

The Bicycle

**THE BIRTH
OF THE
PNEUMATIC
TYRE**
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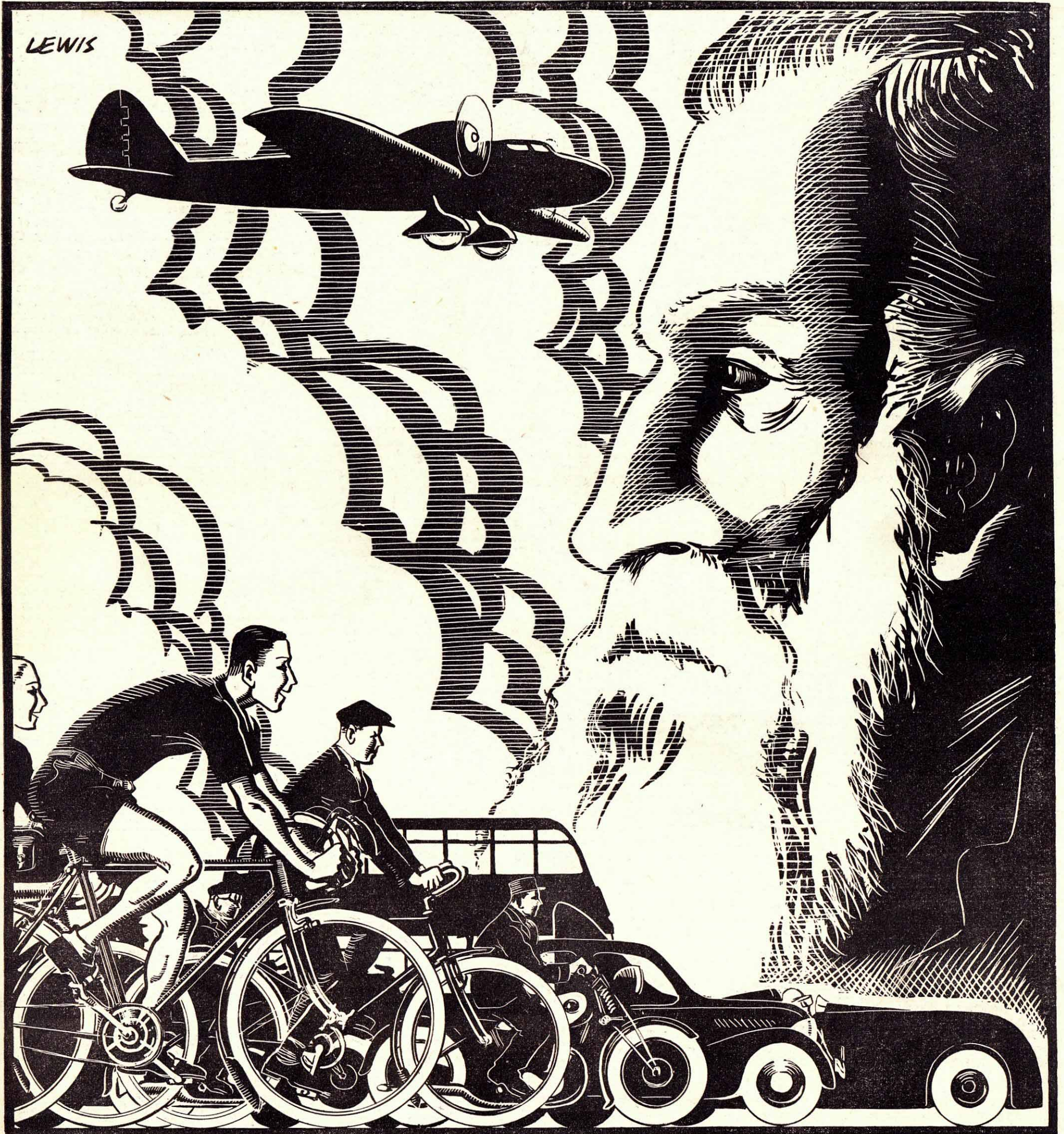
[MEMBERS OF
THE A.B.C.]

