

JOHN SKINNER ASSOCIATES LIMITED

*Industrial and Public Relations*

MELLIN'S HOUSE, 56-60 HALLAM STREET, LONDON, W.1. LANGHAM 5191-2-3

Miss B. Burnby,  
Newsreel Association,  
Film House,  
London W.1.

10.30

*Pirelli House  
Luscombe Ave*

*Mr J. P. Poulton St  
19th October 1959*

Dear Miss Burnby,

I am enclosing herewith two draft releases which we are preparing to present to interested parties in connection with the announcement on 30th October, of the Pirelli BS3 tyre.

You may rest assured that this represents a genuine revolution in tyre design and that it will have far reaching consequences. Needless to say I expect you will treat the information with discretion as it is strictly confidential until 30th October.

If you would like somebody to come along and see examples of the new tyre, we are arranging for members of the technical press to see them this week, and we would be pleased to arrange for your representative to come along too.

Yours sincerely,

*Alfred Woolf*

Alfred Woolf  
Associate Director

*Will ring.*



PIRELLI

STRICTLY CONFIDENTIAL

PLEASE do not publish before 6 p.m. on Friday, October 30, 1959

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THE BIGGEST development since pneumatics replaced solid tyres, is announced to the world today by the Pirelli organization. After many years of research Pirelli has produced a tyre - the BS 3 - in which:

- 1) the tread is a separate and replaceable element
- 2) treads can be changed, without special tools or equipment
- 3) special ice studs can be fixed to permit motoring under full control at normal speeds on solid ice
- 4) it is possible to replace bald treads with new ones at a fraction of the cost of a new tyre
- 5) treads can be changed without having to take the tyre off the wheel
- 6) treads will last as long as a complete tyre of normal construction and the casing will outlast several treads.

These are only a few of the tremendous improvements in motoring which the BS 3 tyre makes possible.

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*Sunny Tri Moon - 15*

WHEN Pirelli announced its intention to give up making racing tyres at the end of the 1957 racing season, the Company was criticised for departing from a field in which it had become pre-eminent. In fact, every World Championship since the war was won on Pirelli tyres up to, and including, 1957. However, the company stated that its retirement from racing was so that it could concentrate on developments for normal purposes. The BS 3 tyre is the result.

It has been a dream of tyre designers for many years to produce a tyre in which the tread, the only part subject to wear, could be separate and replaceable. Pirelli is the first company to have realised this dream, and to put tyres with the feature, into production. The first BS 3 tyres are already in production in Milan, where the Italian Pirelli Company holds its vast research and development centre at the disposal of all the companies of the International Pirelli Group. Plans to produce BS 3 tyres at the Burton-on-Trent factory of Pirelli Limited, and at the other factories of associated companies all over the world, are already well advanced. The news of this remarkable step forward in the history of transport by road, is being announced simultaneously in this country, in Italy, Argentina, Spain and Brazil where the Group have tyre factories, also in New York and all those countries where Pirelli have sales organisations - Belgium, Denmark, France, Germany, Switzerland and Sweden, to name a few.

What does the BS 3 tyre mean to the ordinary motorist? First, a reduction in motoring costs. The price of a complete BS 3 tyre, including its three steel reinforced rubber tread bands, is about the same as that of a normal tyre. The tread bands themselves cost only a fraction of the total - in fact each band costs approximately 12 per cent. of the cost of the tyre. Assuming a motorist will cover, with a complete BS 3 tyre, the same mileage as is possible with a conventional tyre with its integral tread, the replacement cost at the end, instead of being the cost of a complete new tyre, or of a remould, will be simply the cost of a set of tread bands. About 36 per cent. of the cost of a new tyre, in fact.

Secondly, the BS 3 tyre offers a new standard of safety. The possibility of punctures in normal tyres is only serious when the tyre has covered three parts or more of its possible life. With BS 3 tyres, the fast motorist will be able to replace the treads, at modest cost, before the tread wears thin enough to make punctures possible. And further, the metal cords on which the tread bands are based act as a tough protective shield, preventing penetration of the casing up to exceptional mileages.

Thirdly, a saving in cost, and a big improvement in safety is offered, at very small cost, because the motorist will no longer need to buy a special set of tyres for the winter. A special set of winter tread bands will give more traction under the most adverse conditions than has ever been available either with special winter tyres, or with chains.

A basic feature of the BS 3 tyre is its exceptional adhesion under all conditions; this is of particular value when the winter tread bands and ice spikes are in use. What is more, it is possible to change the tread bands in under 2 minutes. In other words, in 10 minutes it is possible to remove the standard pattern tread bands from all four wheels, and replace them with new standard tread bands, or winter pattern tread bands.

For the enthusiastic motorist, there are even more advantages to be gained. Because of the split tread construction, the BS 3 tyres have a higher shock absorption capacity than normal tyres. The individual tread bands react to road irregularities like the keys of a piano, each being depressed differently instead of all together as in a normal tyre.

This also means that the tyre is much more silent than a normal one. A normal tyre cornered hard, will squeal - a noise value approaching 115 decibels may be recorded. A BS 3 tyre under the same conditions will produce a mere 92 decibels.

