

AMERICA AND THE WORLD'S WHEAT SUPPLY.

BY RAY STANNARD BAKER.*



NE has only to watch for a few weeks, as I have been watching, the amazingly intricate operations of the machine which deposits each morning its supply of bread where that bread is to

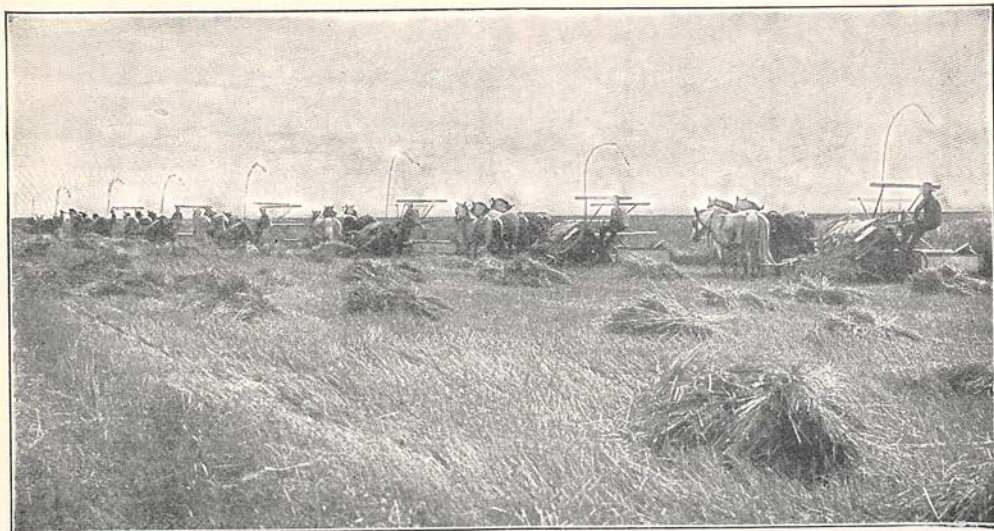
be eaten, never a loaf too much, but sometimes many loaves too few, to feel the mighty reality of the problem of food distribution. There are at present about 517,000,000 bread-eaters in the world. An increase equal to two Londons is yearly swelling the enormous figures, the additions coming partly from births in the more advanced countries, and partly from the training of the consumers of rice, rye, and the like into a preference for wheat foods. The deductions of years have shown that each bread-eater—man, woman, and child—will consume a barrel of flour (four and one-half bushels of wheat) every year. The French, the English, and the Americans eat more than the average; the Russians and the Germans eat less. On the basis of this average, the bread-eating world requires more than 2,300,000,000 bushels of wheat every twelve months to supply its table with bread. If the wheat-fields of the world produce as much as this, then there is plenty and prosperity the world over; if the production is less, there is suffering and starvation. Few people realise how closely the crop is consumed each year. According to the statistician of the United States

Department of Agriculture, the world's total production of wheat in 1897 was 2,226,745,000 bushels—not enough by millions of bushels to supply the world's food demand and furnish seed for the crops of another year. Consequently, countries of the earth where the crop was light were visited by want and high prices, in India the need even touching the point of famine. During the following year, 1898, the crop was enormous, reaching a total production reported as 2,879,924,000 bushels, but this is probably an overestimate; and, as a consequence, there was plenty of food in nearly every part of the world.

Not long ago Sir William Crookes, the distinguished President of the British Association for the Advancement of Science, considering the proportion between wheat production and wheat consumption, ventured to name the year 1931 as a date when the world's bread-eaters would cry for more wheat than the world's farmers could produce. There is good reason to believe, as Mr. Edward Atkinson has pointed out, that Sir William has vastly underestimated the wheat-growing possibilities of the earth, at least of the United States. Yet the statistics from which such prophecies are drawn show how very closely the consumer treads upon the heels of the producer, and how imperative is the necessity of distributing the crop—grown perhaps half a world away from the centres of consumption—as soon as it is shaken from the threshes in a million fields, in order that every white man shall have his loaf, and have it before his last supply has run out.

Great Britain eats her entire wheat crop in about thirteen weeks, and then she must be supplied immediately with the products of Minnesota, Central Russia, or India, or else she must suffer. If the United Kingdom could be completely blockaded, say by the ships of allied Europe, her population would probably be totally extinguished by starvation within three months. The like is true of every country in Western Europe, although in some of them actual starvation could be much longer averted. This immediate requirement of the densely settled portions of the earth for a constant supply of bread overrides all laws and diplomatic

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HARVESTING IN DAKOTA, ON A FARM OF 10,000 ACRES, 8,000 ACRES OF WHICH ARE UNDER CULTIVATION.

and political considerations ; it disregards customs duties and the boundaries of nations ; and it is the foundation of the world's money systems ; for wheat must move, that men may have bread.

DIRECTION AND FORCE OF THE WHEAT TIDES.

Generally speaking, the vast tides of wheat set to the east and north—from the emigrant farmers on the edge of civilisation to the cities of the old countries ; from America, Chili, and Argentine to Europe. There are lesser tides to the west and south, as from California to China, from Russia and India to England, from the United States to Brazil ; but they are insignificant compared with the vast main tide from west to east. A few years may make great changes in these tides. The rice-eating Chinaman has tasted the food of the white man, and he finds it good. He could consume the present world's crop and still go hungry. Siberia, opened by the Russian railroad, may yet be one of the greatest wheat-producing countries. Australia has been farmed only around its fringes.