THE WEEKLY NEWSPAPER

FOR ALL CYCLISTS

[REGISTERED AS
A NEWSPAPER]

Week ending JULY 23, 1938



James Boyd Dunlop—the man who paved the way for the modern cycle, and subsequently all forms of transport

ELLIMAN Athletic RUB
The Champion Rub of Champions

Another Remarkable
Tribute (SEE PAGE 7)

JULY 23rd, 1888—a date that marked the beginning of modern cycling, for it was on that day that

THE PNEUMATIC TYRE WAS BORN

PNEUMATIC tyres — what romance is there in such a subject? Thus will ask the layman. But there is engrossing interest, a story of human endeavour, of the genius of the inventor; the tale of a continual effort to develop scientifically the product of this genius; the work of thousands of men to make a commercial proposition of the invention and to make available a product which has helped to revolutionise means of transport. There is romance in the production of a single tyre. Rubber and cotton from the far corners of the earth, bales of it loaded in ships' holds; whirling machinery of the industrial North; these are chapters in the Romantic Story of Rubber.

This year the Dunlop Rubber Company, Limited, celebrates the fiftieth anniversary of the invention of the rubber pneumatic tyre. The application of the late J. B. Dunlop for a patent was the opening chapter of the story of Dunlops. But for it the world would never have known the development of the cycle, the motor-car, and the aeroplane as they are known to-day.

The Era of the Tyre's Advent

In 1888 the world was very different from what it is to-day. The present generation—especially the younger section of it—cannot easily visualise the age when the pageant of life went by at a jog-trot. People are apt to think of the present age as an age of noise, but actually the noises are only different in type and more continuous. City streets were noisy enough in the '80's with the clatter of shod hooves on cobbled thoroughfares, the clang of iron-rimmed wheels and the jingle of harness. By comparison, transport to-day is not only swifter, but relatively more silent. The transition was due, in the main, to one man. That man was John Boyd Dunlop.

Of what stock came this man who was to achieve such fame? Strangely enough he was no city-bred person, for his father was a farmer in the little Ayrshire village of Dreghorn. By profession he became a veterinary surgeon, but by 1888 he had achieved sufficient success in this direction to be able to sit back and contemplate some of the problems against which he came up each day.

One of these was the problem of "unsprung weight" in the ordinary road vehicles of the period. Much of his time was spent in jogging along country lanes in his dog-cart,

The most romantic story that has emerged from the building up of to-day's tremendous era of travel is the tale of the pneumatic tyre's invention by John Boyd Dunlop, just 50 years ago, and the amazing development of Dunlop tyres in this half century. Here, told in a new form, are the dramatic details of the invention that revolutionised road travel for all time.

and to these jogs is due the pneumatic tyre as it is known to-day.

Experiments With a Tricycle

Bumping along, Dunlop pondered ways and means of attaining more comfortable travel. There came to him the idea of the air-filled tube, and in the autumn of 1887 he began to experiment. His ten-years-old son had a tricycle, which proved ideal for a practical experiment.

Dunlop first made a wooden disc of about 16 in. diameter. With sheet rubber one thirty-second of an inch thick he made a tube, inserting at the union of the two ends a small air-inlet pipe like that of a football. Inflated with a football pump and the inlet closed, the primitive pneumatic tyre was secured to the rim of the wooden disc by means of a covering strip of linen nailed to the wood.

