIGHT RATES ON WHEAT AND FLOUR IN AUGUST 1939, 1940, AND 1941\*

Route	Aug. 1939	Aug. 1940	Aug. 1941	Per- centage Increase 1939 to 1941
US Atl. to Cont. (\$ per 100 lbs. of wheat) . . .	.14	.60 <sup>a</sup>	1.15 <sup>a</sup>	704
R. Plate to UK/ Cont. (\$ per ton of wheat) . . .	20.25	112.00 <sup>a</sup>	273.00 <sup>b</sup>	1,248
Pacific Coast to China (\$ per ton of flour) . .	5.00	11.50	30.00	500

\* Data from various trade journals.

<sup>a</sup> Neutral vessels.

<sup>b</sup> Rough conversion of rate to Lisbon quoted at \$55.

#### WHEAT CONTROLS IN EUROPE

Government controls over wheat production, distribution, and consumption had been materially strengthened in Europe during the first year of the war.<sup>1</sup> They were further tightened in the second year, particularly in the countries that came under Germany's domination after April 1940. By the close of 1940-41, virtually all controllable aspects of the wheat situation in Continental Europe were under some degree of governmental regulation; and except in the Danube basin such regulation was directed toward relieving or preventing serious shortage of bread grains. In the following paragraphs we sketch merely the broad outlines of the major policies and measures, noting only a few of the more im-

portant details and reserving some others for discussion in subsequent sections.

The measures taken to encourage increased wheat production in Europe ex-Danube in 1940 appear in retrospect to have been weak and poorly executed. In France existing restrictions on expanded wheat sowings were removed; and there and elsewhere government officials urged farmers to plant increased areas to bread grains. Most countries attempted to provide adequate supplies of good seed at reasonable cost, and some moved promptly to assure farmers satisfactory prices for their 1940 crops and/or special subsidies for plowing up non-arable land. In many instances, however, such steps as were taken to stimulate increased wheat plantings for 1940 were more than offset by military requisitioning of farm horses and mules and by the calling of farmers to army service.

Probably the greatest expansion of grain acreage in 1940 was effected in the United Kingdom, where the government offered a bonus of £2 for each acre of grassland plowed up and planted. Under this provision about 2 million acres were added to the crop land planted for harvest in 1940, and almost another 2 million acres were added in 1941. Apparently most of the newly cultivated land was sown to grain—some to wheat.

During the second year of the war, the measures adopted to increase bread-grain production were materially improved and strengthened in Continental Europe. Throughout most of the enlarged German-occupied area, and in unoccupied France, Switzerland, Sweden, Hungary, and Rumania, government authorities drew up detailed crop plans which they attempted to execute in 1940-41, with the aid of various systems of bonuses and penalties but without resort to outright compulsion. Except in the Danube basin,<sup>2</sup> these plans called for considerable expansion of the area under bread grains for harvest in 1941—in most cases an expansion greater than appears to have been effected. Enforcement machinery was organized too late to be fully effective; and bread-grain prices, though high, were not high enough relative to other prices to encourage heavy diversion of other agricultural land to bread-grain production.

<sup>1</sup> Those important for the wheat situation of 1939-40 are discussed in J. S. Davis, "The World Wheat Situation 1939-40: A Review of the Crop Year," *WHEAT STUDIES*, December 1940, XVII, 161-62, 178, 183, 193-94, 195-96.

<sup>2</sup> In Hungary and Rumania some reduction in grain acreage was recommended in order that the acreage under oil and fiber plants might be more easily expanded.

In virtually every Continental country, wheat farmers were legally compelled in 1940–41 to deliver to government agencies all of their marketable wheat. Moreover, most countries—including Germany, Italy, France, almost all of the German-occupied areas, Switzerland, Rumania, Hungary, and Yugoslavia—also set limits to the quantity of wheat that individual farmers could retain for their own use or for storage at the end of the year. Although these provisions were by no means fully enforced, the bulk of the wheat marketed in Europe during 1940–41 was undoubtedly marketed through government channels.

The prices at which farmers sold their wheat to the government agencies and the prices paid by millers for wheat purchased from those agencies were both fixed by official action. In order to encourage increased sowings of wheat and/or to insure delivery of all marketable wheat, farm prices of wheat were generally fixed considerably above the levels that had prevailed in prewar years and in 1939–40 (Table XXVIII).<sup>1</sup> Although the increased wheat prices were in most instances not high in relation to commodity prices in general, the government officials of some countries felt that flour and bread prices should not be permitted to rise as much as the increases in farm wheat prices warranted. Substantial government subsidies were therefore paid on flour and/or bread in the United Kingdom (p. 139), Italy, Spain, Sweden, and probably some other countries.

Practically all trade in wheat in Europe in 1940–41 was handled or supervised by officials or agencies of the various national govern-

ments. In the United Kingdom, the Cereal Imports Branch of the Ministry of Food negotiated all foreign purchases of wheat. These included during 1940–41 two large purchases of Winnipeg wheat futures through the Canadian Wheat Board (100 million bushels on August 2, 1940 for delivery by July 31, 1941, and 120 million announced on May 13, 1941 for delivery before the end of May 1942)<sup>2</sup> and undisclosed amounts of Argentine and Australian wheat. British imports during 1940–41 presumably also included some deliveries against the purchase of 50 million bushels of Winnipeg futures made on June 1, 1940, and on earlier purchases of Argentine and Australian wheat.

Through its navicert system and naval blockade of the Continent, the British government also exercised the right of veto over many import decisions made by the governmental agencies of Continental countries. The official British policy was to prevent any imports from going to the Axis powers or to any part of the occupied territory, but to permit neutral countries to import food needed for current consumption so long as their stocks did not exceed about two months' supplies.<sup>3</sup>

Within the limits imposed by the British navicert system, Spain, Portugal, Greece (prior to April 1941), Switzerland, and Finland arranged, with Britain's approval, for substantial imports of wheat from Argentina, Australia, and Canada. The largest purchases were negotiated by Spanish officials, who arranged for shipments of wheat apparently totaling about 780,000 tons (28.7 million bushels) under long-term credit and barter trade agreements with Argentina. In addition, Spain acquired title to small quantities of British-owned Argentine and Canadian wheat under the terms of Anglo-Spanish agreements announced in January and March.<sup>4</sup>

In no field were European government controls more stringent and effective during 1940–41 than in the field of food consumption and storage. With respect to bread grains, these controls assumed four or five major forms, all of which were designed to curtail the utilization of bread grains: (1) measures to reduce or eliminate feeding of millable wheat, (2) provisions to increase the amount

<sup>1</sup> Germany represented an important exception to this general tendency. Among all the countries of Europe, Germany stands practically alone in having prevented significant price inflation.

<sup>2</sup> Statement of J. A. MacKinnon before the Canadian House of Commons on May 13. *Monthly Review of the Wheat Situation* (Canada), May 23, 1941, pp. 1–2.

<sup>3</sup> On the British blockade and navicert policies, see *Neue Zürcher Zeitung*, Mar. 23, 1941, and *New York Times*, Mar. 10, 1941, p. 6.

<sup>4</sup> Whether the latter of these agreements was in any way related to the announcement made on April 10 in the House of Commons that Great Britain had made a loan of £2,500,000 to Spain for purchases of foodstuffs is not clear. *Southwestern Miller*, Apr. 15, 1941, p. 22.

of wheat or rye flour obtained from a given quantity of wheat or rye, (3) regulations compelling millers or bakers to mix other kinds of flour with bread-grain flour, (4) measures to reduce waste and luxury consumption of flour, and (5) establishment of definite bread and flour rations which helped to accomplish several of the purposes listed above.

During the first months of the war, a number of countries had ruled that all millable wheat and rye should be reserved for human consumption and that feeding of millable wheat would be penalized.<sup>1</sup> After German troops occupied Denmark, Norway, the Low Countries, and part of France, those countries introduced or extended regulations curtailing wheat feeding, or relied, for the same result, on rationing regulations and on measures requiring compulsory delivery to the state of all bread-grain supplies in excess of specified "producers' allowances." Among the unoccupied countries, unoccupied France, Switzerland, Sweden, Yugoslavia, Rumania, Hungary, Eire, and the United Kingdom introduced new controls after June 1940 which were at least partly designed to prevent heavy feeding of wheat. In the United Kingdom, feeding regulations were tightened several times prior to March 17, 1941, when the feeding of millable wheat was completely prohibited (p. 163).

In most European countries, less attention has been devoted to the problem of feeding wheat than to the more difficult problem of reducing human utilization of bread grains. Since the bulk of the bread-grain supply normally flows to flour mills, much attention has naturally been given to devising milling regulations that might reduce the amount of bread grains used in the production of flour. The most important of the milling regulations have pertained to (1) milling extractions and (2) flour admixture specifications.

France's regulations may be taken to illustrate the first type of controls. In the production of the usual French flours of prewar days,

100 pounds of wheat were ordinarily milled to produce something like 70 pounds of flour. Soon after the outbreak of the present war, the French government specified that no wheat should be milled at an extraction lower than the specific weight of the wheat plus two points. This was interpreted for the 1939 crop to indicate a common or average extraction of about 77 per cent.<sup>2</sup> In the fall of 1940, and again in the spring of 1941, French authorities raised the legal minimum extraction rate further until it stood at 85 per cent—apparently without reference to the specific weight of the wheat ground.<sup>3</sup>

Under current war conditions it has been impossible to keep track of all of the changes in extraction rates that have been made in the various European countries. There is fairly clear evidence, however, that the legal minimum rates were raised for 1940-41 in at least eleven countries: the United Kingdom, Eire, Portugal, Switzerland, Greece, Hungary, Yugoslavia, Rumania, Italy, France, and Belgium. Moreover, there is a reasonable presumption that such rates were also raised in Finland, Norway, and Holland. In most instances the increases over 1939-40 ranged from 3 to 8 percentage points. In Eire the increase, mainly concentrated between December 1940 and March 1941, amounted to at least 20 points.

Provisions for compulsory admixture of other cereal flours or potatoes with wheat flour were unimportant for the crop year 1939-40. After Germany's conquest of the Low Countries and France, however, one country after another introduced mandatory admixture regulations, and the percentage admixture requirements were raised from time to time as the months passed.

Rye flour, corn flour, and potatoes were the most commonly required elements of admixture, though barley and even oats were added in certain countries. Neither the United Kingdom nor Eire required the admixture of any other cereals in wheat flour, but by the end of the crop year there appears to have been no Continental country that had not resorted to this method of stretching wheat supplies. Although our information as to the specific admixture requirements of Continental countries is incomplete, it is clear that by July

<sup>1</sup> See our "World Wheat Survey and Outlook, January 1940," *WHEAT STUDIES*, January 1940, XVI, 212-13.

<sup>2</sup> The average specific weight of the 1939 crop was believed to be about 75 kilograms per hectoliter.

<sup>3</sup> *Neue Zürcher Zeitung*, Mar. 3, 1941; *New York Times*, Mar. 30, 1941, Sec. 1, p. 16.

1941 several countries were compelling flour mills to mix with wheat flour 35 per cent or more of other cereals (p. 166). Among the most stringent admixture requirements were those of Rumania, Hungary, Bulgaria, Slovakia, Italy, and the Netherlands. Information is not available as to Spain's admixture regulations, but in practice the millers of that country probably used a larger percentage of non-wheat cereals in their flour mixtures than did the millers of any other country except Poland and Greece (after April).

Governmental controls over flour and bread consumption did not stop at the mills but were extended even to the smallest bakery. In most European countries, bakeries were ordered to produce no more than one to three standard types of bread. Moreover, fancy rolls, cakes, and pastries were generally forbidden or reduced in quantity. Even the standard breads often could not be sold fresh, but had to be kept for 12 to 24 hours after baking until they had become less palatable and could more easily be sliced thin. Penalties, involving fines and even imprisonment, were imposed on persons found guilty of wasting bread.<sup>1</sup>

Finally, in most Continental countries, the quantity of bread and flour that might be sold to individual consumers was determined directly by the government, which enforced such decisions by means of ration cards. Bread rationing, uncommon during 1939-40

except in Greater Germany and probably the General Government of Poland, was widely extended on the Continent during 1940-41. Indeed, at the end of the crop year only Portugal, Switzerland, and Italy allowed bread to be sold without ration cards; and both Switzerland and Italy, if not also Portugal, required such cards for purchases of flour and macaroni. The development of bread rationing in Europe during 1940-41, with evidence of its general tightening in the latter part of the crop year, is illustrated by the table on page 168.

#### WHEAT CONTROLS IN FOUR EXPORTING COUNTRIES

While European governments were struggling during 1940-41 to relieve or prevent serious shortage of wheat for bread, the four major exporting countries were seeking ways of avoiding some of the more disastrous results associated with excessive stocks.

**Canada.**—In Canada, where the wheat supplies of 1940-41 were the most burdensome, important legislative changes were made to provide wheat growers an adequate market at a guaranteed minimum price and to insure each individual farmer an equitable share in the use of the inadequate storage facilities of the country.<sup>2</sup> Under the Wheat Board Amendment Act, 1940,<sup>3</sup> an initial payment of 70 cents per bushel for No. 1 Northern, basis Fort William-Port Arthur or Vancouver, continued to be offered, as in the preceding year, for wheat delivered by producers to the Canadian Wheat Board (CWB). But whereas in 1939-40 each grower had been permitted to deliver only 5,000 bushels at this guaranteed minimum price, in 1940-41 no limit was imposed on the total volume of deliveries.<sup>4</sup> On the other hand, the timing of the wheat marketings of each producer was strictly controlled in 1940-41. On August 7 the CWB announced a primary delivery quota of 5 bushels per sown acre for wheat, and quotas of the same size for barley and oats. Under this regulation, each grower was permitted to deliver to elevators and loading platforms as much as 5 bushels of wheat for each of the number of acres specified in his sworn statement of sown wheat acreage. Before the middle of September all restrictions on the marketing of barley and oats had been

<sup>1</sup> *New York Times*, Dec. 12, 1940, p. 12.

<sup>2</sup> Two recent summaries of the Canadian government's wheat policy since the outbreak of war in 1939 warrant special mention: G. E. Britnell, "The War and Canadian Wheat," *Canadian Journal of Economics and Political Science*, August 1941, VII, 397-413; James Richardson & Sons, "Canadian Wheat in Wartime," *Weekly Grain Letter*, July 7, 1941.

<sup>3</sup> *Statutes of Canada*, 4 Geo. VI, c. 25. In addition to the special features covered in the text, this act provided for (1) the making of an interim payment on participation certificates if such "can be made without any possibility of loss or cost to the government," (2) removal of obligation on the part of the CWB to offer wheat "continuously" for sale on world markets, (3) increase in penalties for violation of the Board's regulations, and (4) expansion of the Advisory Committee from seven to eleven persons.

<sup>4</sup> In both years farmers were free to dispose of their wheat on the open market. In 1939-40 farmers with more than 5,000 bushels to sell could deliver their excess supply to one of the co-operative pools authorized to make an initial payment of 56 cents per bushel on such wheat; but few took advantage of this.

removed; the general delivery quota for wheat had been raised to 8 bushels per acre; and at a number of individual points where extra storage space was available wheat quotas had been increased to 10, 12, or 15 bushels. Subsequently, daily adjustments were made at individual points and the general delivery quota was successively raised to 10 bushels (on November 27), 12 bushels (on December 13), 15 bushels (on March 13), and finally 20 bushels (on April 17). Three days after the last increase, all restrictions on wheat marketing in the Prairie Provinces were removed.

The financial burden placed on Canadian producers (and their creditors) by the legal limitations on wheat deliveries in the early part of 1940-41 was not relieved by adoption of any of the widely discussed proposals for government aid in financing the grain held on farms.<sup>1</sup> Dominion aid and recompense were confined to what amounted to farm-storage payments of about  $\frac{1}{45}$  cent per day after November 1, and to income-tax concessions to elevator companies that expanded their available storage space through the construction of temporary annexes.<sup>2</sup>

Aid of a different type was available under the Prairie Farm Assistance Act to farmers who secured low yields of wheat per acre. Since the average price of wheat was less than 80 cents during August-October 1940 (specifically 71.43 cents), the year was declared an emergency year, with awards payable in all townships in which the average yield of wheat was 12 bushels per acre or less.<sup>3</sup> The crop failure provisions of the act were not applicable in 1940-41.

Although a remarkable expansion of elevator space took place in Canada under government encouragement during 1940-41 (pp. 131-32), government officials, members of the grain trade, and farmers alike recognized that serious difficulties would be encountered in 1941-42 if Canada should produce another large wheat crop. Consequently, the Canadian government adopted in the spring of 1941 a program for wheat-acreage contraction, with features designed to maintain a fair level of income to Western grain growers. The details of the new program need not be recorded here.<sup>4</sup> However, it is important to note that

the scheme included provisions (1) that total Canadian wheat marketings would be limited to 230 million bushels in 1941-42 and (2) that bonuses of \$2.00 to \$4.00 per acre would be paid to growers who would divert wheat land to summer-fallow, grass, coarse grains or other specified purposes in 1941. On May 2, the House of Commons appropriated \$35,000,000 for financing the acreage reduction program, the bulk of the appropriation to go to farmers as acreage-bonus payments.

A processing tax of 15 cents per bushel was collected throughout 1940-41 on all wheat processed for domestic consumption in Canada. The government's wheat program for 1941-42, as first outlined, provided for continuation of this tax, which was estimated to

<sup>1</sup> For one of the most widely discussed proposals, see James Richardson & Sons, *Weekly Grain Letter*, Aug. 22, 1940.

<sup>2</sup> The government provided that for income-tax purposes elevator companies might write off annually for two successive years 50 per cent of the cost of such new annexes. In February 1941, government officials and the Western elevator companies made a supplementary agreement which provided that (1) the companies would construct about 50 million bushels of temporary storage space at Fort William-Port Arthur and (2) the government would maintain existing elevator charges through July 31, 1943, as well as the income-tax concessions made earlier. Government encouragement to the expansion of grain storage capacity declined after April 1941, when it appeared no longer essential. On April 21, the Board of Grain Commissioners announced that thereafter no licenses would be granted for "special" annexes (*existing* structures taken over for the temporary storage of grain), and on April 29 the Director of the Priorities Branch of the Department of Munitions and Supply announced a limitation on expenditures on construction of grain storage facilities to \$1.00 except under special license.

<sup>3</sup> Individual farmers received awards on one-half of their cultivated acreage, up to a maximum of 200 out of 400 or more cultivated acres. Payments totaling \$6,693,112 were made for 1940-41 at the following rates: \$2.00 per acre in townships with a wheat yield of less than 4.0 bushels per acre; \$1.50 in townships with a yield of 4.0 to 8.0 bushels; and \$.90 per acre in townships with a yield of 8.1 to 12.0 bushels (information supplied directly by the Office of the Deputy Minister of the Department of Agriculture). Under an amendment of August 1940, farmers whose yields per acre were above 8.0 bushels and who secured a total output of more than 3,000 bushels were excluded from benefits under the act.

<sup>4</sup> For these, see Canada, *House of Commons Debates*, Mar. 12, 1941, pp. 1,595-1,600; *ibid.*, May 2, 1941, pp. 2717-19; *Monthly Review of the Wheat Situation* (Canada), Mar. 22, 1941, pp. 2-3.

yield a total revenue of about \$5,000,000.<sup>1</sup> On July 31, 1941, however, the Canadian government took steps to abolish the processing tax, partly in the hope that a general advance in bread prices might thereby be prevented.

**United States.**—Evidence of excessive wheat supplies was almost as prominent in the United States as in Canada, though here the pressure on storage space was much less serious. A burdensome wheat surplus was by no means new in this country, and governmental machinery was already in existence to “protect” the income of wheat farmers, to “stabilize” prices, and to “control” wheat acreage. The specific measures employed for these purposes in 1940–41 differed but slightly from those in force in the preceding year. The national acreage allotment for the 1940 wheat crop had been set in the spring of 1939 at 62.0 million acres, and in May 1940 exactly the same allotment was announced for the 1941 crop. Every “co-operating” farmer who had planted within his acreage allotment for 1940 received during 1940–41 at least two direct governmental payments: (1) a “parity payment,” amounting to 10 cents a bushel on the normal yield of wheat on his allotted acreage and (2) a “conservation payment,” amounting to 8.1 cents a bushel on the same production basis.<sup>2</sup> Many farmers received a third type of direct government payment for following specified “soil-building” practices.

Wheat growers who co-operated in the gov-

ernment's wheat program were also eligible to share in the benefits of the wheat-loan program administered by the Commodity Credit Corporation (CCC). In 1940–41 this privilege was utilized much more extensively than it had been in either of the two preceding years. The rates of loan offered were not appreciably higher than they had been in 1939–40 (see p. 145); but more farmers were eligible to receive loans, they had a better understanding of the advantages of the loan program, and price developments during September–December were such as to make the loan program more attractive in 1940–41. As a result, 278 million bushels of wheat were pledged under CCC loans in 1940–41, as compared with 168 million in 1939–40 and only 86 million the year before. In 1939–40 farmers had redeemed 93 per cent of their 1939 loan wheat, had resealed under loan 10 million bushels or 6 per cent, and had defaulted on loans covering less than 2 million bushels or about 1 per cent.<sup>3</sup> In contrast, up to September 30, 1941, only 35 per cent (96 million bushels) of the 1940 loan wheat had been redeemed, and a much larger quantity, 173 million bushels, or 62 per cent, had been delivered to the CCC against defaulted loans.<sup>4</sup> How much of the 6.8 million bushels of 1940 farm-stored wheat reported still under loan on September 30, 1941 represented recently resealed wheat has not been made public; but the quantity resealed was certainly small and probably about half of the amount resealed in the preceding year.

Up to September 30, 1941, the CCC had received against defaulted loans 178 million bushels of wheat, of which about 5 million represented resealed wheat of the 1939 crop. This wheat, together with the 2 million bushels of 1939 wheat delivered to the CCC in 1939–40, has been “pooled.” When all of the wheat in any one pool is finally sold by the CCC, any net proceeds remaining above the original advances, carrying charges, and all other direct costs will be distributed to the producers on a flat per bushel basis.<sup>5</sup>

During 1940–41 the CCC sold on the open market a very small quantity of wheat—mainly odd lots and out-of-condition wheat. At the end of 1940, it had been officially an-

<sup>1</sup> *Winnipeg Free Press*, July 31, 1941, p. 9.

<sup>2</sup> These two payments had amounted respectively to 0 and 12 cents in 1938–39 and to 11 and 17 cents in 1939–40. The parity payments of 1939–40 and 1940–41 were both made in accordance with the appropriation provision that the rate of parity payment should not exceed the amount by which the average farm price of wheat in the preceding crop year was less than 75 per cent of the parity price. The 75 per cent limitation was removed in the appropriation provisions for parity payments in 1941–42; but the wheat-parity rate was again placed at 10 cents per bushel of normal yields on allotted acreages.

<sup>3</sup> U.S. Dept. Agr., AAA, *Agricultural Adjustment* 1939–40, p. 25.

<sup>4</sup> Estimates as of Sept. 30, 1941, kindly supplied directly by the Commodity Credit Corporation.

<sup>5</sup> U.S. Dept. Agr. Press Release, Mar. 9, 1940; J. B. Hutson, *Looking Ahead at Our Financial Problems*, U.S. Dept. Agr. Press Release 987–42, Nov. 6, 1941, pp. 6–7.

nounced that the CCC would not sell any 1940 wheat that was in good condition except at prices that would at least cover loan values plus storage and other charges.<sup>1</sup> This ruling was subsequently modified (after Congress had determined on a greatly increased loan rate for 1941-42) to specify selling prices that would cover the new higher loan values plus accrued charges.<sup>2</sup> For some weeks, in certain regions, wheat prices were high enough to warrant sales under the former of these two policies, but apparently almost none was sold. Larger amounts of the defaulted 1940 loan wheat were transferred to other government agencies; up to September 30, 1941, about 4 million bushels were turned over to the Federal Surplus Commodity Corporation (FSCC) and 3 million to the Federal Crop Insurance Corporation (FCIC). Thus, on September 30,

there still remained in the hands of the CCC 174 million bushels of pooled wheat.

The higher loan basis established by Congress for 1941-42 (p. 145) promised to increase the disparity between wheat prices in Winnipeg and United States markets and to result in a heavy flow of Canadian wheat into the United States. To prevent such developments, President Roosevelt, on advice from the Tariff Commission,<sup>3</sup> announced limited import quotas on wheat and wheat products for human consumption, effective May 28, as follows:

Source	Wheat (bu.)	Wheat products (lbs.)
Canada .....	795,000	3,815,000
Total .....	800,000	4,000,000

United States wheat producers were not asked to vote on marketing quotas for 1940-41, although the crop and stocks figures now standing for that year would have made a marketing-quota referendum mandatory if they had been available for use in the forecast of supplies announced by the Secretary of Agriculture in May 1940.<sup>4</sup> By the following May, however, the anticipated United States surplus was so large that there could be no doubt that the Secretary would find a referendum call obligatory. And crop developments after mid-May 1941 added another 85 million bushels to the supplies for 1941-42 envisaged by the Secretary. Although temporarily the outcome of this first referendum on wheat marketing quotas was uncertain, 81 per cent of the votes cast were favorable, well in excess of the two-thirds majority required. This insured continued operation of the loan program in 1941-42, at the increased loan rate set by Congress just prior to the referendum vote. Except for its indirect effect on wheat prices in June-July, the adoption of marketing quotas for 1941-42 had virtually no influence on the wheat developments of 1940-41, and warrants no further attention here.<sup>5</sup>

The crop year 1940-41 was the third year of operation of the government's wheat insurance plan, under which farmers can insure 50 or 75 per cent of their average yields of wheat against losses from all unavoidable causes (including insect infestation and plant diseases).<sup>6</sup> For the 1940 crop more than

<sup>1</sup> U.S. Dept. Agr. Press Release 1309-41, Dec. 30, 1940.

<sup>2</sup> *Ibid.*, June 26, 1941.

<sup>3</sup> United States Tariff Commission, *Wheat and Wheat Flour: Report to the President under Section 22 of the Agricultural Adjustment Act of 1933 as Amended*, May 1941.

<sup>4</sup> The figures on wheat supplies and marketing quota levels presented by the Secretary of Agriculture, prior to May 15 (as required by law), in 1940 and 1941, respectively, are shown below in million bushels in comparison with the most recent official estimates for the same crop years:

Item	1940-41		1941-42	
	May 13 forecast	Current data	May 10 forecast	Current data
Gross carryover .....	289	282	390	387
Insurance reserve .....	15	14	12	12
Net carryover .....	274	268	378	375
New crop .....	675	812	858	946
Total supplies .....	949	1,080	1,236	1,321
Normal consumption .....	692		698	
Normal exports .....	66		57	
Total normal use .....	758		755	
Coefficient .....	x 1.35		x 1.35	
Marketing quota level. Supplies above (+) or below (-) marketing quota level .....	1,023 -74	1,023 +57	1,019 +217	1,019 +302

<sup>5</sup> For a brief discussion of marketing quotas and their anticipated effects, see our last two surveys of the world wheat situation, *WHEAT STUDIES*, May 1941, XVII, 412-13; *ibid.*, September 1941, XVIII, 18-19.

<sup>6</sup> The Food Research Institute plans to devote an early issue of *WHEAT STUDIES* to a detailed analysis of this program by J. C. Clendenin.

twice as many insurance contracts were written as for the preceding crop, and for 1941 a still larger number of farmers took advantage of the plan. The wheat acreage covered also increased, but proportionally less than the number of contracts.<sup>1</sup> In all three years, the government has suffered net losses on its wheat insurance business, in addition to the

<sup>1</sup> Current estimates, partly supplied directly by the Federal Crop Insurance Corporation, are as follows:

Crop insured	Number of contracts (thousands)	Net acreage covered (million acres)
1939 .....	165.8	5.97
1940 .....	361.6	10.92
1941 .....	417.0	11.00

<sup>2</sup> Although premiums and indemnities are expressed in terms of wheat, about 90 per cent of the total premiums for 1940 and 1941 were paid as offsets against payments earned by farmers under the Agricultural Conservation program, and many of the indemnities for losses were paid by the FCIC in cash.

<sup>3</sup> See WHEAT STUDIES, December 1940, XVII, 165. On June 30, 1940, the SMA was created in accordance with a reorganization plan which consolidated under it "the administrative functions and responsibilities in connection with surplus removal and marketing agreement programs previously vested in the FSCC and the former division of Marketing and Marketing Agreements of the AAA." Purchases of wheat products during the past four crop years by the SMA and the FSCC for relief distribution in the United States or, in 1940-41, for Red Cross shipments abroad were as indicated in the following tabulation, in thousand barrels of 196 pounds:

July-June	White flour	Graham flour	Wheat cereal	Miscellaneous wheat products	Total
1937-38 .....	2,430	269	204	...	2,903
1938-39 .....	908	315	340	...	1,563
1939-40 .....	2,802	1,725	669	68 <sup>a</sup>	5,264
1940-41					
Domestic <sup>b</sup> ..	655	150	0	...	805
Red Cross <sup>b</sup> ..	214	136	6	104 <sup>c</sup>	460

<sup>a</sup> Red Cross exports of wheat products.

<sup>b</sup> Data supplied directly by the SMA.

<sup>c</sup> Cracked wheat; in addition 250,000 bushels of grain were shipped to Finland.

<sup>4</sup> In June 1940, this program was operating in only 83 areas, with 1.5 million people participating. By May 1941 it had been extended to 350 areas with about 4 million persons participating. N. L. Gold, *Economic Aspects of Programs to Increase Domestic Consumption of Agricultural Products*, U.S. Dept. Agr. Press Release, June 23, 1941, p. 4.

<sup>5</sup> U.S. Dept. Agr. Press Release, May 5, 1941. Soon after the new wheat crop movement got under way, the U.S. Dept. Agr. began to publish monthly reports on the percentage of the storage capacity occupied with grain (including beans and flaxseed). The maximum so far reported was 86 per cent on Oct. 1.

expenses of operation of the FCIC. The greatest loss was in connection with the 1940 crop, on which premiums amounted to 13.8 million bushels and indemnities totaled 22.8 million.<sup>2</sup> Preliminary figures for 1941 indicate that premiums totaled 14.1 million bushels and indemnities may reach 19 or 20 million.

Surplus-disposal projects accounted for relatively little wheat during 1940-41. Purchases of wheat and wheat products by the Surplus Marketing Administration (SMA) for shipment abroad by the Red Cross came to only about 2.2 million bushels in terms of wheat equivalent. Moreover, SMA purchases for direct relief distribution in the United States, roughly 3½ million bushels as wheat, were only about one-fifth as large as the corresponding purchases in 1939-40—a reduction probably partly attributable to the heavy purchases made but not distributed by the FSCC in June 1940.<sup>3</sup> On the other hand, the Food Stamp Plan was widely extended during 1940-41,<sup>4</sup> and the amount of wheat flour purchased with blue stamps rose to 1,529,000 barrels from only 346,000 in 1939-40. Of this large increase, only a very small part probably represented a net addition to total flour sales.

The government's wheat-export program—partly a surplus-disposal project, partly a project for maintaining foreign trade—was less important in 1940-41 than it had been in either of the two preceding years of its operation. Only 22 million bushels of wheat (including flour) were sold for export under financial assistance from the SMA in 1940-41, as compared with subsidized exports of 94 and 35 million bushels, respectively, in 1938-39 and 1939-40.

The United States did not face in 1940-41 the acute grain-storage problems that Canada had to meet. Yet the storage position here was tight enough to cause concern about the future. The United States Department of Agriculture made a nation-wide survey as of March 1, which showed that the commercial grain-storage capacity of the country (exclusive of farm storage facilities and the 136 million bushels of storage space represented by steel bins owned by the CCC) then approximated 1,550 million bushels.<sup>5</sup> On the same date, new construction under way or planned



totaled 71 million bushels. After late February, various measures were adopted by government agencies in the United States to encourage expansion of grain-storage facilities for the anticipated heavier demand to be met in 1941-42. These included (1) the statement on February 20 that the Defense Commission and the Secretary of War had recently joined in the issuance of "certificates of necessity" for the construction of needed grain-storage facilities—such certificates permitting owners to write off the total cost of the construction over five years for income-tax purposes; (2) the announcement on March 4 that the Department of Agriculture did not contemplate any reduction through 1942-43 in the grain-storage rates specified in the Uniform Grain Storage Agreement and that farmers would continue to be paid equivalent rates for farm storage of wheat for government agencies; (3) the announcement by the Farm Security Administration late in July that it would inaugurate a program under which farmers in the Northwest could secure wood and wire storage bins at a cost of \$10.40 per 1,000 bushels capacity; and (4) the announcement that the CCC would pay *in advance* in 1940-41 the wheat-storage allowance of 7 cents per bushel to farmers who construct new, or satisfactorily repair existing, storage facilities for wheat.

**Australia.**—At the very beginning of the war, the Australian government, acting under powers conferred by the National Security Act, acquired all the wheat in Australia, and established a central Australian Wheat Board (AWB) with full authority to receive, handle, store, and market all marketable wheat. The general system of operation adopted for 1939-40 was maintained in 1940-41. For wheat milled for domestic consumption, flour mills continued (as they had since 1938-39) to pay an excise tax which brought the price of such wheat to 5s. 2d. per bushel, ports basis.<sup>1</sup> As shipping difficulties increased, export business in flour, as well as in wheat, was handled more and more by the AWB, which tried to allocate the flour sales as equitably as possible among the various mills. Licensed wholesale firms operated under the AWB on fixed margins of profit. Growers delivered all their

marketable wheat to agents of the AWB and were "compensated" by an initial advance from government funds and by such later payments as the government authorized. Actually, wheat growers received virtually the entire net proceeds from sales of their pooled 1939 wheat (3s. 6½d. bagged basis, and 3s. 4½d. bulk basis, f.o.r. ports, per bushel), and in 1940-41 the government is expected to pursue a similar compensation policy.<sup>2</sup> In both years, farmers with yields below seven bushels per acre received drought-relief payments.

This broad system of regulation suffered two major defects under existing conditions of low export wheat prices, scarcity of shipping space, and restricted export markets: (1) the prices received by Australian wheat producers were regarded as unbearably low, and (2) under ordinary conditions of yield and if the war continued, Australia seemed destined to pile up in the course of a few years unmanageable surplus wheat stocks which would present extremely difficult storage, financial, and production-adjustment problems. Recognition of these defects and political pressure from wheat producers induced the Australian government in November 1940 to adopt a Wheat Stabilisation Scheme, to come into effect for the 1941-42 crop year and to continue in operation throughout the war and for one year thereafter. Under this plan, growers are to continue to market through the AWB all marketable wheat harvested as grain, and they are

<sup>1</sup> The proceeds of this tax (£1,500,000 in 1940-41 as against £2,500,000 in 1939-40) went partly for drought relief and reconstruction of marginal wheat lands in the different states, and partly to the pooled wheat fund to be distributed among all growers in proportion to their sales of wheat.

<sup>2</sup> According to the latest information, wheat growers have so far been paid on their 1940 marketings 3s. 7d. per bushel bagged basis, f.o.r. ports, and 3s. 5d. bulk basis. We wish specifically to correct the impression given in our recent Surveys that Australian growers had been guaranteed a minimum total return of 3s. 10d. per bushel bagged basis, f.o.b. ports, for their 1940 wheat. This guarantee is part of the Wheat Stabilization program which applies for the first time to the 1941-42 crop (see text). For this and other information regarding the Australian regulations we are indebted to C. J. Perritt, Secretary of the AWB and John S. Teasdale, member of the AWB for Western Australia.

to receive a guaranteed minimum price of 3s. 10d. a bushel, f.o.b. natural ports, bagged basis, for a marketed crop of 140 million bushels.<sup>1</sup> This plan influenced developments during 1940-41 only as regards new-crop plantings and the necessary registration of farmers for licenses.

In February, the Wheat Industry Stabilisation Board (WISB) announced that there would be no enforced reduction of the sown wheat area for 1941 as compared with normal plantings of the past few years, but that restrictions would be enforced against any expansion of sowings.<sup>2</sup> The issuance of individual farm licenses was considerably delayed by the fact that many farmers applied for licenses to sow wheat substantially in excess of their normal acreages.<sup>3</sup> Consequently, over 600 local committees were set up to review the applications to make recommendations to the WISB as to (1) what farmers should be registered as wheat growers and (2) what area of wheat individual farmers should be licensed to grow.<sup>4</sup> Under this system, the first wheat licenses were issued in early September to wheat growers in New South Wales; and as of the same date it was estimated that only about three-fourths of the cases had so

far been decided by the local committees and many of these still had to be reviewed.<sup>5</sup>

**Argentina.**—During 1939-40, the Argentine Grain Regulating Board (GRB) had operated with respect to wheat only as a seller of the large holdings it had purchased at fixed prices and had not disposed of in 1938-39.<sup>6</sup> On November 20, 1940, however, the GRB was again given the powers to buy wheat from producers at government-decreed minimum prices, with the minimum prices effective immediately and board purchases authorized from December 1 (p. 141). The new regulations included two new features: (1) the GRB was required to sell wheat to local millers at 2.25 pesos per 100 kilos (roughly 15 U.S. cents per bushel) above the official minimum buying price, and the mills were obliged to pay to the GRB a similar amount for wheat they bought directly from producers;<sup>7</sup> (2) the GRB was authorized to require producers from whom it purchased grain to agree not to increase their acreage under wheat for 1941 and, if later so ordered, to reduce their acreage by an amount not to exceed 10 per cent.<sup>8</sup> No such action was taken by the GRB to reduce wheat plantings for the 1941 crop, though farmers were advised not to expand sowings.

## II. SUPPLIES AND MARKETINGS

Aggregate wheat supplies in the world except Russia<sup>9</sup> in 1940-41 apparently differed but little from the record supplies of the preced-

ing year (Chart 2, p. 124). A reduction in the world crop of something like 300 million bush-

<sup>1</sup> For details of this plan, see *Monthly Summary of the Wheat Situation in Australia*, November 1940; also *The Land: Farm and Station Annual*, Nov. 30, 1940, pp. 40-41.

<sup>2</sup> *Monthly Summary of the Wheat Situation in Australia*, February 1941.

<sup>3</sup> In general, the acreage regarded as "normal" seems to be related to average sowings over the past four years, with adjustment for rotational practices. Farms were not eligible for registration as "wheat farms" unless wheat grown thereon had been harvested for grain in one or more of the three preceding years. *Ibid.*, April 1941.

<sup>4</sup> *Ibid.*, May 1941.

<sup>5</sup> *The Land*, September 12, 1941, p. 1.

<sup>6</sup> By the summer of 1940, however, these holdings and also the estimated quantities of wheat in private hands were believed to have been so reduced that an

embargo (effective July 29) was placed on exports of wheat except under permit. It was generally understood that permits would be issued for exports to any destination to fulfill previous sales, and for exports to neighboring countries against future sales, provided the available supplies should prove larger than needed for domestic consumption. This regulation was modified on September 12 to provide export permits for shipments to any country, so long as the remaining wheat supplies appeared adequate. Finally, on November 13, all export restrictions were abolished.

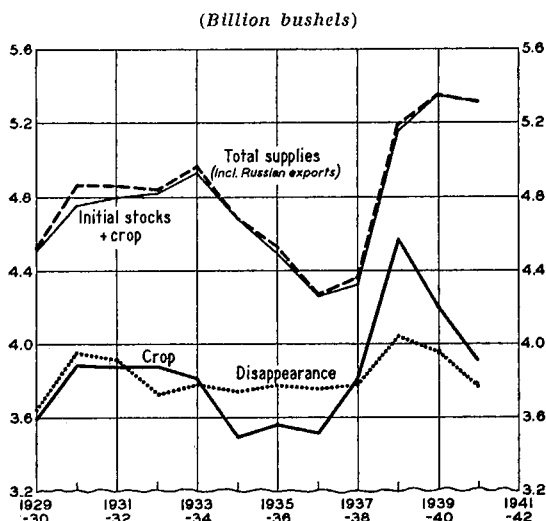
<sup>7</sup> The gain from these sales (virtually a processing tax) was to be used to help defray the general expenses of the GRB.

<sup>8</sup> *Boletín Informativo*, Dec. 15, 1940, pp. 1030-31.

<sup>9</sup> Exclusive of the USSR, China, Iran, Iraq, and several countries which produce very little wheat. In the following discussion we frequently speak of "world" crops and "world" supplies in referring to the crops and supplies of this restricted area.

els (1939 boundaries)<sup>1</sup> was almost offset by an increase in the initial stocks by about 250 million bushels.

CHART 2.—WHEAT SUPPLIES AND DISAPPEARANCE, WORLD EX-RUSSIA, ANNUALLY FROM 1929-30\*



\* Recent data from Tables I, XII, and XXV.

The 1940 world wheat crop, though much smaller than either of its two predecessors, was still the fourth largest on record. The aggregate acreage sown was probably the smallest in more than a decade, but the average yield per acre was fairly high (Table I), having been exceeded in only six earlier years. Estimates of the 1940 world crop published a year ago were even more optimistic than those now standing. Downward revisions for Continental Europe, Australia, Argentina, Turkey, French North Africa, and several minor countries exceeded the few small upward revisions by over 160 million bushels.

"World" wheat production and supply estimates for 1940-41 are much less trustworthy than similar figures for earlier years (see below). In addition, they hold little meaning, because wheat could not flow freely during 1940-41 from the major surplus areas of the

<sup>1</sup> In the following discussion of crops and supplies, boundary changes made after August 1939 are disregarded. Many of these changes have already been nullified by war developments since June 1941, and the remaining ones warrant scant attention under present conditions of Nazi domination of most of Continental Europe.

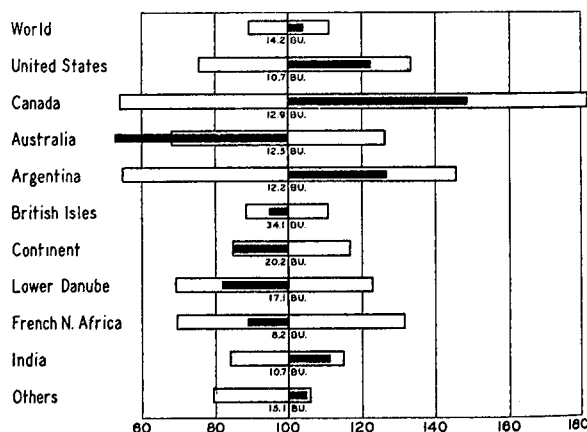
world to the chief deficit countries in Continental Europe. Much more important for that year are estimates of the distribution of the world wheat crop and of total supplies among the various producing regions, with emphasis on current political and military groupings.

#### MAJOR 1940 WHEAT CROPS

The distribution of the 1940 world wheat crop was unfavorable from many standpoints. Three of the four chief exporting countries, already burdened with heavy wheat stocks, secured extraordinarily large harvests. In contrast, European neutrals and belligerents alike, faced with serious shipping difficulties and naval blockades that restricted imports, obtained mostly poor to mediocre crops. In total, the crops of other countries were about as large as in the two preceding years.

These broad differences in outturn reflected to a large extent the influence of adverse weather conditions in the principal producing countries, though in parts of Continental Europe shortage of labor and draft power were also important. Chart 3 shows that wheat

CHART 3.—WHEAT YIELDS PER ACRE EX-RUSSIA, 1940, AND RANGES FOR 1925-39, AS PERCENTAGES OF AVERAGES FOR 1930-39\*



\* Based on data in Tables I and IV. Unshaded bars show minimum and maximum yields in 1925-39 as percentages of 1930-39 averages; solid bars show yields in 1940 as percentages of the same averages given in figures.

yields per acre in 1940 (solid black bars) were considerably above average in the United States, Canada, Argentina, and India, while they were substantially below average in Australia, various parts of Europe ex-Russia, and

French North Africa. On the other hand, only the yield in Australia fell outside of the corresponding range of wheat yields over the period 1925-39 (unshaded bars).

In practically all of the principal wheat-growing regions except Canada, wheat sowings for the 1940 crop were fairly light, trends considered. Tables I and III indicate that the greatest *absolute* reduction in wheat acreage from the 1935-39 average occurred in the United States, where the decline amounted to 10 million acres. Efforts of farmers to comply with the government's wheat acreage program (in order to share in the benefits related thereto) were presumably the major factor here. In a large number of countries (including many in Europe, Australia, and Argentina) acreage reductions were mainly due to adverse weather conditions at planting time, though other influences, such as shortage of labor and draft animals in Europe and unsatisfactory wheat prices in Argentina and Australia, were also important.

