

The Future of the Natural Rubber Industry in Ceylon

By

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CEYLON'S rubber industry is today facing another crisis—and perhaps one worse than those it has so far faced and weathered. Before the war, natural rubber had no rival. There was overproduction, and competition between the various producers had forced prices down to what were considered to be hopelessly uneconomic levels. But a "restriction of production" scheme was formulated by which supply and demand were equalized, and for some years just prior to the war natural rubber enjoyed a safe and steady market.

The war changed this for ever. When the major sources of natural rubber were lost to the enemy, the urgent necessities of war so hastened research on substitutes that synthetic rubber became a commonplace. It was at first nothing more than a substitute for natural rubber, and not a very good one at that, but it served its purpose. American ingenuity and efficiency were not content to let synthetic rubber remain as a rather poor substitute for natural, and there has been, and still is, steady and continued improvement. Natural rubber now has a worthy competitor—one which already is nearly as good, and one which is likely to improve further.

There has been a widespread belief in recent months that much of natural rubber's troubles were caused by the mandatory use of synthetic rubber in the U. S. A., but this appears to be self-delusion, for the actual use of synthetic rubber is approximately twice the mandatory amount. Furthermore, the cost of synthetic rubber is believed to be slightly higher than natural rubber. Manufacturers appear to use synthetic rubber of their own free will, because they like it and not because they must. This at first sight suggests that synthetic is a better product than natural rubber. The answer to this, from the manufacturer's point of view, is that the many advantages in the manner in which synthetic rubber is supplied to him outweigh its defects when compared with the natural rubber available to him.

It is worth while at this stage to consider the relative merits of natural and synthetic rubber. In the first place, there is not one, but many synthetic rubbers. At any one time, a considerable number—perhaps as many as 40—different types are available and in demand. New ones are continuously being added, usually at the expense of an older type. Some of these types have specialized application depending on, say resistance to oil (Neoprene), or low permeability to air (Butyl), and in such cases, since the synthetic product is more suitable for its purpose than natural, it has permanently supplanted natural rubber. Natural rubber must face the continued loss of specialised markets as new and better types of synthetic for particular purposes are evolved.

Most of the world's natural rubber is used in the tyre industry, and it is here that the decisive battle will be fought. A very recent review of the relative qualities of natural versus synthetic (GR.S and Cold Rubber) sums up the situation as follows: "Cold Rubber is an improvement over GR. S. in most of its laboratory properties. It is not, however, the equal of natural rubber, and cannot be expected to do away with the need for natural rubber". (J. H. Fielding, The Goodyear Tyre and Rubber Co., Akron, Ohio.) (Industrial and Engineering Chemistry, August, 1949, p. 1560). Natural rubber has two qualities in which synthetic is far behind—those of self adhesion and of resilience. When these factors are of importance, as in tyre carcasses and in the treads of larger tyres, natural rubber is invariably used. In large tyre treads, heat build up is the important factor limiting tyre life, but with smaller tyres this factor becomes of secondary importance to other characteristics such as abrasive wear and resistance to cracking and growth of cuts. For the present, the combination of the new Cold Rubber and new furnace blacks appears to give definitely better abrasive wear than natural rubber. The evidence concerning cracking and growth of cuts is not clear, but natural certainly has no marked superiority. A small, passenger car tyre with a natural rubber carcass and a synthetic tread may be just as good a tyre as an all natural rubber one.

The real advantages which synthetic holds over natural rubber are psychological ones. Synthetic rubber is regarded as a new and constantly improving material. New modifications are welcomed and their potentialities explored by user and producer working in close co-operation. By contrast natural rubber is treated as a substance of which the full potentialities are already known. Research is geared to the synthetic industry, with its promise of spectacular results. There is unbounded confidence, based on the present rate of progress, in the future, and a widespread belief that sooner or later—perhaps in five years, perhaps ten—synthetic will oust natural completely. It is this psychological superiority that is so dangerous to natural rubber at the present time, for it affects not only the manufacturer and the research man, but also the consumer, who is becoming synthetic minded. He hears so much of the good points of synthetic rubber, and he knows there has been great progress in the last few years, so that he is beginning to believe that synthetic has already got the natural product beaten.

