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AMERICAN TOPICS.

NEW YORK, *November 11th*, 1903.

Something should be done—some law, by-law, or regulation enforced—to prevent accidents and loss of life from automobile or motorcycle racing, for mishaps are becoming too frequent. Only a few months ago poor Harry Elkes lost his life at the game, and now Albert Champion, the famous motorcyclist, meets with a smash-up which will disable him for a long time, perhaps permanently. Hurled from a racing motorcar going at something approximating a mile a minute, Champion was seriously injured at the second annual speed meeting of the Long Island Automobile Club at the Brighton Beach race track. The accident occurred in the first mile of the pursuit race, and was attended with sensational features. The turns of the track were regarded as treacherous for a car being driven at nearly record speed. The last turn was the worst of the lot, and Champion had been warned about it. As he neared the spot at terrific speed the wheels skidded, the car swerved, and then plunged through the fence on the inside of the track. Apparently Champion had his wits about him, for he ducked his head and threw up a protecting arm. The car cut through the fence leaving the top rail intact. It turned over in the ditch next to the turf course, and Champion was thrown 20 feet. When assistance reached him he was unconscious. His right arm was lacerated and almost torn from its socket; his head was cut and his right leg broken near the thigh by what a physician said appeared to be a compound fracture. The car was badly broken, the bonnet over the motor being torn away, the right front wheel broken off at the axle, and all of the wheels were buckled. Only the motor remained in perfect condition, and that was still working when the spectators reached the car. Despite the pain which he endured, Champion expressed regret that the machine had been harmed. The cause of the catastrophe the operator laid to the rutted condition of the track on the turn.

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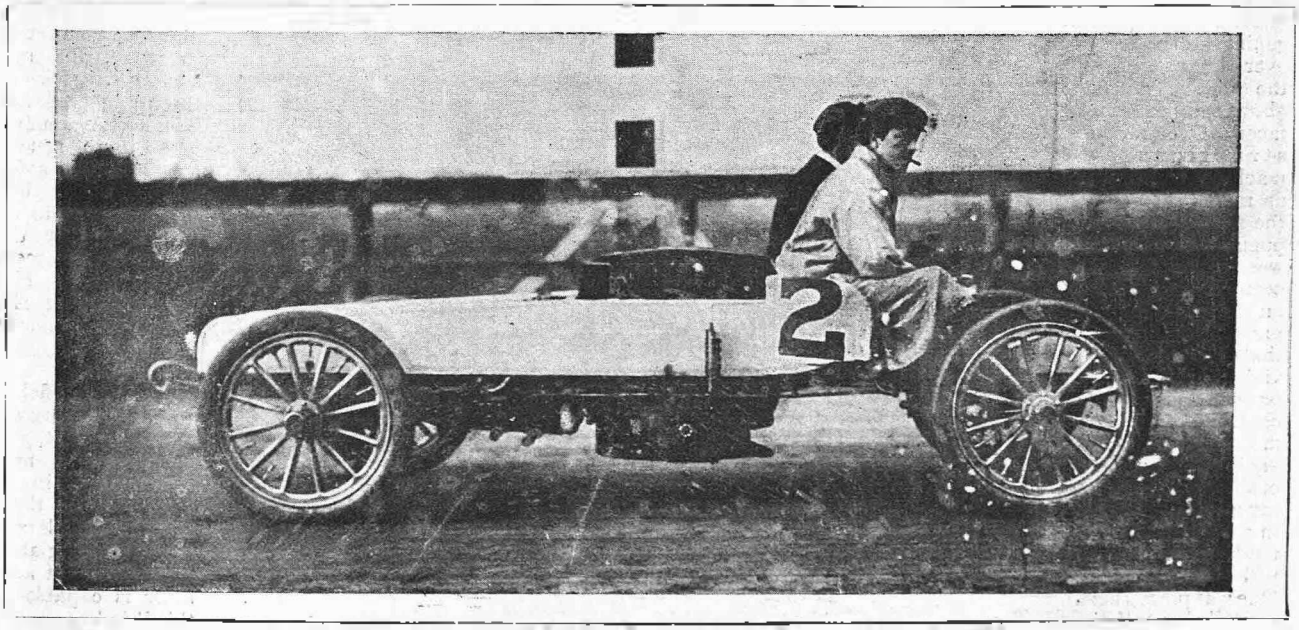
The new Packard racer, called the "Grey Wolf," which Champion was riding, is the first car built purely for speed purposes by the Packard Motor Car Co. It is equipped with one of the maker's standard four cylinder 25 h.p. model K engines, located under the forward hood. The machine has sliding gear transmission, giving two speeds forward and reverse. When running on the high speed all gears are disengaged, and drive is direct from the motor to the differential. The two forward speeds give 30 and 75 miles per hour at an engine speed of 1,000 revolutions per minute. The machine is not in any sense a freak, constructed for speed purposes only, but contains all the elements of a road car. The spring suspension combines the same transverse front spring used successfully in the model F road car, and gives to the "Grey Wolf" the same three-point bearing and the flexibility of the running gear necessary for traversing uneven surfaces at high speed without disturbing the alignment of the mechanism. In all of its essential features, such as ignition, carburetter, water circulating system, steering gear, brakes, etc., the racer is just like one of the standard cars, differing only in its shape and the elimination of all surplus



The American Cannon Steamer. A racing freak.

weight for racing purposes. The car tips the scales, when filled with gasoline, water and oil, at slightly less than 1,400 lbs. It had already had several accidents.

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A special match race, at the same meeting, between cars operated by George G. Cannon and John W. Howard was the only contest to bring out a somewhat freakish-looking car. It was that operated by Cannon, a student of Harvard University, who invented and built the car himself, and he and his assistant sat in front of the motor directly over the forward axle. When the car got fully under way, fire and steam trailed behind, and then it was seen why the men had to sit ahead. They would have been roasted and toasted by the stream of fire, that looked like the tail of a comet as the car circled the track. Cannon's car won the race in the fast time of 3 mins. 46 3-5 secs. for a 6 h.p. motor. Mr. Cannon's machine has the two seats for himself and his assistant close in front, with almost nothing to break the wind. Back of the seat rises the 25 inch Oswego boiler, with its rearwardly bent funnel on top. The engine is an 8 h.p. Mason. Back of the boiler the low body slopes gently to a point just back of the rear axle, giving a length over all of ten feet. The wheels are of wood, with bolts between each two spokes to hold the tyres on. The frame is of channel iron, reinforced with wood. Mr. Cannon used wheel steering, while his assistant used the side lever, but both carriages were geared direct to the rear axle.

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An automobile, weighing 3,400 lbs. and equipped with solid rubber tyres, was driven over several miles of rough pavements in Brooklyn last week with as much comfort to the passengers as if pneumatic tyres had been used. The machine was a gasmobile "Surrey" of obsolete pattern, with a third seat added; and in the trip eight persons were carried. The secret of the easy riding was the action of a cushion spring for which the run yesterday was the first official test in a vehicle fitted with solid tyres. The device had previously been tried on an automobile running on pneumatics, and though it had improved the riding qualities of that machine the test of its efficiency was not so convincing as in yesterday's trial. The gasmobile was driven over uneven stone pavements, over asphalt that was dotted with gaping holes, and over tracks where the rails obtruded above the road surfaces. Over all obstructions the machine rode with as much ease as if the most resilient of pneumatic tyres were beneath it. It seemed to possess an advantage over pneumatic tyres in that there was no violent rebound in passing over large obstructions. The machine was equipped with three cushions, though the inventor claims that in a vehicle of more modern build two will be sufficient. One was placed horizontally beneath the rear of the body and supporting it above the rear truck, while the other two were placed one on either side of the forward part of the body and supporting it above the running gear. The cushion is operated by both air and glycerine, the flow being so regulated that it instantly responds when one of the wheels strikes an obstruction, while the reaction is sufficiently retarded to prevent shock.

The Man of the hour in America. Barney Oldfield.

THE MAN OF THE HOUR.

Barney Oldfield, who is probably the most successful automobilist in the world, is busily engaged smashing records throughout the country. He has set new records for all distances from one mile up to ten. He has reached the point where a mile in more than 56 secs. is not considered anything out of the ordinary.

Recently, at Denver, three records fell before his mighty machine, but these records were his own. For five miles the old record was 4.54—he made it in 4.45. Ten miles in 9.38—former record, 9.45; and fifteen miles in 14.24¾—former record, 14.35.

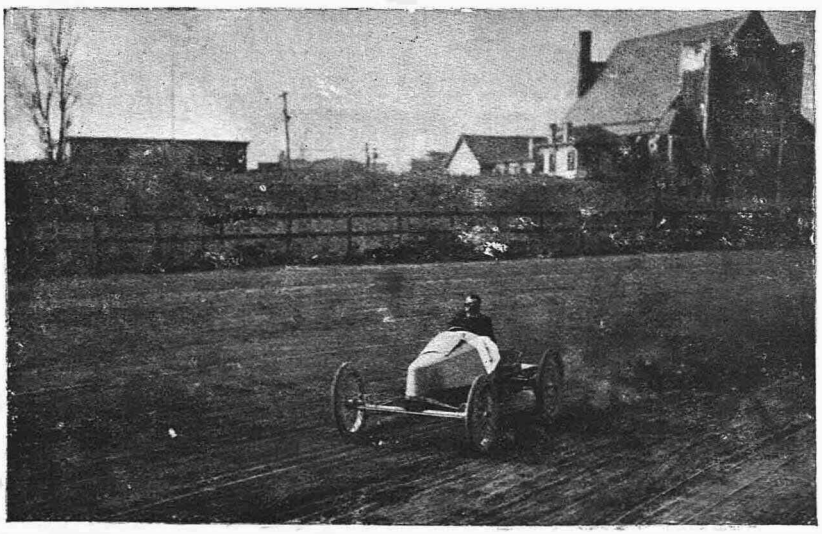
Oldfield is willing to wager 1,000 dollars that he will place the mile straightaway record at 45 secs., and the mile track record at 52 secs. He made this statement as he was starting for the Pacific coast, and those who know him are looking forward with a great deal of interest to his work at San Francisco. A week later he will ride at Los Angeles, and will then come east and prepare for his trip abroad, where he goes to compete in the big Continental events.

That Oldfield trains for his riding will be news to many. He does so, riding many miles daily in a touring car and taking long trips whenever possible, to strengthen his back and arm muscles. "I have finished many a track ride," said he, "and it is work to get the big machine round the track, and very hard work. I am only one of the men who are racing for the lowest records.

