

## ENGLAND'S BREAD SUPPLY.

"The British public as a body do not generally know to what extent we rely on foreign countries for our food supply, and very few thoughtful readers have yet realized to what extent Great Britain depends on the good will of other nations for her daily bread," says the Pall Mall Gazette. "The inhabitants of the British Isles number 40,500,000 to-day, and consume breadstuffs equal to about 30,500,000 quarters of wheat. Of this total quantity required during the last cereal year the British farmers contributed 8,740,000 quarters, and there came from abroad 23,060,136 quarters. Unfortunately for the English millers, of the quantity of breadstuffs imported in the cereal year just ended nearly one-third of the wheat reached us in the manufactured form of flour. This, of course, means that the wheat offal is not consumed in this country, so that our farmers are deprived of a much valued feeding-stuff, and, further, that the money that would be paid in wages for converting the wheat into flour in our mills if the breadstuff had been imported in the form of grain is not expended at home.

"It is doubtful whether there is any necessary of life receiving more attention at the present time throughout the civilized world than bread, and this is due to the fact that wheat prices are low, in spite of the assertions made by some scientists, for example, Sir W. Crookes, who predicts a scarcity of wheat, 'within appreciable distance,' unless by the aid of science the yield per acre throughout the chief producing countries is greatly increased. But the most interesting portion of the wheat problem to our readers is to know on what countries we rely to supply us with our daily bread, and to what extent we are indebted to their good nature. If we take the Government returns just published and make an analysis of the 23,060,136 quarters of breadstuffs that were imported into the United Kingdom during the cereal year just ended, namely, between September 1st, 1898, and August 31st, 1899, we find that the United States sent a little over 64 per cent. of the total quantity of breadstuffs imported, and of this large amount some two-fifths came in the form of the manufactured article, flour. For many reason it is pleasant to notice that the second place in the list of countries that furnish us with our bread supplies is Canada, who sent during the last cereal year almost 10 per cent. of the quantity imported, while India came next in the list, with about 8¾ per cent. In passing, it may be as well to recall the fact that seven years ago Russia supplied us with most of our breadstuffs, namely, 36 per cent., and the United States only 30 per cent., but last year Russia came fifth on the list of countries, and did not send us more than 3 1-3 per cent. of the total, while the Argentine Republic had the position immediately above her with 7 1-3 per cent. of the total. Australasia only sent to the United Kingdom a little over 2½ per cent. of the total breadstuffs we imported, while the remainder came from Austria, France, Germany, Chili, Turkey, Roumania, etc., in the order of importance we have named.

"From these figures our readers will see that we only receive about a fifth part of the bread supplies imported from within the Empire, and that the farmers of the United States have not only kept their position in the corn trade of this country, but have beaten Russian peasants nearly out of the field; so that if we add the quantity of breadstuffs that we receive from our 'cousins' across the 'herring pond,' to that sent from our colonies, we find we imported from the English-speaking race over 85 per cent., which fact in itself is of great importance and also somewhat of a safeguard should war break out between any European powers."

## THE MERCER PROCESS OF DYEING COTTON.

About the year 1850, Mr. Mercer, a cotton printer in Manchester, who, as the result of chemical research, had introduced several improved processes to the cotton printing trade, discovered that cotton fabrics treated in a special manner by a strong caustic alkali not only assumed a much finer appearance in texture, but also that the tensile strength and durability of the fabric was very much increased.

The discovery attracted very considerable attention at the time, and a handkerchief made from mercerized cotton was amongst the few samples of fabrics accepted by Her Majesty the Queen, from the Exhibition of 1851.

Mercer's experiments appear to have been made solely with the object of closing up the interstices of cotton fabrics, and giving the texture a closer, finer appearance in the way that the process of milling acts on prices of woollen goods and flannel, and when it was found that this process only accomplished this end imperfectly, and that in a very expensive manner, the cotton manufacturers appear to have decided to leave mercerizing alone and stick to the ordinary method of finishing cottons, in which they found plenty of employment for their looms. Although Mercer had demonstrated that cotton goods, treated by his process, in addition to being made finer in texture, could also be more readily and effectively dyed and superior shades obtained, his discovery may be said to have actually sunk back into obscurity for all practical purposes, although the theory was never lost sight of by the chemists and other scientists connected with the dyeing trade.