Standing estimates of the United States Department of Agriculture indicate a reduction of about 4 million acres in Europe ex-Russia. Since the sown, and presumably the harvested, wheat acreage of Britain was expanded (partly through diversion to wheat of a portion of the 2 million acres newly plowed during 1940-41), the reduction in Continental Europe must have been even larger—say almost 4.5 million acres. The European acreage figures, however, apply principally to harvested acreage; and for the 1940 crop, winterkilling, flood losses, and war losses resulted in heavier acreage abandonment than usual. Thus, we infer from the Department's European acreage estimate that the reduction in wheat sowings in Continental Europe was appreciably less than 4.5 million acres.<sup>1</sup>

**Europe and neighboring countries.**—Since the British naval blockade was extended and tightened in the summer of 1940 to include virtually the entire European Continent, interest in wheat-production statistics has centered on the figures for Europe. Even now, however, the actual size of the 1940 European wheat crop is not *known* and it can be safely estimated only within fairly wide limits. Very few European countries issued official acre-

age and/or production estimates for 1940, and unofficial approximations for the remaining countries rest in large measure upon inadequate qualitative information.

Certain general facts about the 1940 European wheat crop are indisputable. There is no question that wheat sowings were hampered in the fall of 1939, at least in western Europe and the Danube basin, by persistent, heavy rains that saturated the ground and seriously delayed and finally prevented a considerable amount of planned plowing and seeding. Moreover, the planted wheat suffered unusual damage during the winter of 1939-40 from extremely low temperatures,<sup>2</sup> which at times occurred when the snow cover was not adequate. Even the spring of 1940 turned out to be generally unfavorable, though less so than the preceding winter and fall. In parts of the Danube basin, floods destroyed a significant part of the surviving wheat and late frosts took an additional toll. Elsewhere the cold, wet spring mainly hampered normal growth and lowered the condition of the plants.

With this background of development, the 1940 European wheat crop could not have been

<sup>1</sup> It should be noted that the indicated reduction would be substantially larger than 4.5 million acres, if French wheat sowings were reduced as much as suggested by the estimate of harvested area of 7.66 million acres shown in Table III. We regard this figure as probably too low and judge that a somewhat higher figure for France has been included in the acreage estimate for Europe ex-Russia published by the U.S. Department of Agriculture. Two comments on French wheat sowings that appeared in the *Monthly Crop Report and Agricultural Statistics* (International Institute of Agriculture), credited there to *Journal du Commerce* and *Bulletin des Halles*, are pertinent. In January 1940 (p. 6S) the following statement was published: "On the whole it was estimated that seeding had been carried out over two thirds of the area of last year at this period, except in the north, and it was forecast that for France as a whole 90 per cent of the normal area would be sown." In April 1940 (p. 270S) there was the later comment that "It is estimated in official circles that the area sown to wheat will be about 12 million acres."

The acreage actually sown to wheat in France was probably somewhere between two-thirds of the total sowings for 1939—roughly 8 million acres—and 12 million acres. For our own calculations we have chosen to use a figure of about 10 million acres.

<sup>2</sup> It was reported for Hungary that January 1940 was the coldest month in more than a decade and that with the exception of February 1929 it was the coldest in 40 years. *Ibid.*, February 1940, p. 93S.

large. The clear presumption is that it was below average size. Almost certainly the wheat crops of Rumania, Yugoslavia, Hungary, France, Spain, Portugal, and Italy fell considerably short of the average outturns of these countries in 1935-39, and only a few countries obtained above-average harvests.

These incontestable statements, however, are consistent with any one of a number of quantitative European crop estimates. We should perhaps accept outright the standing official crop figures published for Hungary, Yugoslavia, Rumania, Bulgaria, Italy, Spain, Portugal, Greece, Switzerland, Norway, Sweden, Finland, Estonia, and Eire. These total 725 million bushels. Over the five preceding crop years corresponding estimates for these countries represented from 53 to 57 per cent of the total European crop. But we cannot safely infer therefrom that the European crop of 1940 (basis 1939 boundaries) fell between 1,270 and 1,370 million bushels.

One may more reasonably build up a total European crop figure by adding to the aggregate of the official crop estimates mentioned above a "guesstimate" for each of the remaining countries. This has been done by the United States Department of Agriculture, which probably has at its command more complete qualitative information on the different European crops of 1940 than any other statistical agency. The Department's standing estimate for the 1940 crop of Europe ex-Russia (1939 boundaries) is 1,300 million bushels, with 73 million attributed to the British Isles and the remainder, 1,227 million, to the Continent. Corresponding approximations for Europe ex-Russia by the International Institute of Agriculture and Broomhall are 1,360 and 1,384 million bushels, respectively.<sup>1</sup>

As we interpret the information now available to us, the 1940 European wheat crop ex-Russia probably did not exceed 1,375 million bushels and probably did not fall below 1,275 million. Within this range, the approximation of the United States Department of Agriculture appears as reasonable as any, and we accept it in preference to issuing a different approximation of our own. Addition of the production figures for individual countries shown in Table II (the unofficial approxima-

tions in that table are mainly figures that have been published at different times by the United States Department of Agriculture) yields a total of only 1,278 million bushels. However, these figures are presented not because we are convinced of their accuracy, but because we believe that they give a fair picture of current ideas as to the general distribution of the 1940 European crop—a picture that should form part of the historical record. The aggregate estimate of the United States Department of Agriculture is only 1.7 per cent higher.

If the European crop ex-Russia of 1940 (1939 boundaries) approximated 1,300 million bushels, it was perhaps distributed about as follows among the principal political areas, in million bushels, with comparisons:

	1934-38 average	1939	1940
Europe ex-USSR .....	1,597	1,698	1,300
British Isles .....	71	72	73
Continent .....	1,526	1,626	1,227
Five neutrals <sup>a</sup> .....	190	170	118
Greece .....	28	38	33
Continent ex-neutrals			
ex-Greece .....	1,308	1,418	1,076
Danube basin <sup>b</sup> .....	362	453	295
Italy .....	267	293	261
Others (mostly German-controlled) <sup>c</sup> .....	679	672	520

<sup>a</sup> Spain, Portugal, Switzerland, Sweden, Finland.

<sup>b</sup> Hungary, Yugoslavia, Rumania, Bulgaria, with adjustment for Hungary in 1934-38.

<sup>c</sup> Germany, Austria, Czechoslovakia, all of Poland, Denmark, Norway, Holland, Belgium, France, and the three Baltic States.

These figures may slightly understate the 1940 harvests of the five neutral countries and of some of the other specified groups, and correspondingly overstate the outturn in the group of countries designated "others,"<sup>2</sup> but this is by no means certain. In any case, it seems probable that Germany and the German-occupied countries of western and central Europe harvested 20 to 23 per cent less wheat

<sup>1</sup> *Monthly Crop Report and Agricultural Statistics*, July 1941, p. 322S; *Corn Trade News*, Sept. 24, 1941, p. 196.

<sup>2</sup> The detailed crop figures given in Table II for this group of countries add to only 498 million bushels, as compared with the 520 million indicated here.

in 1940 than in 1939 or than on the average in 1934-38. Presumably this reduction was spread unevenly over the German-controlled area, with the greatest relative declines in France, the Low Countries, and Denmark. Outside of the German-controlled area, only Spain, Portugal, Sweden, Hungary, Yugoslavia, and Rumania suffered crop reductions that appear to have amounted to 20 per cent or more. In contrast, only Eire and Switzerland seem to have secured outturns larger than in 1939 and also than in 1934-38.

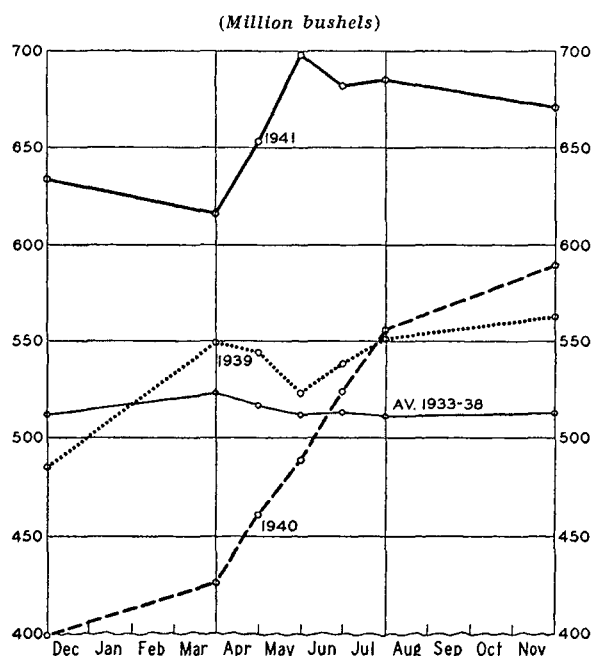
For the blockaded countries of the Continent, the wheat harvests of neighboring areas—French North Africa, Egypt, the USSR, Turkey, and other Near Eastern countries—assumed an importance they rarely have. Unoccupied France drew freely on the supplies of her North African dependencies, which are believed to have harvested a small aggregate crop in 1940 after a bumper one in the preceding year had left wheat stocks at a high level. The Egyptian crop was apparently of near-record size, but Egyptian exports were available only to Greece (while she ranked as a neutral or British ally) and perhaps to one or two other friendly countries. Turkey, Syria, and Iraq are reported to have had good-sized crops in 1940, but none of these countries exported any significant quantity of wheat (p. 154); and Turkey and Syria, if not also Iraq, had to face problems of local bread shortage before the end of the crop year. In contrast, the USSR undoubtedly harvested a large wheat crop—larger than in either of the two preceding years—and her domestic bread-grain supplies were fairly abundant. Political considerations, however, apparently encouraged the Soviet Union to store the bulk of her surplus grain rather than to strengthen Germany's position through its exportation.

**Four exporters.**—The wheat situation in North America was in almost every respect the opposite of that in Europe. In both the United States and Canada, old-crop carry-overs were burdensome and the 1940 wheat harvests were above average size.

Through April 1940, American crop experts had agreed that the United States winter-wheat crop would be extremely small. Low moisture reserves and persistent dry weather

in the fall in the hard winter-wheat belt had curtailed sowings<sup>1</sup> and had given the crop a bad start; as of December 1, the reported "condition" estimate had been the lowest on record; and as of April 1 the percentage abandonment (mainly from drought and winterkilling) was expected to be considerably above the ten-year average. The unprecedentedly low December 1 "condition" estimate—55 per cent of normal—had been interpreted on the basis of the preliminary acreage estimate to indicate a prospective winter-wheat outturn of 399 million bushels. The corresponding April 1 forecast was only slightly higher at 426 million (Chart 4). Then came such re-

CHART 4.—SUCCESSIVE ESTIMATES OF SPECIFIED CROPS OF UNITED STATES WINTER WHEAT\*



\* Official estimates from crop reports of the U.S. Department of Agriculture.

markable recovery that the crop became widely designated as "the miracle crop." As of August 1, the official production estimate was 556 million bushels, 130 million higher than the April forecast, and the December estimate raised the figure to 589 million bush-

<sup>1</sup> A more important influence on wheat plantings, as compared with 1935-39 when sowings were heavy, was the government's wheat-acreage reduction program (p. 125).

els. Over the same months official estimates of the sown wheat acreage were revised downward and the April forecast of abandonment was reduced from 29.0 to 13.8 per cent or to well below the 1930-39 average.

The United States spring-wheat crop was planted somewhat late under favorable moisture conditions, and it developed satisfactorily in an unspectacular manner. The sown acreage for the spring crop, like that for the winter crop, was definitely small: according to standing official estimates the area sown to all wheat fell fractionally short of the national allotment of 62 million acres. This was the lowest reported acreage since 1926. In contrast, yields per acre of both winter and spring wheat were relatively high and the average yield of all wheat was the highest in nine years. At 812 million bushels, the total wheat crop was 65 million bushels above the 1930-39 average, though it had been exceeded in size four times during that decade.

In many respects the United States wheat crop of 1940 was of exceptionally good quality.<sup>1</sup> The hard red wheats, both winter and spring, graded higher than in any year since 1934, with 70 and 81 per cent respectively rated as No. 2 or above. The soft red winter crop also graded unusually high, with 75 per cent in the first two grades as compared with only 50 per cent on the average in 1934-39.

<sup>1</sup> The following information on quality is based on inspection data, published annually on wheat receipts during July-October. For data on the 1940 crop see U.S. Dept. Agr., Agr. Marketing Service, *Quality of the 1940 Crops: Wheat, Barley, Oats, Rye, and Grain Sorghums* (November 1940).

<sup>2</sup> The percentage of soft white wheat has climbed more or less steadily from 29 per cent in 1934 to 47 per cent in 1940.

<sup>3</sup> Map-charts showing the approximate average yields of wheat in the various crop districts of the Prairie Provinces, annually, in 1937-40 are shown in *WHEAT STUDIES*, December 1940, XVII, 150. In spite of some subsequent revisions in estimates, these maps adequately portray the general distribution of yields. On pp. 155-56 of the same study, details of the development of Canada's 1940 crop are discussed.

<sup>4</sup> The following statements are based on data of the Board of Grain Commissioners for Canada. For 1940 data, see Table IX; J. Ansel Anderson and T. R. Aitken, *The Quality of the 1940 Crop of Western Canadian Wheat*, Oct. 19, 1940; and J. Ansel Anderson and W. J. Eva, *Protein Survey of Western Canadian Wheat, 1941 Crop*, October 1941, p. 10.

Moreover, less of the soft red crop than usual was assigned to special grades, with the reduction greatest in the proportion graded "tough." In protein content, the hard winter wheat inspected at Kansas City was appreciably lower than in 1939 and somewhat below average; but the hard red spring wheat tested at Minneapolis had an average protein content of 14.7 per cent—higher than in any of the seven preceding years except 1936. In contrast to the generally good quality of the three classes of wheat mentioned above, Pacific white wheat graded abnormally low, and soft white wheat constituted a much larger proportion of the crop than in any of the six preceding years.<sup>2</sup> The durum crop graded considerably less high than the hard red spring, and in addition contained an unusually large proportion (7 per cent) of "tough" wheat.

Canada's 1940 wheat crop stands out as a real bumper. It was the result of record heavy sowings (mainly planted while wheat prices were high before Germany invaded the Low Countries) and generally favorable weather conditions. The average yield of wheat per sown acre is now placed at 19.2 bushels<sup>3</sup>—a high yield, over 6 bushels above the 1930-39 average, but still considerably below the record for 1915. The standing official estimate of the Canadian harvest, 551 million bushels, is expected to be only slightly reduced in the final revision to be issued late in January. The 1940 Canadian wheat crop was of unusually good quality.<sup>4</sup> Of the total inspections of hard red spring wheat, over 50 per cent graded No. 1 and 82 per cent graded Nos. 1 and 2. These figures were extraordinarily high, even though they did not come up to the corresponding percentages for the preceding season. In protein content, the 1940 crop was quite satisfactory, averaging exactly the same as each of the two preceding crops. As in 1939-40, there was less difference than usual in the protein content of the various grades. Test weight per bushel was high and the flour yield was exceptionally good.

In the Southern Hemisphere, both Australia and Argentina planted appreciably smaller areas to wheat in 1940 than they had on the average in either the five or ten preceding years. But in Argentina the planted

wheat thrived under the influence of generally favorable weather conditions, whereas in Australia persistent drought took extremely heavy toll of the crop. The total Australian outturn, placed at 82.6 million bushels, was less than half of a normal harvest. Not since 1914-15, and only twice before in the present century, had Australia secured as low a yield per acre as the 6.6 bushels indicated for 1940. New South Wales and Victoria suffered the greatest reductions in yield, securing only 5.7 and 5.1 bushels per acre respectively, in comparison with ten-year averages of about 13 bushels. F.a.q. standards were high for Victoria, South Australia, and Western Australia, but only fair for New South Wales.

The Argentine wheat crop benefited from exceptionally favorable weather during September-November 1940. Prior to September, excessive rains were believed to have lowered the condition of the crop, and a below-average yield was generally anticipated. In mid-September the standing Argentine crop forecast of the United States Department of Agriculture was 190 million bushels and we accepted as reasonable a rounded forecast of 200 million.<sup>1</sup> The first official estimate, released December 13, indicated an outturn of 294 million bushels, almost 50 per cent more. This high estimate was regarded with skepticism by members of the trade, who were then inclined to credit estimates in the neighborhood of 250 to 260 million bushels. After mid-December continuous rains interfered with the Argentine harvest, lowered the quality of the crop, and perhaps reduced the total outturn. In any case, the second official estimate of the crop, issued January 22, was cut to 276 million bushels, a figure the trade was willing to accept. Subsequent revisions have been insignificant, the last one standing at 271 million bushels. But recent data on Argentine wheat stocks suggest that the first estimate of the crop, over 290 million bushels, was more nearly correct than any of the later revisions (see Table XXVI).

<sup>1</sup> These forecasts were based on an estimated sown area of 17.0 million acres, as compared with the revised estimate of 17.5 million. See WHEAT STUDIES, September 1940, XVII, 18.

<sup>2</sup> *Boletín Informativo* (Comision Nacional de Granos y Elevadores), May 15, 1941, p. 381.

The harvest rains may or may not have reduced the total outturn of Argentine wheat, but they undoubtedly lowered its quality, primarily with respect to grading. Moreover, the excessive moisture throughout most of the growing and harvesting periods resulted in reduced protein content. Indeed, the protein content of samples of Rosafé, Buenos Aires, and Bahía Blanca types (Nos. 1 and 2) averaged only 10.8, 11.1, and 10.7 per cent of protein as contrasted with averages of 12.8, 12.8, and 14.2 per cent, respectively, over the five preceding years. Moreover, the Chopin Alveograph figure for sampled 1940 wheat indicated a much lower strength than for any of the five preceding crops similarly tested.<sup>2</sup>

**Other countries.**—In the Orient, India and Japan both reported crops of record size, but the standing high Japanese estimate is subject to considerable doubt. In contrast, the Manchukuoan crop, planted on a reduced acreage and subjected to more or less unfavorable weather, was apparently the smallest since 1934. Small crops were also harvested in Chile and Uruguay. Chosen and Mexico in the Northern Hemisphere, and South Africa and New Zealand in the Southern Hemisphere, harvested moderate crops, mostly from fairly large sown areas.

#### DISTRIBUTION OF WHEAT SUPPLIES

More important than the distribution of 1940 crops among the principal producing regions was the distribution of total wheat supplies (crops plus carryovers). For most countries other than the four chief exporters, official data on total supplies are not available, and our own approximations to the European supply figures are admittedly less trustworthy for 1940-41 than for prewar years. We believe, however, that the available official estimates, supplemented by our rough approximations where necessary, give a fairly good idea of the regional distribution of such supplies in 1940-41 as compared with preceding years. These are shown in Chart 5, page 130.

The unprecedentedly heavy aggregate supplies held by the four major exporting countries stand out in sharp contrast with the short supplies in Europe ex-Russia and French North Africa combined. Of the four



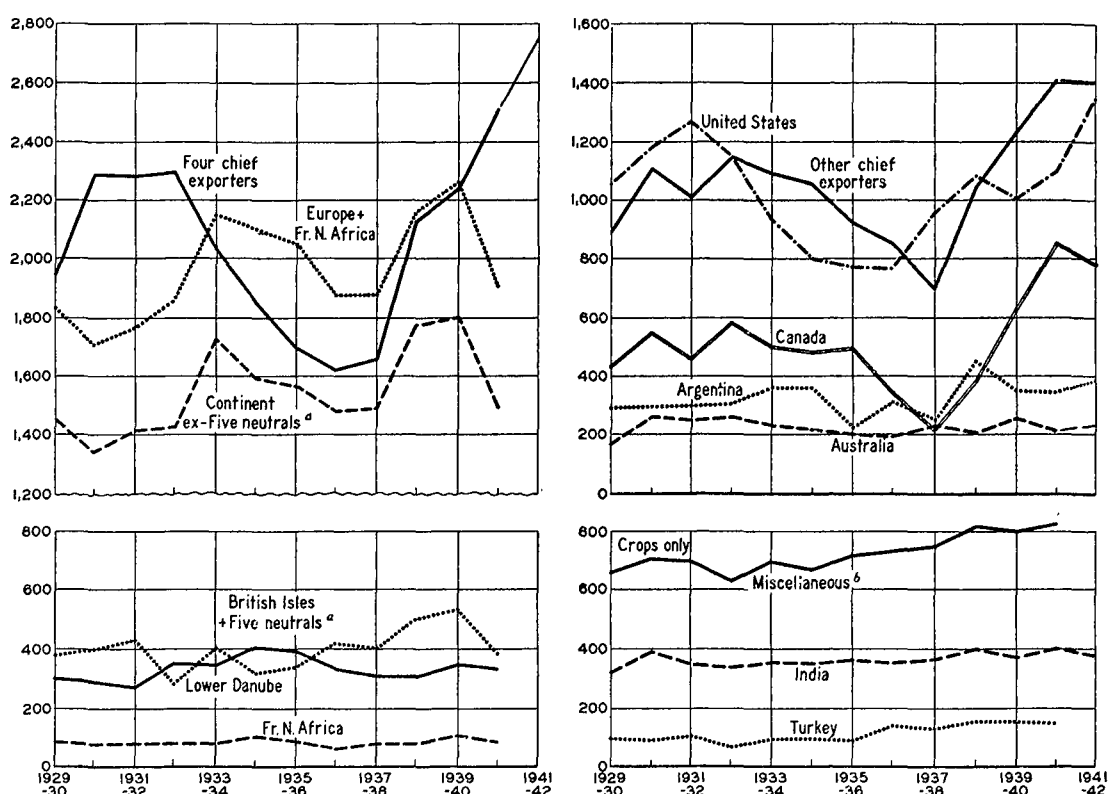
exporters, only Canada had more wheat on hand than ever before. Argentine and United States wheat supplies, though large, had been exceeded in two or more earlier years. Australia held very moderate supplies, with her new harvest smaller than her old-crop stocks as of August 1—a relationship that had not been witnessed since 1919-20.

quirements. A somewhat similar but much less serious wheat-supply position existed in Portugal. In contrast, Sweden and Switzerland had larger bread-grain supplies than in most earlier years, and Sweden's supplies were fully adequate for domestic needs.

On the remainder of the Continent, the quantity of wheat available from new crops

CHART 5.—WHEAT CROPS PLUS CARRYOVERS IN MAJOR AREAS EX-RUSSIA, 1929-41\*

(Million bushels)



\* Based on crop data in Tables I and II, and stocks data in Table XII.

<sup>a</sup> The five neutrals are Spain, Portugal, Switzerland, Sweden, Finland.

<sup>b</sup> All countries included in Tables I and II which are not represented in the other sections of the chart.

In the aggregate, the wheat supplies of the British Isles and the five Continental neutral nations (Spain, Portugal, Switzerland, Sweden, and Finland) were somewhat below average size, implying heavy dependence on imports to maintain recent average levels of consumption. British wheat supplies from new crops and carryovers were of record size. In reflection of Spain's short 1940 harvest, Spanish supplies were small as compared with earlier years and also far below consumption re-

and estimated carryovers was definitely low as compared with earlier years, yet not nearly so low as the crop position alone might suggest. The level of total supplies there implied a net deficiency of only about 100 million bushels, or 7 per cent, in relation to normal consumption and minimum stocks requirements—a deficiency not too great to be met by uniform reduction of wheat consumption. Subtraction of the wheat supplies of Greece, which through mid-April 1941 had limited ac-

cess to overseas markets, would not significantly alter this picture nor the course of the curve for the "Continent ex-5 neutrals."

Although most of this area was Axis-dominated during the whole of 1940-41, and completely so dominated during the last few months of the crop year, national boundaries remained of considerable importance in the distribution of wheat and other food supplies. In the Danube basin, where wheat supplies were only moderately below average,<sup>1</sup> definite shortage of wheat was faced by Yugoslavia and Rumania. In contrast, Bulgaria had adequate supplies for both domestic use and exportation, and Hungary seems to have endured a shortage that was at least partly government-imposed.

Outside of the Danube basin, bread-grain supplies in the Axis-dominated area were apparently in liberal supply only in Greater Germany. They appear to have been at least as large as in most earlier years, though below ordinary consumption requirements, in Norway, the Netherlands, Greece, and perhaps Italy. They were considerably smaller than in most recent years, and in varying degrees below normal consumption levels, in Denmark, Belgium, France, and Poland. The last two countries suffered additional distri-

bution problems as a result of the artificial boundaries established between occupied and unoccupied France and between Nazi-controlled and Soviet-controlled Poland. In France, the unoccupied area was poorly supplied with bread grains relative to its population, while in Poland the German-controlled area (including the General Government) was at an advantage as regards per capita bread-grain supplies, though not wheat alone.<sup>2</sup>

Since practically any country can cut its food utilization of bread grains by 10 to 15 per cent from normal without reducing the supply of bread available, it is important to note that on the Continent, only Spain, Portugal, Finland, Greece, Belgium, and the Netherlands appear to have had available from their 1940 crops and inward carryovers less than 85 per cent of the bread-grain supplies normally used for human consumption and for seed. Moreover, most of these countries were able to supplement their deficient domestic supplies of bread grain through importation.

#### WHEAT MARKETINGS

In both Canada and the United States, where wheat supplies were most abundant, the wheat crops of 1940 were marketed at a slower rate than in other recent years.

The marketing and storage situation in Canada was early recognized as critical. As of August 1, 1940, a large portion of the available elevator space in Canada was filled with heavy stocks of old-crop wheat, and the 1940 wheat crop, almost ready for marketing, was nearly as large as the preceding record crop of 1928. In short, Canada's total wheat supplies amounted to over 800 million bushels, whereas the working capacity of her country terminal and mill elevators was in the neighborhood of only 400 million bushels. Faced with this inadequacy of storage space, Canadian authorities moved to restrict grain marketings through the establishment of marketing quotas, and at the same time took steps to encourage construction of temporary storage annexes (p. 118).

Both measures proved extraordinarily effective. By July 31, 1941 the total grain-storage capacity of Canadian elevators and annexes amounted to 577 million bushels and

<sup>1</sup> Most wheat-supply statistics for the Danube basin, including those presented in Chart 5, overstate the level of supplies after 1936-37 in relation to earlier years. This situation arises out of two circumstances: (1) several of the Danubian countries introduced changes in their methods of crop estimation in 1936 and 1937—changes that tended to yield crop figures higher than the methods formerly employed; and (2) Hungary's territorial expansion at the expense of Czechoslovakia added to the Danubian crops of 1939 and 1940 ten to fifteen million bushels of wheat that in previous years had been recorded under Europe ex-Danube.

<sup>2</sup> Populations and bread-grain crops were distributed as follows in recent prewar years in percentages of the national totals (WHEAT STUDIES, January 1940, XVI, 230 and *ibid.*, January 1941, XVII, 225):

Area	Popu- lation	Wheat	Rye	Wheat and rye	Pota- toes
Unoccupied France . . . . .	33 <sup>a</sup>	25	57 <sup>b</sup>	28	40
Occupied France . . . . .	67	75	43 <sup>b</sup>	72	60
Nazi-controlled Poland . .	61	56	67	64	63
Soviet-controlled Poland. 39	44	44	33	36	37

<sup>a</sup> Doubtless considerably higher in 1940-41, counting refugees from the occupied area and other countries.

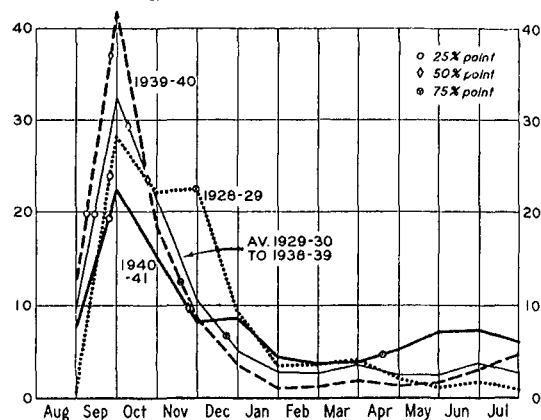
<sup>b</sup> The French rye crop is always small, amounting usually to less than 10 per cent of the wheat harvest.

the working capacity was in the neighborhood of 537 million bushels.<sup>1</sup> Moreover, the marketing-quota system operated with much less friction and inefficiency than had been anticipated. Individual shipping points where extra storage space was available were assigned marketing quotas higher than the general rate,<sup>2</sup> and the flow of wheat from country points to Fort William and Port Arthur was closely supervised by a Car Control Committee, which was responsible for distributing cars equitably among the various shipping points and among the different shippers at each point. Under this system of controlled marketings, farmers were able to deliver 305 million bushels of wheat by January 31, and 353 million by April 21, when the marketing-quota controls were completely removed. At the beginning of the season no one would have dared to hope for deliveries of this magnitude. In fact, one carefully computed September forecast of deliveries up to the reopening of navigation was 285 million bushels,<sup>3</sup> or 65 million less than was actually delivered prior to the opening on April 17.

In spite of the fact that the Canadian wheat crop of 1940 was marketed more rapidly than was anticipated, the rate of marketing was definitely slow as compared with earlier years. This is apparent in Chart 6. For comparison with 1940-41, delivery figures are shown for the two bumper crops of 1928 and 1939 and corresponding average figures for the decade 1929-39. It is noteworthy that 25 per cent of the total wheat marketings of 1940-41 was not delivered until September

23—a date later than in any preceding year since 1928-29—and the 50 per cent point was not reached until November 23, six to seven weeks later than on the average in 1929-39, and a month later even than in 1928-29.

CHART 6.—MONTHLY CANADIAN WHEAT MARKETINGS AS PERCENTAGES OF THE CORRESPONDING CROP-YEAR MOVEMENTS\*



\* Based on Canadian series in Table X, except indicated 25, 50, and 75 per cent points, which are calculated from daily marketings. See Holbrook Working, "Price Effects of Canadian Wheat Marketings," WHEAT STUDIES, XIV, October 1937, esp. p. 51.

Weekly deliveries up to September 23 averaged only 4.8 per cent (as compared with a normal rate of about 8 per cent) and over the next two months sank to 2.7 per cent—by far the lowest figure on records which go back to 1921-22. Equally or more impressive is the fact that the last 25 per cent of the wheat marketed in 1940-41 was delivered after April 18—a period during which deliveries are normally very light. Over the preceding two decades, the latest date previously recorded for the 75 per cent point in Canadian marketing was February 13.

Comparable data on country deliveries of wheat are not available for the United States.<sup>4</sup> However, there is no question that in this country, too, the movement of wheat from farms to markets was relatively slow. Although fragmentary, the following evidence seems more or less conclusive: (1) farm stocks of wheat on January 1, 1941 represented 31.5 per cent of the total crop-year farm supplies, a percentage larger than in any but two (1931-32 and 1932-33) of the preceding fourteen years for which data are avail-

<sup>1</sup> These figures are from *Canada's Wheat Problem*, published by the authority of J. A. MacKinnon, Minister of Trade and Commerce, April 1941, p. 12.

<sup>2</sup> These changes were actually more important for the marketing movement than were the more publicized changes in the general quota. For example, on November 16, eleven days before the general quota was raised from 8 to 10 bushels, 69 per cent of the shipping points were already operating on marketing quotas of 10 bushels or higher, 19 per cent had a quota of 12 bushels, 17 per cent a quota of 15 bushels, and 8 per cent one of 20 bushels. *Monthly Review of the Wheat Situation*, Nov. 27, 1940, p. 3.

<sup>3</sup> James Richardson & Sons, *Weekly Grain Letter*, Sept. 5, 1940.

<sup>4</sup> The statistical series that is the most nearly comparable is probably that shown in the top section of Table X; but 1940-41 data are not yet available.

able; (2) farm stocks on April 1, 1941 amounted to 24 per cent of the year's supplies, or substantially more than in any of those years except 1932-33; (3) wheat receipts at primary markets in July-December represented almost as small a percentage of the crop-year total receipts in 1940-41 as they had in 1932-33 and 1933-34—the standing record lows; and (4) the percentage of such receipts was unprecedentedly low for July-March 1940-41.

Part of the delay in movement of wheat from United States farms to commercial elevators in 1940-41 is probably attributable to the wheat-loan operations of the CCC (p. 143). Some 57 million bushels of farm-stored wheat were reported sealed under government loans as of December 31, 1940 and practically the same amount was still under loan as of March 31, 1941. The loans on farm-stored wheat (due to mature ten months from the date of issue) mainly expired after April 1, and wheat prices during January-March offered no incentive to redemption. The next four months were characterized by rising wheat prices, which encouraged farmers to redeem and market a large portion of the farm-stored wheat on which they had outstanding loans. By July 31, the amount of farm-stored wheat still pledged to the CCC had declined to 20 million bushels, and only a very small amount had been delivered against defaulted loans. Thus the government's loan system was probably partly responsible for the relatively heavy storage of wheat on farms on January 1 and April 1, 1941 and for the relatively heavy marketing of wheat during April-July 1941. However, farm marketings would presumably have been slow in 1940-41 even in the absence of government loans on farm-stored wheat, since (1) wheat producers, influenced by the war, rising commodity prices, and the strength of the Congressional "farm bloc," were generally bullish and inclined to hold for future sale, and (2) storage congestion at various country and terminal elevators tended to prevent as heavy an early movement from farms as might otherwise have taken place.

The government's loan program not only affected the movement of wheat from farms to commercial elevators, but also reduced the

quantity of commercially stored wheat that was available for immediate sale. Chart 11 (p. 143) shows the amount of wheat in the hands of the CCC (both pledged under loan and pooled) in 1939-40 and 1940-41. The quantity of wheat so withheld from the market in 1940-41 was substantially larger than in the preceding year. Yet enough unpledged wheat remained even as of January 1, 1941 to meet all crop-year demands for domestic and export purposes and to leave at least 100 million bushels in the free supply for the 1941 wheat carryover. The concurrence during April 24-May 10 of rising prices and maturation of loans on warehouse-stored wheat led to a substantial increase in "free" wheat after the beginning of May and to an expanded movement to primary terminal markets.

In all four of the major exporting countries, government agencies handled huge quantities of wheat in 1940-41. The United States loan system and the operations of the CCC, however, differed in many vital respects from the wheat-purchase programs and handling operations of government agencies in the other three countries. The CCC had little control over the loan wheat pledged to it unless and until farmers defaulted on their loans; and since most of the loans did not fall due until after mid-April, the CCC had full powers over substantial quantities of wheat only during the last few months of the crop year. Roughly, the CCC may be said to have held under loan at one time or another during 1940-41 about 40 per cent of the crop year's marketable supplies of wheat; and on June 30, 1941 it held in producers' pools about 23 per cent of the year's marketable supplies. In sharp contrast with the governmental wheat boards in Canada, Argentina, and Australia, the CCC did not offer for sale any significant quantity of the wheat delivered to it.

In Canada, farmers are believed to have delivered about 80 per cent of their wheat marketings to the CWB, which made several large sales of futures to the Cereal Imports Branch of the British Ministry of Food (p. 115) and numerous smaller sales to Canadian exporters and millers. The remaining 20 per cent of Canadian wheat marketings presumably went into private trade channels.

The GRB of Argentina operated after December 1, 1940 on much the same basis as the CWB, except that it had less opportunity to make large direct sales for export. Prior to December 1, farmers sold the bulk of their remaining supplies of 1939 wheat to representatives of the private grain trade. After December 1, however, they had two possibilities of disposing of their grain: (1) to the private trade or (2) to the GRB. Through July 1941 the GRB is reported to have purchased 194.7 million bushels of wheat from growers and to have sold in domestic and export channels something over a third of that amount.<sup>1</sup> The purchases of the board represented almost 80 per cent of reported farmers' deliveries of wheat during December-July.<sup>2</sup> The farm-delivery figures suggest that the bulk of the 1940 Argentine crop had been delivered by the end of February. We infer, therefore, that in Argentina the wheat-marketing movement proceeded rapidly, in contrast with marketing developments in North America.

In Australia, farmers were required to deliver all of their marketable wheat to agents of the AWB (p. 122). Apparently, the marketing movement was rapid, deliveries being virtually complete by mid-February. In both Australia and Argentina an important factor in speeding deliveries was probably the government's lack of provision for farm-storage payments. Farmers who delivered their wheat in January received the same return as those who made deliveries in June. Through July

1941, the AWB had received from Australian farmers about 63 million bushels of wheat and had sold for export and domestic milling purposes over 47 million bushels.

Almost no information is available with regard to European wheat marketings. British farm deliveries are reported to have totaled only 17.7 million bushels during August-July 1940-41—a somewhat smaller percentage than usual of the current crop,<sup>3</sup> in spite of new regulations that would reduce the amount of farm utilization of wheat for feed.<sup>4</sup> On the Continent, various complaints of farm hoarding of bread grains might suggest that in certain countries marketing proceeded at a slower pace than usual; on the other hand, the reduced harvests of 1940 may have caused the officials of some countries erroneously to conclude that farmers were holding back large quantities of wheat.

#### VISIBLE SUPPLIES

The outstanding features of the marketing and export movements of wheat in the four major exporting countries are reflected in considerable measure in the data on visible supplies shown in Chart 7. Thus, the Canadian visible rose more or less slowly to a late peak at the end of January, declined substantially as exports picked up in late March and early April, and thereafter stood between 440 and 450 million bushels, with heavy marketings roughly offsetting large exports.

The course of the United States visible is noteworthy for the slow decline from the peak reached at the beginning of October and for the abnormal increase recorded during July 1941. The former feature mainly reflected the combination of light exports and delayed marketings, though the addition of stocks data for several markets not previously included in the visible series (see note to Chart 7) tended to exaggerate the slow decline of the United States visible during December-June. The sharp rise in July is attributable almost wholly to extraordinarily heavy deliveries in the major northwestern markets, where farmers faced an unusual opportunity to dispose of their old-crop wheat (part of which had been farm-stored under loan) at attractive prices.

Argentine commercial stocks exhibited no

<sup>1</sup> Data from *Monthly Review of the Wheat Situation* (Canada), Aug. 25, 1941, p. 7, and July 26, 1941, p. 10.

<sup>2</sup> We have not as yet been able to determine the precise meaning of the statistics on Argentine farm deliveries published monthly in *Boletín Informativo* and used as the basis of this calculation. The percentage figure indicated above for Argentina may or may not be reasonably comparable with the similar percentage of Canadian wheat deliveries.

<sup>3</sup> This statement is based on the latest estimate of the U.S. Department of Agriculture for the British wheat crop of 1940, with deduction of the official estimate for Eire and our rough approximations for the crops of North Ireland and Scotland (Table II).

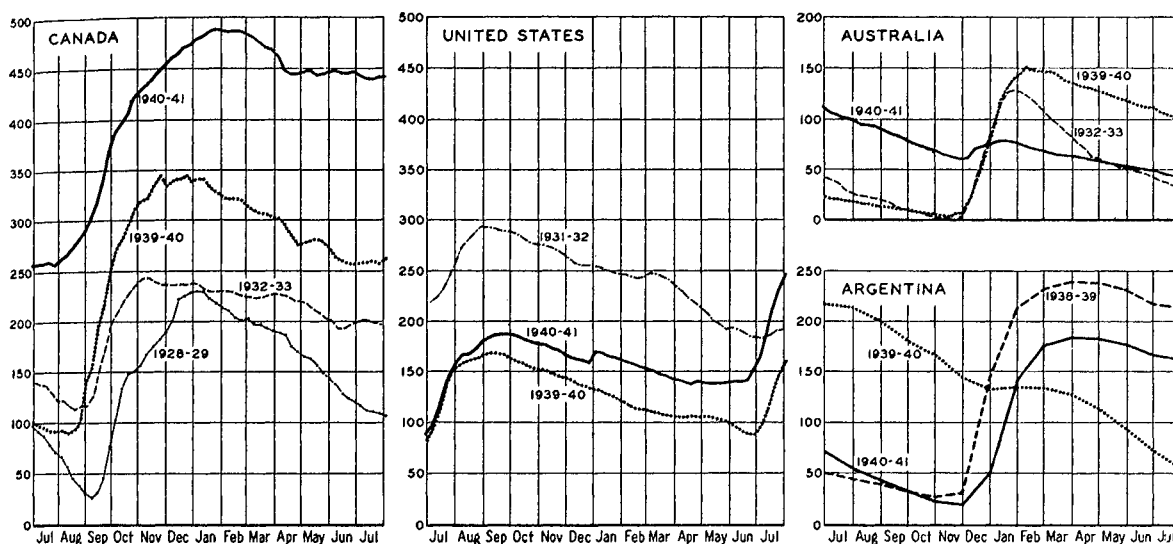
<sup>4</sup> We infer that this situation, witnessed also in 1939-40, reflects increase in farm storage of wheat, and changes in marketing procedures that render the data on British wheat deliveries for 1939-40 and 1940-41 not comparable with earlier figures.

unusual feature, except for a sharp increase in February and a continued rise during March, reflecting heavy marketings and extraordinarily light exports. The general course of the Australian visible was most unusual, registering a transition from the heavy wheat

fore impossible to present data comparable with those in Table XI on "world" visible supplies. On the other hand, there is no question that world visibles were unprecedentedly large throughout 1940-41. The two missing elements in the total are normally small; and

CHART 7.—VISIBLE SUPPLIES OF WHEAT, 1940-41, WITH COMPARISONS\*

(Million bushels)



\* Weekly data (monthly for Argentina) for certain series summarized by months in Table XI. In the United States series, two new markets were added in January 1941, and two others in July 1941.

supplies of the preceding year to the abnormally light supplies of 1940-41. In view of the restricted world import market, the rapid decline in Australian visible supplies during August-November 1940 is noteworthy: since domestic uses of commercial wheat (ex-seed) practically never exceed 3 million bushels per month on the average, one may infer that the additional decline of about 7 million bushels monthly represented heavy fall exports.

Reflecting the large crop-year wheat supplies in Canada, the United States and Argentina (p. 130), and the limited export outlets for the latter two countries, the level of commercial wheat stocks was abnormally high in North America (especially Canada) and in Argentina as well. Canadian visibles stood at an all-time record height, while United States and Argentine visibles were at heights exceeded only in two or three preceding years.

Data are not available this year for stocks afloat or for stocks in British ports. It is there-

at least in the early months of 1940-41, and again near the end of the year, British port stocks were probably larger than usual.

#### CROPS OTHER THAN WHEAT

Like wheat, other cereals were generally abundant in the major overseas exporting countries in 1940-41 and, in total, fairly short in Europe ex-Russia (Table V). In practically all of the larger producing areas inclusive of Europe, however, potato crops were sizable.

Europe ex-Russia, dependent more heavily than in years of peace upon her rye and feed-grain crops for food, as well as for needed animal feed, suffered substantial reductions in cereal output as compared with 1939. The European rye crop was definitely short, though relatively less so than the wheat harvest. Serious declines in rye production seem to have been quite general, extending from Scandinavia to Portugal and into both central Europe and the Danube basin. Corn, a cereal

used extensively for food in the Danube basin, Italy, and Spain, yielded well in these and other areas. Indeed, in Europe ex-Russia as a whole, the corn harvest was apparently of record size, though not large enough to offset the great shortage of rye.

Barley apparently produced a reasonably good harvest in Europe ex-Russia, but oats, quantitatively more important, yielded poorly. Potatoes, sugar beets, and other root crops made excellent harvests, presumably reflecting increased sown acreages as well as high yields per acre.

In North America, 1940 harvests of feed grains and potatoes were of good size. The United States corn crop was above average, though 100 to 200 million bushels smaller than any of the three preceding harvests.<sup>1</sup> The total supply of corn, inclusive of the record carryover on October 1, 1940, was larger than in all but four of the twenty preceding years. An appreciable part of this supply was in the hands of the CCC. Of the 1940 carryover, 323 million bushels were pledged against government loans and 138 million were owned outright by the CCC.<sup>2</sup> The corn-loan program was continued for the 1940 crop: at the basic loan rate of 61 cents in the commercial corn area (the highest established up to that time), farmers pledged 102 million bushels—only about a third of the quantity in 1939-40 and less than half of that in 1938-39. For this low figure the poor quality of the 1940 corn crop<sup>3</sup>

was partly responsible, but so, too, were the higher market prices for corn during 1940-41. The increased prices in 1941 attracted substantial sales of corn by the CCC (85 million bushels during January-September 1941) and significant redemptions by farmers (67 million bushels during the same months).<sup>4</sup> As a result of these several factors, the 1941 carryover of corn included only 235 million bushels of pledged grain (almost 90 million bushels less than in 1940) and 150 million bushels that was owned by the CCC. The total domestic disappearance of corn in 1940-41 is now estimated at about 2,500 million bushels—a large figure but not a record. In contrast, exports were light at 13.6 million bushels.