Oldfield's training stands him to the good in other respects, for he is a good general athlete. Only the other day he and his friend, Henry Alexander, subdued three intoxicated hoodlums near here. Oldfield and his party were on their way in from Ingleside track. In the party were Mr. and Mrs. Oldfield and Mr. and Mrs. Alexander. The party occupied a large touring car, which was towing Oldfield's racer, Bullet No. 3, in which were seated Charles Graham, Oldfield's machinist. Three men, who were in a buggy, struck Graham across the face with a whip for no apparent reason, and then threatened to wreck the machines. Their threats angered Oldfield and Alexander. The three roughs attacked the automobilists. It was Oldfield's lot to be pitted against the largest of three men. After knocking him down Oldfield helped Alexander in subduing the other two roughs.

It is Oldfield's ambition to drive a mile in 50 flat, and to make the mile straightaway in 35 secs. Both these records he feels confident of doing at an early date. If anybody is capable of this it is he.

WHEEL.



Albert Champion on the "Grey Wolf" in the lap before the accident at the very spot where his machine left the track.

THE PROGRESS OF THE LIGHT CAR.

At the inception of this journal we pinned our faith to the popular side of motoring, a branch which had at that time scarcely shown signs of emerging from the chrysalis form. Whether this journal has had little or much to do with the rapid development or encouragement of this branch it is not for us to say, but that development has been rapid and along a definite fixed line will be at once apparent when so formidable a list of light cars as that which we publish on the succeeding pages has been carefully studied. Here is a list of cars which is rapidly approaching three figures, for it must be remembered that in a good many cases it is open to the purchaser to choose from two or more specifications which constitute variations on a particular type of car. For instance, a higher powered engine can be fitted to a certain chassis, thus permitting of the addition of a tonneau body. But in order to keep the list within bounds we have been compelled to ignore most of these variations, just as we have had to leave for later consideration cars the prices of which greatly exceed £200.

As was to have been expected, the improved type of light car exhibited at the last Paris Show set a fashion which has not only been generally followed, but has not been easily departed from. The experience of some years had at last developed a car with tubular framework, an engine giving about 6 or 6½ h.p., driving through a pedal-actuated clutch, a gear box and a flexible shaft to the differential on the rear live axle. Forced circulation for the cooling water, artillery wheels, and the absence of automatic governor on the engine were features of this type, and the 1904 pattern light cars are identical in specification, showing that the past year has brought to light no fault or inherent weakness in the general system. But in details we may naturally expect to find that improvement is being continually introduced. Thus, it is rather the exception than the rule now to find that a reverse gear is provided. Even when a car is exceedingly light a reverse is occasionally necessary in traffic, and it is invariably a convenience for manœuvring a car in and out of its garage. Next to the engine the most important detail in the mechanism of a car is the gear box, and it is here that the greatest amount of diversity of method is to be found. Expanding clutches are only found on one type of car; in others, however, the Renault system (we showed an example last week on page 381) has found more vogue. But the popular demand is undoubtedly for three speeds, and we think that only a matter of price will compel a purchaser to accept two speeds. The first speed must necessarily be low enough to take the car up the steepest hill, and the driver does not want to be driven to use so low a speed every time he is compelled to come off of his top speed; he prefers to have an intermediate speed for such occasions.

The great feature of the past twelvemonth is the fact that, without a doubt,

VAST STRIDES HAVE BEEN MADE BY ENGLISH MOTOR MAKERS.

The M.M.C. moved up a step by increasing the power of their lightest car engines to 8 h.p., but we think that the power which will, at least for the present, appeal to the beginner will be somewhere in the region of 6 h.p. The Swift car was increased from 4½ to 6 h.p. and gained proportionately in popularity. The two great exponents of the three-wheeled type, the Eagle and Century tandems, have also been increased in power. Early in the year the Humberette was announced, and when it was placed on the market in July it undoubtedly created a sensation. The demand for the car has been phenomenal, and we are given to understand that both at Coventry and Beeston the works have continued at high pressure in order to cope with it. These delightful little cars have proved successful, very few faults developing themselves, and those being all readily abolished as soon as they were known. We have had evidence that the Humberette has given its purchasers ample satisfaction and a vast amount of pleasure, and everyone who has the least knowledge of the past knows that the company will only permit its name to be associated with that which is reliable and efficient. That the manufacture of such vehicles is

A PROFITABLE UNDERTAKING

is evidenced by the report of the directors at the recent annual meeting of the company, when it was stated that this branch of the business was earning substantial profits for the shareholders. The Velox car was announced early in the year and a few were made, but their manufacture has not been proceeded with, although with but few modifications the design should not be unsuccessful. The Gordon is a very cheap well-made car which has been greatly improved, more power being added and every detail being brought up to date.

There is a kind of tradition that English engineers look with a kindly eye upon the horizontal engine and would prefer to adopt it rather than the vertical engine. And there are two schools which think quite differently on engine speed; one school favouring the slow engine running at about 800 revolutions to the minute because it is freer from vibration and, therefore, more suited to a light car; whilst the other school favours the high speed engine at about 1,500 to 2,000 revolutions—well, for the same reason that the higher the speed the less the vibration. "When doctors differ," etc.! But it is quite possible that either type properly developed will give satisfaction. Certainly the exponents of the slow speed horizontal engine compare extremely well with their rivals. The old Benz car—what a splendid name that earned in the early days; and the cars of this type which one sees about to this day are eloquent of their usefulness and good quality. The Pick cars were among the early English examples of the type, and the new twin-cylindered 6 h.p. car with chain driving instead of belts is a particularly nice car to drive. The Vauxhall car was introduced early in the summer and has enjoyed a very good demand. It is a well designed and well made article, with many novel features adopted for the purposes of simplification and economical production and upkeep. We have heard very good accounts indeed of this car, and have never hesitated a moment to recommend it. Recent introductions of the horizontal type are the Wolseley and the Siddeley, both 6 h.p., with the engine placed forward and driving through chains. These are single-cylindered, but are very sweet in the running and are of good quality and workmanship throughout.

To go back to cars with vertical engines,

THE NEW LIGHT ROLLS CAR,

being produced by the Hon. C. S. Rolls, promises well. It is designed upon lines which have proved thoroughly successful, and as it is being made in England the car will be turned out with a guarantee which must go far to instil confidence in its purchasers. The Little Star is a newcomer in the light car firmament from which good things are expected, whilst the Clyde produced by the Leicester concern of that name is an extremely well designed car and excel-

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lent value for the price asked for it. The new British-built cars (including the Humber, the Siddeley, the Wolseley, the Star, the Rolls, the Vauxhall, the Pick, and the Gordon) which have appeared during the past year are now being viewed with exceptional interest and, with others which we know to be on the stocks, may be expected to capture a substantial portion of the home demand next year.

The buyer who can afford from £120 to something over £200 is provided with a wide range of cars from which to choose, and many efforts have been put forward during the past year in order to bridge the gap between the motor-bicycle at £45 and the cheapest of the cars. The "Trimo" or fore-carriage was the first introduction, and this has developed extensively; in fact, the original idea of making it convertible from a bicycle to a two-seated tricycle has now almost died out, and most of the vehicles are made non-convertible, and are all the better for the alteration. The Carpeviam, a German-built car, in which the two riders sit side by side, has given the lead to our designers, and to this we can clearly trace the Motorette and the Kyma car, although it will be noticed that neither is by any means a copy of its prototype. Without the slightest doubt a really useful three-wheeler will sell well because of its lightness, cheapness and absence of complication, and we shall expect to see further developments with this type of machine in the near future. The efforts of designers and makers of light cars, now that simplicity and compactness have been practically secured, are towards greater efficiency and reliability, perfect silence, ease of control and economy of production. Each feature is being steadily improved, whilst economy of production must necessarily come when stability of design has been assured and orders can be given for the output of a very large number of cars of a certain type. This position has been reached on the Continent, and by two firms it has also been reached here; but there is this to be said of the English motor industry: it is still keenly on the alert to effect every possible improvement, and whilst that feeling exists there need be no fear for the future of motor engineering in this country.

The list which follows gives particulars of no less than 80 cars, and although there are instances where the same car sells under more than one name, this fact does not reduce the list to very much below 75. Last year we drew up for our personal guidance a somewhat similar list. We have struck out of that list the names of cars no longer made or offered to the public, and we find that the latest list given below is five times the size of last year's amended list. In other words, over 60 cars are specified below of which, a year ago, there was no knowledge in this country.

LIGHT CARS AT A GLANCE.

EIGHTY OF THE MOST POPULAR TYPE ARRANGED IN ORDER OF PRICE.

Name of Car.	Seating Accommodation	Motive Force.	H.P. of Engine.	No. of Forward Speeds.	If Reverse Fitted.	Mode of Transmission.	Weight.	Price.	Makers.
							Cwt.	£ s.	
Kyma	2	Petrol	6	2	No	Belts	1½	62 0	Kyma Car Co., Nunhead Crescent, Peckham Rye, S.E.
Morette	1	"	2½	1	No	Chain	2	73 10	B. E. Dickinson, Toledo Engineering Works, Aston Brook Street, Birmingham.
Morette	2	"	4	1	No	Chain	3	84 0	B. E. Dickinson, Toledo Engineering Works, Aston Brook Street, Birmingham.
Rex Tricar	2	"	3½	1	No	Belt	3	84 0	Rex Motor Mfg. Co., Ltd., Earlsdon, Coventry.
Raleighette	2	"	3½	2	No	Chains	—	95 0	Raleigh Cycle Co., Ltd., Lenton, Nottingham.
Carpeviam	2	"	3½	2	No	Chains	4	99 0	C. Peacock and Co., 29, Clerkenwell Road, London, E.C.
Holdsworth	2	"	5	2	No	Gear	5	99 10	Light Car and Motor Engineering Co., Dale End, Birmingham.
Bijou	2	"	5	2	No	Chain	5	99 15	Express Motor Co., 45, Everton Street, Liverpool.
Orient Buckboard ...	2	"	4	2	No	Gear	4	100 0	Remington Automobile Agency, Sanctuary House, Tothill Street, Westminster.
Revolution	2	"	4	2	Yes	—	—	100 0	New Revolution Cycle Co., Ltd., Vauxhall St., Birmingham.
Crestmobile	2	"	3½	2	No	Chain	4½	120 15	O'Halloran Bros. and Co., 164, Clerkenwell Road, London.
O. H. B.	2	"	3½	2	No	Chain	5	120 15	O'Halloran Bros. and Co., 164, Clerkenwell Road, London.
Century Tandem ...	2	"	6½	2	No	Chains	5	125 0	Century Engineering and Motor Co., Ltd., Cumberland Park, Willesden Junction, N.W.
Gordon	2	"	6	2	No	Chain	4½	131 5	Gordon Motor and Cycle Co., 140, Seven Sisters' Road, Holloway, London, N.
Coventry Humberette	2	"	5	2	Yes	Gear	5½	131 5	Humber, Ltd., Coventry.
Ranelagh	2	"	7	3	Yes	Gear	—	135 0	Ranelagh Motor Co., Castlenau, Barnes, S.W.
Vauxhall	2	"	5	2	No	Chain	5	136 10	Vauxhall Ironworks Co., Ltd., Wandsworth Road, London, S.W.
Highgate	2	"	6	2	Yes	Gear	9	136 10	Highgate Motor Co., Archway Road, Highgate, N.
Speedwell	2	"	6	2	Yes	Gear	8	136 10	Speedwell Motor and Engineering Co., Ltd., 151, Knightsbridge, London.
Mabley	2	"	3½	2	No	Chains	4½	140 0	John Marston, Ltd., Wolverhampton.
Regal	2	"	6	2	Yes	Gear	8	141 15	O. C. Selbach, 36, Great Russell Street, London, W.C.
Alldays	2	"	4½	2	Yes	Gear	5½	142 10	Alldays and Onions Engineering Co., Ltd., Birmingham.
Beeston Humberette	2	"	5	2	Yes	Gear	5½	147 0	Humber Ltd., Beeston, Notts.
Achilles	2	"	6	2	Yes	Gear	9½	150 0	B. Thompson and Co., Ltd., Frome, Somerset.
Oldsmobile	2	"	5	2	Yes	Chain	7	150 0	Jarrott and Letts, Ltd., 45, Great Marlborough Street, London.
Light Rolls Car ...	2	"	6	2	Yes	Gear	8	150 0	C. S. Rolls and Co., Ltd., Lillie Hall, Earl's Court, London, S.W.
Highgate	2	"	6	3	Yes	Gear	10	152 5	Highgate Motorcar Co., Archway Road, Highgate, London, N.
Eagle Tandem ...	2	"	6½	2	No	Chains	5¾	160 0	Eagle Engineering and Motor Co., Ltd., Oakfield Road, Altrincham.
Continental	2	"	6	3	Yes	Gear	10	165 0	Continental Automobile Co., Long Acre, London.