When a European thinks of food, he thinks in terms of wheat. He is the greatest of bread-eaters ; where an American eats meat and potatoes, he eats meat and bread. Yet in the best of years Europe never produces enough, even including the crops from the vast fields of Russia, to supply her own needs. She is therefore absolutely dependent on the United States, India, Australia, and

Argentine. If an open conflict between the United States and Europe should ever come, the American might go far toward winning his victory by a mere stoppage of the tide of food ; he could almost starve his enemy into submission. Five countries of Europe produce more wheat than they can use—Russia, Hungary, Servia, Bulgaria, and Roumania ; but their surplus would be sufficient to supply only the needs of Holland, Belgium, Scandinavia, and little Switzerland, leaving unsatisfied the vast populations of Great Britain, Germany, Austria, Italy, and France. It is, therefore, no wonder that the question of food supply is constantly before the parliaments of Europe. It is no wonder that the British Government is pondering the feasibility of building national granaries and storing vast quantities of wheat against the emergencies of war or famine.

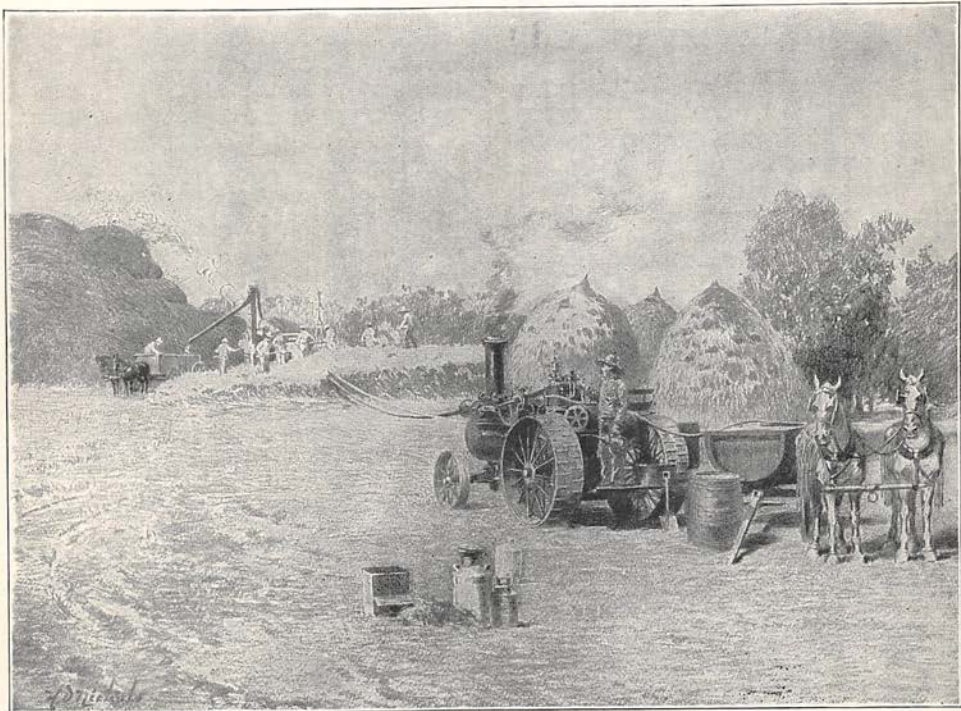
North America is not yet the largest producer of wheat, although the day may not be far distant when it will take first rank. In 1898, American farmers grew over 758,000,000 bushels, or more than one-quarter of the world's production ; but Europe produced 1,548,881,000 bushels, or more than one-half the world's production. Asia (mostly India and Turkey) came next, with 421,000,000 bushels. These three continents are the great wheat producers. South America grows only 72,000,000 bushels, less by some 6,000,000 bushels than the production of the single State of Minnesota ; Africa grows only 44,000,000 bushels ; while Australia, which has been so much heralded as a source of wheat, comes

last of all, with only about 35,000,000 bushels, or about the production of the State of Wisconsin, which is far from being first in the list of American States.

THE GREATEST OF ALL WHEAT TRADERS.

The American, with his enormous surplus of wheat for exportation, has become, naturally, the greatest of all wheat traders. He is practically the manager and dictator of the world's wheat movement. He is eminently practical, clear-headed, and far-sighted; and wherever I saw him—in Chicago, Minneapolis, New York, Duluth, Buffalo, Detroit, or Toledo—he was always astonishing, he came so near to the realisation of the cosmopolitan. Every morning he knows the conditions of the weather in Chili and the progress of threshing in India. The United States Government hangs at his elbow a map showing the rising storm in Montana, which may reduce by two per cent. the crops of Northern Minnesota. His special newspapers inform him as to prices in Mark Lane, London; in the Produce Exchange, New York; on the Board of Trade, Chicago; in the Chamber of Commerce, Minneapolis. The railroad companies quote him daily rates

for shipments to Rio Janeiro, Hamburg, and Hong Kong. His State Government weighs his wheat as it arrives from the fields, and decides definitely as to its grade. He knows intimately how many bushels of wheat there are each morning at the great terminal elevator points the world over, how much is afloat in steamships, how much is being rushed across the continents in cars. His bank stands ready to advance him money at the lowest rates of interest to the full value of the slips of paper which record his elevator holdings. He knows the personal traits and the needs of half the races of the earth. He knows, for instance, just when the Chinaman can be persuaded to buy his cheap flours instead of rice. He knows that Germany will use his bran for making molasses cakes. He knows that the Finns will sometimes eat his wheat, though grown 4,000 miles away, in preference to the flour of Russia. He knows that the Frenchman eats more bread than the Englishman, and the Englishman more than the American; and while there is wheat in the bins of Manitoba or Buffalo he will not allow the poorest bakeshop in London to go without bread to sell. So vast are his dealings that thousands have become units to him; when he sells



THRESHING WHEAT: A SCENE NEAR BEATRICE, NEBRASKA.

The large blow-pipe in the background carries off the chaff, it can be pointed in any direction that is desired.

