No. 250 209

MICHELIN

Cycle
and
Motor Cycle Tyres.

No. 250 [illegible]

Bibendum

on

Cycle & Motor Cycle Tyres.

5910

Table of Contents.

Foreword.

EVER since M.M. Michelin, the manufacturers of the world-known motor tyres, invented the detachable cycle cover, they have been the first in the field with every improvement made in tyre construction.

It is no empty statement, therefore, that the tyre they are now able to offer the cycling public is, in every way, the best on the market.

From the first treatment of the raw material to the production of the finished article, every stage in the manufacture is carried through by expert craftsmen. Every machine in the Michelin factories is the most perfect of its kind; and every ounce of material used is of one quality only—the very best obtainable. Quality, **one quality only—the best,** has ever been, and will ever be, the Michelin watch-word.

If the prices of Michelin tyres are not absolutely the lowest, they are certainly the lowest for such quality, and are within the reach of every cyclist.

Why we do not guarantee our Tyres.

We believe we are the only Tyre Company who do not furnish a guarantee with our tyres—based either upon a certain mileage or upon a certain stated time. We are continually being reproached for this omission. We think, however, that an impartial examination of the matter will convince tyre users that instead of being accused of falling behind our competitors, we should be congratulated on being in advance.

In dealing with the subject, the first question naturally arising is: "Is it *possible* to give a guarantee which will be satisfactory to all parties?"

Frankly, our answer must be "No!"

Let us suppose two persons each purchase a pair of shoes, identical as to quality and price. Will the firm who sells them give a written guarantee that their soles will wear six months? Of course, they will do no such thing; for one person may daily accomplish long walks over bad roads and rough ground, while the other may simply indulge in short promenades on well-laid pavements. Consequently, the shoes subjected to the greater amount of use will wear more rapidly.

Precisely the same thing applies to pneumatic tyres.

To illustrate our meaning more clearly, we will compare the case of a postman, using a cycle for a daily round

of 20 miles in all weathers over good and bad roads, with that of a shop assistant who only uses his cycle for a week-end spin of 50 miles over good roads. In a year the former will have ridden $365 \times 20 = 7,300$ miles; while the latter's mileage will only be $52 \times 50 = 2,600$ miles, or about one-third of the distance in the same time.

Is it reasonable, then, to think that, under these conditions, a guarantee—say of 12 months—can be given?

The figures themselves supply the answer.

Again, there are very many other factors which affect the life of tyres adversely—such as riding them under-inflated, leaving deflated tyres to bear the weight of the cycle, or storing under improper conditions, when not in use, general lack of attention after riding, etc., etc.

A guarantee cannot be based upon a certain period of time; it is equally impossible to issue one for mileage, for 100 miles over loose roads will create more damage than a far greater distance over roads with a good surface.

From the foregoing remarks, it will be obvious that, if we give a guarantee, we are making ourselves responsible for conditions over which we have no control.

The reason why we do not guarantee our tyres, then, is equally obvious :

BECAUSE IT IS IMPOSSIBLE.

"Bibendum" on the Fallacy of Existing Guarantees.

I do a lot of cycling—in fact, I cut a rather handsome figure at the pastime, as you will doubtless agree on glancing at the above portrait of myself which serves as an introduction. Consequently I am much interested in the guarantee question, and after reading Michelin's remarks on the subject, I was curious to see what the "other fellows" say, so I raked out a Cycle Tyre guarantee—it was worth the trouble!

Preceding the actual guarantee itself I found a number of notes, commencing thus:

"A great deal of misunderstanding exists on the subject of the guarantee of tyres."

True! but it does not strike me as a strong argument in favour of the guarantee. The object of this note puzzles me, so I pass on to the next for enlightenment; it reads:

"It should be clearly understood that no manufacturer could guarantee his tyres to last any given length of time."

True again! Exactly what Michelin states! But why do these people attempt the impossible?

I am still puzzled, but not beaten, as I am still hopeful of enlightenment from the next note, which reads:

"The period during which a tyre lasts depends upon a variety of circumstances over which the manufacturer can have no control whatever—e.g., the conditions under which the tyre is used; the nature and amount of use to which the tyre is put; the care and attention bestowed upon it by the user."

Again true! Again exactly what Michelin states! So again I ask—*plaintively* this time—why *do* these people attempt the impossible?

I am fogged now—absolutely beaten. The notes are obviously intended to prove that a guarantee is impossible, and yet there is a guarantee following somewhere! A feeling comes over me that some joker is pulling my leg! Ah! here's the guarantee! Now for the solution of the puzzle:

". . . . . Cycle Tyres of Standard Sizes made and sold for use in Great Britain which fail by reason of bad workmanship or defective materials within a period of Fifteen months from the date upon which such tyres were issued by the Company, will be replaced or repaired by the Company at a charge proportionate to the wear which the tyres have given."

Hold on a minute! This requires—a wet towel and another cigar. The cigar did it!

This guarantee is nothing more nor less than a vague statement to the effect that the Company will do exactly what it would if the statement had never been made.

I *now* understand the object of the preceding notes, which, up to this stage, had puzzled me. It is evident that their object is to qualify the guarantee, which, in its turn, justifies the existence of the notes.

A very neat and subtle arrangement! A sort of follow on game, which, if played slowly, should cause considerable amusement during the long winter evenings.

The fog having now completely cleared, I further see that this guarantee was never intended to be taken seriously; the whole concoction is a huge joke—a mighty "leg-puller" which has been bursting its gigantic sides with thunderous roars of laughter at the expense of the whole cycling public for years!!! —

Sorry to keep you waiting, but at this juncture I rolled off my chair, convulsed with laughter. Fortunately my inner tu—I mean vest—and outer cover (ing) are of ONE QUALITY ONLY—THE BEST—or I should have burst my sides under the strain. It was a near thing, but I feel better now, and I hasten to congratulate the originators on what is in my opinion the most subtle, stupendous, and overwhelmingly successful hoax of the nineteenth and twentieth centuries.

I am nearly exhausted from laughing, but I must mention before closing that after the joke was perpetrated, those responsible for it were apparently smitten with remorse lest it should be taken seriously, for I find immediately following this "guarantee" a *further* series of notes, obviously intended (in conjunction with the preceding notes) to prove beyond a vestige of doubt the absolute impossibility of a guarantee.

I quote as follows :

"No claim can be entertained in respect of tyres which have been subjected to unfair treatment, or which have been fitted to unsuitable rims. To ensure immunity from trouble on the latter point customers are recommended to fit.....rims only."

"Unfair treatment of tyres comes under the following heads :

"1. Riding tyres not sufficiently inflated.

"2. Detaching tyres by use of unsuitable tools.

"3. Damage caused by the action of oil, undue brake action, or friction with any part of the machine.

"4. The casing failing owing to wet being allowed to penetrate.

"5. The fitting of so-called puncture-proof bands, or leather strips, inside the cover."

"Also the Company does not accept responsibility for minute superficial cracking not detrimental to the tyre in practical use."

Was the joke, then, accidental after all? I hope not, as it gives me genuine pleasure to congratulate the jokers.