Continued on next page.

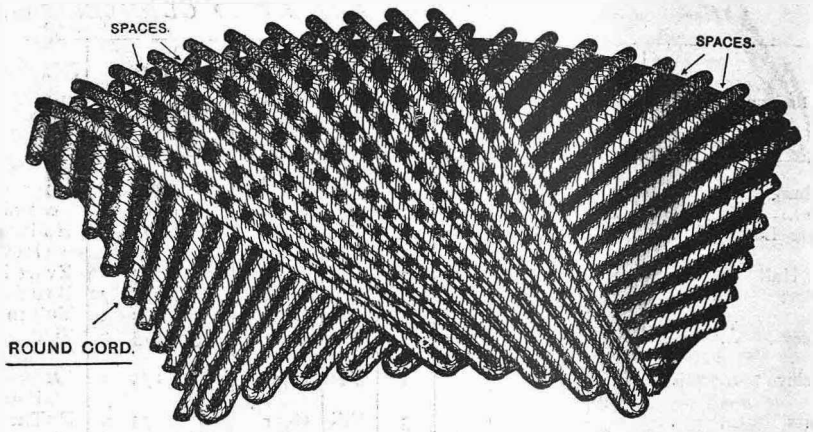
LIGHT CARS AT A GLANCE.—Continued.

Name of Car.	Seating Accommodation	Motive Force.	H.P. of Engine.	No. of Forward Speeds.	If Reverse Fitted.	Mode of Transmission.	Weight.	Price.	Makers.
Wartburg	2	Petrol	5½	3	Yes	Gear	—	168 0	Haynes and Son, Ltd., 17, Goswell Road, London.
Jaxon	2	,,	6	2	Yes	Chain	—	168 0	Central Motor Co., 124, Euston Road, London, N.W.
Prosper Lambert ...	2	,,	8	3	Yes	Gear	8	170 0	Holland Park Motor Co., 1, Princes Road, Holland Park, London.
Evart Hall	2	,,	6	3	Yes	—	9½	170 0	Evart Hall, Ltd., 38, Long Acre, London, W.C.
Beaufort	2	,,	6	2	No	Gear	9¼	171 7	Beaufort Motor Co., 14, Baker Street, London, W.
Vulcan	2	,,	6½	3	Yes	Gear	10	173 5	Vulcan Motor Co., Ltd., Southport.
Siddeley	2	,,	6	2	Yes	Chain	8½	175 0	Siddeley Autocar Co., 79, 80, York Street, Westminster, S.W.
Wolseley	2	,,	6	2	Yes	Chain	8	175 0	Wolseley Tool and Engineering Co., Ltd., Adderley Park, Birmingham.
Achilles	2	,,	8	3	Yes	Gear	10	175 0	B. Thompson & Co., Frome, Somerset.
Clyde	2	,,	6½	2	Yes	Chain	7¾	175 0	Clyde Cycle and Motor Co., Ltd., Leicester.
Pick	2	,,	6	3	Yes	Chain	10	175 0	Pick Motor Co., Ltd., Blackfriars Works, Stamford.
Little Star	2	,,	6	3	Yes	Chains	7	175 0	Star Engineering Co., Wolverhampton.
Baby Peugeot ...	2	,,	5	3	Yes	Gear	7	175 0	Friswells, Ltd., Albany Street, London, N.W.
Perfecta	2	,,	6½	3	Yes	Gear	8	175 0	Cheswright and Co., 72, Queen Victoria Street, London, E.C.
Waddington	2	,,	6½	3	Yes	Gear	--	175 0	Waddington and Sons, Middlesbrough.
Cottereau	2	,,	7	3	No	Gear	7½	175 0	City Garage, 34, Queen Street, London, E.C.
Highgate	4	,,	8	3	Yes	Gear	10	175 0	Highgate Motorcar Co., Archway Road Highgate, London, N.
Enfield	2	,,	6	3	Yes	Gear	8	175 0	Enfield Cycle Co., Ltd., Redditch.
Mobile	2	,,	6	3	Yes	Gear	—	178 10	Mobile Motor Engineering Co., Ltd., John Bright Street, Birmingham.
Mohawk Manon ...	4	,,	6	3	Yes	Gear	—	178 10	Mohawk Motor Co., Harwood Street, Chalk Farm Road, London.
L.V.B. Universal ...	2	,,	6	3	Yes	Gear	10	178 10	Motor Car Industries Co., 50, College Street, South Kensington, S.W.
Primus	2	,,	5	2	Yes	Chain	—	183 15	Egerton's, Ipswich.
Rambler	2	,,	7½	2	Yes	Chain	—	183 15	Petrol Motor Power Co., Carteret Street, London, S.W.
Pegasus	2	,,	6½	3	Yes	Gear	8	185 0	Motor Car Co., Ltd., 168, Shaftesbury Avenue, London, W.C.
Relyante	2	,,	6	3	Yes	Chain	8	189 0	Chief British Depot, 94, Victoria Street, London, S.W.
Clarendon	2	,,	7	3	Yes	Gear	—	189 0	Clarendon Motor Car and Cycle Co., Earlsdon, Coventry.
Canterbury	2	,,	6½	3	Yes	Gear	—	189 0	Canterbury Motor Co., Canterbury.
Locomobile	2	Steam	—	—	Yes	Chain	6½	190 0	Locomobile Co., Ltd., 39, Sussex Place, South Kensington.
Stanley	2	,,	5½	—	Yes	Chain	9	194 5	J. Cockshott and Co., Great Northern Arches, Deansgate, Manchester.
Cottereau	2	Petrol	7	3	Yes	Gear	9	195 0	City Garage, 34, Queen Street, London, E.C.
Elswick	2	,,	6	3	Yes	Gear	8	200 0	Burlington Carriage Co., Ltd., 315, Oxford Street, London.
De Dion-Bouton ...	2	,,	6	2	Yes	Gear	8	200 0	De Dion-Bouton, Ltd., 10, Great Marlborough Street, London.
Achilles	4	,,	8	3	Yes	Gear	11	200 0	B. Thompson and Co., Ltd., Frome, Somerset.
Cadillac	2	,,	6½	2	Yes	Chain	11	200 0	Oldsmobile Co., Ltd., 100c, Queen Victoria Street, London, E.C.
Century	2	,,	6½	3	Yes	Chains	9	200 0	Century Engineering and Motor Co., Ltd., Cumberland Park, Willesden Junction, London, N.W.
Baker	2	Electric	—	3	No	—	6	204 15	Anglo-American Motor Co., Heddon Street, Regent Street, London.
Mohawk Manon ...	5	Petrol	9	3	Yes	Gear	—	210 0	Mohawk Motor Co., Harwood Street, Chalk Farm Road, London.
Papillon	2	,,	6	3	Yes	Gear	—	210 0	Société des Automobiles Francaises, 77, High Street, Marylebone, London, W.
Rex	2	,,	6	3	Yes	—	—	210 0	Rex Motor Manufacturing Co., Ltd., Earlsdon, Coventry.
Vousemoi	2	,,	9	3	Yes	Gear	12½	210 0	Foster & Co., 422, Birkbeck Chambers, London, E.C.
Beaufort	2	,,	9	2	Yes	Gear	9	216 0	Beaufort Motor Co., 14, Baker Street, London, W.
Swift	2	,,	6	2	Yes	Gear	10	220 10	Swift Motor Co., Coventry.
Emerald	2	,,	9	3	Yes	Gear	8	225 0	D. S. Cox, 33, Selsdon Road, West Norwood.
Rochet	2	,,	6½	3	Yes	Gear	—	225 0	New Automobile Co., Cambridge Circus, London, W.C.
Vousemoi	2	,,	9	3	Yes	Gear	13	225 0	T. Foster and Co., 422, Birkbeck Chambers, London, W.C.
Eagle	2	,,	9	2	Yes	Gear	9	235 0	Eagle Engineering and Motor Co., Ltd., Oakfield Road, Altrincham.
Talbot	2	,,	6	3	Yes	Gear	—	240 0	British Automobile Commercial Syndicate, Ltd., 97, Long Acre, London, W.C.
Coronet	2	,,	7	—	—	—	9½	250 0	Coronet Motor Co., Ltd., Far Gosford Street, Coventry.
Roots	2	Paraffin	5	3	Yes	Chains	11	260 0	Roots Motor Car Co., Critchley Street, York Road Lambeth, London, S.E.
Benz	2	Petrol	6	3	Yes	Chain	13	265 0	Hewetsons, Ltd., Tottenham Court Road, London.
M.M.C.	4	—	8	3	Yes	Chains	10	270 0	Motor Manufacturing Co., Ltd., Motor Mills, Coventry.

THE NEW PALMER MOTOR TYRE.

