

# Wide Fabrics Choice For Today's Tire Maker

When the Firestone company was founded in 1900, women had little variety to choose from in fabrics for clothing and home use. Tire makers, too, had little choice in fabrics for the primary structural or reinforcing material for their tire. In fact, the only choice for pneumatic tires was square-woven cotton fabric.

Today, women enjoy a great variety of versatile fabrics for different purposes. So do tire makers have variety.

In 1915 the first experiments were conducted in the use of cord fabric for tires, consisting of a number of long-staple cotton cords lying parallel to each other and held together by an occasional yarn of small diameter. The same type of cord fabric construction was used in 1933 when the company first used man-made rayon in tires. Later nylon, steel wire and polyester cord were introduced.

**BY LATE 1963**, Firestone was on the threshold of another exciting development in tire cord—fiberglass. It was announced that fiberglass cord is particularly promising for use in a new type of tire in which the cords run directly across the tire body instead of at an angle of 34 to 38 degrees from the circumferential direction as in conventional tires.

Fiberglass tire cord is made from the same tiny glass fibers for which there are now so many applications in both home and industry. Tires originally were of solid rubber, fastened around a carriage, bicycle, automobile or other wheel in various ways. But a softer ride was in demand and the idea of riding on air encased in a rubber tube was developed.

Robert William Thompson, an Englishman, built the first pneumatic tire in 1845. He used leather, both to cover and protect the rubber air tube and to give the tire strength. His tire met with little success.

In 1888, John Boyd Dunlop of Belfast, Ireland, built his first pneumatic tire, consisting of a rubber air tube enclosed in a linen jacket. Flaps of the jacket were cemented to a wooden bicycle rim and the outside surface was covered with rubber sheeting.

**SQUARE-WOVEN COTTON**, considered as a reinforcement about 1900, was the first reinforcement material used that actually adhered to the rubber. This fabric was much like canvas and was used for 15 years until specially-designed cotton cord fabric was introduced.

As transportation grew and motor vehicles traveled greater distances at ever-increasing speeds, more and more was demanded of tires. They had to be strong enough to withstand se-

## EVOLUTION

**OF TIRE CORD** is represented here, as girl at left wearing typical cotton costume of the early 1900s holds sample of square-woven cotton tire fabric and displays early Firestone Non-Skid tire. Wearing polyester dress and nylon gloves, the other girl stands behind experimental tire containing fiberglass cord (center) and a conventional rayon cord Firestone De Luxe Champion. Foreground: Packages of the six cords which have been used to reinforce tires. Cards show years in which Firestone first used the cords.



vere road shocks and intense heat, but they also had to be flexible enough to provide the best possible ride. Improved tire cords, along with better rubber compounds, made remarkable progress possible.

Rayon appeared for tire cord about 20 years after cotton cord fabric. It was quickly accepted and from 1939 to 1949 gained 75 per cent of the tire market. During World War II rayon achieved universal use because it had the heat resistance necessary to withstand the higher-running temperatures of the new synthetic rubber tires. Soon nylon was challenging rayon because it also had this characteristic.

First used in aircraft tires during World War II, nylon became popular for off-road and heavy-duty truck tires; then penetrated the passenger-tire market.

Makers of rayon cord met the competition by increasing strength, durability and adhesion of their products. Nylon cord makers also improved their cord by doubling its resistance to heat fatigue and greatly increasing durability, adhesion and strength.

**PNEUMATIC-TIRE SALES** now are split about evenly between nylon and rayon, in the overall original-equipment and replacement markets for trucks, buses and passenger cars. Steel wire cord provides the answer in many applications.

Challengers have appeared for these tire cord materials, just as they have in women's fashions and home furnishings. Each challenger has its own advantages and potentialities.

In 1959 Firestone announced successful testing of tires made with cord fabric of polyester fibers, such as Dacron and Terylene, and recently the company announced testing of fiberglass cord.

As in every field, the old standbys remain and continue to be improved in the textile field, but exciting new materials offer much promise for the future on the highways, as well as at home.



