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## WHEAT CONSUMPTION DURING THE DEPRESSION

CARL L. ALSBERG<sup>1</sup>

The paper I am about to present to you is not my own work alone; it is really a joint product for which a number of members of the staff of the Food Research Institute, and in particular Dr. Merrill K. Bennett, are quite as much responsible as am I. Most of the publications that come from our Institute are, of necessity, joint productions, because we endeavour to approach our problems from the viewpoint of agriculture, of the food industries, of human nutrition, and of economics, and our staff has been selected with this end in view. So in this paper of mine you will find a blend of a variety of points of view, rather than a statistical analysis alone. I shall limit myself to wheat consumption for food; I shall not discuss seed or feed uses, except incidentally.

I propose to begin with the consideration of those characteristics of food that distinguish its consumption from that of nearly all other commodities, for these characteristics govern wheat consumption at all times—even during a depression. Economic factors determine how much a person consumes of any non-food commodity, but physiological factors set a limit to the volume of food any person eats. Consumption of ordinary goods is restricted by purchasing power; food consumption cannot exceed the human body's physiological need for it. If a millionaire buys a motor car, a skilful salesman may persuade him immediately thereafter to buy a second one, if he can be convinced that he needs a car for his wife or his children or merely that he owes it to his social position as a millionaire to have two cars. If, however, you sell a millionaire a dinner, you can't sell him a second one until the first dinner has been digested. The demand for motor cars is elastic, but the walls of the human stomach are inelastic. If you eat more than you need, you grow fat. If the appetite did not set a limit to eating, the prosperous peoples of the earth would be nations of fat men. For any given person under given living conditions, the necessary daily food ration is constant.

This does not mean, of course, that we all need the same amount of food. Every one knows that small people need less than large ones, young people more than the aged, labourers more than white-collar workers, and that everyone needs more food in cold climates than in warm ones. Appropriate adjustments are made, usually quite unconsciously, by the appetite. Since the food intake of individuals varies with the factors I have just enumerated, the food requirements of a nation, taken as a whole, must tend to change when conditions of life are modified, as, for example, when men use machines more and muscles less. In consequence less food is needed where mechanization of industry and agriculture goes on.

Where mechanization takes place, the standard of living rises—I don't pretend to say which is cause and which is effect. That is something which is quarrelled about a great deal. A rising standard tends to reduce food requirements, because men come to live in what to all intents and purposes amounts to an artificially-improved climate. The climate each one of us lives in is, after all, the climate between our underclothes and our skins. Better clothing, better housing, and better heating all tend to make our peridermal climate, if I may take the liberty of coining the phrase, more equable and, thereby, tend to reduce our food requirements.

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Furthermore, a change in the age distribution of a population modifies its food requirements. If there tend to be fewer young, and more aged people, the total food requirements of a nation tend to become less. This has been happening in western Europe and in the United States, as the result of a lower birth rate and a longer average span of life.

You will note that all these changes in man's method of living, tending to reduce the amount of food he needs, are actually taking place—at least in occidental countries. For this reason, one would expect food consumption in general, including wheat, to be showing a downward trend quite apart from any effects of the depression. We must keep this tendency in mind in appraising the behaviour of wheat consumption under present world conditions.

Food requirements are measured, not in pounds and ounces of food, but in calories of energy available for human use. This is customary, because different foods contain very different amounts per pound of available food energy. For example, the edible portion of lettuce contains nearly 95% of water and less than 90 calories per pound. To get enough energy to supply a man's needs for a day would require eating and digesting 28 pounds of lettuce each day. This is a task that would take much time and a stomach like a cow's. If the human race had had to live on the herbs of the field alone, it would have had to spend so much time in eating and digesting that it never would have had the leisure to become civilized. Fats and oils represent the other extreme of the diet: they contain over 4,000 calories per pound, while sugar, cereals, and lean meat contain somewhat less than half as much as fats and oils.

Because the amount of food energy required for any one person is so nearly constant, and because different foods contain such vastly different amounts of energy per pound, it follows that, when the diet is changed and one food is substituted for another, the substitution is not made pound for pound. If lettuce were to be substituted for fat, for each pound of fat one would have to substitute about 45 pounds of lettuce, in order to get the same amount of food energy. Obviously, a vegetarian diet is bulky and for the human economy less pleasant than a mixed one which includes animal products and vegetable oils.