"10 wheat," he means 10,000 bushels, not ten bushels. He knows just where in all the world wheat will be scarce, and he prepares overnight to turn all his elevators, railroads, canals, and steamship lines to satisfying the demand. He may not know a harvesting machine from a plough, this trader of wheat; but his eye is always on the thin, wavering ratio line between population and production; he is always facing world-wide starvation, and always averting it by his splendidly organised business machinery. Indeed, there is no more impressive spectacle in the whole scheme of human life than the almost frantic energy and haste of the men of the wheat pits, of the railroad and steamship lines, and of the mills, each fighting tooth and nail for his own personal gain, and yet serving all unconsciously the mighty world purpose of feeding the city from the surplus of the distant field.

A few estimates as to last year's crop—the crop of 1899—will give some idea of the wheat business of the American—

For feeding his 74,000,000 inhabitants for one year, at $4\frac{2}{3}$ bushels each, he needed . . .	345,000,000 bushels.
For seeding his wheat farms of 47,000,000 acres, at $1\frac{1}{2}$ bushels to the acre, he needed . . .	70,500,000 bushels.
Total requirement for one year . . .	415,500,000 bushels.

Thus he got from the crop of 1899 something over 600,000,000 bushels of wheat, and that left him approximately 200,000,000 bushels to send abroad to his hungry brethren of other nations. More than a third of this he ground, and exported in the form of flour; the remainder he sent as wheat. And in addition to this great exportation and the incident handling and conveyance, there is the interior distribution of wheat and flour in the United States, the movement from the fields in the West to the populous centres of the East, which is an immense business in itself, exceeding in volume the entire domestic food movement of all the countries of Europe.

In spite of the eagerness of the American trader and his great shipments, he never sells down below a certain huge surplus. On July 1st, 1899, for instance, what is called the "visible supply" of grain in elevators at such terminal points as Duluth, Minneapolis, and Chicago, together with the wheat in transport on ships and cars, amounted to about 74,000,000 bushels. The invisible supply in the farmers' hands and in country elevators on the same date was roughly

estimated at 70,000,000 bushels, making a total of 144,000,000 bushels on hand at the beginning of the year's harvest. The surplus varies from time to time, being smallest in the summer just before the new crop comes in; but it is always large. It is the mighty trade buffer which prevents the running of "corners" and preserves the equilibrium of price and movement. Let a Leiter try to control all the wheat in the country, and the canny trader permits him to dip deep into the surplus, and he suddenly finds himself so loaded down with wheat the very existence of which he hardly realised, that he loses millions in trying to save himself by selling out.

THE MARCH OF THE HARVESTERS.

Hardly less impressive than the eastward flow of the wheat is the northward march of the harvesters. This begins at the bottom of the world, in November, with the harvests of Peru and the southern tip of Africa. Then comes Burma in December; in January, Australia and Argentine; in February and March, the East Indies and Upper Egypt; in April, the wheat belts of Asia Minor, Persia, India, and Mexico. It is not until May that the harvesters touch the United States; in that month they reach Florida and Texas, and, in foreign countries, Japan and Northern Africa. With June, the wheat harvest in the United States begins in earnest, and from that time until September 1st, when the last harvester has passed northward out of the Red River Valley, there is not an hour of daylight when the click of the reapers cannot be heard. July and August are the harvest months of northern civilisation. In the United States, the harvest-time succession has developed its own typical harvester. He appears with the ripening of crops in Oklahoma, ragged, unkempt, and penniless, but ready to do a man's full work for double wages. As soon as the Oklahoma grain is safely in shock, he marches northward. Somewhere in Nebraska or Kansas he acquires a blanket, possibly a black tin tea-pail, and a little money. He is then known as a "wheat stiff," or sometimes as a "blanket stiff." If he is industrious, he can make a year's wages in two months. By the time he reaches the Dakotas, he is one of an army of more than 50,000 men, many of whom have been drawn from St. Paul, Chicago, and even farther east, tempted by low railroad fares, large wages, and bountiful board. In September, the



A SQUAD OF WHEAT SAMPLERS AT WORK.
From photographs supplied by the "North-Western Miller."

harvester, now no longer penniless, disappears from the knowledge of men; where he goes no one can say; but with another June he will be found waiting in Oklahoma ready for the ripening of wheat. And he is the first, and not the least interesting, of the movers of wheat.

THE SHIFTING OF THE CENTRE OF PRODUCTION.

Another one of the great movements pertaining to wheat is the change of location in the centre of wheat production. Only six States east of the Mississippi had a larger wheat acreage in 1897 than they had at the time of the eleventh census in 1890. On the other hand, every State west of the Mississippi, with the single exception of Missouri, showed a considerable increase; and the production of wheat on the Pacific

Coast had made a phenomenal advance, constituting in itself in 1897 thirteen and three-tenths per cent. of the total production of the country. Thus the centre of American wheat production, like the centre of population, is advancing rapidly westward.

The wheat grown in the United States is of two general kinds. One is the old-fashioned, plum-kernel, winter wheat, grown through all the Central and Southern States; and the other is the hard spring wheat—the "Scotch Fife" and the "Blue Stem" of Minnesota and the two Dakotas—for many purposes the best wheat grown in the world and the kind that has made the fame of Minneapolis flour.

During last season, the product of the hard, or spring, wheat sections of the country amounted to upward of 240,000,000 bushels, about two-fifths of the entire production of the United States. Of this Minnesota and the two Dakotas alone produced nearly 200,000,000 bushels. Minnesota is the greatest of all the wheat States. Last year her wheat-fields covered nearly 5,000,000 acres, and she grew upward of 78,000,000 bushels—more than twice the entire production of the continent of Australia, and more than that of Great Britain and Ireland.