In our last issue we referred briefly to the new Palmer motor tyre, but were quite unable to do full justice to the subject. We now give the following interesting particulars:—

In the process of manufacture of the ordinary fabric tyre the canvas is first of all stretched longitudinally at the tread. It is then stretched transversely, and pulled towards the smaller circumference of the mould. The "puckers" or folds which form at the sides are then pressed or rolled down by the tyre builder as much as possible, which has the effect of causing the threads of which the canvas is composed to be slack in some places and taut in others. When one layer of canvas has been placed on the mould another is laid in the same manner on top of the first, and so on until the desired number of layers has been applied. Many attempts have been made to overcome the puckering of the canvas by using specially shaped canvas or webbing, but this presented the serious disadvantage of not crossing the tyre diagonally, which feature affects their running qualities and durability to a considerable degree. During the earlier experiments at the Silvertown Rubber Works in building up tyres with cords, it was found that when the round cords were placed close together at the bead or anchorage, considerable spaces were left between the cords at the tread or larger circumference of the tyre, and it was necessary to fill up each of these spaces with a shaped piece of rubber when building up the tyre. The method is illustrated in Fig. 1. This difficulty is overcome in the new Palmer cord tyre in a very novel manner. Instead of employing the cords in their natural round shape, they are flattened to an oblong or oval shape. At the anchorage or smaller circumference of the tyre the cords are arranged with their wider surfaces together, and as they approach the tread or larger circumference of the tyre, each cord is given a quarter turn, so that the narrow surfaces or edges are together (Fig. 2). By this simple means a uniform fabric is made, without any filling pieces. And, further, the tyre is easier to build, and is claimed by the makers to be fully 50 per cent. stronger than if the cords were employed in their round condition, that is to say, about 50 per cent. more of the flattened cords can be built into each layer than would be the case if round cords only were employed. Each cord is entirely insulated throughout; that is to say, each separate strand is coated with pure rubber gum before being built into the cord proper. There is often a considerable difference in the life of tyres made with canvas lining supplied by the same makers, as motorists know by experience. The explanation is that even the best tyre builder cannot possibly arrange that the warp and weft threads in the different layers of canvas shall be of equal tension everywhere. Some may be lying at right angles to each other, but the majority will be lying at various angles. By chance a tyre may be obtained in which the slack and taut threads are fairly well distributed, and this tyre will probably last a considerable time, and the same tyre builder may, while using equal care, make a tyre in which the tensions are concentrated at one or more places, and this tyre would probably soon give out. It is a well-known fact that when a tyre is flattened by contact with the road, the alteration of shape at the side walls changes the disposition of the canvas in such a manner that the major portion of the strain is thrown on the outside layer, while the other layers become slack in varying degrees, just at the time when they are most required to transmit the motive power to the road. For the purpose of comparison, it may be assumed that a tyre having five layers of canvas contains ten layers of wavy threads, that is to say, five running in each direction. In the new Palmer cord tyre only two layers are employed, one in each direction. The shape of the side walls will naturally be altered by the tread making contact with the road, but the strength of the cord fabric is not reduced at this time, when it is most required to transmit the driving power to the road. Another feature of a canvas fabric tyre is that the warp and weft threads become bent and intertwined in such a manner that any movement, while they are under tension, causes each thread to cut or saw its neighbour. This cannot occur with the new Palmer cord tyres, because the cords are not interlocked, and for other reasons already stated.



EARLY EXPERIMENTS IN BUILDING TYRES WITH ROUND CORD. FIG. 1.

METHOD OF BUILDING TYRE WITH FLATTENED CORD.

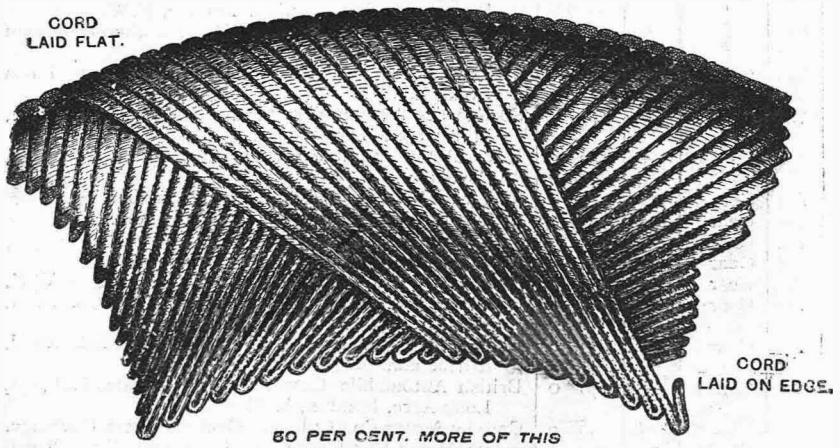


FIG. 2.

Motorcycle Reliability Trials in France.

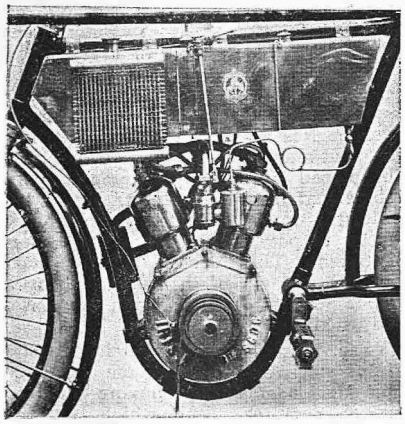
The sixth and last day's run of the French Motorcycle Club's trials took place on Sunday, November 15th. Previous runs were reported in a recent issue of "THE MOTOR." The concluding run was a short one—from Paris to Corbeil-Essones and back, 70 miles. Sixteen competitors started, all of whom finished. Rain fell nearly all day, and the roads were very muddy. The 16 motorcycles which are officially stated to have accomplished successful trials all through are:—Bonnet, Bremè, Bruneau, Chantemede No. 1, Chantemede No. 2, Doue, Gobron-Minerva, Knap No. 2, Lamaudiere No. 2, Lurquin et Couderc, Mauxion, Moto-Sacoche No. 1, Moto-Sacoche No. 2, Paillard, Pecourt, and Werner No. 2. These subsequently underwent a supplementary trial for silence in running and other details, the result of which is not yet officially published. In our last issue we illustrated a number of the competing bicycles, but this "par" was crowded out.

FURTHER MOTOR EXHIBITS AT THE STANLEY SHOW.

Although our last issue was greatly enlarged to allow of the descriptive and illustrated report of the two Shows, the space devoted to Novelties proved inadequate, and we are compelled, therefore, to continue on the following pages to describe many features which were necessarily omitted last week.

48. **Lucien Allegre and Co.**, 59a, New Oxford Street, London, W. Motorists who had a desire to appear in public with clean hands visited this stand, where Savon des Chauffeurs, a special soap for automobilists, was on sale. It is retailed in collapsible tubes at 1s. each, and will remove grease, oil, etc., from the hands.

282b. **Edmonton Manufacturing Co.**, Angel Road, Edmonton. One of the lowest priced motorcycles in the Show was to be seen at this stand. It is fitted with 2¾ h.p. Edmonton engine, a combined belt and chain drive, Vital tyres, hygienic saddle, large tool bag, girder front forks, Bowden band brake on back wheel, Bowden front brake, plated tank, Longuemare carburetter.



Iris Motor-Bicycle, showing 2-cylinder water-cooled engine, free engine clutch and radiators on tank.

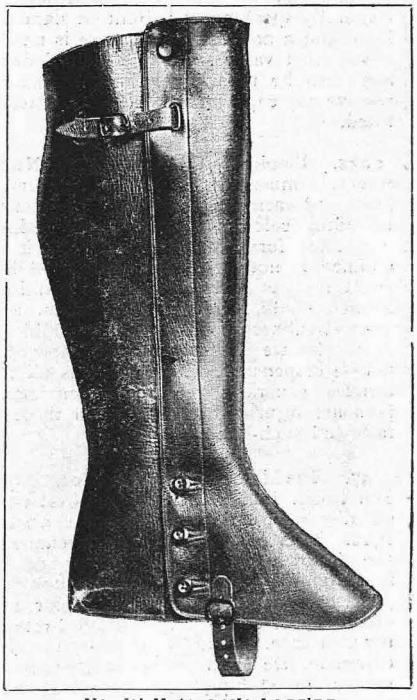
68. **Mabon and Co.**, 19, Clerkenwell Road, E.C. This exhibitor showed three machines—the first a Mabon Trimo motorcycle fitted with Minerva engine of 3¼ h.p., belt driven; the second and third being Mabon cycles fitted with Mabon engines of 3¼ h.p. and weighing 110lbs. A novelty is the blower for air-cooled engines to drive off engine pulley. The machines are fitted with Clipper tyres and Bowden brakes

32g. **G. Strauss and Co., Ltd.**, 211, Upper Thames Street, London, E.C. This firm showed the well-known Fafnir engine, from 2¼ h.p. to 24 h.p. The small Fafnir engines have an exhaust valve governor, which is designed to be worked from the handlebar by a rod; this varies the lift of the exhaust valve, and so regulates the power of the explosion and the speed of the engine. The larger engines are governed on the inlet, and have mechanical inlet valves. The Fafnir engine is made by the Aix la Chapelle Steel Works.

228. **Steiner and Co.**, Houndsditch, E.C. This firm had novelties in acetylene lamps which, when filled, burn one hour and a half; refills can be carried in the pocket at a cost of one halfpenny each; they are clean to carry, being in an air-tight box, which has to be broken before the refill can be used. Other items of interest were shown, such as horns, handles, saddles, toe-clips, oil cans, chain adjusters, etc.

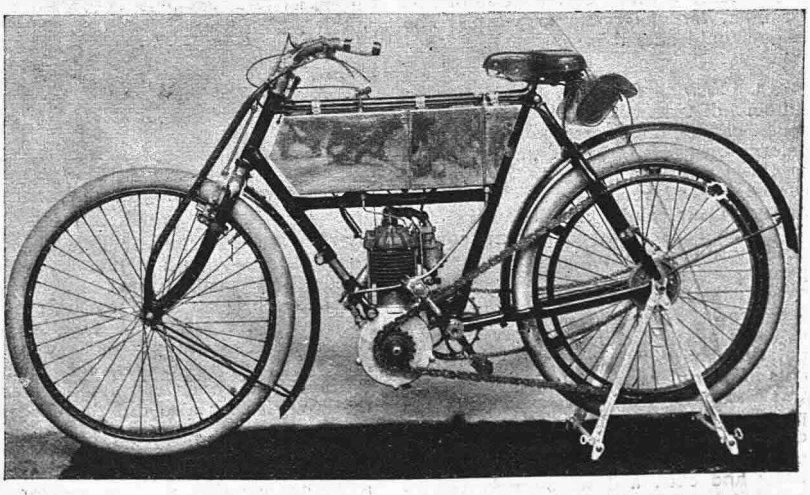
251. **Thomas Smith and Sons, Ltd.**, of Saltley, Birmingham. The forgings and drop stampings of this firm are so well-known as to need little description; every conceivable part of cycles, motorcycles and car fittings was represented here. The firm also make and sell to the trade a 2¾ h.p. motor possessing many very practical points, well worthy of inspection: the frame is particularly well made and thought out, combining strength with lightness. They also supply a complete set of the parts to enable the small maker to produce a finished machine. A very neat folding stand having its attachment to the chain stays and so permitting the wheel to be drawn or the bearings to be adjusted without difficulty was exhibited.