Barley, oats, and grain sorghums all made good to excellent crops in the United States in 1940. Together with the available supplies of corn and old-crop stocks of oats, these yielded a total feed-grain supply, as of October 1, of 116 million short tons—as large as the supply in 1932 and the second largest in two decades.<sup>5</sup>

In Canada, the barley crop was excellent, the oats crop of moderate size. But since feed-price ratios were favorable and the animal population relatively large, these supplies of feed grains proved small in relation to the demand. This led to heavier feeding of wheat than usual (p. 162).

Argentina secured a second successive bumper corn crop in 1940-41 and a good crop of barley, but her oats harvest was definitely poor and her rye crop mediocre. Of these grains, only corn is very important. Under normal conditions Argentina has a ready market for her surplus corn in Europe, but war seriously restricted that outlet in 1939-40 and narrowed it further in 1940-41. This situation seemed to warrant government intervention. On April 2, 1940, the Bank of the Nation was authorized to lend growers without interest 2 pesos per 100 kilos (about 15 cents per bushel) on either shelled or ear corn, properly stored on farms.<sup>6</sup> Several months later, the GRB was authorized to buy new-crop corn at 4.75 pesos per 100 kilos (about 36 cents per bushel) basis, good export quality, shelled, sacked, and delivered at Buenos Aires.<sup>7</sup> Appalled by the huge quantities of 1939-40 corn it was re-

<sup>1</sup> Largely as a result of the AAA program, the acreage planted to corn for 1940 was the smallest in at least 43 years. The yield per acre, however, was considerably above average for the fourth successive year, in part reflecting increasing use of hybrid-corn seed.

<sup>2</sup> U.S. Dept. Agr., Bur. Agr. Econ., *The Feed Situation*, October 1941, p. 4.

<sup>3</sup> Only 47 per cent graded No. 3 or higher during December-February, as compared with 99 per cent in the preceding year and 88 per cent in 1938-39. U.S. Dept. Agr., Bur. Agr. Econ., *Feed Statistics*, March 1941, p. 5.

<sup>4</sup> *The Feed Situation*, October 1941, p. 6.

<sup>5</sup> *Ibid.*, p. 11, and *Feed Statistics*, March 1941, p. 11.

<sup>6</sup> For details, see *Foreign Crops and Markets*, Apr. 13, 1940, p. 429, and June 15, 1940, p. 768.

<sup>7</sup> By decree of September 9, the GRB was authorized to purchase shelled corn only during the ensuing 15 days, but ear corn could be purchased at a discount of 90 centavos per 100 kilos up to November 30. *Boletín Informativo*, Sept. 15, 1940, pp. 772-74.

quired to purchase (reportedly 212 million bushels)<sup>1</sup> and confronted with the prospect of a new bumper crop, the GRB established a schedule of selling prices for corn far below the board's price level for purchases.<sup>2</sup>

These low prices, designed mainly to encourage feeding, though partly to stimulate the use of corn for fuel, were probably offered too late in the year to have much effect on corn disappearance through July 1941. In that month, however, the government inaugurated a new program to encourage large-scale use of corn for fuel. New low selling prices were established (for government-

owned corn in cribs only 1 peso or about 27 cents per metric ton), and the granting of import quotas for fuel was made dependent on the purchase of corn.<sup>3</sup> Domestic disappearance of corn was swelled in 1940-41 by very heavy losses from storage deterioration—indicated at 25 per cent or higher for 1939-40 grain.<sup>4</sup> Later (July 14, 1941) it was decreed that the GRB should destroy all government-owned corn of the 1939-40 crop stored in cribs or other storage places on August 31, 1941.<sup>5</sup> The total carryover of corn on March 31 came to about 200 million bushels, almost half the preceding harvest.

### III. PRICES AND PRICE RELATIONS

Wheat price developments in 1940-41 are explainable only in the light of two widespread and fundamental background factors: (1) the upswing of wholesale commodity prices in general in most countries, and (2) extended governmental controls over wheat supplies and wheat prices. The influence of each of these factors differed enormously in the different countries. Changes in wholesale commodity price indexes ranged all the way from insignificant advances in Germany and Australia to an increase of something like 70 per cent in Rumania. Advances of 10 to 30 per cent were common.<sup>6</sup> Indexes of living and food costs<sup>7</sup> rose somewhat less than wholesale prices, with the indi-

cated increases for many European countries understating the actual advances that took place. Not only were "black market" prices not registered, but many of the less expensive foods and commodities included in the indexes became unobtainable, necessitating substitution of higher-priced articles.

Other factors equal, the influences responsible for the advance in commodity prices in general would normally be reflected in wheat prices as well. In 1940-41 this potential effect was strongly modified by governmental price controls, which in some countries augmented, in others diminished, the effect of more general influences.

#### WHEAT PRICE LEVELS

In 1938-39, burdensome wheat supplies had been associated with notably low wheat prices in the four major exporting countries (Chart 8, p. 138, top left section)—prices only a little above the record lows of 1931-32 and 1932-33. In the Danube basin and in the few remaining European importing countries with relatively free markets—the United Kingdom (Chart 8, upper right section), Belgium, and Denmark—the wheat prices of 1938-39 had been more or less similarly low. Nor had the early outlook for 1939-40 been less depressing; the existing burdensome world wheat surplus threatened to persist and even to grow. Then came the war and, later, evidence of severe crop damage in Argentina. In North America, the war induced farm holding and

<sup>1</sup> *Foreign Crops and Markets*, Mar. 24, 1931, p. 360. By decree of April 4 the GRB was authorized to purchase new corn at the same basic price that had been set for 1939-40, with purchases restricted, however, to ear corn stored on farms.

<sup>2</sup> Ear corn was offered for sale at .40 to 1.00 peso per 100 kilos (3.0 to 7.6 cents per bushel), shelled basis on farms; and shelled corn owned by the GRB was sold at a basic price of 3.12 pesos per 100 kilos (23.6 cents per bushel) on rail at Buenos Aires. *Ibid.*, Mar. 10, 1941, p. 303.

<sup>3</sup> *Ibid.*, Aug. 11, 1941, pp. 146-47.

<sup>4</sup> *Ibid.*, Mar. 24, 1941, p. 360.

<sup>5</sup> *Ibid.*, Aug. 11, 1941, p. 146.

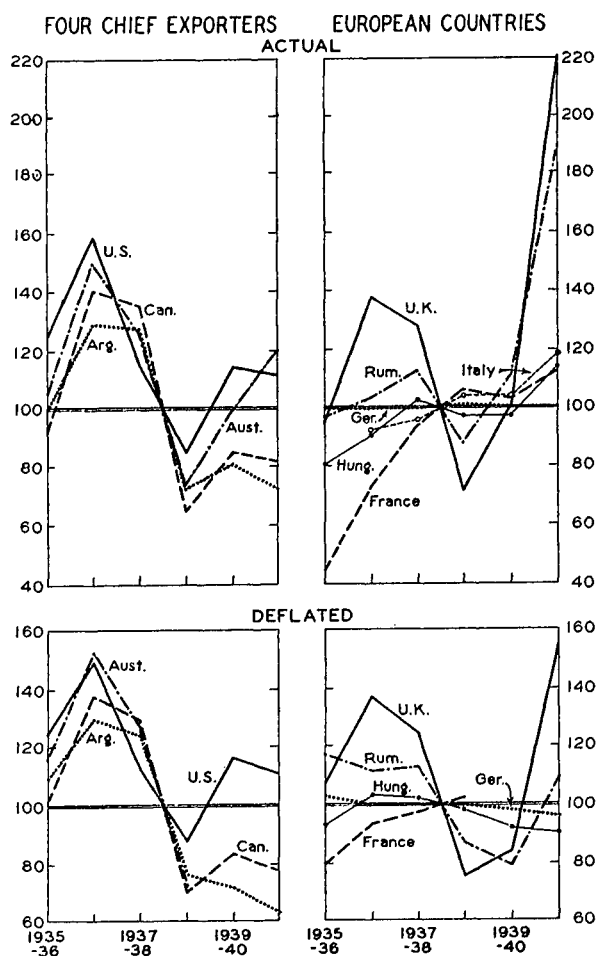
<sup>6</sup> Data from League of Nations, *Monthly Bulletin of Statistics*. We do not mean to imply that the wholesale price indexes of the different countries are really comparable or that a given percentage increase means the same thing for the different indexes.

<sup>7</sup> See *International Labour Review*, October 1941, XLIV, 463-69.



some bullish speculation in wheat. These tendencies were strengthened by subsequent indications of a small harvest in Argentina, which also strengthened Argentine wheat prices and perhaps contributed to the decision

CHART 8.—WHEAT PRICES (ACTUAL AND DEFLATED) IN CERTAIN COUNTRIES, ANNUALLY FROM 1935-36 AS PERCENTAGES OF AVERAGES IN 1937-39\*



\* Price data are from Tables XXVII and XXVIII. Prices are deflated by general indexes of wholesale prices (1929 = 100) from the *Federal Reserve Bulletin* and the League of Nations, *Monthly Bulletin of Statistics*.

of the AWB to raise Australian export prices in December 1939. In Europe, wheat prices rose in consequence of increased transport costs, exchange depreciation, price advances in exporting countries, and new governmental measures. Quite generally, then, wheat prices averaged higher in 1939-40 than they had in

1938-39, in spite of spectacular breaks in North American and Argentine markets after Hitler invaded the Low Countries in May 1940.

In 1940-41, wheat supplies in the major exporting countries were of record size, and North American wheat prices were not notably influenced, as they had been in 1939-40, by speculative enthusiasm based on the war. However, in the United States, Canada, and Argentina, strengthened governmental price-supporting measures kept wheat prices from averaging much lower than they had in 1939-40; and in Australia, the AWB continued, as it had since January 1940, to offer wheat for export at prices ranging between 48d. and 53d. per bushel. For Australia, this meant a materially higher average f.o.b. price in August-July 1940-41 than in the preceding year, when much lower prices had persisted through mid-December. In the United States, the average farm price of wheat ranged from 54 per cent of parity in mid-August 1940 to 73 per cent in mid-July 1941. The latter figure was the highest reached since April 1940.

In Europe, as in the chief exporting countries, wheat price levels were determined mainly by governmental measures in 1940-41. Most European farmers were required to deliver their wheat at government-fixed prices to specially designated buying agencies; and in practically every country except Germany, Portugal, and perhaps Greece,<sup>1</sup> the prices officially established for 1940-41 were considerably higher than the prices witnessed in any other recent year (Table XXVIII). Increases of 20 to 30 per cent over roughly comparable price averages for 1936-39 were common. In the United Kingdom,<sup>2</sup> Denmark, Sweden, Rumania, Yugoslavia, and France, the increases amounted to 40 per cent or more.

Had the larger increases been passed on in full to European bread consumers, serious consequences might have followed. Various governmental controls prevented this. In or-

<sup>1</sup> *International Review of Agriculture*, August 1941, p. 418S; *Foreign Crops and Markets*, Feb. 17, 1941, p. 217.

<sup>2</sup> For this comparison it seems desirable to use not the Gazette price shown in Chart 8, but the "standard price" to producers (Table XXVIII). The former implies an increase of more than 100 per cent, the latter an increase of roughly 40 per cent.

der to conserve wheat, extraction rates were raised and substantial admixtures of cheaper cereals or potatoes were required in wheat flour—measures which tended incidentally to keep down the price of flour and bread. Moreover, a number of countries, including the United Kingdom, Italy, Spain, and Norway, provided for direct or indirect governmental subsidies to offset the potential effect of increased wheat costs on flour and bread prices.<sup>1</sup> Governmental wheat agencies, which had formerly sold domestic wheat to millers at prices substantially higher than had been paid to farmers, probably more or less generally reduced their margins of income in 1940–41, and in some cases sold below purchasing prices.

Details as to these developments are not yet available except for the United Kingdom. However, more or less generally throughout Continental Europe, bread prices appear to have been materially higher in 1940–41 than they had been before the war or even in 1939–40, though they showed smaller relative increases than did the corresponding prices of wheat paid to producers. Moreover, in a considerable number of Continental countries, producers' wheat prices, while increased, were not high in 1940–41 in terms of purchasing power over other commodities. Only in the United Kingdom, Rumania, Yugoslavia, and Denmark was the purchasing power of wheat (as reflected in official producers' prices) clearly higher than on the average in the four preceding years. In contrast, the purchasing power of such wheat was lower in Germany, Hungary, and Portugal, and apparently little changed in Bulgaria and the Netherlands. On "black markets" everywhere, wheat prices were almost certainly higher than the official prices of recent years, not only absolutely but also in terms of purchasing power.

The relationship of wheat, flour, and bread prices in the United Kingdom warrants somewhat more attention. Pertinent average prices for the past five crop years are shown in the following tabulation, in shillings per 112

pounds of wheat and per 280 pounds of flour, and in pence per four pounds of bread. In each of the four years prior to 1940–41 British wheat growers received, in addition to the

Year	Domestic wheat		British parcels	Straight flour (London) <sup>a</sup>	Bread
	Gazette	"Standard"			
1936–37..	9.0	10.0	9.8	37.6	9.0
1937–38..	8.4	10.0	9.2	34.8	9.4
1938–39..	4.7	10.0	5.4	27.5	8.6
1939–40..	6.6	11.0	...	25.5	8.5
1940–41..	14.5	14.5	...	25.5	8.5

<sup>a</sup> Including quota payments.

current market prices for their wheat, "deficiency payments" which were designed to bring the average return on certified sales of British wheat up to the predetermined "standard price" for the crop year. The "deficiency payments" were distributed by the Wheat Commission out of proceeds from variable quota payments levied on British millers. In May 1940, however, millers were freed of this levy and thereafter British farmers were paid the full "standard price" when they delivered their grain to approved buyers. During most of 1939–40 and all of 1940–41 imported wheat was distributed to British millers at officially fixed prices, with governmental subsidies payable in the form of rebates against these prices. In 1939–40 the fixed prices for No. 2 Manitoba wheat (London ex-ship) averaged 9s. per cwt.,<sup>2</sup> or about 5s. net, after deduction of the average subsidies paid. Some imported wheats averaged higher than this but most were lower. During 1940–41 (effective June 10, 1940) all imported wheats were sold to millers at a uniform price which for the year averaged 12s. per cwt., or 7s. net.

Whereas British wheat growers received roughly 40 per cent *more* for their wheat in 1940–41 than they had on the average over the four preceding years, consumers actually paid 19 per cent *less* for straight-run flour (of slightly increased extraction) and at least 4 per cent *less* for bread. These differences reflected the government's policy of subsidizing flour and bread prices. Up to December 1, 1940 the British government subsidized all wheat flour at the same rate, at a total annual

<sup>1</sup> See *Foreign Crops and Markets*, Nov. 4, 1940, p. 639; *ibid.*, Nov. 12, 1940, p. 692; *Nationalzeitung*, Oct. 5, 1940.

<sup>2</sup> Arithmetic average of the official prices weighted by the number of days each was in force.

cost of about £35,000,000.<sup>1</sup> In mid-December, effective retroactively from December 1, bakers of bread were granted a new supplementary subsidy that amounted to 4s. per sack of flour (the equivalent of 1s. 2d. per quartern loaf of bread) with respect of bread sold at or below the following prices: 8d. per quarter, 4d. per 2-pound loaf, 2¼d. per 1-pound loaf.<sup>2</sup> This subsidy, together with the continued subsidy on flour, was reported to cost the British government about £50,000,000 annually.<sup>3</sup>

#### COURSE OF PRICES

Not since World War I has the course of wheat prices in all four of the chief exporting countries been so completely dominated as in 1940-41 by governmental controls. Moreover, except in the United States, the controls have been associated with price stability in both cash and futures markets. Chart 9, which shows the daily course of prices in the three principal futures markets, accordingly warrants less attention than usual this year.

**Winnipeg.**—Wheat futures at Winnipeg, shown in terms of Canadian currency in Chart 18 (p. 190), remained throughout 1940-41 at or extremely close to their legal minimum levels.<sup>4</sup> The largest daily price changes occurred in response to two reductions in the minimum limits made by the Winnipeg Grain Exchange at the request of the Canadian

Wheat Board. On September 18, 1940, the minimum prices that had been established following the precipitous price break of early May 1940 were lowered some 3 cents per bushel, and market prices declined correspondingly. On July 2, 1941, a reduction of roughly 8 cents per bushel was announced in the minimum for the July future in order to bring it in line with the minimum prices set for the new crop year. On that occasion, market prices did not decline as much as permitted, and the initial drop of 6 Canadian cents in the July future was largely recovered by July 8. Over the next two weeks, Winnipeg July wheat sold 5 to 6 cents above its minimum level and the October future sold 7 to 8 cents above. These premiums were larger than any recorded during the preceding twelve months, but they lasted only a short time. By the end of July, the July and October futures had declined to within 2½ and 4⅛ cents, respectively, of the minimum level, and the premium on the October was further reduced during the following month.

The tendency of Winnipeg wheat futures to remain so close to their legal minimum selling limits throughout 1940-41 rested on general recognition that exportable supplies of wheat were burdensome and concentrated heavily in Canada. Both the international and national wheat positions discouraged bullish speculation at prices above the legal minimum levels established for the Winnipeg market. Moreover, other trading operations in that market were unusually light during 1940-41. On the supply side, there was virtually no hedging pressure, since the bulk of the wheat marketed by farmers went not to private interests, but to the CWB, which neither hedged its purchases nor (apparently) offered wheat for sale at any time on the Winnipeg futures market. On the demand side, there was the usual domestic milling business, but sales for export were confined to small sales to countries other than the United Kingdom. The British Cereal Imports Branch, the largest buyer of Canadian export wheat, purchased wheat futures directly through the CWB, and relied on the private trade only for the exchange of futures against cash wheat.

**Buenos Aires.**—From the end of July to

<sup>1</sup> Information released by the Ministry of Food on Dec. 19, 1940. *London Grain, Seed and Oil Reporter*, Dec. 19, 1940, p. 295.

<sup>2</sup> After February 10, 1941 it was further provided that the subsidy would be paid only if bread made of brown wheatmeal or other wholemeal flour were sold by the baker at or below the price of subsidized white bread. *Milling*, Feb. 15, 1941, p. 79, and Feb. 22, 1941, p. 91.

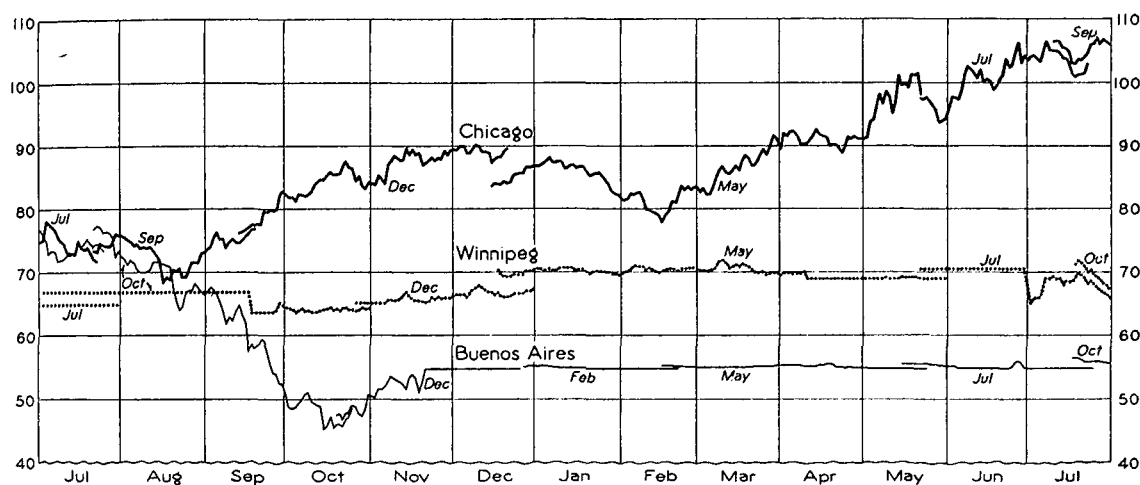
<sup>3</sup> The Ministry of Food announced a fundamental revision of its bread-flour subsidy program, effective Oct. 6, 1941, under which government subsidies were to be paid only on flour used by bakers for bread-making. *London Grain, Seed and Oil Reporter*, Sept. 26, 1941, p. 321.

<sup>4</sup> Prior to Sept. 18, 1940 the legal minimum prices per bushel were as follows: July, 71½ cents; October, 73½ cents; December, 74½ cents. Between Sept. 18, 1940 and July 2, 1941, the following minimum prices were in force: October, 70 cents; December, 71½ cents; May, 75½ cents; July, 77½ cents. After July 2, 1941, the minimum price for the old July future was 70 cents and minimum limits for the new-crop futures were the same as had prevailed after September 18 in the preceding year.

mid-October, Buenos Aires futures prices declined sharply in response to accumulating evidence that the new Argentine wheat crop would be of good size and that old-crop supplies were larger than had previously been estimated.<sup>1</sup> This decline amounted to over 30 cents per bushel in United States currency. It brought the price of the near future at Buenos Aires from a noncompetitive position above Winnipeg futures in July to a discount of 15-20 cents per bushel in mid-October.

Only once during this period was there even a slight flurry in the Buenos Aires market (Chart 18, p. 190). On June 26-27 wheat futures prices rose from 1 to 3 cents per bushel. These gains were almost wiped out during the next two market days; but after the GRB raised its export price of wheat from 6.50 to 6.65 pesos per quintal (roughly 1 cent per bushel) on June 30, the more distant futures again rose slightly, apparently on bullish in-

CHART 9.—DAILY PRICES OF SELECTED WHEAT FUTURES IN LEADING MARKETS, 1940-41\*  
(U.S. cents per bushel)



\* Prices at the close; based on trade quotations in sources cited under Chart 18 (p. 190). Conversions from foreign currencies at fixed official rates of exchange.

Thus was the transition made from a year of short Argentine wheat supplies in 1940 to a year of fairly large supplies and restricted import markets in 1941.

After mid-October, Buenos Aires futures prices recovered some 5 cents or more on (1) reports that Britain had signed an agreement calling for large Argentine exports of agricultural and pastoral products, and (2) rumors that the Argentine government was about to decree a fixed minimum price for the 1940 wheat crop. The minimum-price decree was made public on November 21, with the minimum limits effective immediately. Thereafter, Buenos Aires futures sold through July 1941 at or only fractionally above the basic mini-

interpretations of this move. That such interpretations were soon discarded is evident from the prompt price reaction on July 7-11.

**Chicago.**—In contrast with the persistent stability of Winnipeg and Buenos Aires futures prices during most of 1940-41, wheat futures prices in United States markets moved widely and fluctuated sharply. The movements and fluctuations in Chicago futures are best shown in Chart 10 (p. 142).

This chart brings out clearly one of the most prominent features of the movement of Chicago wheat prices during the past crop year: wheat prices rose about 40 per cent from early August 1940 to the end of July 1941, or about the same amount as Moody's index of sensitive commodity prices. Also striking is the fact that the upward movements of these two price series were more or less similarly timed.

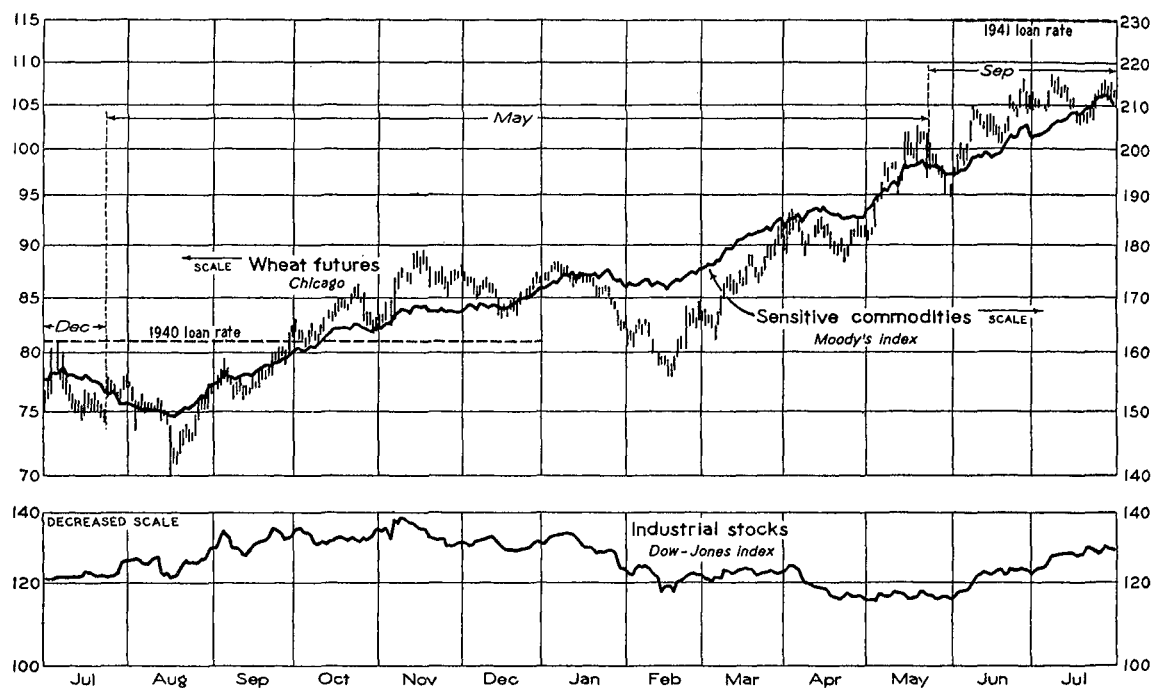
<sup>1</sup> As one bit of evidence, the limited embargo on Argentine wheat exports established on July 29 was substantially relaxed on September 12 (see p. 123 n.)

During most of the year Chicago wheat futures prices advanced when other sensitive commodity prices were advancing, remained firm while the sensitive commodity index was stable, and tended downward when the sensitive commodity group was registering weakness. These similarities of movement are too num-

who influenced the different commodity markets through their daily decisions to buy or sell or to refrain from buying or selling, roughly agreed during 1940-41 in their interpretations of the meaning for commodity prices of (1) the constantly changing news of war developments and of war threats, (2) the avail-

CHART 10.—CHICAGO WHEAT FUTURES PRICES, LOAN RATES ON NO. 2 HARD WHEAT AT CHICAGO, AND PRICE INDEXES OF SENSITIVE COMMODITIES AND INDUSTRIAL STOCKS, DAILY, 1940-41\*

(Cents per bushel; per cent; logarithmic vertical scales)



\* High and low prices of the specified Chicago futures; index of closing prices of 15 sensitive commodities, base December 1931 = 100, compiled by Moody's Investors Service; index of closing prices of 30 industrial stocks, compiled by Dow-Jones News Service. The scales represent a change of 10 per cent in stocks prices by the same vertical distance as a change of 5 per cent in either the wheat price or the Moody index.

erous and striking to be brushed aside as "happenstances." They mean more than that wheat and a couple of commodities closely associated with wheat are included in the Moody index. Specifically, they probably mean that strong underlying market forces were operating to move wheat prices in the same direction as other sensitive commodity prices.

Whether those forces be broadly designated as "general market sentiment" or "inflationary tendencies" or "wartime psychology" is perhaps of little moment. None of these terms adds significantly to our knowledge; all are open to criticism. It is perhaps sufficient to say that farmers and merchants and traders,

able evidence on orders, production, costs, and labor problems associated with the American armament and lease-lend programs, and (3) national political, economic, and financial developments and prospects, as reflected at Washington and elsewhere. The bits of evidence irregularly released on these important matters might well have been so uniformly interpreted in the different commodity markets as to result in rough similarity of timing of different price advances and price declines. But there is no good reason to suppose that the different types of developments would have had the same degree of effect on the various commodity prices. For example, reports of

reduced industrial unemployment and increased wage rates could not be expected to affect the prices of steel, meat, and wheat to the same extent. Nor would reports of increased war threats in the Pacific influence in the same degree the prices of tin, cottonseed, and wheat. Thus, it seems reasonable to conclude that the similarity in *magnitude* of movement between Chicago wheat prices and Moody's price index during 1940-41 may have been due in large measure to the coincidence of circumstances and developments that were related only remotely, if at all.

To understand the basis of the 40 per cent advance in wheat prices during 1940-41 it is necessary to analyze briefly the major phases of that advance. The crop-year price movement may conveniently be divided into four parts: (1) the sharp rise from about mid-August to mid-November; (2) stability, interrupted by temporary weakness, from mid-November to mid-January; (3) a marked decline from mid-January to mid-February, and (4) a strong upward movement, with minor setbacks from mid-February to early July.

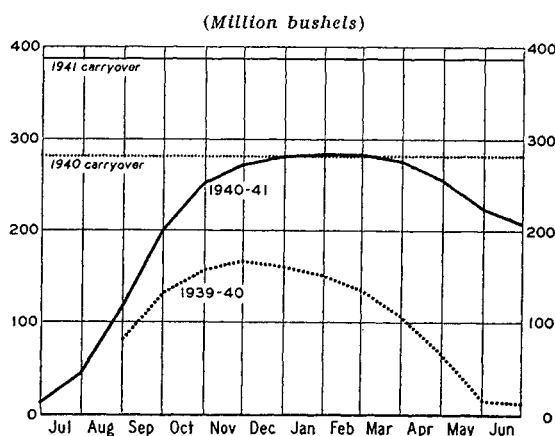
In mid-August 1940, the near Chicago future stood 10 cents or more under government loan rates for deliverable grades of wheat at Chicago. Practically all United States markets had been depressed by Germany's rapid conquest of France and by the early August air raids on Britain. Moreover, in a number of United States wheat markets, evidence of storage congestion had appeared, leading many millers and traders to anticipate further price declines on later marketings.

After mid-August, however, market confidence was gradually restored by reports of strong British resistance and by increasing evidence that farmers were holding their wheat firmly and participating actively in the government loan program. During the following weeks much attention was given to the weekly CCC reports of wheat held against government loans (Chart 11) and to various trade estimates of the amount of 1940 wheat likely to be pledged under loan. In early September such estimates seem to have ranged up to 425 or even 450 million bushels,<sup>1</sup> but

the figures most commonly credited were somewhat lower.

As the weeks passed and the loan total mounted (the loan reports being widely recognized as applying to dates earlier than indicated) there seems to have been increasing conviction that the quantity of wheat needed for domestic millings would not be forthcoming except at prices equal to or above the loan

CHART 11.—WHEAT HELD BY THE CCC UNDER LOANS AND POOLED, 1939-40 AND 1940-41, COMPARED WITH UNITED STATES CARRYOVERS\*



\* Loan data from monthly statements of the CCC. Carryover data from Table XIII.

rates. Before the middle of October market prices of wheat at Chicago, Kansas City, St. Louis, and Minneapolis had reached and passed the loan levels for those markets. Yet farmers still showed no urge to liquidate their remaining large supplies. Prices climbed still further before the end of the month, and there were slight indications of increased farm selling and a few scattered reports of loan redemptions in the Southwest. After a major setback, attributable partly to freer farm selling and partly to uncovering stop-loss orders, there was a new upswing to November 14.

The period of rising wheat prices from mid-August to mid-November was characterized by price advances in other commodity markets and in the New York stock market. There was renewed expectation that the war would be long, and that it would bring higher prices. The American armament program was reducing unemployment and widening the market for all sorts of goods, from machine

<sup>1</sup> *Southwestern Miller*, Sept. 3, 1940, p. 21.

tools to meats. Finally, considerable attention was devoted to the financing of the huge armament program, particularly with reference to prospects for inflation. But in spite of growing bullish sentiment based on these developments, there was little market speculation in wheat: the average daily volume of trading in wheat futures in United States markets during August-October was the lowest ever recorded for those months, and at Chicago the open interest was also low (Table XXIX).

At their peak in mid-November, wheat futures prices in most leading markets were high enough to cover the current loan rates plus full carrying charges to the delivery dates for the different futures. Although these prices did not attract heavy immediate farm selling, they held the prospect of ultimate redemption of large quantities of wheat not needed for current consumption. Probably mainly because of this, the peak prices of mid-November did not hold; but prices only a little lower were well maintained through early December and, after a temporary setback in the middle of that month, again prevailed up to about the middle of January.

After mid-January, Chicago futures declined about 8 cents during the next four weeks to the lowest point reached after mid-September. This decline, like the concurrent downward movement in the New York stock market and the sagging tendency in average commodity prices, was due in part to bearish market sentiment based on fears that an invasion of Britain was imminent. But more important in the Chicago wheat market was anticipation of early liquidation of large quantities of unpledged wheat by farmers who faced excellent prospects for their growing crops. At the same time, some attention was given to the possibility of an unfavorable change in the loan program for 1941-42.

From the lows of mid-February there was a prompt reaction, influenced partly by short covering and increased mill and other cash buying, and partly by reports from Washington that Congress might dictate a higher loan rate for wheat in 1941-42.<sup>1</sup> Over the next few weeks, confidence in the prospect of an increased loan rate grew and wheat prices rose even higher. Enactment of the Lease-Lend

Act on March 11, with a prompt implementing appropriation of \$7,000,000,000, stimulated bullish sentiment in all markets. Moreover, many wheat traders interpreted bullishly the announcement of the CCC on March 11 that no further sales of government-owned wheat would be made in the near future, since the Corporation wanted to give farmers an opportunity to take advantage of the current higher prices to redeem and sell their loan wheat.<sup>2</sup>

By early April many observers definitely expected Congress to provide for wheat loans of 75 per cent of parity, and there was some talk of the rate being placed at 85 per cent. In spite of general strengthening of these expectations during April, wheat prices sagged markedly on two occasions—both characterized by disturbance over war developments in the Balkans—and registered no net gain for the month. Redemption and sale of loan wheat apparently contributed to market weakness, particularly in late April; but the quantity of wheat redeemed during April and early May probably did not exceed 35 million bushels,<sup>3</sup> and not all of this was promptly sold. Perhaps as important were the large quantities of unpledged wheat that remained on farms on April 1.

In any case, the upward movement of Chicago wheat prices was resumed in early May, largely on increasing anticipation that the wheat-loan rate would be raised to 75 per cent, and perhaps to 85 per cent of parity—rates that suggested a Chicago loan basis of something like \$1.02 or \$1.13 (based on the parity price on April 15). The 85 per cent rate became virtually assured when House and Senate conferees agreed on that figure on May 12. Formal approval was given by the House on May 13 and by the Senate on May 14. For a week or more thereafter, some uncertainty prevailed as to whether the President, who had previously opposed a loan rate higher than 75 per cent, would sign the new bill. Even after the President's signature became as-

<sup>1</sup> On Feb. 21, Senator Bankhead introduced a measure providing for loans of 100 per cent of parity in years when marketing quotas are in effect.

<sup>2</sup> U.S. Dept. Agr., Press Release, Mar. 11, 1941.

<sup>3</sup> The CCC reported redemptions from April 1 to May 13 at 33 million bushels.

sured on May 26, there was further uncertainty as to whether wheat farmers, voting on May 31, would pass the marketing-quota referendum by the necessary two-thirds majority—the final step required to make the new law effective. When they did so, Chicago wheat futures prices promptly moved upward toward the new higher loan rates (Chart 10, p. 142).

As subsequently determined by the Department of Agriculture, the 85 per cent parity law implied an average farm loan rate of 98 cents per bushel for 1941–42. Corresponding loan rates for the principal grades of wheat at the leading terminal markets are shown in the following table, with comparisons.

REPRESENTATIVE LOAN RATES ON WHEAT  
IN FOUR SEASONS\*  
(Cents per bushel)

Market and grade	1938–39	1939–40	1940–41	1941–42
<i>Chicago</i>				
No. 2 Hard Winter.....	77	80	81	115
No. 2 Red Winter.....	75	80	81	115
No. 2 Yellow Hard.....	75	78	79	113
<i>Kansas City</i>				
No. 2 Hard Winter.....	72	77	77	110
<i>St. Louis</i>				
No. 2 Red Winter.....	73	80	81	115
<i>Minneapolis</i>				
No. 1 Dark N. Spring...	81	87	87	115
<i>Portland-Seattle</i>				
No. 1 Hard White.....	68	74	74	106
Other No. 1.....	67	73	73	105

\* Data from *Federal Register*.

The loan rates for the Chicago market clearly indicate the major basis of the 25 cent rise in Chicago wheat futures prices during March–July 1941. Even in July, the near Chicago future was almost 10 cents below the new loan rate—a margin that was considerably narrowed during the first week of August. In the light of the increased loan rates, the striking price advance which began in mid-February is surprising only as regards the lack of expansion of speculative interest in wheat futures during the period. The volume of trading in wheat futures increased no more than seasonally and remained at a notably low level; and the total open commitments in Chicago wheat futures gradually tended down-

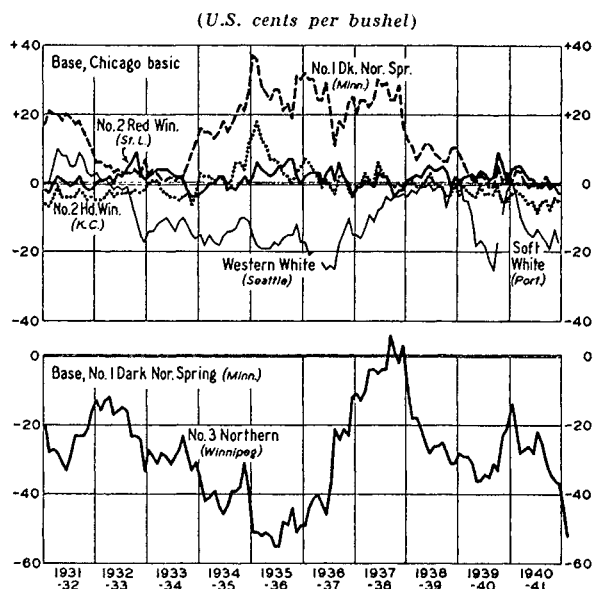
ward, establishing successive new all-time low records in March, April, and May, and finally dropping to the standing record low of 38 million bushels on June 9, 1941.

#### NORTH AMERICAN PRICE SPREADS

Within the Winnipeg market, wheat-price relationships during 1940–41 rested mainly upon the CWB's basic buying prices for the different grades of wheat and upon the minimum legal selling prices established for cash wheat and wheat futures at Winnipeg. These spreads therefore require no comment.

Although almost as simply explained, the Winnipeg-Minneapolis price spread shown in Chart 12, lower section, warrants special men-

CHART 12.—CASH WHEAT PRICE SPREADS IN NORTH AMERICAN MARKETS, MONTHLY, AUGUST 1931–JULY 1941\*



\* Computed from data shown for recent months in Table XXVII. "Chicago basic" represents the price of the cheapest wheat deliverable on futures contracts without premium or discount.

tion. As United States wheat prices rose during March–August 1941, the discount on No. 3 Northern wheat at Winnipeg under No. 1 Dark Northern Spring at Minneapolis increased sharply to levels that in past years have been associated with large imports of Canadian wheat into the United States. To prevent such imports in 1941–42—as an indirect result of Congressional action in placing



the wheat-loan rate at 85 per cent of parity—the President of the United States established small import quotas on wheat and wheat flour, effective May 28 (p. 120).<sup>1</sup>

At Chicago, during most of 1940-41, cash wheat commanded premiums over futures, and the nearer futures sold above the more distant futures (Chart 18, p. 190). These relationships, suggestive of shortage and tightness of cash wheat, were extremely abnormal in a crop year that was to close with a record or near-record carryover of United States wheat. As in 1939-40, when similar relationships had prevailed in the face of large supplies, the premiums on cash wheat and on the nearer futures in 1940-41 mainly reflected the operation of the government's loan program in removing large quantities of wheat from the immediate market supply. Moreover, in both years, general economic factors, as well as the loan program, encouraged holding of unpledged wheat by farmers who were not eligible or did not wish to place their wheat under government loans. The substantial negative carrying charges<sup>2</sup> between Chicago futures during October-March were reasonably consistent with anticipation of a carryover of 120 million bushels or less in the free supply on July 1, 1941—an anticipation that seems to have prevailed in various quarters prior to April, when the first large redemptions were reported. As United States wheat prices rose higher and higher during March-June, the negative spreads between Chicago futures narrowed, vanished, and were finally replaced by positive spreads. Thus, by June, the Chicago September future was selling almost 2 cents (2 per cent) over the July—a relationship consistent with the stocks of about

175 million bushels carried privately and without government loans on July 1, 1941.<sup>3</sup>

Price spreads among the principal cash wheat markets in the United States were unusually narrow during 1940-41. This is readily apparent from the monthly price spreads shown in the upper section of Chart 12. Even No. 1 Dark Northern Spring at Minneapolis—an excellent hard wheat that in past years has often commanded high premiums—sold about on a par with Chicago basic cash wheat during most of 1940-41. And good hard winter wheats at Kansas City sold at unusually large discounts under Chicago basic.

These abnormal relationships mainly reflected the extraordinarily plentiful supplies of good, high-protein wheats in the United States in 1940-41. Hard red spring wheats, in particular, were in abundant supply, constituting a significantly larger percentage of the total wheat supplies of the country than in any year since 1933-34 (Tables VI, XV). In contrast, soft red winter wheats were relatively less plentiful than they had been since 1933-34, and these wheats sold at St. Louis throughout 1940-41 at significant premiums over comparable wheats in other markets.

Soft white wheat at Portland was priced about the same as Chicago basic cash wheat through early September, but on the subsequent price advance Portland prices rose less than Chicago prices. Indeed, on most of the major price movements of 1940-41, the Pacific wheat markets, as usual, responded less vigorously than the Eastern markets. Perhaps mainly because of this tendency, soft white at Portland fell to a discount of 15 cents under Chicago basic cash by early December, and remained 13 to 18 cents below during most of the rest of the crop year. These discounts, though almost as large as those prevailing during 1933-36, were not associated with similarly heavy movements of wheat eastward, because of the government's loan program and the current shortage of merchant tonnage. Shipments by water to American Atlantic and Gulf ports in 1940-41 are believed to have approximated only 3 million bushels as compared with an average of 17.5 million in 1933-36, and the movement eastward by rail was apparently very small.<sup>4</sup>

<sup>1</sup> The Canadian quota was completely filled for 1941-42 by September 20. *Foreign Crops and Markets*, Oct. 6, 1941, p. 409.

<sup>2</sup> A convenient expression indicating that cash wheat prices and the prices of the nearer futures are above the prices of the more distant futures.

<sup>3</sup> See Holbrook Working, "Price Relations between July and September Wheat Futures at Chicago since 1885," *WHEAT STUDIES*, March 1933, Vol. IX, No. 6, and "Price Relations between May and New-Crop Wheat Futures at Chicago since 1885," *ibid.*, February 1934, Vol. X, No. 5.

<sup>4</sup> *The Wheat Situation*, June 1941, p. 11.

## IV. INTERNATIONAL TRADE

One country after another has suspended publication of statistics on trade in wheat—mainly since August 1939. For 1940–41, official trade data are available only for three of the four major exporting countries, for one of the four Danubian exporting countries,<sup>1</sup> for the two major non-European importing countries (Brazil and China), and for a few scattered small exporters and importers. If this were all the information at our command, we should hesitate to estimate even the total volume of wheat exports in 1940–41—to say nothing of its distribution among exporting countries. But Australian wheat exports can presumably be reasonably approximated by reference to available Australian data on wheat production and stocks, and the smaller aggregate exports from northern Africa, the USSR, India, and Japan can probably be guessed without excessive error on the basis of crop and unofficial trade information. Consequently, we believe it possible to summarize fairly accurately the export side of the picture of international trade in wheat in 1940–41.

Much less can be claimed for our inferences as to the distribution of wheat imports, though these rest on numerous scattered bits of information that seem to fit together reasonably well. Argentina's wheat shipments were reported as to country of consignment throughout 1940–41, and similar information was available with respect to United States exports through March 1941 and to Canadian exports through December 1940. For the destinations of Australian exports, on the other hand, it has been necessary to rely entirely on unofficial trade reports and on the official trade statistics of importing countries such as China which indicate the sources of their imports.

