

## THE ROMANCE OF RUBBER

P P Jayasinghe

By the time the first Spaniards arrived in the Americas in the 1490s some of the Ameri-Indians, inhabiting what is now called, Guatemala and Mexico, had already discovered the art of tapping the latex of *Castilloa elastica*, the maxican rubber-yielding tree. They have been found to make use of this latex for water proofing the garments and footwear of those times. Besides, they have been playing various games with rubber balls and also using them in magical ceremonies.

However this crude forms of rubber were easily spoilt and decayed when exposed to the sun-rays and were stiffened when exposed to the cold climate. Rubber latex could not be transported to Europe without coagulation setting in. Therefore, for more than two centuries only small pieces of sticky rubber reached Europe, and for the most part, these sample pieces became items of curiosity in private collections.

A French Scientific expedition to Peru and Brazil sometime during 1735 – 1745, led by De La Condamine, the naturalist, sent back to Paris, specimens of rubber obtained from the tree called by the inhabitants “hheve” (now *hevea*). He also prepared notes about a rubber – yielding tree that grew along the banks of Amazon river and dispatched them to France.

A few years later, Fresneau, a French engineer, discovered several kinds of latex producing trees in Guiana, one of which, *Hevea brasiliensis* forms the nucleus of the modern rubber industry. At this time the Spaniards called rubber by an Indian word “cauchuc” meaning “weeping wood”. This word later on became the caouthoc in French.

For more than a century Brazil continued to be the chief supply source of raw – material rubber which found its way into the commerce of the world. It soon developed into a lucrative business with Brazilian ports becoming a hive of activity.

The French now turned their attention to the problem of finding a solvent for rubber which would allow the resulting paste to be formed or moulded into a required shape. But little progress was made until the discovery of gas – lighting, pioneered by William Murdoch, was put into practical use between the years 1800 – 1820.

At this point the eminent men who dominated the early history of the modern rubber industry enter the saga, that is, Thomal Hancock (1786 – 1865) and Charles Macintosh (1766 – 1843).

In 1819 Hancock had a workshop in London for processing crude rubber and transforming it into cut-strips in order to insert the strips into garters, mittens and waistbands. He found scrap rubber cuttings accumulating in large quantities and early in 1820 he devised his famous “masticator” a machine which caused rubber scrap to soften and unite again into a plastic mass that could be moulded into slabs and then re-used.

Charles Macintosh was an industrial chemist, who in 1819 had contracted with the proprietors of a gasworks company for large – scale supplies of residual tars. He was involved in refining these tars in order to obtain ammonia for his dye factory and was left

with a considerable surplus of naphtha. Faced with the problem of finding a profitable outlet for this solvent, Macintosh began to experiment with rubber solutions made from naphtha, and in 1823 got the rights of his famous patent for water proofing, cloth by the simple but effective "Sandwich principle", that is, enclosing a layer of the thick paste of rubber between two layers of cloth.

Some years later Hancock and Macintosh established a formal partnership, to manufacture articles made from water proof material. Initially, they were experiencing difficulty in getting the necessary succour from tailors, who refused to handle this messy material. So the early "Macintosh Cloaks" and articles were often leaking, at the seams, leaving sticky patches wherever they were laid.

In 1828, Hancock set up the first modern rubber factory in France for Messrs Rattier and Guibal. The famous firm of Michelin of France has its origins from 1832 and owes its establishment to the accidental marriage of a niece of Macintosh to one of the founders of Michelin.

The next most important event was the discovery of "vulcanisation" of rubber. Rubber had not yet been freed from its natural tendency to become hard and stiff in cold weather and to soften and become tacky in warm spells.

Between 1835 and 1842 Nathaniel Hayward and Charles Goodyear, conducting experiments in the United States, successfully hardened this non - yielding rubber by heating a mixture of rubber, sulphur and lead oxide. Pieces of rubber so treated in the United States came into the hands of Macintosh and Hancock and during the winter of 1843 - 44, Hancock experimented with complete success to find out what had caused "the change" and termed it "vulcanization".

Vulcanization gives rubber a permanent elasticity which remains uniform in varying temperatures and conditions.

The expansion of the bicycle industry in the 1870s and the rapid development of the motor - car industry during 1890s necessitated more and more rubber. By 1897 Britain, the biggest consumer then, was importing some 20,000 tons of rubber. But there existed grave danger of a rubber shortage.

Most of the rubber entering the international trade were still from sources of the plunder and pillage of native rubber trees by the denizens of Brazillian forests. Nevertheless supplies of African wild - rubber, mainly from the Belgian Congo had reached significant levels by the early twentieth century. The primitive tapping methods used, killed hundreds of thousands of latex-bearing trees and the cultivation of rubber on the plantation system under European direction with European capital became urgent and imperative.

At the suggestion, a providential one of course, of James Collins, the curator of the museum of the Pharmaceutical society of Great Britain, attempts were made by Sir Clements Markham, an Assistant Secretary at the India office to introduce rubber to India and other Asian countries. But this move was thwarted apparently by the other European countries who had interests in South Americas and Africa. But while this tug-of-war was going on Henry Wickham, who was later knighted, had managed to smuggle in some seeds and establish a plantation in Sri Lanka. The rest of the story is known history!