307. **Geo. Norris.** In addition to the Pedes-Cyclo shoes which are suitable alike for cyclists and motor-cyclists, and are now so well-known, this firm also showed the Utility boot, which is intended more particularly for riders of motorcycles. The lower part of this boot is fastened by a strap like the Pedes-Cyclo shoe, and the upper part is fastened with an additional strap. The straps are fastened with special buckles which do not pass through them, but merely press into them, thereby enabling the straps to be fastened at any point. This firm has recently put on the market the Moto-Cyclo legging which has a stiffened leg portion and soft upper and



Norris' Moto-Cyclo Legging.

lower parts, making it easy for pedalling or walking. Some skins were on view showing the quality of leather employed in the manufacture of these goods.



The Edmonton Motor-Bicycle, with combination chain and leather belt.

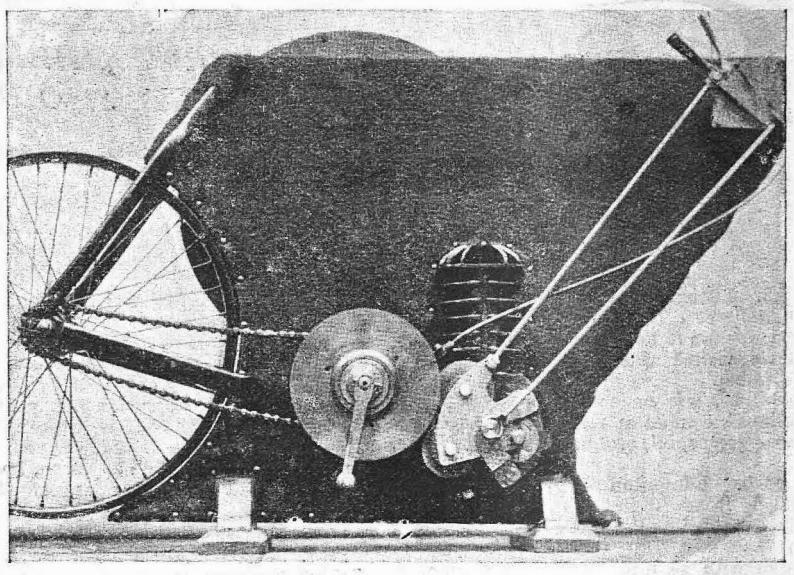
233. **Ferrubron Mfg. Co., Ltd.**, 143, Queen Victoria Street, E.C. The "Gartor" lubricant for motor and cycle chains was displayed by this company. Users speak very highly of this preparation, which, besides acting as a preservative, cannot cl g or gum. Another thing in its favour is that it does not stain the hands or clothes. It is packed in a convenient form for use.

237. **Cooper and Co., Ltd., Manchester.** At this stand were to be found a large number of useful accessories, including electrical novelties. A well designed motor-bicycle, priced at £35, was a prominent feature: this type is fitted with a vertically placed 2¾ h.p. motor, having a 70 mm. by 80 mm. bore and stroke. Generally speaking, it is built on standard lines, but a noticeable departure is an exposed inlet valve spindle, which if damaged can be repaired without having to remove any caps. The F.N. carburetter is fitted.

232. **Elephant Chemical Co.**, Neate Street, Camberwell, S.E. This firm had a large and varied assortment of accessories including calcium carbide and calcoid—a special form of carbide which it is claimed is not only very economical but generates gas more regularly. Solutions French chalk, tyre cements, wires, and general rubber goods were also exhibited. A novelty we saw was in the shape of a pocket dispensary, which contains all the articles generally required when small personal injuries are occasioned through falls and such-like mishaps.

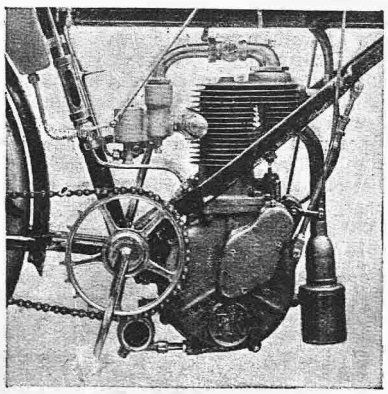
47. **The Motor Castings Co.**, 101, Gray's Inn Road, London, W.C. A novel two-speed gear for motor-bicycles was exhibited here. This combines in one mechanism the following advantages—Two speeds, free engine, chain drive, spring clutch and great compactness. The whole gear and chain can be enclosed in a neat oil-retaining gear case. Castings for, as well as the complete, De Dion pattern engines were shown, in 2¾ h.p., 3½ h.p. and 4½ h.p. sizes, all air-cooled; also a 6 h.p. water-cooled engine, which was shown fitted to a reversible propeller shaft, and two-bladed propeller for a 20 or 25 foot boat. The Motor Castings Co. are fortunate in having a large stock of the new (genuine) Longuemare carburetters, with automatic air inlet, for motors up to 3 h.p. The trade should note this.

235. **W. and A. Bates, Ltd.**, Leicester. Automobilists in want of first-class rubber goods cannot do better than go to this enterprising firm. They are specialists in this particular line, and have justly earned a good reputation for their products. Their exhibit at the Agricultural Hall included such things as outer covers, inner tubes, non-slipping bands, canvas patching, rubber tyres and wearing treads; the firm make a special feature of tyre repair work, and specimens of the methods adopted were on view. A preparation styled "Cutcure" for repairing cuts in the outer covers of pneumatic tyres was also prominently displayed: this is a plastic preparation which vulcanises when exposed to the air: from actual experience we know that it effectually closes up holes and cuts, and we strongly recommend it.



Two-speed Gear shown by the Motor Castings Company.

198. **Sutherland and Marcuson, Twickenham, London.** The speciality of this firm is the Umpire battery for X-Ray work and medical purposes. It is of the semi-solid type, with porous separator, corrugated on one side to allow the free escape of the gas and for the circulation of the electrolyte. Batteries of this description are suitable for induction coils, working motors and supplying current for incandescent lamps for carriage lighting. Owing to the method of construction the internal resistance is very small, so that high rates of discharge can be taken from them without injury. These cells are in good demand for ignition purposes.

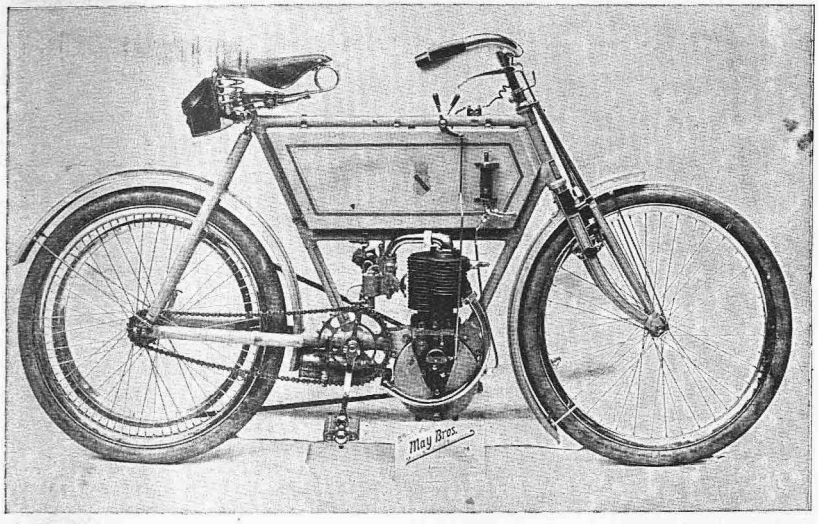


F.N. Engine, showing new lubricator.

236. **Black Pneumatic Tyre Co.**, Glasgow. Black tyres for motorcycles and quads and made from Moseley rubber and fabric attracted considerable attention at this exhibit. Solution, tyre repair shields, and air tubes were also noticeable. Flap covers for replacing worn out wired covers figured amongst the novelties, as also did the Clydesdale covers which have an improved non-slipping tread: these latter are specially manufactured for the firm by D. Moseley and Sons, so they need no recommendation from us.

192. **James J. Duffy, Carrickmacross, Ireland.** The exhibit of this firm consisted of a special form of spring claimed to be a universal non-vibrating device, applicable to cycle frames, front forks, saddle springs, etc.; in fact, in every position where vibration is known to exist; but especially is it suitable for motorcar springs. The principle on which it is designed is as follows:—A flat spring is so bent that it permits a spiral spring to be placed in tension between its points, somewhat in the form of the letter "C," with the upper and lower points elongated so as to pass each other with the spring between. This idea, if properly carried out, should act in the manner described, as it permits of the tension being easily adjusted.

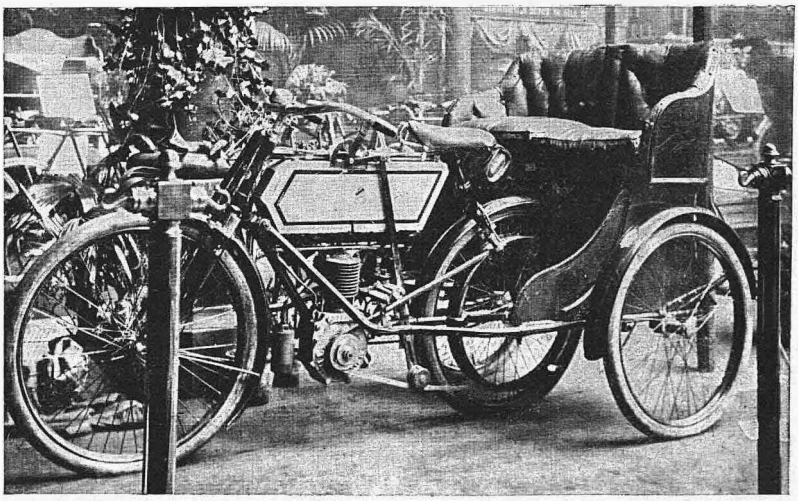
129. **A. W. Wall, 51, Farringdon Street, London, E.C.**, exhibited the Roc motor-bicycle, a machine having numerous novel features, and which proved a most interesting exhibit. The motor is 4 h.p., mounted vertically, and the frame is of extra length in the wheel base. Transmission is by V belt on to a rear pulley, constructed in a novel manner from steel flanges stamped out. The inside of the groove is lined with a non-slipping fabric, which should give an excellent grip. The ignition is another special detail, consisting of a small magneto dynamo driven by chain, and working through a special induction coil to an ordinary spark plug. The rear belt rim is so devised that it provides a free engine at will. There is a clutch on the inside of the wheel, and this can be put in and out of action by a foot lever. There are no pedals to this machine, but substantial foot rests are fitted. The sample frame also shown was a most substantial piece of work, the head being especially strong. The front forks are duplex. A handlebar switch, extra petrol capacity, vibrationless saddle, spray carburetter, and sight feed lubricator are good features. A well designed twin cylinder machine of 4 h.p. was also shown. The brake gear and clutch lever have a combined action, and there are numerous detail improvements.