Mirthfully yours,

BIBENDUM.

The Michelin Way.

The *Michelin* Guarantee cannot be "misunderstood"—it is so *simple*.

It does not take a page of our price-list or booklet to explain and qualify it—it is written in one word, thus :

MICHELIN—

(a) The name which has long been world-famous for the production of goods of

ONE QUALITY ONLY—THE BEST.

(b) The name which has a world-wide reputation—second to none—for honest dealing.

(c) The name of which the proprietors are extremely jealous. Consequently, it is obvious that "Michelin" dare not, in their own interests, do otherwise than—

(1) manufacture and market goods of the highest quality ;

(2) carefully consider complaints, and meet customers liberally in the event of there being any doubt as to fair service.

The Michelin Guarantee is *always* with users of Michelin goods ; they cannot escape it, neither can "Michelin," for it is *branded* on all goods of Michelin manufacture thus :

MICHELIN

Distinctive Features of Michelin Tyres.

The Tread. A Michelin can pass in safety over obstacles that would puncture an ordinary tyre. The Michelin tread is not just the usual flat thin strip of rubber; it is a substantial, well-moulded, protective pad. Its exceptional tread-thickness is one of the distinguishing features of the Michelin cycle tyre.

Shallow Grooves. Should the grooves in the tread of a tyre be deep or shallow? There has long been a difference of opinion on the point; but, for very good reasons, shallow grooves are unquestionably the better. In the first place, no grits or small stones can lodge in them, to cut farther into the tread with every turn of the wheel.

Secondly, a shallow-grooved tread is thicker than one in which the grooves are deep, and every cyclist knows that with a good tyre the thicker the tread the longer it wears.

So shallow are the grooves in the tread of a Michelin cycle tyre that they make practically no reduction in its thickness. The deeply-ribbed and heavily-corrugated type of cover owes its origin to an endeavour to prevent side-slip, but we have conclusively proved, by a series of exhaustive tests, that deep grooves add nothing to the anti-skidding properties of a tyre.

Manufacture of Covers.

The cover of a pneumatic tyre is composed of rubber and textile, which are either stuck together cold with solution, or are heated in moulds and vulcanised together.

The resilience of a tyre depends upon the nature and quality of the textile used. Cotton is generally preferred, in the form of woven canvas or of "fabric."

Woven Canvas. In this material the warp and weft are of equal strength and thickness, and are so woven that the threads cross alternately (Fig. 1).

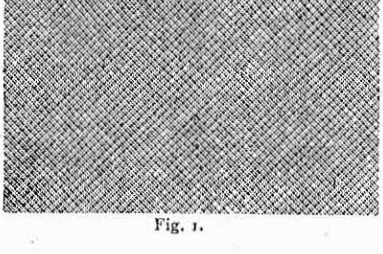

Fig. 1.

Woven canvas is generally employed in the manufacture of extra heavy cycle covers and motor cycle covers, which thus secure additional strength and durability. These qualities are very necessary, in view of the fact that the uses to which these covers are put impose a far greater strain than is the case with ordinary roadster covers.

"Fabric." In "fabric" the threads of the weft are very fine and widely spaced, while those of the warp are held together by being impregnated with rubber solution (Fig. 2).

Only the most perfectly-matured fabric, made of the best Egyptian cotton, is used in the manufacture of Michelin covers. It is very thin, but very strong and tough.

Naturally, covers made from this fabric are remarkably resilient; they possess that desirable quality termed "life," which means so much to the cyclist.

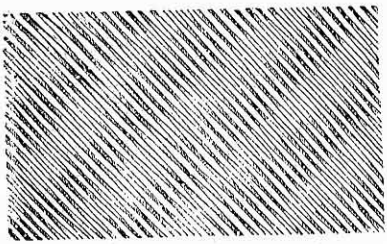

Fig. 2.

All Michelin covers, whether on canvas or fabric foundation, contain only two layers of material, which, in view of their exceptional strength, are amply sufficient to meet any demand that may be made on the tyre.

The suppleness of a pneumatic tyre is in inverse proportion to the amount of textile used; and two layers of material really good in quality are worth four or five of mediocre or poor quality.

The Old Way of Making a Cover. A strip of the textile is smeared with rubber solution, and is set on a wooden shape (Fig. 3) of the diameter of the tyre to be constructed. Over the textile, and to protect it, is placed a band of vulcanised rubber. This band is a flat ring, somewhat thicker in the centre than at the edges; and it will be fixed to the canvas with solution.

Fig. 3.

But when the rubber is coated with solution, it swells and is not easy to manipulate. The consequence is that, in order to assist the manufacture, the flat rubber band used is of slightly smaller diameter than that of the finished cover. Thus, in order to fit the rubber on to the wooden shape it must be stretched; which means that the tread of the cover is formed of **distended** rubber. Suppose, now, that a sharp stone cuts this tread very slightly—that is to say to a depth of about $\frac{1}{16}$ of an inch—the cut will open and, because the rubber is stretched, will remain open (Fig. 4). Mud, dust, small stones, and all kinds of foreign matter will lodge in the incision, will deepen it, and will eventually work their way right through to the canvas.

Fig. 4.

You know very well that damp will weaken the textile and will cause the tyre to swell at the point affected. This swelling is, of course, a sure sign of an approaching burst; and in most instances such trouble cannot be repaired.

That is the great drawback to the cover, and the principal cause of its lack of durability.

Furthermore, the component parts of the cover are simply stuck together with solution by hand, with the result that, as the solution cannot be spread perfectly even, the rubber and textile are joined less securely in some places than they are in others.

If the work has been carefully done, the cover will doubtless be satisfactory; if not, then—and notwithstanding the fact that materials of the best quality have been used—the cover will very soon go to pieces.

How a Moulded Cover is Made. Rubbered textile and non-vulcanised rubber are used, practically in the same way as before. There is, however, this difference that, as soon as the cover is shaped, it is put whole into a mould and both canvas and rubber are vulcanised together.

During the process of vulcanisation—done under great hydraulic pressure, which compresses the rubber and gives it exceptional vitality—the rubber penetrates the fabric, through all its pores, thus rendering it waterproof.

When it leaves the mould, at the end of the operation, the cover is a homogeneous whole; every part is absolutely regular.

Its life is at least three times as long as that of the older type.

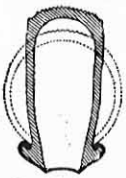

Fig. 5.

Both wired and beaded Michelin covers are moulded in such a way that before being inflated they have the narrow, upright shape shown in Fig. 5.

The dotted lines represent the shape after inflation.

Fig. 6.

Thus when the tyre is pumped up, the rubber of the tread, instead of being stretched, is compressed, and any cuts remain closed (Fig. 6), instead of opening as described on page 15 (see Fig. 4).

This means that in addition to mud, dust, and small stones being unable to work their way in, moisture—which so speedily rots canvas—is also excluded.

As a result, the life of the moulded cover is much longer than that of the old-fashioned article.

Ordinary Roadster Cycle Tyres.