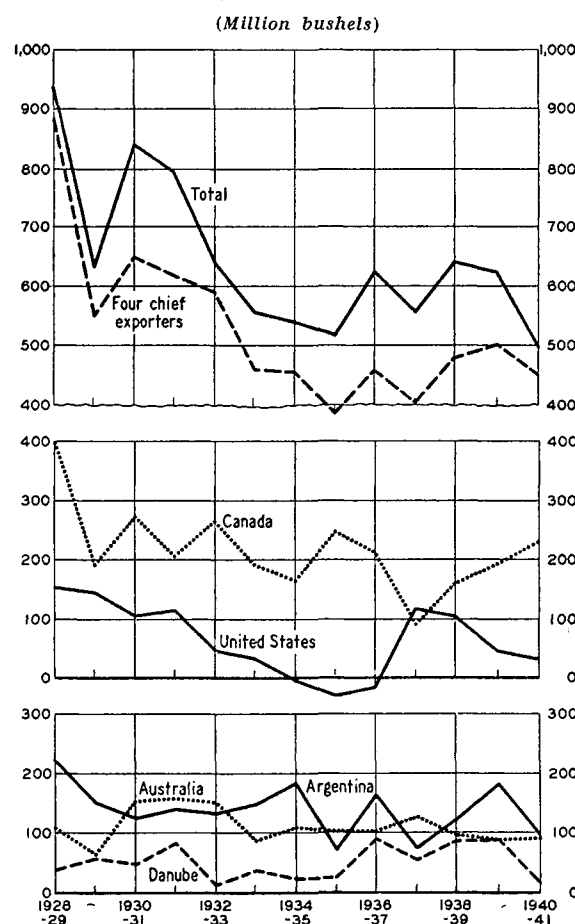
In the following discussion, we purposely omit most of the detailed evidence on which our estimates of exports and imports rest: much of this has already been presented in

our recent Surveys<sup>2</sup> and the remainder would take up more space than it warrants.

## VOLUME AND COURSE OF TRADE

World wheat exports probably approximated 500 million bushels in 1940–41 (Chart 13). This does not include the wheat that was

CHART 13.—NET EXPORTS OF WHEAT AND FLOUR, BY EXPORT AREAS, ANNUALLY FROM 1928–29\*



\* Data from Table XVIII. In arriving at totals for the four chief exporters, United States net imports are deducted in three years.

transported from German-annexed Poland into Germany proper or what was moved during the last weeks of the crop year from the former national boundaries of Bulgaria into the newly annexed districts of Macedonia and Thrace, or any other similar movement of wheat within altered national boundaries.

<sup>1</sup> In addition, Hungary reported trade data through December 1940.

<sup>2</sup> See WHEAT STUDIES, September 1941, XVIII, 2–5; *ibid.*, May 1941, XVII, 389–97; *ibid.*, January 1941, XVII, 229–36.

The world wheat exports of 1940-41 were the smallest since 1917-18. On the other hand, they were surprisingly well maintained in view of (1) Britain's effective naval blockade of the European continent, (2) Japan's restrictive policy of exchange control in the Orient, and (3) general shortage of shipping space. In spite of these adverse factors, world exports of wheat and flour were only a little smaller in 1940-41 than they had been in 1935-36, and the aggregate net exports of the four major exporting countries were actually larger than in either 1935-36 or 1937-38.

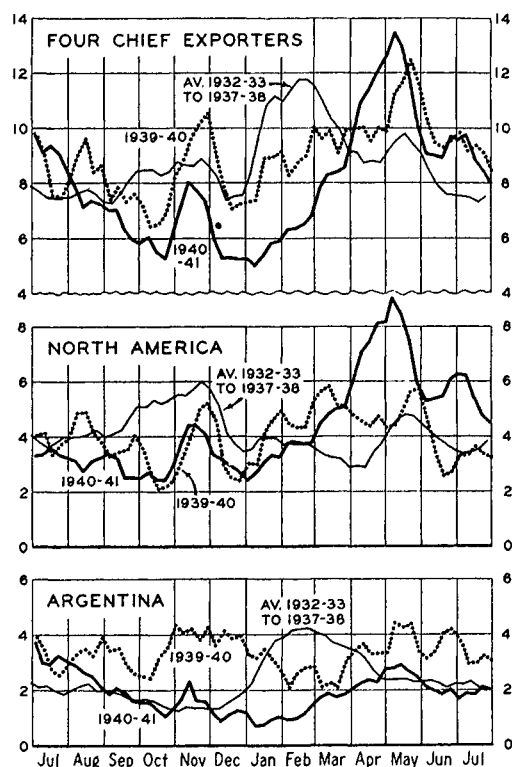
Of the four major exporters, Canada alone shipped more wheat than she had on the average in the preceding decade. Indeed, for the second time in 15 years,<sup>1</sup> Canada's exports were larger than those of the other three chief exporters combined. United States, Australian, and Argentine exports were all relatively light, though not so light as in one or two other recent years. We judge that the aggregate exports of all other countries were the smallest in 10 years or more. Danubian exports declined sharply from their high levels in the two preceding crop years and were probably only a little above the 20-year low record of 1932-33. Wheat shipments from French North Africa, drawn partly from old-crop stocks and partly from the good harvests of 1941, were exceptionally well maintained in comparison with earlier seasons; but exports from the USSR and "other" countries were markedly reduced (Table XVIII).

Decisions of governmental agencies, influenced in no small measure by the course of the war, largely determined the unusual course of overseas shipments of wheat reflected in Chart 14. Through February, the British Ministry of Food allowed British wheat stocks to be drawn down sharply; the British navy sharply restricted the flow of wheat to Continental Europe; and many non-European governments, faced with exchange and shipping difficulties, curtailed wheat imports in favor of other commodities deemed more essential. In consequence of these developments, the combined shipments of the four chief exporting countries were consid-

erably below the corresponding weekly average shipments of 1932-38 and smaller, too, than in 1939-40.

CHART 14.—INTERNATIONAL SHIPMENTS OF WHEAT AND FLOUR FROM OVERSEAS EXPORTING COUNTRIES, 1940-41, WITH COMPARISONS\*

(Million bushels; 3-week moving averages)



\* Based mainly on Broomhall's weekly data, but including for Australia smoothed monthly official exports in September-June 1939-40 and our approximations thereafter. Averages are for corresponding weeks in the 6-year period ending July 30, 1938.

After early March, however, shipments on purchases by the British Cereal Imports Branch were notably expanded, and Argentina began to make substantial weekly exports of wheat under navicerts to Spain. Almost the full effect of the increase in the British takings was reflected in the sharply enlarged shipments of wheat from Canada. During March-July, weekly North American shipments were almost twice as large as they had been in the preceding six or seven months; Canada's exports during the last third of the crop year were the largest she had ever made in April-July; and Canadian shipments in the week

<sup>1</sup> This occurred also in 1935-36.

ending May 16 were the largest since December 1932.<sup>1</sup> Although North American shipments declined markedly in late May, they remained at a surprisingly high level through June and July, in reflection of the decision of British authorities to store unprecedentedly large stocks of import wheat against possible emergencies.

#### NET-EXPORTING COUNTRIES

**Four chief exporters.**—Canada, the premier exporter, reported for 1940–41 net “customs” exports of 224 million bushels of wheat (including flour) and net “clearances” of 231 million bushels. The differing monthly course of these two trade series is shown in Table XX, which also makes clear (in footnote *b*) the precise distinctions between the two. Both series are useful—the customs exports, because they fit in better with calculations of domestic wheat disposition within Canada (Table XXVI); and the export clearances, be-

cause they better reflect the flow of Canadian wheat in international trade (Table XVIII).<sup>2</sup>

At 231 million bushels, Canada’s export clearances of wheat and flour amounted to almost 47 per cent of the estimated world exports—the largest percentage on record in any year except 1935–36. This reflected Canada’s abnormally heavy wheat supplies and her proximity to Britain.

Although data on the distribution of Canadian wheat clearances or exports by destination are available only through December, it is reasonably certain that something over 80 per cent went to the United Kingdom. Between June 1, 1940 and May 13, 1941, British purchases of wheat futures totaled 270 million bushels, but a large part of the last purchase of 120 million bushels presumably remained for export in 1941–42.

Canadian exports of wheat and flour to Continental Europe probably amounted to considerably less than 10 million bushels, as compared with exports of 47 and 35 million, respectively, in the two preceding crop years. Apparently Portugal was the chief, if not the sole, Continental purchaser of Canadian wheat, though small shipments went also to Spain under arrangements made by the British government.<sup>3</sup>

Shipments of Canadian wheat and flour to non-European countries were about of usual size, including 10.5 million bushels sent to the United States for milling in bond and domestic consumption. Throughout 1940–41, Canadian authorities apparently continued to refrain from granting licenses for wheat shipments to Vladivostok—a policy adopted in January 1940.<sup>4</sup> With increasing tension in the Pacific, the licensing of wheat shipments to Japan also came into question. Sometime prior to February 13, 1941, a Japanese firm placed orders in Vancouver for two shipments of Canadian wheat. These shipments had not been made when an order-in-council was adopted on February 13 requiring permits for all exports of wheat and wheat flour from Canada. Under this order, permits for all shipments to Japan were refused. The Japanese government protested that prohibition of the shipment of wheat purchased prior to the adoption of the order requiring permits would be contrary to

<sup>1</sup> *Monthly Review of the Wheat Situation* (Canada), May 23, 1941, p. 3.

<sup>2</sup> For the latter purpose we have at times used Canadian customs exports adjusted for changes in stocks of Canadian wheat in the United States—a series that normally corresponds closely, on an annual basis, with the net-clearance series. In each of the past two crop years, however, there has been a substantial discrepancy between these two series. Mr. J. McAnsh, Statistician of the Agricultural Branch of the Dominion Bureau of Statistics, states that these large differences are attributable to heavy movement of Canadian wheat “in transit” to eastern Canadian lake ports via ports in the United States during the past two seasons. This wheat has not been recorded in Canada’s customs records, even though part of it has remained in storage in the United States for many months. Adjustment of the reported crop-year customs figures by subtraction of the net increase in total stocks of Canadian wheat in the United States accordingly results in understatement of Canada’s wheat trade in both 1939–40 and 1940–41. The net-export-clearance figures, which are unadjusted and therefore not open to such criticism, may be accepted as representing more accurately the flow of Canadian wheat to international trade in years of heavy movement of wheat in transit to eastern Canada via United States ports.

<sup>3</sup> The quantity of British-owned Canadian wheat shipped to Spain has not been made public. In late January 550,000 bushels were shipped (*Monthly Review of the Wheat Situation*, Jan. 29, 1941, p. 2) and under a trade agreement signed in March, a first shipment of 370,000 bushels was reported (Broomhall’s American cable service, Mar. 13, 1941).

<sup>4</sup> WHEAT STUDIES, December 1940, XVII, 180.

international practice, and that it could be interpreted as an "unfriendly act." After considering the representations of Japan, the Canadian government decided to issue permits for the two shipments arranged before February 13, in order to prevent increased strain in the relations between Japan and Britain.<sup>1</sup>

Argentine wheat exports of 96 million bushels in 1940-41 were definitely small, both as compared with earlier years and in relation to the available exportable surplus. Cut off from important sections of her normally large Continental European market for wheat, Argentina was forced to rely solely on orders from neighboring South American countries, Britain, Spain, Portugal, Switzerland, and Finland. The orders of Portugal, Switzerland, and Finland combined probably did not exceed 3 or 4 million bushels; the total demands of the South American countries were not significantly larger than usual; and Britain's wheat takings were distinctly moderate.<sup>2</sup>

In contrast, Spain purchased fairly large quantities of Argentine wheat and corn. These "purchases" were arranged mainly under trade agreements with Argentina and Great Britain. Although the details of these agreements have not been made public, it appears that Spain made two deals with Argentina that involved shipments of Argentine wheat. The first of these, signed in March, provided for long-term credits to cover exports of 400,000 tons (14.7 million bushels) of Argentine wheat, 350,000 tons (13.8 million bushels) of Argentine corn, and certain non-grain exports.<sup>3</sup> Apparently a large part of the corn covered by this agreement and an appreciable

quantity of the wheat involved had already been shipped under official authorization, pending final settlement of the details of the agreement. A second agreement (apparently involving barter trade) was signed by Argentina and Spain in April: this provided for additional wheat exports of 380,000 tons (14.0 million bushels),<sup>4</sup> bringing the total amount of wheat so arranged for to 28.7 million bushels. Supplementing these direct negotiations with Argentina, Spain made one or two trade agreements with Britain under which Spain acquired an uncertain amount of British-owned Argentine and Canadian wheat. From various and conflicting trade reports we should guess that the quantity of Argentine wheat involved in the British-Spanish deals may have been as small as 150,000 tons (5.5 million bushels) or as large as 300,000 tons (11.0 million bushels).<sup>5</sup> In any case, during August-July 1940-41 Argentine weekly shipments reports specify wheat shipments of only 16 million bushels to Spain. Although some of the wheat designated for shipment to the United Kingdom or orders presumably also went to Spain, we infer that not more than about a fourth of Argentina's crop-year exports went to that country.

Much less information is available with regard to Australian exports, which we have estimated at the fairly low figure of 90 million bushels.<sup>6</sup> We should guess that something over half of these was sent to non-European countries, with more than a fourth shipped to China, Japan, and Manchukuo. Other non-European countries probably took, as usual, some 25 to 30 million bushels of Australian wheat, mainly in the form of flour. This would leave roughly 40 million bushels to be distributed to the United Kingdom and European neutral countries. Of this, the bulk must have gone to the United Kingdom, and most of the remainder to Greece.

Apparently no new large purchase of Australian wheat was made by the British Cereal Imports Branch during 1940-41, and the wheat exported to the United Kingdom was presumably part of the quantity purchased in the preceding crop year.<sup>7</sup> At the beginning of August 1940, about 55 million bushels of wheat held by the AWB was sold but not yet

<sup>1</sup> For the statement of Prime Minister Mackenzie King on this issue, see *Winnipeg Free Press*, June 11, 1941, pp. 1, 12.

<sup>2</sup> Even more sharply reduced were British purchases of Argentine corn. British authorities preferred to employ such shipping space as they could spare on the distant Argentine run to carry increased quantities of beef, wool, and tannin.

<sup>3</sup> *Foreign Commerce Weekly*, Mar. 22, 1941, p. 476, and Mar. 29, 1941, p. 542.

<sup>4</sup> *Foreign Crops and Markets*, Apr. 28, 1941, p. 600.

<sup>5</sup> Cf. *Corn Trade News*, Feb. 12, 1941, and Apr. 23, 1941; *New York Times*, Mar. 9, 1941, Sec. 1, p. 9; *Neue Zürcher Zeitung*, Apr. 19, 1941.

<sup>6</sup> WHEAT STUDIES, September 1941, XVIII, 4.

<sup>7</sup> *Ibid.*, December 1940, XVII, 174.

shipped, whereas a year later such wheat totaled only 25 million bushels. Even with allowance for somewhat larger quantities of the unshipped wheat destined for countries other than Britain as of August 1, 1940, the greater part of the indicated reduction of 30 million bushels during 1940-41 must have represented shipments of wheat to the United Kingdom or to British troops in the Mediterranean region.

Toward the close of 1939-40, Australia began to ship appreciable quantities of wheat to Great Britain via United States ports. That movement continued well into 1940-41, though it was mainly concentrated in the early months of the season. Toward the end of February 1941, Broomhall reported that such shipments had totaled 4.9 million bushels since May 1, 1940, and roughly 3.0 million since the beginning of August.<sup>1</sup> Much, if not all, of this wheat was entered in bond at United States ports while awaiting transshipment to Europe.<sup>2</sup>

Gross exports of United States wheat and flour, including shipments to possessions, came to about 44 million bushels during July-June 1940-41 (Table XVII). Of this total, 7.0 million bushels represented exports of flour milled in bond from Canadian wheat, about 3.6 million represented shipments to Alaska, Hawaii, and Puerto Rico, and about 4.0 million represented exports of wheat grain and flour sold before July 1, 1940 under the export-subsidy program of 1939-40. Of the remaining 30 million bushels, probably 8 to 10 million were exported without benefit of subsidy—roughly a million each to Siberia, Japan, and Canada, perhaps about 4 million to China on sales made after October 8, 1940 and a couple of million to miscellaneous ex-European countries. Thus, something like 20 to 22 million bushels of wheat (mostly in the form of

flour) must have been exported during July-June 1940-41 under the export-subsidy program of that year.

Subsidized export sales during 1940-41 were roughly about the same size, and considerably smaller than in either of the two preceding years. Comparisons for three seasons are given in the following tabulation in thousand bushels and dollars.<sup>3</sup> The reduction in

July-June	Subsidized export sales			Cost of subsidy	
	Total	Flour (as wheat)	Unexported at end of year	Total	Per bushel
1938-39..	93,754	24,000	10,000	25,700	.27
1939-40..	35,079	16,507	4,000	10,086	.29
1940-41..	21,703	18,358	4,000	4,476	.21

1940-41 was due mainly to a sharp decline in subsidized sales of wheat grain for export. In fact, the amount of flour disposed of under the government's export program was slightly larger than in 1939-40.

Part of the small quantity of wheat grain sold for export under the subsidy program represented government-owned wheat for which bids were first accepted for exportation to Mexico in early February. The total quantity of subsidized wheat grain sold to Mexico through July has not been made public, but it may have added to about 2 million bushels. Most of the rest of the grain sold under subsidy was destined for China, on sales made prior to October 8, 1940.

The subsidized flour exports consisted of flour sold for export under the "indemnity" rates, announced by the FSCC. These rates were materially modified during the course of 1940-41, as is evident from the table on page 152. The first important change was introduced on July 18 when indemnities were re-established after more than six months on export sales of wheat flour to ports in North and South America (exclusive of Alaska, Puerto Rico, and the Canal Zone). The second major change came on October 8, when "indemnities" on flour export sales to China, Hong Kong, and Dairen were discontinued. The latter modification, made 11 days after announcement of Japan's pact with the European Axis powers, represented withdrawal of substantial aid to Japanese interests in the

<sup>1</sup> Broomhall's American cable service, Feb. 25, 1941; *ibid.*, Mar. 10, 1941.

<sup>2</sup> The reported bonded stocks of Australian wheat rose from 100,154 bushels on July 27 to a peak of 1,200,000 bushels on September 14, and subsequently declined to zero at the end of October. Thereafter, such stocks were reported only intermittently through April, and later not at all.

<sup>3</sup> Data from official releases and directly from the Surplus Marketing Administration.

Orient. For some time it had been known that much of the wheat and flour sold under governmental subsidy from the Pacific Coast to China had been sold to Japanese nationals,

UNITED STATES "INDEMNITY" RATES ON FLOUR  
EXPORTS, JULY 1940—JULY 1941\*

(Dollars per barrel)

Date effective	Gulf and Atlantic ports to ports in the Americas	Pacific coast ports to		
		China, Hong Kong, and Dalren	Philippine Islands	Ports in the Americas
July 1.....	0	0	0	0
2.....	0	1.10	.80	0
9.....	0	1.20	.80	0
18.....	.70	1.20	.70	.70
Sept. 18.....	.85	1.00	.70	.85
Oct. 8.....	.85	0	.70	.85
Nov. 7.....	1.05	0	.70	1.05
Feb. 6.....	.90	0	.60	.90
Mar. 25.....	1.05	0	.60	1.05
May 7.....	1.35	0	.60	1.35

\* Data from official press releases and trade journals. For corresponding rates in 1939-40, see WHEAT STUDIES, December 1940, XVII, 175.

who had arranged for its transportation in Japanese ships to Japanese importers and millers in northern China.

Later changes in the "indemnity" rates appear mainly to have represented alterations made in response to the major movements in wheat prices in United States markets. The increase on November 7 on sales to American destinations followed a prolonged advance in wheat prices (Chart 10, p. 142); and the subsequent reduction in the same indemnity rate on February 6 came near the end of a substantial price decline. The two later increases to American destinations announced by the FSCC on March 25 and May 7 appear to have been in response to the upward price movement that took place after mid-February.

Not included in the subsidized export figures on page 151 were Red Cross shipments of .25 million bushels of wheat *grain* to Finland, and Red Cross *flour* shipments equivalent to .20 million bushels of wheat to Spain, .72 million to France, and .20 million to Greece.

Net exports of United States wheat and flour (including shipments to possessions) totaled only 33.2 million bushels in July-June and 31.2 million in August-July. These figures

have been calculated by subtraction of reported "imports for consumption" from the gross export totals discussed above. For most recent years prior to 1939-40 it makes very little difference whether net exports are calculated (1) by deduction of "imports for consumption" from reported gross exports or (2) by deduction of "general imports" from the sum of gross exports and re-exports. During 1939-40 and 1940-41, however, large quantities of Canadian wheat have been taken for storage at United States warehouses under transactions which have involved the recording of such wheat under "general imports" but not under "imports for consumption." Moreover, since this wheat has mostly remained in storage, it has not yet appeared in the records of re-exports—a development to be expected in some later year. Under these circumstances, net-export figures for 1939-40 and 1940-41 more closely represent the actual trade situation if they are computed by the first of the two methods mentioned above, which involves utilization of the data on "imports for consumption." This method has been employed this year for the first time in obtaining the July-June net-export figures shown in Tables XVII and XXVI, and for the August-July net-export figures for 1939-40 and 1940-41 shown in Tables XVIII and XIX.

As compared with earlier years, United States wheat "imports for consumption" were neither strikingly large nor notably small.<sup>1</sup> Imports of Canadian wheat for milling in bond came to 7.3 million bushels or slightly less than in any of the 15 preceding years except 1937-38. On the other hand, 3.2 million bushels—more than usual—were imported as "unfit for human consumption" at the 5 per

<sup>1</sup> Import data for the past six years are shown below in million bushels:

July-June	For domestic use			For grinding in bond
	Total	42-cent duty	10% ad valorem duty <sup>a</sup>	
1935-36.....	34.40	25.29	9.20	11.98
1936-37.....	34.26	30.20	4.06	13.47
1937-38.....	.60	.60	.00	2.82
1938-39.....	.25	.04	.21	8.90
1939-40.....	.14	.06	.08	9.04
1940-41.....	3.42	.18	3.24	7.31

<sup>a</sup> On wheat "unfit for human consumption." Rate cut to 5 per cent on Jan. 1, 1939.

cent duty. As in most years, the quantity imported at the 42-cent tariff was negligible.

**Other exporters.**—For large sections of Continental Europe, the wheat exports of the Danube basin, Russia, and neighboring Mediterranean countries assumed more significance than usual in 1940–41. On the other hand, these exports were much smaller than in most other recent years, partly because of small crops and partly because of the very war strains that enhanced their significance. In the Danube basin, Yugoslavia's poor wheat crop definitely precluded exports, and both a poor harvest and territorial losses prevented Rumania from exporting significant quantities of wheat in 1940–41.<sup>1</sup> Only Hungary and Bulgaria made substantial exports: in total, these probably did not quite reach 15 million bushels—less than Hungary usually exports alone. No official trade data are available for Bulgaria, and Hungary reported her trade in wheat only for the six months ending December 1940. During those six months Hungary exported only about 4 million bushels in total—2 million to Italy, almost a million to Switzerland, and the rest mainly to Germany.<sup>2</sup>

Of the remaining Continental countries except Russia, Sweden may have exported (net) less than a million bushels of wheat and the General Government of Poland may have been compelled to send to Germany one or two million bushels. Considerably more important is the uncertain net trade position of France. It is fairly certain that France exported several million bushels of wheat to Belgium<sup>3</sup> and that she shipped some wheat and flour to the German Reich.<sup>4</sup> But whether the quantity shipped by France to Germany was large or small we

cannot at present determine. In September 1940, unconfirmed reports were circulated that Germany had demanded from France some 30 million bushels of wheat.<sup>5</sup> At first, the assumption was made that this wheat would be shipped to Germany, and the fact that some shipments were later reported seemed partly to bear out this expectation. On the other hand, at least part of the substantial shipments of wheat sent from occupied to unoccupied France were reported in March to be drawn from the large stocks of French wheat previously requisitioned by the German army for its own use.<sup>6</sup> This development suggested that the German government may have left within occupied France the bulk of whatever quantity of wheat it had requisitioned there. If so, such wheat would be unavailable for French use, except at the will of the German government, but it would not figure as an export from France to Germany. Consequently, we tentatively assume that France as a whole was a net importer of wheat in 1940–41.

Wheat exports from French North Africa were apparently well maintained during 1940–41. Admiral Darlan, of the Vichy government, stated in March that October–February shipments of grain by sea to France totaled 260,000 tons (9.5 million bushels of 60 pounds), and Secretary Jean Achard expressed the belief that 125,000 tons (4.5 million bushels) of North African wheat would be imported into unoccupied France during April–July.<sup>7</sup> It seems probable that the bulk of the grain imports of October–February consisted of North African wheat and that April–July imports from North Africa exceeded Secretary Achard's forecast. In mid-July a German news source reported that Algeria had just sent 75,000 tons (2.7 million bushels) of new-crop wheat to France;<sup>8</sup> and other unofficial sources indicated that Tunis had exported about 40,000 tons (1.5 million bushels) from early June to mid-August. In view of these scattered bits of evidence, we are inclined to guess that exports of wheat from French North Africa to France could scarcely have fallen short of 15 million bushels during 1940–41 and may well have reached 20 million bushels.

Except for Egypt, other Mediterranean countries exported very little wheat during

<sup>1</sup> Yugoslavia put an embargo on wheat exports effective in July or August 1940 and Rumania adopted a similar measure effective in December.

<sup>2</sup> Data from Hungary, Magyar Királyi Központi Statisztikai Hivatal, *Statisztikai Negyedévi Közlemények*, October–December 1940, pp. 306, 311.

<sup>3</sup> *New York Times*, June 30, 1941, p. 3.

<sup>4</sup> *Ibid.*, Mar. 28, 1941, p. 9; June 4, 1941, p. 5.

<sup>5</sup> U.S. Dept. Agr., Federal-State Market News Service, *Wheat Market Review*, Sept. 21, 1940; *Modern Miller*, Sept. 21, 1940, p. 25.

<sup>6</sup> *New York Times*, Mar. 11, 1941, p. 2; Mar. 14, 1941, p. 3; Mar. 26, 1941, p. 5.

<sup>7</sup> *Ibid.*, Mar. 28, 1941, p. 9; and Mar. 29, 1941, p. 2.

<sup>8</sup> *Deutsche Allgemeine Zeitung*, July 26, 1941.



1940-41. In December 1940, trade sources reported that Egypt had already consigned over 4 million bushels of wheat to Cyprus and Palestine, with the demand also good for exports to Greece and Malta.<sup>1</sup> Perhaps some of these exports were made during June-July 1940 and some were offset by imports from Australia; but we tentatively assume that Egyptian net exports of wheat came to several million bushels during August-July 1940-41. In contrast, Iran, Iraq, and Syria and Lebanon, usually wheat exporters, ranked as net importers during 1940-41. Moreover, Turkey exported much less wheat than usual, having banned exports except under license.<sup>2</sup>

In spite of large domestic wheat supplies, Soviet Russia (including Russian Poland and the Baltic States) apparently exported relatively little wheat in 1940-41. We judge that these exports went mainly to Greece and Fin-

land, with smaller amounts shipped to Norway, Sweden, Belgium, and Switzerland. There is no indication that Russia exported any wheat to Germany, though she shipped an appreciable amount of barley there.<sup>3</sup>

In the Orient, India shipped some small quantities of wheat to Iran and other near Eastern countries and received in turn some small shipments from Australia. We infer that India's wheat trade was in fairly close balance. Japan, on the other hand, again ranked as a net exporter of wheat and flour. Her net exports during July-June 1940-41 have been unofficially placed at 4.3 million bushels;<sup>4</sup> and we judge that in August-July they were roughly about the same size. These reflected exports of Japanese flour to Manchukuo, North China, and other Japanese-dominated areas materially in excess of the imports (mainly of wheat grain) that Japan received from Australia, Canada, and the United States.

<sup>1</sup> *Commercial Intelligence Journal*, Feb. 1, 1941, p. 124.

<sup>2</sup> At first the Turkish Minister of Commerce announced that no export licenses would be issued for wheat, corn, or barley (*Foreign Crops and Markets*, Sept. 23, 1940, p. 390), but subsequently some small exports were reported (Table XX).

<sup>3</sup> Much attention was centered on the Russo-German trade treaty signed on January 10, which was unofficially reported to call for exports of 2.5 million tons of grain and feed barley, in addition to industrial raw materials and oils. *New York Times*, Jan. 11, 1941, p. 8.

<sup>4</sup> *Foreign Crops and Markets*, Sept. 2, 1941, p. 248.

<sup>5</sup> There appears to be no better way of estimating wheat sinkings at present than with reference to the experience during World War I. When German submarine attacks on merchant shipping were at their peak in November-July 1916-17, losses of British, Allied, and neutral vessels averaged about 535,000 gross tons monthly and 7.3 per cent of the wheat shipped to the United Kingdom was lost on passage. During the first half of 1940-41 merchant shipping losses of British, Allied, and neutral vessels averaged 373,000 gross tons monthly and shipments of wheat to the British Isles were relatively small. Over those six months, the percentage of wheat lost may not have exceeded 5 or 6 per cent. During the second half of the crop year, however, merchant shipping losses were heavier (402,000 gross tons on the average) and they were heaviest during March-June (Chart 1, p. 113), when wheat shipments to Britain were at their peak and probably bulking large in the total shipping movement. In the second half of the crop year, therefore, it would not be surprising if the percentage of British wheat shipments lost on passage came to about 10 per cent, with higher percentages reached in one or two months. For the crop year as a whole we are inclined to guess the percentage loss at 7 to 9 per cent.

#### EUROPEAN NET-IMPORTING COUNTRIES

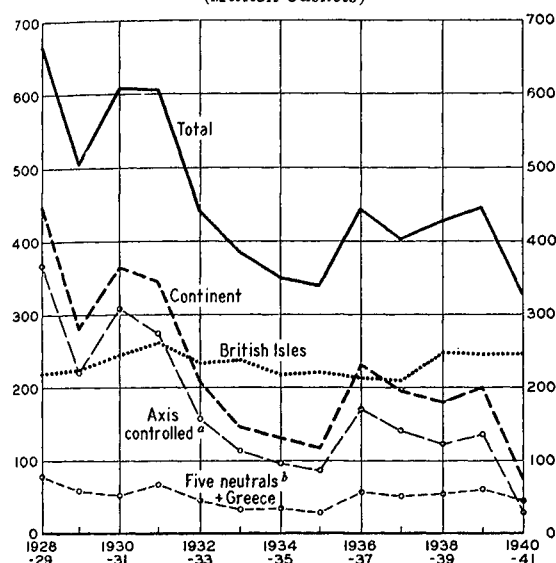
In spite of the lack of official trade data for most European importing countries, three facts about the European wheat import trade of 1940-41 stand out clearly. First, British wheat imports were large for the third successive year. Second, the aggregate wheat imports of the five Continental "neutrals" and Greece were well maintained in comparison with other recent years. Third, the remaining Continental importing countries as a group (Germany, Italy and the countries under Nazi domination) received notably small aggregate net imports of wheat in 1940-41—probably the smallest since World War I. These statements are not now subject to precise formulation in quantitative terms, but in Chart 15 we show our rough approximations.

Our calculations of the net imports of the British Isles at 245 million bushels in 1940-41 rest upon scattered evidence that exporting countries shipped something like 270 million bushels of wheat and flour to the United Kingdom and Eire during July-June and that between 7 and 9 per cent of these exports were probably sunk en route through enemy action.<sup>5</sup> Moreover, in addition to the sinkings, there were apparently significant diversions of Brit-

ish cargoes to Spain and to British armed forces in Africa, Greece, and the Near East.

Eire's share of the large net imports of the British Isles in 1940-41 must have been smaller than in any other recent year. Indeed, there is some basis for guessing that

CHART 15.—NET IMPORTS OF WHEAT AND FLOUR IN EUROPE EX-DANUBE EX-RUSSIA, ANNUALLY FROM 1928-29\*  
(Million bushels)



\* Data from Tables XVIII and XIX.

<sup>a</sup> Germany, Austria, Czechoslovakia, Poland, Italy, France, Belgium, Netherlands, Norway, Denmark, and the three Baltic states.

<sup>b</sup> Spain, Portugal, Switzerland, Sweden, Finland.

Eire's imports were not even half as large as on the average in 1934-39. The reduction reflected (1) scarcity of neutral shipping tonnage and (2) reluctance of British authorities to allow British-controlled shipping to be used to supply wheat to a near-by member of the British Commonwealth that refused to co-operate in Britain's war efforts. The British navicert system was extended at the end of December 1940 to cover Eire's exports to a number of neutral countries, in and outside of Europe, and it was further extended from May 1 to apply to all goods shipped to Eire from neutral areas outside of Europe.

Mainly as a consequence of the British naval blockade, though partly also because of the scarcity of shipping, the aggregate net imports of wheat and flour into Continental Europe ex-Danube ex-Russia apparently amounted to

considerably less than 100 million bushels in 1940-41. Specifically, our present rough approximation to these imports is 75 million bushels—only about 42 per cent of the average for 1934-39 and the lowest on records that go back to 1885-86. Almost two-thirds of these small imports went to Greece and Continental neutral countries, whose imports as a group were well maintained (Chart 15).

Greece (until its conquest by Germany in April 1941) and four of the five Continental neutrals were permitted to import limited amounts of overseas wheat and flour under the British navicert system. Ordinarily, British authorities appear to have granted navicerts freely for shipments of food clearly needed for current consumption. On the other hand, navicerts were not granted for imports that would result in building up stocks beyond two months' supply;<sup>1</sup> nor for imports that would allow stocks of substitutable commodities to be accumulated; nor for imports that were needed to take the place of food previously exported to enemy territory. Moreover, navicerts were granted only to countries that showed means of safeguarding the distribution of imported supplies and only so long as those countries appeared to be pursuing "neutral" or friendly policies.

The number of Continental countries with access to overseas bread-grain supplies under the British navicert system dwindled during the course of 1940-41. By the end of October 1940 the navicert system was well organized and apparently operating with respect to imports of bread grain into Greece, Spain, Portugal, Switzerland, and Finland. Sweden seems to have been excluded from the start, perhaps mainly because her available supplies of bread grain were more than adequate to cover her domestic needs. After Germany's victory in Greece in April 1941, that country was also excluded from the benefits of the British navicert system; and before mid-June, Finland became ineligible as a result of her unneutral behavior in permitting German troops to enter and cross Finnish territory.<sup>2</sup>

<sup>1</sup> *Neue Zürcher Zeitung*, Mar. 23, 1941.

<sup>2</sup> The British-Finnish agreement of October 1940 was terminated by Britain on June 14. *New York Times*, June 19, 1941, p. 5.

Thus, during the last six weeks of the crop year only three Continental neutrals could secure British navicerts for food imports.

The group of Continental neutrals ex-Danube as constituted during most of 1940-41 (Spain, Portugal, Switzerland, Finland, Sweden) apparently secured aggregate net imports of something like 35 million bushels. Such imports would have been slightly larger than on the average in 1934-39, but materially less than in either of the two preceding years. Spain was the largest importer of this group in 1940-41, with imports of perhaps 25 million bushels, mainly from Argentina (p. 150). Portugal, according to the official records, took about 4 million bushels of foreign wheat, or somewhat more than usual. In contrast, Finland's imports were apparently only of average size,<sup>1</sup> while Switzerland's were notably

low.<sup>2</sup> As has often been true in recent years, Sweden ranked as a small net exporter.

Greece, the only other Continental country that was authorized to import substantial quantities of wheat through the British blockade, may have received almost as much wheat as in 1939-40. Most of Greece's imports came from Australia and the USSR, with additional small amounts from the Danube countries, Egypt, India, Turkey, and the United States (p. 152). After Germany's conquest of Greece, wheat imports virtually ceased, though some small quantities of relief wheat may have been moved into the country from Rumania<sup>3</sup> and Bulgaria before the end of July. More recently, Britain agreed to allow 50,000 tons of food to be sent to Greece from the United States, Britain, and Turkey, for distribution by the International Red Cross.<sup>4</sup>

The remaining countries of Continental Europe ex-Danube—now all under Axis domination—were seriously restricted as to wheat imports in 1940-41. None of these countries received sizable shipments from overseas. Negligible quantities of wheat were apparently run through the British Atlantic blockade, and the United States made a token shipment to unoccupied France of 13,660 tons of enriched wheat flour (.73 million bushels in grain equivalent);<sup>5</sup> but otherwise the Axis-dominated importing countries as a group were wholly dependent for outside imports upon French North Africa, the Danube basin, and the USSR. We tentatively place the probable aggregate exports of these three areas at 35 to 40 million bushels. Since Switzerland, Finland, and Greece received some of this wheat, not more than about 30 million may have gone to the Axis-dominated countries. Such imports would have been far below those of any other recent year and only about a third of the notably low imports of 1935-36.

Only the broad outline of the distribution of these imports is reasonably clear. The wheat from French North Africa went in the first instance to unoccupied France. We are inclined to guess that most of it remained there, despite widely circulated rumors that unoccupied France had earlier agreed to send to Germany one-half of all of her food imports.<sup>6</sup> Although the total French trade posi-

<sup>1</sup> Finland reportedly received from Russia 12,500 tons (.46 million bushels) of wheat during August-December (*Der Bund*, Jan. 3, 1941), and about 7,500 tons (.28 million bushels) during January-June. In March 1941, Sweden agreed to sell Finland 5,000 metric tons of wheat flour (.25 million bushels of wheat) and to lend her 20,000 metric tons of bread grain (probably mostly rye) to be returned in November. Finally, overseas exporters reported wheat shipments of 1.45 million bushels to Finland during July-June 1940-41 (1.20 million from Argentina and .25 million bushels from the United States through the American Red Cross). After Finland joined with Germany against Russia, Germany reportedly agreed to send to Finland 25,000 tons of bread grain—probably mostly rye.

<sup>2</sup> Switzerland appears to have been unable to make the necessary arrangements for British navicerts prior to the middle of October 1940, and thereafter she had great difficulty in obtaining shipping space for overseas grain shipments. In the Argentine weekly shipments reports for July-June, Switzerland is credited with 1.3 million bushels of wheat and .5 million bushels of maize. Danubian grain shipments to Switzerland were probably somewhat larger.

<sup>3</sup> Two German ships were reported in June to have been sent to Rumania to load wheat for Greek ports to ease serious food shortage there. *Facing the Facts* (National Committee on Food for the Small Democracies), June 3, 1941.

<sup>4</sup> Broomhall's American cable service, Sept. 12, 1941.

<sup>5</sup> This flour was shipped by the American Red Cross in April in two French boats—the "Ile de Ré" and "Leopold."

<sup>6</sup> Although Germany may have allowed unoccupied France to keep most of the wheat she imported, German authorities may well have taken more than half of such food imports as meat, edible oils, wine, and certain vegetables.

tion is obscure (p. 153), we tentatively assume that France was an importer on balance. In any case, the unoccupied zone was a net-importing area and the occupied zone a net-exporting area.

The trade in wheat and other foodstuffs that took place between occupied and unoccupied France in 1940-41 was of immeasurable importance, not only for the prevention of famine and distress, but also for international political and military relationships. Food was clearly used by Hitler as a "political weapon" in France.<sup>1</sup> At the beginning of the crop year, the boundary between occupied and unoccupied France was more restrictive of trade and migration than most international boundaries. After considerable diplomatic negotiation, a barter trade plan was apparently drawn up in October 1940, which was said to provide for shipments from occupied to unoccupied France of 800,000 tons of wheat (roughly 30 million bushels) among other exchanges.<sup>2</sup> For some reason or other, this plan seems not to have been acceptable to one of the two groups of government officials involved. In any case, the plan did not go into effect in October, as scheduled. In March 1941, the Secretary of State for Supplies in the Vichy government told American correspondents that the agreement actually became effective on February 15 and that the first deliveries

under it were made on March 12. He stated that the proposed shipments of wheat would not exceed 40,000 tons a month during March-August or 240,000 tons in total.<sup>3</sup> If this statement is taken at its face value, the occupied zone shipped to the unoccupied area 7.34 million bushels of wheat before the end of July 1941. On the other hand, these shipments may have been swelled by the release of additional quantities of wheat from the occupied area after the food situation in unoccupied France became critical in the late spring.<sup>4</sup>

German-Austrian-Czechoslovakian imports could scarcely have been as large in 1940-41 as they had been in 1936-39 (Table XIX), and certainly not unless heavy shipments of French wheat went to Germany. We would guess that in total these imports were below average (1934-39), yet larger than the notably light takings of 1935-36. Italy, the other Axis partner, doubtless received a share of the small Danubian exports but had no access to other sources of exports. Italy's imports must have been small—perhaps about the same as in 1935-36 and 1937-38.

Much larger reductions in wheat imports were suffered by the Netherlands and Belgium. These two countries—normally fairly large importers—were unable to obtain in 1940-41 anything like the quantity of foreign wheat that they usually import. Indeed, so far as we have been able to learn, Dutch imports of wheat were negligible, and Belgium secured no more than a few million bushels from France and a trickle of wheat from Russia.<sup>5</sup>

Second only to the reductions in wheat imports suffered by the Netherlands and Belgium were those of Norway and Denmark. Neither of these countries appears to have imported as much as a million bushels of wheat, though Russia and Sweden both shipped small quantities of bread grain (mostly rye) to Norway, and Denmark received an uncertain amount of grain from Hungary and perhaps Russia.

#### OTHER NET-IMPORTING COUNTRIES

Of the world's total exports of wheat, roughly two-thirds went to Europe, the remaining third to non-European countries. At something like 145 million bushels, total non-European net imports were somewhat larger

<sup>1</sup> See Karl Brandt, "Food as a Political Instrument in Europe," *Foreign Affairs*, April 1941, XIX, 516-29.

<sup>2</sup> See *New York Times*, Mar. 26, 1941, p. 5 and the statement of Secretary Achard to American correspondents in *ibid.*, Mar. 29, p. 2. All sources do not agree on the terms of the trade agreement: cf. *ibid.*, Apr. 6, sec. 4, pp. 3 and 6, and *Foreign Crops and Markets*, Supp., May 27, 1941, p. 789.

<sup>3</sup> *New York Times*, Mar. 29, 1941, p. 2.

<sup>4</sup> See *Neue Zürcher Zeitung*, May 31, 1941. Some sources claim that the shipments of wheat that the Germans agreed to make to unoccupied France out of requisitioned supplies in the occupied territory were made instead out of German war reserves in the German Reich (*ibid.*, Aug. 11, 1941).

<sup>5</sup> In addition to this grain, Belgium is reported to have received 300,000 to 545,000 tons of rye and 93,000 tons of seed and table potatoes from Germany (*Die Tat*, May 31, and Aug. 8, 1941); 38,000 tons of potato flour from Holland (*ibid.*); and a small quantity of rye from Russia. On the other hand, German officials are said to have requisitioned and shipped to Germany in the fall of 1940 large quantities of potatoes from Belgium (*Corn Trade News*, Oct. 30, 1940).

than in 1939-40 and about of average size. These net imports were thus surprisingly well maintained in a year characterized by high freight rates, scarcity of shipping tonnage, and restrictive exchange controls.

As usual, China and Brazil were the two largest non-European importers, together accounting for almost 45 per cent of the non-European total. China's imports, in particular, played an important part in maintaining the average level of non-European imports in 1940-41. Officially reported at 31 million bushels during August-July, Chinese net takings of wheat and flour were the largest since 1932-33, though only slightly larger than in 1938-39. They were drawn mainly from Australia and the United States, though partly from Japan and Canada. As in other recent years, Chinese net imports were probably larger than the official figures indicate, though in 1940-41 the unreported margin may have been reduced. Since the great bulk (80 per cent) of Chinese imports consisted of flour, they are discussed below (p. 160).

In contrast to China's large imports, the takings of Brazil were relatively small for the second successive year. The reduced Brazilian imports of 1939-40 could be partly ascribed to the sizable wheat stocks that must have remained on August 1, 1939 after a year of abnormally heavy importation, but a year later no such stocks were on hand. The small imports of 1940-41 are probably attributable to the imposition of more stringent admixture requirements for bread flour and to more rigid enforcement of those requirements. During most of the crop year 1938-39, Brazilian mil-

lers and flour importers had been legally required to mix with wheat flour for bread purposes only 2 and later 5 per cent of manioc flour.<sup>1</sup> Throughout most of 1939-40 the total admixture requirement had ranged between 13 and 16 per cent, with 18 per cent specified as from June 1, 1940.<sup>2</sup> In the late summer or early fall of 1940 this was raised to 21 per cent, and later to 23 per cent (15 per cent manioc flour, 5 per cent corn flour, and 3 per cent rice flour).<sup>3</sup> The latter rate remained in force until June 1, 1941, when it was reduced to 15 per cent manioc flour in accordance with the terms of the Brazilian-Argentine trade agreement of March 1941.<sup>4</sup> The effect of the admixture measures of 1938-39 and 1939-40 was modified by the issuance of special permits to flour importers in northern Brazil for exemption from compliance with the mixing regulations pending installment of necessary mixing machinery. These permits were scheduled to terminate on October 16, 1940, and official notice was given that no extension beyond that date would be granted.<sup>5</sup> From later news, however, we judge that in some cases existing exemptions were subsequently extended to the beginning of June 1941.