The tendency from the dawn of history has been not merely to diversify the diet and make it more abundant, but also to render it less bulky. Among primitive agricultural people, the diet is largely vegetable: roots, herbs, seeds, and coarse grains, with relatively little of the bread grains or rice and little of meat or fat or sugar. As the standard of living rises, the bread grains or rice take the place of millet, sorghum, maize, barley, and oats. Among bread eaters, as distinguished from rice eaters, wheat tends to displace rye. At the same time as wealth increases and livestock becomes more abundant, meat and fats are consumed in increasing quantities. Since they furnish much energy and are concentrated forms of food, the time ultimately comes when meats and fats displace ever-increasing amounts of bread grains. The diet becomes quite concentrated, perhaps too concentrated; it is then diversified further, if the standard of living continues to rise, by means of fresh and canned fruits and vegetables, to add roughage and flavour, and also by sugar. These and especially sugar displace further articles of the diet, the most important one they displace being bread.

The United States has passed through this whole cycle. Since 1904, flour consumption has declined, and about half this decline, speaking in terms of food energy, has been made good by a corresponding increase in sugar consumption (5). Few other countries have reached the stage of diminishing flour consumption. In some, wheat-flour consumption is stationary; in others, it is still rising, accompanied by diminished consumption of rye or non-bread grains or both.

It is obvious, therefore, that the effects of a depression upon wheat consumption are likely to be different according as a nation is in the stage of diminishing, stationary, or rising trend of flour consumption. During a depression, one would

expect that particular change in flour consumption to take place which would reduce the cost of food; but this change might be very different in countries with different pre-depression trends in flour consumption.

Thus, one would expect a people subsisting largely on coarse grains with wheat as a luxury, as in north China, to consume very much more coarse grains and correspondingly less wheat in times of depression, if the diet be cheapened thereby. We would expect the negroes, for example, of the southern United States to eat less flour and more corn meal for the same reason. In a period of economic stress, one would expect a nation with a stationary flour consumption and a diversified diet to consume less of the very expensive foods and correspondingly more of inexpensive foods like sugar and wheat flour. This is what one would anticipate, for example, in Great Britain. Finally, in a country with declining flour consumption, like the United States and probably Canada, one would expect the decline at least to be arrested during a depression, provided the diet be cheapened thereby. One would hardly anticipate a large effect, because among the expensive foods that would be eschewed, more or less, are fresh fruits and vegetables (but not potatoes), which, as we have seen, have a small food energy content. Only a little flour would be sufficient to fill any gap in the diet, resulting from the displacement of fruit and vegetables. Furthermore, in a country of this type, bread is purchased and home baking may be almost a lost art. Bread is relatively much more expensive than flour, because labour and other expenses are large elements in costs (4). It is easily possible that in a depression other foods may become relatively less expensive than bread, so that flour consumption, instead of increasing, falls, even in a country with a high standard of living.

In analyzing probable changes in diets, we should keep in mind that prices are relative, that their usual relationships may be dislocated in a depression, and that substitution is a function not merely of price differentials but also of price levels. When the prices of two articles which may be substituted for one another are high, the cheaper article is likely to be consumed in increasing quantity at the expense of the more costly, even, though the price differential between the two be relatively small. On the other hand, if price levels for both be low, there may be increasing consumption of the more costly article at the expense of the cheaper one, even though price differentials are larger. When both commodities are very cheap, the dearer may be preferred, even though the price differential be appreciable.<sup>3</sup> Thus, it may come about that, in countries with a high standard of living, wheat consumption may not rise, even though wheat be cheap relative to other foods, if these, too, have fallen sharply in price.

Another factor that needs to be taken into consideration is that there are no statistics on waste. A nation may fail to show in its statistics a drop in wheat consumption during a depression, because people waste less. High-standard-of-living nations are wasteful nations—none more so than the United States. With our habit of wasting bread crusts, as well as the bread that is not absolutely new-baked, it would be quite possible for our statistics to show a decrease in flour consumption, although, in fact, our people might be eating just as much bread as before, because they were not throwing away crusts or bread which was slightly stale.

Migrations also may obscure the statistics. For example, in the United States, there has been an extensive internal migration of the negroes from the agricultural southern states into the industrialized northern and northeastern states. When an individual is plucked out of his customary environment and transplanted into a new one, his habits change and tend to approach those of the region into which he has moved. No doubt, in the United States, the dietary of the negro has been affected

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consumed in smaller amount. Perhaps, the drop in flour consumption in the United States is merely the result of an unconscious adjustment by the public to price relationships of this kind.

Let us next consider Canada. Canadian statistics cover categories of consumption different from those in the United States. Graph 2 is based upon them. Line A shows flour produced minus flour exported, and is equivalent to net mill grindings in the United States. There are official estimates of wheat 'milled-for-food', which are represented by Line B. It is not known to us just how these estimates are obtained; they are apparently more all-inclusive than the milling statistics. On the supposition that the milled-for-food statistics, on which Line B is based, represent the best Canadian data, we could say that there was a very slight upward trend prior to the depression, and that the depression broke this trend. However, the downward drift since 1929-30 has been very slight, indeed. It is, therefore, entirely possible that there has been no break in the trend, but that the trend over the whole eleven years covered by the graph is horizontal, which implies a slight downward trend in per capita food use.