The American farmer, and particularly the North-western wheat farmer, who ploughs and reaps and threshes by machinery, without so much as touching his product with his hands, is becoming pre-eminently a man of business. The Government has supplied colleges for educating him, and it sends him regular bulletins containing the results of long-continued experiments conducted by the Department of Agriculture. He is a wide reader, sometimes a thinker, and always a politician. Every morning during the days of harvest he receives the reports of the Board of Trade or the Chamber of Commerce where his wheat is likely to be sold. He also has on his desk daily prices and a general advisory letter from his commission men. He is even beginning to study the Government crop reports and to watch the crop probabilities of Russia and Argentine



ARRIVAL AT A GRAIN ELEVATOR AT BUFFALO.

as an indication of the trend of prices. A prominent commission man of Detroit told me that large numbers of farmers in Michigan, which has the oldest and best of agricultural colleges, had put in telephones, so that they could keep more closely in touch with the city markets and be ready at a moment's notice to take advantage of any advance in price. In Dakota, some of the farmers have special telegraph lines running into their houses. All this recently developed business acumen on the part of the farmer is increasing marvellously the rapidity and efficiency of the distribution. Only a few years ago the railroad elevator buyer was the only man who could quote prices, and the farmers, knowing that they were at his mercy, were suspicious and slow. Now the more advanced of them know the reigning prices in Liverpool from day to day almost as soon as the most sophisticated city trader.

HOW THE FARMER DISPOSES OF HIS WHEAT.

The primary movement of wheat is the natural flow to the local flour-mill, where it is ground to feed the farmer's family, and toward the granary, where it is stored up for seed. The portion of wheat thus actually retained and consumed in the country where it is grown is astonishingly large. According to the statistician of the Department of Agriculture, half of the crops of Ohio, Iowa, Virginia, California, and Oklahoma are eaten where they are grown. Minnesota and Michigan farmers consume a third of their wheat. Pennsylvania eats over 18,000,000 bushels out of the 26,000,000 bushels produced. In some of the States—among them, all of New England, South Carolina, Mississippi, and Montana—not so much as a kernel gets away from the county where it is grown. In all the United States, about 276,000,000 bushels of the crop of 675,000,000 bushels for 1898 were consumed immediately at home.

When the farmer has amply provided for himself, he begins to think of selling his surplus—which in 1898, for instance, for the whole United States, amounted to the enormous total of 400,000,000 bushels. Of this, something less than half is consumed in the cities of the United States, and something more than half is exported to foreign countries, either as wheat or as flour. The wheat crop of the average year is, therefore, divided into three more or less equal parts, the first being consumed by the farmer and his immediate neighbours of the smaller towns and villages, the second going to supply the concentrated masses of population in the great cities, and the third being exported as wheat or flour to feed the foreigner. These are most important factors in the general economy of the nations, for the longer the producer can preserve intact the present relation between the wheat consumed at home and that exported, the greater will the country become, the larger the number of farmers' sons who will be educated in the agricultural colleges, and the larger the number of farmers' daughters who will play upon pianos.

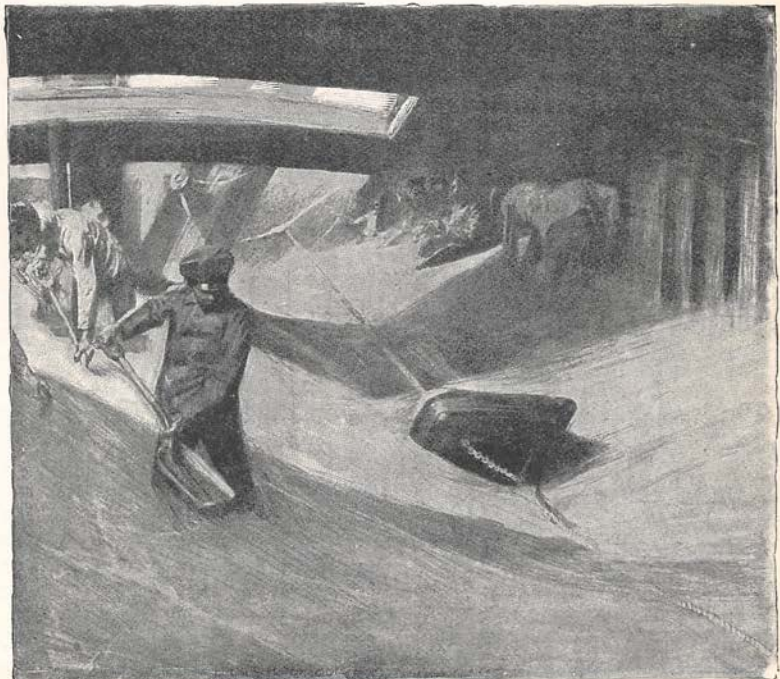
There are three general methods by which the wheat farmer disposes of his crop. In the prolific North-west, where large numbers of farmers are cultivating from 3,000 to 10,000 acres of wheat a year, where the

various farm buildings are connected by telephone, where the ploughing is done by complicated machinery, where the farmer owns from two to ten threshing-machines, from twenty to fifty reapers, and hundreds of cattle and horses, the sale of a crop becomes a large business transaction. I met a Dakota farmer of the type who had two large elevators, one at each end of his 3,000 acres of wheat. Here the grain was stored as fast as it came from the threshers, and freight cars could be run on the special side-tracks which had been provided by the railroad company, and the wheat shipped at a moment's notice. This farmer expected a crop of 50,000 bushels from his land. At sixty cents a bushel, the net price he expected to receive, his income from his crop for the year would be about £6,000. Some of the great farmers even keep special agents in the Chamber of Commerce at Minneapolis or on the Board of Trade at Duluth. These agents watch their opportunity, and sell portions of the crop from time to time for future delivery, as the reigning price attracts them. Of course, this wholesale method of doing business is only possible among the biggest farmers. But there is a considerable class of somewhat less extensive wheat-growers who have of late years formed close business relations with commission men at such terminal points as Chicago, Duluth, Minneapolis, St. Louis, and Toledo. They order cars themselves, and ship their grain direct, thereby avoiding the middleman charge of the local dealer, and get a price remarkably close to the city quotations. Some of these farmers even go so far as to sell on board for future delivery.

