

roller now clamoring for recognition from the American milling public, is an approved auxiliary of the Hungarian system, and that its results in practical operation in those countries where it has been most thoroughly tried are seemingly satisfactory, although scientific tests are constantly being made to still further increase its efficiency and value.

The demand of the miller belonging to the progressive school of to-day is, that in the reduction of the wheat berry, the bran shall be kept in such large particles as to prevent its passing through the cloths in the processes of bolting, and this desirable result, it is claimed by many, cannot be accomplished by the agency of the millstone, because its tendency in operation is to rub and tear the berry apart, and as a consequence the bran is abraded and more or less reduced so that minute particles are produced which it is found impossible to prevent becoming incorporated with the flour.

Again, it is said that this rubbing and tearing action disintegrates the germ and it too passes into the flour product, causing it to assume a yellow cast, thereby injuring its commercial value.

It is further claimed by some that upon millstones all degrees of granulation are effected at a point about mid-way between the eye and skirt, and all frictional contact beyond that point is injurious, as the tendency is to produce a greater quantity of superfine flour, in addition to the liability of reducing the germ and bran.

It is urged that the amount of care and attention necessary in keeping the stones in proper condition, the power required to drive them, and their liability to derangement, more than counterbalance the difference in first cost as compared with rolls. To sum up the superiority claimed for the roller system of reduction we have,

- 1st. The bran and germ are better preserved.
- 2nd. The product in the form of middlings, semolina or flour will be freer from impurities.
- 3rd. The effect of the pressure is to burst the berry, and in disintegration its granular formation is preserved.
- 4th. The flour obtained is not in the slightest degree heated.
- 5th. The flour will be more absorptive, and consequently the bread made therefrom will better retain moisture.
- 6th. As the degree of reduction can be regulated with the greatest accuracy, the middlings can be more easily and thoroughly purified.
- 7th. As the point of frictional action is reduced to the minimum, there is a perceptible decrease in the quantity of power necessary to perform the operations of granulation.
- 8th. Their remarkable durability as compared with the millstones.

9th. The time consumed in dressing the millstone is saved. On the other hand some advocates of the retention of the millstone urge that, where care is taken to select close burrs, they are properly dressed and the fittings as accurately and carefully constructed and arranged, equally as good if not better results will be obtained than by the employment of rolls.

It is claimed by some that the flour obtained by the roller system is coarser in texture than that produced on the millstone, and that for this reason the bread will not as well retain its moisture; that if the wheat is damp and tough it is necessary to thoroughly dry it before subjecting it to the process of reduction; that the middlings produced are not, by reason of their elongated shape, so readily purified; that the cost of operation is greatly increased; that the first cost is greater, and that much longer time is required in the operations of flourmaking.

Now, if both sides to this question can adduce substantial proofs of the accuracy of all their statements and assertions, it will be evident that

- 1st. Both systems are the best, and
- 2nd. Neither one is calculated to produce satisfactory results. In 1876, all the great mills in Buda-Pesth had adopted the roller system of granulation, and it is to-day, probably, in greater favor than at any previous time, but the fact that in some of the mills as many as eleven grades of flour are made, would seem good ground for supposing that the system in its entirety could not be successfully introduced into this country.

The fact that constant experiments are being made there to devise other means of reduction, would also indicate that the system, although in use, leaves something to be desired.

Again that the roll is not generally taken to be, theoretically the best adapted for the first reduction, is shown by the fact that numerous cutting machines have been devised for this purpose; and, that for "finishing up" it does not satisfactorily meet the requirements of millers, is evidenced by the fact that in some of

the leading mills in Austro-Hungary this operation is performed upon millstones.

A careful consideration of all the theories advanced, and facts obtainable having a bearing upon this question, leads to the following conclusions:

1st. Roller milling in a somewhat modified form might be profitably employed in this country in mills that now operate on strictly the "high grinding" plan, as in this system all operations may be performed upon rolls, except regrinding the bran.

We think it must be admitted that the cost of operation will exceed that of millstones, and certainly the first cost is greater, but, as there appears to be ample evidence that a greater percentage of high grade flour is obtainable from their use, the increased value of this product will probably more than counter-balance the objections.

The operations of reducing, scalping, purifying and bolting, consume more time, and the system demands more watchful care and attention than that now in vogue, but if adopted, as it bids fair to be in some of our large mills, we look for the happiest results.

2nd. Rolls will be found valuable auxiliaries in half high grinding for the purpose of flattening the germ, and middlings to which particles of bran adhere.

To perform this office, we look to see them almost universally employed, as for the purpose they have yet found no worthy competitor.

In discussing the probabilities of the millstone being discarded, and the roller adopted in the United States, it must be borne in mind that mills which pursue "high grinding" are few in number as compared with those that do not.

The great mills at St. Louis, whose products find ready market at home and abroad, and other well-known and extensive mills throughout Missouri, Wisconsin, Illinois, Michigan, Indiana and other States where soft wheats are grown and milled, have not thought it economical or wise, in a commercial sense, to adopt the system of high grinding prevalent in those sections where hard wheat is obtainable, and so long as this is the case millstones will be employed and regarded with favor.

That changes will be made in them and their methods of operation, that their capabilities and value will be augmented is to be expected, as we are progressive in our ideas and aspirations, but the time when they will be entirely superseded, is, we believe, far distant.—*The Milling World*.

Messrs. Rambert and Robert are bringing out a magnificent serial publication of what I might call, the *Natural History of Familiar Birds*; of those birds that we know, that we love, which interest all ages, even in fancy. About sixty species are noticed, and what is certainly new, the drawings are all from nature. The authors are very severe on the inhabitants of Southern Spain, of Corsica and Italy, for their massacres of feathered friends; they slaughter with the coldest cruelty, some of the most charming species, seeing in them nothing but game. The havoc is more terrible as it is by these regions the migrations pass. The Italian markets are encumbered with robin red breasts, larks, red-wings, finches and thrushes; the nightingale is a good take also, and even young swallows. The chapter on the tom-tit is peculiarly interesting. This bird is a veritable acrobat, and executes gymnastic feats on the extremity of a leaf with a marvellous dexterity—a combination of a monkey and the squirrel; but its play is hunting all the while, the eggs of caterpillars, bugs and spiders. It is terribly cruel if caged with a weaker bird—will kill it in order to suck its brains. As a parent, it is kind, and it cracks hard seeds and grains affectionately for its young. The hawk is the only bird of which tom-tits have a mortal dread.

Messrs. Cerbeland and Dumont publish a volume of 600 pages of a work treating on the industries of France, and deploring that while there is no falling off in point of intelligence in the part of the French artisan and manufacturer, they are being cut out of their own market by the foreigner. The French are not sufficiently speculative and are timid to change old plans for new. In the matter of coal, France ranks only fourth in the production of that combustible—on a par with Belgium, though she is not deficient in coal mines. England produces as much coal as all the nations of the world together. Excepting in iron, France has to depend on the foreigner for her supply of the other metals, although she is comparatively rich in them herself. It is an English company that works the chief iron mine at Bone, in Algeria.