For Australia, there are official statistics of flour milled, from which a consumption estimate may be deduced by subtracting net exports of wheat flour, including what goes out manufactured as biscuits. Unfortunately, the statistics available do not go beyond the year, July-June 1930-1931. Line A on Graph 3 gives flour milled and retained, with allowance for changes in flour stocks. It indicates an upward trend in domestic retention of flour from 1922-23 to 1930-31. I have not seen any evidence that would suggest a break in this trend on account of the depression. However, when we take statistics of crops minus net exports of wheat and flour, adjusted for changes in wheat and flour stocks, which gives us Line B, the figure for November-December 1931-32 turns out to be relatively low. It is more probable that this is to be taken to indicate rather than the crop was underestimated than that consumption within Australia was low.

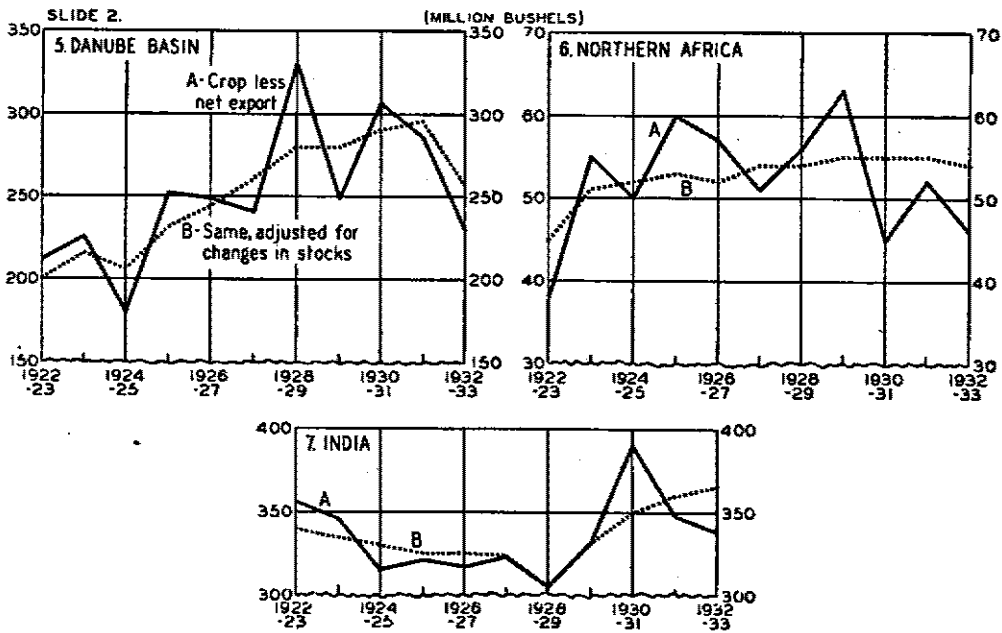
For Argentina also, there are official statistics by calendar year. Line A on Graph 4 represents the wheat milled for domestic consumption adjusted to an August-July crop-year basis. Unfortunately, the estimates do not go beyond the calendar year 1930. The slope of this line is not such as to inspire confidence. The rise in consumption in the earlier years is too rapid to seem reasonable. I suspect the statistics for these years to be unreliable. Moreover, there are no data on the amount of wheat used for feed in Argentina. I should judge, however, that it must be small, as in Australia.

Line B shows crops minus net exports adjusted for changes in stocks. A comparison of the course of this line with Line C, which represents net milling plus seed, is interesting. Line B ought to run a few million bushels above Line C. You will note that it does so in most years, but that it falls below in three years—1922, 1927, and 1929. I feel that we may be reasonably certain that in these years the crop was underestimated.

About all we can say regarding Argentina is that there is no reliable evidence that there have been significant changes in the trend of wheat consumption for food either per capita or in toto.