THE LOCAL ELEVATOR MAN.

But the great mass of smaller farmers, especially

throughout the winter-wheat States, still sell in the old-fashioned way, to the local elevator man or buyer. They keep themselves so thoroughly informed, however, as to the reigning prices in the great marts, and the probabilities as to rise or fall, that the commissions of the local dealer have been scaled to the lowest notch. Indeed, in this day of many railroads, if the small wheat-grower is dissatisfied with local prices, he can combine with his neighbours—a not infrequent occurrence—and ship directly by car-load lots to some city commission man, who is only too willing to buy his grain at the highest possible price. So fierce is the competition among the wheat-buyers that at some centres, most notably Minneapolis, vast systems of elevators have sprung up, each controlled by a powerful central house at the terminal point. There are no fewer than thirty-six elevator companies in Minneapolis, controlling 1,862 country elevators with a combined capacity of nearly 50,000,000 bushels of wheat. A single company controls 115 country elevators having a capacity of 4,750,000 bushels of wheat. And the head of this company is also the head of other companies there, having lines of elevators in Minnesota and the Dakotas with a com-



UNLOADING WHEAT FROM THE HOLD OF A LAKE STEAMER.

Men shovel the wheat by hand into the path of a travelling steam-shovel, which carries it to a line of travelling buckets; and these, in turn, take it up into the elevator.

bined storage capacity of nearly 10,000,000 bushels. He also has lines of elevators in Nebraska and Kansas. He is said to be the largest individual wheat-dealer in the world. These elevators are distributed along nearly every railroad line touching Minneapolis, and form a network of business enterprise covering five States. Every part of every system vibrates in instant sympathy with the controlling head at Minneapolis, and deals are made with a rapidity fairly dizzying to the outsider. The manager of a local house may buy a thousand bushels in a day. The central office at Minneapolis is immediately informed of the amount by telegraph, and within an hour every bushel is sold on the floor of the Chamber of Commerce. Indeed, so rapid and successful is this system of crop movement, that of the wheat of 1898 less than thirty per cent., according to statistics of the Department of Agriculture, was left on hand on March 1st, 1899. In other words, more than two-thirds of a year's crop had actually been disposed of within a half year.

Perhaps no one thing so simplifies and facilitates the movement of wheat as the present rigid system of inspection and grading. In former times a load of grain must needs be carefully examined by every prospective purchaser, were he miller or commission man; and if this buyer sold again, a second examination became necessary, with its attendant disagreement as to quality. The business of wheat-buying, indeed, was full of time-consuming details, and in the end neither party to a trade was likely to be satisfied. As a consequence, the State Government, or, in some primary markets, the local Chamber of Commerce, stepped in and assumed charge of the whole system of grading and inspection; and now no portion of the great wheat business moves with more ease and efficiency, a degree of care and accuracy simply amazing to the outsider being constantly maintained.

A TYPICAL SYSTEM OF GRADING.

Minneapolis is the greatest primary wheat market in the world, and it is here that the system may be seen to its best advantage. During the crop year ended August 31st, 1898, Minneapolis received upward of 75,000,000 bushels of wheat, besides vast stores of other grain. It will be seen that so slight a mistake in inspection or grading as the equivalent of one cent a bushel on the wheat would mean the improper distribution of some £150,000 in a single year. The Minnesota

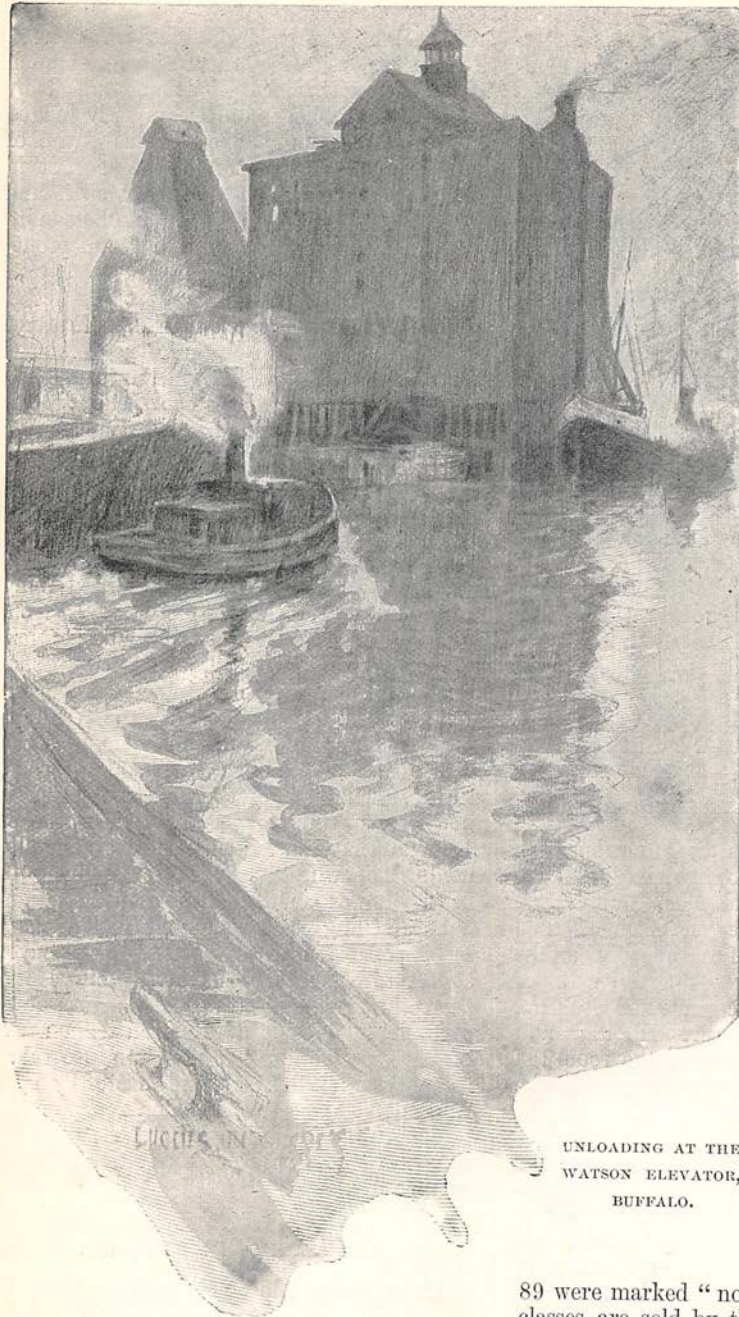
system of inspection is under the supervision of the State Railroad and Warehouse Commission, which meets in St. Paul every August for the purpose of establishing grades for the ensuing year. Notices are published, and the grain men of the State are invited to attend and make suggestions for changes or improvements in the system. Last winter the number of grades was fixed at eighteen. The first (and it is the pride of Minnesota) was No. 1 Hard Spring Wheat; and the second, No. 1 Northern Spring Wheat. Here are the descriptions of these two grades—