Manchukuo, like Brazil, took less foreign wheat and flour than usual in 1940-41. The reduction in Manchukuoan imports from 1939-40 apparently amounted to about 9 million bushels in terms of wheat. It took place in the face of serious shortage of domestic wheat supplies (that were partly withheld from the market) and seems to have been mainly due to the scarcity of foreign exchange imposed by Japanese controls. High freight rates, shortage of shipping space, and the limited supplies of Japanese wheat available for exportation contributed to the curtailment of Manchukuoan imports.

In South America, the reduced imports of Peru<sup>6</sup> were more than offset by appreciable takings of Argentine wheat by Uruguay, which has ranked as a net exporter in most other recent years. Mexico, faced with a poor wheat crop and an opportunity to buy subsidized American wheat, took somewhat larger imports than usual. Philippine imports were apparently a little smaller than in either of the two preceding crop years, yet still up to

<sup>1</sup> *Commerce Reports*, April 8, 1939, p. 326.

<sup>2</sup> *Ibid.*, Aug. 5, 1939, p. 702; Feb. 3, 1940, p. 107. Part of the required admixture was corn and rice.

<sup>3</sup> *Ibid.*, Sept. 21, 1940, p. 798; *Foreign Commerce Weekly*, Apr. 19, 1941, p. 119.

<sup>4</sup> *Foreign Commerce Weekly*, July 26, 1941, p. 8. This rate is to remain in force until Jan. 1, 1942 when it is to be reduced to 10 per cent.

<sup>5</sup> *Foreign Crops and Markets*, Sept. 23, 1940, p. 393.

<sup>6</sup> A decree of July 8, 1940 provided that Peruvian mills using imported wheat should thereafter mill rye and quinoa (an indigenous grain) under government orders, and that after sufficient quantities of rye and quinoa flour should become available, the domestic bread should be made from 80 per cent wheat flour, 15 per cent rye flour, and 5 per cent quinoa flour. *Commercial Intelligence Journal*, Aug. 17, 1940, p. 275.

the 1934-39 average; and the net imports of the Dutch East Indies, British Malaya, Indochina, and Ceylon (concerning which we have virtually no information) were probably of about average size.

Near Eastern and African countries probably took somewhat larger aggregate net imports of wheat (including flour) than in most other recent years, despite the net export position of Egypt. Shortage of domestic wheat supplies in Iran, Iraq, and Syria and Lebanon—a shortage partly attributable to hoarding—apparently induced those countries to become small net importers of wheat in 1940-41. On the other hand, such imports were seriously limited by scarcity of shipping. The Union of South Africa, despite moderate wheat crops in 1939 and 1940, appears to have taken larger net imports of wheat in 1940-41 than in any of the eight preceding years. Official trade data indicate net imports of 2.6 million bushels of wheat and flour during June-December 1940 and the net import figure for August-July may have been even larger.<sup>1</sup>

#### THE FLOUR TRADE

International trade in wheat flour has recently been stimulated, as it was in 1914-19,<sup>2</sup> by abnormal industrial and shipping conditions associated with extensive warfare. Although trade data are not available for a number of the more important flour exporters, there is little doubt that in 1940-41 world net exports of wheat flour were larger than they had been in any of the preceding eight or nine years (Table XXII). Moreover, in terms of percentage of total wheat and flour exports, the exports of flour were relatively even larger—the largest on record since 1923-24.

From the following table and Table XXII, it is evident that the large increase in flour exports in 1940-41 is traceable mainly to enlarged exports from Canada, in turn mainly

reflecting an increased demand for flour imports in Britain. Canadian flour exports totaled 10.3 million barrels as compared with an average of 5.1 million in the preceding decade. Whether the British demand was based primarily on heavy bombing losses, scarcity of trained labor, the need to save shipping space, or (less probable) the desire to obtain increased quantities of enriched flour is not clear. Estimates of the loss of British milling capacity ranged from 10 to 20 per cent in the middle of 1940-41, with the lower figure more commonly credited.<sup>3</sup> A general reduction of British milling capacity by 10 per cent would scarcely affect the flour-import trade of Britain perceptibly; but such a reduction concentrated at several of the chief ports might encourage British authorities to order an increased amount and proportion of overseas flour. Or bomb damage may have been the decisive factor, not because of loss of milling capacity but as the result of serious damage to docks and to the special equipment required for unloading bulk grain.

PERCENTAGE OF FLOUR EXPORTS TO GROSS EXPORTS OF WHEAT GRAIN AND FLOUR IN FOUR MAJOR EXPORTING COUNTRIES\*

Aug.- July	Four exporters	U.S.	Canada	Aus- tralia	Argen- tina
1931-32..	15.9	31.0	11.7	21.3	2.6
1932-33..	13.8	56.6	9.2	19.9	2.9
1933-34..	16.5	51.6	12.6	30.2	3.9
1934-35..	17.1	90.6	12.9	31.3	2.8
1935-36..	16.6	98.4	8.8	28.3	6.0
1936-37..	15.0	80.1	10.5	25.9	3.1
1937-38..	19.1	22.9	16.9	24.5	5.9
1938-39..	19.7	32.2	12.9	36.4	4.0
1939-40..	19.4	58.5	15.8	38.0	2.6
1940-41..	25.5	78.8	20.0	38.8 <sup>a</sup>	2.5

\* Data from official sources, except as indicated.

<sup>a</sup> Our approximation; see Table XXII.

From sometime in February, if not earlier, British authorities specified in some of their contracts for Canadian export flour the requirement that such flour be fortified with the vitamin B<sub>1</sub>.<sup>4</sup> This was followed in early May by official notification that from June 1, 1941 all shipments of flour from Canada would be required to contain a minimum of two grams of vitamin B<sub>1</sub> per 280 pounds of flour.<sup>5</sup> But despite the British enrichment program, we

<sup>1</sup> *Ibid.*, Feb. 22, 1941, pp. 219-20.

<sup>2</sup> Data for the calendar years 1909-38 are given in *The Wheat Situation*, Jan. 26, 1940, pp. 25-35.

<sup>3</sup> Cf. *The Northwestern Miller* (Minneapolis), Jan. 15, 1941, p. 16, and the *Hook-Up* (Millers' National Federation), Feb. 24, 1941, p. 4.

<sup>4</sup> *Milling*, Feb. 22, 1941, p. 95.

<sup>5</sup> *Northwestern Miller*, May 14, 1941, p. 28.

infer that British importing authorities would not have increased their takings of Canadian flour primarily for the purpose of obtaining increased quantities of flour fortified with B<sub>1</sub>.

Chinese, as well as British, net imports of wheat flour were considerably expanded in 1940-41. Officially reported at 5.5 million barrels during August-July 1940-41, Chinese net imports of flour were over twice as large as in 1939-40, and 2.5 million barrels larger than China's maximum flour takings in any of the eight preceding years for which data are available. Australia and the United States were the major sources of supply, though Canada had a slight share in the expanded business. Little is known about the increased Chinese trade. It presumably reflected the short crops of rice and wheat in China in 1940, transport and other difficulties that interfered with the movement of domestic grain to the coastal cities, and less restrictive Japanese exchange and trade controls than existed in Manchukuo. The great bulk of the flour imports into China went to Japanese-controlled ports; and most of the business seems to have been carried on by and for Japanese interests. Although neither Australia nor Canada would sell wheat or wheat flour to Soviet firms in Siberia, both countries sold to Japanese firms for shipment either to Japan or to China during six months or more of the crop year (p. 149). American wheat or flour could be shipped freely to any destination, but after October 8, 1940 flour sold to China, Hong Kong, and Dairen did not qualify for indemnity payments under the American government's export subsidy program (pp. 151-52). It seems improbable that any significant quantity of American wheat or flour was imported into China during August-July 1940-41 under the terms of the Lease-Lend Act.

Flour exports and re-exports from China appear from the official records to have been considerably smaller in 1940-41 than in either of the two preceding years, but Japan is reported to have taken substantial quantities of wheat and flour from China "without observing customs formalities." It is possible, therefore, that "more of these products may have been shipped during the past season from China to Japan, or other yen-bloc countries, than ever before."<sup>1</sup> Even if this should be true, it seems improbable that the increase in flour exports from China could have offset the increase in flour imports in 1940-41.

Manchukuo's flour imports appear to have been unusually low in 1940-41, in reflection of extremely restrictive Japanese exchange controls and reduced Japanese exports of flour.

Australian flour exports have not been reported since June 1940. However, there is little reason to doubt that these were large during August-July 1940-41—as large as or larger than the peak exports of 1938-39. Partly because of the evidence on Chinese imports of Australian flour, and partly because of other bits of evidence, we have estimated Australian flour exports in 1940-41 at 7.5 million barrels (Table XXII). Even with exports of this size, Australia yielded first place as a flour exporter to Canada and held second rank only by a small margin over the United States. In the early months of 1940-41, Australia presumably continued to ship flour against the British purchase of 150,000 short tons made in January 1940;<sup>2</sup> but throughout the crop year Australian exports of flour to non-European destinations were probably considerably larger than those to the United Kingdom. Toward the end of the crop year Australia, like Canada, was required to fortify with vitamin B<sub>1</sub> the flour shipped to the United Kingdom.

## V. UTILIZATION AND CARRYOVERS

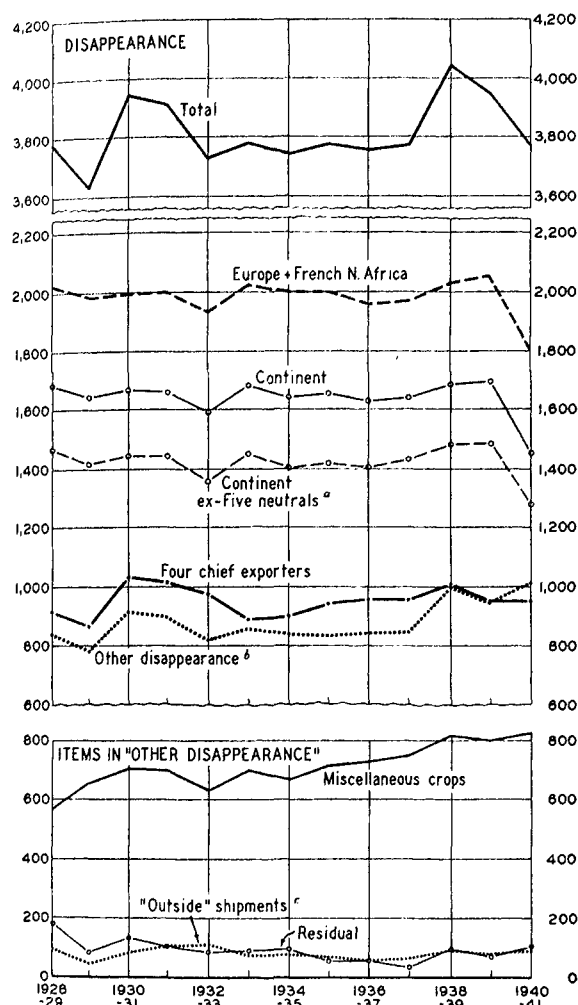
Global estimates of wheat disappearance in the world ex-Russia always rest in part upon rough approximations and guesses; but for the past two crop years the guessing element has been unusually prominent. In spite of this, there is little doubt that world wheat disappearance was strikingly lower in 1940-41

than in 1939-40, when it had been only moderately below the record level of 1938-39. These relationships are reflected in the estimates and approximations shown in Chart 16 and Table XXV.

<sup>1</sup> *Foreign Crops and Markets*, Sept. 2, 1941, p. 246.

<sup>2</sup> *WHEAT STUDIES*, December 1940, XVII, 180.

CHART 16.—WHEAT DISAPPEARANCE IN MAJOR AREAS  
EX-RUSSIA, ANNUALLY FROM 1928-29\*  
(Million bushels)



\* Based on data in Tables I, XII, and XXV. For definition of "miscellaneous crops," see footnote b to Chart 5 (p. 130).

<sup>a</sup> The five neutrals are Spain, Portugal, Switzerland, Sweden, Finland.

<sup>b</sup> "Other disappearance" represents the difference between total disappearance and the aggregate disappearance in the four chief exporting countries and in Europe plus French North Africa.

<sup>c</sup> "Outside" shipments represent our approximations to exports from the "world ex-Russia" (as defined in footnote a to Table I) to China and other areas outside.

Noteworthy, also, is the indication in Chart 16 that the level of world wheat disappearance in 1940-41 was not significantly different from that of any of the six years preceding 1938-39. This is partly attributable to relative overstatement of the disappearance of 1940-41 in the figures here presented. Since year-end

stocks approximations are not available for the large group of non-European producers designated "miscellaneous" in Chart 16, the crops of those countries are counted in full in the annual disappearance totals. Probably in most years this makes little difference in the final disappearance estimates, since the wheat utilization of almost every one of the countries in this group varies markedly from year to year, in rough dependence on the size of the domestic crop. In 1940-41, however, the coincidence of large domestic wheat crops and a critical international situation encouraged private hoarding of wheat and governmental accumulation of special wheat reserves in these countries. To the extent that year-end stocks of wheat were thus increased or the 1940 crops of these countries overestimated, the world wheat disappearance figure for 1940-41 is overstated.

Even if such overstatement were not involved, however, the estimate of world wheat disappearance in 1940-41 would appear only moderately below the average level in 1932-38. This is mainly attributable to four factors, which tended to offset the large reduction in wheat utilization in Europe ex-Russia in 1940-41: (1) the recent upward trend of wheat production (somewhat exaggerated in the official crop figures) in the group of "miscellaneous" countries mentioned above; (2) the unusually large exports in 1940-41 to countries outside the "world ex-Russia" as here defined; (3) the substantial war losses of wheat on ocean passage to Europe during the past crop year; and (4) the slightly heavier net utilization of wheat in the four major exporting countries in 1940-41 than in 1932-38.

Two or more of these influences are in some degree associated with population growth. The historical tendency has been for wheat disappearance to increase over periods of five years or more as the world's population has increased, though not necessarily at the same rate. Other factors constant, therefore, one would have anticipated some increase in world wheat disappearance between 1932-38 and 1940-41. The fact that no such increase occurred meant that per capita wheat disappearance was appreciably lower in 1940-41 than it had been in the earlier period. Indeed,



such inadequate population figures as are available to us suggest that per capita world wheat disappearance was lower in 1940-41 than it had been for two decades or more.

The low per capita disappearance figure for 1940-41 mainly reflected restriction of utilization of wheat under the influence of naval blockade in Continental Europe ex-Russia. There, feed use of wheat was reduced to negligible proportions, and utilization of wheat for food was so sharply cut in certain countries that hunger and privation were common.

#### SEED, FEED, AND LOSSES

In spite of a striking reduction in seed use of wheat in Canada, the total use of wheat for seed was somewhat larger in 1940-41 than in the preceding year. Substantial increases occurred in the Danube basin and in importing Europe, where the acreage sown for harvest in 1940 had been abnormally small. Official seed indications for Canada and the United States and our own seed approximations for Australia and Argentina (Table XXVI) suggest that the four chief exporting countries combined used less than 140 million bushels of wheat for seed for the first time since 1923-24. In the world ex-Russia, as a whole, we hazard the guess that between 430 and 435 million bushels of wheat were so utilized, or somewhat less than on the average during the preceding decade.

Our corresponding guess at feed use of wheat in 1940-41 is 200 to 225 million bushels. Drastic reductions in feed use in Europe were largely offset by relatively heavy feeding in North America. Official estimates for the United States and Canada, published in the spring of 1941,<sup>1</sup> indicate comparatively heavy feeding of wheat in both countries, with relatively the greatest increase over earlier years in Canada.

At 53 million bushels, the Canadian estimate of merchantable and unmerchantable wheat fed on farms where grown was the highest ever reported. As compared with the two preceding years, the entire increase came in the Prairie Provinces, where wheat feeding was practically doubled.<sup>2</sup> The heavy wheat-feed figure for Canada mainly reflected increased feeding of livestock for domestic con-

sumption and shipment to Britain. There was no encouragement to wheat feeding either through poor crops of feed grains or through low grading of domestic wheat. The feed-grain crops were of good size and less than the usual amount of wheat graded No. 4 or lower.

The large "residual" utilization figure shown for Canada for 1940-41 in Table XXVI might be interpreted to suggest extraordinarily heavy purchases of wheat for commercial feed use. Some five million bushels of this, however, is apparently due to overestimation of the 1940 Canadian crop,<sup>3</sup> and another 8 million reflects the wheat shipped to United States ports and stored there without being recorded in customs reports (p. 149 n). After deduction of 13 million bushels, the Canadian "residual" figure for 1940-41 would still be above average, but only moderately so.

In the United States, the amount of wheat fed on farms where grown in 1940-41 is estimated at 100 million bushels.<sup>4</sup> This figure is a little above the corresponding estimate for 1939-40, but it is far below the record of 174 million bushels in 1931-32. Moreover, the 1940-41 "residual" figure shown for the United States in Table XXVI suggests that commercial feed use of wheat was moderate. Domestic feed grains were in good supply in 1940-41 and, after October, corn and the other feed grains were not priced particularly high in relation to wheat.

Wheat is never fed in large quantities in either of the other two major exporting countries. In 1940-41, somewhat more wheat than usual may have been fed in Australia as the aftermath of serious drought, which dried up pastures. In Argentina, overabundant sup-

<sup>1</sup> U.S. Dept. Agr., Agricultural Marketing Service, *Farm Production, Farm Disposition, and Value of Principal Crops, 1938-40*, April 1941, p. 2; and Canada, Dominion Bureau of Statistics, *Quarterly Bulletin of Agricultural Statistics*, April-June 1941, p. 109.

<sup>2</sup> Ontario, which normally accounts for almost half of Canada's total feed figure, is reported to have fed less wheat in 1940-41 than in either of the two preceding years and to have accounted for scarcely more than a fourth of the total.

<sup>3</sup> *Monthly Review of the Wheat Situation* (Canada), Aug. 25, 1941, p. 15.

<sup>4</sup> This estimate bore out well the early forecast of 107 million bushels by Nat C. Murray at the beginning of November 1940. Jackson & Curtis, *Monthly Grain and Cotton Report*, Nov. 1, 1940.

plies of corn and the liberal domestic sales policy of the GRB in respect to corn tended to keep wheat feeding to a minimum. But the wet harvest weather in Argentina in December-January 1940-41 presumably resulted in a very substantial amount of "tail" wheat, which was diverted to feed channels.

In Europe ex-Russia, wheat (and rye) feeding was undoubtedly further reduced in 1940-41 below the lowered level of 1939-40. The British government had moved to curtail the utilization of wheat for feed in 1939-40;<sup>1</sup> but the measures then adopted were mild as compared with those introduced during 1940-41. The Home Grown Wheat (Control) Order, effective September 2, 1940, provided that millable home-grown wheat should be used only for milling, seed, and poultry feed, and that the amount used for poultry feed should be limited in the case of flour millers to one-third of the quantity milled, and in the case of approved buyers who were not flour millers to the amount purchased from other approved buyers (exclusive of seed wheat) plus one-third of the quantity purchased directly from growers and sold to flour millers.<sup>2</sup> This order was soon supplanted by a more restrictive one, effective October 1.<sup>3</sup> The latter provided that millers might divert to poultry feed only one-ninth of the quantity of home-grown wheat they milled for flour, and that other approved buyers might similarly use or sell for poultry feed only one-ninth of the quantity they purchased directly from growers and turned over to flour millers plus all the wheat they purchased from other approved buyers. This regulation remained unchanged until March 17, 1941, when the Ministry of Food prohibited all feeding of millable wheat.<sup>4</sup>

<sup>1</sup> WHEAT STUDIES, December 1940, XVII, 193.

<sup>2</sup> A copy of the order is available in *Corn Trade News*, Sept. 11, 1940, p. 2. In addition to the millable wheat authorized for sale as poultry feed, the unmillable portion of the crop (perhaps amounting to 3 to 5 per cent or 2 to 3 million bushels) could be used for feed, as could also *salvaged* wheat that proved unfit for human consumption.

<sup>3</sup> For details of the order, see *ibid.*, Oct. 2, 1940, p. 2.

<sup>4</sup> *Ibid.*, Mar. 19, 1941, p. 2.

<sup>5</sup> On his return from England, R. M. Evans reported that in Liverpool only 3,000 out of 11,000 warehouses had completely escaped damage from bombs. *Southwestern Miller*, Oct. 14, 1941, p. 20.

Britain was one of the last European countries to prohibit wheat feeding. Similar measures, or controls that had the same effect, had previously been adopted in Eire and in practically all of the Continental countries ex-Russia. Probably in Europe ex-Russia (including the British Isles) the amount of wheat fed in 1940-41 was not over a third as large as on the average in 1936-37 and 1937-38, when world wheat supplies were relatively short and wheat was priced high in most markets.

Losses of wheat through destruction and deterioration were considerably heavier than usual in 1940-41, though they continued to represent a very small portion of the total world disappearance. The largest losses presumably resulted from sinkings of vessels en route to Europe (mainly to the British Isles) and from bombings of warehouses and mills in the United Kingdom. If, as we previously suggested (p. 154), some 7 to 9 per cent of the wheat shipments to the United Kingdom were sunk on ocean passage, the total quantity of wheat lost through sinkings may have come to 20 to 25 million bushels (including some wheat destined to Continental Europe). Bombing losses are much more difficult to estimate within any kind of a reasonable range. There is no question that British port warehouses and mills (p. 159) suffered serious damage from bombing in 1940-41.<sup>5</sup> The amount of wheat lost thereby, however, was perhaps not great, since the British government discouraged heavy storage of wheat at the chief centers of attack and, in any case, storage buildings can be badly damaged without destruction of the wheat they hold. Finally, the salvaging of bombed wheat under government orders assumed substantial proportions in 1940-41, though the amount salvaged has not been made public. On the Continent, some war destruction must have occurred in Greece, Yugoslavia, and German Europe, and, at the very end of the crop year, in eastern Poland, the Baltic states, and Bessarabia. Yet we infer that on the Continent, as a whole, relatively little wheat was lost as a result of war damage through July.

Losses through deterioration in storage were probably light in Europe, but heavy in the overseas exporting countries, where there

was pressure against crowded storage space and a substantial amount of grain was stored under unsatisfactory conditions.<sup>1</sup> In total, the losses of wheat through various kinds of destruction and deterioration may have approximated 40 to 60 million bushels in 1940-41 as compared with our corresponding guess of 30 to 40 million in 1939-40.

#### Food Use

In the four major exporting countries, per capita consumption of wheat flour probably remained about the same as in other recent years. Domestic retention of flour as wheat (Table XXVI) was somewhat increased in the United States but reduced in Canada.<sup>2</sup> The reduction in Canadian flour retention had been generally anticipated, following the building up of flour stocks in Canada during 1939-40.<sup>3</sup> But in terms of wheat grain, the reduction was perhaps even greater than expected, since it rested to some slight extent on a notably low requirement of wheat per barrel of flour.

The increased net retention of wheat flour in the United States mainly reflected, we believe, population growth and a moderate increase in total flour stocks (Table XXIV). On the other hand, city-mill stocks of flour on June 30, 1941 were smaller than they had been a year earlier (Table XIV), and there is a distinct possibility that at least part of the increase in net retention that we are inclined to credit to flour stocks went instead into consumption. This possibility is supported by two outstanding characteristics of the crop year 1940-41: (1) it was the first year in which large numbers of young men were called under the Selective Service Act to train for military service,<sup>4</sup> and (2) it was a year of markedly increased industrial employment.<sup>5</sup> These two factors may have combined to swell domestic consumption of wheat flour, but there is no clear evidence that they did.

Many flour millers and bakers in the United States hoped that domestic consumption of flour and bread would be stimulated by the introduction of enriched flour in the spring of 1941.<sup>6</sup> Since the United States crop year ends on June 30, this development could not have had much influence during 1940-41, and

its effect upon consumption still remains to be demonstrated. In the North, the movement to enrich flour and bread made more rapid headway than in the South; and by October 1941, when only about 10 per cent of the white bread sold by commercial bakers in the South was being enriched, the average for the whole country was 30 to 35 per cent.<sup>7</sup>

In spite of moderate flour exports, the total production of wheat flour in the United States was heavier in 1940-41 than in any year since 1931-32. Millfeed production was relatively low, mainly because the domestic crop was of such good quality that less wheat was required to produce a barrel of flour than in any of the preceding 18 years. Under such conditions of production, American mills might have been expected to make heavy profits. But in actual fact, the net profits of the larger mills were somewhat lower than the good profits of 1939-40.<sup>8</sup>

<sup>1</sup> In Argentina, there were heavy losses of corn through deterioration in storage (p. 137), but no serious complaints have been heard as regards deterioration of stored wheat. In Australia, old-Pool wheat is reported to have deteriorated so markedly that the AWB is trying to establish new depots for the new crop at least 5 miles away from any storage depot for old wheat (*The Land*, Sept. 26, 1941, p. 2). The abnormal Canadian wheat situation was almost certainly associated with unusually heavy losses through deterioration; and there were probably substantial losses in the United States, despite the finding of the CCC that only small quantities of stored loan wheat had seriously deteriorated during the crop year.

<sup>2</sup> Canadian flour mills produced more flour in 1940-41 than in any year since 1928-29, in reflection of a good export demand. The heavy production was reflected in large operating incomes, but net profits were reduced through increased taxes.

<sup>3</sup> WHEAT STUDIES, December 1940, XVII, 195.

<sup>4</sup> According to the Office of the Quartermaster General, the ordinary soldier eats 8 to 10 ounces of bread per day (*Northwestern Miller*, Sept. 3, 1941, p. 34). This is appreciably more than many of the men would eat at home.

<sup>5</sup> While expanded industrial employment is more clearly associated with increased purchases of meat, dairy products, and other higher-priced foods, there is some belief that more bread is used in times of industrial activity, because of the importance of sandwiches in the noon-day meals of employed workers.

<sup>6</sup> For a discussion of this development, see Alonzo E. Taylor, "Why Enrichment of Flour?" WHEAT STUDIES, November 1941, XVIII, 77-108.

<sup>7</sup> *Southwestern Miller*, Oct. 14, 1941, p. 22.

<sup>8</sup> *Ibid.*, July 29, 1941, p. 19; Aug. 5, 1941, p. 24. The same story of increased sales and reduced net

In Europe ex-Russia, some countries were well supplied with wheat and rye in 1940-41. Others had to contend with serious shortage of these cereals. Yet all felt the need to conserve bread-grain supplies, if only to insure "emergency reserves" for the future or to keep the burden on transportation facilities to a minimum. The amount of wheat alone that was saved for human consumption by restrictions in feed use (p. 163) may have considerably exceeded 50 million bushels. Other measures to conserve bread-grain supplies—milling controls and rationing—were widely adopted, particularly in Continental Europe. The stringency of these measures varied from country to country, but in the aggregate they were more important than the feeding regulations in conserving wheat.

In the British Isles crop-year wheat supplies were probably of record size, as is indicated by our rough quantitative approximation in Table XXV. Eire, however, was confronted with a shortage that became more apparent after December 1940, when that country refused the British government's request for bases. In January 1941, Eire was said to have on hand six months' supply of wheat, which had to be stretched over the remaining seven and a half months to harvest.<sup>1</sup> Several months later, the Minister of Supplies of Eire stated that current wheat stocks were about four weeks below requirements to September 30, despite the measures taken by the government to conserve wheat.<sup>2</sup> This situation seems to

profit is presented in the Federal Trade Commission's annual report for 1940 on the operations of nine of the largest flour milling companies. *Northwestern Miller*, Sept. 24, 1941, p. 10.

<sup>1</sup> Broomhall's *Corn Trade News*, Jan. 22, 1941, p. 1.

<sup>2</sup> *Southwestern Miller*, June 10, 1941, p. 41.

<sup>3</sup> Imports were limited by the critical shortage of shipping. To meet this problem, a commission was sent to buy ships in the United States. At least six were purchased, but only one was reported in operation before the end of July 1941. *New York Times*, Apr. 24, 1941, p. 7; June 20, 1941, p. 5; Aug. 31, 1941, sec. 5, p. 8; Sept. 10, 1941, p. 3.

<sup>4</sup> *Ibid.*, Jan. 1, 1941, p. 5.

<sup>5</sup> *Milling*, Feb. 22, 1941, p. 93.

<sup>6</sup> *Corn Trade News*, Apr. 30, 1941, p. 2.

<sup>7</sup> *Ibid.*, Aug. 13, 1941, p. 127.

<sup>8</sup> Statement of Major Lloyd George in Parliament on Sept. 30, *Milling*, Oct. 4, 1941, p. 152.

<sup>9</sup> *Northwestern Miller*, July 2, 1941, p. 53.

have been only slightly improved by subsequent importations,<sup>8</sup> though the transition to the new crop year was apparently made without serious difficulty. Eire's food situation was helped by the government's adoption of progressively higher extraction rates for wheat flour in the winter and spring of 1941 and by Eire's position as a surplus producer of potatoes, dairy products, and livestock. There was probably little decline in bread consumption in Eire in 1940-41, but wheat utilization for food was markedly reduced.

The wheat-supply position of the United Kingdom remained secure throughout the crop year, though British war reserves of wheat were probably relatively low at the end of February 1941, just prior to the heavy spring movement of wheat from Canada (p. 148). Aside from adoption of stringent feed regulations, the British government did little to conserve wheat supplies. The Minister of Food, Lord Woolton, appealed to the British people to learn to like potatoes instead of bread and to eat porridge instead of imported cereal.<sup>4</sup> In February, the Ministry of Food arranged for the voluntary production of bread made from National Wheatmeal (a flour of about 85 per cent extraction) and subsequently took steps to encourage voluntary consumption of that type of bread.<sup>5</sup> Finally, effective April 21, the minimum legal extraction rate for wheat flour was raised to 75 per cent,<sup>6</sup> at which figure it was probably still the lowest in Europe (see table, p. 166). These mild moves probably had little effect upon the utilization of wheat for food. It is true that the consumption of potatoes was later reported to have increased by more than 10 per cent,<sup>7</sup> and the output of National Wheatmeal bread rose steadily until it was reported at the end of September 1941 to represent 7½ per cent of the total bread produced.<sup>8</sup> But much more impressive was the statement of the Parliamentary Secretary of the Ministry of Food that the consumption of all types of bread had increased 20 per cent.<sup>9</sup>

The striking increase in consumption of bread and potatoes in the United Kingdom during 1940-41 well reflected the general food situation of that country. There were fewer types of foods available; imported fruits and

certain vegetables were scarce; sugar, meat, bacon, butter, margarine, and cheese supplies were short and subject to ration; and the supply of liquid milk was insufficient to cover the increased demand. But the commoner foods were both plentiful and cheap; and probably largely because of this fact, Lord Woolton was able to report to the British people in September 1941: "I am assured by competent medical and nutritional experts that we have never been in better health for years."<sup>1</sup>

With a view to promoting public health, the British government had decided during the preceding crop year on a policy of government-subsidized fortification of all white flour with vitamin B<sub>1</sub> and calcium.<sup>2</sup> Various problems of vitamin manufacture and supply delayed inauguration of the program, and not until late June 1941 was the first widescale distribution of fortified flour attempted.<sup>3</sup> Even then, the distribution was confined to South Wales; and the area served may not have been much further extended before the end of July.<sup>4</sup>

On the Continent, the wheat-supply position varied from one country to another, but almost every country enforced more restrictive milling measures than did the United Kingdom. The accompanying table shows for specified months since December 1939 such information as is available for representative wheat-consuming countries on the two major types of wheat-milling regulations in force in Europe ex-Russia. Since accurate information

#### MINIMUM EXTRACTION RATES AND ADMIXTURES REQUIRED FOR WHEAT FLOUR IN CERTAIN EUROPEAN COUNTRIES AT SPECIFIED DATES\*

(Percentage of wheat grain extracted in flour; percentage of other flour or potatoes required in wheat flour)

##### A. MINIMUM EXTRACTION RATES

Country	Dec. 1939	Dec. 1940	Apr. 1941	July 1941
U. Kingdom ....	70, 73 <sup>a</sup>	70, 72 <sup>a</sup>	75	75
Eire .....	none	75	95	95
Switzerland ....	80	85	85	85
Greece .....	85, 95	90	90	.. <sup>b</sup>
Germany .....	78-80 <sup>c</sup>	.. <sup>d</sup>	.. <sup>d</sup>	.. <sup>d</sup>
Italy .....	78	80	80	80
France .....	.. <sup>d</sup>	.. <sup>d</sup>	85	85
Belgium .....	none <sup>f</sup>	85	85	85
Hungary .....	none	82, 85	82, 85	82, 85
Yugoslavia .....	none	80	80	.. <sup>b</sup>
Rumania .....	none	none <sup>f</sup>	.. <sup>d</sup>	.. <sup>d</sup>

##### B. COMPULSORY ADMIXTURE REQUIREMENTS

Country	Dec. 1939	Dec. 1940	Apr. 1941	July 1941
U. Kingdom ....	none	none	none	none
Eire .....	none	none	none	none
Portugal .....	15C <sup>b</sup>	18C <sup>b</sup>	18C <sup>b</sup>	18C <sup>b</sup>
Switzerland ....	none	..R <sup>d</sup>	5R	5R
Germany .....	10R	7R	{ 15R 5P <sub>2</sub> }	15R
Italy .....	none	25C	25C	30CD <sup>f</sup>
France .....	none	5R	5-15RCB <sup>k</sup>	5-15RCB <sup>k</sup>
Holland .....	none	... <sup>i</sup>	{ 25R 10B 15R }	25R 10B 15R
Slovakia .....	... <sup>i</sup>	50R	{ 10P <sub>1</sub> 20B }	10P <sub>1</sub> 20B
Hungary .....	none	15-25P	{ 15-25P 20C }	15-25P
Yugoslavia .....	none	30C	30C	.. <sup>b</sup>
Rumania .....	none	none	25C	45C
Bulgaria .....	none	15C	30C	30C

\* Data from U.S. Department of Agriculture, trade sources, and newspapers. Admi. designated as follows: R, rye flour; C, corn flour; B, barley; P<sub>1</sub>, potato flour; P<sub>2</sub>, potato starch; L, lupine; D, dextrin; CD, cooked potatoes; P, potato; S, soybeans; M, malted barley; B, barley.

<sup>a</sup> Lower rate for domestic wheat; higher for imported.

<sup>b</sup> Probably higher than last rate specified, but detailed information is not available.

<sup>c</sup> Last rate reported was 78-80 in 1939; the current rate is almost certainly higher, but no details are available.

<sup>d</sup> Specific weight (kilograms per hectoliter) plus 2 points.

<sup>e</sup> Rate raised—apparently to specific weight plus 5 points.

<sup>f</sup> Probably no legal requirement, but this is not certain.

<sup>g</sup> Specific weight plus 8 points.

<sup>h</sup> Requirement for "standard" bread, which constitutes about 80 per cent of total bread consumed.

<sup>i</sup> Percentage unspecified.

<sup>j</sup> Thirty per cent corn and rice (5 to 12 per cent may be rice) must be mixed with 70 per cent wheat flour and cooked potatoes (latter permitted up to 25 per cent).

<sup>k</sup> Rate and cereal required vary according to locality.

<sup>l</sup> We have no information on the requirement in force.

<sup>1</sup> *New York Times*, Sept. 14, 1941, Sec. 1, p. 14.

<sup>2</sup> This policy was announced to Parliament on July 19, 1940.

<sup>3</sup> On June 25, 1941, the Parliamentary Secretary of the Ministry of Food announced: "Flour millers supplying flour to the whole of South Wales have commenced the fortification of . . . white flour with vitamin B<sub>1</sub>. The area over which fortified white flour will be delivered will be extended rapidly with the increase of supplies of vitamin B<sub>1</sub> . . ." *Milling*, July 5, 1941, p. 1.

<sup>4</sup> Indeed, although there was further extension of the area of distribution over the next few months, the Parliamentary Secretary of the Ministry of Food stated on Sept. 30, 1941: "It is not possible, at present, to give a reliable estimate as to when all the white flour sold in this country will be fortified with aneurin, synthetic vitamin B<sub>1</sub> . . . I am not in a position at present to make any further statement as to when or in what form and what quantity calcium will be added to the fortified loaf." *Ibid.*, Oct. 4, 1941, p. 152.

is difficult to obtain under war conditions, some of the figures given in the table may be in error; but they portray reasonably well the general situation in Europe as a whole.

Up to the outbreak of war in September 1939 very few European countries specified minimum extraction rates for wheat or required other cereal flours or potatoes to be mixed with wheat flour for breadmaking. By December 1939, when practically all European countries had their first wartime controls in operation, legal minimum extraction rates were more common, but there had been almost no further extension of compulsory admixture regulations. Germany's invasion and rapid conquest of the Low Countries and France in the following spring and summer, and the short wheat harvests gathered throughout Europe in 1940, clearly established the need for further economies in wheat utilization—especially in German-occupied countries that had previously relied heavily on wheat imports. Minimum extraction rates were extended and raised, and compulsory-admixture requirements were widely adopted prior to December 1940. Thereafter, changes in these regulations were confined to fewer countries, with practically all alterations designed to obtain increased amounts of bread flour from given amounts of wheat.

In the late spring and early summer of 1941, the lowest legal minimum extraction rate in Europe was apparently the 75 per cent specified in the United Kingdom.<sup>1</sup> Germany's and Italy's legal minimum rates may not have exceeded 80 per cent, but most of the remaining Continental countries enforced minimum rates of 85 per cent or above. Eire apparently required the highest minimum extraction in Europe—95 per cent—though in parts of Spain, Poland, and Greece whole-grain flour (100 per cent extraction) was apparently all that was obtainable.

In July 1941 most of the wheat-consuming countries of continental Europe were requiring 15 to 20 per cent admixtures of other cereals and potatoes in wheat flour, and the

admixture provisions of Holland, Rumania, and Slovakia were even more rigorous. The highest admixture rates were in force in the Danube Basin, Holland, Slovakia, and Italy, where wheat supplies were low and domestic corn or rye was available for mixing purposes.

In a number of countries, including Spain, Greece, Poland, unoccupied France, and even Italy, the bread actually obtainable in many areas apparently contained heavier admixtures of non-bread-grain substances than the national admixture provision specified. For Spain (not included in the above table) information is lacking as to official admixture requirements. But the content of bread flour in Spain apparently varied markedly from district to district, with Spanish millers adding to their flour large quantities of corn, barley, or whatever else was available. One news dispatch from Spain stated that the relief bread distributed by the American Red Cross in Barcelona contained 50 per cent wheat flour in contrast with the usual bread types that had recently contained only 10 to 30 per cent wheat flour.<sup>2</sup> Another dispatch reported that the bread sold in Madrid had "the consistency of concrete" and that the flour used for bread purposes was "supposed to be composed mostly of ground-up chick-peas mixed with barley, rye, or some such cereals."<sup>3</sup> With all necessary allowance for possible exaggeration and misinformation, these and other reports clearly indicate that in the principal cities of Spain the common bread flour contained a substantially larger percentage of non-wheat substances than was legally required in any of the countries for which legal admixture requirements are specified in the above table.

For the Scandinavian countries, Finland, and Poland (excluded from the table because they are primarily rye-consuming countries) the extraction rates and admixtures required in the production of standard rye flour are of major importance. In most of these countries fairly high minimum extraction rates for rye were in force, with a maximum of 98 per cent in Finland from June 1941.<sup>4</sup> During most of the crop year, rye flour milled in Sweden legally had to contain 15 per cent of wheat or barley; that produced in Denmark had to contain 10

<sup>1</sup> Prior to April 21, the British rate was three points lower than this.

<sup>2</sup> *New York Times*, Mar. 18, 1941, p. 3.

<sup>3</sup> *Ibid.*, Feb. 7, 1941, p. 3.

<sup>4</sup> *Foreign Commerce Weekly*, Sept. 20, 1941, p. 15.

per cent of wheat; and that produced in Norway apparently had to contain a substantial amount of potatoes. Specific information for Poland is lacking.

In addition to the stringent milling provisions considered above, and minor baking regulations (p. 117), most Continental countries attacked the problem of wheat and rye consumption directly, by imposing limitations on the quantity of bread and flour that each person could buy. The specific rations that appear to have been in force in various months since the outbreak of war in September 1939 are shown in the following table. In spite of great care, these figures may be partly in error; but we believe that they accurately present the broad outlines of the rationing picture in Europe ex-Russia.

In the early months of the present war, bread was rationed only in Greater Germany (as a precautionary measure) and presumably in German-occupied Poland. By December 1940, however, bread rationing had been widely extended throughout Continental Europe, and the German bread ration had been reduced. At that time only Portugal, Italy, Switzerland, and Greece in Continental Europe ex-Danube ex-Russia sold bread in unlimited quantities without ration cards; and at least three of these four countries rationed pastes and/or flour. Over the next seven months, five of the ten countries that had rationed bread in December 1940 were forced to reduce their rations, and Greece (after her invasion by German troops) was added to the group of bread-rationing countries.

The milling regulations and bread rations of the various Continental countries afford some clue to the general bread position of the different countries; but because prewar bread consumption varied so widely over Continental Europe, these regulations alone do not afford an adequate basis for judgment.

In actual fact, bread supplies were seriously deficient during the last months of 1940-41 in Greece, Poland, Spain, and Belgium, and somewhat short in at least parts of France, Norway, Finland, and Italy. The situation in each of these countries differed considerably from that in any of the others.

Up to the time of the German invasion,

EUROPEAN BREAD RATIONS (FLOUR INCLUDED), PER CAPITA FOR ADULTS FROM DECEMBER 1939\*

(Ounces per week)

Country	Dec. 1939	Dec. 1940	Apr. 1941	July 1941
UNITED KINGDOM AND NEUTRALS				
U. Kingdom..	Free	Free	Free	Free
Eire .....	Free	Free	Free <sup>a</sup>	Free <sup>a</sup>
Switz. Bread.	Free	Free	Free	Free
Flour..	12 <sup>b</sup>	14 <sup>b</sup>	8 <sup>b</sup>	6 <sup>b</sup>
Portugal ....	Free	Free	Free	Free
Sweden .....	Free	65-97	65-97	57-75 <sup>c</sup>
Finland .....	Free	62-148	62-148	49-106
Spain .....	Free	37	20-43	20-43 <sup>d</sup>
AXIS AND OCCUPIED AREAS				
Italy Bread..	Free	Free <sup>e</sup>	Free <sup>e</sup>	Free <sup>e</sup>
Flour..	Free	17 <sup>b</sup>	17-22 <sup>b</sup>	17-22 <sup>b</sup>
Germany ....	86-170	80-165	80-165	80-165
Netherlands ..	Free	84-168 <sup>e</sup>	84-168 <sup>e</sup>	84-168 <sup>e</sup>
Denmark ....	Free	71-97(18) <sup>f</sup>	83-132(17) <sup>f</sup>	83-132(17) <sup>f</sup>
France .....	Free	87-111	59-80	68-86
Norway .....	Free	73-122 <sup>g</sup>	73-122 <sup>g</sup>	64-120 <sup>g</sup>
Belgium .....	Free	56-112	56-112	56-112
Poland .....	... <sup>h</sup>	49, 55 <sup>i</sup>	49, 55 <sup>i</sup>	49, 55 <sup>i</sup>
Greece .....	Free	Free <sup>j</sup>	73 <sup>j</sup>	47 <sup>j</sup>

\* In so far as possible, these figures represent *total* rations for bread, baked goods, flour, groats and pastes, all in terms of bread. Ranges indicate the different rations allowed to "normal" consumers (low) and "very heavy workers" (high) except for Spain, where the lower limit represents the ration allowed the highest-income group, and the upper limit the ration allowed the lowest-income group.

<sup>a</sup> Bread rationed on a national basis only in restaurants. In northern Italy restrictive local rationing by June.

<sup>b</sup> Flour, pastes, and maize flour, without conversion to bread equivalents; for Italy also includes rice.

<sup>c</sup> Including oatmeal, etc.

<sup>d</sup> Ration in Madrid reported at 10-21 ounces in June.

<sup>e</sup> Wheat-products ration; higher alternative rye-products ration was available.

<sup>f</sup> Figures in parentheses show the ration for wheat bread included in the total.

<sup>g</sup> In December 1939, flour rationed at 82 oz. to prevent hoarding; later rations cover also peas, beans, rice, potato flour, etc.