The Danube Basin, taking in Hungary, Jugo-Slavia, Roumania, and Bulgaria, is best considered as a whole. Statistics are not very satisfactory, for we have only figures for crops and net exports. We have, however, made estimates for changes of year-end stocks, based partly on theoretical considerations regarding consumption, and partly upon fragmentary quantitative and qualitative evidence published in the press. Line A of Graph 5, based on these estimates, shows fluctuations in domestic utilization without adjustment for changes in stocks. These fluctuations are very large. Line B shows domestic utilization, which includes food, feed, and seed, adjusted for stocks. Assuming that our estimate of stocks is correct, Line B shows that utilization has not varied much from a general steep upward trend until

1932-33, when it fell very sharply. For this sharp drop, I would suggest the following explanation. There were moderate stocks when the crop year 1932-33 opened. Then, there was a virtual crop failure in two of the countries, Roumania and Jugo-Slavia. These countries never import heavily when they have a crop failure. With difficulties in balancing national budgets, they simply could not afford to import heavily in 1932-33. Wheat consumption undoubtedly fell off, and fell off heavily, but it has probably been more largely due to crop failure than from causes related to world depression. It is likely that, had times been more prosperous, more wheat would have been imported into Jugo-Slavia than was imported in 1932-33,



GRAPHS 5, 6 AND 7

but certainly not enough to bring consumption up to the line of trend. In these two countries, peasants turn most easily to the consumption of maize, or corn. They did the same thing to a lesser degree in 1924-25 and 1929-30. In Roumania and Jugo-Slavia, we have examples of countries with a fairly low standard of living, in which coarse grains, especially maize, are largely consumed. In these countries, when there is a crop failure or a depression or both, the peasants turn to coarse grains, because the diet thereby is cheapened.

India has the same kind of statistics as the countries of the Danube Basin, namely crops and net exports. Line A of Graph 7 is based on them. We have made estimates of stocks, and Line B gives crops minus exports adjusted for changes in stocks. You will notice that no distinct line of trend is perceptible. In the main, what is consumed depends upon what is produced, upon the price of wheat at Liverpool, and upon the price of wheat in relation to other things in India. Such evidence as we have suggests that the last four years of depression saw consumption of wheat in India at a higher level than it had been for five or six years. When the Liverpool price fell in 1929-30, India had a smallish crop, and imported about ten million bushels, probably without building up stocks. Then the next year, there was a record crop in India, but the Liverpool price was so low that Indian peasants chose, rather, to eat wheat than to export it. There is a good deal of



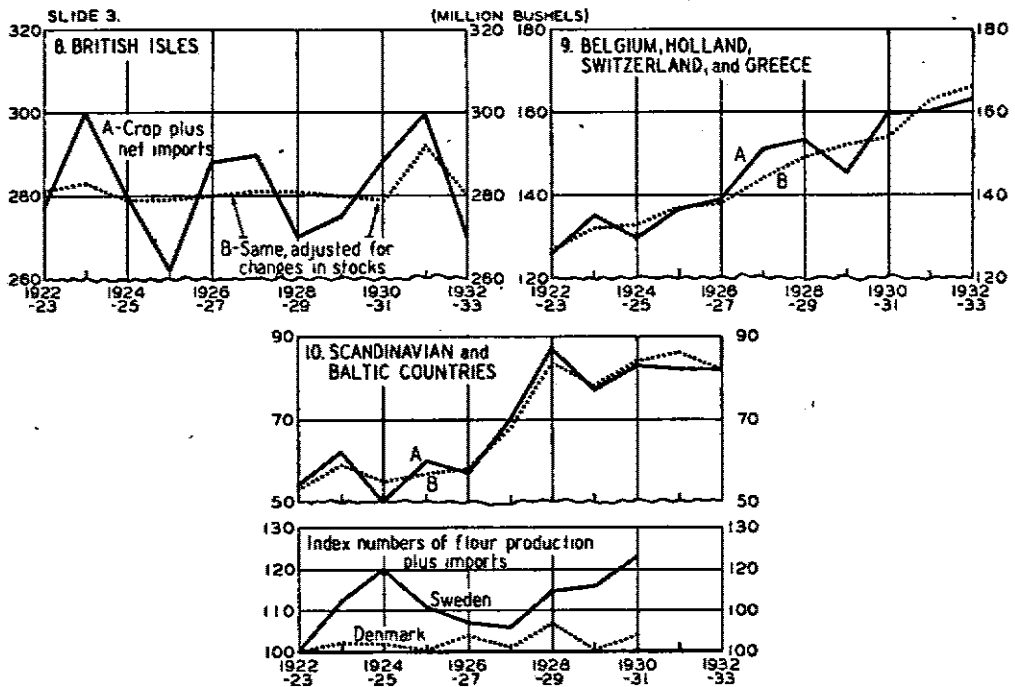
qualitative evidence that stocks were built up a good deal in the course of 1930-31. At the same time, consumption within India undoubtedly expanded. In the next two years, with fairly good crops, India only exported one million bushels each year. We then began to get information showing that wheat was definitely being consumed in place of millet. It is our impression that, for five consecutive years now, Indian wheat consumption has been rising. Probably, stocks accumulated from the big crop of 1930 have been drawn down. There is no evidence to show that stocks early in April 1933 were above a normal or even a minimum level. We would not be justified, however, in concluding that wheat consumption in India will permanently remain on a high level. Very probably the Indian peasant, with his low standard of living, will again turn to selling wheat for export whenever the price at Liverpool is so high that he can get enough for his wheat to be able to buy millet or other cheap foodstuffs to replace the wheat he sells and yield him a cash surplus. This has been his practice in the past. As you no doubt know, the government of British India has in former years found it necessary to prohibit the exportation of wheat when crops in general have been bad, for experience has shown that when it was profitable wheat was exported in the face of threatening famine (6).