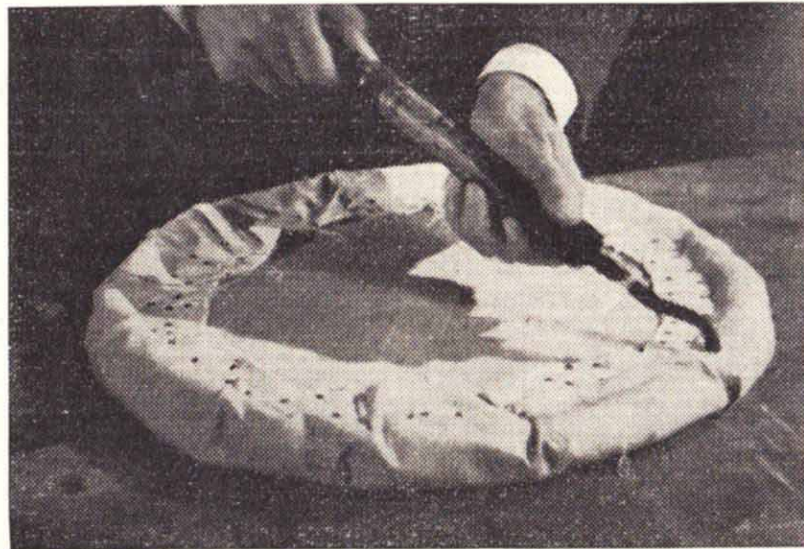
The first Dunlop tyre was then ready for the initial and—as it proved—epoch-making test.

By trundling the wheel up and down the yard Dunlop was convinced that he was working on the right lines and two months later he commenced a more ambitious experiment. Two strips of elm wood 9 ft. long, 3 inches wide and a quarter of an inch thick were bent into hoops about 3 feet in diameter and the ends riveted together. Two air tubes were made of the finest sheet rubber one thirty-second of an inch thick and drawn into canvas tubes, a small air supply tube being inserted before the ends were solutioned together.

The canvas cover or jacket was covered with a thickness of sheet rubber, with two extra thicknesses on the tread. The tyres were solutioned to the wooden rims and the rims were secured to the rear wheels of the tricycle with copper wire. They were finished on the night of February 28, 1888, and Dunlop's young son immediately went out on the machine for a trial run in the moonlight. It was at

once obvious that the tyres were lighter, faster and enormously more comfortable, but would they wear? The question was soon answered, for the next morning, when they were examined, not a scratch nor a mark could be found.

Dunlop decided to carry his experiment further and built wheels himself to use for further experi-



The first pneumatic tyre—a wooden disc about 16-inch in diameter, with a tube of sheet rubber primitively fixed round the edge by means of a strip of linen—is here shown being inflated

mental work. Then, in July, 1888, so convinced was he of the importance of his discovery, that he took out a patent for his invention:

"No. 10607 A.D. 1888.

Date of application, 23 July, 1888. PROVISIONAL SPECIFICATION.

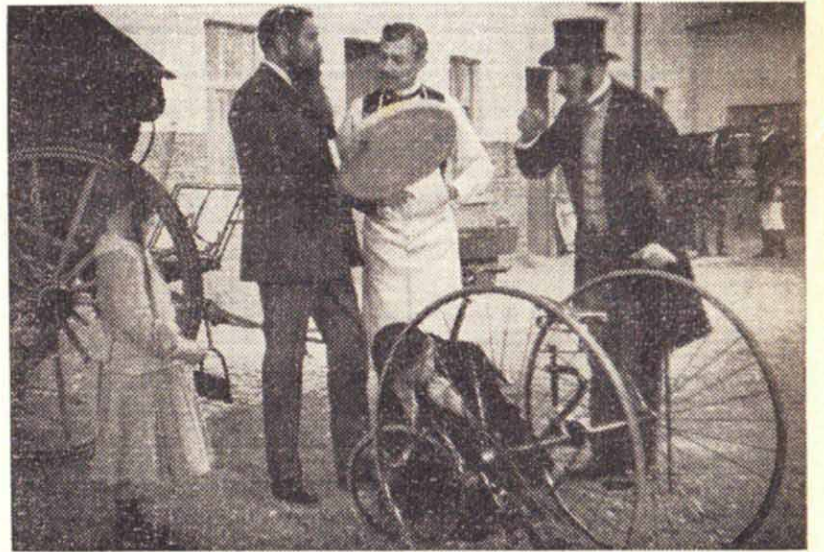
I, John Boyd Dunlop, Veterinary Surgeon, 50, Gloucester-street, Belfast, do hereby declare the nature of this invention to be as follows:—
A hollow tyre or tube made of indiarubber and cloth, or other suitable material, said tube or tyre to contain air under pressure or otherwise and to be attached to the wheel or wheels in such a method as may be found most suitable.

