Soybean Oil in India

THE PRINCIPAL vegetable oils available in India are peanut, coconut, cottonseed, and mustard oils. While the production of the first two is large, the huge population of the country results in a very low per capita fat consumption, and to raise it to a satisfactory level would require the importation of very considerable tonnages of foreign oils.

It must be remembered that the vegetarian diet of a majority of the people precludes the use of any animal fat with the exception of butter fat, which is obtained from the milk of the cow or water buffalo. Hence this *visible* fat consumption, unlike that of other countries where meat is a large part of the diet, is a good index of the actual fat intake of the people.

Butter fat is consumed in the form of "ghee", a practically anhydrous product, but available supplies are relatively small, and the material is very expensive.

In order to alleviate this situation, about thirty years ago production of a vegetable ghee by hydrogenation of peanut oil, which has many of the characteristics of natural ghee, began. This material is sold under the name of "vanaspati," and is much cheaper than ghee. Its production has now reached a level of approximately 400,000 metric tons per annum.

Until quite recently cottonseed was not crushed in India, but was used directly as a cattle feed. Today less than half of that produced is crushed for oil. The Government of India has sought to encourage the cottonseed crushing industry by making special tax concessions to those manufacturers who use 10% or more cotton oil in vanaspati, but the industry is growing rather slowly because of the shortage of foreign exchange. Much of the equipment of a modern oil mill, (delinting, decorticating and drying machinery) is not manufactured in India, but must be imported. Coconut oil and mustard oil are used without hydrogenation, the latter being consumed as a cooking oil with no processing of the crude except filtration.

Vanaspati, like natural ghee, is an anhydrous, coarsely granulated solid fat, and has no resemblance physically to texturated shortenings. It is used principally for cooking, but may also, when melted, serve as a spread. A typical vanaspati formulation is 85% peanut oil, 10% Indian cotton oil, (both hydrogenated), and 5% liquid sesame oil. The last is added by law to allow the detection of any adulteration of natural ghee with the less expensive vanaspati.

If a satisfactory product could be made by substituting some soybean oil for peanut oil in this formula, even a minor amount, 10–15% would account for a considerable tonnage of oil (50,000–60,000 metric tons).

The Soybean Council of America, Inc., with international offices in Rome, maintains an office in New Delhi, and, working in cooperation with the Foreign Agricultural Service, U.S.D.A., is concerned with market developments for soybeans and soybean products overseas. As a result of their efforts, the Government of India ordered a token shipment of some 3000 metric tons of soybean oil in 1961 under Title I of PL 480.

As Technical Consultant for the Council the writer was asked to go to India to visit various members of the Vanaspati Manufacturers Association who had been allotted varying amounts of this oil, to assist them in processing it for possible use in their products, and to confer with their technical personnel. The Vanaspati Manufacturers Association, with head offices in Bombay, is a strong organization with approximately 28 member companies.

I was very well received on this trip and visited a large number of refineries scattered over India. Most of the processors were able to incorporate some bean oil in their product and some even experimented with a vanaspati made entirely of bean oil, except for the 5% sesame mentioned above.

On the whole, these initial experiments were successful, and the quality of the product with 10–20% bean oil in the formula was acceptable. However, the increased amount of hydrogen required to harden the soybean oil (over that needed for peanut oil) was a considerable obstacle. There is a hydrogen shortage in India, and expansion of existing facilities would thereby require foreign exchange.

In addition to plant inspection and conferences with individual companies, I conducted four well-attended seminars with technical personnel—one each in Bombay, New Delhi, Calcutta and Madras.

Despite the hydrogen shortage, the vanaspati people were eager to get more soybean oil, and requested the Government of India to apply for 50,000 metric tons under PL 480, Title I. In 1962, I was asked to return to India to discuss processing problems with these people; and also to attend the symposium on oils and fats to be held in Calcutta early in December, where I was asked to deliver a paper on soybean oil.