Northern Africa, taking in Algeria, Morocco, and Tunis, has statistics only for crops and net exports. They are not too reliable, but I will not go into an analysis of the reasons why. We have also made estimates for changes in stocks. We have, however, no great confidence in any of the data. In general, it has been our experience, that official French agricultural statistics are not up to the quality of some other western countries. No adequate machinery, such as that of Canada or the United States, has been set up. Specifically, our suspicion of the crop estimates of Northern Africa is based on two facts: (1) When crop estimates for these countries begin to come out in the summer, figures are given that are later revised as much as 50%. More than this, a figure will stand for, say, two or three years, and then be revised 20 or 30%. It seems reasonable to assume that, if the system of crop estimating were anything like a good one, such extreme revision ought to be unnecessary; they should not exceed 10% at the very most. (2) The estimates for Morocco appear to be maximum and minimum estimates—that is to say, the mean of maximum and minimum estimates between which the range is very large. The striking thing about the statistics of these countries is that exports have been running high in the last few years, despite only average crops, assuming that the crops are properly measured. These high exports leave domestic utilization rather low. It is possible to make estimates of stocks that indicate that there were heavy accumulations prior to 1929-30 and this would explain the discrepancy (see Line B of Graph 6); but we have no confidence in such estimates.

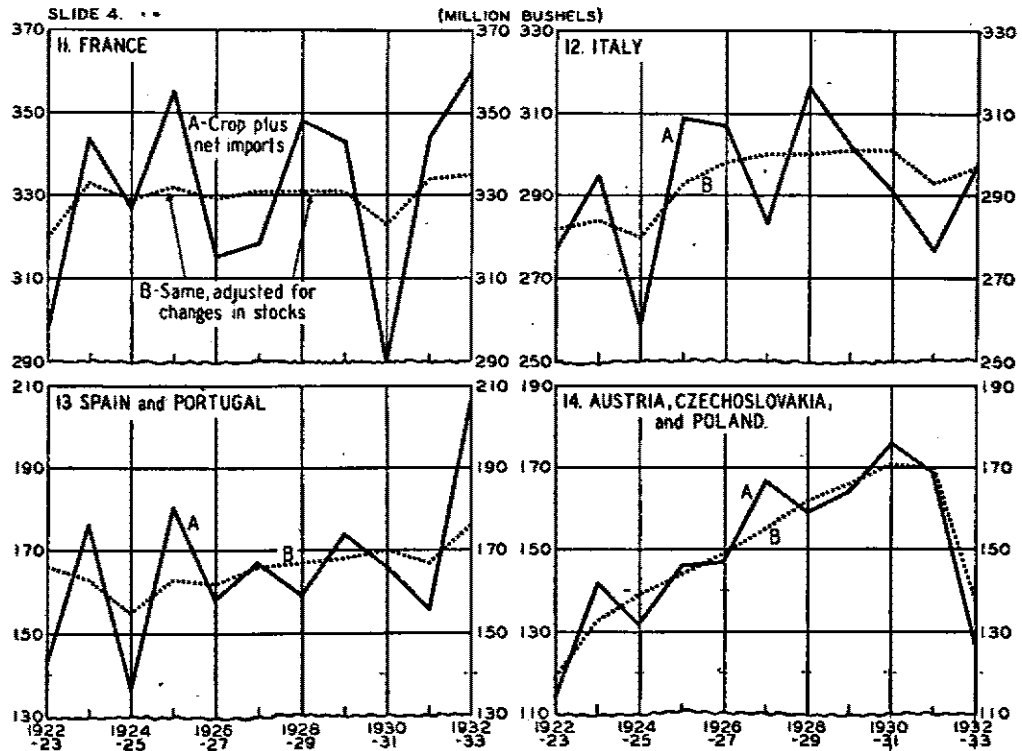
If we turn to the foreign trade of these countries in foodstuffs, we can get some light on the situation. We see that in 1931 and 1932 Algeria and Tunis changed from large net exporters of barley to large net importers. Now, barley in Northern Africa is still extensively used for food. One suspects that the deficit that arose from the enlarged export of wheat has been made good, in the main, by the import of barley.

