SOME PERSONAL OBSERVATIONS OF THE OIL AND CAKE INDUSTRY IN GREAT BRITAIN

By H. J. MORRISON

The Great War made necessary many changes and readjustments in very many fields of production and manufacturing in European countries. In no country probably were changes from old customs to new greater than in Great Britain. Great Britain being a free trade country it was, of course, a natural sequence that they manufactured only those products which they can do cheaply enough to compete in the world markets, buying or trading in those products of other countries which were produced at a lower cost.

Before the war, Great Britain was not a great factor in the crushing or extraction of oils for the above reason. The shutting off of sources of supply, however, necessitated their entering the field. Thus, compound cake manufacturers, who before the war imported most of their cake and meal, took up the crushing and extraction to supply their needs.

Margarin manufacture had a large expansion and necessitated the procuring of supplies first hand. Great Britain's colonies and other countries who had previously sent large supplies of oil seeds to the Central Powers had large surpluses to divert. Thus, there were many factors which led to a great increase in oil production direct from the oil seeds. Our tariff served to keep these industries alive, as the world's crops of oil seed with American competition reduced to zero offered much cheap raw material and ready markets.

The British are distinctly a trading nation, and their hereditary instincts seem to prevent them from establishing strict grades and specifications. The trader wants the widest latitude. The romance of horse trading would be reduced to zero if each horse was graded by strict standards and arbitration boards set up to determine whether the horse was strictly prime or not. The British trader wants none of this.

At the one mill, the question was asked as to the content of water in a certain cake, and the naïve reply was that in winter it could carry 15 per cent; but in summer it would spoil at that figure, so between 10 and 11 per cent prevailed for the warmer weather.

Cake and meal are not sold on a protein basis, and for this reason most of the British output is sold as cake, as probably the buyer has more faith that he will get the genuine article in this form, whereas the meal might easily have something added. Besides, the leading crushers by years of strictly upright dealing have built up splendid and valuable good wills, and by selling in cake form whereon they impress their name and trademark they carry their guarantee to the ultimate consumer. Such would not be the case with meal.

Some oil seeds, of course, produce very uniform quality cake because they have no hull to speak of. Thus, soya and palm kernels only vary by the amount of oil and water left in them. On the other hand, cottonseed, linseed, peanuts, etc., vary in the degree to which they have been decorticated. The former are pressed largely without any decortication, and even the so-called decorticated still carries large quantities of hulls.

Peanuts are readily decorticated and cleaned, so the decorticated product should show practically no hull. The value of the guarantee that extra hulls do not find their way into the undecorticated depends at times upon the reliability of the impressed trademark on the cake.

It is also a custom to make compound cakes of two or more seeds. Thus, linseed-soya bean or cottonseed-soya bean cakes are marketed.

Oils, like cakes, are not graded as we grade cottonseed. They must, however, be true to name. No adulterations are tolerated. Some general specifications obtain, such as fairly broad limits on free fatty acid, etc; but otherwise they usually designate it as good average quality for season, etc.

In selecting methods under war conditions mistakes were possible, but on the whole, experience of the best methods of other countries were available. We find, then, both expression and extraction practiced, and often the two methods applied to the same seed in a single plant. Some seeds, however, are treated almost exclusively by the one or the other method. Thus, soya beans are practically all treated by the solvent method, whereas cottonseed is universally pressed. Palm kernels one finds being both pressed and extracted. The method to be used must be determined for each seed, as the effect on the quality of the oil and cake, whether expressed or exacted, is quite different in many instances, and the demand for the respective products differs widely.

The hydraulic presses used in England constitute every variety manufactured it would seem. There is no consensus of opinion which is the best and most economical. In fact, in the same mill one finds different varieties of presses. At least, the difference in cost of operation of one type over another is not sufficient to allow the scrapping of the less efficient machine.

The rolling is also done in various ways. However, with several varieties of seed handled in a single mill with the same equipment might account for this. The type or rolling for one seed might not be the best for another, but not sufficiently inefficient to warrant a separate installation.

There are as many methods of cooking as we have in this country and each advocate is as sure as many of our superintendents are that their method is the best. Cooking is done in continuous five high cookers of American design to cooking in open pans with live steam, where the meats do not get more than 10 minutes' cooking and not over 200° F. But,

strange to say, the results reported do not differ much from each other nor from the average figures in this country on mill run. The figures are not always directly comparable because of the difference in the amount of decortication, but on a ratio basis, i.e., oil divided by protein, the difference is not so decidedly in favor of any particular method. Possibly what one method gains in one direction, it loses in another.

The costs of crushing and pressing are higher in Great Britain than here. Our labor rate per hour is lower, but this does not account for the difference. Our output per man hour is greater. In addition, in the United States figures used in comparison, there was included delinting, decortication, etc., whereas the British figures cover only a very little of these operations.

In many quarters, especially in Great Britain, there is still a decided prejudice against extracted meal, and it sells at a discount as against the expressed cake. This discount is such that the differential in cost of preparation is just about wiped out. Thus, palm kernel cake always sells considerably above palm kernel meal. (The extracted seed, of course, are marketed as meal except where special proprietary compounds are made and molded into small lumps or nuggets.)

In some countries, however, as in the Scandinavian countries, extracted meal sells on a par or is preferred to expressed cake. In these countries, they recognize that for feeding purposes protein is more desirable than oil, and as the materials are sold "as is" and not on the protein content, they get slightly more protein in the practically oil-free meal. For this reason, soya beans are almost always extracted and the meal largely exported, and this sets the market value largely. Soya beans make a very concentrated food, whereas palm kernel meal or cake is low in food value and, consequently, will not bear the extra freight charges for export and hence must find a market near at hand and thus suffers because of the British farmer's prejudice.

Practically all extractors have tried from time to time to extract cottonseed, but not successfully. The oil is dark and hard or impossible to refine, and the meal almost unsalable. The cottonseed experimented on has been of both the general varieties, the bald Egyptian and the woolly variety such as we have, the latter coming from India and South America.

The extraction apparatus are for the most part fairly standard, differing only in small details. The various manufacturers, of course, make much of their special details, but as a matter of fact it is conceded by all users that the simpler the apparatus is the better. Simple percolators run in some mills in tandem and in others singly, simple still with efficient condenser, a liberal supply of cold water, and a dryer for the meal are the only essentially important parts. The art of successful extraction seems to lie more in the proper grinding or rolling of the oil seeds and is different

for each. Some seeds, such as peanut, do not extract well if completely decorticated, and a preliminary pressing to reduce the oil content is practiced. Palm kernels, however, the higher in oil, have such a fibrous meat that it extracts readily without any preliminary treatment.

On the whole, it would appear that extraction is not gaining ground, though both cake and oil can now be made quite free from the former objection of retaining traces of the solvent.

The solvent used almost exclusively is a narrow cut of gasoline. Other solvents have one objection or another. Most of them are excellent solvents for color and other matters. Others, especially the synthetic solvents, though having the valuable feature of being uninflammable and in many cases heavier than water are objectionable on account of their too great solvent power and their hydrolyzing to corrosive elements.

The expansion in cultivation and gathering of oil bearing seeds and nuts is progressing rapidly. Peanuts and palm kernels are especially increasing crops. Sunflower oil and seed from Russia are being produced in exportable quantities and can be greatly increased if the proper encouragement is given by the Soviet Government.

It seems to be the opinion that American cottonseed oil has lost its position formerly enjoyed, at least it will have to compete with many oils formerly considered inferior, but which now through necessity they have learned how to refine and utilize and a public educated to their uses.

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