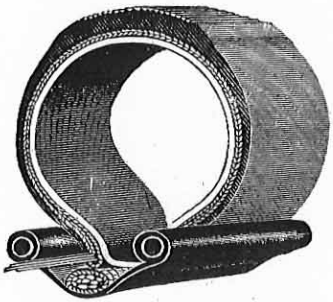

Fig. 7.

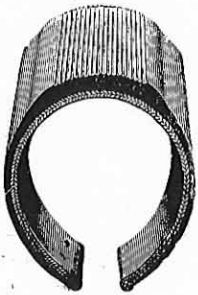

Fig. 8.

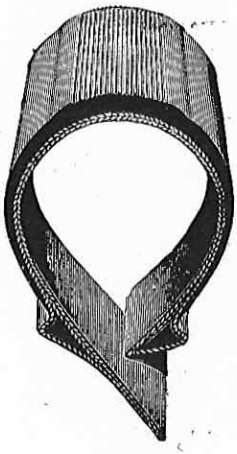

Fig. 9.

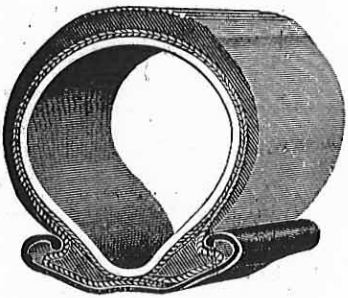

Fig. 10

Ordinary Roadster Cycle Covers.

The ordinary "Roadster" cover is the type now used by cyclists for general every-day work. It is what might be termed the standard cycle cover.

A cover of this type has to be a combination of many virtues, and all possible defects must be eliminated. It should be as resilient as possible, in order that the rider may derive comfort and attain the maximum speed with the minimum exertion; but at the same time durability must not be sacrificed to obtain resilience. It must also, of course, be reliable and able to withstand all the adverse conditions under which it may be used, as cycles are now perhaps more largely requisitioned for business purposes than for pleasure.

To attain this end, it is necessary to construct the foundation of a material which ensures great strength without loss of resilience. Such qualities can be obtained only by using cotton fabric. It is for this reason that we construct the foundation of this type of cover of the best Egyptian cotton in a perfectly matured state (see page 14).

Michelin Ordinary Roadster Tyres combine all the above-mentioned qualities, and for all ordinary purposes we can confidently recommend them to give the maximum amount of satisfaction.

Tandem Cycle Tyres.

(Extra Strong.)

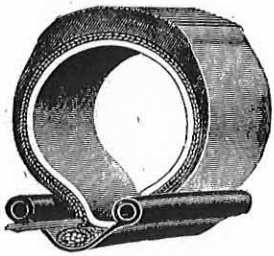

Fig. 11.

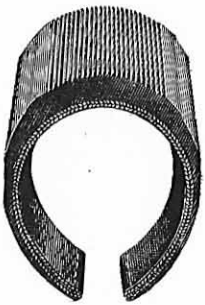

Fig. 12.

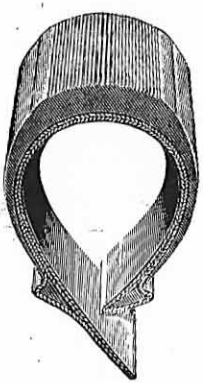

Fig. 13.

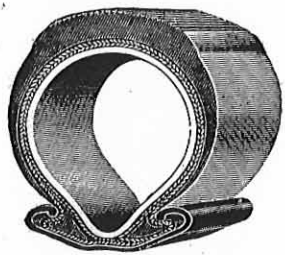

Fig. 14.

Tandem Cycle Covers.

These covers are especially suitable for heavy riders, tourists, tradesmen's "carrier" cycles, and for those who habitually use their cycles on bad roads, and under adverse weather conditions.

They are somewhat heavier than the ordinary, on account of their greater tread-thickness, which is partly responsible for their exceptional strength.

Fabric is not used in their construction. A specially-woven canvas forms their foundation; a canvas thicker in texture, and much stronger, than any fabric (see page 13).

This strong, closely-woven foundation, together with the extra tread-thickness, ensures greater security against puncture, greater resistance generally, and to cyclists whose calling necessitates much riding under unfavourable circumstances, is indeed a boon and a blessing.

Light Motor Cycle Tyres.

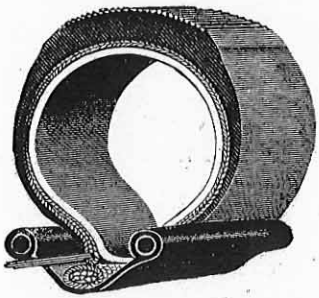

Fig. 15.

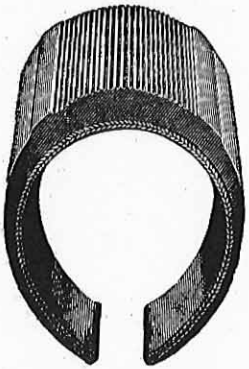

Fig. 16.

Fig. 17.

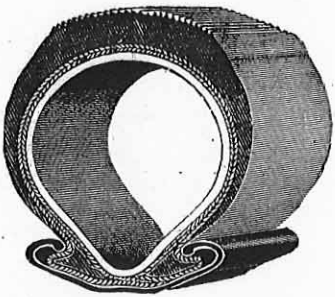

Fig. 18.

Light Motor Cycle Covers.

These covers are more especially designed for light-weight motor-cycles not exceeding 3 H.P., and the *FRONT WHEELS* of machines of any engine power up to about 5 H.P. They are also particularly suitable for side-cars and tradesmen's carriers, and are in great favour with the manufacturers and users.

As these covers are not designed to withstand the excessive strain set up by the driving wheel of a high-powered machine, we cannot recommend them to be fitted to the rear wheel of any motor-cycle whose engine power is greater than 3 H.P.

It will be seen, on referring to the illustrations on the opposite page, that these covers are constructed in a similar manner to our Tandem or Extra Heavy Cycle Covers; that is to say, the foundation is composed of two layers of very stout and supple canvas, upon which is imposed a layer of rubber of a thickness ample for the work for which the cover is designed.

The rubber is vulcanised to the canvas under great hydraulic pressure which, as we have already explained (see page 16), compresses the rubber and gives it exceptional vitality.

This method of construction renders the cover remarkably resilient, a fact which riders will not be slow to appreciate when using this cover on a light or medium-weight machine.

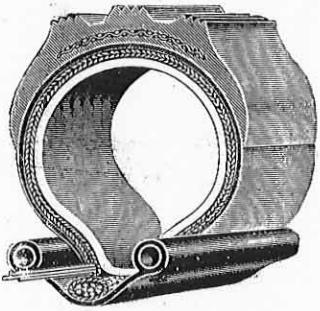

Fig. 19.

