GHEE—ITS PRODUCTION AND MARKETING

THE most striking difference in the dairy industry of this country and that in the West is that a large bulk of liquid milk is consumed in the from of its products. The most important amongst these products is ghee for which nearly 43·4 per cent. of the total available supply of milk, amounting to nearly 4929·2 million gallons is used. This position is due to the fact that the production of milk and ghee are followed largely as a subsidiary occupation as a result of animals which every agriculturist must keep for the tillage of land. Further, amongst the products of milk butterfat is fairly easy to isolate and under normal conditions possesses good keeping quality. Any improvement in the method of manufacture and marketing of such an important product can therefore be expected to be of considerable benefit to the producers. With this object the Central Agricultural Marketing Department* has carried out a comprehensive survey of the methods of manufacture, quantity available, price, methods of assembling, storage, transport and distribution, quality control and legal standards for ghee in India. Those acquainted with the ghee trade will realise that such a survey is beset with many difficulties, and the results can at best be taken to represent the broad outline of the general trend and not literal facts. This is borne out by a study of the figures for utilisation of milk given in the present survey carried out in 1945 and those reported before.† Whereas previously it was stated that 27·3 per cent. of total milk produced is utilised for fluid consumption, 58·0 per cent. for making ghee, and 14·7 per cent. for making other products, the latest publication gives these figures as 35·4, 43·4 and 21·2 per cent., respectively.

The production of ghee is concentrated mainly in the northern and western regions, which account for three-fifths of the total ghee produced. Madras, Mysore and other South Indian States contribute only to the extent of about 13 per cent. of the total Indian production. An idea of the difficulty in marketing this almost an universal item of diet in the country will be had from the fact that the amount of ghee produced per annum per 100 persons varies from 0·4 maunds in Assam to 16·0 maunds in Rajputana, which when worked out on the basis of production per square mile comes to 0·8 maund in Assam and 28·5 maunds in Baroda State, the average for the whole country coming to only 8·9 maunds per square mile. The average *per capita* consumption for the country as a whole comes to a very meagre figure of 2·8 lb. per annum. Only a small portion of the ghee produced is retained by the producers, and the marketable surplus varies from about 20 per cent. in the Punjab to 97 per cent. in Hyderabad. It is also noticed that in places which produce less ghee, the producers tend to dispose off a greater part of their production. As a rule the consumption of ghee in urban areas is much higher than the corresponding rural areas, the only exception being the Punjab where these two figures are almost equal. In Bihar the difference is most marked, the *per capita* consumption in rural areas being 0·6 lb., whereas the corresponding figure for the urban areas is 20 lb. per annum.

Though the basic method for the isolation of ghee is largely the same, namely by churning soured milk and melting the butter, the quality produced shows wide variation. Thus there seems to be much scope for improving the quality of ghee by suitable propaganda. Knowledge about the preparation of good ghee is now available. The process is very simple, the essential things being observance of cleanliness at every stage of preparation, and control of the final temperature of melting butter to obtain ghee with pleasant aroma and good keeping quality. It is possible to obtain good ghee either by the *Deshi* process, or from creamery butter, or by directly heating cream. *Deshi* method tends to give ghee with a more appealing appearance and aroma for reasons not yet fully understood. Though a low yield of butter-fat is obtained by this method it is due more to the unfavourable conditions of churning generally adopted rather than due to any inherent defect in the method. Under ideal conditions a loss of only 7 to 8 per cent. of butterfat occurs, and this loss is not a loss in the trade sense as buttermilk is normally consumed by the producer. Any hasty replacement under village conditions of this traditional method with a view to secure a few more percentage of ghee will result in the loss of a valuable by-e-product, namely separated milk, which cannot

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* "Report on the Marketing of Ghee and Other Milk Products in India," Central Agricultural Marketing Deapartment. Govt. of India, 1948, Manager of Publications, Delhi.

† "Report on the Marketing of Milk in India and Burma," Central Agricultural Marketing Dept., p. 67, 1943.

be readily utilised in the same manner as buttermilk.

