

HOW TO RENDER OUR SMALL MILLS MORE PROFITABLE.

OUR English contemporary, the *London Miller*, lately offered a prize of ten guineas for the best essay on the above subject. The prize has been awarded to Mr. W. T. Bates, manager of the Bee Mills, Liverpool. His essay, though somewhat lengthy for these columns, contains much practical information tending to the solution of a problem which is of as much importance to Canadian millers as to their English brethren, and we therefore reproduce it in full.

"If report speaks truly, there was a time, perhaps not far removed, when flour milling was a good money-making business. For how many ages this has been the case we are unable now to determine, but judging from the burden of the *Dee's* celebrated millers' song, and general traditional lore, we come to the irresistible conclusion that millers of the past, like the above particular gentleman, could afford to 'envy nobody,' their position making them the envy, rather, of others. Not only does tradition enlighten us on the matter, but the evidence of our own senses confirms its truth. The past, and especially the distant past, was the period of small mills. Only in comparatively recent times have large merchant mills been erected, and these almost invariably sprung from small beginnings from the profitable small mill. Whether that was the age of honesty among millers, and success the reward of integrity, or whether success came through 'tolling' too much and too often, must remain an unsolved problem; but the fact must be recorded that millers 'got rich.' Now, however, times have sadly changed: the capitalist finds a difficulty in making both ends meet, and in striving to do this effectually strangles the struggling small miller and drives him from the field.

There are many reasons for this great change, but one of the principal causes is the rapid and easy communication afforded by the railways between towns and country districts, as well as by rapid intercommunication with other countries by steamships. The increase of foreign wheat, and a corresponding decrease of home production, is another serious cause, for whereas formerly the local mills, chiefly small ones, ground up most of the wheat grown in their district and sold the product again in their own immediate neighborhood, trade was evenly distributed and safe. But now, with the large import of foreign wheat, and large mills erected specially to treat it, whose situation, through railway facilities, gives them a command of extensive districts, these small mills are in many cases effectually extinguished. The last straw, if it was needed, to break the backs of those small millers who had not already succumbed to capitalism was the introduction of rollers. "There is a tide in the affairs of every man, which, taken at the flood, will lead him on to fortune." Those amongst the small millers who had the money waited too long watching the course of events; they hesitated, and missed the flood-tide of golden opportunity. If they had only known the flood time they might be rich to-day instead of poor.

Beyond all these changes at home we have the development of the Northwest territory of America, and following that, the erection of large mills there, the product of which has been thrown upon our markets, completely demoralizing them, and embarrassing both large and small millers. In the midst of all this trouble there is much casting about for a remedy. Some are vainly asking for impossible Government assistance in the form of protection, and these, by no means, all small millers. Others again, more sensible, are striving to improve their mills, and by all means to keep abreast of the times—the latter are most likely to succeed. Since, therefore, we have in all kinds of mills such a small margin of profit wherewith to cover expenses and to recoup ourselves, it behoves us to seek a remedy, and the object of this paper is to endeavor to point out a means to that end.

It has long been the custom (once true) to attribute our profitless position to our want of technical skill in the manipulation of our raw material. We not infrequently hear the remark made by those who do not know that if we only had American operatives and American systems we should succeed. Banish that idea! We have quite as good mills, and certainly not inferior men, but one thing we lack, and that the most important, good American wheat or its equivalent. It is not too much to say that an ordinary stone mill worked on good strong wheat, could beat a first-class roller mill on common weak wheat, not in finish, certainly, but in bread results—the bakers' standard.

This essay is supposed to relate to small mills, but neither class, stones or roller, is specified. Neither is the definition of a small mill given, so what "small mills" mean is apparently left to the judgment of each individual competitor. I should define a small mill to be anything under 6 sacks an hour. Beyond that, and under 12 sacks, a medium mill; and above 12 sacks, a large mill. The only advantage the latter has, as far as I can see, is the ability to buy largely, and consequently cheaper, combined with a better method of distribution of finished products. The medium mill has an advantage over the small one, as the cost of working the latter is proportionately heavier, but a large mill is the cheapest as far as manual labour is concerned, as the work is better apportioned, but generally the latter is heavily weighted with office and management expenses. For a very small mill of, say, two or three sacks capacity, there is, I think, a better chance than for the largest, as their expenses are very low and they generally depend upon a local trade, and where this is assured they succeed very well. The situation of any mill, small or large, is an important matter, and materially influences results, and although changing the situation of any mill is out of the question, it is a matter well worth considering when taking or building a new one. The means of obtaining raw material and distributing finished products in our seaports and centres where the large mills are situated is so perfect that unless a small mill has similar facilities, or is locally situated in a good wheat-producing and offals-consuming district, beyond outside influences, it has a poor chance. The fact also that many small mills are old established and have a safe connection is greatly in their favour. But somehow the present tendency is to

forsake old friends for better bargains offered by enterprising millers, and hence the cause of many small millers' troubles.