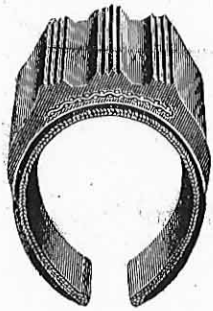

Fig. 20

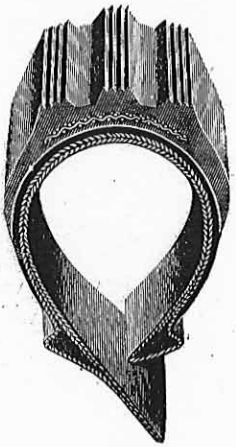

Fig. 21.

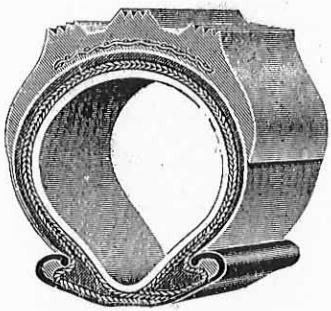

Fig. 22.

"Standard" Motor Cycle Covers.

(Extra Strong.)

As the name implies, the "Standard" cover is designed and manufactured for use on standard motor-cycles of normal weight and power, under general conditions.

It is made in two types—the Plain Round Tread and the "Trident" Tread. The casing is identical in each case; the only difference is in the tread, that of the plain cover being unquestionably superior, as its design is correct and lends itself to perfect manufacture.

Most motor-cyclists are strongly prejudiced in favour of covers displaying rubber studs, ribs, corrugations, etc., on the tread. They believe that these projections prevent skidding, and this belief is fostered by manufacturers of covers with fancy patterns. However, *we have conclusively proved that such designs add nothing to the anti-skidding properties of the cover.*

We are, therefore, making the "Trident" cover, not because we believe in the tread design, but solely to meet the strong prejudice in its favour, and assist us to demonstrate the superiority of the Plain Round Tread.

Motor-cyclists, as a whole, refuse to believe that a Plain Round Tread is the best. We consequently offer both types, so that motor-cyclists may prove our conten-

"Standard" Motor Cycle Tyres.

(Extra Strong.)

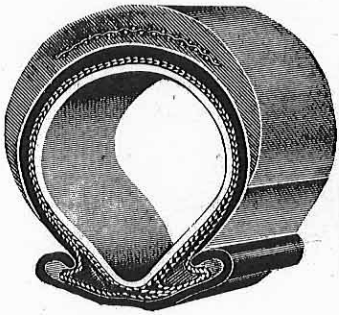

Fig. 23.

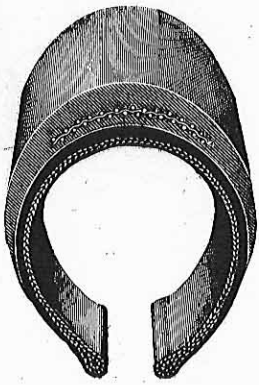

Fig. 24.

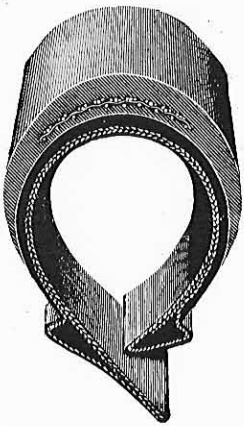

Fig. 25.

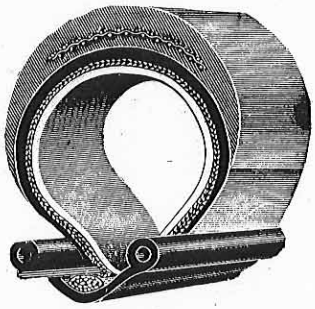

Fig. 26.

tion for themselves. We maintain that the Plain cover will prevent skidding as much as the "Trident," or any fancy rubber tread of another make—i.e., *not at all,* and in every other respect will give better results than any fancy-pattern motor-cycle cover.

Particulars of a really *effective* Non-skid are given on page 29.

The majority of motor-cycle covers are unable to withstand the severe strain imposed upon them by the driving wheel of a 3½ H.P. motor-cycle. It is therefore interesting to note that the Michelin Standard cover is designed to withstand a strain much greater than that set up by the average 3½ H.P. machine. It follows that when used on a 3½ H.P. motor-cycle, the cover is not worked up to the limit of its resistance, but has an ample margin of strength and resilience to spare. This ensures greater freedom from puncture, more comfort to the rider, and longer life to the machine and tyre. The Standard cover, fitted on the rear wheel of a motor-cycle, in conjunction with one of our light covers on the front wheel, forms the most inexpensive and satisfactory combination of all rubber covers that it is possible to obtain.

"Semelle" Non-Skid Tyres.

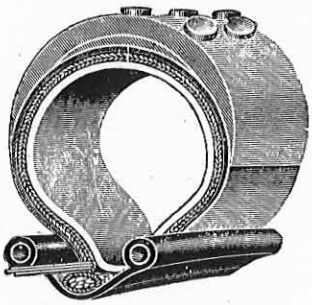

Fig. 27.

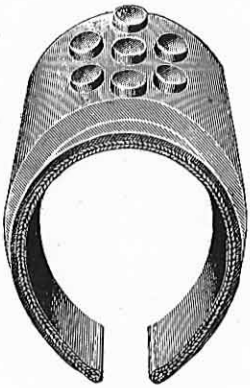

Fig. 28.

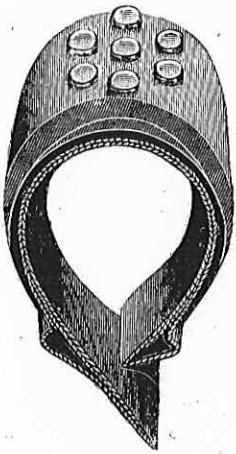

Fig. 29.

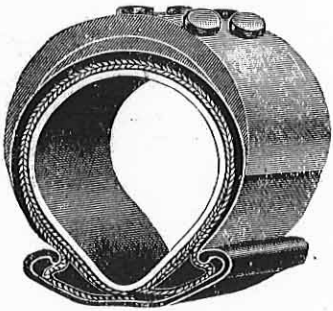

Fig. 30.

Steel-Studded "Semelle" Non-Skid Covers.

As a preventative of side-slip, this type of cover has no equal. Long familiarity with the question and exhaustive experiments have convinced us that the only really satisfactory Non-skid Cover for motor-cycles is one constructed on similar lines to our car non-skid, which is now universally admitted to be **the** non-skid *par excellence.*

The tread, which forms an integral part of the tyre, is composed of a stout leather band, through which rows of hard steel studs project. This band, while serving as the only foundation in which the steel studs can be effectively embedded, renders the cover *practically puncture-proof.*

A puncture in the rear tyre is one of the greatest misfortunes which can befall a motor-cyclist; consequently, although the "Semelle" is somewhat more expensive than an ordinary cover, the purchaser is more than compensated for the extra outlay by the additional comfort and safety secured. It should be borne in mind that our non-skid is as supple as a plain cover, due resiliency being ensured by the rubber walls.

The ideal combination for a heavy machine is a "Standard" on the front wheel and a "Semelle" Non-skid on the rear wheel. Thus equipped, the motorist can feel as secure from punctures and side-slips on asphalt or greasy wood pavements, as on rough or stony roads.