It also results in much lighter steering. In other words the tyres respond more speedily and much more accurately to the movement of

the steering wheel. Effort is reduced, and the onset of fatigue on long journeys delayed. Parking a heavy car with BS 3 tyres is no problem even to the most ladylike physique - although heavy handed male motorists may have to learn a new steering technique.

For the modern car the BS 3 represents an answer to all problems involved in greater performance in acceleration, braking, cornering, and shock absorption capacity. It means vastly improved safety and a noteworthy improvement in economy; it means tyres which can be maintained in as new condition for huge mileages without submitting them to a second curing process,



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PIRELLI INTRODUCES REPLACEABLE TREAD TYRE

FIRST PRODUCTION examples of a new type of tyre in which the tread is a separate replaceable element are being presented to the public on the Pirelli stand at the Turin Show, opening on Saturday, October 31. Known as BS 3 tyres, they herald the beginning of a new era in tyre development. Companies in the Pirelli group all over the world are now planning for the production of tyres of this type.

New methods of construction developed for the BS 3 tyre, which has been patented by Pirelli S.p.A., of Italy -- and which is also the rubber and tyre research centre for the world wide Societ  Internationale Pirelli organization -- mark as significant a step forward in tyre development as did the first full pneumatic car tyres. The result is a tyre in which only the part most subject to wear, the tread, need be replaced, and in which the tread pattern can be carried to suit prevailing weather conditions without special tools or equipment.

Additionally another patented development makes it possible to insert, as required, a series of tungsten carbide tipped spikes or studs, which enable a car to be driven on solid ice with the same degree of control as on dry asphalt.

Subsidiary advantages of the BS 3 tyre are no less striking. First, exceptional adhesion is provided at all times. Second, a smoother ride is obtained. Third, exceptional silence is assured even under extreme provocation such as

when cornering or braking. Fourth, steering response is improved, so that effort required for steering is reduced and the car can be more accurately controlled. Fifth, the life of the casing itself is extended, and the possibility of punctures made remote. Tyre costs are reduced to a notable extent, and safety enhanced to a degree hitherto unapproached.

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PIRELLI BS 3 TYRES --- CONSTRUCTION

IN A normal tyre, the tread and sidewall are applied as a single extrusion to the carcass while the tyre is being built, and are bonded into the structure during the curing process. When the tread is worn out, and if the casing is still in good condition, the entire tyre must be submitted to a second curing process if it is to be remoulded and made suitable for a further period of use.

The Pirelli BS 3 tyre consists of a casing or carcass on which are mounted three peripheral steel reinforced tread bands. Ridges round the crown of the BS 3 casing locate the bands parallel with each other across the crown of the casing. The bands are slightly smaller in diameter than the casing itself; thus when the casing is inflated, pressure is exerted all round the casing so that the bands cannot be displaced involuntarily.

Detail design of the casing, and the <sup>in</sup>extensible nature of the metallic reinforcement in the tread bands, ensure

complete adhesion between casing and bands. The bands may however be removed without special tools or equipment when, for example, the tread pattern has worn smooth. The casing is deflated, and the tread bands eased off. The special BS 3 casing remains in perfect condition even after the tough tread bands are worn smooth. In normal good quality tyres the casing will outlast two treads. This is especially true of the BS 3 casing, so that after the first set of tread bands has been discarded, a new set may be fitted, and the tyre remains in service.

In the unlikely event of a puncture the tread bands will not become detached until considerable deflation has occurred. Even so, the bands will not become jammed under the tyre causing instability. The partially inflated casing is perfectly capable of travelling safely some distance without the bands.

Uneven wear of the tread, perhaps as a result of misalignment of some kind, or incorrect inflation need not result in premature failure of the tyre as can happen with conventional tyres. This is because the bands can be changed around laterally, or from wheel to wheel, to even out wear, and if necessary, only part of the tread, represented by a single tread band, can be replaced when required, to ensure that fully efficient treads are maintained on the tyres.

With the BS 3 tyre, worn tread bands can be replaced at minimum cost without the need to buy a new cover. It is not necessary to remould the old tyre, or even to remove the tyre from the wheel. In exceptional circumstances treads can be replaced without even taking the wheel off the car.

Further, in the event of accidental damage to the casing, such as might occur with normal tyres as a result of violent contact with a kerb, the casing alone can be replaced, while the original tread bands are retained for further use.



The three rings or bands which make up the tread are built and vulcanised under special processes. They are made principally of rubber, but incorporate in addition metallic cords laid longitudinally to form an inextensible belt. There is no possibility of the belt stretching or fracturing, or in any way failing to exert the pressure necessary to maintain complete adhesion to the casing. The safety factor is very high.

Because the tread bands have to be manufactured to standards of accuracy not normally required in conventional tyres, the dynamic balance of BS 3 tyres is exceptionally good. Each ring is produced by a method which guarantees absolute dimensional accuracy and perfect centring.

