



THE FIRST TYRE

*The True Story of
J. B. Dunlop's invention of the
Pneumatic Tyre*

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(Daughter of the famous inventor)

THE invention of the pneumatic tyre by the late J. B. Dunlop has been the subject of so many misconceptions that an accurate account should not be without interest and should serve to dispose of many stories which, however amusing in themselves, fail to do justice to a man of his character and intelligence.

I believe there is a general impression that he stumbled on his invention by the merest chance, but this is not so.

He was a veterinary surgeon by force of circumstances, but his natural bent was mechanical and scientific, and in his leisure moments his thoughts drifted in that direction.

The problem of road transport had always interested him, and he gave as

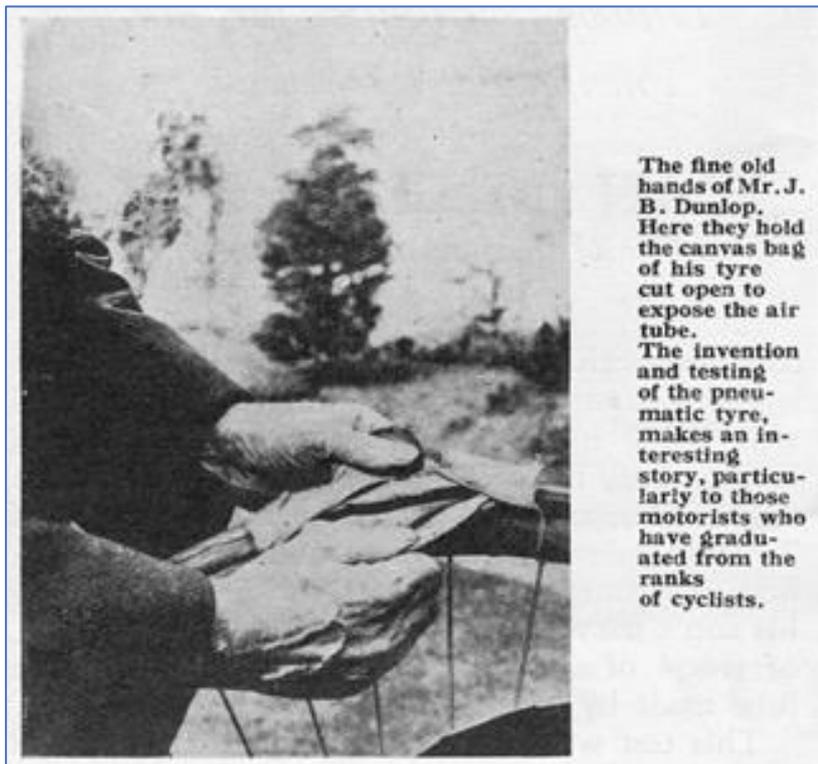
much thought as his extensive practice would allow to spring wheels and the question of vibration losses before coming to the conclusion that the solution lay in intercepting vibration at

its point of origin, that is the point of contact between road and wheel.

He knew that spring spokes and pliable rims of steel would fatigue, in addition to having other obvious drawbacks. Eventually the air tube idea occurred to him. A somewhat similar idea had occurred to a Mr. Thomson in the year 1845, but this gentleman, for reasons outside the scope of this article, was unable to make a success of

the invention and eventually abandoned it. Dunlop, at the time of his invention (or reinvention, as some people insist), was entirely unaware of this previous attempt. He invented his tyre for speed, and so well did he understand its working principles and the essential points in its construction that his first bicycle tyres* were not worn out when the

machine was dismantled after 3,000 miles. The front tyre of his racing bicycle, built in 1889, was in good condition after 8,000 miles, and was ridden by him at the "Old Timers" meeting held



The fine old hands of Mr. J. B. Dunlop. Here they hold the canvas bag of his tyre cut open to expose the air tube. The invention and testing of the pneumatic tyre, makes an interesting story, particularly to those motorists who have graduated from the ranks of cyclists.

in Dublin in 1917. His first experiment was to test the front wheel of his son's tricycle with its solid tyre against a disc of wood of similar diameter fitted with an air tube made by himself.

This test was carried out at night in the yard of his veterinary premises because he was naturally anxious to keep the idea as secret as possible. The large gates were closed as usual after business hours and there were only about six people present, including members of his family.

One of his professional assistants was very sceptical indeed and could not be convinced of the superior speed of the pneumatic tyre until he had tried the experiment for himself.