<sup>h</sup> Bread and flour probably rationed, but amount unknown.

<sup>i</sup> Two reported Warsaw rations which probably do not represent the complete range for that city.

<sup>j</sup> Macaroni rationed in Athens area at 2.5 ounces per week in December 1940; later ration figures are for Athens, Patras, and Salonika.

Greece's food position was fairly secure, in spite of high prices and certain food shortages. This situation changed rapidly after the entrance of German troops into Greece. Active warfare and German confiscation of gasoline supplies, trucks, and draft animals completely disrupted the country's transport system; and fruit and potato crops in certain parts of the

country were left to rot on the ground because no means of transport were available. German authorities commandeered all sorts of food supplies, including bread, flour, and wheat. As in Poland, the German confiscation appears to have proceeded without any attempt to leave even the minimum essentials in the way of food to the hungry citizens. With regard to Greece, as earlier to Poland, German authorities openly commented on the need to reduce the native population. With Germany in control of Greece, Britain extended her naval blockade to that country and thus cut off needed imports of wheat and other food. The situation was further worsened when Germany gave a large portion of the northern wheat-growing area of Greece to Bulgaria, though this action held implications that were more serious for 1941-42 than for 1940-41. During the past crop year as a whole, bread consumption was not heavily reduced in Greece and even the utilization of wheat was less strikingly reduced than in several other countries. But because other food supplies were short, and in the last quarter of the year poorly distributed, the need for bread was greater than usual. In May-July 1941, the food situation in the leading cities was extremely critical: the bread ration had been reduced to less than 7 ounces a day in late April and even this short ration was not always obtainable. Other food supplies were even more deficient. The result was widespread hunger and some starvation; but the starvation seems not to have approached famine proportions during 1940-41.

In German Poland (including the General Government) there was a serious food problem throughout 1940-41, a problem largely of German creation. The segregation of the General Government area—apparently in prewar years a deficiency area—and continued German confiscation of food supplies throughout the whole of German Poland led to a serious shortage of food for the native population. As a part of German policy, differential rations were established for Germans, Poles, and Jews;<sup>1</sup> and the levels of the rations differed markedly from district to district. Supplies were often not adequate to cover the rations; and some of the scarcer foods were distrib-

uted in small amounts at irregular intervals, with none going to the Poles or Jews. In general, the Polish food situation in 1940-41, though critical, was perhaps somewhat better than it had been immediately after Germany's conquest in the preceding year. The Germans in the area probably got along fairly well, though not so well as if they had lived in Germany. In the cities the Poles and Jews received practically no fats or milk and little meat; their bread rations were small and often not fully obtainable; and even oatmeal and barley groats were distributed in inadequate amounts. Many of the poorer people suffered serious privation and hunger, and rumored death rates were high, especially in Warsaw's ghettos.<sup>2</sup> Germany's policy of liquidation of "unneeded" Jews and Poles thus proceeded apace.

Belgium's food position was only a little less critical than that of Poland or of Greece; but Germany did much more to relieve the strain in Belgium. That country, normally heavily dependent upon imported cereals for food and feed, was placed in a most vulnerable position when her access to overseas grain was cut off. Almost immediately, Belgian authorities took measures to stretch the available inadequate supplies of bread grain and to cut livestock numbers to manageable proportions. Part of the slaughtered livestock went to ease Belgium's difficult food position; but apparently the greater portion went to Germany through confiscation or "purchase." Belgium soon began to ration potatoes, mainly because her 1940 potato harvest was poor, but partly because the marketable supply was cut down by hoarding and shipments to Germany.<sup>3</sup> Indeed, as the situation developed, the existing supplies of potatoes proved inadequate to cover the current rations (about a pound daily in the early winter). Various other food ra-

<sup>1</sup> For example, in German-occupied Lodz, rations for the week ending February 2 were reported for Germans and Poles as follows by the Polish Information Center (*New York Times*, Feb. 16, 1941, Sec. 1, p. 25):

Group	Meat (oz.)	Apples (lbs.)	Butter (oz.)	Eggs (no.)	Jelly (oz.)	Honey (oz.)	Oatmeal (oz.)
Germans	17	2½	7	1	7	3½	3½
Poles ...	5½	0	0	0	0	3½	3

<sup>2</sup> *Time*, Dec. 15, 1941, p. 67.

<sup>3</sup> See *Corn Trade News*, Oct. 30, 1940.



tions, also, were often unobtainable, and "black markets" thrived.

For a time, in mid-winter, Belgian authorities evinced great concern about the inadequacy of existing bread-grain supplies; and in the United States, Belgium's potentially difficult position was stressed by ex-President Herbert Hoover, who urged that the British blockade be relaxed to allow overseas shipments of food to Belgium and other small democracies of northern Europe.<sup>1</sup> British officials announced that such shipments would bring indirect aid to Germany and thus operate against Britain's war efforts.<sup>2</sup> Meanwhile, Belgian officials were having some success in obtaining food supplies from other Continental European countries; and during January-July substantial quantities of wheat, rye, and potatoes were imported from occupied France, Germany, Holland, and Russia. These imports were mainly German-sponsored and apparently in fulfillment of the assurances given the Belgian government by Germany in mid-January that she "would deliver the necessary additional quantities of grain for bread and raw materials, provided Belgian authorities as well as Belgian producers and consumers fulfilled their obligations toward the common weal."<sup>3</sup>

Whether Germany's less wanton role in Belgium is thus mainly to be ascribed to Belgium's co-operation with Germany—probably mainly in the industrial field—is not clear; but there is little question that Germany's food policy in Belgium differed from her policy in Poland and Greece. In Belgium, the German-sponsored imports did not prevent substantial hunger and distress nor the spread of vitamin-deficiency disorders; but conditions as bad as Germany allowed to exist in Poland and Greece were apparently averted in Belgium

through German intervention. The imports did not prevent a marked reduction in Belgian bread consumption in 1940-41, even with the quality of the bread greatly lowered. Moreover, wheat utilization for food was reduced much more sharply than the consumption of bread, in spite of moderate savings through prohibition of wheat feeding.

Spain's difficult food position in 1940-41 arose mainly as the aftermath of civil war and as the result of unusually bad crop weather during 1939-40. As a "neutral," Spain was permitted to import overseas grain supplies under British navicerts; but her imports were limited by scarcity of foreign exchange and shipping facilities, if not also at times by British policy. The total quantity of wheat available to Spain during 1940-41 was far below normal; and in spite of the addition of various kinds of grain and other food substances to bread flour, the supply of bread was critically short in the face of an expanded demand. Even the small quantities specified on the ration cards were not always obtainable. The general food deficiency resulted in widespread suffering and some starvation, with these effects most prominent in the late winter and early spring. The situation was relieved in part by spring shipments of grain from Argentina, but more definitely after the early vegetable and fruit crops began to move to market in May-June.

In France, substantial food shortages were evident in both the occupied and unoccupied areas. In the occupied zone, potatoes and meat were most notably short—too short to cover the specified rations—while in the unoccupied area bread-grain supplies were most seriously deficient. France, normally about self-sufficient in agricultural products, faced food difficulties in 1940-41 because (1) her available food supplies could not move freely across the German-established boundary between the occupied and unoccupied zones, (2) the French transportation system, disrupted by warfare, was further weakened by German requisitioning of rolling stock,<sup>4</sup> trucks, gasoline, and other needed equipment, and (3) German authorities requisitioned and "purchased" large quantities of French food. It is true that France had inferior to poor food crops in 1940,

<sup>1</sup> For Mr. Hoover's position and proposals, see *New York Times*, Aug. 12, 1940, p. 8; *ibid.*, Nov. 16, 1940, p. 6; *Collier's*, Nov. 23, 1940, pp. 12, 69-72; *New York Times*, Feb. 17, 1941, pp. 1, 6.

<sup>2</sup> For an official statement on Britain's blockade policy, see *New York Times*, Mar. 10, 1941, p. 6.

<sup>3</sup> *Ibid.*, Jan. 19, 1941, p. 17, citing a German news agency announcement of the preceding day.

<sup>4</sup> Over 40 per cent of all French freight cars are reported to have been requisitioned by German officials and moved to Germany. *Foreign Crops and Markets*, Supp., May 27, 1941, p. 789.

but in spite of this handicap, the French population might have been adequately fed, if France had not been artificially divided and if she had not had to release transportation equipment and food to Germany.

As the French food position became increasingly acute, officials of the Vichy government appealed to America for bread grains. In mid-February, the Minister of Supplies stated that French bakeries would be forced to close about April 15 if France could not obtain by then 500,000 to 600,000 tons of wheat from the United States.<sup>1</sup> For a while it looked as if American supplies might be forthcoming in considerable quantity. Then the Vichy government moved in the direction of greater cooperation with Germany, and the terms of the German-sponsored trade agreement between the occupied and unoccupied zones were made public (p. 157). America's official interest in France's difficulties promptly declined.

Over the next few months, the French food position showed signs of further deterioration, especially in the unoccupied territory: the Vichy government sharply reduced the bread ration in the unoccupied zone at the beginning of March and arranged for a similar reduction in the occupied area in April. The new low bread rations caused great hardship, since potatoes and other foods were also in short supply. News dispatches reported increasing evidences of hunger, though nowhere does the situation seem to have been so acute as in Poland, Spain, or later in Greece. At the beginning of June, the French bread ration was raised moderately as a result of wheat shipments from the new large harvests in North Africa (p. 153) and from German-requisitioned stocks in the occupied zone. Thus the most critical phase of France's food shortage seems to have passed by June 1, though even then bread rations and bread consumption remained below normal, with wheat utilization still farther below other recent years.

The bread shortages apparent at the end of the season in Norway, Finland, and Italy do

not warrant detailed comment. In none of these countries does there appear to have been widespread *acute* hunger, though at least in Norway and Finland many people had to get along on fewer calories than usual. The food position of Norway was favored by abundant domestic supplies of potatoes and fish. Although these were requisitioned in part for shipment to Germany, the supplies that remained helped to offset Norway's deficiency of bread grains.<sup>2</sup> Finland profited until late June by her position as a neutral, importing essential overseas food supplies to the extent that she could secure shipping for them. In both Norway and Finland, reduced bread consumption mainly implied reduction in utilization of rye rather than wheat. In fact, there is some reason to suppose that human consumption of wheat was not sharply reduced.

Italy seems to have faced no serious problems of bread supply until almost the end of the crop year. Only macaroni and flour were rationed—a situation that presumably resulted in heavily reduced consumption of wheat in the south, where macaroni is most widely used. The northern districts felt the pinch of reduced bread-flour supplies mainly during May–July, when the amounts of flour allotted to bakeries for bread are reported to have been far below normal.<sup>3</sup> Moreover, during June–July drastic *local* rationing of bread was reported from some districts in the north.<sup>4</sup> During the crop year as a whole, wheat utilization in Italy was probably considerably reduced, but with little if any reflection in bread consumption. This was mainly due to stringent milling regulations and rationing of pastes and flour.

In the remaining countries of Continental Europe ex-Russia—Germany, Sweden, Denmark, Holland, Switzerland, Portugal, and the four Danube countries—bread, potatoes, and most other basic foods seem to have been in reasonably adequate supply in 1940–41. Many of the choicer foods, normally available, were exceedingly scarce or unobtainable; and there was a more or less general shortage of meats and fats that was offset for a while by abnormal slaughterings. We hazard the guess that in most of these countries *bread* consumption was maintained or expanded in

<sup>1</sup> *St. Galler Tagblatt*, Feb. 19, 1941.

<sup>2</sup> Moreover, Norway was said to have received some bread grain from Sweden, Russia, and Germany.

<sup>3</sup> *Foreign Crops and Markets*, July 21, 1941, p. 82 n.

<sup>4</sup> *Ibid.*, p. 77.

1940-41. Data are available to show that Germany's flour and bread consumption was increased by 8 per cent and her potato consumption by 14 per cent during the first year of the war,<sup>1</sup> and we infer that these increases were maintained or augmented in 1940-41.<sup>2</sup> Roughly similar conditions of food supply in most of the other countries of this group (scarcity of meats, fats, and certain dairy products, and adequate supplies of potatoes and bread grains) were presumably associated with similarly heavy consumption of bread and/or potatoes. This tendency may not have been apparent, however, in Rumania and Yugoslavia, where consumption of corn may have increased at the expense of wheat bread.

Maintenance, or even expansion, of bread consumption in these countries may have taken place in the face of reduction of utilization of either or both of the principal bread grains. We are inclined to guess that *wheat* utilization for food was sharply reduced from 1938-39 and 1939-40 in Holland, Rumania, Yugoslavia, and probably Hungary; reduced little, if at all, in Denmark, Sweden, Switzerland, Portugal, and Bulgaria;<sup>3</sup> and actually increased in Germany. Reportedly to combat the increase that had recently taken place in the consumption of wheat bread and mixed wheat-rye bread, as contrasted with pure rye bread, the German government introduced last April new bread-ration cards that specified that certain coupons (marked "R") could be used only for the purchase of rye bread or rye-flour products. The proportion of "R" coupons on the ration cards varied from one

region to another and was highest in those regions that had most recently shifted from rye bread to mixed or wheat bread.<sup>4</sup>

In the Orient, serious shortage of rice in the Japanese empire tended to swell the demand for wheat flour for noodles and bread. The Japanese government, unable to meet this demand in full, assumed increased control over the distribution of flour supplies; and various local governments resorted to flour rationing. In February, the United States Department of Agriculture reported: "A recent survey by the Home Ministry shows that many towns and villages in Japan proper have worked out local rationing systems for various commodities. Wheat flour is reported to be sold by ticket in 399 villages and noodles in 24."<sup>5</sup> On April 25 flour rationing was introduced in Tokyo. Later, bread-rationing may also have been adopted, with each family allowed about a half a pound of bread per week.<sup>6</sup> But since relatively little flour is consumed in the form of bread in Japan, this step would have been less important than the earlier rationing of flour. In total, Japan's consumption of wheat was probably relatively high in 1940-41, though less high than the official crop figure and our estimate of Japanese exports might seem to imply. Manchukuo, on the other hand, apparently consumed less wheat than in other recent years, largely as a result of reduced imports. Her short supplies were met by flour-rationing late in the crop year.<sup>7</sup>

#### CARRYOVERS

With world wheat supplies of near-record size in 1940-41 and disappearance appreciably below average, the world wheat carryover was markedly increased during the crop year. As of August 1, 1940 year-end wheat stocks had stood higher than ever before, and their increase during 1940-41 placed them at a new record peak (Chart 17).

Although the world carryover of 1941 was perhaps about 150 million bushels larger than that of 1940, old-crop stocks of wheat were sharply reduced in Europe and French North Africa and in Australia. In all other major positions increases were recorded.

At 480 million bushels, the Canadian wheat carryover in North America was far above

<sup>1</sup> Other comparisons with the last year of peace are as follows: total calories consumed rose by 450; sugar consumption rose 7 per cent; meat consumption declined 11 per cent; fat consumption declined 16 per cent. *Frankfurter Zeitung*, Feb. 19, 1941.

<sup>2</sup> The consumption of potatoes was certainly increased. One estimate indicates that the consumption of potatoes for food in 1940-41 was 25 per cent above recent peace years, while another estimate indicates a rise of 83 per cent. *New York Times*, Sept. 18, 1941, p. 5, and *Neue Zürcher Zeitung*, Sept. 19, 1941.

<sup>3</sup> Denmark, Sweden, Switzerland, and Portugal were able to maintain their normal diets better than other Continental countries, including Germany.

<sup>4</sup> *Deutsche Allgemeine Zeitung*, Mar. 29, 1941; *Der Führer*, Mar. 29, 1941.

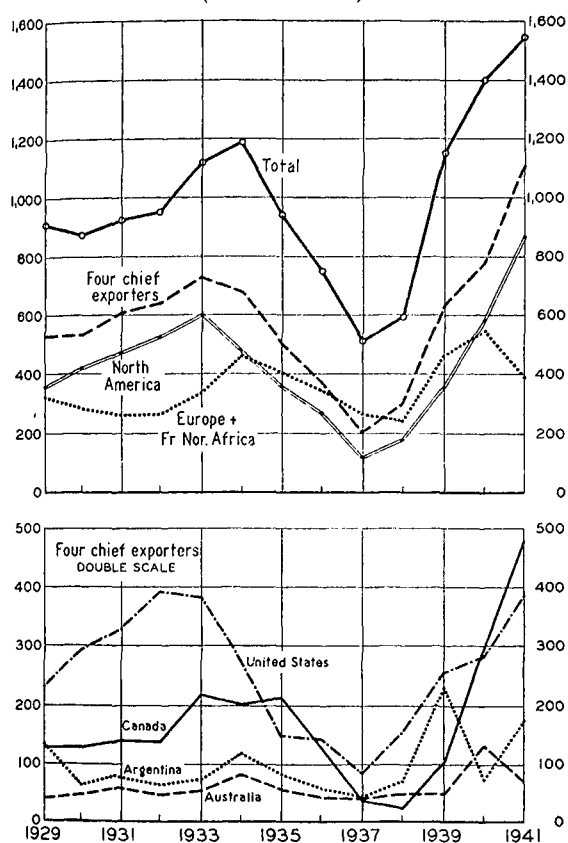
<sup>5</sup> *Foreign Crops and Markets*, Feb. 24, 1941, p. 245.

<sup>6</sup> *Ibid.*, June 23, 1941, p. 995.

<sup>7</sup> *Idem.*

that of any earlier year (Table XII). United States stocks as of July 1 were also exceedingly heavy, but they had been at least equally heavy nine years earlier. The North American total—an aggregate of official estimates—was 867 million bushels, as compared with a

CHART 17.—WHEAT STOCKS EX-RUSSIA, EX-ASIA, AS OF ABOUT AUGUST 1, 1929-41\*  
(Million bushels)



\* Data in Tables XII and XIII. Mainly our estimates except for the United States (as of July 1) and Canada.

previous record of 600 million in 1933. Complete official stocks estimates are not available for Argentina and Australia as of August 1; but we have tentatively placed these stocks at 175 and 70 million bushels, respectively, on the basis of a semiofficial "commercial" stocks figure of 161 million bushels for Argentina, and reported holdings of 67 million bushels by the AWB in late July.<sup>1</sup>

In the aggregate, the four major exporting countries apparently held over 1,100 million bushels of wheat on about August 1, 1941—an amount larger than any *world* carryover

prior to 1933. Moreover, if our stocks estimates for Europe and French North Africa are not too seriously in error, the four major exporting countries held a larger proportion of the world's wheat stocks in 1941 than they had in any year of the preceding two decades. Such stocks naturally presented serious problems with regard to their storage; but under existing war conditions, they appeared much less burdensome than they would have in peacetime.

The time had not come to regard such large stocks as a benefit, but there was increasing recognition that the future might still prove them so. If the war is sufficiently prolonged, these stocks may all be seriously needed. In any case, a large portion will be used at the end of the war for postwar relief distribution in Europe. Partly to make plans for the storage of wheat for such relief purposes, the Department of State of the United States called a conference of government representatives from Argentina, Australia, Canada, the United Kingdom, and the United States to meet in Washington on July 10, 1941. The conference temporarily adjourned on August 3, without making public its deliberations or accomplishments.<sup>2</sup> Apparently three major problems were considered—all bearing on the existing large stocks of exporting countries: (1) postwar relief exports, (2) plans for sharing the world export market after the war, and (3) wheat acreage control.

The greater portion of the old-crop wheat stocks of the four major exporting countries in 1941 was held by government agencies—mostly in what amounted to producers' pools. In Australia, the AWB presumably held about 65 million bushels; the Argentine GRB owned something like 125 million; the CWB may have held about two-thirds to three-fourths of the Canadian carryover; and in the United States, the CCC held 170 million bushels "pooled" and 38 million under loan, while the FCIC carried 12 million in insurance reserves.

In Europe, British wheat stocks were al-

<sup>1</sup> For a discussion of these estimates, see our last survey of the wheat situation, *WHEAT STUDIES*, September 1941, XVIII, 16-17.

<sup>2</sup> It subsequently reconvened Oct. 14, 1941. See L. A. Wheeler, "Agricultural Surpluses in the Postwar World," *Foreign Affairs*, October 1941, esp. pp. 88-90.

most certainly of record size on August 1, 1941. In late June, the Minister of Food reported that British wheat stocks were greater than they had been at the same time in 1940; and on September 23, he announced that reserve wheat stocks in the United Kingdom were the largest on record.<sup>1</sup> In contrast, Eire's stocks were below normal (p. 165).

We know considerably less about the level of wheat stocks in Continental Europe, though certain points are clear. For example, there is no doubt that wheat carryovers were far below normal in Spain, Belgium, Poland, and Greece, and at definitely low levels in Norway, Finland, Denmark, Slovakia, and probably the Netherlands and Portugal. Moreover, Swedish *bread-grain* supplies were expected to be reduced to about 125,000 tons (less than 5 million bushels of 60 pounds) at the end of August 1941, as compared with 375,000 tons (13.8 million bushels) in the preceding year;<sup>2</sup> and Swiss wheat reserves, that reportedly had represented 4 to 6 months' requirements in 1940, were drawn down to a more normal level in 1941.<sup>3</sup>

On the other hand, the levels of the quantitatively more important wheat stocks of Germany-Austria-Bohemia-Moravia, France, and Italy are more in question. Germany is known to have held large reserves of wheat at the beginning of the war, and we judge that these

were considerably increased during 1939-40. The short German wheat crop of 1940 and the small net imports that we believe Germany received during 1940-41, however, must have resulted in a substantial decline in German wheat reserves. The magnitude of that decline is uncertain, but we hazard the guess that German wheat stocks on August 1, 1941 were about as large as or a little larger than they had been two years earlier. This comparison does not allow for heavy shipments of requisitioned French wheat that may have been sent to Germany during 1940-41. We have guessed that the bulk of these requisitioned supplies were left in France and thus added to the French carryover of 1941.<sup>4</sup> In any case, the requisitioned stocks were under full German control and their exact location probably has more significance from a military standpoint than it has for the food situation of either Germany or France.

Italian wheat stocks as of about August 1, 1941 were presumably low except for surplus reserves held by military or civil officials for possible future emergencies. To what extent these reserves swelled the total stocks held in Italy is far from clear. But the obvious scarcity of wheat in ordinary consumption channels at the end of 1940-41 and the introduction of bread rationing in Italy in October 1941 at a relatively low level suggest the Italian wheat carryover of 1941 was of moderate size or smaller.

Russian and Oriental wheat stocks, not included in our "world" stocks figures, are of more importance than usual this year. Before the German invasion, Russian stocks of old-crop wheat were undoubtedly large; but we have no information as to the quantity destroyed. Uncertainty also exists with regard to Japan's wheat stocks. However, we are inclined to guess that that nation held very substantial reserves of wheat in preparation for the present war.

<sup>1</sup> *Milling*, June 28, 1941, p. 317 and *Monthly Review of the Wheat Situation* (Canada), Sept. 15, 1941, p. 2.

<sup>2</sup> *Neue Zürcher Zeitung*, Aug. 3, 1941.

<sup>3</sup> *Ibid.*, Mar. 31, 1941; and *Foreign Agriculture*, April 1941, pp. 134-35.

<sup>4</sup> The current uncertainty about the French stocks position of 1941 is illustrated by the two following newspaper accounts: (1) the *Journal de Genève* (Aug. 21, 1941) reported that the French Minister of Agriculture declared that France held no reserves of bread grain at the close of 1940-41, whereas she had carried over 1.4 million tons (51 million bushels) of wheat in the preceding year; and (2) the *Pariser Zeitung* (according to the *Neue Zürcher Zeitung* of Sept. 16, 1941) referred to French wheat stocks of 20 million quintals (74 million bushels) on Aug. 1, 1941.

*The writer is most deeply indebted to Rosamond H. Peirce, who gave invaluable statistical and other assistance throughout the preparation of this study. Marion Jo Theobald prepared most of the tables and P. Stanley King prepared the charts. Helpful contributions not acknowledged in the text were made with respect to specific portions of the study by T. W. Grindley, J. C. Clendenin, the Board of Grain Commissioners of Canada, and the Foreign Agricultural Service of the U.S. Department of Agriculture.*

# APPENDIX TABLES

TABLE I.—WHEAT PRODUCTION, ACREAGE, AND YIELD PER ACRE IN PRINCIPAL PRODUCING AREAS, 1930-40\*

Year	World ex-Russia <sup>a</sup>			Four chief exporters			British Isles	Continent ex-Russia				French North Africa <sup>d</sup>	India	Others ex-Russia <sup>e</sup>	USSR
	Total	Northern Hemisphere	Southern Hemisphere	United States, Canada	Argentina, Australia	Total		Total	Five neutrals <sup>b</sup>	Others ex-Danube	Lower Danube <sup>c</sup>				
A. PRODUCTION (Million bushels)															
1930.....	3,884	3,382	502	1,307	446	1,753	43	1,316	186	777	353	64	391	317	989
1931.....	3,877	3,405	472	1,263	410	1,673	39	1,396	170	856	370	69	347	353	753
1932.....	3,877	3,357	520	1,200	455	1,655	44	1,474	238	1,014	222	75	337	292	744
1933.....	3,811	3,269	542	834	463	1,297	64	1,679	188	1,124	367	70	353	348	1,019 <sup>e</sup>
1934.....	3,489	3,045	444	802	374	1,176	74	1,472	248	975	249	97	350	320	1,117 <sup>e</sup>
1935.....	3,557	3,184	373	908	286	1,194	72	1,503	214	987	302	70	363	355	1,133 <sup>e</sup>
1936.....	3,509	3,038	471	846	401	1,247	63	1,417	162	871	384	50	352	380	1,128 <sup>f</sup>
1937.....	3,810	3,343	467	1,056	395	1,451	63	1,473	164	948	361	72	364	387	1,722 <sup>f</sup>
1938.....	4,563	3,945	618	1,292	534	1,826	81	1,766	159	1,141	466	72	402	416	1,502 <sup>f</sup>
1939.....	4,199	3,794	405	1,272	330	1,602	72	1,626	170	1,002	454	100	372	427	.....
1940.....	3,902	3,478	424	1,364	354	1,718	73 <sup>g</sup>	1,227 <sup>g</sup>	118	814	295 <sup>g</sup>	62	402	420	.....
Average 1935-39..	3,928	3,461	467	1,075	389	1,464	70	1,557	174	990	393	73	371	393	1,371 <sup>h</sup>
B. ACREAGE (Million acres)															
1930.....	267.3	223.1	44.2	92.1	39.4	131.5	1.43	72.1	13.0	39.1	20.0	8.9	31.7	21.7	83.4
1931.....	264.2	226.9	37.3	92.4	32.0	124.4	1.27	74.6	13.4	40.3	20.9	8.2	32.2	23.5	91.1
1932.....	267.8	227.3	40.5	93.1	35.6	128.7	1.36	73.9	13.6	41.5	18.8	8.8	33.8	21.2	85.3
1933.....	271.0	230.9	40.1	94.5	34.6	129.1	1.79	76.0	13.6	42.5	19.9	9.0	33.0	22.1	82.1
1934.....	264.5	227.2	37.3	87.5	31.4	118.9	1.96	75.6	13.7	42.4	19.5	9.0	36.1	22.9	87.1
1935.....	267.2	234.7	32.5	93.3	26.2	119.5	2.04	76.8	13.6	42.5	20.7	9.7	34.5	24.6	91.6
1936.....	276.0	238.6	37.4	99.3	31.6	130.9	2.06	76.1	13.0	42.2	20.9	8.7	33.6	24.6	96.3
1937.....	285.3	245.0	40.3	106.6	34.5	141.1	2.06	74.7	12.3	41.5	20.9	9.7	33.2	24.5	102.3
1938.....	288.2	246.3	41.9	105.5	35.6	141.1	2.16	74.7	11.0	41.5	22.2	8.8	35.6	25.8	102.6
1939.....	270.2	232.7	37.5	90.3	31.1	121.4	2.02	75.0	11.2	40.6	23.2	9.4	35.4	27.0	101.1
1940.....	262.0	226.0	36.0	90.2	30.0	120.2	2.25	70.5	11.3	37.9	21.3	8.5	34.0	26.6	.....
Average 1935-39..	277.4	239.5	37.9	99.0	31.8	130.8	2.07	75.5	12.2	41.7	21.6	9.2	34.5	25.3	98.8
C. YIELD PER ACRE (Bushels)															
1930.....	14.5	15.2	11.4	14.2	11.3	13.3	30.1	18.3	14.3	19.9	17.6	7.2	12.3	14.6	11.9
1931.....	14.7	15.0	12.7	13.7	12.8	13.4	30.7	18.7	12.7	21.2	17.7	8.4	10.8	15.0	8.3
1932.....	14.5	14.8	12.8	12.9	12.8	12.9	32.4	19.9	17.5	24.4	11.8	8.5	10.0	13.8	8.7
1933.....	14.1	14.2	13.5	8.8	13.4	10.0	35.8	22.1	13.8	26.4	18.4	7.8	10.7	15.7	12.4 <sup>e</sup>
1934.....	13.2	13.4	11.9	9.2	11.9	9.9	37.8	19.5	18.1	23.0	12.8	10.8	9.7	14.0	12.8 <sup>e</sup>
1935.....	13.3	13.6	11.5	9.7	10.9	10.0	35.3	19.6	15.7	23.2	14.6	7.2	10.5	14.4	12.4 <sup>e</sup>
1936.....	12.7	12.7	12.6	8.5	12.7	9.5	30.6	18.6	12.5	20.6	18.4	5.7	10.5	15.4	11.7 <sup>f</sup>
1937.....	13.4	13.6	11.6	9.9	11.4	10.3	30.6	19.7	13.3	22.8	17.3	7.4	11.0	15.8	16.8 <sup>f</sup>
1938.....	15.8	16.0	14.7	12.2	15.0	12.9	37.5	23.6	14.4	27.5	21.0	8.2	11.3	16.1	14.6 <sup>f</sup>
1939.....	15.5	16.3	10.8	14.1	10.6	13.2	35.6	21.7	15.2	24.7	19.6	10.6	10.5	15.8	....
1940.....	14.9	15.4	11.8	15.1	11.8	14.3	32.4	17.4	10.4	21.5	13.8	7.3	11.8	15.8	....
Average 1935-39..	14.2	14.4	12.3	10.9	12.2	11.2	33.8	20.6	14.3	23.7	18.2	7.9	10.8	15.5	13.9 <sup>g</sup>
1930-39..	14.2	14.5	12.4	11.3	12.3	11.6	34.1	20.2	14.8	23.4	17.1	8.2	10.7	15.1	12.2 <sup>h</sup>

\* Data summarized mainly from Tables II, III, and VIII (except for India and USSR), with yields computed throughout from production and acreage (sown acreage for United States and Argentina). Figures in italics are in substantial part unofficial approximations. Dots (....) indicate no data available. For 1940, figures are for 1939 boundaries; they are not in all cases aggregates of data in Tables II and III (see p. 126).

<sup>a</sup> Excludes USSR, China, Iran, Iraq, Transjordan, and various areas producing under 1 million bushels a year.

<sup>b</sup> Spain, Portugal, Switzerland, Sweden, Finland.

<sup>c</sup> Hungary, Yugoslavia, Rumania, Bulgaria.

<sup>d</sup> French Morocco, Algeria, Tunis.

<sup>e</sup> Not fairly comparable with earlier data.

<sup>f</sup> A still different basis; data for 1936 and 1938 reported by the International Institute of Agriculture as unofficial.

<sup>g</sup> Estimates of U.S. Department of Agriculture.

<sup>h</sup> Four years ending 1938.

<sup>i</sup> Nine years ending 1938.

TABLE II.—WHEAT PRODUCTION IN PRINCIPAL PRODUCING COUNTRIES, 1930-40\*

(Million bushels)

Year	U.S. total	U.S. winter	U.S. spring	Canada	Australia	Argentina	Uruguay	Chile	Hungary	Yugoslavia	Rumania	Bulgaria	Morocco	Algeria	Tunisia
1930.....	886.5	633.6	252.9	420.7	213.6	232.3	7.4	21.2	84.3	80.3	130.8	57.3	21.3	32.4	10.4
1931.....	941.7	825.4	116.3	321.3	190.6	219.7	11.3	21.2	72.6	98.8	135.3	63.8	29.8	25.6	14.0
1932.....	756.9	491.8	265.1	443.1	213.9	240.9	5.4	29.0	64.5	53.4	55.5	48.1	28.0	29.2	17.5
1933.....	551.7	376.5	175.2	281.9	177.3	286.1	14.7	35.3	96.4	96.6	119.1	55.5	28.9	32.0	9.2
1934.....	526.4	438.0	88.4	275.8	133.4	240.7	10.7	30.1	64.8	68.3	76.6	39.6	39.6	43.5	13.8
1935.....	626.3	465.3	161.0	281.9	144.2	141.5	15.1	31.8	84.2	73.1	96.4	47.9	20.0	33.5	16.9
1936.....	626.8	519.9	106.9	219.2	151.4	249.9	9.2	28.6	87.8	107.4	128.7	60.4	12.2	29.8	8.1
1937.....	875.7	685.8	189.9	180.2	187.3	207.6	16.6	30.3	72.2	86.2	138.2	64.9	20.9	33.2	17.6
1938.....	931.7	688.1	243.6	360.0	155.4	379.1	15.5	35.5	98.8	111.3	177.2	79.0	23.2	34.9	14.0
1939.....	751.4	569.7	181.7	520.6	210.3	119.5	9.9	31.6	113.1 <sup>a</sup>	105.7	163.6	71.2	38.8	42.6	18.6
1940.....	812.4	588.8	223.6	551.4	82.6	271.1	7.1	28.9	76.0 <sup>a</sup>	69.3	89.3	61.8	23.9	27.6	10.7
Average 1935-39..	762.4	585.8	176.6	312.4	169.7	219.5	13.3	31.6	85.8 <sup>b</sup>	96.7	140.8	64.7	23.0	34.8	15.0
1930-39..	747.5	569.4	178.1	330.5	177.7	231.7	11.6	29.5	80.6 <sup>c</sup>	88.1	122.1	58.8	26.3	33.7	14.0

Year	United Kingdom	Ireland	France	Italy	Germany	Austria	Czechoslovakia	Switzerland	Belgium <sup>d</sup>	Netherlands	Denmark	Norway	Sweden	Spain	Portugal
1930.....	42.2	1.09	228.1	210.1	139.2	12.0	50.6	3.60	13.7	6.1	10.2	.72	20.8	146.7	13.8
1931.....	37.8	.78	264.1	244.4	155.5	11.0	41.2	4.04	14.2	6.8	10.1	.59	17.0	134.4	13.2
1932.....	43.6	.83	363.8 <sup>e</sup>	276.9	183.8	12.2	53.7	4.00	16.1	12.8	11.0	.75	24.1	184.2	23.8
1933.....	62.4	1.98	362.3	298.5	205.9	14.6	72.9	5.42	16.1	15.3	11.5	.76	26.3	138.2	15.1
1934.....	69.8	3.80	338.5	233.1	166.5	13.3	50.0	5.52	17.3	18.0	12.8	1.20	27.8	186.8	24.7
1935.....	65.4	6.69	285.0	282.8	171.9	15.5	62.1	5.97	17.1	16.7	14.7	1.87	23.6	158.0	22.1
1936.....	55.3	7.84	254.6	224.6	162.7 <sup>f</sup>	14.0	55.6	4.47	17.2	15.6	11.3	2.09	21.6	121.5	8.7
1937.....	56.4	6.99	257.8	296.3	164.1 <sup>f</sup>	14.7	51.3	6.18	16.8	12.7	13.5	2.50	25.3	110.0	14.7
1938.....	73.3	7.40	360.1	300.7	205.0 <sup>f</sup>	16.2	66.7	7.34	22.0	15.9	16.9	2.64	30.2	96.0	15.8
1939.....	61.6	10.38	273.5	293.2	206.3 <sup>g</sup>		40.0 <sup>h</sup>	5.89	13.8	15.3	15.4	2.86	31.4	105.4	19.0
1940.....	61.5	11.68	188.0	261.3	170.0 <sup>g</sup>		32.0 <sup>h</sup>	6.06	9.0 <sup>i</sup>	10.0 <sup>i</sup>	7.0	2.53	15.5	79.4	10.5
Average 1935-39..	62.4	7.86	286.2	279.5	175.9 <sup>g</sup>	15.1 <sup>h</sup>	58.9 <sup>h</sup>	5.97	17.4	15.2	14.4	2.39	26.4	118.2	16.1
1930-39..	56.8	4.78	298.8	266.1	172.7 <sup>c</sup>	13.7 <sup>c</sup>	56.0 <sup>c</sup>	5.24	16.4	13.5	12.7	1.60	24.8	138.1	17.1

Year	Poland	Lithuania	Latvia	Estonia	Finland	Greece	Turkey	Other Near East <sup>j</sup>	Egypt	Japan	China	Manchukuo	Mexico	South Africa	New Zealand
1930.....	82.3	9.0	4.06	1.64	.87	9.7	95.0	24.5	39.8	30.9	9.4	49.8	11.4	9.3	7.58
1931.....	83.2	8.3	3.39	1.74	1.12	11.2	110.0	18.8	46.1	32.3	8.7	58.4	16.2	13.7	6.58
1932.....	49.5	9.4	5.29	2.08	1.48	17.1	71.1	12.9	52.6	32.8	9.0	39.4	9.7	10.6	11.06
1933.....	79.9	8.3	6.72	2.45	2.46	28.4	98.2	16.7	40.0	40.4	8.9	52.5	12.1	11.5	9.04
1934.....	76.4	10.5	8.05	3.11	3.28	25.7	99.7	21.7	37.3	47.7	9.3	23.9	11.0	16.4	5.93
1935.....	73.9	10.1	6.52	2.27	4.23	27.2	92.6	24.8	43.2	48.7	9.7	37.3	10.7	23.7	8.86
1936.....	78.4	8.0	5.27	2.43	5.26	19.5	141.6	20.3	45.7	45.2	8.1	35.2	13.6	16.0	7.17
1937.....	70.8	8.1	6.30	2.79	7.66	30.0	133.0	24.1	45.4	50.4	10.2	41.4	10.6	10.7	6.04
1938.....	79.8	9.2	7.05	3.14	9.40	36.0	156.7	27.3	45.9	45.2	10.4	34.3	11.9	17.1	5.56
1939.....	83.4	9.6	7.77	3.13	8.50	38.2	154.5	28.1	49.0	61.1	12.6	31.2	14.8	15.3	8.01
1940.....	60.0 <sup>k</sup>		20.0 <sup>k</sup>		6.91	32.9	150.8	32.2	50.0	66.1	10.2	27.6	13.3	16.2	8.31
Average 1935-39..	77.3	9.0	6.58	2.75	7.01	30.2	135.7	24.9	45.8	50.1	10.2	35.9	12.3	16.6	7.13
1930-39..	75.8	9.0	6.04	2.48	4.43	24.3	115.2	21.9	44.5	43.5	9.6	40.3	12.2	14.4	7.58

\* Data of U.S. Department of Agriculture and International Institute of Agriculture. Figures in italics are unofficial approximations. Dots (...) indicate that comparable data are not available. See also Table VIII. For 1909-13 averages, so far as available, see WHEAT STUDIES, December 1935, XII, 162-64.

<sup>a</sup> Including gains from Czechoslovakia.

<sup>b</sup> Four years ending 1938.

<sup>c</sup> Nine years ending 1938.

<sup>d</sup> Including Luxemburg.

<sup>e</sup> Adjusted data; see WHEAT STUDIES, XIV, 108 n.

<sup>f</sup> Including the Saar.

<sup>g</sup> Including the Sudeten area.

<sup>h</sup> Bohemia-Moravia, Slovakia.

<sup>i</sup> Unofficial approximations from supp. to *Foreign Crops and Markets*, May 26, 1941.

<sup>j</sup> Syria and Lebanon, Palestine, Cyprus.

TABLE III.—WHEAT ACREAGE IN PRINCIPAL PRODUCING COUNTRIES, 1930-40\*

(Million acres)

Year	U.S. total	U.S. winter	U.S. spring	Canada	Australia	Argentina	Uruguay	Chile	Hungary	Yugoslavia	Rumania	Bulgaria	Morocco	Algeria	Tunisia
1930.....	67.15	45.03	22.12	24.90	18.16	21.28	.96	1.61	4.19	5.25	7.55	3.01	2.96	4.03	1.90
1931.....	66.00	45.65	20.35	26.36	14.74	17.30	1.08	1.52	4.01	5.29	8.57	3.05	2.54	3.64	1.98
1932.....	65.91	43.37	22.54	27.18	15.77	19.79	.95	1.47	3.79	4.82	7.09	3.12	2.71	3.74	2.39
1933.....	68.49	44.45	24.04	25.99	14.90	19.66	1.19	2.10	3.92	5.14	7.70	3.10	3.21	3.99	1.75
1934.....	63.56	44.58	18.98	23.98	12.54	18.81	1.10	2.12	3.80	5.00	7.61	3.11	3.02	4.07	1.95
1935.....	69.21	47.07	22.14	24.12	11.96	14.21	1.27	1.92	4.14	5.31	8.50	2.73	3.62	4.10	2.03
1936.....	73.72	49.76	23.96	25.60	12.32	19.26	.99	1.92	4.03	5.46	8.48	2.96	3.19	4.29	1.22
1937.....	81.07	57.66	23.41	25.57	13.74	20.72	1.38	1.89	3.66	5.26	8.78	3.23	3.03	4.31	2.40
1938.....	79.57	56.54	23.03	25.93	14.35	21.30	1.26	2.04	4.00	5.26	9.44	3.45	3.00	4.10	1.67
1939.....	63.51	46.46	17.05	26.76	13.28	17.83	1.16	2.05	4.63 <sup>a</sup>	5.44	10.08	3.04	3.19	4.08	2.10
1940.....	61.46	43.21	18.25	28.73	12.45	17.51	.92	1.93	4.31 <sup>a</sup>	5.18	8.28	3.51	....	....	1.36
Average 1935-39..	73.42	51.50	21.92	25.60	13.13	18.66	1.21	1.96	3.96 <sup>b</sup>	5.35	9.06	3.08	3.21	4.18	1.88
1930-39..	69.82	48.06	21.76	25.64	14.18	19.02	1.13	1.86	3.95 <sup>c</sup>	5.22	8.38	3.08	3.05	4.04	1.94

Year	United Kingdom	Elze	France	Italy	Germany	Austria	Czechoslovakia	Switzerland	Belgium <sup>d</sup>	Netherlands	Denmark	Norway	Sweden	Spain	Portugal
1930.....	1.40	.027	13.28	11.92	4.40	.508	1.96	.134	.436	.142	.249	.030	.647	11.13	1.10
1931.....	1.25	.021	12.84	11.88	5.36	.517	2.05	.134	.404	.192	.259	.029	.683	11.24	1.27
1932.....	1.34	.021	13.43	12.18	5.64	.534	2.06	.137	.417	.297	.245	.028	.688	11.25	1.46
1933.....	1.74	.050	13.50	12.59	5.73	.543	2.27	.155	.406	.338	.261	.028	.748	11.17	1.42
1934.....	1.87	.094	13.35	12.27	5.43	.573	2.30	.165	.411	.366	.280	.046	.718	11.39	1.34
1935.....	1.88	.163	13.25	12.37	5.22	.601	2.38	.168	.468	.380	.312	.059	.674	11.25	1.38
1936.....	1.80	.255	12.86	12.69	5.15 <sup>e</sup>	.624	2.29	.171	.469	.374	.296	.075	.694	10.77	1.16
1937.....	1.84	.220	12.59	12.78	4.88 <sup>e</sup>	.619	2.10	.193	.471	.318	.319	.079	.739	9.88	1.22
1938.....	1.93	.230	12.48	12.43	5.04 <sup>e</sup>	.619	2.22	.183	.487	.311	.325	.086	.763	8.65	1.13
1939.....	1.76	.255	11.68	12.84	6.00 <sup>f</sup>	....	1.20 <sup>g</sup>	.188	.347	.306	.330	.102	.834	8.64	1.25
1940.....	....	.305	7.66 <sup>h</sup>	12.57	....	....	1.05 <sup>g</sup>	.191	.394	.332	.203	.100	.763	8.74	....
Average 1935-39..	1.84	.225	12.57	12.62	5.07 <sup>b</sup>	.616 <sup>b</sup>	2.25 <sup>b</sup>	.181	.448	.338	.316	.080	.741	9.84	1.23
1930-39..	1.68	.134	12.93	12.40	5.21 <sup>c</sup>	.571 <sup>c</sup>	2.18 <sup>c</sup>	.163	.432	.302	.288	.056	.719	10.54	1.27

Year	Poland	Lithuania	Latvia	Estonia	Finland	Greece	Turkey	Other Near East <sup>i</sup>	Egypt	Japan	Chosen	Manchukuo	Mexico	South Africa	New Zealand
1930.....	4.07	.415	.179	.090	.035	1.40	6.94	1.84	1.52	1.20	.848	3.39	1.22	1.27	.249
1931.....	4.50	.478	.215	.099	.045	1.50	7.17	2.04	1.65	1.23	.817	3.92	1.50	1.74	.269
1932.....	4.26	.510	.255	.127	.059	1.50	6.56	1.71	1.76	1.25	.793	3.09	1.10	1.53	.303
1933.....	4.19	.504	.309	.155	.091	1.71	6.64	1.80	1.43	1.51	.790	3.40	1.17	1.19	.286
1934.....	4.38	.514	.351	.161	.125	1.96	7.80	2.01	1.44	1.59	.798	2.04	1.22	1.86	.225
1935.....	4.33	.536	.347	.155	.174	2.09	8.47	2.04	1.46	1.63	.801	2.67	1.14	2.30	.249
1936.....	4.30	.490	.319	.162	.208	2.06	8.72	2.08	1.46	1.69	.817	2.74	1.26	2.04	.222
1937.....	4.18	.521	.338	.168	.279	2.12	8.27	2.11	1.42	1.78	.836	3.00	1.20	1.75	.186
1938.....	4.34	.501	.348	.172	.323	2.13	9.51	2.07	1.47	1.78	.845	2.68	1.24	2.08	.189
1939.....	4.36	.500	.378	.185	.336	2.36	9.82	2.02	1.50	1.83	.860	3.19	1.41	2.13	.258
1940.....	....	....	....	....	.344	2.58	10.00	2.20	1.56	2.06	.859	2.52	1.45	....	.243
Average 1935-39..	4.30	.510	.346	.168	.264	2.15	8.96	2.06	1.46	1.74	.832	2.86	1.25	2.06	.221
1930-39..	4.29	.497	.304	.147	.168	1.88	7.99	1.97	1.51	1.55	.820	3.01	1.25	1.79	.244

\* For general notes see Table II. Sown acreages for United States and Argentina (harvested acreage given in Table VII), Canada (spring wheat), and Australia; otherwise mainly harvested acreage.