Dated this Twenty-third day of July, 1888.

JOHN BOYD DUNLOP."

The First Bicycles with Pneumatics

A local firm of cycle manufacturers, Edlin and Co., then began to manufacture bicycles suitable for the new pneumatic tyres, and the first of these was so successful that it was ridden for more than



The first tyre—Johnny Dunlop, the son of the inventor, is seen taking the front wheel from his solid tyred cycle to test the first pneumatic [Pictures from the Jubilee Film]

a notable advance, for it made the detachable tyre possible, simplified puncture repair, and later developed into the wired-type tyre and well-base rim. This is to this day the most popular type of fitting. There was also William Erskine Bartlett's patent of October, 1890, for securing the rim by means of turned-in edges, the edges of the cover being thickened without loss of flexibility. This was the original "clincher" cover.

The company's Dublin factory quickly proved inadequate to meet the increasing demand, and since it was desirable to maintain closer contact with cycle makers, the manufacturing business was transferred to Coventry, the heart of the cycle industry, and sales depots were opened in London, Birmingham, Nottingham, and other important centres. The Coventry premises were quickly outgrown, and another move was made to Aston Cross, Birmingham. Not many years passed before this accommodation, too, proved inadequate, and it was decided that provision must be made for large-scale expansion.

In 1916, therefore, 400 acres of land were purchased at Erdington, Birmingham, and the building was started of what is now the "tyre town" of Fort Dunlop, with its own locomotives and transport system, fire brigades and ambulance services, canteens to feed the armies of workers and sports fields for their recreation, and a power station to supply enough steam, electricity, and water for the needs of a fair-sized city.

Throughout the history of the Dunlop Company continual development in the actual methods of production has been taking place. It was natural, of course, that the early efforts of the industry should be concentrated on the cycle tyre business. In the midst of all its subsequent activities the company has ever since continued to be mindful of the needs of cyclists, who now probably number more than ten million persons in Great Britain. In the early days the cost of a pair of tyres alone was greater than the cost of many complete bicycles to-day!

Every development of any importance has been pioneered by Dunlop, and as a result the Dunlop cycle tyre of to-day is pre-eminent, not only in design, construction, and improved material, but in the utilisation of the most accurate machinery and manufacturing methods. The Dunlop Sprite cycle tyre, it may be remembered, was awarded the C.T.C. plaque for the most noteworthy improvement made in cycle design, construction, or equipment in 1933.

Dunlops are by far the largest producers of cycle tyres in the world. As an indication of the universal popularity of cycle tyres in the wide Dunlop range it may be claimed with confidence that there is hardly a country in the world where Dunlop cycle tyres are not in daily use. No wonder the company is proud of its slogan: "First in 1888, foremost ever since."

Manufacture of Equipment

From tyres the company developed to the manufacture of other products. Tyres for other means of transport than cycles was an obvious course to follow, and motor-cars, and later aeroplanes, provided the necessary markets. But it was the advent of the company in the realm of cycle equipment manufacture that is of most interest to readers of this article. First came the outfit for the repair of punctures, then the Dunlop pump, valve tubing, handle-bar grips, brake blocks, and pedal rubbers—these are but a few examples at random from the long list of Dunlop accessories.

Now let us for a moment think of the processes through which the rubber goes on its way to the shop window to be displayed as "Dunlop" (Continued on page 9.)