Voiturette (Light Car) Tyres for Motor-Cycles with Side-Cars.

Owing to the increasing popularity of the side-car, which imposes a strain on the rear tyre of the motor-cycle to which it is attached far too great to admit of satisfactory results being obtained from motor-cycle tyres which were not designed to withstand such conditions, we strongly recommend our Voiturette (or Light Car) tyres for the rear wheels of machines driving side-cars—which is at present the only satisfactory solution of the difficulty.

By adopting this suggestion users will experience greater comfort and reliability and better results from both tyre and machine at no greater initial outlay, and in the long run the saving of time, trouble, and money would be very considerable.

It must be borne in mind, however, that the Voiturette cover will not fit the standard motor-cycle tyre rim, and motor-cyclists wishing to employ Voiturette tyres must

therefore have their existing motor-cycle tyre rims replaced by those suitable for Voiturette tyres.

To enable customers to overcome this difficulty, we supply motor-cycle rims in sizes 26 × 2½in. and 28 × 2½in. which take Voiturette tyres in sizes 650 and 700 respectively.

Further, should customers experience difficulty in having their rims changed, we are prepared to fit these rims to their motor-cycle wheels at an inclusive charge of 10/- per wheel. Wheels (with spindles) should be sent, carriage paid, to our London address.

Michelin Red Rubber Tubes.

An exhaustive series of chemical tests has conclusively proved to us that, of red and grey rubber, the red is immeasurably superior for the manufacture of inner tubes. The inferiority of grey rubber is due partly to the volatility of the chemicals necessarily used in its manufacture, which tend strongly to harden it.

The rubber from which Michelin tubes are made is subjected to special chemical treatment, which accounts for its strength and elasticity, as well as its rich red colour. No rubber of inferior quality could undergo the same treatment without injury ; and, we may say, no rubber can compare in any way with the rubber from which Michelin tubes are produced. This explains the superiority of our red tubes, as well as their somewhat higher price.

It must not be assumed that every red tube sold is made of pure rubber chemically treated in the Michelin way. Tubes made of ordinary, medium-grade rubber, coloured up with red ochre or vermilion, have been marketed from time to time ; but of course they cannot approach the quality of Michelin tubes.

The sudden formation of a series of blisters round the inner circumference of a grey tube is a familiar phenomenon to cyclists. Friction with the spoke-heads is commonly set down as the cause. This, however, is wrong, because a medium-quality grey tube fitted to an **undrilled** rim will blister in exactly the same way. The

blistering is due to the unequal distension in the hollow of the rim of the inner circumference of the grey tube.

Now Michelin red rubber tubes are entirely unaffected by such distension. As a matter of fact, nothing less than a nip will cause them to blister; and it is to prevent the occurrence of nips that we supply a round plaited rim tape **free** with each wired cover, and sell them at 2d. each to anyone requiring tubes apart from covers. Filling the hollow in the rim, it acts as a cushion for the tube and receives any nip that may occur.

The Michelin tube so fitted cannot possibly blister on the inner circumference. We, therefore, take no responsibility for any tube of our make that may present blisters.

Butted and "Simplex" Tubes.

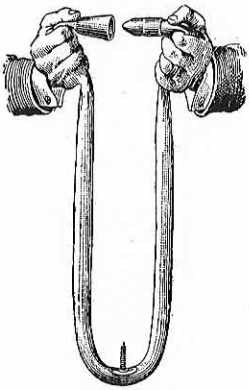

Fig. 31.

For a long time past one of our specialities has been the manufacture of tubes which can be fitted and detached without removing or dismantling the wheel.

Motor-cyclists appreciate our butt-ended motor-cycle tube (Fig. 31)—a simple,

efficient device, which saves a great deal of complicated, troublesome work.

The "Simplex" Tube is, if anything, even more simple to manipulate than the butt-ended tube.

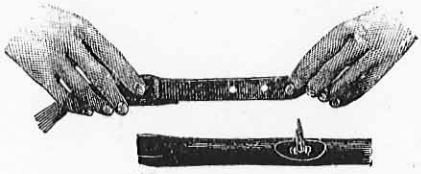

Fig. 32.

Each end is flattened, and to one a holed tab is attached. By means of the holes the length of the tube can be regulated to suit the cover with which it is to be used. Figs. 32 and 33 give a good idea of its special features.

Fig. 33.

It will be seen that immediately adjacent to each hole is printed the size and type of the cover with which the hole must be used. Thus, if the tube is to be fitted with a 1¾ beaded cover, the hole marked "1¾ beaded" would be placed over the valve; but if it is to be used with a 1¾ wired cover, the hole marked "1¾ wired" would be used.

Directions for fitting both Butted and "Simplex" Tubes will be found on page 43.

Length of Michelin Tubes.

Some of our customers have complained that our tubes are too long, and that on this account they find it difficult to fit them properly. Some even go as far as to return the tubes, asking us to shorten them to the extent of two or three inches, and expressing surprise at our apparent negligence in placing tubes of wrong size on the market.

We frankly admit that our tubes are longer than the average tube on the market, but if the reader will follow us for a little, we are confident that we shall convince him that our tubes are not too long, but are, on the contrary, just the correct length, while the average tube is much too short.

We would ask the reader to refer to Fig. 34, which will illustrate our argument:

A represents the rim of a wheel,

B the outer extremity of the tyre,

C an imaginary circle drawn between A and B.

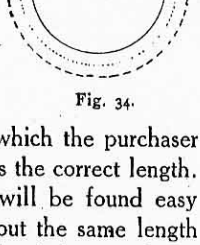

Fig. 34.

Let us take an ordinary tube, to which the purchaser has been used, and which he considers is the correct length. Try to fit it on to the rim A. This will be found easy enough, for the tube is evidently of about the same length as the circumference of A. When inflated for use, however, it has to fill the space from A to B, all round the rim, and the circumference of this space, represented by C, is much longer than the circumference of A. Consequently, in order to fill it, the tube has to stretch, both transversely and lengthwise, very considerably.

This tension is exceedingly harmful, for it rapidly destroys the essential properties of the rubber—i.e., its "nerve" or elasticity. The inevitable result is that after only a short time in use the tube is hopelessly strained beyond its correct length and section, becomes hard and brittle, and is generally distorted to such an extent that it is extremely difficult to handle—to refit or even to repair.

Further, in the event of a puncture, a distended tube is always inclined to tear.

To illustrate the harm done to rubber by distension, we would advise you to take a plain rubber band, cut it, and carefully measure its length. Then stretch it to its utmost capacity, and keep it so stretched for a considerable period. On releasing the tension and remeasuring, you will find that it will not revert to its original length, but will be considerably longer, the increased length being gained through a corresponding decrease in elasticity or "nerve."

Exactly the same thing happens to a distended inner tube.

All this means a very short life for the tube.

We will now take a Michelin tube, and attempt to fit it on A. To those used to fitting shorter tubes, ours will appear too long. Why? Simply because, instead of being the same length as the circumference of A, it measures fully that of C, i.e., just the length necessary—when fully inflated—to fill, without stretching, the space between A and B, all round the rim.