<sup>a</sup> Including gains from Czechoslovakia.

<sup>b</sup> Four years ending 1938.

<sup>c</sup> Nine years ending 1938.

<sup>d</sup> Including Luxembourg.

<sup>e</sup> Including the Saar.

<sup>f</sup> Including the Sudeten area.

<sup>g</sup> Bohemia-Moravia, Slovakia.

<sup>h</sup> We regard this figure as probably too low; see p. 125 n.

<sup>i</sup> Syria and Lebanon, Palestine, Cyprus.



TABLE IV.—WHEAT YIELD PER ACRE IN PRINCIPAL PRODUCING COUNTRIES, 1930-40\*

(Bushels of 60 pounds)

Year	U.S. total	U.S. winter	U.S. spring	Can- ada	Aus- tralia	Argen- tina	Uru- guay	Chile	Hun- gary	Yugo- slavia	Ru- mania	Bul- garia	Mo- rocco	Al- geria	Tunis
1930.....	13.2	14.1	11.4	16.9	11.8	10.9	7.7	13.2	20.1	15.3	17.3	19.0	7.2	8.0	5.5
1931.....	14.3	18.1	5.7	12.2	12.9	12.7	10.5	13.9	18.1	18.7	15.8	20.9	11.7	7.0	7.1
1932.....	11.5	11.3	11.8	16.3	13.6	12.2	5.7	19.5	17.0	11.1	7.8	15.4	10.3	7.8	7.3
1933.....	8.1	8.5	7.3	10.8	11.9	14.6	12.4	16.8	24.6	18.8	15.5	17.9	9.0	8.0	5.3
1934.....	8.3	9.8	4.7	11.5	10.6	12.8	9.7	14.2	17.1	13.7	10.1	12.7	13.1	10.7	7.1
1935.....	9.0	9.9	7.3	11.7	12.1	10.0	11.9	16.6	20.3	13.8	11.3	17.5	5.5	8.2	8.3
1936.....	8.5	10.4	4.5	8.6	12.3	13.0	9.3	14.9	21.8	19.7	15.2	20.4	3.8	6.9	6.6
1937.....	10.8	11.9	8.1	7.0	13.6	10.0	12.0	16.0	19.7	16.4	15.7	20.1	6.9	7.7	7.3
1938.....	11.7	12.2	10.6	13.9	10.8	17.8	12.3	17.4	24.7	21.2	18.8	22.9	7.7	8.5	8.4
1939.....	11.8	12.3	10.7	19.5	15.8	6.7	8.5	15.4	24.4 <sup>a</sup>	19.4	16.2	23.4	12.2	10.4	8.9
1940.....	13.2	13.6	12.3	19.2	6.6	15.5	7.7	15.0	17.6 <sup>a</sup>	13.4	10.8	17.6	....	....	7.9
Average															
1935-39..	10.4	11.4	8.1	12.2	12.9	11.8	11.0	16.1	21.7 <sup>b</sup>	18.1	15.5	21.0	7.2	8.3	8.0
1930-39..	10.7	11.8	8.2	12.9	12.5	12.2	10.3	15.9	20.4 <sup>c</sup>	16.9	14.6	19.1	8.6	8.3	7.2

Year	United Kingdom	Elre	France	Italy	Ger- many	Aus- tria	Czecho- slovakia	Switzer- land	Bel- gium <sup>d</sup>	Nether- lands	Den- mark	Nor- way	Swe- den	Spain	Portu- gal
1930.....	30.1	40.4	17.2	17.6	31.6	23.6	25.8	26.9	31.4	43.0	41.0	24.0	32.1	13.2	12.5
1931.....	30.2	37.1	20.6	20.6	29.0	21.3	20.1	30.1	35.1	35.4	39.0	20.3	24.9	12.0	10.4
1932.....	32.5	39.5	27.1	22.7	32.6	22.8	26.1	29.2	38.6	43.1	44.9	26.8	35.0	16.4	16.3
1933.....	35.9	39.6	26.8	23.7	35.9	26.9	32.1	35.0	39.7	45.3	44.1	27.1	35.2	12.4	10.6
1934.....	37.3	40.4	25.4	19.0	30.7	23.2	21.7	33.5	42.1	45.2	45.7	26.1	38.7	16.4	18.4
1935.....	34.8	41.0	21.5	22.9	32.9	25.8	26.1	35.5	36.5	43.9	47.1	31.7	35.0	14.0	16.0
1936.....	30.7	30.7	19.8	17.7	31.6 <sup>e</sup>	22.4	24.3	26.1	36.7	41.7	38.2	27.9	31.1	11.3	7.5
1937.....	30.7	31.8	20.5	23.2	33.6 <sup>e</sup>	23.7	24.4	32.0	35.7	39.9	42.3	31.6	34.2	11.1	12.0
1938.....	38.0	32.2	28.9	24.2	40.7 <sup>e</sup>	26.2	30.0	40.1	45.2	51.1	52.0	30.7	39.6	11.1	14.0
1939.....	35.0	40.7	23.4	22.8	34.4 <sup>f</sup>	....	33.3 <sup>g</sup>	31.3	39.8	50.0	46.7	28.0	37.6	12.2	15.2
1940.....	....	38.3	24.5	20.8	....	....	30.5 <sup>g</sup>	31.7	22.8	30.1	34.5	25.3	20.3	9.1	....
Average															
1935-39..	33.9	34.9	22.8	22.1	34.7 <sup>b</sup>	24.5 <sup>b</sup>	26.2 <sup>b</sup>	33.0	38.8	45.0	45.6	29.9	35.6	12.0	13.1
1930-39..	33.8	35.7	23.1	21.5	33.1 <sup>c</sup>	24.0 <sup>c</sup>	25.7 <sup>c</sup>	32.1	38.0	44.7	44.1	28.6	34.5	13.1	13.5

Year	Poland	Lithu- ania	Latvia	Eston- ia	Fin- land	Greece	Tur- key	Other Near East <sup>h</sup>	Egypt	Japan	Chosen	Man- chukuo	Mexico	South Africa	New Zea- land
1930.....	20.2	21.7	22.7	18.2	24.9	6.9	13.7	13.3	26.2	25.8	11.1	14.7	9.3	7.3	30.4
1931.....	18.5	17.4	15.8	17.6	24.9	7.5	15.3	9.2	27.9	26.3	10.6	14.9	10.8	7.9	24.5
1932.....	11.6	18.4	20.7	16.4	25.1	11.4	10.8	7.5	29.9	26.2	11.3	12.8	8.8	6.9	36.5
1933.....	19.1	16.5	21.7	15.8	27.0	16.6	14.8	9.3	28.0	26.8	11.3	15.4	10.3	9.7	31.6
1934.....	17.4	20.4	22.9	19.3	26.2	13.1	12.8	10.8	25.9	30.0	11.7	11.7	9.0	8.8	26.4
1935.....	17.1	18.8	18.8	14.6	24.3	13.0	10.9	12.2	29.6	29.9	12.1	14.0	9.4	10.3	35.6
1936.....	18.2	16.3	16.5	15.0	25.3	9.5	16.2	9.8	31.3	26.7	9.9	12.8	10.8	7.8	32.3
1937.....	16.9	15.5	18.6	16.6	27.5	14.2	16.1	11.4	32.0	28.3	12.3	13.8	8.8	6.1	32.5
1938.....	18.4	18.4	20.3	18.3	29.1	16.9	16.5	13.2	31.2	25.4	12.3	12.8	9.6	8.2	29.4
1939.....	19.1	19.2	20.6	16.9	25.3	16.2	15.7	13.9	32.7	33.4	14.7	9.8	10.5	7.2	31.0
1940.....	....	....	....	....	20.1	12.8	15.1	14.6	32.1	32.1	11.9	11.0	9.2	....	34.2
Average															
1935-39..	18.0	17.6	19.0	16.4	26.6	14.0	15.1	12.1	31.4	28.8	12.3	12.6	9.8	8.1	32.3
1930-39..	17.7	18.1	19.9	16.9	26.4	12.9	14.4	11.1	29.5	28.1	11.7	13.4	9.8	8.0	31.1

\* Computed from data in Tables II and III. Averages are computed from average production and acreage.

<sup>a</sup> Including gains from Czechoslovakia.<sup>b</sup> Four years ending 1938.<sup>c</sup> Nine years ending 1938.<sup>d</sup> Including Luxemburg.<sup>e</sup> Including the Saar.<sup>f</sup> Including the Sudeten area.<sup>g</sup> Bohemia-Moravia, Slovakia.<sup>h</sup> Syria and Lebanon, Palestine, Cyprus.

TABLE V.—PRODUCTION OF OTHER GRAINS AND POTATOES IN PRINCIPAL PRODUCING AREAS, 1934-40\*  
(Million bushels)

Year	RYE												
	Europe ex-Russia	Ger- many, Austria	Poland	Czecho- slovakia	France	Spain	Lower Danube	Baltic States	Scandi- navia	Nether- lands	Bel- gium <sup>a</sup>	Canada	United States
1934....	894	322.1	254.5	60.0	33.0	21.6	46.8	67.2	31.5	19.8	22.8	4.7	17.1
1935....	886	318.8	260.5	64.5	29.4	19.2	56.9	60.1	28.6	18.4	15.5	9.6	58.6
1936....	843	309.4	250.5	56.5	28.2	18.1	62.1	50.8	22.1	19.1	14.5	4.3	25.3
1937....	816	291.1	222.0	58.4	29.1	18.0	59.7	65.8	25.1	19.2	14.0	5.8	49.8
1938....	979	362.1	285.6	75.0	31.9	16.9	68.4	61.4	27.5	21.7	15.7	11.0	55.6
1939....	980	272.2 <sup>b</sup>	300.4	50.0 <sup>a</sup>	29.7	16.1	68.3 <sup>d</sup>	67.1	24.6	23.8	14.3	15.3	39.0
1940....	778	300.0 <sup>b</sup>	232.0	40.0 <sup>a</sup>	22.9	13.8	58.0 <sup>d</sup>	50.5	21.4	17.0	10.0	14.0	41.1

Year	CORN (Maize)								BARLEY				
	Europe ex-Russia	Ru- mania	Yugo- slavia	Hun- gary	Italy	United States	Argen- tina <sup>a</sup>	South Africa <sup>a</sup>	Europe ex-Russia	Ger- many, Austria	Lower Danube	Canada	United States
1934....	724	191	203	83	126	1,461	452	66	715	161	92	64	117
1935....	611	212	119	56	98	2,304	396	54	698	168	98	84	286
1936....	777	221	204	102	120	1,507	340	101	697	169	138	72	147
1937....	770	187	210	109	134	2,651	174	69	680	180	100	83	220
1938....	721	201	187	105	116	2,562	191	104	732	209	107	102	253
1939....	733	238	159	94 <sup>d</sup>	102	2,602	408	74	728	194 <sup>b</sup>	110 <sup>d</sup>	103	275
1940....	787	227	172	117 <sup>d</sup>	135	2,461	403	86	726	208 <sup>b</sup>	115 <sup>d</sup>	104	310

Year	OATS						POTATOES						
	Europe ex-Russia	Ger- many, Austria	France	Poland	Scandi- navia	United States	Europe ex-Russia	Ger- many, Austria	Poland	Czecho- slovakia	France	British Isles	United States
1934....	1,683	409	302	176	165	542	5,467	1,820	1,230	352	612	296	406
1935....	1,653	399	307	179	170	1,195	4,901	1,595	1,194	282	526	270	386
1936....	1,655	417	290	182	152	786	5,409	1,789	1,260	393	560	262	332
1937....	1,682	440	299	161	169	1,162	6,175	2,165	1,478	454	583	285	395
1938....	1,860	469	376	183	188	1,068	5,720	2,073 <sup>b</sup>	1,270	284 <sup>c</sup>	636	283	374
1939....	1,835	469 <sup>b</sup>	363	198	172	936	.....	2,068 <sup>b</sup>	.....	...	...	301	363
1940....	.....	508 <sup>b</sup>	284	...	138	1,246	.....	2,164 <sup>b</sup>	.....	...	...	...	378

\* For general note see Table II. Figures in italics are wholly or in substantial part unofficial approximations.

<sup>a</sup> Including Luxemburg.<sup>d</sup> Including gains from Czechoslovakia.<sup>b</sup> Including the Sudeten area.<sup>c</sup> Crops harvested in March-July of the following year.<sup>e</sup> Excluding the Sudeten area and territory lost to Hungary.TABLE VI.—UNITED STATES WHEAT PRODUCTION  
BY CLASSES, 1934-40\*  
(Million bushels)

Crop of	Hard red winter	Soft red winter	White	Hard red spring	Durum	Total
1934....	208	188	70	53	7	526
1935....	203	204	86	108	25	626
1936....	260	207	100	51	9	627
1937....	373	258	114	102	29	876
1938....	389	236	107	157	43	932
1939....	309	206	80	121	35	751
1940....	328	207	86	157	34	812
Average						
1935-39..	307	222	97	108	28	762
1930-39..	312	206	89	112	29	748

\* Latest estimates of U.S. Department of Agriculture; for 1919-32 see *The Wheat Situation*, Feb. 23, 1939, p. 22.TABLE VII.—WHEAT ACREAGE IN THE UNITED  
STATES AND ARGENTINA, 1934-40\*  
(Million acres)

Harvest year	U.S. total		U.S. winter		U.S. spring		Argentina	
	Sown	Har- vested	Sown	Har- vested	Sown	Har- vested	Sown	Har- vested
1934....	63.6	43.4	44.6	34.6	19.0	8.8	18.8	17.2
1935....	69.2	51.2	47.1	33.4	22.1	17.8	14.2	11.7
1936....	73.7	48.9	49.8	37.7	23.9	11.2	19.3	17.6
1937....	81.1	64.4	57.7	47.0	23.4	17.4	20.7	17.2
1938....	79.6	69.9	56.6	49.8	23.0	20.1	21.3	20.1
1939....	63.5	53.5	46.5	38.1	17.0	15.4	17.8	12.7
1940....	61.5	53.0	43.2	35.8	18.3	17.2	17.5	15.5
Average								
1935-39	73.4	57.6	51.5	41.2	21.9	16.4	18.7	15.9
1930-39	69.8	55.9	48.1	39.2	21.7	16.7	19.0	16.8

\* Latest official data.

TABLE VIII.—WHEAT PRODUCTION IN MISCELLANEOUS COUNTRIES, 1930-40\*

(Million bushels)

Year	China	Iran (Persia)	Iraq	Syria, Lebanon	Palestine	Cyprus	Brazil	Peru
1930...	...	...	...	19.4	3.21	1.94	6.27	4.52
1931...	794	44.1	...	14.2	2.93	1.68	5.20	3.48
1932...	835	50.9	...	9.8	1.88	1.18	6.04	3.12
1933...	828	68.0	12.4	13.5	1.63	1.64	5.73	2.67
1934...	825	70.9	13.8	16.3	3.27	2.20	5.31	1.76
1935...	783	75.3	11.0	18.5	3.83	2.50	5.37	2.13
1936...	848	79.4	19.7	15.7	2.80	1.84	5.28	3.03
1937...	636	71.4	21.3	17.2	4.68	2.21	5.34	3.32
1938...	640 <sup>a</sup>	...	22.0	23.7	1.63	2.02	6.26	3.79
1939...	667 <sup>a</sup>	...	...	22.3	3.28	2.51	6.73	4.11
1940...	700 <sup>a</sup>	...	...	24.6	5.14	...	...	3.86
Average 1934-38	746	74.2 <sup>b</sup>	17.6	18.3	3.24	2.15	5.51	2.81

\* For general note see Table II.

<sup>a</sup> Estimates of the Shanghai office of the U.S. Department of Agriculture.<sup>b</sup> Four years ending 1937.

TABLE IX.—PROTEIN CONTENT AND GRADING OF CANADIAN HARD RED SPRING WHEAT, 1935-40\*

Aug.-July	Protein content <sup>a</sup>	Percentage of inspections grading							
		No. 1 <sup>b</sup>	No. 2	Nos. 1-3	Nos. 4-5	No. 6, feed	Tough and damp <sup>c</sup>	Other <sup>d</sup>	
1935-36..	14.2	24.5	14.1	53.0	20.5	12.7	5.2	8.6	
1936-37..	15.0	50.8	21.6	91.0	3.0	.8	3.6	1.6	
1937-38..	14.3	23.8	25.2	84.3	6.7	.5	5.8	2.7	
1938-39..	14.1	30.0	36.4	86.8 <sup>e</sup>	6.7	1.0	.3	5.2	
1939-40..	14.1	63.3	23.7	91.9 <sup>e</sup>	1.5	.0	5.2	1.4	
1940-41..	14.1	51.6	30.1	90.9 <sup>e</sup>	3.7	.2	4.3	.9	

\* Data from annual reports of the Dominion Grain Research Laboratory and *Canadian Grain Statistics*. Exclusive of durum, white spring, winter, and Garnet.<sup>a</sup> Average (by weight) of samples of No. 1 Hard to No. 3 Manitoba Northern, 13.5 per cent moisture basis.<sup>b</sup> Including No. 1 Hard and No. 1 Northern.<sup>c</sup> Wheat of straight grades but higher moisture content.<sup>d</sup> Including "smutty," "rejected," "condemned," "sample."<sup>e</sup> Excluding No. 3 Garnet, which was formerly included.

TABLE X.—WHEAT MARKETINGS IN NORTH AMERICA, MONTHLY, 1940-41, WITH COMPARISONS

Year	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Total
UNITED STATES: PERCENTAGE MARKETING BY FARMERS*															
1937-38...	9.1	30.2	16.3	10.4	6.0	3.8	4.0	3.8	3.9	3.3	3.9	3.3	2.0	...	100
1938-39...	5.7	25.0	17.3	11.6	7.7	4.7	4.7	3.6	3.2	3.7	3.9	5.2	3.7	...	100
1939-40...	7.4	22.6	13.5	9.2	5.7	4.1	5.3	3.5	6.7	7.9	10.5	2.5	1.1	...	100
1940-41...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Average	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
1924-34...	4.0	20.2	19.6	15.0	9.8	6.2	5.1	4.2	4.1	3.3	2.9	3.4	2.2	...	100
1935-40...	6.1	26.5	17.7	11.5	7.2	4.3	4.7	3.5	4.0	4.4	4.7	3.2	2.2	...	100
UNITED STATES: RECEIPTS AT TWELVE PRIMARY MARKETS† (Million bushels)															
1931-32 <sup>a</sup> ...	...	104.0	61.5	38.9	32.7	26.4	13.8	17.1	25.0	13.4	13.2	15.3	13.5	...	375
1936-37 <sup>a</sup> ...	...	84.2	29.5	10.6	15.2	10.7	10.4	7.8	6.1	7.6	8.9	7.6	19.4	...	218
1937-38...	...	111.9	62.2	35.2	22.6	16.1	10.6	10.9	8.5	10.6	10.9	14.3	17.0	...	331
1938-39...	...	101.2	61.1	38.5	27.3	19.1	14.9	11.9	9.5	13.7	16.0	25.5	44.0	...	383
1939-40...	...	99.0	43.9	39.0	19.8	12.2	11.5	9.4	11.4	21.9	28.4	29.4	13.4	...	339
1940-41...	...	103.9	46.2	39.9	18.5	10.0	9.0	10.4	8.4	12.6	17.0	29.9	49.3	...	355
CANADA: RECEIPTS AT COUNTRY ELEVATORS AND PLATFORM LOADINGS‡ (Million bushels)															
1927-28...	...	...	1.7	38.0	90.4	100.0	58.4	37.3	27.1	17.5	10.2	12.5	11.4	6.1	411
1928-29...	...	...	3.2	134.1	105.6	107.0	44.7	16.7	17.3	19.6	9.6	5.5	7.9	4.3	475
1932-33...	...	...	17.6	120.5	81.0	38.1	18.5	11.3	11.5	20.8	10.3	10.8	19.5	10.5	371
1937-38...	...	...	20.5	45.0	17.8	9.8	5.2	5.6	3.2	4.0	4.6	2.8	3.9	3.1	126
1938-39...	...	...	39.6	122.2	62.0	21.2	9.6	4.6	2.6	5.5	5.1	5.0	5.2	8.0	291
1939-40...	...	...	54.1	178.2	78.7	36.7	15.3	4.5	5.5	7.9	6.0	7.0	12.8	20.0	427
1940-41...	...	...	33.0	105.3	69.2	35.9	39.2	20.7	17.6	18.0	24.0	32.5	33.4	27.4	456

\* Estimates of Bureau of Agricultural Economics on the basis of reports from about 3,500 mills and elevators. Based on June-May for Kansas, Oklahoma, Texas, New Mexico, Arizona, and California; on July-June for other states. See *The Wheat Situation*, Feb. 23, 1939, p. 24, for data from June 1922.† Trade data, here compiled from *Survey of Current Business*. Includes Chicago, Duluth, Indianapolis, Kansas City, Milwaukee, Minneapolis, Omaha, Peoria, Sioux City, St. Joseph, St. Louis, Wichita.‡ Data for Prairie Provinces only, computed from official figures given in *Canadian Grain Statistics*; from August 1939 including small receipts at interior and private mill elevators not previously included. For corresponding data from 1921-22, see *WHEAT STUDIES*, October 1936, XIII, 62, and December 1939, XVI, 188.<sup>a</sup> Fourteen markets, including Toledo and Detroit.<sup>b</sup> Thirteen markets, including Detroit, through 1936.

TABLE XI.—WORLD WHEAT VISIBLE SUPPLIES, AUGUST 1, 1937-39, AND MONTHLY, 1940-41\*

(Million bushels)

Approximate date	Grand total	Four ex- porters	North America	United States grain		Canadian grain		Australia	Argentina	Afloat to Europe	U.K. ports
				United States <sup>a</sup>	Canada	Canada <sup>b</sup>	United States				
Aug. 1											
1937 .....	194.3	156.7	121.3	89.3	.1	27.8	4.1	14.5	20.9	25.6	12.0
1938 .....	231.2	180.6	114.8	96.4	.3	17.1	1.0	21.5	44.3	36.5	14.1
1939 .....	533.3	472.9	241.4	149.4	.5	84.9	6.6	18.0	213.5	34.9	25.5
1940-41											
Aug. 1.....	.....	577.2	423.0	160.2	.1	235.6	27.1	98.5	55.7	....	....
Sept. 1.....	.....	603.4	469.9	180.0	.6	257.8	31.5	90.2	43.3	....	....
Oct. 1.....	.....	668.2	554.8	186.5	.6	330.4	37.3	80.2	33.2	....	....
Nov. 1.....	.....	695.7	605.4	176.4	1.2	388.9	38.9	68.0	22.3	....	....
Dec. 1.....	.....	699.6	620.0	166.6	.2	404.8	48.4	60.2	19.4	....	....
Jan. 1.....	.....	773.5	647.9	169.8	.3	424.1	53.7	76.0	49.6	....	....
Feb. 1.....	.....	865.2	648.2	161.1	.2	438.5	48.4	75.5	141.5	....	....
Mar. 1.....	.....	881.7	635.9	152.6	.2	436.8	46.3	68.0	177.8	....	....
Apr. 1.....	.....	858.4	610.0	141.9	.2	423.8	44.1	63.0 <sup>c</sup>	185.4	....	....
May 1.....	.....	827.4	586.9	139.1	.2	415.9	31.7	58.0	182.5	....	....
June 1.....	.....	817.0	586.1	139.5	.2	407.3	39.1	53.5	177.4	....	....
July 1.....	.....	819.0	599.4	151.9	.2	408.8	38.5	49.5	170.1	....	....
Aug. 1.....	.....	892.3	689.4	246.7	.2	411.2	31.3	42.2	160.7	....	....

\* Selected, for dates nearest the first of each month, from weekly data in *Commercial Stocks of Grain in Store in Principal U.S. Markets*, *Canadian Grain Statistics*, *Broomhall's Corn Trade News* (for Afloat to Europe, U.K. ports, and Australia), and *Boletín Informativo* for Argentina. Dots (...) indicate that data are not available.

<sup>a</sup> Data not strictly comparable: two markets, Enid, Oklahoma, and Amarillo, Texas, added to the total at the beginning of January 1941; two other markets (not specified) added in June 1941.

<sup>b</sup> Excluding, for comparability, stocks in transit by rail which are now included in officially published totals.

<sup>c</sup> Approximate.

TABLE XII.—WORLD WHEAT STOCKS EX-RUSSIA AND EX-ASIA, ABOUT AUGUST 1, 1925-41\*

(Million bushels)

Year	Grand total	Four chief ex- porters <sup>a</sup>	North America <sup>b</sup>	United States grain <sup>b</sup>	Canadian grain	Australia	Argentina	Europe and Northern Africa				Afloat		
								Total	Europe ex-Danube	Lower Danube <sup>c</sup>	French North Africa, <sup>d</sup> Egypt	To Europe	To ex-Europe	Total
1925....	475	228	142	111	31	28	58	208	172	22	14	33	6	39
1926....	546	232	141	101	40	24	67	268	210	38	20	39	7	46
1927....	590	272	167	111	56	35	70	263	204	39	20	46	9	55
1928....	651	337	206	115	91	36	95	257	213	28	16	44	13	57
1929....	911	529	359	232	127	40	130	328	240	72	16	38	16	54
1930....	874	534	421	294	127	48	65	294	226	46	22	39	7	46
1931....	925	608	468	329	139	60	80	264	190	60	14	38	14	52
1932....	951	640	527	391	136	48	65	269	202	55	12	31	10	41
1933....	1,118	730	600	382	218	55	75	345	296	31	13	32	11	43
1934....	1,188	679	477	274	203	84	118	463	383	67	13	35	11	46
1935....	939	503	361	147	214	57	85	408	350	34	24	17	11	28
1936....	752	372	269	142	127	43	60	348	296	34	18	21	11	32
1937....	512	206	120	83	37	41	45	272	220	40	12	26	8	34
1938....	593	300	178	153	25	50	72	244	194	36	14	37	12	49
1939....	1,150	636	356	253	103	50	230	466	373	75	18	35	13	48
1940....	1,400	787	582	282	300	130	75	553	435	85	33	..	..	60
1941....	1,550	1,112	867	387	480	70	175	395	...	..	..	..	..	43
Average 1935-39.	789	403	257	156	101	48	98	348	287	44	17	27	11	38
1925-39.	812	454	320	208	112	46	88	313	251	45	17	34	11	45

\* Revised estimates (see WHEAT STUDIES, October 1939, XVI, 66, for data from 1922) based so far as possible upon stocks of old-crop wheat reported either officially (e.g., North America) or unofficially (e.g., afloat to Europe).

<sup>a</sup> United States, Canada, Argentina, Australia.

<sup>c</sup> Hungary, Yugoslavia, Rumania, Bulgaria.

<sup>b</sup> United States data as of July 1.

<sup>d</sup> French Morocco, Algeria, Tunis.

TABLE XIII.—WHEAT CARRYOVERS IN THE UNITED STATES AND CANADA, 1935-41\*

(Million bushels)

Year	United States (July 1)						Canada (July 31)						
	On farms	In country mills and elevators	Commercial stocks	In city mills <sup>a</sup>	Total in four positions	U.S. grain in Canada	On farms	In country mills and elevators <sup>b</sup>	In terminal elevators	In transit	In flour mills <sup>c</sup>	Total in five positions	Canadian grain in U.S. <sup>d</sup>
1935....	44.3	30.9	22.0	49.5	146.7	.0	7.9	53.8	126.6	12.9	.9	202.1	11.7
1936....	44.0	21.9	25.2	50.6	141.7	.0	5.5	36.2	59.7	5.0	1.7	108.1	19.3
1937....	21.9	11.5	9.0 <sup>e</sup>	40.4 <sup>e</sup>	82.8 <sup>e</sup>	.1	4.0	7.4	17.7	2.8	1.0	32.9	4.1
1938....	59.1	30.6	22.2 <sup>e</sup>	40.8 <sup>e</sup>	152.7 <sup>e</sup>	.7	5.1	2.8	12.2	2.4	1.1	23.6	1.0
1939....	90.4	36.6	64.1 <sup>e</sup>	61.1 <sup>e</sup>	252.2 <sup>e</sup>	.6	4.7	16.8	67.2	4.8	1.1	94.6	8.3
1940....	83.1	33.6	84.2 <sup>e</sup>	80.7 <sup>e</sup>	281.6 <sup>e</sup>	.6	17.3	78.3	159.3	16.9	1.1	272.9	27.5
1941....	89.1	73.2	142.7 <sup>e</sup>	81.6 <sup>e</sup>	386.6 <sup>e</sup>	.2	14.0	224.4	187.6	21.1	1.2	448.3	31.8

\* Official data of U.S. Department of Agriculture and Dominion Bureau of Statistics.

<sup>a</sup> Estimates of U.S. Department of Agriculture, based on wheat reported held in city mills (Table XIV); including amounts "stored for others," which prior to 1931 are as estimated by the Bureau of Agricultural Economics.

<sup>b</sup> Strictly "in country, private, and mill elevators in the Western Division"; but from 1931 including stocks in flour mills in the Western Division.

<sup>c</sup> From 1931, in the Eastern Division only.

<sup>d</sup> In bond, usually chiefly for export as wheat, exclusive of some bonded wheat in transit by rail.

<sup>e</sup> Excluding all new-crop wheat. See *The Wheat Situation*, August 1941, p. 2.

TABLE XIV.—CITY MILL STOCKS IN THE UNITED STATES, JUNE 30, 1935-41\*

(Million bushels)

Year	Wheat in mills <sup>a</sup>			Other wheat owned by mills				Total wheat owned by mills <sup>c</sup>	Flour as wheat <sup>d</sup>	Percentage of census flour output represented <sup>e</sup>
	Total	Owned	Stored for others	Private terminals <sup>b</sup>	Public terminals	Transit to mills	Country elevators			
1935.....	46.01	42.64	3.37	3.59	3.53	6.64	2.30	58.70	17.10	96.8
1936.....	47.10	40.94	6.16	2.47	3.26	13.28	2.69	62.64	20.00	97.0
1937.....	49.35	42.20	7.15	2.14	2.03	18.97	2.53	67.87	17.73	93.3
1938.....	50.75	39.77	10.98	2.90	2.55	8.99	2.83	57.04	16.49	93.6
1939.....	78.90	65.74	13.16	6.17	5.14	17.44	5.23	99.72	17.11	92.8
1940.....	83.51	73.67	9.84	7.17	6.35	13.46	3.04	103.69	19.71	91.8
1941.....	87.59	63.33	24.26	3.86	5.01	15.69	3.28	91.17	18.80	93.3

\* As reported to Bureau of the Census, here compiled from press releases of U.S. Department of Commerce. Available from 1925. See WHEAT STUDIES, December 1936, XIII, 218.

<sup>a</sup> And in elevators attached to mills.<sup>b</sup> Private terminal elevators not attached to mills.<sup>c</sup> Excluding wheat "stored for others."<sup>d</sup> Taking 1 bbl. = 4.7 bu.; but see Table XXIV.<sup>e</sup> Percentage of flour output reported in Census of Manu-

factures for the second or third calendar year preceding. The percentages for 1935 and 1936 would be about 5 per cent lower if the census of 1933 had been as complete as earlier censuses. See WHEAT STUDIES, April 1936, XII, 275.

TABLE XV.—UNITED STATES WHEAT CARRYOVERS BY CLASSES, ANNUALLY, 1935-41\*

(Million bushels)

July 1	Hard red winter	Soft red winter	White	Hard red spring	Durum	Total
1935....	68	32	16	26	5	147
1936....	57	27	17	34	7	142
1937....	37	15	10	18	3	83
1938....	60	37	20	31	5	153
1939....	114	29	20	72	17	252
1940....	135	25	21	83	18	282
1941....	160	42	23	136	26	387

\* Latest estimates of U.S. Department of Agriculture. Prior to 1937 the figures include small amounts of new-crop wheat in some positions, particularly mill stocks.

TABLE XVI.—UNITED STATES WHEAT EXPORTS, BY CLASSES, ANNUALLY FROM 1935-36\*

(Million bushels)

July-June	Hard red winter	Soft red winter	White	Hard red spring	Durum	Total
1935-36..	2	0	5	0	0	7
1936-37..	3	0	9	0	0	12
1937-38..	69	5	26	3	0	103
1938-39..	68	5	30	4	2	109
1939-40..	22	3	18	5	0	48
1940-41..	6	3	24	1	0	34 <sup>a</sup>

\* Recent estimates of U.S. Department of Agriculture, including exports of flour milled from domestic wheat and shipments to possessions.

<sup>a</sup> Apparently excluding shipments to possessions.

TABLE XVII.—UNITED STATES TRADE IN WHEAT AND FLOUR WITH FOREIGN COUNTRIES AND ALASKA, HAWAII, AND PUERTO RICO, ANNUALLY FROM 1935-36\*

(Thousand bushels)

July-June	Wheat grain			Flour as wheat			Wheat and flour as wheat				
	Exports	Imports	Net exports	Exports		Net exports	Exports	Imports	Net exports	Shipments to possessions <sup>a</sup>	Net exports plus shipments
				Wholly of U.S. wheat	Other						
1935-36....	311	46,472	(46,161)	3,896	11,723	15,453	15,930	46,638	(30,708)	2,891	(27,817)
1936-37....	3,168	47,730	(44,562)	6,099	12,317	18,223	21,584	47,923	(26,339)	3,011	(23,328)
1937-38....	83,740	3,421	80,319	16,360	7,137	23,357	107,237	3,561	103,676	3,322	106,998
1938-39....	84,587	9,235	75,352	22,057	9,138	30,806	115,782	9,624	106,158	2,891	109,049
1939-40....	23,636	10,092	13,544	21,232	9,407	30,304	54,275	10,427	43,848	3,476	47,324
1940-41....	10,806	10,726	80	22,841	7,019	29,569	40,666	11,017	29,649	3,600 <sup>b</sup>	33,249

\* Data from *Monthly Summary of Foreign Commerce* and U.S. Dept. Comm. Statement No. 3009. Figures in parentheses are net imports. Flour converted to wheat equivalent at 4.7 bushels per barrel; this rate is somewhat too high (see Table XXIV), especially for flour milled in bond from Canadian wheat and for flour exported from the Pacific Northwest. For earlier data (using general imports) see our previous "Reviews."

<sup>a</sup> Including Virgin Islands from January 1935 through December 1939. Shipments to Alaska have not been reported since December 1940, nor those to Hawaii and Puerto Rico since March 1941.

<sup>b</sup> Estimate of the U.S. Department of Agriculture; ship-

TABLE XVIII.—SUMMARY OF INTERNATIONAL TRADE IN WHEAT AND FLOUR, ANNUALLY FROM 1930-31\*

(Million bushels)

Year Aug.-July	Net exports of net-exporting countries											Net imports of Europe ex-Danube		
	Total	Five overseas exporters						Lower Danube	French North Africa <sup>a</sup>	Others <sup>b</sup> ex- Russia	USSR	Total <sup>c</sup>	British Isles	Conti- nent
		Total	United States	Canada	Aus- tralia	Argen- tina	India							
1930-31..	831	643	97	269	152	125	(5)	46	17	11	114	609	245	364
1931-32..	803	627	122 <sup>d</sup>	207	156	140	2	82	22	7	65	606	261	345
1932-33..	641	589	45	262	150	132	(1)	12	20	3	17	441	234	207
1933-34..	557	458	33	192	86	147	0	35	20	10	34	387	238	149
1934-35..	540	455	(4)	163	109	182	1	22	26	35	2	350	217	133
1935-36..	518	419	(32)	246	102	70	1	25	20	25	29	339	220	119
1936-37..	623	493	(17)	210	102	162	19	89	6	30	5	443	212	231 <sup>e</sup>
1937-38..	555	423	117	89	126	72	19	54	15	20	43	404	208	196 <sup>e</sup>
1938-39..	643	479	103	158	96	122	(1)	85	10	35	34	428	247	181 <sup>e</sup>
1939-40..	625	503	45	192	86	179	1	87	17	18		445	240	205
1940-41..	495	448	31	231	90	96	0	14	17	16		320	245	75
1914-15..	... <sup>f</sup>	534	319	85	0	93	37	..	..	..	14	...	206	207 <sup>g</sup>
1915-16..	... <sup>f</sup>	617	241	269	34	64	9	..	..	..	13	...	213	270 <sup>g</sup>
1916-17..	... <sup>f</sup>	528	179	174	69	49	57	..	..	..	10	...	224	323 <sup>g</sup>
1917-18..	... <sup>f</sup>	469	113 <sup>h</sup>	169	41	106	40	..	..	..	0	...	155	180 <sup>g</sup>

\* Mainly from data in Table XIX. But data for the United States are here adjusted for changes in stocks of U.S. wheat in Canada, and through 1936-37 data for Canada are adjusted for changes in stocks of Canadian wheat in the U.S.; from 1937-38 data for Canada correspond with series B, Table XX. Figures in parentheses represent net imports, ignored in arriving at totals. Those in italics for 1939-40 and 1940-41 are our present approximations.

<sup>a</sup> French Morocco, Algeria, Tunis. For Morocco, July-June years through 1931-32.

<sup>b</sup> Including various countries. Prior to 1931-32, net exports are estimated from calendar-year data for Uruguay and data for April-March years are used for Iraq.

<sup>c</sup> Deducting net exports by one or more of these countries in years in which they were net exporters.

<sup>d</sup> Probably understated by 7 to 9 million bushels.

<sup>e</sup> Including our estimates for Spain.

<sup>f</sup> Owing to boundary changes in Europe and the shift in sources of exports, data comparable with recent years are not available.

<sup>g</sup> Excluding Germany, Austria, Lithuania, Latvia, Estonia, Poland, and Czechoslovakia.

<sup>h</sup> Not including shipments of 6 million bushels to relief organizations and A.E.F.

TABLE XIX.—INTERNATIONAL TRADE IN WHEAT AND FLOUR, ANNUALLY FROM 1930-31\*

(Million bushels)

## A. NET EXPORTS (In parentheses, net imports)

Year Aug.-July	United States <sup>a</sup>	Can- ada <sup>b</sup>	Aus- tralia	Argen- tina	Brazil <sup>c</sup>	Chile	Hun- gary	Yugo- slavia	Ru- mania	Bul- garia	Mo- rocco	Al- geria	Tunis	India	USSR
1930-31..	116.0	258.4	152.3	124.7	(30.9)	.93	18.28	5.61	16.08	5.91	2.03	9.56	5.84	(4.9)	113.7
1931-32..	114.8 <sup>d</sup>	206.9	156.3	140.3	(31.6)	.07	18.26	14.90	37.36	11.27	7.56	5.86	8.52	2.0	65.0
1932-33..	32.9	264.1	150.2	132.3	(30.5)	(2.55)	7.48	.97	.05	3.14	5.72	8.82	5.35	(.9)	16.7
1933-34..	29.1	194.4	86.1	147.1	(34.3)	(.36)	29.32	1.05	.23	3.96	7.88	12.15	(.06)	.4	34.3
1934-35..	(3.9)	164.9	109.1	181.5	(32.6)	.37	12.80	4.26	4.22	.37	7.59	13.13	4.80	1.0	1.9
1935-36..	(31.7)	254.1	102.1	69.9	(37.2)	2.29	17.30	.79	5.87	1.14	4.87	10.07	4.63	1.2	28.5
1936-37..	(17.1)	194.8	101.7	162.4	(38.6)	(.24)	25.09	18.27	37.58	7.91	(15.1)	6.16	(.60)	18.6	4.6
1937-38..	117.6	86.8	125.9	71.6	(36.8)	(.11)	9.04	4.65	32.61	7.88	2.40	7.10	5.01	18.6	43.0
1938-39..	102.6	165.1	95.6	122.2	(40.6)	(1.02)	29.64	5.46	45.96	3.50	4.10 <sup>e</sup>	1.48 <sup>e</sup>	4.27	(1.3)	33.2 <sup>f</sup>
1939-40..	44.2	207.5	74.5 <sup>g</sup>	179.3	(32.7)	(.23)	38.40 <sup>g</sup>	9.82	31.09	3.71 <sup>h</sup>	...	...	.13 <sup>h</sup>	1.8 <sup>g</sup>	...
1940-41..	31.2	224.1	...	95.7	(22.8) <sup>i</sup>	(.10) <sup>j</sup>	....	.06 <sup>h</sup>	.03 <sup>g</sup>	...	...	...	...	...	...