## Edison Biographer Mentions Firestone

"Edison—that veritable dynamo of genius and invention—typifies more than any of his peers the American dream. His education was limited to three months in a Port Huron, Mich., school. But the fires burned brightly within the lad who was, successively, a railroad newsboy and a telegraph operator, but who always found time to experiment in his spare time.

"Deafened at an early age, he forged on in an ever-growing world of silence, to give mankind, among other things, the electric light and the phonograph. The farm boy from Ohio (Milan was the original family home) brought light and music into the lives of millions."

**SO BEGINS** a review on the jacket of the new biography of Inventor Thomas Edison, written by Rex Beasley and published Feb. 11 by Chilton Books.

"In Rex Beasley's exciting book," continues the review,

"Edison is seen in a conflict of moods as he proves, pushes and shouts for results he is determined to achieve. Here he is—from the bright days of youth through the middle years of success and failure, to the twilight time of honor, for in his old age his name was known to every schoolboy throughout the world.

"In this era of modern electronics and science, it is fitting that Edison's story be told anew—His achievements stand for all time. His position is unique in the history of mankind and of his age. But beneath the genius there lay the man. Many past biographers have ignored that particularly human quality which endeared Edison to all who knew him. Here for the first time, and for all time, is Edison the man and Edison the genius."

**OF SPECIAL** interest to Firestone employees are the references in the book to the friendship of Mr. Edison and Harvey S. Firestone, founder of the Firestone company. Among the acknowledgements at the start of the book, the author thanks Harvey S. Firestone Jr. for his assistance with illustrative material and permission to quote from a letter written by Naturalist John Burroughs to Harvey S. Firestone.

Author Rex Beasley is a senior vice president and vice chairman of the board of Republic National Life Insurance Company of Dallas, Texas. The author of many books, Mr. Beasley in 1962 received the National L.A.A. Award of Excellence for his popular magazine series on "Great Men of History." His interest in Mr. Edison was such that he collected original Edison inventions and documents and spent long months in talking with people who knew the inventor personally, before starting the writing of the biography.

## Blood Donors

—From page 1

McCurry, Cramer McDaniel, Edith McGinnis, William McGinnis, Erma McNabb, James McNabb, Roxie McNabb, Jerry Mitchell, John Mitchell, Isaac Moss, Paul Neal, Roxie Newton, William O'Neal, William Page, Dillard Palmer.

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## Off-Job Study Brought Rewards



Five men here in February received certificates upon completion of 10-hour courses in the Industrial Management Club's program of adult education.

General Manager Harold Mercer (center) presented Carl

Margaret Summerell.

Buford Tate, Ray Thomas, James Thompson, Marlin Thompson, James Truesdale, G. D. (Bill) Ward, Ila Webster, Tracy Whitener, Brady Whitesides, Hansford Wilkes, George Williams, P. R. Williams, Ted Williams, Margaret Willis.

About two and one-half yards of heavy webbing are required for production of an automobile seat belt.



Rape of carding with certificate for his course in applied psychology. At left: visiting textiles division president R. M. Sawyer. Others (from left), their departments and courses: Cramer Little (shop), supervisory tech-

niques; Alvin Riley (industrial relations), supervisory techniques; James Burr (methods-time study), better quality control; Ralph Johnson (industrial relations), supervisory techniques.

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Claude C. Callaway, Editor

● South Atlantic Council of Industrial Editors

## PLANT REPORTERS

Carding—Payton Lewis

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Mechanical Department—Rosie Francum

Quality Control — Sallie Crawford, Louella Queen, Leila Rape

Warp Preparation—Elmina Bradshaw, Vera Carswell, Elsie Cole, Annie Cooney, Katie Elkins, Catherine Fletcher

Warehouse—Harold Robinson, Israel Good, Roosevelt Rainey

Weaving (cotton)—Ruth Veitch

Weaving (synthetics)—Irene O'Dell, Mayzelle Lewis

Winding—Neil Bolick, Ruth Cloninger

**YMCA MEMBERSHIP DRIVE BEGINS MARCH 23**