Consequently, every Michelin tube begins its career, not only endowed in an overflowing measure with all the essentials of life, but so shaped that it will perfectly retain these qualities. In striking contrast to the ordinary tube,

it thus preserves its elasticity or "nerve," its correct shape, length, and section, and throughout a long and healthy life, can be handled, refitted, and repaired as easily as a new tube.

Our butt-ended tubes are even longer than our ordinary tubes, and for a very good reason. As every motor-cyclist knows, the efficacy of a butt-ended tube depends to a very great extent upon the butt and the sheath making a perfect joint when in use. That being so, what is going to happen when the length of the tube measures the same as the circumference of the rim to which it is fitted?

Why, simply this: when inflated, the tube will have to fill a space for which it is too short, with the result that the butt-end will pull away from the sheath, leaving a space between them. Unsupported by each other, the pressure of air will burst either the butt or the sheath, and in some cases both.

Provided it is properly fitted, the extra length of our butt-ended tube obviates the possibility of the butt and sheath coming apart, and also prevents distension, as the tube is long enough to fill the space without stretching.

These are additional reasons, then, why Michelin Red Rubber Tubes give such satisfaction. We admit that our tube requires more careful fitting than shorter tubes, but if the instructions given on page 43 are carefully followed no trouble need be experienced, and it will be found that the little extra care required in fitting is more than compensated by the efficiency of the tube.

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Instructions for Detaching and Re-fitting.

DETACHING.

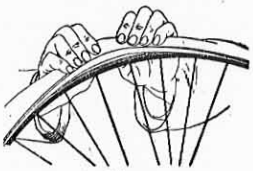

Fig. 35.

Beaded Covers.

Deflate the tyre. Disengage the bead from the rim-clinch by pressing on the side of the cover, near the rim, with both thumbs (Fig. 35). Pull the released edge of the cover downward (Fig. 36) towards the hub, and continue this movement all round the rim (Fig. 37).

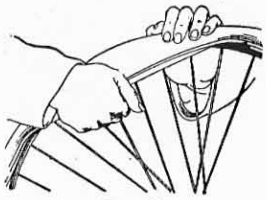

Fig. 36.

Beaded Covers with Extended Flap.

The bead without the flap should be removed first. When the bead has been completely detached, take the tube, at the point diametrically opposite the valve, and pull it off the rim. When the valve is reached, unscrew nut H, raise the cover, and remove the valve from its hole in the rim.

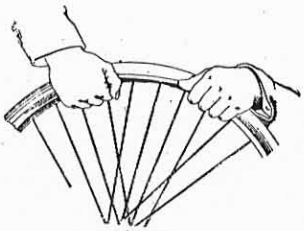

Fig. 37.

Wired Covers. Deflate. Begin on the side opposite the valve; grasp the cover between the fingers and thumbs, and force the wires down into the hollow of the rim. Then slide the thumbs in opposite directions all around the rim, until they meet near the valve. The wire will then pass easily over the edge of the rim (Figs. 38 and 39). For the rest of the operation see Beaded Covers, page 38.

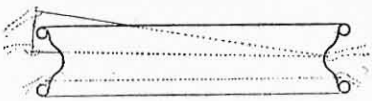

Fig. 38.

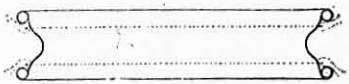

Fig. 39

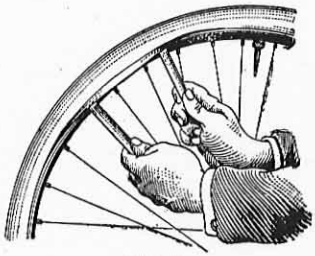

Fig. 40.

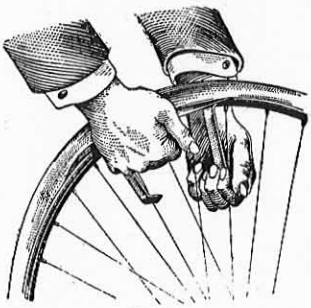

Fig. 41.

Levers. It should be borne in mind that, in view of the damage their careless manipulation can cause, levers should not be used for detaching unless it is absolutely impossible to remove the cover by hand.

How to Use Levers. Deflate completely. Insert the first lever under the wired edge, and be careful to avoid nipping the tube. Insert a second lever, in the same way, 6in. or 8in. from the first, and bring

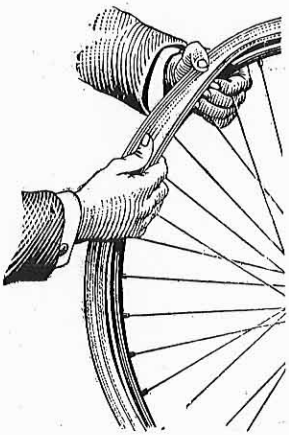

Fig. 42.

both down together towards the spokes. This will release the length of cover between the levers (Fig. 40).

Never slide the levers along the rim under the edge. If you do, it is sure to damage the tube and the covering of the wire.

Grasp the detached portion with one hand, and, instead of pulling it towards you, press it down from above towards the centre of the rim (Fig. 41). Do this all round the rim, and the wired edge will disengage very easily (Fig. 42).

RE-FITTING.

Beaded Covers. If the cover has been completely detached, fit the bead with the extended flap first. Push it well home into its clinch all the way round. Take care that the valve-slit in the bead falls exactly over the valve-hole in the rim.

Deflate the tube completely, if this has not already been done. Roll it up, as shown in the illustration, to expel **all** the air. Begin the rolling at the point farthest from the valve (Fig. 43).

Before releasing your hold on the rolled-up tube, replace the valve-parts so that no air can enter. Raise the edge of the cover, pass the valve through its hole in the rim, and place the tube, without twisting it, inside the cover.

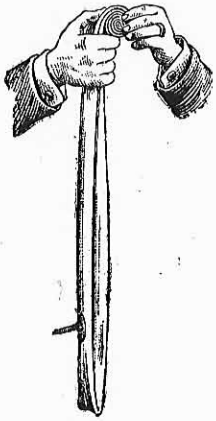

Fig. 43.

When the tube is all in position, partly inflate it and smooth out any folds. See that it is evenly disposed round the rim: pass the hand round under the cover and make sure that the tube is not stretched in one place and bunched up in another.

Then fit the second bead.

If you begin about 6in. or 8in. from the valve, the bead will fit itself, provided you take care to push the valve inward. Be sure that the bead is pushed well home into the rim clinch; if necessary strike the cover sharply with the palm of the hand to force the bead into place.

When the fitting is finished, test the tube to make sure it is not nipped between bead and rim: push the bead back with both thumbs towards the centre of the rim. Do this all round the wheel. If the tube shows anywhere it is nipped at that point. Push it in under the cover with some blunt instrument, let go your hold on the bead, and finish inflating the tyre.

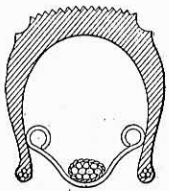

Fig. 44

Wired Covers. The method we are about to describe is, we believe, new, and results from the use of our tape.