No. 1 Hard Spring Wheat.—No. 1 Hard Spring Wheat must be sound, bright, and well cleaned, and must be composed mostly of Hard Scotch Fife, and weigh not less than fifty-eight pounds to the measured bushel.

No. 1 Northern Spring Wheat.—No. 1 Northern Spring Wheat must be sound and well cleaned, and must be composed of the hard and soft varieties of spring wheat.

The deputy inspector and his men are out early in the morning. The cars from the wheat-fields have been shunted to their special sidings in each of the yards. One man goes ahead, recording the numbers and initials of the cars, and examining the seals to see that no one has tampered with them. A second man breaks the seals and opens the doors, and then comes the deputy himself—the wheat expert. He is quick and keen, long schooled in observing the minute differences which mark the wheat from different parts of the country. I saw one grizzly old inspector who had become so expert that, according to humorous report, he could tell what county in the West a car of wheat came from merely by sniffing a pinch of the grain. The inspector looks sharply for threshers' dust, oats, cockle; and he examines the kernels keenly to see if they are shrunken or burnt; and then he smells for smut. He even plunges a hollow brass tube into the heap to make sure that some cunning shipper has not put in a layer or "plug" of poorer grade wheat at the bottom of the car. Usually he is able to decide on the grade of a car-load almost as soon as he sees the wheat; but sometimes he is compelled to take out a pinch here and there, and then weigh it in a little brass kettle, to make sure that it comes strictly within the lawful specifications. He is an absolutely impartial judge. He records only the number and initials of the car. He never knows who is the shipper. I heard of one deputy who inspected his own brother's wheat for six months without knowing whose it was.

The official inspector is accompanied by a



UNLOADING AT THE
WATSON ELEVATOR,
BUFFALO.

number of active young men of the sampling bureau which represents the great elevator and commission houses. They climb into the car, thrust a brass plunger deep into the wheat, bring up a sample here and there, fill a bag, label it with the number and initials of the car, and pass on with the inspector. It is swift work, of necessity, for the samples

must be in at the opening of the Chamber of Commerce, where, set out in little tin pans, each bearing the grade tag of the State inspector, they form the basis of the day's trading. Of such wheat as now comes into the market an inspector can inspect and grade thirty or forty cars an hour; but eight or ten years ago he could inspect and grade from sixty to ninety cars in an hour, the wheat at that time being much cleaner, owing to its coming from newer and less weedy fields, and to more careful threshing. In about half the cars the inspector must now sift and weigh samples of the grain to see how many pounds to the bushel it must be docked for dirt and oats. The highest grade of Minnesota wheat is very rare and precious, and happy is the farmer who ships it. Of 995 cars of new wheat marketed in Minneapolis during August, 1899, only five cars were graded No. 1 Hard, while 296 were set down as No. 1 Northern, 387 as No. 2 Northern, 156 as No. 3 Northern, 62 were rejected, and

89 were marked "no grade." The last two classes are sold by the commission men for what they will bring, and the wheat may later be dried, scoured or cleaned of dirt by the elevator men, so that it will come up to grade specifications.

After an inspector has finished his work, the cars are resealed with a State seal, to await the disposition of the purchaser. Everything is done promptly and in a thoroughly

business-like manner, and the wheat is rarely delayed more than a day in the cars in which it arrives. The State keeps complete records and samples of every car inspected until the wheat has passed entirely out of the market, so that should any dispute arise, it could be instantly and amicably settled. It sometimes happens that the commission man believes that the wheat is entitled to a higher grade than the inspector has given it. If so, he may appeal from the inspector's decision to a State board which is especially appointed to hear his complaint. If the grade is changed after a second examination, the State bears the expense of the inspection; if not, it is borne by the objecting commission man. It may be said to the credit of these inspectors, that during the crop year ended August 31st, 1898, out of 220,777 cars inspected, only 16,104 were held for reinspection, and in only half of these was the grade changed. The State charges a small fee for its services as inspector—twenty cents a car—and later it steps in and officially weighs all the wheat as it is distributed into the elevators. For a recent crop year, for instance, the total expense to the State was £38,336, and this sum was nearly covered by the fees.

THE WHEAT TRADERS AND THEIR METHODS.

About ten o'clock in the morning, the wheat traders of the great primary markets, such as Chicago, Minneapolis, Duluth, St. Louis, and Toledo, gather on 'Change. The samples from hundreds of cars are ready on the tables, each with its tag telling the name of the commission man, the grade and dockage, and the number of the car. Big dials and blackboards distributed about the room tell the story of the price fluctuations in the market at Chicago, and usually in the markets of several other cities, including, of course, the local market. The elevator men, the millers or their buyers, and the commission men swarm about the tables, buying as many car-loads as they may have orders for. In Minneapolis, a very large proportion of the wheat is bought in for the millers; in Chicago and other cities it is bought for storing against a rise in price or for immediate shipment. The seller makes a notation of each sale on his "sold" card, and the buyer enters his purchase on his "bought" card.

