

A Brief History of Rubber

Based on Wade Davis, *One River* 1996

Rubber is one of the most important products to come out of the rainforest. Though indigenous rainforest dwellers of South America have been using rubber for generations, it was not until 1839 that rubber had its first practical application in the industrial world. In that year, Charles Goodyear accidentally dropped rubber and sulfur on a hot stovetop, causing it to char like leather yet remain plastic and elastic. Vulcanization, a refined version of this process, transformed the white sap from the bark of the Hevea tree into an essential product for the industrial age.

With the invention of the automobile in the late 19th century, the rubber boom began. As demand for rubber soared, small dumpy river towns like Manaus, Brazil, were transformed overnight into bustling centers of commerce. Manaus, situated on the Amazon where it is met by the Rio Negro, became the opulent heart of the rubber trade. Within a few short years Manaus had Brazil's first telephone system, 16 miles of streetcar tracks, and an electric grid for a city of a million, though it had a population of only 40,000. Vast fortunes were made by individuals, and "flaunting wealth became sport. Rubber barons lit cigars with \$100 bank notes and slaked the thirst of their horses with silver buckets of chilled French champagne. Their wives, disdainful of the muddy waters of the Amazon, sent linens to Portugal to be laundered...They ate food imported from Europe...[and] in the wake of opulent dinners, some costing as much as \$100,000, men retired to any one of a dozen elegant bordellos." The citizens of Manaus "were the highest per capita consumers of diamonds in the world."

The opulence of the rubber barons could only be exceeded by their brutality. Wild Hevea trees, like all primary rainforest trees, are widely dispersed, an adaptation that protects species from the South American leaf blight which easily spreads through and decimates plantations. Thus, to make a profit, the barons had to acquire control over huge tracts of land. Most did so by hiring their own private armies to defend their claims, acquire new land, and capture native laborers. Labor was always a problem, so barons got creative. One baron created a stud farm, enslaving 600 Indian women whom he bred like cattle. Other barons like Julio Cesar Arana simply used terror to acquire and hold on to Indian slaves. Indians captured usually submitted because resistance only meant more suffering for the families. Young girls were sold as whores, while young men were bound, blindfolded, and had their genitals blasted off. As the Indians died, production soared: in the 12 years that Arana operated on the Putumayo River in Colombia, the native population fell from over 30,000 to less than 8,000 while he exported over 4,000 tons of rubber earning over \$75 million. The only thing that stopped the holocaust was the downfall of the Brazilian rubber market.

The Brazilian rubber market was crushed by the rapid development of the more efficient rubber plantations of Southeast Asia. However, the prospects of developing plantations did not begin on a high note. Rubber seeds, rich with oil and latex, could not survive the long Atlantic journey from Brazil. Finally, in 1876, an English planter, Henry Wickham, collected 70,000 seeds and shipped them to England. This shipment remains "a source of controversy. Brazilians, conveniently forgetting their entire agricultural economy is based on five imported plants—African oil palm, coffee from Ethiopia, cacao from Colombia and Ecuador, soybeans from China, and sugarcane from Southeast Asia—still speak of the "rubber theft" as a moment

of infamy. Wickham himself, in his memoirs, lent a note of mystery to the deed, no doubt intending to elevate his own profile in the eyes of his peers. In fact, all evidence suggests that the exportation was a straightforward affair conducted in the open and actively facilitated by the Brazilian authorities in Belém." In either case, 2,800 of the seeds germinated and were sent to Colombo, Ceylon (present day Sri Lanka). After several false starts, including one by a planter in northern Borneo who felled his plantation after finding no rubber balls hanging from the branches, the prospects were grim. One major obstacle was that the success of tea (Ceylon) and coffee (Malaya) gave planters no reason to try an untested crop.

Finally in 1895, Henry Ridley, head of Singapore's botanical garden, persuaded two coffee growers to plant two acres (.8 ha) of Hevea trees. Twelve years later more than 300,000 ha of rubber grew in plantations in Ceylon and Malaya. New innovations increased efficiency, and production doubled every two years. Rubber could be produced at only a fraction of the cost of collecting wild rubber in Brazil. By 1910, Brazilian production had fallen 50 percent. In 1914, Brazil's market share was down to around 30 percent, in 1918, to 20 percent, and in 1940 to 1.3 percent.

However the Second World War threatened to shift the rubber wealth. With Japan occupying prime rubber-producing areas in Southeast Asia, the U.S. feared it would run out of the vital material. Every tire, hose, seal, valve, and inch of wiring required rubber. The Rubber Development Corporation, the chief overseer of rubber acquisition, sought out other sources including establishing a rubber program that sent intrepid explorers into the Amazon seeking rubber specimens that would be used to produce high yields, superior products, and the possibility of resistance against leaf blight. The ultimate goal of the program was to establish rubber plantations close to home. In addition to searching the Amazon and establishing experimental plantations in Latin America, the program came up with some novel plans to produce rubber, including planting dandelions—their milky sap a small, but useful source of rubber—in 41 states. Extensive work on synthetic rubber yielded a product that, in time, economists predicted, would replace natural rubber. By 1964 synthetic rubber made up 75 percent of the market.

However, the situation changed drastically with the OPEC oil embargo of 1973, which doubled the price of synthetic rubber and made oil consumers more conscious of their gas mileage. The concern over gas mileage brought an unexpected threat to the synthetic market: the widespread adoption of the radial tire. The radial tire replaced the simple bias tires (which had made up 90 percent of the market only five years earlier) and within a few years virtually all cars were rolling on radials. Synthetic rubber did not have the strength for radials; only natural rubber could provide the required sturdiness. By 1993 natural rubber had recaptured 39 percent of the domestic market. Today nearly 50 percent of every auto tire and 100 percent of all aircraft tires are made of natural rubber. Of this rubber, 85 percent is imported from Southeast Asia, meaning that the U.S. is highly susceptible to disruptions caused by an embargo, or worse, the unintentional or intentional introduction of leaf blight into plantations. None of the trees in plantations across Southeast Asia has resistance to blight so "a single act of biological terrorism, the systematic introduction of fungal spores so small as to be readily concealed in a shoe, could wipe out the plantations, shutting down production of natural rubber for at least a decade. It is difficult to think of any other raw material that is as vital and vulnerable."