vision of nature that it is so. Nearly all odors will quickly produce fatigue, some to a much greater extent than others. You will find in smelling any of the perfumes constantly for a few seconds that you are unable to detect any odor. After a brief rest you will again be able to smell it. Men working in places where there are revolting stenches soon become accustomed to them and fail to notice them at all, and are surprised to see strangers come in holding their noses.

Another handicap is a lack of descriptive adjectives. There are a few in common use and even these convey quite different meanings to different people. I may say that a perfume is floral, but there are so many flowers; that it is Oriental, but there are many perfumes derived from the Orient. One might think of cinnamon, cloves, patchouli, sandalwood, ylang-ylang, or many others according to those with which he is most familiar. It may be light, or strong, or mild, or sweet or acrid. There are not many more descriptive terms and none of them will convey to anyone more than an extremely vague idea of what is in the mind of the person giving the description. Of course, if one says an odor is like violet, or rose, or narcissus, a rather definite idea is conveyed, but occasions for making such comparisons are few and therefore such unrevealing terms as "delightful" and "exquisite" have to do more than their proper share of work.

In concluding, there are two facts that I want to particularly emphasize:

First, the commercial importance of perfumes. They do not occupy a position of first importance today, although it is a very large industry, but the commerce in perfume and spices between which formerly no very distinct line was drawn, marked the beginning of international trade and opened or helped to open up the great trade routes to the Orient.

The other consideration is the growing importance of the synthetics. Not so many years ago, when there were only a few synthetic perfumes it was not thought that there would be any very serious competition with the natural essences. Now every perfumer uses the synthetics as well as the natural products. There are numerous factories both in Europe and America devoted exclusively to the production of synthetic perfumes. Today natural dyes are a thing of the past and it is quite possible that we are facing a similar situation in the perfume industry.

Notes On The Characteristics Of English Cottonseed Oil

By W. G. McLeod

IN the development of the industrial era, England soon came to the front as a manufacturing nation, and because of its geographical situation it was necessary for the country to import vast quantities of raw materials from all over the world.

These raw materials are converted into finished goods which are consumed in the British Isles or are shipped to other countries through world trade.

One of the many industries which have grown up in England is the oil crushing industry. The oil mills are located in seaports and the industry thrives in Hull and Liverpool.

Oil seeds are brought to the mills by boats from various parts of the world where the seed crops are grown.

The cottonseed which are crushed in England come from Eastern and Northern Africa, mainly from British East Africa and Soudan, but seed are also brought from Syria and other near east countries and from South America, largely from Brazil.

I believe that the problems in connection with storing and transporting cottonseed under the climatic conditions which prevail and over such long distances are many, and the development of methods for overcoming the difficulties will not be easy.

The quality of the cottonseed varies from season to season, and the seed from one country will be good, while weather conditions in another country might cause poor quality. The English crusher must blend his seed in order to produce the best possible grade of oil.

It is my understanding that most of the cottonseed oil produced in England is made by pressing the seed or meats in hydraulic presses, but some oil is made by solvent extraction.

Due to the tariff situation and to conditions in world trade in recent years, Canadian edible oil refiners have switched from American crude cottonseed oil to English or European cottonseed, peanut, cocoanut, palm kernel or other oils, and to oils produced in other parts of the world.

During the last five years large quantities of English cottonseed oil have been brought into Canada.

Some of you have no doubt examined samples of English cottonseed oil, or have refined commercial lots, but for those present who are not familiar with the characteristics of this oil, I shall describe briefly some points relative to quality, and refining and bleaching methods, with special emphasis upon a comparison with American cottonseed oil.

English Crude Cottonseed Oil

Color—The crude oil is dark in color—red to reddish brown. It is darker than the better grades of American oil.

Odor and Flavor—English oil has a characteristic odor and flavor. The flavor could be classed as slightly musty or seedy. The seedy flavor suggests extractives from the hulls of the seed which are slightly bitter. The oil does not grade prime.

Moisture and Impurities — The crude oil is usually very clear and is free from moisture and impurities. On this point it is superior to the average American crude. I believe that the oil is treated at the mill to remove impurities.

Free Fatty Acid Content—The average free fatty acid content of a large number of shipments of English crude oil received by us is 2.28 per cent, with a range from 1.8 to 2.7 per cent. This is the highest grade of crude oil shipped from England.

Refining Loss—The big problem in the refining of English crude cottonseed oil is the production of a refined oil with a good color and one which will bleach. In other words, color is the problem.