So far, the trading is as simple as the selling of a calico dress by sample—I have grain to sell, and you buy it. But the most important feature of the wheat exchange is

not this buying and selling of cash wheat. It is rather the trading in "futures," a branch of the wheat business little understood by the outside public, and often unjustly judged on account of its abuses. It has played of late years an immensely important part in making the movement of wheat swift and certain, and in permitting the middleman to do business on a very narrow, but still profitable, margin.

The selling of "futures" grew out of actual necessity. Early in the sixties, before the railroads had reached out into the West, the elevator men of Red Wing, Minnesota, then a great wheat market, were compelled to buy the farmer's wheat in quantities in the fall, store it all winter, and float it down the Mississippi in the spring. They bought without the slightest idea of what the price would be when they came to sell, and the fluctuations of war times were wide and frequent. As a consequence, the Red Wing traders were compelled to buy very low from the farmers, to avoid any possibility of loss when they came to sell, and their profits were quite likely to be enormous. This condition of the grain trade, with the resultant dissatisfaction among the farmers, was the direct cause of the practice of selling for the future. The date of the first transaction is not known, but it was in the winter of 1868-69 that the system was first generally used. The wheat was sold for delivery in May. It was a simple business transaction, a man selling wheat which he had actually in his possession, to be delivered to the buyer at a future time. From this primitive and perfectly wholesome form, the practice, however, finally developed into such refinements of pure speculation that now immense sales, for "future" delivery, are made by men who don't possess, and don't expect to possess, a grain of actual wheat, to men who have no desire or expectation of ever getting any.

THE MAMMOTH ELEVATORS.

Having been sold on the trading board of the terminal market, the wheat is stored in elevators, each grade by itself, and elevator receipts are issued to the owners. These receipts play an important part in every wheat transaction. They are accepted by banks as security for loans to nearly the full value in money of the wheat they represent. Both the State and the local Chambers of Commerce watch the elevators with critical eyes, for it is upon the absolute trustworthi-

ness of these receipts that the trade bases its money transactions.

The four great wheat elevator centres are Minneapolis, Duluth, Chicago, and Buffalo. I visited some of the elevators in the last-named city—elevators that have a storage capacity of from 100,000 to 2,500,000 bushels, some of them built of steel, operated by electricity from Niagara Falls, protected from fire by pneumatic water systems, and having complete machinery for cleaning, drying, and scouring the wheat, when that is necessary. The elevators are provided with so-called "legs," long spouts, containing moving bucket-belts, which are lowered into the hold of a grain-laden vessel. Here the wheat is shovelled by grimy workmen, toiling in a cloud of dust, into the pathway of huge steam shovels, which, in turn, draw the yellow load—it looks from above like so much sand—to the ends of the "legs," where the

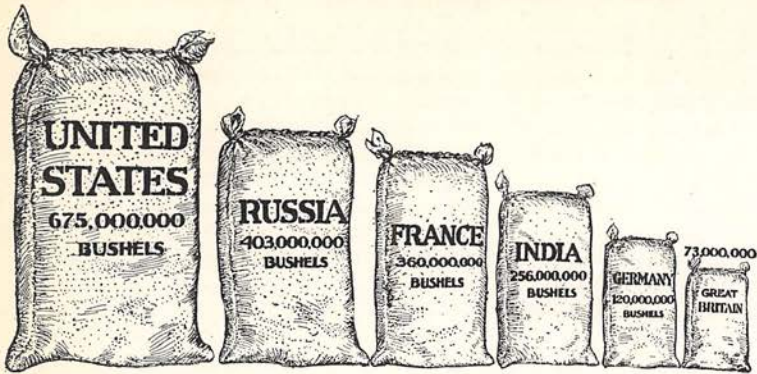
buckets seize it, and carry it upward into the elevator, and distribute it among the various bins. A cargo of 180,000 bushels can thus be unloaded in a few hours, while legs on the other side of the elevator will reload it into cars, six at a time, in five minutes, or in an hour fill a canal-boat. The cost of all these operations has been reduced to a ridiculously low figure—the entire work of unloading, storing, and reloading rarely adding more than one cent to the price of a bushel of wheat.

TRANSPORTATION TO THE SEABOARD.

The transportation of the wheat from the West to the seaboard is a business of almost inconceivable magnitude. It means many thousands of pounds a year to railroad and ship owners, and during the rush season so great is the demand for transportation that shippers find difficulty in obtaining enough cars and vessels. Most of the wheat of the North-west goes by way of the lakes, through the Sault de Sainte Marie Canal, to Buffalo, where it is shipped by rail or canal to New York, Boston, Baltimore, and Philadelphia. Few there are who appreciate the magnitude of the lake shipping interests, which have been developed to a considerable extent by the transportation of wheat. Duluth-Superior is the second port in the United States in point of tonnage, being exceeded only by New York. The Sault de Sainte Marie Canal passes two and a half times as much tonnage in eight months as the Suez Canal passes in a full year. Lake shipping furnishes, moreover, the cheapest transportation in the world. Some of the greater lake vessels carry enormous cargoes—up to 250,000 bushels of wheat in a single load. Without comparisons it is difficult to form any conception of the immensity of a cargo of this size. In Duluth, 700 bushels are estimated as a car-load. At that rate, a cargo of 252,000 bushels, which has actually been transported from Duluth to Buffalo, would fill 360 cars, or nine trains



GRAIN "SCOOPERS" GOING TO WORK IN BUFFALO HARBOUR.



COMPARATIVE WHEAT PRODUCTION OF THE DIFFERENT COUNTRIES.

of forty cars each. At fifteen bushels to the acre, this cargo would represent the yield of 16,800 acres of land. In many localities, a farm of 160 acres is looked upon as a large one. It would take 105 such farms to raise enough wheat to furnish this one cargo.