Motor-Bicycle exhibited by May Brothers.

171. **May Bros**, Clapham Road, London, S.W., exhibit comprised six handsomely designed and exceptionally well finished motorcycles, which attracted numerous visitors, especially as the stand was situated in the entrance. Various makes of engines of different powers are fitted, including M.M.C., Minerva, Fafnir, Rex, and De Dion. The most striking machine, however, was one with a 4½ h.p. De Dion motor, which is specially designed for racing purposes.

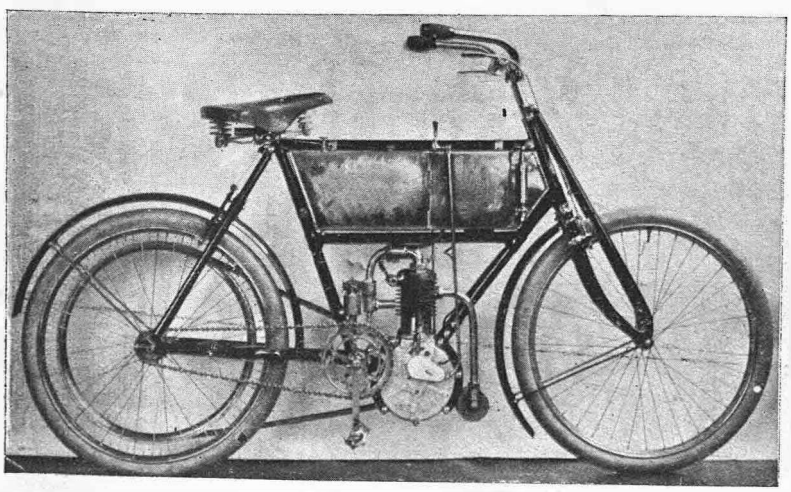
23. **Terrot and Co.**, Dijon, France. Four motor-bicycles of 2¼ and 2¾ h.p. were staged here. The engines themselves do not possess any special features, but in each case a new form of silencer is fitted. The sparking plug, too, is attached to the combustion chamber in a novel manner, the sparks being seen through a glass observer. We hope to be able to describe and illustrate this in a future issue. Powerful brakes are fitted, one of which acts as an interrupter. The carburetter is the well-known and widely used F.N. The machines are belt driven, and are similar to those which have performed so well upon the Continent.



The Cosi Car.

The Cosi-Car Co, Ltd., 53, Warwick Street, Regent Street, London, exhibited the Cosi-Car. It is an attachment that fits centrally over the driving wheel of the motor-bicycle, and is made to carry one, two or three passengers. It can be manipulated from the saddle, or by means of a special handlebar. The body is of the "Tonneau" pattern in aluminium, and room for luggage is provided under each seat. It is adjustable as to load, so that the weight can be equalised between the wheels of the car and the back wheel of the cycle. The price is 20 guineas. This exhibit was at the Stanley.

316. **Reliance Engineering Works**, Coleman Street, Southampton. The N.A.B. spring seat pillar and handlebar shown at this stand have been somewhat improved for 1904, but the principle of ball-bearings between the two moving parts remains the same. A new method of controlling the carburetter and throttle on motorcycles was also shown. The handlebar is provided with a sliding knob near each handle. These knobs are moved by the thumbs, and, by means of Bowden wires actuate the carburetter lever and throttle lever.



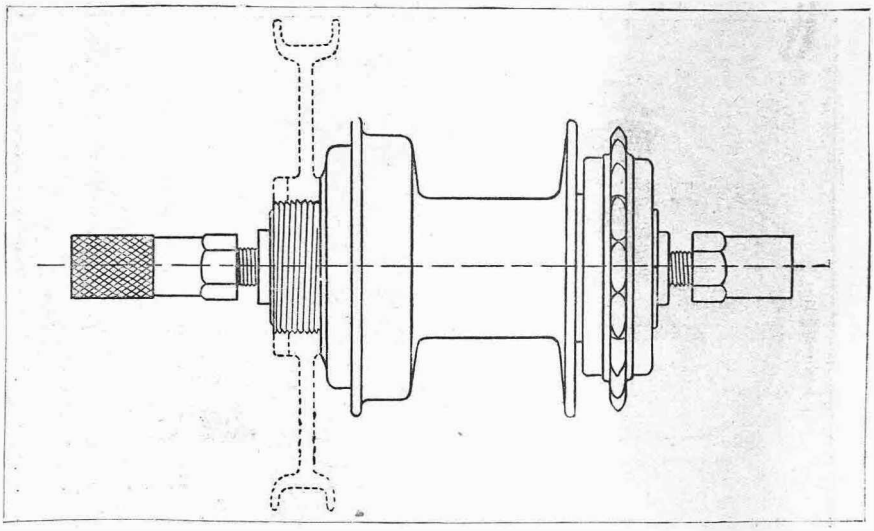
Motor-Bicycle shown by Terrot and Co.

110. **Geo. Lyons and Co., Ltd.**, East Street, London, W. The Trafalgar motor-bicycle and flexible side-carriage was shown in various patterns, powers and finish. The 3½ h.p. engine is situated in the popular vertical position, and strongly bolted into the cycle frame. The axle of the near wheel of side-carriage is brought seven inches behind the centre of back wheel of the bicycle, the two machines being connected by a hinged flexible joint, and a rubber lined clip. This enables the cycle rider to balance and steer his machine just as if it were free.

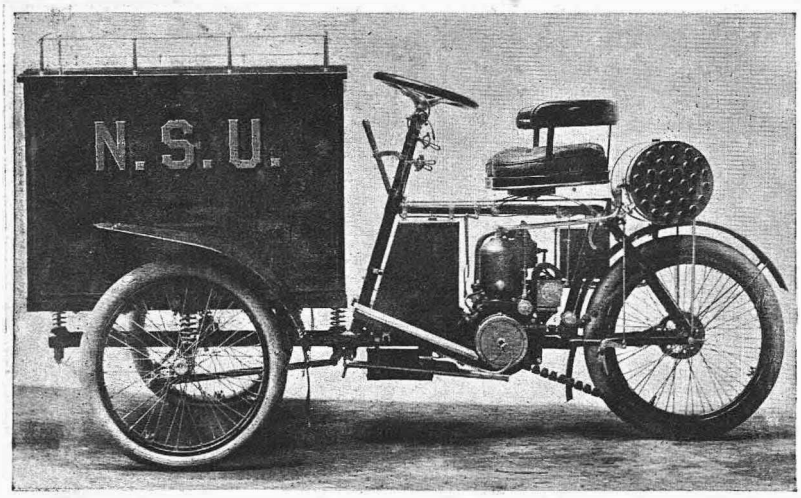
210. **F. J. Anderson**, Furnival Street, E.C. The Elswick motorcycle belt which is so widely used was prominently displayed at this stand, situated in King Edward's Hall. It is of V section, and is made from chrome-tanned belting, with two insertions of sailcloth. It is closely copper wire sewn. A non-slipping fibre cement pulley covering is undoubtedly a very good innovation. A good dressing for belts, styled Strapoline, was also to be seen, as was a clutch for providing a free engine, and a new form of speed indicator for cars.

The N.S.U. Co., Neckarsulm, Wurtemburg, Germany, exhibited at the Stanley the delivery car illustrated. It has a 3½ h.p. water-cooled engine, with mechanical inlet valve and magneto electric ignition. The steering is by inclined pillar and wheel, and radiator system is carried at the rear. The transmission is by a combination belt and chain, with jockey pulley adjustment. Instead of an ordinary saddle, a cushioned seat is provided. A spray carburetter is used.

Hub Two-Speed Gear Co. For over a year the Hub Two-speed Gear Co., Ltd., of Salford, Manchester, have been experimenting with a variable speed device for motorcycles. The experimental stage over, they have been able to produce a piece of mechanism which is not only as ingenious and as beautifully made as their widely used hub for ordinary cycles, but which is likely to be equally effective. As a matter of fact (as the illustration shows), the motorcycle hub is to all intents and purposes a larger model of the older device, but stronger, and especially adapted for the work it has to fulfil. It differs, however, from the cycle hub, inasmuch that in addition to two independent ball-bearings for the wheel, it has a set for the sprockets, thus taking off all the strain from the internal mechanism. It is worth noting that the hub is adapted for either belt or chain drive, and can be fitted to any standard motorcycle. It is operated by a lever, fitted to the top rail of the frame. By pushing this forward the high gear is obtained; the low gear is secured by an opposite movement, whilst an intermediate position gives a free engine. As the result of tests, the makers have decided on a gear ratio difference of 24 per cent., as they consider this to be the most suitable for the general condition of the British roads. We may say that several well-known firms have examined the new model, and are so pleased with it that they have decided to adopt it as soon as complete arrangements are made for its manufacture. We shall shortly be testing one, so we shall probably have occasion to again refer to the mechanism in an early issue from a practical point of view. The feature of its being adaptable to any machine is a specially valuable one, as this will enable a motorcyclist to avail himself of the advantages of a two-speed gear without heavy expenditure on alterations.



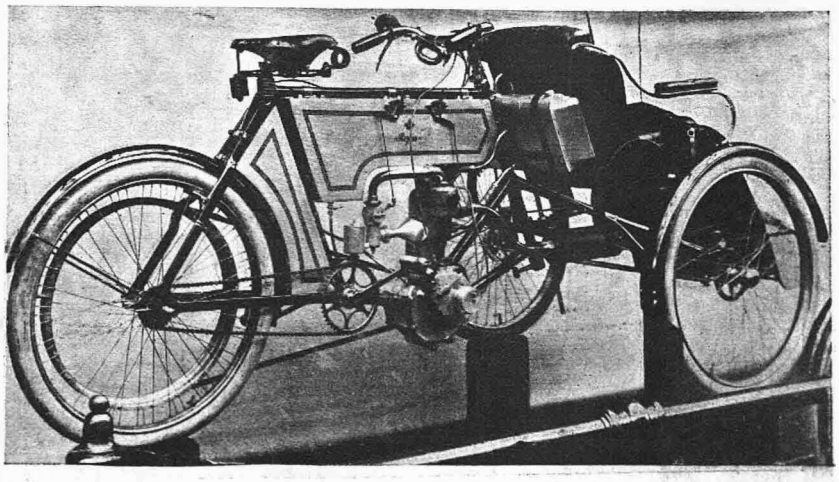
The Hub Two-Speed Gear for Motorcycles.