BUILT FOR YOU

No wonder you think of the Standard K "Continental Masterpiece" as a highly priced mount when you first see it. That specification is a quality first specification. And furthermore, this Standard K production is built to the same high standards by individual craftsmen—built with painstaking care and skill.

Read the specification, then send for the catalogue (coupon below). Your own common sense will influence you in choosing this model.

SPECIFICATION
FRAME.—21" or 22" solid machined lugs, cutaway upright head, Reynolds 531 tubing.
FORK.—Special D to round Russ pattern.
TYRES.—Dunlop Silver Sprite 26" x 1 1/2".
WHEELS.—Endricks Rims, Bayliss Wiley narrow racing hubs. Wing nuts.
GEAR.—Sturmev Archer 3-speed AM medium close ratio. (Cyclo, Simplex or Tri-Velox Derailleur optional.)
SADDLE.—Brooks.
CHAIN WHEEL.—3-pin flanged 6 1/2" cranks.
MUDGUARDS.—White celluloid with rear reflector.
PEDALS.—Racing Rat-Trap.
CHAIN.—Perry or Renold 1 1/4".
HANDLEBAR.—Special Continental pattern on 2-pin 2" extension stem, all chrome plated or order.
FINISH.—Special blue sheen and silver enamel with Continental bands, all bright parts chromium plated.
ACCESSORIES.—15" x 1 1/2" white celluloid inflator and Spanners.

CASH PRICES—As specification with 3-speed Gears £8.8.0. Or with Fixed and Free Wheel only £7.7.0.

Fill in the coupon below for the Standard K catalogue and post to: The Standard Cycle Co., Ltd., Barn St., Birmingham 5.

STANDARD K

Name..... Address.....

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A picture from Malaya, showing a native at work on the extensive Dunlop rubber plantations

The Pneumatic Tyre Was Born

(Continued from page 8)

tyres." When J. B. Dunlop invented his pneumatic tyre in 1888 the rubber plantation industry was not in existence. Rubber was not exported from Malaya until about 1900, and prior to that date South and Central America yielded practically all that was available.

So Dunlop started a new industry. The advent of the pneumatic tyre and the development of the automobile industry have raised world requirements of rubber in fifty years by 1,100,000 tons.

It was twenty-two years after Dunlop's invention that the company turned its attention to the growing of its main raw material. Properties of moderate size were purchased in Malaya, and during the Great War further extensive areas were planted. By the year 1925 the planted acreage belonging to the company was still less than 50,000. In the year 1926 a further development programme was undertaken, which has increased the planted acreage to 85,000—the

largest under one management in the British Empire.

In 1930 world rights were taken for a patented process whereby the latex as obtained from the tree is centrifuged to reduce the water content by 50 per cent., preserved and shipped in liquid form—the product being probably the finest example of liquid latex in the world.

Large quantities are shipped in bulk in steamer tanks. For this purpose the company has erected vast bulking installations at Singapore and Liverpool, with respective capacities of 192,000 and 180,000 gallons. Subsidiary installations are available in other parts of the world.

In many other ways the Dunlop Company has continued its rapid progress and expansion. From a small seed has grown a vast organisation. Not only rubber, but cotton, too, plays an important part in the manufacture of tyres, and many thousands of people must be indirectly employed in the cotton industry. The Dunlop Company has gone into another side of the business—the manufacture of wheels—and there are factories at Dudley and Coventry.

In far-off Malaya natives are at this moment collecting latex; in Singapore the liquid is being

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two runs, such a position is to
 pumped into the tanks of steamers; Dunlop. In another corner of the
 sailors are bringing it half across Empire workers are gathering
 the world to England; and it goes to cotton; in Lancashire the mills are
 Birmingham to the works of the humming busily. *Whir and Roar*
 greatest tyre company in the world, goes the machinery at the Dunlop

factory, and every day a modern
 miracle is performed. A cycle tyre
 is produced. Just think of all this
 "history" of a tyre when next you
 look at your bike.