There are some things which these small millers may learn to their advantage, and first I would say, avoid speculation of all kinds: the day is past for profits from that source. Telegraphic communication round the world gives us a daily statement of all the principal markets. Even our own harvests influence us but very little. Gambling of any kind is very alluring, one little win tempts to other and heavier ventures, and fascinates with the vision of a fortune, but ultimate results are generally disastrous. Use your money legitimately. Do a trade within your means and limits. Do not be everlastingly increasing your output. This is one of the greatest evils of the age, and one that is very tempting, as millers naturally think that if they can do a larger business with no increase of expense they will gain a corresponding increase of profit. This may appear true, but facts do not altogether prove it so. People sometimes overreach themselves, and millers are no exception, as we well know. Instead of this, let them strive to improve and perfect, by all means in their power, the mill they have. If there is money to spare, let it be spent judiciously in the purchase of necessary machinery; and in this connection I would say, consider well and take advice (not always the mill furnisher's) before parting with your money. Do not fill your mill with useless machinery, which has nothing to recommend it but the verbosity of the seller. And do not spend all your money upon machinery, leave some for the purchase of wheat. Many in their haste to change their mills have overlooked these important truths, and found, too late, that change does not always mean improvement, especially in their circumstances. While on this matter I would say, look well to your cleaning machinery. Consider whether it is a proper arrangement for removing all extraneous matter, enabling you to clean and use all kinds and classes of wheat. If it is not perfect, money spent thereon will be well laid out. This has always been a weak point with small millers, and indeed some large ones have apparently not found out that dirt will not make white flour.

Economy in all things must be the order of the day, personal expenditure included. Many a collapse has been caused, not so much by bad business or want of business as by expenditure exceeding income. We have not to go far for instances; they are numerous enough, and known to all. In the mill everything must be done to curtail expense, but remember there is no economy in having the mill underrun by underpaid men. Economy lies rather in having good, well-paid men, but not, of course, too many of them. There are many ways of saving and preventing expense which must be constantly kept in mind. Low expenses will sometimes show a fair profit, while high expenses, through carelessness, will turn what might have been a profit into a loss. In fact, as will be shown, the difference between profit and loss depends almost entirely upon careful management and attention to little things.

Personal attention to business, both in and out of the mill, is absolutely necessary. It is possible to get good trustworthy men, but few, if any, will do for you as you would do for yourself.

"Let the servant's eye be keen as it will,
The master's eye is keener still."

No business in these days will bear neglect, whatever might have been the case 30 or 40 years ago. Upon this point also hangs in a great measure the result—success or failure. Two men may be working mills precisely alike in construction and detail, having equal conditions all round. One makes a profit and thrives, while the other makes a loss and fails. How is this? Attention to business in the one case and neglect in the other, especially in little things. The profit is now made out of items which were entirely overlooked a few years ago. It stands to reason, therefore, that he who attends to these little things is the one to succeed. In the days of large profits one could afford to be careless, but certainly not now. Doubtless it is difficult for a miller to change his habits, they are almost as fixed as the leopard's spot, but change he must if he desires to live. Some are doubtless living in hope of a return of the good old times. They are, I fear, hoping in vain. The days of large profits in milling are, I fear, gone for ever.

The kind of mill, whether stones, rollers or mixed, is, I presume, beyond the province of this paper—one has to make the best of what he has, be it stones or rollers. Still, I am aware that the former are still by far the most numerous, and the ones which most severely feel the pressure of these hard times, especially where they depend upon flour alone, for, unfortunately, of late years the small millers have lost one profitable part of their business, that is, farmers' grist grinding. The latter have felt most severely the loss of profit from low prices, and in curtailing their own expenses have shorn the miller of his, at least in that department. A roller mill is, of course, more perfect than a stone mill, and, generally speaking, the latter has no chance beside it as to finished products, the one may be equally as unprofitable as the other, especially if incomplete or badly built. It is possible to improve either, and, by care, to make both payable, that is, of course, if the conditions are favorable. The stone mill, being simple, is less liable to derangement and more cheaply worked. If it be in a situation beyond the influence of outside competition, and is worked to the best advantage, it can be made to pay. The roller mill, on the other hand, being complicated, is liable to run astray without good attention and careful management, but is very far ahead in finish. This would be the case simply from its excellent arrangement of successive grinding, dressing and purifying, leaving out the virtue of rollers. The secret virtue of roller milling is supposed to lie in the germ extraction and in the purification. The first may be dismissed as a myth—there is nothing in it. The other is important—purification is very important—but there is also another important matter, and that is silk surface. Well purified flour may be dressed coarser than unpurified, and the resulting bread will have a clearer, more transparent appearance, but in "getting up" flour and eliminating impurities, a great deal depends upon the fineness of the silk used. In stone mills this is especially important, for, purify middlings as you will, the action of stones is to cut up and make finer the impurities, while rollers flatten and enlarge them so that they are easily separated. Wheat well ground and coarsely

dressed will make good lively flour, but to make it white requires fine silk, and, if fine, abundance of surface. Small millers will find this (especially stone millers) next to good grinding, and, if possible, purification, one of the secrets of making good flour, and probably in making their mills pay. There must be successive grindings of the middlings to produce the requisite fineness to pass the silk, for nothing will, of course, pass through a hole smaller than itself. So if the silk is No. 14, remember the flour must be 14 also, or it will find its way into the wrong sack. By continuing the process of grinding and dressing long enough, it is possible to get not only the flour, but offals as well, into the flour sack, even through fine silk. As roller mills are worked upon this principle, it is unnecessary to say more upon this matter, except to observe that if more reductions were used a better all round result would be obtained in any mill.