During the course of this second trip it was possible to visit several vanaspati plants which had not been inspected in 1961, and to confer with many technical people, some of whom I had met previously. I also held two seminars on soybean oil processing in which production problems and quality control were discussed in detail. More might have been accomplished had it not been for the Chinese invasion of the border, which resulted for a time in the cancellation of all internal airflights and the requisitioning of the planes to carry troops and equipment to the front lines. Traveling by train was very time consuming, but the unilateral cease fire later eased this situation.

The four-day symposium in Calcutta which was held under the joint auspices of the Indian Oil Technologists Assoc., the Vanaspati Manufacturers Assoc., and the Soybean Council of America's New Delhi office, was a great success, and very well organized. Attendance was adversely affected by the national emergency, but was remarkably good under the circumstances. A total of 60 papers was received, printed ahead of time, and distributed to those registering. Individual contributors were asked not to read their papers, but to summarize the high spots only, and then answer questions from the floor. This worked very well indeed.

I found a high degree of technical knowledge among the Indian oil technologists, and a very wide acquaintance with the technical literature of oils and fats, not only from the U.S., but also from Europe and elsewhere. I was happy to renew my acquaintance with K. S. Murti, and J. Kane, who had spent some time in the U.S. and will be remembered by many of the older members of the AOCS.

During my two visits to India I was accompanied everywhere by Maharajkumar Virendrasingh, Soybean Council Director for India, whose wide acquaintance with the trade and with government officials was of inestimable value to me in my work.

At the present writing, the Government of India apparently has not gone ahead with the Vanaspati Manufacturers Association's request for a large shipment of soybean oil under Title I of PL 480. However, there is no doubt that soybean oil in substantial quantities can be used in vanaspati to replace a portion of the peanut oil without sacrificing quality. Of course the present shortage of hydrogen remains a problem, and the lack of refrigeration in India will require care in processing and handling the finished product in order to insure adequate shelf life.

At the moment there is little interest in the production of margarine in India, but several companies have expressed a desire for information on the manufacture of texturated vegetable shortenings, and this market has a reasonably good chance to develop.

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• *Report on Fats and Oils*

CROSSROADS

As EVERY CROP season begins, the supply is fairly well known but disappearance is usually a question mark. Consequently disappearance forecasts of all shapes and sizes are heard. It is difficult to contradict any of them because of the great range of potentially applicable factors. As the season progresses, however, consumption tends to move toward a certain portion of the range of guesses. It becomes pretty obvious that some original sets of figures are going to be too high and some too low; we have run out of time and factors to attain them. Recognition of estimate errors comes slower in some quarters than others, as old estimates die hard. This is because many forecasts contain strong elements of wishing.

The old crop soybeans-soybean oil-soybean meal season is nearly eight months old. Adjustment from old crop to new crop basis will be necessary in a very short time. The manner and the pain of the adjustment are still uncertain but several factors are beginning to take shape. Some old forecasts and uncertainties are withering away. Among the dead forecasts is the original U.S.D.A. estimate of cottonseed oil plus soybean oil exports of 2.2 billion lb. Even U.S.D.A. has reduced this to 2.0 billion lb. Attainment of 2.2 billion or close to it, was necessary in order to make a major dent in the very large domestic oil surplus. Exports of 2.0 billion or less would not do much in the way of reducing stocks, so this has been a bit disconcerting to the market. Even more upsetting has been the growing feeling on the part of traders that even an estimate of 2.0 billion is substantially too high; we seem to be running out of time and factors to make it. There is a general leaning towards final exports somewhat less than 1.8 billion lb. Since a large part of oil exports go out late in the season there is a good deal of guesswork in this, but not enough to indicate major changes.

The prospect of at least a minor reduction in oil stocks this season was an important factor in the up-move of oil prices last year during the old crop-new crop adjustment period. That same prospect has been a sustaining factor in oil prices throughout the first seven months of this season. Another sustaining factor has been the technical one of large exporter long positions both in cash oil and oil futures, presumably largely undertaken in hopes that the U.S.D.A. export estimate would be correct. The cost of carrying this position, both as futures and cash, was not excessive as long as adequate carrying charges to distant positions were available. Now, however, board carrying charges are skimpy. Weak cash basis because of full storage is aggravating this. As long as this technical position remains in old crop oil futures, lack of charges is likely to get worse. This is because new crop beans, and consequently oil, are somewhat high-priced for this time of year, by most historical standards. Unless crop prospects suffer a serious setback, pressure on new crop bean futures will exert pressure on new crop oil futures, perhaps forcing new crop oil months to discounts despite an enormous oil stock in the country. This would increase drastically the carrying costs of oil inventories for everyone, but particularly for longs in futures.