This is a gloomy picture for the future, but it is largely the result of the lethargy of the natural rubber industry in not changing from its pre-war traditions and methods when natural rubber had no competitor. *No one denies that the better grades of natural rubber as at present produced are definitely superior in general qualities to any form of synthetic rubber so far produced.* If the qualities of natural rubber could be further enhanced and if the marketing organization of synthetic could be adapted to natural rubber the advantage which natural has over synthetic at the moment could be appreciably increased.

Synthetic rubber is marketed as a "clean" product, and each batch is uniform and is supplied with specifications concerning its physical and processing characteristics. Wartime concentration on synthetic rubber has led to a generation of technicians who appreciate this uniformity and technical grading and who do not appreciate the variable unknown material

sold as natural rubber. Moreover, the general trend in processing is to use more and more severe conditions which serve only to emphasise the present defects of natural rubber.

Complaints of dirt in natural rubber are widespread. Dirt is associated with cracking in the finished product, and must be removed by washing, an expensive operation not necessary with synthetic. Even the best rubber is prepared from latex passed through 50 or 60 mesh sieves, which remove only macroscopic, but not microscopic particles, and there is some evidence that such fine particles may be responsible for the start of cracks in treads. Obviously every attempt should be made to prepare clean rubber.

Variability from bale to bale in natural rubber is a marked disadvantage when compared with synthetic rubber. Rubber is sold at present on its appearance, but apart from the obvious advantage of greater cleanliness in the higher grades, there appears to be no relation between appearance and technical characteristics. If natural is to compete with synthetic, it seems essential that grading on specification should come into being. The technical advisers of the natural rubber industry are unanimous on this point. Technical grading and the production of large batches of clean uniform rubber appear to be the minimum essential defensive steps necessary in the competition with synthetic. The value of different grades of rubber—i.e., hard or soft—to the manufacturer is not known, and can only be ascertained by experience, in which process it is essential that the producer takes a lively interest.

A start has already been made on technical grading by French Producers in which No. 1 and No. 2 R. S. S. are tested and each bale marked on a dual basis of viscosity and rate of cure. Other rubber producing countries will probably follow suit and in the near future. At a recent conference in Malaya on Quality in Rubber, the delegates voted unanimously that in their opinion it was desirable to introduce as rapidly as it is practicable a system of technical grading for solid rubber.

It seems reasonably certain that within a limited period much of the rubber from the East will consist of clean, uniform, technically graded material. Within this preliminary framework there must be intensive research on the improvement of the intrinsic properties of natural rubber and on special applications for the speciality rubbers. There will not be one natural rubber, but several, each one particularly fitted to its own special purpose.

In the long run, with natural and synthetic rubbers approximating more closely in their qualities to one another, cost may well be the determining factor. It has been claimed that the present synthetic industry is subsidised by the U. S. Government. Whatever the truth of these claims might be it seems that there is little likelihood of an increase in price when the industry becomes independent of Government. An appreciable fall in the price of either natural or synthetic rubber would undoubtedly help that particular rubber to a larger share of the joint market.

The world's potential output of natural rubber is steadily increasing. Seedling rubber gave about 500 lbs/acre/annum; the best of the earlier clones gave more than double this amount, and the best of the modern clones are expected to give four times this amount. Replanting is proceeding apace

in many countries, with Ceylon far behind the rest. This is not the whole story, either. Between the two wars, American interests started up rubber plantations in South America, among other places. These areas were decimated by the South American leaf blight—*Dothidella Ulei*. Work during the last 10 years under the direction of the U. S. Department of Agriculture has enabled selections to be made which are resistant to this scourge and at present extensive work is in progress in eleven tropical American countries to develop rubber production, primarily by smallholders.