Length of product is most important in any kind of mill, small or large, and requires much looking after. It is said that the profit or loss lies in the tail of the mill. It does in the offals. There is no profit in the flour in any case, but flour thrown into the offals is dead loss, and a bad percentage will turn what might otherwise have been a profit into a loss. As mentioned above, it is possible to get all the flour out if the operation is sufficiently extended, or, what answers the same purpose, that coarse silk can be used at the top end of the mill, and must increase in fineness as the end is approached where the material is more impure. One means of increasing the percentage of flour in a roller mill and preventing loss is to send all the finished offals (except bran) through a detacher, or a common wire brush machine will answer. Dust this over a reel or centrifugal, and purify (if possible) and grind the tail sheet. The flour therefrom will not be of very high quality, but it pays. The stive dust might also be included in the reel, as it is almost impossible to prevent some waste from purifiers, especially of the gravity type. It is well also to subdivide the offals as much as possible, and even if they are not treated as suggested for grinding, it would pay to divide them on a reel or sifter. They are thus not only better divided, and worth more money as a consequence, but they are always uniform, which is essential.

Perhaps the most important matter of all in making a mill pay is to have a good reliable article; something always alike, which the customers may depend upon. This, of course, brings in the question of wheat. Wheat of the right sort, properly milled, will make good flour, whether done by stones or rollers. Every miller should carefully study his market, and do his utmost to produce the required article. Color may be required in one district and strength in another, while a third may require a combination of both. As strong flour produces the greatest number of loaves and is a safer and easier bread maker, it is only reasonable to expect that that kind of flour will have the preference, and that it has in an overwhelming degree. Those millers situated in or near towns, and generally where American flour comes into competition, would do well to study strength. Colour is an excellent quality in flour, but strength and colour combined are much better. As a rule, flour without strength does not meet a ready sale nor realize a good price, but strength fetches both. The reason why American flour (especially the well-known brands) sells so readily is not so much that it is well milled as that it is made from strong wheat, is uniform, and makes a great number of loaves. It is profitable to the baker, even if he gives 2s. or 3s. a sack more for it. If a regular supply of good strong wheat can be obtained, small millers might find it advantageous to mill it alone, or mixed with a small portion of native wheat for colour and flavour. The result will be much better if the wheat is properly freed from dirt and other impurities. Especially does this apply to Russian and similar European wheat. The flour from many of these might be improved shillings a sack if they were washed and the stones extracted. In any case a good damping, and a second thorough cleaning would materially benefit the resulting flour, most particularly where stones are used. Wheat that has been well damped will, on standing in sacks for a few days (more or less according to weather), set up a vinous or sweet fermentation, and if it is then used the flour therefrom will possess a corresponding sweet and agreeable flavour. But if the wheat be left too long damp, especially in hot weather, an acetic or sour fermentation ensues, which has a disagreeable and deteriorating effect on the flour. It is scarcely necessary to say that on the management of this department hang important results; also, that where dry, brittle wheat is generally used, judicious damping will very materially assist the regularity and uniformity of the flour as well as bran. We cannot be unnecessarily changing our silks to suit our varying wheats, but we can temper our wheat to fit our silk. Failing a regular supply of strong wheat or a market for that kind of flour, a combination of wheats should be used possessing the qualities of the best. There are some kinds of wheat which possess all the virtues—that is, strength, colour and flavour—but generally they are high in price; and small millers will find it more advantageous to buy the various properties separately, and mix them, either in the wheat or flour. The very few wheats possessing the above combined virtues are limited to about three countries, and they are Hungary, America and Australia. Most of these are generally at a price beyond the reach of small millers. Strong Russian, Ghirkia, or Duluth for strength, combined with English for colour and flavour, would be a good combination, and be fairly cheap. A judicious blending of washed Indian would cheapen the mixture, but in all things let strength prevail. Many millers make the mistake of blending several kinds of wheat, not one of which can lay claim to strength, and then wonder that the flour does not give satisfaction. No kind of milling, nor the finest silk, will overcome this defect. With strength, however, bad milling, coarse dressing, and apparent bad colour will pass unnoticed, for strength "covers a multitude of sins." Strong flour will sponge well, and will rise and make a white loaf. Weak flour, being incapable of retaining the gases, will not rise; and however white the flour the bread will be dark and poor.

As the object of working the mill is to make flour, it is just as well to make that article as good as possible. It is as easy to make a good article as a bad one, if you have the right way of doing it. The proverb, "Whatever is worth doing is worth doing well,"