

164 THE FIRESTONE TIRE & RUBBER COMPANY

The Company had made additions to the original factory in 1904-6. In 1910 it bought 23 acres a mile away and next year occupied the new plant it built there. A second plant was soon started, designed for the exclusive production of small-size tires for popular cars, one of the first to apply the principles of straight-line production to tire manufacture. In the meantime the Company had developed a considerable business in rims, growing out of a demountable rim perfected by Firestone in 1907. The rim division took over the entire original tire factory and was incorporated as the Firestone Steel Products Co. In 1922 a new steel plant was built and a subsidiary factory later constructed at Wyandotte, Mich.

About 1910, Firestone Tire & Rubber Co. entered the reclaimed rubber field and during World War I constructed a factory as a subsidiary called the Xylos Rubber Co. Eight offices in the Far East were opened during this period and the Company built a \$1,000,000 plant at Singapore in 1919, to prepare and ship rubber from Malaya, Sumatra, Java, and Borneo. Because of the Stevenson Rubber Restriction Act, enacted by Great Britain in 1921 to inflate the price of rubber, Firestone made a world survey to determine a suitable place to establish rubber plantations. It secured an option to lease 1,000,000 acres in the Republic of Liberia in 1924. From a force of 2,000 native laborers, the enterprise has grown to 35,000 workers and a plantation of 80,000 acres, most of it in production.

The Company constructed tire plants in Hamilton, Ont., in 1922; Brentford, near London, 1928; Los Angeles, 1928; Buenos Aires, 1931; Bilbao, Spain, 1933; Pratteln, Switzerland, 1935; Port Elizabeth, South Africa, 1936; Memphis, Tenn., 1937; Bombay, India, and Sao Paulo, Brazil, 1939. After World War II Firestone purchased tire plants which it had operated for the Government in Des Moines, Ia., and Pottstown, Pa., and acquired additional foreign factories in Viskafors, Sweden, and Christchurch, New Zealand.

Tire fabric of cotton, rayon, and nylon is made by Company-owned and operated factories at New Bedford, Mass., Gastonia, N. C., Bennettsville, S. C., and Woodstock, Ont, operating as Firestone Textile Co. Another subsidiary, Firestone Industrial Products Co., makes several hundred types of automotive parts, rubber and plastic, in Fall River, Mass., Paterson, N. J., Noblesville and New Castle, Ind., and Pottstown, Pa. Firestone entered the plastics field several years before World War II and a subsidiary, the Firestone Plastics Co., manufactures synthetic resins, films, and other plastic products.

In 1940 Firestone had a small commercial plant producing synthetic rubber. The first government-owned synthetic plant built and operated by Firestone went into production in Apr. 1942. Synthetic rubber plants operated by Firestone are in Lake Charles, La., Port Neches, Tex., and Akron. Chemists had to find new and improved accelerators and other ingredients for compounding synthetic rubber; the whole problem that they had taken 40 years to accomplish with natural rubber had to be done in a year or two. In making cords for synthetic tires for aircraft, first rayon and then nylon were used and found to be satisfactorily treated by the Firestone process of gum-dipping, a method specified by the War Department

The research laboratory steadily expanded and in 1945 moved into a new \$2,000,000 building given over exclusively to pure chemical and physical research. Other research activities are carried on in the Product Development Department and in other laboratories and include not only chemical compounding of raw ma-

terials, but engineering development in design and construction, such as electronic vulcanization, and improvement in the machines which makes these products.

The Company has sponsored research fellowships for many years in various universities, such as Princeton, University of Minnesota, Case School of Applied Science, Ohio State University, University of Akron, and has cooperative arrange-