For Morocco, the picture is not so clear, because the figures for 1932 are not yet available to us. In that year, Morocco was still a large net exporter of barley. However, in 1932, France exported to Morocco over two and one-half times as much as in 1931, itself a year of large French barley exports. One suspects that when the Morocco figures for 1932 become available, they will show that this country has either ceased to export barley or has actually become a net importer.

The French possessions in Northern Africa have enjoyed a stimulus to wheat exportation, for it is the French colonial policy to regard colonies and dependencies as a part of France, subject to the same laws and regulations, at least in theory. Wheat brought into France from dependencies, with a minor exception as regards



GRAPHS 8, 9, AND 10



GRAPHS 11, 12, 13 AND 14

Morocco, is treated as if it were French domestic wheat. The French domestic-wheat price has been held high, relative to the Liverpool price all during the depression. Consequently, one may assume that producers in the three French dependencies have had a preferred market for their wheat and have found exportation remunerative. It would seem that France has simply exchanged barley for wheat. It is significant that in the year 1931, the last for which we have all the figures, the net barley exports of Algeria, Tunis, and Morocco, combined, were 673 thousand quintals, which was nearly balanced by the importation of 637 thousand quintals from France. Despite the still large net exports of Morocco, the net exports of the three countries as a whole were trifling as compared with their customary very large exports, which for the period 1923-27 averaged over 1,700 thousand quintals.

It would seem that in the Danube Basin, in Northern Africa, and in India, we have peoples with a low standard of living and accustomed to eating coarse grains. When there is failure of the wheat crop, they are too poor to import much; they eat coarse grains. When they have a good wheat crop, they export it and eat coarse grains, if that is remunerative; if it is not, they eat the wheat themselves.

This completes what I have to say about wheat-exporting countries. We now turn to wheat-importing countries, and we shall take up Europe first.

Direct statistical measurement of wheat and flour consumption in European countries is not often to be found. There are no direct estimates at all, so far as we can learn, for the following countries: the British Isles, France, Italy, Spain, Portugal, Switzerland, Belgium, Norway, Finland, Esthonia, Latvia, Lithuania, Poland, Austria, and Czecho-Slovakia. None of these countries has the kind of consumption statistics that you have in Canada or we have in the United States. For these countries, we have only crop estimates and reported volume of imports. These figures tell us how much wheat was available in any given country in any given year, except for the error due to changes in stocks. I propose to designate these figures as 'domestic utilization'.

If stocks were reduced in the course of the year, the summation of crops and net imports, i.e. 'domestic utilization', understates the amount that was consumed. But, if stocks were built up in the course of the year, the same summation overstates the amount that was consumed. We have made estimates of the stocks at the beginning and end of the past 11 years (1). We do not regard them as completely reliable, but we do think that they are more useful than any other figures we have seen. We think that they are good enough to enable us to obtain a fair notion of the course of wheat consumption in each of these countries in Europe, but we do not want the figures thus obtained to be considered as anything more than fairly good approximations. I propose to designate these figures by the phrase 'adjusted domestic utilization'. This figure is most reliable for those countries that import practically all of the wheat and flour they consume. This is true, because the wheat that moves in international trade is much more accurately measured than wheat crops produced domestically. A country like Norway produces hardly more than a tenth of what she consumes. Consequently, statistics of crops plus net imports, even without adjustment for changes in stocks, give a reasonably good index of the course of total consumption. These figures would not do so if stocks changed greatly, but we have no reason to suppose that changes in stocks are ever very large in a country that imports almost all of its wheat. Besides, Norway, the other countries of Europe that lean very heavily upon imports are the British Isles, Belgium, Holland, Switzerland, Greece, Denmark, and Finland.

Four countries—Holland, Germany, Denmark, and Sweden—have in addition to statistics on crops and net imports more or less direct measurement of consumption.

Let us now consider in rapid succession Graphs 8 to 14 of the several countries. In all of them, Line A represents crops less net imports, Line B 'adjusted domestic utilization'.

Graph 8 is for the British Isles. You will note that consumption has been practically stable over the past decade. The high figure of 1931-32 almost certainly reflects some exceptional use for feed. The figures upon which the graphs are based are to be regarded as highly reliable.

Graph 9 represents Belgium, Holland, Switzerland, and Greece, combined. They all import much more than they produce, and, therefore the data are moderately reliable. Consumption has risen 30% in eleven years, probably a little faster than population increase. There is no evidence at all of a break in this trend in the last few years. It seems probable that in the last two years, at least, there has been some exceptional use of wheat for feed.