First, see that the tape is placed properly at the bottom of the hollow in the rim; then, place the cover astride the rim, as indicated by Fig. 44. It will then be easy to fit the first wire from its own side without displacing the tape (Fig. 45). The old method of fitting would certainly disturb the tape.

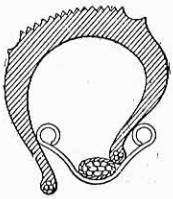

Fig. 45.

Fit the tube in exactly the same way as with a beaded cover (see page 40). Straighten out all folds and inflate slightly to equalise the tension.

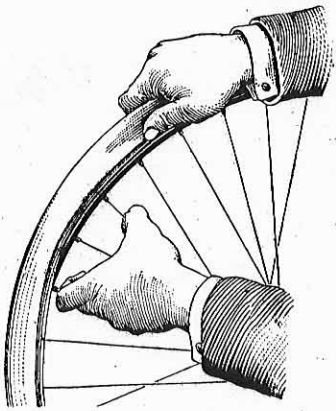

Fig. 46.

Then fit the second wire. Press it into position, as far as possible, with the ball of the thumb; and then, gripping the tyre between finger and thumb, push both wires as far as possible into the hollow of the rim (Fig. 46). Keep the wires held together, and slide the hand, without letting go, towards the unfitted portion of the cover. Repeat this movement several times, and you will find that each time a fresh length of the second wire will pass into place, until the whole is fitted.

How to Fit a Butted Tube.

Work evenly from valve to butt, and from valve to sheath, arranging the tube so that its fulness is distributed evenly around the cover. It must not be folded, twisted, or creased in any way, and should be inserted in lengths of 6 or 8 inches. When fitting a new part, draw it gently towards the portion which has just been placed. When the tube is in position, it gives one the impression that it is too long, but inflation will cause this "bunched-up" appearance to disappear.

If it is necessary to ease the tube, and especially if it is required to draw away from the joint, hold the joint firmly to prevent the butt pulling away from the sheath. Take care to force the butt end well into the sheath, and, when doing so, do not twist the tube.

How to Fit a "Simplex" Tube.

Remove the dust cap and nuts from the valve and pass it through the required hole in the tab *without twisting the tube*. After the tab has been fitted the tube can be handled in the same manner as an ordinary tube. When placing the valve into position on the rim, take care that the printed side of the tab is downward against the rim. Commence fitting both the tube and the cover at the "Simplex" ends.

The Michelin Valve.

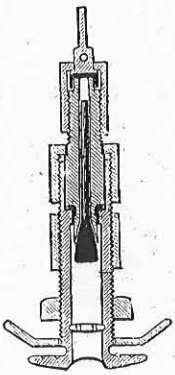

Fig. 47.

There is a striking difference between the Michelin valve and the ordinary cycle valve used in this country.

The difference is that, instead of being fitted with the usual piece of thin rubber tubing, the Michelin valve contains a plug. An objection which has been raised against the use of the plug is that it can be so easily lost. There is certainly less chance of losing the rubber tubing; but the plug has several distinct advantages of its own:

It will last far longer than the tubing.

If lost, and no spare plug is to hand, an effective substitute can be improvised without difficulty. An ordinary pin, or a small piece of wire, coated at one end with sealing-wax, or even wound round with solutioned thread, will make a thoroughly serviceable plug in time of need.

If, however, your valve is not a Michelin, but is one of the ordinary pattern, and you have no spare piece of tubing with which to replace the damaged or perished piece, you can do nothing.

Again, it is much easier to inflate through a Michelin valve. Less resistance is offered to the incoming air; and the higher the inflation the better the air-tightness of the plug is ensured.

How to Measure a Rim.

In measuring a rim there are two important things to be determined :

(1) The diameter.

(2) The depth.

The easiest way to obtain the diameter is to take a rule, and, passing it between the forks, as shown in the accompanying illustration (Fig. 48), measure the distance

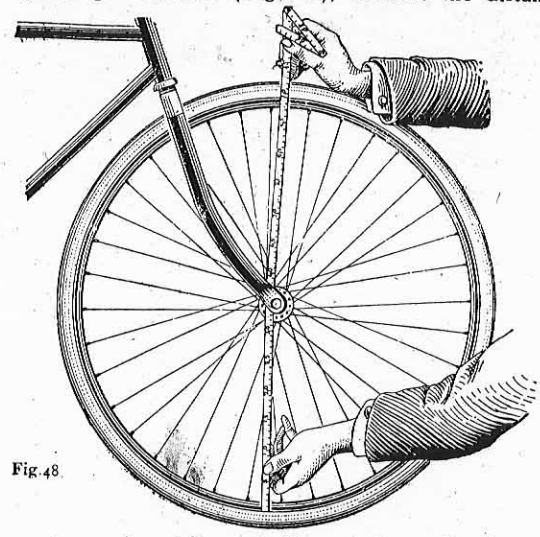

Fig. 48

between two points—diametrically opposite each other—in the circumference of the rim.

To ascertain the depth, remove the tape and, placing another rule or flat object across the rim clinches, measure the depth as shown in Fig. 49. Care must be taken that the rule is on the bottom of the rim and not resting on a nipple.

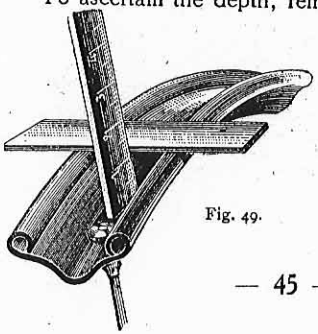

Fig. 49.

How to Inflate.

Generally speaking, cyclists do not inflate their tyres sufficiently. The better the road surface, the heavier the rider, and the more flinty the stones encountered, the harder the tyre should be inflated. Inflate the rear tyre of a bicycle very hard. Inflate the driving wheel tyre of a tandem bicycle or motor-cycle harder still.

The front tyre need not be inflated so much; especially if the roads you travel are rough and bad.

Remember that if your tyres are well inflated they should never burst when they bump over a stone.

If a tyre is insufficiently inflated, the rim is too near the ground. Then, when the tyre passes over a stone, or other irregularity on the road, the jerk causes the rim to touch the ground. This nips the tyre and cuts the tube. If the rim rings when you pass over a stone, the tyre is insufficiently inflated.

Further, you will notice that, the more a tyre is inflated, the narrower is the surface it presents to the road.

In wet weather, when the roads are greasy and slippery, it is better to inflate the tyres rather less. By doing so you will considerably reduce the chances of side-slip.

Proper inflation is important; and those tyres which are carefully attended to, in this respect, will wear much better than those which are not.

Bad Fitting.

Fig. 50.

If a cover is to be well fitted, its wires must be properly placed in the rim. See Fig. 50. A beaded cover will always fit well because the beads can lodge only in the clinches provided, and, once in place, they cannot move. But a wired cover can take all kinds of positions. See Figs. 51, 52, and 53.

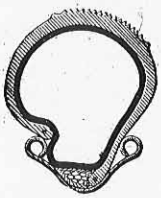

Fig. 51.