There is every prospect that the potential output of natural rubber will exceed the demand, unless vast new uses can be found, such as rubber roads. Competition in the rubber industry itself will tend to force down prices which are already low by pre-war standards. Only the more efficient producers will be able to keep going.

A further point of interest is that since natural rubber came onto the market again after the war, the price differential between the good and the poor grades has steadily increased. Although rubber is at present sold on appearance, the bigger purchasers buy on the technical qualities of the various grades and the price differential really represents the extra cost to the user in turning a low grade rubber into a high grade one. This extra cost includes not only extra processing such as washing, but also the value of increased rejects. The actual extent of the price differential may be expected to remain steady, even though the price of rubber falls. So that, in such a case, it would just not be worth while to produce low grade rubber. When overproduction does arrive, it will be the clean, uniform, specified grades of rubber that will find ready sale at the expense of the poorer grades.

How will all this affect Ceylon? The present organization of the Rubber Industry in Ceylon is ill adapted to take part in this fight for survival. Her total production is less than 1/10 of the Far East total, and any action the Dominion takes may not vitally affect the struggle between natural and synthetic rubbers. But if the Dominion wishes to retain her share in whatever market for natural rubber may exist in the future, it is imperative that we should be able to offer rubber in quantity of a standard not below that of other producing countries.

Uniform rubber can only be produced where facilities for bulking latex exist. Specified rubber means that technical tests have to be carried out on each batch of rubber. At a very rough estimate the cost of a single specification will be of the order of Rs. 10-20. It would be quite uneconomic to test each and every bale, and the lower limit at which testing would be feasible is suggested at approx. 2 tons, or in round figures, 1,000 gallons of latex. Few of Ceylon's factories are equipped for handling latex in bulk at this level.

Better rubber, so far as Ceylon is concerned, means centralized factories capable of bulking at least 1,000 gallons latex, and preferably double or treble this amount. Such factories could turn out clean, uniform rubber which could be specified at little cost. In some cases, groups of estates could amalgamate. In other cases, it might be necessary for new factories to be built to handle both estates and small holders' latex. Proposals for centralization on purely economic grounds were made in the Report of the Commission on the Rubber Industry in Ceylon in 1947—"We feel that reorganization

is bound to come sooner or later, if Ceylon is to compete with her better organized neighbours further east". This economic need has now been changed to *essentiality* if Ceylon is to fall in line with the rest of the East and produce clean, uniform graded rubber.

The reorganization of Ceylon's industry into units of 1,000-2,500 acres, each with its central factory, will not be an easy task, particularly on the administrative side, and will entirely upset the present system of handling rubber between estate and ship. Other countries are also faced with these complications—"the erection of central factories also involves certain consequences on the selling side, as it is natural to assume that the selling of the products of the central factory will in most cases (although not necessarily) no longer be a matter for the individual estates. It is hoped that the higher interests which are here at stake will make it possible to conquer these complications". (Dr. H. R. Braak, *De Bergcultures*, September 1, 1949.)

In the years to come Ceylon's rubber acreage may be reduced to a fraction of the present value, clustered round central factories, with a total output probably higher than the Dominion's present figure. Smallholders will have their part in the industry as well as the bigger estates for the Central factories will collect and purchase latex. With lowered production costs, through high yielding material and through efficient factories, and with a better product, made possible by these same efficient factories, there need be no undue pessimism about the future of natural rubber in Ceylon. The days of fabulous profits are gone for ever, as the industry settles down to maturity but there are good grounds for the hope that there will be reasonable recompense for efficient producers for many years ahead. The lesson to be learned is that synthetic rubber is no longer a substitute for natural rubber; rather is natural rubber to be regarded as one of a range of alternative materials to be selected or rejected entirely on its merits according to the particular requirements to be satisfied. It is up to the natural rubber industry to make the best of the inherent merits of its product, and to see that those merits are widely known.