Towards the end of the eighties, however, continual improvements in the methods of using aniline or coal tar dyes had resulted in it being practicable to dye cotton directly (that is, without the use of a mordant), into almost any color, and this perfected process seems, both in this country and in Germany, to have drawn the attention of scientific dyers to the possibility of applying the Mercer process successfully in connection with these modern methods of cotton dyeing.

It was now discovered that, in addition to the increase in the density and tensile strength of the fabric, cottons treated with caustic alkalies in the special Mercer way also assumed a peculiar lustre or brilliancy extremely like silk, and that, as this bright appearance resulted from chemical action on the very fibre of the cotton, this changed appearance was practically permanent and unaffected by water or exposure.

After a lengthy and very costly series of experiments, both in Germany and this country, conducted by the leading chemists and engineers connected with the dyeing industry, this perfected Mercer treatment is now being most successfully applied to all classes of cotton fabrics, where fineness of texture and brilliancy of appearance are a desideratum.

Although cotton satin linings had been used to a certain extent for many years, until quite recently their use for men's wear had been greatly restricted by the difficulty in getting a black dye which kept its color, and also by the fact that after a short time these goods became tender and dull, and unsightly in appearance. The introduction of the fast black aniline system of dyeing got over the difficulty allowing cottons to become a good black, and the mercerizing process has greatly increased the strength and rendered a good cotton satin a permanently beautiful fabric.

Another property of mercerized cottons is that the colors of these goods receive a great additional brilliancy in dyeing, and so, when finished by recently intro-

duced improved methods, the result is a fabric very nearly equal in appearance to silk, and much more durable and strong for most classes of ladies' wear.

The greatly enhanced price of silk will, no doubt, cause very great interest to be taken in the new fancy styles of mercerized cottons, which are now being put onto the market for summer dress wear, and there seems very little reason that the dyers of Bradford have before them a long run in the production of the various modifications of this Mercer process, which has for so many years lain dormant.

In addition to the solid shade and white goods being produced so successfully by the Mercer process, very great use is also being made of mercerized yarn, which, in the dyed state, is being introduced into an endless variety of fancy cotton dress fabrics for summer use, and these so nearly resemble fancy silks that no doubt they are purchased in many instances as the more costly material. The makers of these goods have had a most successful season, and are already booking large orders for the summer season of 1900. Mercerized cotton yarn is also being largely used to replace silk in the hosiery trade, and has been found to combine most successfully with wool and silk in the production of fancy braids and trimmings, both for dress and upholstery purposes.

In the production of the mercerized mohair crepons with which Bradford has been so successful, the shrinking power of the Mercer process has been taken advantage of, so that when cotton and mohair are woven together, and the length of the cotton thread reduced, the mohair is thrown up with that beautiful wavy appearance which has caused these goods to be so attractive. This process of finishing requires most delicate manipulation and expensive machinery, and it was only after many costly experiments and failures that Bradford dyers attained that perfection of finish which has placed them to-day easily in front of all competitors.—Draper's Record.

## SOUNDING THE NIAGARA RIVER.

Previous mention has been made in these columns concerning the work now being carried out on the cantilever bridge across the Niagara river, just below Niagara Falls, by which a third truss will be added to strengthen the existing structure, made necessary by the increased weight of rolling stock since the bridge was designed, in 1890. With the view of ascertaining the profile of the river bottom under this bridge the Michigan Central Railway recently took soundings at this point. The bridge is situated just over the head of the whirlpool rapids, where the current is very swift, and unusual methods had to be resorted to in getting the depth. The sinkers on the sounding lines were egg-shaped masses of cast iron, one weighing 600 lbs., and the other 150 lbs., the sounding line being a steel wire about ½-in. in diameter. In order to keep the sinkers from twisting, a long fin was attached to the rear of each. The depth at mid stream was ascertained to be 78 feet, and the depth at 100 feet from shore, 43 feet. In the course of subsequent soundings, the weights were lost. By means of these soundings, the engineers were able to make accurate maps of the river at the point of crossing, the importance of which may be readily surmised when it is known that the piers supporting the cantilever bridge are located close to the water's edge, on either side of the stream.—Railway Review.

At Cowansville, Que., ground is being broken for the Canadian factory of the Malt Cereal Food Company, of Burlington, Vt.