No better tribute could be paid to the magnificent transportation machinery of the country than a simple statement of the freight rates on grain to foreign ports. A bushel of wheat, or an equivalent amount of flour, can be shipped from Minneapolis to almost any point in Western Europe for about twenty cents. This includes no fewer than three re-shipments—at Duluth, Buffalo, and New York. It is a curious and significant fact for the economists to explain, that it costs almost as much to transport a bushel of wheat from the Dakota fields to Duluth as it does to send the same wheat from Duluth through to Liverpool. A similar condition apparently exists in England. A recent writer in the London *Banker's Magazine* says that shippers in America can move grain from Duluth to Liverpool for less than the English railroads charge for carrying it from Liverpool to Leicester. The same writer, in comparing Old World methods of wheat-dealing with New, pays a splendid tribute to the genius of the American trader. He says—

The cost of growing wheat is only one factor in the problem which the Americans are solving so successfully—of how the New World is to feed the Old. No less important are the railroads with which the Western States are now grid-ironed, the rolling stock, beside which our own is quite out of date, and the ubiquitous agencies that exist for collecting grain, grading it, and hurrying it through to the seaboard in train-loads of 300 or 400 tons each. The financing of the crop requires a most extensive ramification of local bankers and grain brokers, who have all to be “bright men” if they mean to fulfil their first duty as Americans and “get on top.” The elevator companies, who store grain at the railroad centres, whence it can be shipped east at an hour's notice, are indispensable wheels in the

machine. Even the speculators in the “wheat pit,” who buy and sell “futures,” have their legitimate use. Their dealings create a free market for grain such as exists nowhere else. Through them millions of bushels can be bought or sold any morning. Orders which might take days to execute at Liverpool or Mark Lane are the work of a moment in Chicago. In the case of a foreign purchase, the grain can be on the way to the port of shipment the same night. So on all the way through, in every branch of the wheat business, from growing it to making markets for it, the American is *facile princeps*. He handles millions of bushels where European dealers seldom get beyond thousands, and his methods are proportionately massive.

THE FOREIGN CONSUMERS.

Last year the United States exported about 200,000,000 bushels of its wheat crop, about 80,000,000 bushels, or 18,000,000 barrels, of which took the form of flour. The year before was the greatest in the history of the country for flour exports, every civilised nation on the face of the earth and many uncivilised nations having bought flour at the American mill. The average price per bushel for wheat exported in the form of flour in the fiscal year ended in 1899 exceeded the price, for the same period, of the same proportion of raw grain by an amount which brings to American industry over £2,000,000 in one year as a compensation for the enterprise which transformed the 80,000,000 bushels of grain into the 18,000,000 barrels of flour exported.

In this connection Western millers complain much of the present treaty agreements of the United States with certain foreign Powers, which permit the entrance of American wheat at a much lower proportionate tariff than American flour, thereby encouraging the shipment of the raw wheat and its manufacture abroad in competition with American mills. The millers urge that the United States should seek by reciprocity treaties to secure the introduction of flour and wheat into all foreign countries on a basis of equality.

But in spite of all discrimination the foreign sale of American flour is increasing enormously—from about 4,000,000 barrels in 1875 to over 10,000,000 barrels in 1885, and 18,000,000 barrels in 1899. American flour is shipped 5,000 miles to

compete with Russian flour in Germany; and, more wonderful still, Western millers are actually selling their cheaper grades of flour in China to compete with the native-grown rice. The exportation of flour to Hong Kong exceeded 1,000,000 barrels in the year 1899, while in 1889 the number was only 378,634 barrels. The flour shipped to Hong Kong is distributed largely in China. Considerable quantities also are shipped direct to Japan and the Philippines. In ten years the United States flour trade in Japan has increased elevenfold, while in all Asia it has risen from 418,353 barrels in 1889 to about 1,750,000 in 1899. Germany took 500,000 barrels in 1899 compared with only 13,000 barrels in 1889. Holland has become one of America's very best customers, but does not compare with Great Britain, which has nearly doubled her imports since 1889, so that she now buys of the United States more than 10,000,000 barrels a year, or considerably more than half of their entire exportations. Great Britain has the character of being fond of American flour. She buys the best grades and knows the best brands. The flour is exported in 280 and 140 pound sacks. It goes in free of duty, and so the prices in England range remarkably close to the prices in America. During the fiscal year ended June of last year Great Britain paid to America nearly £20,000,000 out of America's total receipts of £35,000,000 for flour and wheat exported to foreign countries. Germany came next, then Canada, and then South America—chiefly Brazil.

THE PROFIT OF THE FARMER.

Now, from all this vast production and distribution, what is the result in profit and prosperity to the American farmer? This is, of course, a most important question, for the volume of the wheat business rises and falls in direct proportion to the prosperity of the wheat-raiser, and a reduction of his profits means a sluggish movement of wheat; but I can barely touch upon it here. It is exceedingly difficult to arrive at the exact cost of producing grain; there are, indeed, as many estimates as there are investigators. But the Wisconsin State Bureau of Labour and Industrial Statistics lately spoke on the subject with more than ordinary authority. Its calculations were based on more than 7,000 inquiries and schedules, and its investigations covered a period of three years, and the conclusion reached was that "the average profit or surplus as computed from the results of all returns ranged from five to twelve per cent. on the capital invested or used."

Moreover, the average yield of wheat per acre is creeping up. In 1890 it was only 11·1 bushels to the acre, in 1895 it was 13·7 bushels, while in 1898 it had reached 15·3 bushels. By the use of machinery, combined with cheaper rates of transportation for supplies, the farmer can produce a larger yield more cheaply than ever before, so that, although the farm prices for wheat do not average higher from year to year, the farmer's profits are larger.