Re-appraisal of oil export prospects center around several specific countries and areas. The table shows only those countries and areas where there is some question. Those that will reach estimated takings are omitted. Unfortunately, for oil longs, the table points out the real problem, that the "overs" are few and small compared to the "shorts". There appears to be no really good prospect of increasing the "overs" in number or size, or decreasing the "shorts" in number or size. For a long time it looked as if Mediterranean olive losses would give us some good "overs", but gradually this hope has faded. For a while, some attention also was directed to the Peruvian fishing strike and the poor Antarctic whale catch. There were also other factors that occasionally encouraged hopes that overseas buyers would take oil in the form of beans rather than just the meal. But no, they kept coming for the meal. This overseas meal demand holds out the possibility that the U.S.D.A.'s bean crush estimate of 470 million may yet be reached or closely approached. This would compound the problem of oil longs but aid the position of bean longs.

In a sense the problem of this year's oil exports, which apparently will end up about the same as last year's, point up the basic problem of a bull market in new crop beans. Unless weather reduces yields substantially, a bull market pretty much has to be based on a continuation of the historical tendency for bean utilization to expand at a sort of straight line rate. Why this has happened, and whether one can continue to forecast it simply and solely because it has persistently happened in the past is another question. I think that it has been demonstrated that we can expand the bean exports and the utilization of the meal from an expanded domestic crush, but the oil utilization appears to be a much more difficult problem. We have not been able to solve it this year and I am not sure that we will be able to solve it next year.

For many months oil prices have been static as traders attempted to assess the impact of various sets of total disappearance possibilities. As the shape of the final totals becomes more apparent, the market is going to be forced to take a hard look at the size of stocks both now, at crop end, and during the new crop season. The need to do this truly puts the oil market at the crossroads, both for the short and the long term.

James McHale
MERRILL LYNCH, PIERCE, FENNER & SMITH INC.

Soybean Oil in India . . .

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Although liquid soybean oil has not been actively considered in India for a cooking oil, I believe that there is a market potential for this oil also. Some fully refined soybean oil has been sent to India under Title III of PL 480 for free distribution to needy persons through the Catholic Relief Services, and has met with quite encouraging acceptance.

In any event, since India is not likely in the near future to be able to produce domestically enough vegetable oils to give the expanding population a satisfactory level of fat in their diet, there is a great market potential for U.S. soybean oil there.

EDWARD M. JAMES
Soybean Council of America, Inc.

• *New Literature*

LAPINE SCIENTIFIC CO. has issued a new bulletin on strip-chart recorders which describes a linear/log recorder and a high-sensitivity recorder with a sensitivity of 1 μv in the ½-mv range. An automatic integrator is also illustrated and listed. (6001 S. Knox Ave., Chicago 29, Ill.)

FOSTER D. SNELL, INC., CALKIN & BAYLEY DIV., has launched another in a series of specialized marketing services. A new monthly, "Fatty Abstracts," will contain marketing data for surfactants, oils, soaps, fats, waxes, and related materials. It will also include news of producers, their plans, acquisitions, new plants, raw material and new product information, world trade, and statistics of the industries covered. (Client Relations Dept., 29 W. 15th St., New York 11, N. Y.)

NORTHO CHEMICAL CO. has released a brochure covering specifications of various types of hydrogenated fatty acids, stearic acids, glycerides, sperm products, and vegetable fatty acids. (P. O. Box 46, Painesville, Ohio).

EASTMAN CHEMICAL PRODUCTS, INC., subsidiary of Eastman Kodak Co., has made available a technical data report on the newly approved food-grade antioxidant THBP (2,4,5-trihydroxy-butyrophenone). The report details the antioxidant activity of THBP in edible fats and oils, inedible

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