The Dutch official statistics of flour consumption, which are not presented separately in the graph, also show a smooth upward trend without substantial annual deviation.

Graph 10 covers Scandinavian and Baltic countries, which as a group import rather more than they produce domestically, but the excess is not very large. Adjusted domestic utilization shows no smooth and consistent trend. Beginning with 1927-28, the level seems to have moved upward, which probably merely means that a great deal more wheat began to be used for feed than had been used in earlier years. Moderately good evidence that food use has remained on a level through the period is to be had from the index numbers of flour produced plus flour imported in Denmark and Sweden, which are graphed on the lower portion of the slide. It is possible that, without the depression, feed use in these countries would have run even higher than it did after 1929-30, but there is certainly no evidence that the depression tended either to expand or contract the use of wheat for food.

Graph 11 covers France. We have no reason to suppose that there is very extensive use of wheat for feed in France. On the other hand, we have good evidence of a quantitative sort, that stocks are built up and down within a rather wide limit. Furthermore, consumption is mostly for food, consequently our estimate of adjusted domestic utilization should really show what has happened to wheat consumption, provided crop estimates are to be trusted. Of this, there is some doubt. In consequence, about all that can be said is that there is no evidence that the depression has affected wheat consumption much one way or the other.

Graph 12 covers Italy, where what happens to stocks is less clear than it is for France. Feed use of wheat is quite small. The graph indicates that perhaps an upward trend in consumption may have been a little interrupted by the depression. In view of the short period covered, this cannot be maintained with certainty. However, that the depression has affected consumption more than in other countries in western Europe is not at all unlikely. The standard of living is low. It has been estimated that it is probably as low as in Japan, at least in southern Italy (2). Moreover, maize and rice are rather widely used for food, so that a shift from wheat to these cereals would not represent as great a change in the dietary as it would in most other western European countries.

Graph 13 covers Spain and Portugal, where there is very little information concerning stocks, where crops vary rather widely from year to year, and where wheat imports have been strictly regulated for practically the entire period under consideration. Nevertheless, we are inclined to believe that the statistics point to stable consumption for food and very little consumption for feed. This statement, however, needs to be qualified as regards years like 1924-25, when the domestic crops were short, stocks were not very large, and importation was not permitted in amounts sufficient to bring the available supply up to a normal level. In such a year, consumption of wheat for food is compelled to be reduced. Probably, in a year with the domestic crop extremely large, as was the crop of 1932, consumption expanded a little, but, in the main, surpluses were stored to be used in future years.

Graph 14 covers Austria, Czecho-Slovakia, and Poland, for which we do not have very trustworthy statistics. In Czecho-Slovakia, as well as in Poland, the system of crop estimating has been changed in the course of the period under consideration. Since 1926, the figures for crops, and hence for domestic utilization, are substantially too high for proper comparison with statistics of earlier years. Even with allowance for this fact, there seems to have been a rather sharp upward trend in wheat consumption up to about 1930-31 or 1931-32. It is entirely possible that consumption is increasing more rapidly than population.

Estimated consumption fell off very rapidly between 1931-32 and 1932-33. It is a question, however, how much of this is to be attributed to the depression and how much to the very short wheat crop of 1932-33. To maintain consumption at a normal level would have necessitated very large imports. It is doubtful whether this would have been financially possible, even in good times. It was certainly impossible during the depression. Moreover, there was a very good rye crop coinciding with the poor wheat crop, so it was easy to keep up bread-grain consumption, although wheat consumption had declined. Probably not more than half the actual decline may reasonably be attributed to the depression.

To discuss conditions in Germany adequately would require as much time as has been allotted to me today. I can only sketch the situation. In the first place, it is probable that the German crop estimates are too low. This is a question that I cannot go into here. Because of the complexity of the situation, I am not presenting a graph for Germany to you. It would probably prove misleading unless there were time to discuss it in detail. The situation seems to be that human consumption of wheat declined most, and most persistently. According to our Berlin correspondent, Professor Jasny, the Germans consumed about 189 million bushels of wheat for food in 1928-29, and only about 145 million bushels in 1932-33. It is a striking fact to say that if the earlier trend of food-use in Germany had continued beyond 1928-29, the aggregate food-use in Germany in the past four years would have totaled fully 160 million bushels more than it actually did. So far as we can judge, this is very nearly half of the world's wheat surplus now.