The official refining methods of the American Oil Chemists' Society are not suitable for most of the English crude oil because high colored refined oils are obtained which are very hard to bleach, and the losses are high.

Following English practice along with modifications which we have worked out, we are able to produce a refined oil with a good color which will bleach to 20 yellow—2.5 red with activated earth and carbon black, but not with straight English fuller's earth.

The average loss obtained on 17 samples using the special refining method in the laboratory was 5.95 per cent, with a range from 4.7 per cent on low acid oil to 7.9 per cent on high acid oil.

The following results were obtained by the use of the special laboratory refining method and by bleaching with an activated earth-carbon black mixture:

No. Samples	F. F. A.	Ref. Loss	Ref. Color	Bleach Color
17	High 2.7%	7.9%	35 yellow-12.4 red	20 yellow-3.1 red
	Low 1.8%	4.7%	35 yellow- 5.5 red	20 yellow-1.4 red
	Average 2.28%	5.95%	35 yellow- 7.6 red	20 yellow-1.92 red

Comparison of laboratory results using special refining method and official method:

No. Samples	F. F. A.	Refining Loss Spec.	Official	Refined Color Spec.	Off.
6 Average	2.08	5.58	6.58	7.5 red	8.9 red
Sample (A)	2.7	8.3	10.2	6.5	7.2

Color of Refined and Bleached Oils—As pointed out above, the average color of the refined oil using the special refining method is close to 35 yellow—7.6 red. The color varies through the seasons, depending, no doubt, upon the quality of the seed from which the oil was crushed.

In order to bleach English cottonseed oil to a color not darker than 20 yellow—2.5 red, it is necessary to use a mixture of activated earth and carbon black. In the laboratory 4 per cent of a mixture containing 84 per cent activated earth and 16 per cent carbon black is used. Neutral activated earth and standard carbon black (oil grade) are suitable.

Some samples will bleach to the standard color with English fuller's earth, but these are well above the average in quality.

Bleaches:	B	C
Refined color	35 yellow-7.4 red	35 yellow-5.5 red
6% Eng. Earth	20 yellow-3.5 red	20 yellow-2.5 red
4% Act. Earth	20 yellow-3.4 red	20 yellow-2.4 red
3.35 Act. Earth .65 Black	20 yellow-2.3 red	20 yellow-1.5 red

Samples:	No. 1	No. 2	No. 3	No. 4
4% Eng. + .5 black	20 yellow-2.9 red	3.0 red	3.5 red	3.2 red
4% Act. + .5 black	20 yellow-2.4 red	2.6 red	2.8 red	2.3 red

The slightly musty or seedy flavor is found in the refined and bleached oils, so it is a little more difficult to deodorize English oil than American oil.

Laboratory Refining Methods for English Cottonseed Oil—The apparatus and general method used follows closely those of the official methods, but the following differences are important:

a. *Caustic Solution*—It has been found that 20° Baumé caustic solution gives best results on English crude cottonseed oil.

From the free fatty acid content calculate the actual amount of caustic soda necessary to neutralize. Use 100 to 150 per cent excess caustic as 20° Baumé solution.

Caustic Wash—In order to get good refined colors and oil which will bleach, we find it necessary to give the oil from the first refining a caustic wash as follows:

Pour off refined oil completely into clean tared cup, weigh and place in stirring machine. Add 18 per cent of water (based upon weight of oil), bring up to 75° C. with 250 r.p.m. agitation. Then add 1 to 2 per cent of 20° Baumé caustic and continue agitation for 30 minutes. Allow to settle in bath for 3 hours. (Note: Our outline specifies 1 or 2 per cent of 20° caustic in the caustic wash. On dark oils we use 2 per cent 20° caustic. The water wash after caustic wash is very important in the laboratory. Traces of soap left in the oil affect the bleach.) Pour off washed oil into tared cup, separate last portions of oil from caustic wash with a pipette. Weigh oil and calculate *total refining loss.* (Note: The refined oil may be cloudy due to traces of moisture and soap. Before bleaching wash oil with 20 per cent of water at 75° C., 250 r.p.m., for 20 minutes. Let settle 30 minutes and pour off clear oil for bleaching.)

Plant refining methods are similar to the laboratory methods, including the caustic wash. In practice we find that the foots may be drawn from the bottom of the kettle without disturbing the oil, so that the caustic refining and the washing may be done in the same kettle.

Summary

From the above data it will be seen that the English crude cottonseed oil which we have handled is not equal to American crude oil in flavor or in bleaching quality.

However, with the use of activated earth and carbon black the oil can be brought to the proper color for use in shortening and in cooking and salad oils.