## B. NET IMPORTS (In parentheses, net exports)

Year Aug.-July	United King- dom	Elre	France <sup>k</sup>	Italy	Ger- many	Aus- tria	Czecho- slo- vakia	Switzer- land	Bel- gium <sup>l</sup>	Nether- lands	Den- mark	Nor- way	Swe- den	Spain	Portu- gal
1930-31..	225.5	19.4	62.0	81.2	31.2	16.1	17.6	18.5	48.5	35.4	11.73	8.53	4.87	(.19)	2.71
1931-32..	240.8	20.2	79.1	33.0	23.2	13.7	24.8	21.1	46.6	31.2	17.55	8.70	6.83	10.76	2.80
1932-33..	216.0	18.2	32.1	10.5	4.6	13.3	12.1	19.1	39.3	27.3	12.16	8.69	3.23	(.02)	1.36
1933-34..	218.3	19.7	17.5	8.1	(5.4)	10.5	.2	17.6	43.0	22.4	12.61	8.47	1.20	(.08)	.96
1934-35..	200.5	16.9	(16.6)	11.5	10.1	9.8	1.4	17.9	39.8	19.5	18.99	8.88	(1.78)	(.00)	.70
1935-36..	205.3	15.0	8.0	5.1	(.3)	7.2	2.2	16.7	39.0	21.7	8.99	7.73	(1.89)	(.00)	(3.59)
1936-37..	199.1	12.5	12.0	57.5	31.8	9.9	(9.2)	17.7	39.4	21.3	6.36	8.55	.53	...	.14
1937-38..	194.7	13.1	15.5	4.4	38.4	7.6	1.4	14.9	37.0	24.1	6.55	7.03	(.75)	...	2.39
1938-39..	229.5	17.1	(9.2)	13.2	...	43.0 <sup>m</sup>	(1.3) <sup>m</sup>	17.1	37.7	30.3	5.08	8.61	1.63	...	2.25
1939-40..	21.0 <sup>n</sup>	1.0 <sup>n</sup>	...	...	...	...	2.8 <sup>n</sup>	9.5 <sup>f</sup>	27.0 <sup>g</sup>	19.1 <sup>g</sup>	2.83 <sup>f</sup>	9.22 <sup>f</sup>	.37 <sup>h</sup>	...	.92
1940-41..	....	...	...	...	...	...	...	...	...	...	...	...	...	...	3.38 <sup>g</sup>

## C. NET IMPORTS (In parentheses, net exports)

Year Aug.-July	Pol- and	Lithu- ania	Latvia	Es- tonia	Fin- land	Greece	Tur- key	Syria, Leba- non	Egypt	Japan <sup>p</sup>	Man- chukuo	China	Cuba <sup>q</sup>	South Africa	New Zea- land
1930-31..	(4.41)	(.96)	1.55	.82	5.27	24.1	(.47)	.20	10.17	17.8	...	...	4.56	3.27	.76
1931-32..	(3.30)	(.10)	.96	.44	4.51	23.7	(1.54)	.42	7.44	20.4	...	...	4.17	1.75	.99
1932-33..	(1.18)	(.07)	.03	.00	4.47	19.7	(.44)	1.63	.48	3.7	...	55.9	3.67	.28	1.11
1933-34..	(2.49)	(.05)	(.00)	.00	4.56	10.5	(1.39)	1.56	.23	3.1	23.8	21.1	4.07	.08	.39
1934-35..	(3.89)	(.97)	(1.10)	(.23)	4.26	14.5	(4.39)	(.34)	2.15	1.1	31.3	21.1	4.58	.91	.59
1935-36..	(7.09)	(2.12)	(1.54)	.00	4.33	14.8	(.52)	(.31)	.18	4.8	14.5	7.9	4.92	.07	.96
1936-37..	(5.33)	(.00)	.99	.12	3.69	21.5	(4.30)	(1.39)	(.55)	3.7	4.9	1.2	4.69	(.94)	.56
1937-38..	(.43)	(.08)	.95	.16	3.01	18.3	(3.65)	.91	(.57)	(10.0)	5.7	8.8	4.95	.93	4.07
1938-39..	(3.13)	(1.05)	.49	.02	2.30	13.0	(2.01)	(1.06)	.20	(9.8)	13.3	29.3	5.01	1.73	3.34
1939-40..	...	.00 <sup>n</sup>	.00 <sup>n</sup>	.00 <sup>n</sup>	.15 <sup>n</sup>	12.0	(2.34)	(.02) <sup>n</sup>	(.46)	(7.9)	7.4 <sup>r</sup>	16.9	5.03	.20 <sup>s</sup>	1.31
1940-41..	...	...	...	...	...	1.0 <sup>n</sup>	(.10) <sup>s</sup>	...	...	...	...	31.8 <sup>t</sup>	5.14	...	1.62

\* Data from official sources, in large part through International Institute of Agriculture. Dots (...) indicate that data are not available. Table XXI gives calendar-year data for some countries.

<sup>a</sup> Including shipments to possessions; from 1935-36 derived by subtracting imports for consumption rather than general imports less re-exports.

<sup>b</sup> Using custom exports of grain as in Series A, Table XX.

<sup>c</sup> July-June through 1932-33.

<sup>d</sup> Probably understated by 7 to 9 million bushels.

<sup>e</sup> Eleven months.

<sup>f</sup> Five months.

<sup>g</sup> Six months.

<sup>h</sup> Two months.

<sup>i</sup> Nine months.

<sup>j</sup> Seven months.

<sup>k</sup> Net trade in "commerce général."

<sup>l</sup> Including Luxemburg.

<sup>m</sup> See WHEAT STUDIES, December 1939, XVI, 157.

<sup>n</sup> One month.

<sup>o</sup> Eight months.

<sup>p</sup> Exclusive of trade with Chosen and Taiwan.

<sup>q</sup> Gross imports of flour; all from United States from January 1939, mainly from United States in earlier years.

<sup>r</sup> Three months.

<sup>s</sup> Ten months.

<sup>t</sup> Gross imports from May 1941.

TABLE XX.—NET EXPORTS AND NET IMPORTS OF WHEAT AND FLOUR, MONTHLY, 1940-41\*

(Million bushels)

Month	Net exports (In parentheses, net imports)									Net imports				
	United States <sup>a</sup>	Canada <sup>b</sup>		Argentina	Hungary	Yugoslavia	Rumania	Turkey	Iraq	Portugal	China	Brazil	Uruguay	New Zealand
		A	B											
July ....	3.31	13.26	12.03	13.51	4.23	.25	.12	.01	.06	.13	1.64	2.59	.00	.23
Aug. ....	2.69	13.96	11.53	10.66		.02	.02	.04	.03	.00	1.40		.00	.34
Sept. ....	2.39	11.97	9.61	7.56		.04	.00	.04	.00	.47	1.20		.05	.31
Oct. ....	3.81	13.03	10.80	6.58		...	.00	.01	.00	2.75	2.91	13.38	.50	.13
Nov. ....	3.51	20.33	13.69	7.01		...	.00	.01	.00		2.72			.18
Dec. ....	1.92	13.30	8.93	5.57		...	.00	.00	(.03)		2.91			.09
Jan. ....	1.33	6.47	15.22	3.81	...	...	.00	.00	(.02)		4.28			.16
Feb. ....	2.07	12.17	18.09	5.51	...	...	.00	.00	...	.06	3.00	4.38	...	.03
Mar. ....	3.43	14.13	21.49	7.89	...	...	.01	.00	...		2.44			.08
Apr. ....	4.28	24.15	30.76	11.96	...	...	.00	.00	...	.04	2.67	5.03	...	.03
May ....	2.54	35.65	36.81	11.78	...	...	.00	.00	...	.00	3.17 <sup>c</sup>			.04
June ....	1.87	30.99	31.08	7.92	...	...	.00	...	...	.03	3.22 <sup>c</sup>	...	...	.19
July ...	1.36	27.99	23.07	9.46	...	...	...	...	...	...	1.90 <sup>c</sup>	...	...	.03

\* Data from official sources and International Institute of Agriculture. Dots (...) indicate that data are not available. Official trade data no longer published for the United Kingdom, Eire, France, Italy, Germany, Czechoslovakia, Switzerland, Belgium, Netherlands, Denmark, Norway, Sweden, Greece, Spain, Lithuania, Latvia, Estonia, Finland, Poland, USSR, Bulgaria, Morocco, Algeria, Tunis, Egypt, India, Japan, Manchukuo, Syria and Lebanon, South Africa, and Australia.

<sup>a</sup> Derived by subtracting imports of wheat and flour for consumption from total domestic exports of wheat and flour plus flour shipments to possessions (from January 1941 including our monthly distribution of U.S. Department of Agriculture estimate of shipments; see Table XVII, note b). This series includes grain imports for milling in bond and exports of flour milled from foreign as well as from domestic grain. Flour is converted to grain equivalent at 4.7 bushels per barrel.

<sup>b</sup> Series A (carried previously) shows total customs exports of wheat and flour minus customs imports of wheat

and flour. Series B is derived by subtracting customs imports of wheat and flour from the total of overseas clearances of Canadian wheat grain plus customs exports of Canadian flour plus United States imports of Canadian wheat for consumption and for milling in bond. Flour is converted to grain equivalent at 4.5 bushels per barrel. For a description of the difference between customs exports and overseas clearances of wheat, see Canada, Dominion Bureau of Statistics, *Monthly Review of the Wheat Situation*, Feb. 23, 1940, p. 3, and text, p. 149.

<sup>c</sup> Gross imports.

TABLE XXI.—NET IMPORTS OF WHEAT AND FLOUR OF SPECIFIED COUNTRIES, CALENDAR YEARS 1930-40\*

(Million bushels; in parentheses, net exports)

Year	China	Chosen, Taiwan <sup>a</sup>	Philippines <sup>b</sup>	Turkey	Iraq	Palestine	Cyprus	Brazil, total	Brazil, wheat	Uruguay	Chile	Peru	South Africa	New Zealand
1930...	22.6	3.03	3.70	(.29)	(3.43)	.77	.54	31.8	23.8	(2.69)	(1.90)	2.91	2.80	.73
1931...	66.0	2.83	4.15	(.63)	(1.51)	1.66	1.07	32.5	29.2	.62	(.10)	4.16	3.41	.74
1932...	51.9	3.25	3.63	(1.19)	(1.01)	1.83	1.50	28.6	28.4	.07	.60	3.22	.93	1.98
1933...	47.5	2.04	3.64	(.98)	(.95)	3.62	1.47	33.8	31.2	1.72	3.22	3.15	(.08)	(.11)
1934...	19.4	3.73	3.65	(3.22)	(.63)	2.96	1.07	34.9	29.8	(2.83)	(1.42)	4.80	.75	.63
1935...	21.5	5.96	3.75	(2.37)	(.83)	2.40	.30	34.8	32.4	(1.37)	(.01)	5.18	(.08)	.81
1936...	4.3	4.41	4.80	(1.26)	(1.91)	2.40	.58	36.4	33.8	(4.11)	(1.81)	4.46	(.11)	.77
1937...	2.8	2.83	3.94	(4.08)	(4.39)	2.75	1.16	36.4	34.2	(.52)	.30	4.55	(1.17)	1.59
1938...	12.8	3.39	4.85	(3.86)	(2.07)	2.47	1.08	40.3	38.1	(4.61)	1.02	4.58	2.43	3.45
1939...	31.4	....	5.26	(.96)	(1.36)	4.07	.77	37.2	35.5	(5.96)	.20	4.54	(.02)	3.10
1940...	2.09	....	5.58 <sup>c</sup>	(2.35)	(.96)	....	....	32.5	31.5	(.00)	.22	5.01	2.62	1.94

\* Data from *Foreign Trade of China* (Maritime Customs), *International Yearbooks of Agricultural Statistics*, and U.S. Department of Agriculture.

<sup>a</sup> In trade with Japan.

<sup>b</sup> Flour only.

<sup>c</sup> July-June 1939-40.



TABLE XXII.—INTERNATIONAL TRADE IN WHEAT FLOUR, ANNUALLY FROM 1930-31\*

(Thousand barrels of 196 pounds)

Year Aug.-July	Net exports								Net imports		
	All net exporters	Four ex- porters <sup>a</sup>	United States <sup>b</sup>	Canada	Aus- tralia	Argen- tina	Hun- gary	Japan <sup>c</sup>	Man- chukuo	China	Brazil <sup>d</sup>
1930-31.....	34,526	25,348	12,314	6,677	5,307	1,050	2,045	1,664	.....	.....	1,306
1931-32.....	29,367	21,577	8,286	5,363	7,139	789	1,086	1,716	.....	.....	258
1932-33.....	26,608	17,488	4,896	5,344	6,404	844	441	3,368	.....	2,375	147
1933-34.....	27,249	16,623	4,489	5,365	5,571	1,248	748	2,830	5,095	587	1,076
1934-35.....	26,364	17,467	4,489	4,552	7,335	1,091	413	3,651	6,708	735	734
1935-36.....	24,064	15,930	3,917	4,918	6,197	898	636	1,974	3,296	419	611
1936-37.....	22,206	15,697	4,488	4,469	5,645	1,095	690	748	1,204	162	482
1937-38.....	23,773	16,836	5,792	3,522	6,620	902	489	3,137	1,375	1,878	437
1938-39.....	27,727	20,684	7,647	4,530	7,462	1,045	524	2,344	2,853	3,027	429
1939-40.....	.....	21,335	6,654	6,686	7,000 <sup>e</sup>	995	1,200 <sup>e</sup>	2,973	3,000	2,622	301
1940-41.....	.....	25,452	7,168	10,262	7,500 <sup>f</sup>	522	.....	2,200	1,300	5,507 <sup>g</sup>	139 <sup>h</sup>

\* Data mainly from official sources and International Institute of Agriculture. Dots (...) indicate data are not available. Figures in italics are our approximations. See also WHEAT STUDIES, December 1939, XVI, 196.

<sup>a</sup> United States, Canada, Australia, Argentina.

<sup>d</sup> July-June through 1932-33.

<sup>b</sup> Including shipments to possessions; imports for consumption from 1935-36.

<sup>e</sup> Including our approximation for July.

<sup>c</sup> Exclusive of net shipments to Chosen and Taiwan, which averaged 729,000 in the calendar years 1934-38.

<sup>f</sup> Our guess.

<sup>g</sup> Gross imports from May 1941.

<sup>h</sup> Nine months.

TABLE XXIII.—UNITED STATES FLOUR PRODUCTION AND DISPOSITION, MONTHLY FROM JULY 1936\*

(Thousand barrels)

Year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	Total
A. REPORTED PRODUCTION, ALL REPORTING MILLS													
1936-37.....	9,416	9,148	8,708	9,120	8,019	8,216	8,180	7,536	8,402	8,340	7,542	7,637	100,264
1937-38.....	8,415	8,678	9,234	9,446	8,698	8,168	8,116	7,572	8,600	7,834	7,739	8,474	100,974
1938-39.....	8,507	9,160	9,699	9,634	8,838	8,416	8,476	7,757	8,951	8,244	8,516	8,440	104,638
1939-40.....	8,432	9,522	11,191	9,428	8,298	8,119	8,649	8,025	8,320	8,269	8,514	7,682	104,448
1940-41.....	8,504	8,881	9,288	9,960	8,737	8,166	8,818	8,063	8,764	9,002	8,596	8,552	105,330
B. ESTIMATED TOTAL UNITED STATES PRODUCTION													
1936-37.....	10,028	9,753	9,284	9,733	8,558	8,778	8,739	8,051	8,939	8,844	7,998	8,098	106,803
1937-38.....	8,914	9,193	9,782	10,006	9,234	8,670	8,625	8,047	9,149	8,334	8,207	8,986	107,147
1938-39.....	9,021	9,714	10,285	10,216	9,372	8,925	8,989	8,226	9,492	8,742	9,030	8,950	110,962
1939-40.....	8,942	10,098	11,867	9,997	8,800	8,610	9,171	8,510	8,823	8,769	9,028	8,146	110,761
1940-41.....	9,018	9,418	9,850	10,562	9,265	8,659	9,351	8,550	9,293	9,546	9,115	9,068	111,695
C. NET EXPORTS PLUS SHIPMENTS TO POSSESSIONS													
1936-37.....	320	356	470	361	307	401	358	398	370	378	420	356	4,495
1937-38.....	308	430	496	533	512	510	415	430	518	481	559	457	5,649
1938-39.....	447	432	444	572	466	607	547	699	611	802	853	671	7,151
1939-40.....	947	698	741	663	610	464	471	557	740	478	485	309	7,163
1940-41 <sup>a</sup> .....	439	499	452	711	786	459	440	575	445	846	751	633	7,036
D. ESTIMATED NET RETENTION													
1936-37.....	9,708	9,397	8,814	9,372	8,251	8,377	8,381	7,653	8,569	8,466	7,578	7,742	102,308
1937-38.....	8,606	8,763	9,286	9,473	8,722	8,160	8,210	7,617	8,631	7,853	7,648	8,529	101,498
1938-39.....	8,574	9,282	9,841	9,644	8,906	8,318	8,442	7,527	8,881	7,940	8,177	8,279	103,811
1939-40.....	7,995	9,400	11,126	9,334	8,190	8,146	8,700	7,953	8,083	8,291	8,543	7,837	103,598
1940-41.....	8,579	8,919	9,398	9,851	8,479	8,200	8,911	7,975	8,848	8,700	8,364	8,435	104,659

\* Reported production and trade data from U.S. Department of Commerce, *Wheat Ground and Wheat Milling Products, Monthly Summary of Foreign Commerce, Foodstuffs Round the World, and Statement No. 3009*; estimated production as for Table XXIV. For earlier data from January 1925, see WHEAT STUDIES, May 1936, XII, 335, and September 1937, XIV, 33.

<sup>a</sup> Derived by subtracting imports for consumption in place of general imports minus re-exports.

TABLE XXIV.—UNITED STATES MILLING AND FLOUR DISPOSITION, ANNUALLY FROM 1930-31\*

July-June	Wheat ground		Millfeed output (thousand tons)	Flour production and disposition (thousand barrels)							Per capita consumption	
	Total (million bushels)	Per barrel (bushels)		Output	Domestic exports <sup>a</sup>	General imports less re-exports	Shipments to possessions <sup>b</sup>	Net exports plus shipments	Computed net retention	Estimated consumption	Flour (pounds)	As wheat (bushels)
1930-31..	537.9	4.613	4,709	116,595	11,726	0	593	12,319	104,276	105,100	167	3.92
1931-32..	515.0	4.575	4,419	112,576	8,356	(1)	571	8,928	103,648	102,800	162	3.77
1932-33..	506.6	4.585	4,370	110,495	4,379	0	630	5,009	105,486	101,500	159	3.71
1933-34..	460.0	4.582	3,962	100,394	3,873	1	579	4,451	95,943	99,000	154	3.60
1934-35..	470.8	4.561	4,008	103,227	3,934	0	576	4,510	98,717	100,000	154	3.59
1935-36..	483.6	4.628	4,268	104,505	3,323	35	598	3,886	100,619	100,700	154	3.64
1936-37..	492.1	4.608	4,298	106,803	3,918	39	616	4,495	102,308	101,400	154	3.62
1937-38..	493.9	4.610	4,318	107,147	4,999	34	684	5,649	101,498	102,000	154	3.62
1938-39..	508.1	4.579	4,368	110,962	6,637	79	593	7,151	103,811	102,600	154	3.60
1939-40..	505.1	4.560	4,298	110,761	6,519	70	714	7,163	103,598	103,200	154	3.58
1940-41..	507.9	4.547	4,290	111,695	6,353	62 <sup>c</sup>	745	7,036	104,659	104,100	154	3.57

\* Estimates by the Food Research Institute of wheat ground, millfeed output, flour output, and flour consumption, combined with official trade data.

<sup>a</sup> Including flour milled in bond from imported wheat.

<sup>c</sup> Imports for consumption.

<sup>b</sup> Including Virgin Islands, January 1935-December 1939.

TABLE XXV.—APPROXIMATE WORLD WHEAT SUPPLIES AND DISAPPEARANCE, ANNUALLY FROM 1930-31\*

(Million bushels)

August-July	World ex-Russia					Four chief exporters					Europe ex-Russia				
	Initial stocks <sup>a</sup>	Crops	USSR ex-ports	Total supplies <sup>b</sup>	Disappearance <sup>c</sup>	Initial stocks	Crops	Net ex-ports	Total supplies	Utilization	Initial stocks	Crops	Net imports	Total supplies	Utilization
1930-31....	874	3,884	114	4,872	3,947	534	1,753	643	1,644	1,036	272	1,359	563	2,194	1,944
1931-32....	925	3,877	65	4,867	3,916	608	1,673	625	1,656	1,016	250	1,435	524	2,209	1,952
1932-33....	951	3,877	17	4,845	3,727	640	1,655	589	1,706	976	257	1,518	429	2,204	1,877
1933-34....	1,118	3,811	34	4,963	3,775	730	1,297	458	1,569	890	327	1,743	352	2,422	1,972
1934-35....	1,188	3,489	2	4,679	3,740	679	1,176	450	1,405	902	450	1,546	328	2,324	1,940
1935-36....	939	3,557	29	4,525	3,773	503	1,194	386	1,311	939	384	1,575	314	2,273	1,943
1936-37....	752	3,509	5	4,266	3,754	372	1,247	457	1,162	956	330	1,480	354	2,164	1,904
1937-38....	512	3,810	43	4,365	3,772	206	1,451	404	1,253	953	260	1,536	350	2,146	1,916
1938-39....	593	4,563	34	5,190	4,040	300	1,826	479	1,647	1,011	230	1,847	343	2,420	1,972
1939-40....	1,150	4,199	... <sup>d</sup>	5,349	3,949	636	1,602	502	1,736	949	448	1,698	358	2,504	1,984
1940-41....	1,400	3,902	8	5,310	3,760	787	1,718	448	2,057	945	520	1,300	305	2,125	1,730

August-July	British Isles					Continent ex-Russia					Continent ex-5 neutrals ex-Russia <sup>e</sup>				
	Initial stocks	Crops	Net imports	Total supplies	Utilization	Initial stocks	Crops	Net imports	Total supplies	Utilization	Initial stocks	Crops	Net imports	Total supplies	Utilization
1930-31....	28	43	245	316	280	244	1,316	318	1,878	1,664	213	1,130	287	1,630	1,442
1931-32....	36	39	261	336	292	214	1,396	263	1,873	1,660	188	1,226	217	1,631	1,440
1932-33....	44	44	234	322	286	213	1,474	195	1,882	1,591	191	1,236	167	1,594	1,359
1933-34....	36	64	238	338	294	291	1,679	114	2,084	1,678	235	1,491	90	1,816	1,448
1934-35....	44	74	217	335	296	406	1,472	111	1,989	1,644	368	1,224	90	1,682	1,405
1935-36....	39	72	220	331	289	345	1,503	94	1,942	1,654	277	1,289	78	1,644	1,419
1936-37....	42	63	212	317	279	288	1,417	142	1,847	1,627	225	1,255	105	1,585	1,405
1937-38....	38	63	208	309	274	220	1,473	142	1,835	1,640	180	1,309	106	1,595	1,429
1938-39....	35	81	247	363	289	195	1,766	96	2,057	1,683	166	1,607	52	1,825	1,481
1939-40....	74	72	240	386	288	374	1,626	118	2,118	1,696	344	1,456	68	1,868	1,485
1940-41....	..	..	...	415	290	...	.....	...	1,710	1,450	...	.....	...	1,520	1,285

\* Summarized from Tables I, XII, XVIII, and XIX.

<sup>a</sup> Excluding India and Japan, and otherwise less comprehensive than crop data.

<sup>b</sup> Excluding very small exports from outside the world ex-Russia, chiefly from Iraq and Iran.

<sup>c</sup> Utilization within the world ex-Russia, plus small and variable net exports to areas outside it.

<sup>d</sup> Net imports.

<sup>e</sup> Exclusive of Spain, Portugal, Switzerland, Sweden, Finland.

TABLE XXVI.—WHEAT SUPPLIES AND DISPOSITION IN FOUR CHIEF EXPORTING COUNTRIES, ANNUALLY FROM 1935-36\*

(Million bushels)

Year	Supplies			Domestic utilization					Surplus over domestic use <sup>e</sup>	Net ex-ports <sup>h</sup>	Year-end stocks	
	Initial stocks <sup>a</sup>	Crop	Total	Milled (net) <sup>b</sup>	Seed use <sup>c</sup>	Fed on farms <sup>d</sup>	Resid-ual <sup>e</sup>	Total <sup>f</sup>			A <sup>g</sup>	B <sup>i</sup>
	A. UNITED STATES (July-June)											
1935-36.....	147	626	773	466	87.6	83	+22	659	114	(28) <sup>j</sup>	142	...
1936-37.....	142	627	769	471	96.6	88	+53	709	60	(23) <sup>j</sup>	83	...
1937-38.....	83	876	959	468	94.1	113	+24	699	260	107	153	...
1938-39.....	153	932	1,085	475	75.5	126	+47	724	361	109	252	...
1939-40.....	252	751	1,003	472	72.9	91	+38	674	329	47	282	...
1940-41.....	282	812	1,094	476	74.7	100	+23	674	420	33	387	...
	B. CANADA (August-July)											
1935-36.....	202	282	484	44.9	33.5	30.8	+13	122	362	254	108	...
1936-37.....	108	219	327	43.5	34.1	17.3	+ 4	99	228	195	33	...
1937-38.....	33	180	213	42.8	33.0	21.1	+ 5	102	111	87	24	...
1938-39.....	24	360	384	47.2	34.5	34.5	+ 8	124	260	165	95	...
1939-40.....	95	521	616	49.5	35.6	36.8	+14	136	480	207	273	...
1940-41.....	273	551	824	41.6	30.2	53.0	+27	152	672	224	448	...
	C. AUSTRALIA (August-July)											
1935-36.....	57	144	201	33.1	13.1	....	+10	56	145	102	43	8.4
1936-37.....	43	151	194	31.8	14.5	....	+ 5	51	143	102	41	8.9
1937-38.....	41	187	228	29.7	15.4	....	+ 7	52	176	126	50	13.9
1938-39.....	50	155	205	31.0	13.9	....	+14	59	146	96	50	20.8
1939-40.....	50	210	260	32.9	13.4	....	- 2	44	216	86 <sup>k</sup>	130	....
1940-41.....	130	83	213	32.0	13.0	....	+ 8	53	160	90 <sup>k</sup>	70	....
	D. ARGENTINA (August-July)											
1935-36.....	85	141	226	68.6	23.1	....	+ 4	96	130	70	60	-1
1936-37.....	60	250	310	67.1	24.9	....	+11	103	207	162	45	-3
1937-38.....	45	208	253	70.6	25.6	....	+13	109	144	72	72	19
1938-39.....	72	379	451	74.1	21.4	....	+ 4	99	352	122	230	120
1939-40.....	230	119	349	73.5	21.0	....	0	95	254	179	75	9
1940-41.....	75	271 <sup>l</sup>	346	74.0	21.6	....	-21	75	271	96	175	...

\* Based chiefly on latest official data or estimates, including those in preceding tables with some provisional approximations for 1940-41. For similar data from 1925-26, see WHEAT STUDIES, December 1938, XV, 252-53.

<sup>a</sup> United States (July 1) and Canada (July 31), see Table XIII, columns 5 and 12. Australia and Argentina (Aug. 1), stocks "B" adjusted for net exports and net millings in Aug.-Nov. and Aug.-Dec. respectively.

<sup>b</sup> United States, wheat equivalent of flour production less net exports of flour. Canada, official estimates of "wheat milled for food." Australia, official estimates for July-June years except for 1940-41. Argentina, our estimates based on calendar-year flour milled less flour exports.

<sup>c</sup> Argentina, based on acreage sown and average seed requirements per acre.

<sup>d</sup> United States, official estimates of wheat fed on farms where grown. Canada, the sum of official estimates of unmerchantable wheat and of merchantable wheat fed on farms where grown. Australia and Argentina, no data.

<sup>e</sup> Difference between derived total domestic utilization and the sum of specified utilization items. This residual

represents the algebraic sum of loss in cleaning (separate estimates available for Canada), feed use (except that covered in preceding item), certain very minor uses of wheat, and errors in other items.

<sup>f</sup> Total supplies less sum of net exports and year-end stocks.

<sup>g</sup> Sum of the two following items.

<sup>h</sup> United States, including shipments to possessions (Table XVII).

<sup>i</sup> Australia, official estimates as of Nov. 30. Argentina, our approximations to Dec. 31 stocks of old-crop wheat, based largely on estimates by the *Times of Argentina*.

<sup>j</sup> Net imports less shipments to possessions.

<sup>k</sup> Including our approximations for July 1940 and following.

<sup>l</sup> Probably underestimated; see p. 129.

TABLE XXVII.—PRICES OF WHEAT IN FOUR CHIEF EXPORTING COUNTRIES, ANNUALLY FROM 1935-36 AND MONTHLY, 1940-41\*

(U.S. cents per bushel)

Year and month	United States <sup>a</sup> (July-June)									Winnipeg <sup>b</sup> (Aug.-July)			Buenos Aires <sup>c</sup> (Aug.-July)	Melbourne <sup>d</sup> (Aug.-July)
	Farm price		All classes	Basic cash (Chl.)	No. 2 H. W. (K. U.)	No. 2 R. W. (St. L.)	No. 1 Dk. N. S. (Mnpls.)	No. 2 Hd. A. D. (Mnpls.)	Western White (Se-attle)*	Wtd. average	No. 1 Manitoba	No. 3 Manitoba		
	Wtd. av.	Unwtd. av.												
1935-36..	83	86	100	99	107	103	126	113	83	74	84	77	84	70
1936-37..	103	113	131	126	128	129	150	154	108	121	123	118	109	100
1937-38..	96	86	98	97	98	97	123	106	88	122	131	113	108	85
1938-39..	56	56	70	69	68	72	79	73	67	57	62	54	59	47
1939-40..	69	75	91	91	89	94	94	91	79	69	70	65	61	54
1940-41..	67	71	85	87	82	89	88	91	76	66	67	63	56	68
July ....	...	61	72	76	71	76	79	77	74	64	65	58	73	67
Aug. ....	...	60	73	72	69	77	74	77	73	65	66	60	67	67
Sept. ....	...	63	78	78	76	83	82	84	74	65	65	61	61	67
Oct. ....	...	68	85	85	82	90	88	90	75	63	64	61	49	65
Nov. ....	...	72	87	88	84	92	89	92	76	64	65	62	52	68
Dec. ....	...	72	85	89	83	91	88	91	75	65	67	62	55	69
Jan. ....	...	73	88	90	85	92	90	94	75	65	67	62	55	68
Feb. ....	...	68	81	86	78	86	85	94	73	67	68	63	55	68
Mar. ....	...	72	89	91	85	90	90	98	76	68	69	65	55	69
Apr. ....	...	76	90	92	87	93	95	95	76	67	69	65	55	69
May ....	...	79	94	98	90	97	98	95	79	68	69	65	55	69
June ....	...	83	98	102	97	102	101	101	88	69	70	65	55	69
July ....	...	86	99	104	98	103	100	99	86	67	68	63	55	69

\* Basic data partly from official sources and partly from trade journals. Annual averages are arithmetic averages of monthly data. Conversions of foreign prices at par when exchanges were near par, otherwise at current exchange rates.

<sup>a</sup> Data of the U.S. Department of Agriculture on farm prices (as of the fifteenth of the month), all classes and grades in six markets, No. 2 Hard Winter at Kansas City, No. 2 Red Winter at St. Louis, No. 1 Dark Northern Spring and No. 2 Hard Amber Durum (before 1934-35 called No. 2 Amber Durum) at Minneapolis, and Western White at Seattle (Soft White Portland from June 1940). See especially *Agricultural Statistics, 1940*, pp. 26-27, and *Crops and Markets and Foreign Crops and Markets*. Monthly prices of the foregoing series (except farm prices and Western White at Seattle) are averages of daily prices weighted by carlot sales. Prices of basic cash wheat are unweighted average prices of the cheapest wheat deliverable on Chicago contracts without premium or discount.

<sup>b</sup> Based on data from *Canadian Grain Statistics, Grain Trade of Canada*, and *Monthly Review of the Wheat Situation* (Dominion Bureau of Statistics). Winnipeg weighted averages are simple averages of weekly weighted average prices; monthly average prices of No. 1 Manitoba are as reported by

the Dominion Bureau of Statistics; those of No. 3 Manitoba are simple averages of unweighted weekly average prices; converted at official exchange rate from Sept. 11, 1939.

<sup>c</sup> Simple averages of daily quotations from *Revista Semanal* and *Revista Oficial*. Prices are for 78-kilo wheat except that, from Mar. 16 to Dec. 11, 1932, and from Dec. 5, 1933 to Nov. 30, 1937, they are for 80-kilo wheat; converted at official exchange rate from October 1939.

<sup>d</sup> Simple averages of daily quotations from *Wheat and Grain Review* (Melbourne) of "Wheat, Trucks, Williams-town," through 1937-38. From August 1938, averages for Sydney, Melbourne, and Adelaide from *Monthly Review of the Wheat Situation in Australia*, nominal from November 1939; converted at official exchange rate from April 1940. For 1940-41 monthly averages of daily f.o.b. prices as quoted in Broomhall's cables. This series runs 1-5 cents higher than nominal prices in preceding series.

<sup>e</sup> Soft White (Portland) from June 1940.

TABLE XXVIII.—PRICES OF DOMESTIC WHEAT IN EUROPE, ANNUALLY FROM 1936-37\*

(Indicated currency per quintal; except as noted for the U.K.)

Aug.-July	United Kingdom (shillings per cwt.)		Sweden (kronor)	Germany (RM) <sup>a</sup>	France (francs) <sup>a</sup>	Italy (lire) <sup>a</sup>	Netherlands (florins) <sup>a</sup>	Belgium (francs)	Denmark (kroner)	Bulgaria (leva) <sup>a</sup>	Rumania (lei)	Hungary (pengő)	Yugoslavia (dinars)
	Standard	Gazette											
1936-37...	10.0	9.05	19.09	20.49	145.4	120	9.84	132.8	19.25	300	482	19.0	165
1937-38...	10.0	8.40	20.15	20.51	187.2	125	9.98	136.6	18.06	320	521	21.5	188
1938-39...	10.0	4.74	17.36	20.73	210.5	135	10.05	123.8	14.34	340	411	20.4	155
1939-40...	11.0	6.60	19.64	20.60	204.4 <sup>b</sup>	135	10.98	141.4	17.98	350	515	20.4	204
1940-41...	14.5	14.50	26.34	20.60	223.2 <sup>b</sup>	155	12.05	170.0 <sup>c</sup>	28.00 <sup>c</sup>	430	882 <sup>a</sup>	23.8 <sup>a</sup>	313 <sup>a</sup>

\* Data from official sources, the International Institute of Agriculture, and foreign news sources. Averages of available monthly data, at times not complete.

<sup>a</sup> Fixed prices to producers; in Germany for the Berlin area.

<sup>b</sup> Less a tax of from 14 to 49 francs per quintal.

<sup>c</sup> Maximum price to producers.

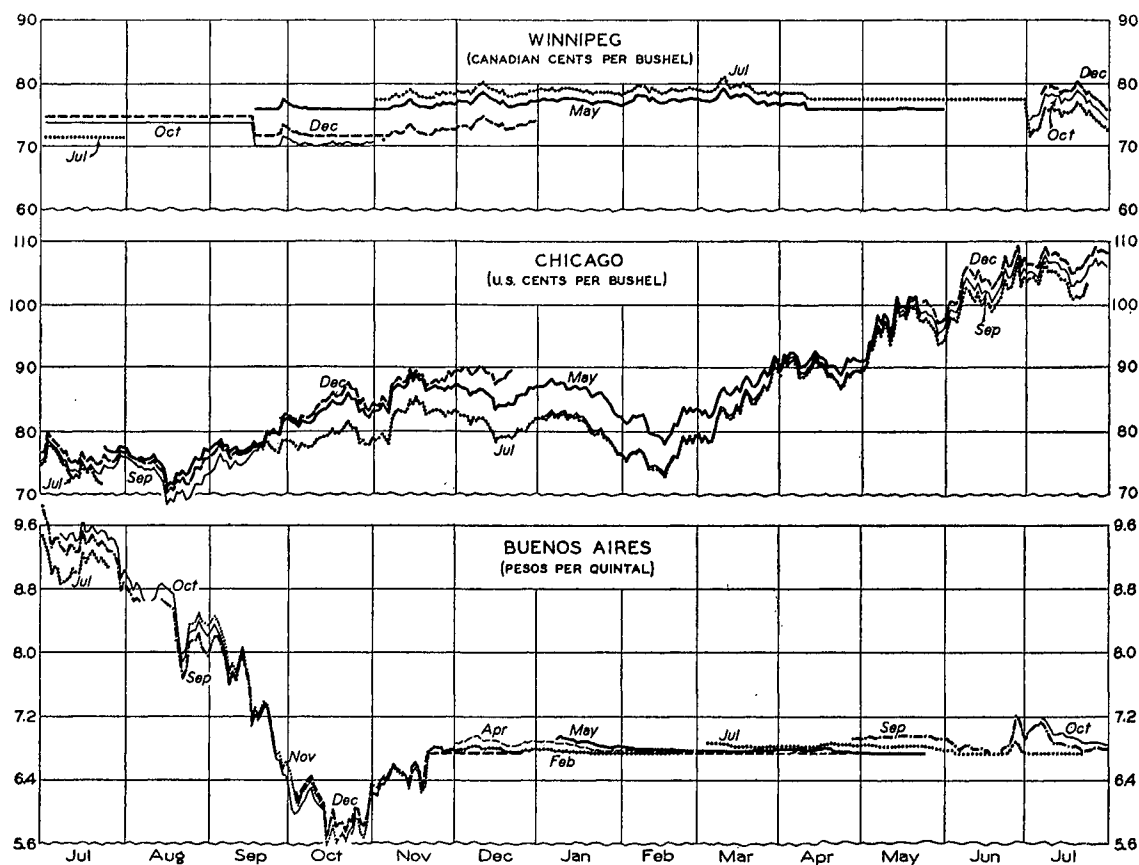
TABLE XXIX.—AVERAGE DAILY VOLUME OF TRADING IN WHEAT FUTURES ON ALL UNITED STATES FUTURES MARKETS AND OF OPEN COMMITMENTS ON THE CHICAGO BOARD OF TRADE, MONTHLY FROM JULY 1935\*

(Million bushels)

Year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	Average
A. VOLUME OF TRADING													
1935-36.....	44.5	34.0	37.6	41.3	26.1	22.8	17.2	14.0	17.9	32.0	23.6	29.5	28.4
1936-37.....	51.1	39.7	26.5	19.8	23.6	44.8	32.4	35.3	45.0	47.9	37.0	59.4	38.5
1937-38.....	63.0	44.6	33.9	37.2	38.6	24.4	26.4	18.2	21.4	22.9	20.5	34.3	32.1
1938-39.....	29.0	28.3	28.1	15.2	14.6	12.5	12.0	7.6	7.5	13.6	27.7	21.4	18.1
1939-40.....	26.8	23.6	28.6	20.2	16.7	42.2	28.1	28.2	29.7	34.6	35.4	17.3	27.6
1940-41.....	19.0	16.7	15.0	13.9	17.7	11.3	8.8	12.6	16.9	17.3	21.1	20.1	15.9
B. OPEN COMMITMENTS													
1935-36.....	72.6	101.2	113.3	123.6	130.8	119.0	109.0	102.9	100.0	94.4	74.5	62.0	100.3
1936-37.....	70.1	92.3	89.4	98.0	101.9	93.8	108.7	106.1	112.5	110.0	87.3	88.9	96.6
1937-38.....	95.7	137.1	126.1	110.5	101.0	101.4	93.1	90.0	89.9	83.8	71.8	68.9	97.4
1938-39.....	87.9	113.5	108.7	111.8	116.7	100.4	92.8	87.6	84.9	71.2	68.1	71.8	93.0
1939-40.....	91.9	97.2	75.1	79.4	86.4	78.4	84.0	81.2	91.8	105.6	105.3	67.2	87.0
1940-41.....	77.8	83.9	60.1	55.7	55.1	54.8	48.0	48.7	43.9	43.4	43.7	40.2	54.6

\* Official data of the Grain Futures Administration and its successor, the Commodity Exchange Administration. For earlier data, see WHEAT STUDIES, December 1931, VIII, 195, and December 1940, XVII, 218.

CHART 18.—WHEAT FUTURES PRICES IN LEADING FUTURES MARKETS, DAILY, 1940-41\*



\* Daily closing prices from Winnipeg Grain Trade News, Chicago Daily Trade Bulletin, and Buenos Aires Revista Oficial. The Liverpool market has not been permitted to reopen since Sept. 2, 1939.

# WHEAT STUDIES *of the* FOOD RESEARCH INSTITUTE

## VOLUME XVII

No.		PRICE
1.	<i>World Wheat Survey and Outlook, September 1940.</i> Helen C. Farnsworth and V. P. Timoshenko. September 1940, pp. 1-37 . . . . .	\$ .75
2.	<i>Wheat Subsidization and Exports: The Experience of 1938-39.</i> V. P. Timoshenko. October 1940, pp. 39-99 . . . . .	1.00
3.	<i>Price Relations of Liverpool Wheat Futures, with Special Reference to the December-March Spread.</i> Sidney Hoos and Holbrook Working. November 1940, pp. 101-43 . . . . .	1.00
4.	<i>The World Wheat Situation, 1939-40: A Review of the Crop Year.</i> J. S. Davis. December 1940, pp. 145-220 . . . . .	1.25
5.	<i>World Wheat Survey and Outlook, January 1941.</i> Helen C. Farnsworth and B. M. Jensen. January 1941, pp. 221-60 . . . . .	.75
6.	<i>Rice and Wheat in World Agriculture and Consumption.</i> V. D. Wickizer. March 1941, pp. 261-314 . . . . .	1.00
7.	<i>Wheat in the Post-Surplus Period 1900-09 with Recent Analogies and Contrasts.</i> Helen C. Farnsworth. April 1941, pp. 315-86 . . . . .	1.00
8.	<i>World Wheat Survey and Outlook, May 1941.</i> Helen C. Farnsworth. May 1941, pp. 387-420 . . . . .	.75

## VOLUME XVIII

1.	<i>World Wheat Survey and Outlook, September 1941.</i> Helen C. Farnsworth and B. M. Jensen. September 1941, pp. 1-36 . . . . .	.75
2.	<i>Wheat in National Diets.</i> M. K. Bennett. October 1941, pp. 37-76 . . . . .	1.00
3.	<i>Why Enrichment of Flour?</i> A. E. Taylor. November 1941, pp. 77-108 . . . . .	.75
4.	<i>The World Wheat Situation, 1940-41: A Review of the Crop Year.</i> Helen C. Farnsworth. December 1941, pp. 109-90 . . . . .	1.25
5.	<i>World Wheat Survey and Outlook, January 1942.</i> Helen C. Farnsworth and B. M. Jensen. January 1942 . . . . .	.75

## RECENT CONTRIBUTIONS *from the* FOOD RESEARCH INSTITUTE

(Numbered reprints available free on request)

No.	
103.	"Food as a Political Instrument in Europe." Karl Brandt. <i>Foreign Affairs</i> , April 1941
104.	"The Conference Process." Hobart Young. <i>American Journal of Sociology</i> , March 1941
105.	"How Europe Is Fighting Famine." Karl Brandt. <i>Foreign Affairs</i> , July 1941
106.	"International Contrasts in Food Consumption." M. K. Bennett. <i>Geographical Review</i> , July 1941
107.	"Consumption Level; Consumption Standard; Plane of Living; Standard of Living." J. S. Davis. <i>Journal of Marketing</i> , October 1941
108.	"The Economic Situation of Agriculture, Industry, and Commerce in the Light of Present World Conditions." Karl Brandt. Address before Appraisal Division, California Real Estate Association, October 1941
109.	"Governmental Price Control as It Pertains to Agriculture." J. S. Davis. Address before Agricultural Section, Sixteenth Annual Statewide Meeting, California State Chamber of Commerce, October 1941

# FOOD RESEARCH INSTITUTE

STANFORD UNIVERSITY, CALIFORNIA

A research department of Stanford University, established in 1921 jointly by Carnegie Corporation of New York and the Board of Trustees of the Leland Stanford Junior University, for research in the production, distribution, and consumption of food.

## DIRECTOR

JOSEPH S. DAVIS

## DIRECTOR EMERITUS

ALONZO E. TAYLOR  
Minneapolis, Minnesota

## ECONOMISTS

MERRILL K. BENNETT  
KARL BRANDT  
VLADIMIR P. TIMOSHENKO  
VERNON D. WICKIZER  
HOLBROOK WORKING

## ASSOCIATE ECONOMIST

HELEN C. FARNSWORTH

## JUNIOR STATISTICIAN

ROSAMOND H. PEIRCE

## PUBLICATIONS

### WHEAT STUDIES

Published monthly from September through May except in February. Annual subscription, \$6.00. The volume includes a comprehensive annual review of *The World Wheat Situation*, three *Survey and Outlook* issues at four-month intervals, and four special studies. Bound Volumes I-XVII, \$7.50 each.

Recent issues listed on inside back cover.

### GRAIN ECONOMICS SERIES

Books, wider in scope or of greater length than issues of WHEAT STUDIES.

No. 2. N. Jasny, *Competition among Grains*. January 1940. 606 pp. \$4.00.

No. 3. V. D. Wickizer and M. K. Bennett, *The Rice Economy of Monsoon Asia*. November 1941. 358 pp. \$3.50.

### FATS AND OILS STUDIES

Books on fats and oils of animal and vegetable origin, dealing primarily with economic aspects—production, trade, prices, and utilization—but with due reference to technical knowledge.

No. 7. Karl Brandt, *Whale Oil: An Economic Analysis*. June 1940. 264 pp. \$3.00.

### MISCELLANEOUS PUBLICATIONS

Books embodying the results of research in fields other than those covered by the series listed above, or more comprehensive in character.

No. 9. J. S. Davis, *On Agricultural Policy, 1926-1938*. January 1939. 494 pp. \$3.00.

## CONTRIBUTIONS

Chiefly reprints of papers by members of the Food Research Institute. Free on request.

*List of publications and contributions available on request. Address orders and inquiries to*

FOOD RESEARCH INSTITUTE

STANFORD UNIVERSITY, CALIFORNIA