SYNTHETIC DETERGENTS

A THREAT TO THE COCONUT INDUSTRY ?

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Director.

AT the beginning of the century, hard and soft soaps of various compositions, with various chemical fillings and produced from animal and vegetable oils and fats, were being used for domestic washing and in industrial processes, such as the cleansing of wool. Coconut oil had a special place among the various oils and fats used in that it produced a hard soap with quick and free-lathering properties, even though it was bad for sensitive skins, when used alone. It was therefore, almost always, blended with other liquid oils and hard fats such as tallow, palm oil, soya bean oil, cotton seed oil, and whale oil, in order to obtain mixed soaps with the required properties. Marine soaps, consisting wholly of coconut oil soap, were an exception.

During the past 50 years, ordinary washing soap has been partly superseded by washing powders which a soap base, such as " Hudson's Soap," " Omo " and "Persil." Such powders have assumed increasing importance because they are easier to use and more efficient than ordinary scrubbing soap which demands the hard physical effort of laundering and which can be very damaging and life-reducing to textiles. To illustrate the rising importance of these soap powders, the production of " Persil " alone has risen from 100 tons a week to 2,000 tons a week over the past twenty-five years.

Now, in the post-war years, there has arisen a challenge to the soap industry in the sensational and widely-advertised rise of the new synthetic soapless detergents. These detergent washing powders and washing fluids, numbering it is said over a thousand different compositions, are primarily products of the chemical and petroleum industries. They are marketed under various trades names, such as " Surf," " Tide," " Quex," " Slik " and " Presto," the latter being used for washing cars. Their rise in popularity is to be attributed to their efficiency, convenience and special uses, but above all to the crashing impact of modern advertising.

In the summer of 1952, the campaign in Britain was on,—a revolution designed to change the habits of the British house-wife, to whom Monday morning was sacred to the worship of the wash-tub. Shop windows were packed with one or the other of the rival commodities, whole pages of every newspaper and periodical advertised them again and again and finally householders received free samples of the competing products. The new detergents which claimed to take the " rub " out of " scrub " have now been generally accepted.

As might be expected this revolution is nowhere more apparent than in America , the home of the labour-saving, where the sale of synthetic or soapless detergents has now exceeded the sales of true soaps and soap powders. This development of coal and petroleum-based detergents has taken only about 10 years. In 1945 synthetic sales in the United States represented only 3 per cent., now in 1954 they are said to be about 60 per cent. of the total sales.

It is necessary for us to try to assess what effect this revolutionary change may have on the world demand for oils and fats, and therefore on the price of coconuts, copra and coconut oil.

According to Sir Geoffrey Heyworth, Chairman of Unilever, Limited, the total world sales of soap (other than toilet soap) in 1952 was more than 5,000,000 tons; the total production of the new synthetic detergents was, he says, over 1,000,000 tons,—about 800,000 tons in America and 300,000 in Europe. They are at present used mostly in countries where purchasing power is high. In the less developed countries, soap powders and synthetic detergents alike have made little headway and hard soap still accounts for the bulk of the trade.

He states that in the United States, (where the standard of living is high) the production of these new synthetic products then amounted to no less than 43 per cent. of the total production of all washing products compared with 22 per cent. in Great Britain and 23 per cent. in Holland. Sales in Asia were only of minor importance, because most laundering is done in rivers, canals, lagoons and beside wells, and the soap is rubbed directly on to the clothes.

The decline in the use of soaps and soap powders in America and Europe is to be attributed to the instability of soap, when used with "hard" waters, containing calcium and magnesium salts in solution. The insoluble calcium and magnesium soaps, which are the result of this interaction, form an objectionable curd or scum which may adhere to the textile or precipitate on the surface being cleaned. Soap, so precipitated, is wasted by being used to counteract the hardness of the water before washing can commence. Thus in districts where the water is particularly hard, it is pleasanter, more economical, and more effective to use synthetic detergents rather than soap powders.

For the same reason, however, there have been complaints that some of these new products produce an unbreakable and permanent lather, and the appearance of foam in rivers and on the filter beds of sewage farms has produced a new problem for science to solve. I have seen a thick foam, covering a river in Hertfordshire, and fish have either to desert these waters or die of suffocation. There are however some detergents which produce an emulsion with water and are efficient cleaners without producing a lather at all.

Detergency is a complex phenomenon, which it is difficult to explain. These cleansing solutions penetrate deeply into fabric, form films round particles of dirt and break down masses of grease into microscopic globules, which are unable either to coalesce again or to resettle back on the material being cleaned. All that is necessary then is to agitate the resulting emulsion of dirt, fat and water and rinse the material with clean water so that the dirt is all carried away in suspension in the wash waters.

There is thus no need whatever for laborious scrubbing with these new products; in fact, it is not advisable as some of the new detergents irritate the skin, if the hands have been softened by prolonged washing and scrubbing. The use of a washing "dolly" or of an electric-washing machine, in any case, obviates any risk of dermatitis.

One important disadvantage of the new detergents is that, at present, they are more expensive to produce than the corresponding soap, soap powder or fluid soap. This means that they are more costly to buy. Nevertheless, the fact that they are more economical to use with "hard" waters will compensate for the higher price. Research, however, goes on and new washing products are still being discovered and, of these, some may be produced at a competitive price.

It is apparent that the sale of these new emulsifying agents will continue to increase not only in Europe but even in America because new uses for them are constantly being developed. In this respect they do not merely replace soap ; they are, in fact, new products with new uses. They are now widely used in machine laundries, for dry cleaning, for rubber polymerisation, for fruit and vegetable washing, for cleaning dairy utensils, for mechanical bottle and dish washing; in electroplating, in leather processing, in insecticides, in fungicides and even in cosmetics ; they are also used in fire-fighting appliances and for cleaning trains and motor-cars.

However, although new uses have increased the total consumption of cleansing compounds, there is little doubt that the new synthetic detergents have replaced soap to a considerable extent. The parallel with synthetic rubber is complete ; they are more expensive, they have defined and specific properties as exact chemical compounds, and they have produced a wide range of new uses but still they are most definitely competing with soap. There will, however, always remain a sustained and a growing demand for soap in countries where purchasing power is low and populations are increasing rapidly and because of the resistance to change in these countries.

Furthermore, it is probable that, owing to these detergents, the prices of both soap and margarine are lower than they would otherwise have been, in view of the acute post-war world shortage of oils and fats. Butter production in the U.S.A. has declined from 1,012,500 tons in 1941 to 743,304 tons in 1950 ; whereas over the same period margarine production has increased from 164,045 tons to 418,224 tons. Similarly in the United Kingdom, butter consumption has declined from 24.8 lbs. per head in pre-war days to 14.5 lbs. per head today ; While margarine consumption has increased from 8.7 lbs. to 18.2 lbs. per head, an increase of 200,000 tons per annum. Thus in countries, where purchasing power is high. the declining use of soap is counterbalanced by the increasing consumption of margarine in lieu of butter, and this means that the demand for coconut oil (which is the ideal margarine oil) will be maintained.

On balance therefore, there is no doubt that the soap trade has been considerably affected by this minor revolution in industry, but a world which is seeking to improve standards of living for an ever-increasing population should still provide an ever-expanding market both for soaps and for detergents—a market in which both will have their place. The use of expensive coconut oil is being transferred from soap to margarine—an important point in a world, faced with an acute shortage of food and in this respect the invention of the synthetic soaps has been a big factor in easing the serious world shortage of oils and fats in the post-war years. They will undoubtedly also lead to the development of new uses and new industries.

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