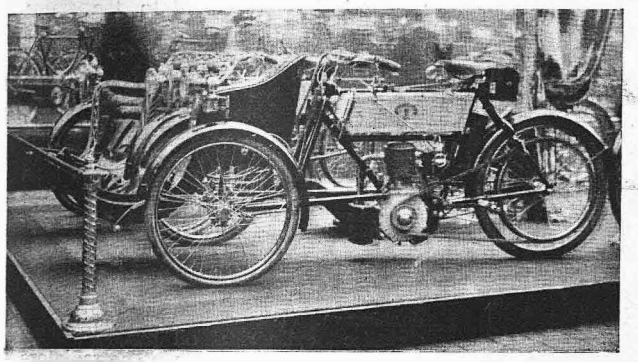
Delivery Motorcar, exhibited by Neckarsulmer Fahrradwerke, Wurtemburg.

106. **Raglan Cycle Co., Ltd.**, Coventry. Last week we referred to the Raglan motorcycle and fore-carriage exhibited by this company at the Stanley Show, but the illustration which appears on this page was crowded out. The cycle and car complete weigh 200lbs.; the engine is 3¾ h.p., water-cooled, and the drive is by belt. The apearance of this combination is smart and business-like.

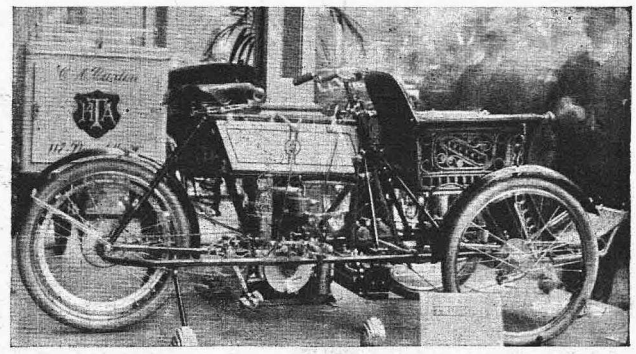
94. **J. E. Hutton, Ltd.**, 81 and 83, Shaftesbury Avenue, W. We were unable to comment on this company's exhibit in our last issue, as the stand was not quite ready for inspection when we first visited it. However, we need hardly say that the display was well worthy of the enterprise of the concern. Several excellent models of Princeps motor-bicycles were staged. These were of two types—chain and belt —and of various powers. We were particularly impressed with a 4 h.p. chain-driven twin-cylinder model, attached to a well-designed and easily steered fore-car. The engine, which has a bore and stroke of 70 mm. by 72 mm. respectively, can be freed by the operation of a combined cone friction clutch and spring drive mechanism, fitted to engine shaft, and



Raglan Fore-car shown at the Stanley.



The Riley Fore-carriage.

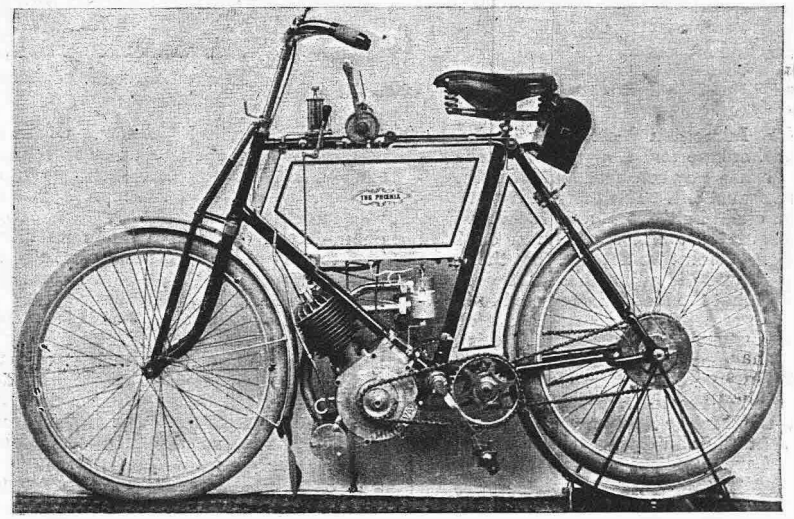


The Triumph Fore-carriage.

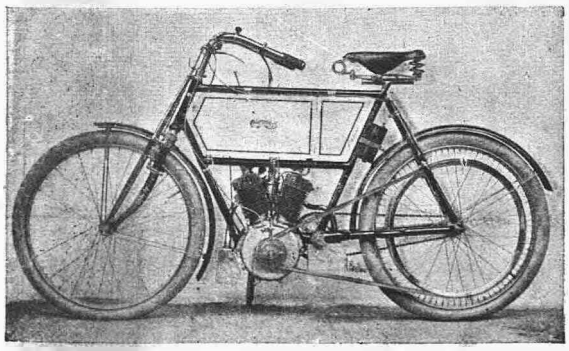
carrying the chain wheel. It is put into action by the use of a small lever, which permits the engine to be started before the rider mounts, or to be stopped for coasting and cooling purposes. It is claimed that the gradual and progressive engagement of the clutch prevents any jarring strain on the chain when starting the machine, or when running at slow speeds, and that, with the action of the spring transmission, a smooth drive is obtained. Special adjustable valves are fitted, while the Vaur's float feed spray carburetter is adopted. The commutator is of special design, and by its use only one coil is necessary for the two cylinders. The frame is strongly built and nicely finished, and the forks are of the girder type. The wheel base is ample—49½in. The power of the engine is conveyed to the road wheels by a Hans Renold ⅜ths pitch motor chain, and the drive being positive no power is lost. An ingenious variable gear and free engine pulley is attached to the belt driven models. In fact, it is, we believe, the only appliance at present invented for providing a gear variable at will and free engine, in conjunction with belt driving.

The Riley Cycle Co., Coventry. The Riley tri-car, which is illustrated on this page, is fitted with a 3½ h.p. water-cooled engine. This is mounted vertically, and the power is transmitted by a long V belt. It is convertible, and has an additional bearing close to the point where the rod is coupled to the steering post. This arrangement, which was adopted about five years ago on the Riley quadricycle, gives a very rigid form of steering. The car is luxuriously upholstered, and is coach-built.

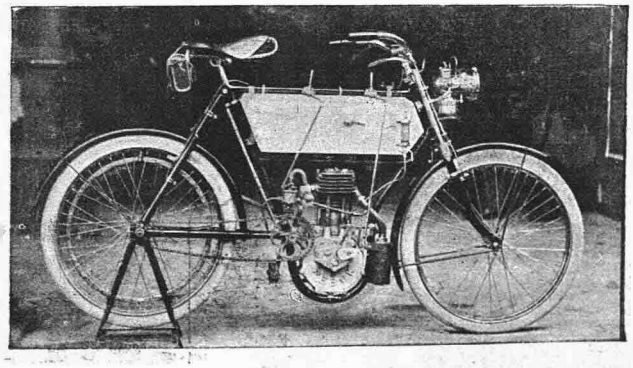
Mr. Romain Talbot, of 67, Rue de la Victoire, Paris, had a distinct novelty in the Zedel 2¼ h.p. engine for motorcycles, inasmuch as the inlet and exhaust valves are operated by one cam only, which performs its work by setting in motion a series of discs acting directly on the valves. Not only is there simplicity of action, but it is claimed the method ensures accurate timing. The Zedel carburetter is also an interesting device. For cleaning purposes it has a patent spring needle, worked from the outside. It is, therefore, operated without having to open the carburetter, an advantage which will commend itself to many. Mr Talbot is the sole agent for the British Colonies and Germany for the Zedel motor and carburetter; but the English trade can be supplied with complete machines fitted with both, or the carburetter may be obtained separately. This motor should be heard of a good deal in future. It has some novel and interesting new points.



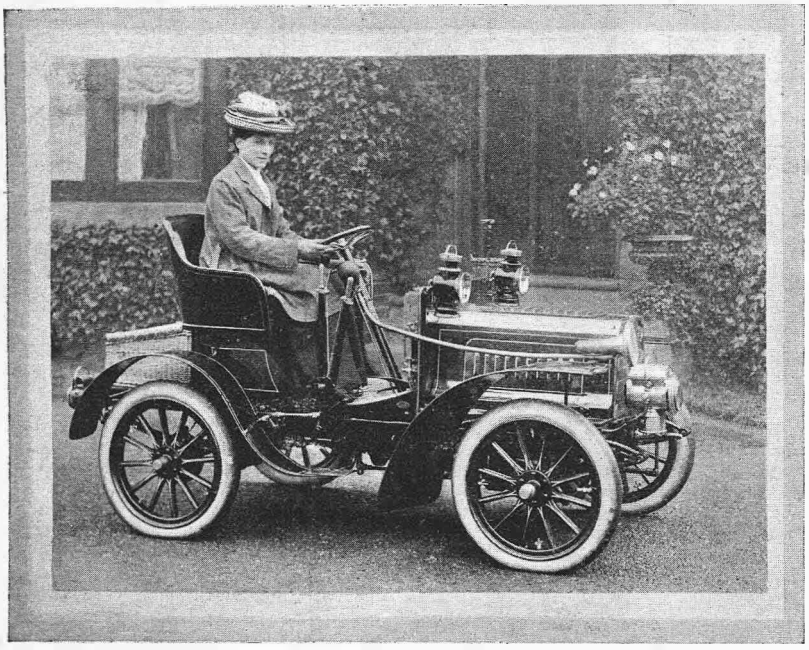
The Phœnix Motor-Bicycle with two speed gear.



The Princeps.



The Pebok.



The 6 h.p. Mobile Light Car.

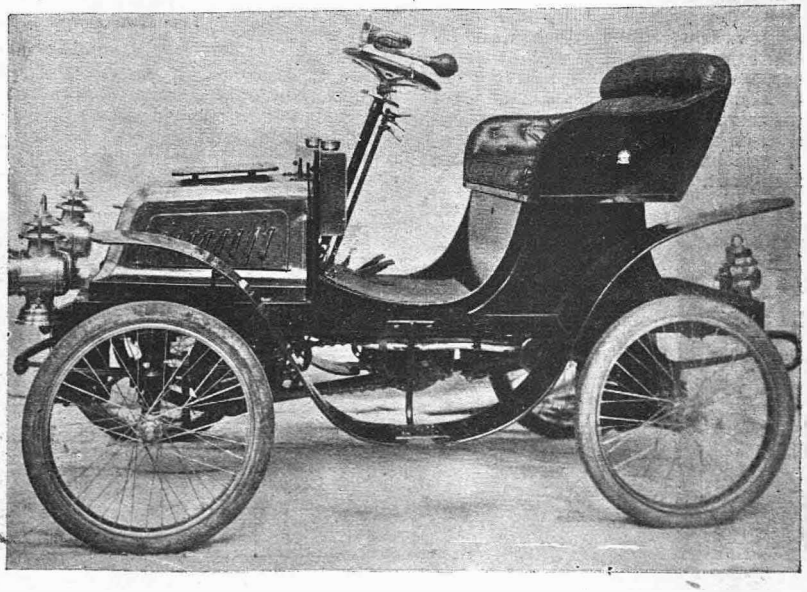
The Edmonton Motor-Bicycle has a 2¾ h.p. engine and Longuemare carburetter. It has Bowden back and front brakes and exhaust lift. The drive is by Brampton's chain-belt from a sprocket wheel on engine to a flat section rim on back wheel. A point we noted is that the down tube of frame is adjustable. We were informed that the idea is introduced to facilitate the attachment or detachment of the engine. The price is £29, and it is sold by the Edmonton Motor Co., Edmonton.