If the wires are placed as shown in Figs. 51 and 53, the tube, when inflated, will fill the space left between the wires and the bottom of the rim. But, as this space is, on account of the bad position of the wires, insufficient to allow the tube to assume its normal shape, part of the surface of the rubber will be subjected to considerable distension, which tends to become permanent.

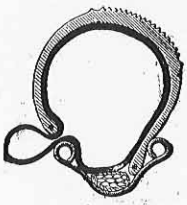

Fig. 52.

Thus it is necessary, when fitting wired covers, to make quite sure that the wires are in their proper places.

Fig. 53.

To test whether the fitting is good or bad: if it is good, the wheel will run perfectly evenly, and the sides of the tyre will be quite parallel all round the circumference. If the fitting is bad, the wheel, when spun, will not run evenly, and the tyre walls will be flat in some places and bulged in others.

Repairs.

Except in the case of an exceedingly severe injury, it is nearly always possible to repair a tyre sufficiently well to finish the run.

You should always carry repair materials with you; and the following take up very little space: pump, repair outfit, roll of proofed canvas, tube of solution, piece of emery paper, phial of benzine, and one or two cover patches.

To Repair a Cover. Superficial cuts and scratches are of little account; but if a cover is cut down to the canvas, stick a cover patch on the outside. If you have no patch, detach the cover, fill the cut with solution, and stick a piece of gummed canvas, from your repair outfit, to the **inside** surface of the cover. The edges of the canvas should fall quite an inch in every direction beyond the edges of the cut. Then place a second patch, larger still, in the same proportion, over the first.

This repair is only provisional. A patch should be placed on the outside of the cover as soon as possible; otherwise water will find its way into the cut, eventually rot the canvas right away, and destroy the cover.

To Repair a Tube. Detach the cover and remove the tube. If the puncture is only a small one, and the object which has caused it is still sticking through the cover, do not take out more of the tube than you require in order to effect the repair.

If, however, you cannot locate the puncture at once, remove the tube completely.

Then locate the trouble as follows:

Partly inflate the tube and either hold it near the ground and watch for the disturbance made in the dust

by the jet of air, or hold it near the cheek to detect the escape.

When looking for a puncture—this is important—do not inflate the tube too much; otherwise it will develop a swelling. If it should do so, deflate immediately.

Use a patch somewhat larger than the puncture; one that will overlap the perforation about half an inch in every direction.

Wipe away all traces of wet or dirt, and clean both the patch and the punctured place with emery paper. Apply the solution evenly to both surfaces and give it three or four minutes to dry. **Remember that the solutioned patch will not adhere properly unless it is applied dry.**

Make sure, by feeling all round inside the cover, that the object which caused the puncture has been removed. Refit and inflate.

Never stick canvas on the tube.

To find those slight leakages which take 24 hours or more to deflate a tyre, partly inflate the tube and immerse it in water. Any leak can be located by the bubbles that will rise from it. Should no bubbles appear, slightly stretch each length of tube as you immerse it.

Only very provisional road-side repairs can be effected with motor-cycle tubes. On account of the heat which the tyres develop, patches stuck on in the ordinary way will not hold. It is best to send such tubes to us for repair.

We can particularly recommend tourists to use our butt-ended motor-cycle tubes, for, with a pair on the wheels and a spare one in the bag, there should be no necessity for hasty road-side repairs. Simply change tubes and leave the repair of the damaged one to be made at a more convenient time.

General Hints.

When possible, use the accessories that are made especially for the particular brand of tyre you favour.

Use a round rim tape whenever advised to do so.

If you must use levers, use wooden ones for preference.

Even the smallest detail is well worth attention.

Remember that care and long wear go hand in hand.

Never travel with your tyres deflated. Inflate the back wheel to a slightly higher pressure than the front wheel.

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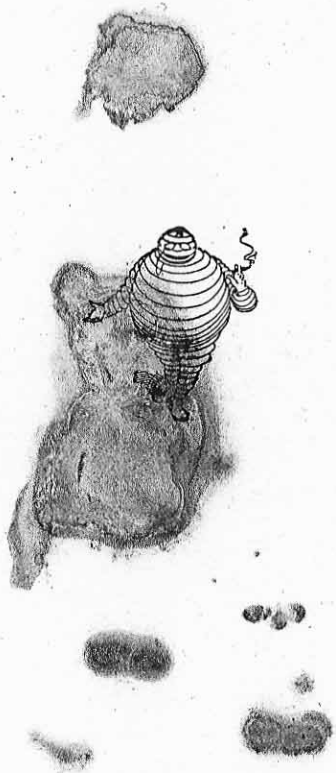

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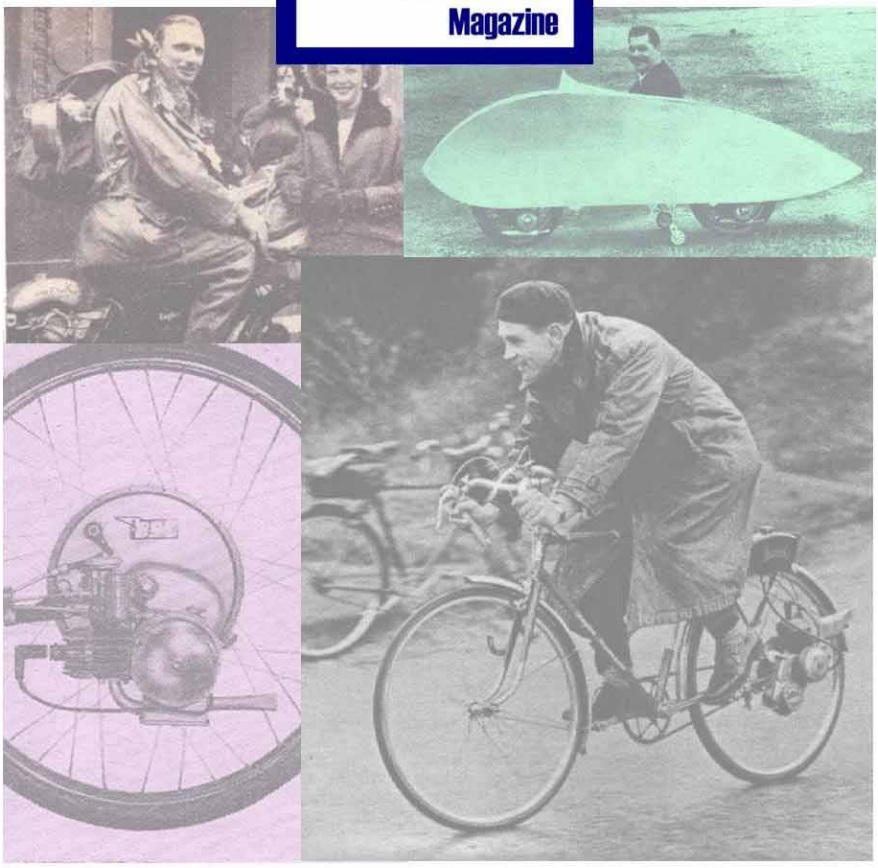

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