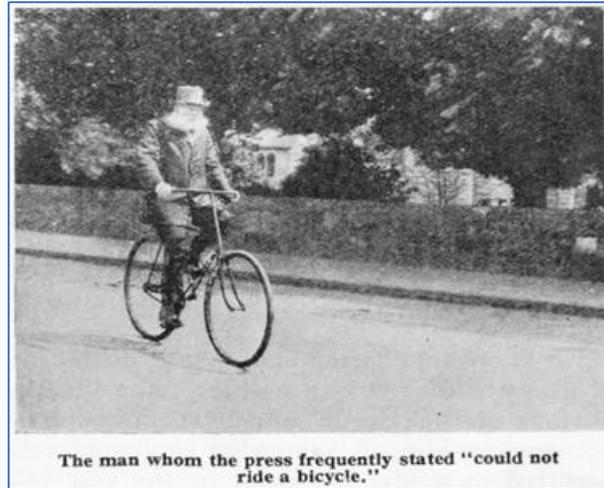
The pneumatic-tyred disc was rolled a distance of about 15 yards towards the gate, from which it rebounded with considerable force. Then the solid tyred wheel was started in the same direction at about the same speed, but it failed even to reach the gate. The result was the same in each subsequent trial. The disc rebounded from the gate; the wheel fell short of it. Perhaps it is as well to state here that Dunlop did not at any time make use of a piece of hose pipe in his tyre experiments. With reference to this, his own words were, "The hose pipe story is childish. The material is so inelastic that it would be incomparably slower than a solid tyre."

Having satisfied himself as to the speed of his air tube, Dunlop then proceeded to attach wooden rims fitted with pneumatic tyres round the back wheel rims of the tricycle which belonged to his son who was at that time under eleven years of age, athletic, and a keen cyclist. This boy had commented on the slowness of his tricycle over setts, compared with its ease of propulsion and speed on good surfaces.

The fork of the front wheel was too small to allow a pneumatic to be fitted. The new rims for the back wheels were made of strips of American elm, two inches wide, which Dunlop bent to shape and fixed round the outside of the

ordinary rims with wire. He made the air tubes from 1/32 in. stock sheet rubber and fastened them to the flat tread of these outer rims by strips

of linen applied like a bandage. It was late on the evening of 28th February 1888 when he had finished the tyres, but so keen were both father and son that the invention was immediately tried out. Dunlop was already satisfied that the tyres would be fast, but the question of wear had yet to be decided, so the boy was told to ride over all



the stretches of freshly-laid macadam which he could find.

In about an hour he returned to report that the machine was fast on all surfaces. It was becoming very dark owing to an eclipse of the moon, but as soon as sufficient light returned he went out again.

Next morning the treads were carefully examined for cuts, but there was no sign of wear or damage. This tricycle was discarded after one more test and a new one without driving wheels was ordered.

Dunlop then proceeded to build suitable driving wheels for this new machine. These wheels were made large in order to gear up the machine and thus take advantage of the expected lessening of resistance. As before, the rims were made from strips of American elm, but in this case he tapped the spokes direct into the wooden rims. The building of these wheels was an unusual and somewhat difficult task for one untrained in this type of work. The tyres were fitted as before and were subjected to prolonged tests for wear.

When he was quite satisfied that his tyre was good for both speed and wear, he made an application on 23rd July 1888 to patent his invention.

Edlin & Sinclair, local cycle agents, became very enthusiastic when they, mounted on good class solids, failed to outpace Dunlop's little son on the pneumatic. His next move was to order a bicycle without wheels. He procured strips of

mild steel and had them shaped in special rollers by W. Edlin & Co. to form the rims which were to take the pneumatic tyres. The rubber tubes and the rubber for the covers were ordered from Messrs. Thornton. Dunlop fitted these tyres himself, using the best quality of yacht sail cloth for the inexpandible covers.

This bicycle was subjected to even more severe tests and was ridden for 3,000 miles. The front tyre was never punctured or removed from the rim during that time and is now in the Royal Scottish Museum, Edinburgh. The back tyre was only once deflated and that was due to a nip against the rim. This wheel was unfortunately lost while on loan for Law purposes in Paris.



The advertisement features three Dunlop tires arranged in a fan shape. The leftmost tire is labeled 'The DUNLOP CORD', the middle one 'The DUNLOP CLIPPER CORD', and the rightmost one 'The DUNLOP CLIPPER CORD'. Below the tires, the slogan 'From now on - Cords!' is written in a cursive font. A block of small text explains the benefits of Dunlop tires, and the Dunlop logo is prominently displayed at the bottom.

From now on - Cords!

Because no other type of tyre is equal to the strain of present-day motoring.
Corded tyres served a good purpose but that was yesterday. To-day's demands on tyres are greater.
Dunlop Cord tyres are the tyres of to-day.
See the two new types, at the Motor Show - the Dunlop Cord and Dunlop Clipper Cord. They are the answer to to-day's demands.

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