As things stand to-day a large quantity of inferior quality ghee is put on the market, the two main defects being high amount of free fatty acids and off flavour. The general trade practice is to blend the inferior product with good quality ghee which ultimately results in the lowering of the general quality. In the present legal set of standards prescribed adequate consideration is not given to define quality more scientifically. Bazaar ghee has an established reputation for adulteration and any individual trader trying to sell pure ghee is likely to meet with disappointment in the beginning. This state of affairs could be remedied only by a determined effort by the trade itself. The quantity of ghee produced in the country is very inadequate to meet the nutritional requirements of the population and with the present high price of ghee, only the upper strata of the society can afford to patronise it. It is essential for the trade to grasp this simple fact and give up the vain attempt to compete with cheaper fats. Propaganda on scientific lines is lacking in the country and without any positive proof it is believed by many that ghee is superior to other cheaper vegetable fats and essential in their diet though little is available. A large amount of scientific literature is available on the nutritive value of fats in general and it is rather surprising why our scientists feel so shy to speak out the truth. The report reviewing the extent of adulteration mentions that " in Bombay city alone there are about 40 establishments engaged in the scientific blending of vegetable oil products and genuine ghee". Though adulteration of ghee is widespread this is no doubt an astounding statement especially as it comes from a Government department. It is doubtful if adulteration can be said to be carried out so openly in a big urban centre without attracting the attention of the authorities concerned. A few such hasty statements are noticeable in the report which could have been put in a better way by careful revision.

The report contains at certain places unnecessary details about the method of manufacture which seem entirely out of place in a report on marketing. The same applies to some of the illustrations. Unnecessary paraphrasing, as illustrated by the following comments, could have been avoided:—"The outturn of *rabri* is estimated at 25 to 30 per cent. of milk. Thus 10 seers of milk yield nearly two and a half to three seers of the product" (page 63). The report on the whole makes only a passing reference to the cost of production of various products, a subject on which a survey of this type could be expected to throw considerable light.

The methods commonly followed for handling ghee at the collecting and blending centres leave much to be desired. The whole process is carried out in a crude manner. In fact, it is a wonder that inspite of such rough handling the product retains its marketable quality. The ghee that comes to the market is sold in a rather crude manner. For this reason ghee trade has to meet a keen competition from the vanaspati industry. On account of the doubtful quality of market ghee, vanaspati finds many adherents without much coaxing. For this state of affairs the ghee trade alone is to be blamed, as such a big industry has made no serious attempt to organise and utilise available scientific knowledge that will win the confidence of the consumers.

It is not always easy to define quality quantitatively as ghee varies in composition due to various factors, the most important of which is food. Much of the confusion in quality control is no doubt due to these natural variations. It is, however, possible to produce a very nearly uniform product by a judicious adjustment of feed. The present multiple standards prescribed for quality leave much to be desired, and as every analyst is aware serve only to create more complications. A uniform standard for the country as a whole is not only desirable but will greatly simplify the matter, and should not prove difficult to evolve if the subject is approached logically. For this purpose it is suggested that specifications for quality control work should include only the usual orgenoleptic tests, a limit for free fatty acids content, a minimum Reichert value of 24 to 26 (or better corresponding refractive index reading so that much time will be saved in analysis), a negative phytosteryl acetate test, and a minimum value for vitamin A content. Sometimes ghee has the required Reichert value but it is offensive to taste. An insistence on a minimum vitamin A standard will help to safeguard the quality to a great extent. Further, nutritionally there is nothing much to choose between ghee of high or low Reichert value, or between ghee and other cheaper fats, except that ghee is rich in vitamin A. Hence it is logical that there should be a minimum standard for vitamin A content. Even if a low Reichert value of 24 is allowed in order to secure an uniform all-India standard, the genuineness of ghee will be safeguarded by inclusion of the phytosteryl acetate as a routine method. If ghee falls below a certain minimum value for vitamin A it should not be allowed to be sold as ghee.