The use of wheat for feed, seed, and shrinkage in Germany did not fall off in the way that food-use fell off. On the contrary, there was very heavy use of wheat, especially for feed, both in 1931-32 and 1932-33. In some part, the heavy feed-use of 1932-33 was directly the result of a government decree that permitted 11 million bushels to be bought by the government, coloured and stained with an anilin dye, eosin, and sold at a much reduced price to poultry producers. This step was taken in order to keep out imports of maize, as well as to use up a domestic surplus of wheat that resulted from the combined effects of governmental restrictions on wheat uses and the bumper crop of 1931-32.

We now come to a series of countries that are minor users of wheat. I will not bore you by presenting graphs for each one of them. I will merely state briefly what each shows.

In the Union of South Africa, there seems to have been no perceptible effect of the depression on the consumption of wheat.

This also seems to be true of New Zealand.

In the West Indies, there seems to have been a sharp drop in consumption beginning with 1928-29, no doubt correlated with low sugar prices. In this connection, it is interesting to note that Cuba now demands that in the baking of bread 10% of yucca flour be added to the wheat. Yucca flour is the same as manioc or cassava meal.

In Brazil, wheat consumption increased up to 1928-29, which began to be checked in 1926-27, due, no doubt, to the low price of Brazilian export commodities.

For Alaska, Hawaii, and Porto Rico, there is no discernible evidence of any effect of the depression.

In the Netherlands East Indies, flour imports have increased regularly from year to year, but increased less between 1930 and 1931 than they had earlier. For 1932, we have no data. Some further decline seems probable, because of low purchasing power in consequence of low world prices for rubber, sugar, etc.

In the Philippines, there has been an upward trend of consumption through 1931. More recent figures are not available.

In British Malaya, the trend of consumption was upward until 1927. Since that time, it has been downward. This is probably to be correlated with the low price of rubber and tin and with the repatriation of imported plantation labour.

For Japan, no effect of the depression is discernible, and this is also true of Egypt.

If I may be permitted to generalize, I would say that as regards their behaviour during the depression one can classify countries according to the elasticity of their demand for wheat.

Countries with a more or less elastic demand for wheat are those with either a very high standard of living or a low one.

In high-standard-of-living countries, demand is somewhat elastic, because in them bread is no longer the principal staff of life. To a certain extent, though within rather narrow limits, consumption of bread may go down during a depression due to the elimination of waste or the substitution of cheaper foods or both. The United States and, perhaps, Canada would seem to be the only representatives of this class.

In low-standard-of-living countries, demand for wheat is quite elastic, because in these countries bread is not *the* all-important element of the diet. Their peoples prefer wheaten bread to rye or the coarse grains, but at all times other cereals than wheat form an important element of the diet. In times of depression, these peoples export wheat, if they have it and if it is profitable to do so and to eat coarse grains instead. As we have seen, this is probably the case in Northern Africa. If it is not profitable to export wheat, they eat it themselves as in India. If there is a crop failure, as in Roumania, Jugo-Slavia, and Poland, they eat coarse grains or rye, for their purchasing power is too feeble in times of depression to enable them to import much wheat.

The demand for wheat is fairly inelastic in countries of moderately high standard of living, because in them bread is the staff of life and they have long ceased to consume coarse grains in considerable quantities. Some of them still consume more or less rye. If they are unaccustomed to rye, they keep their wheat consumption up during a depression and continue to import, if that is not made difficult by government regulation. If they are accustomed to rye and there are government restrictions on wheat imports, they substitute rye. If there are no artificial restrictions, they continue their customary trend of wheat consumption, whether it be stationary or rising.

If we ask what lessons can be learned concerning the market for wheat in the years to come, the following observations suggest themselves. There is little prospect for the expansion of wheat consumption at a rate faster than population growth in the United States, Canada, the United Kingdom, and most of western Europe, excepting, perhaps, the Iberian peninsula, Italy, and Germany. In most western European countries, in which the trend of consumption is about stationary, the trend will probably turn upward whenever the trade in wheat is freed from the government regulations which now limit it. In Australia and Argentina, the trend may continue upward for some time. In other countries, with a very low standard of living now subsisting on coarse grains or rye, like the countries of the Danube Basin, we may look for an upward trend of wheat consumption as their standard of living improves. This will probably be true in general also in tropical and sub-tropical countries, where the present per capita consumption of wheat is low.

With the rise in standard of living, they will tend to absorb more wheat, but per capita consumption may never become large.

Taking the world as a whole, it is impossible to make a forecast. In general, countries with a high standard of living, with a few exceptions, have stationary or declining trends of consumption, whereas countries with a low standard of living, for the most part, exhibit an upward trend. There is no scientific method of weighing one set of countries against another. I can merely record my impression to the effect that in the near future there is little prospect that the total consumption of the world will rise faster than the population increases.

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