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PIRELLI BS 3 TYRES --- CHARACTERISTICS

THE Pirelli BS 3 type tyre makes a positive contribution to road safety. This can be claimed in any event because of its inherently good road holding qualities. More important, however, is the fact that with this type of tyre, there is no economic justification for continuing to keep bald tyres in use. In fact, the converse is true, for if the tread bands are replaced as soon as the tread pattern begins to disappear, the casing can continue to be employed, with successive tread bands in position, up to mileages not normally obtainable with standard car tyres. The BS 3 casing, like the casing of every good quality tyre, will

outlast two treads. But the cost of a set of BS 3 tread bands is far less than the cost of a new normal tyre, or of a new BS 3 tyre complete with tread bands.

There is yet another way in which the BS 3 tyre ensures greater safety. Most punctures in conventional tyres, whether equipped with tubes or not, do not normally occur until the tyre has covered over 75 per cent of its normal expected mileage - i.e. until the tread begins to wear thin. Then most of the punctures experienced occur. With the BS 3 type of tyre, tread bands can be replaced by new ones before this danger arises, without unreasonable expense. Moreover, the steel reinforcement in the base of the tread bands protects the casing from penetration throughout their life.

The design of the BS 3 casing itself places emphasis on stability, and the physical nature of the tread bands is such that the pattern is able to perform its proper function at all times.

But because the whole concept of the tyre revolves round the principle of tread bands which can be readily replaced, the tread pattern can be varied to suit changing road conditions. For normal motoring, on roads which are wet or dry, the standard tread pattern provides excellent traction over sustained mileages. For motoring under adverse conditions, in winter for example, when snow or mud have to be encountered more frequently, a special winter tread pattern is available. The pattern comprises large solid blocks of rubber. These penetrate the top soft surface when running on snow or mud and grip the hard surface beneath.

This is already possible with certain dual purpose tyres. In the case of the BS 3 tyre, however, the motorist does not have to buy a pair, or a set of special winter tyres. He simply removes the standard pattern tread bands from his casings, and slides the winter pattern bands into place. Thus equipped he can face the worst winter conditions with confidence.

In the case of summer or winter conditions, the same factors prove beneficial. The stiffness of the metal cords under the tread ensures that even the smallest grooves in the tread remain open, even when cornering or braking hard on wet surfaces. Thus the sharp edges of the grooves continue to bite through the surface water film on wet roads, the soft top surface in mud or snow, or into the road surface in the dry, and provide a degree of traction not previously approached.

For ice-bound roads, yet another virtue of the replaceable tread principle can be exploited. Gaps are arranged periodically in the ridges which locate the tread bands laterally on the casing. These gaps are designed to accommodate a steel stud with a tungsten carbide tip. These studs have a flat base plate which can be inserted between the inner edges of the outer winter pattern tread bands, and the outer edges of the central band. Rigidly located in this way, the spikes make motoring on ice as safe as on dry asphalt, up to reasonable speeds.

They protrude just far enough beyond the face of the tread to provide a quite exceptional degree of traction. No other expedient, such as chains, or special tyres, can offer an equal degree of tractive efficiency, with the same overall efficiency. Moreover, they are silent in operation, comfortable in use, and completely eliminate any tendency for the car to deviate from the chosen path. Tests carried out on an ice rink revealed that it is possible to apply full pressure on the brake pedal at 25 m.p.h., and the car can be halted in a straight line, in a distance of around 40 ft. A car equipped with normal tyres running alongside a car equipped with BS 3 tyres at the same time during the tests, spun when the brakes were applied, and could not be retarded within the available distance.

#### INCIDENTAL VIRTUES

Because the tread is divided into three sections the effect of meeting minor bumps and potholes in the road surface,

with a BS 3 tyre is different from that experienced with a normal tyre. Only that part of the tread band immediately in contact with the obstacle is affected by the jolt that takes place. With a normal tyre the shock is transmitted through the whole tyre because of its solidity and mass. The individual bands which make up the tread of a BS 3 tyre and which react independently of each other to variations in the road surface are like the keys of a piano.

This also means that the whole of the tread is not affected by cornering and braking forces, as in a normal tyre. Thus squeal is absent under extreme provocation.

Rolling resistance is less with a BS 3 tyre and the power absorption factor is also reduced. The three elements of the tread have a constant contact pressure. In normal tyres contact pressure can vary across the tread area.

With the BS 3 tyres steering is far lighter when manoeuvring to or from standstill and when driving at speed. Drivers discover that not only is less effort required to steer the car, but that smaller steering movements are needed, under all conditions. A different steering technique may have to be learned.

In the case of tyres for high performance cars, the possibility of deterioration of casing qualities either during the life of the tyre from new, or through subsequent remoulding, is a critical factor. This does not arise with the BS 3 tyre, so that its advantages can be employed to the full on cars designed for fast motoring. Three safety features distinguished the BS 3 tyre;

- 1) The toughness of the treads
- 2) The fact that the metal re-inforcement of the tread protects the casing from the possibility of punctures
- 3) The possibility of maintaining treads in good order at low cost

Plans for producing BS 3 tyres at the Burton-on-Trent factory of Pirelli Limited are well advanced. Initially it is planned to begin production with a range of tyres for 15 inch wheels.

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