The Mobile 6 h.p. Car. In placing upon the market the latest 6 h.p. Mobile light car, the Mobile Motor and Engineering Co., Ltd., John Bright Street, Birmingham, have complied with a long felt want in supplying a voiturette built entirely on the principle of the more expensive heavy cars. The illustration plainly shows the good features, and the smartness of design, and the finish of the body, which is made by one of the leading French body makers. The car is fitted with a genuine De Dion 6 h.p. engine; it has three speeds forward and one reverse, direct drive on top speed, governed engine. Panhard type of sliding gear is used to such advantage that most hills can be taken on the second speed, in this way accounting for a good average speed. On the level the car is claimed to be capable of attaining 28 miles per hour. It is fitted with artillery wheels, and 28 by 3½in. Dunlop tyres. The long wheel-base and special long springs add greatly to the comfort of riding. Other special features of the car are its absolute silent running, the Mercedes pattern bonnet and radiator, bucket or plain seats, umbrella or car basket in front on the dashboard, and a waterproof cane basket for luggage being attached to the back. The price is 170 guineas, with a six months' guarantee. Besides this car the Mobile Motor and Engineering Co., Ltd., supply a 9 h.p. Mobile car, fitted with a genuine De Dion engine, which they list at 235 guineas, and a 12 h.p. Mobile car, fitted with a silent Aster engine, at £350.

The Holdsworth Light Car. Of the exhibits shown by the Light Car and Motor Engineering Company, Birmingham, at the Stanley Show, the most important was undoubtedly the Holdsworth 5 h.p. chain-driven car, which made its initial bow to the public. This is a carefully designed, strongly built, and rakish looking vehicle for two persons, and for 99 guineas it should compete with almost anything on the market. The body is finished and upholstered in best carriage style, and the seat is built up and panelled, with a raised seat for the comfort of the passengers. The framework is of ash, flitched with steel plates, and is one which looks thoroughly capable of standing up to its work. The springs are semi-elliptical, and are hung by shackles to scroll irons attached to the frame in such a manner that they strengthen the corners. For the purpose of carrying the engine, and two-speed gearing, and also to strengthen the frame [illegible] tions of channel steel are fitted. The back axle is exceptionally strong. The steering is by the usual wheel, the column being particularly rigid and secure against road shocks. Under the wheel are fitted the necessary levers and quadrant for operating the change speed, throttle, sparking and air supply. The petrol tank is placed under the seat, and a combined water and oil tank is attached to the full width of the dashboard. The oil compartment has a sight-feed cylindrical oil pump, worked on the pressure principle. The radiators have an extra large cooling area, and the bonnet, which is of a Mors pattern, is carried on an extension of the frame in front of the dashboard. The wheels are of metal tangent spoked. All the parts are manufactured by experienced workmen in the firm's own factory, and as a result they are able to guarantee the workmanship. From a close examination of the car we are able to state that it is remarkable value for its price, and we are not surprised that it created an exceedingly good impression at the Show.

The "Ludgate" Light Runabout was exhibited at the Stanley Show. It has two speeds, and the engine, which is water-cooled, can be freed. The drive is by a chain, the sprocket wheel (ordinary cycle type) being fitted to the rear axle. Slackness in the chain is taken up by a jockey pulley. The type of steering is optional—i.e., it can be by wheel or lever, according to the choice of the purchaser. Twenty-eight inch wheels have been adopted, and these are shod with Clincher motor-tyres. The total weight is said to be only 2 cwt., the seating capacity is for two, and the price is 60 guineas. Although the car when we inspected it was minus a bonnet, we understand that one is fitted, and that provision is made for keeping the radiators cool.

[There are still a number of interesting new things to be described and illustrated, and these we shall deal with in our news columns in future issues.—ED.]



The Holdsworth Light Car.

MOTOR EXHIBITS AT THE NATIONAL SHOW.

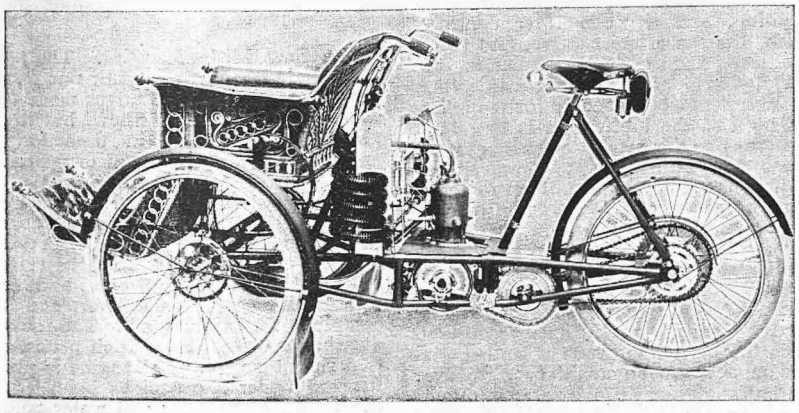
43. **C. R. Base**, 309, High Holborn, London, had a very attractive exhibit of all classes of clothing for motorists in fur and leather. Also a new driving apron named the "Kozifit"—a capital article which should appeal to the motorist—and some good lines in caps and gloves for motorcyclists. High quality is a feature of C.R.B.'s specialities.

2. **The See Motor Car Supply Co.** 151, Oxford Street, London. The Lamaudière motor-bicycle, which competed in the last Bordeaux-Paris race was on view during the Show. The Lamaudière has a 2¼ h.p. engine situated centrally in the cycle frame—in fact the engine takes the place of the usual down tube. An outside fly-wheel is used, and a free engine is obtained by lowering an adjustable jockey pulley (running on balls) and allowing the belt to slip. At Stand No. 65, The See Motor Car Company were showing the Samson-Hutchinson non-slipping puncture proof tread for motorcycles and cars: this is composed of three layers of specially prepared chrome leather, studded with flat headed steel rivets.

55. **The "Rona" Motor Lubricant** was shown here. This is a special preparation for bearings and chains, and is not affected by heat. Several varieties of rubber preparations made by the Rona Chemical Company, Bradford, were also shown.

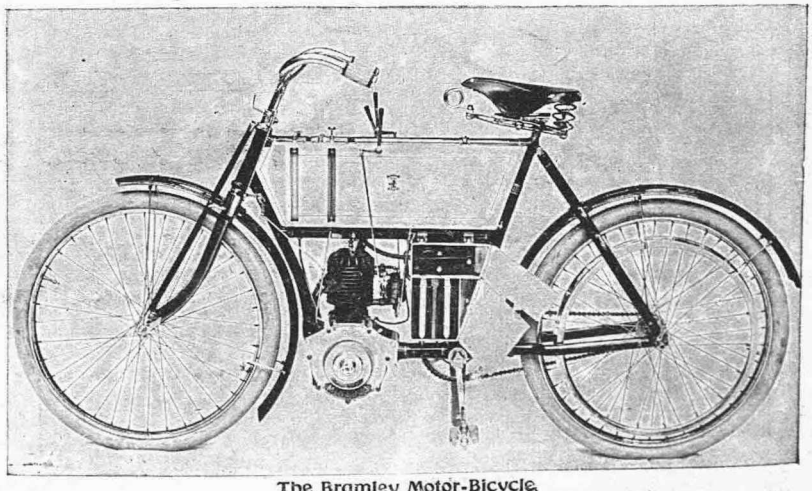
The Booth Motor Syndicate, Putney, exhibited the Bramley motor-bicycle, fitted with a 2¾ h.p. motor, built into the frame. It is provided with mechanical inlet valve and trembler coil ignition. The carburetter is a Longuemare, and transmission is by V belt. A special feature are the gauge glasses, indicating the quantity of petrol and oil in the tanks. Two accumulators are fitted, provided with a two-way switch, and all wiring is, as far as possible, concealed in the accumulator box. This latter can be seen from the illustration. The oil pump is fitted inside the tank. The free-wheel used is a special form, made as part of the hub. Two rim brakes and duplex forks are fitted. The firm make five types of machines, including a 3½ h.p. fore-carriage and a h.p. lady's machine.

The Raleighette. We now illustrate the new 3½ h.p. Raleighette, which, it will be seen, is practically a three-wheeled car for two persons, the driver sitting at the rear on a large saddle, and the passenger sitting in the fore-carriage seat. The frame is specially designed, and is an excellent piece of girder work. The space between the driver and the engine is clear, and he is abie to mount and dismount with the utmost ease, and to keep within the compass of the machine. The engine is water-cooled; the large tank in front has five compartments, and carries the radiators on each side. The upper compartment of the tank is the water reservoir; below this on the left is the oil reservoir, and below that again is the compartment for coil; whilst on the right hand side of the tank there are two compartments, one for tools and parts, and the other for the twin accumulators. The tank between the seat post and rear wheel is for petrol, with a further useful space below. Thermal circulation is employed for cooling, thus dispensing with the complication of a pump. The engine drives through a clutch on the left-hand side of the crank shaft, the clutch being thrown in and out by pressure on a small pedal. The power is then taken by a chain to the countershaft, whence two chains carry the power to the rear wheel. On the left side is the high gear, and on the right the low gear, one or other being thrown into engagement with the hub by means of a twisting handle. The midway position provides the free engine. Band brakes to the two front wheels are provided. The new Raleigh method of controlling the engine by varying the lift of the exhaust valve is adopted, a twisting handle being used for the purpose. The engine is fed from a Longuemare carburetter. The new Raleighette should be a thoroughly efficient little vehicle, and should be good value at the price quoted, namely, £95. It is certainly a smart and serviceable looking vehicle.



Raleighette new water-cooled Fore-car.

127. **Collier and Sons**, Plumstead. The Matchless Motorcycle was shown on this stand, provided with a 2¾ h.p. De Dion or M.M.C. motor, fitted diagonally to a specially designed frame. It presents a very powerful appearance, and its capabilities have been well proved during the past season. All the controlling levers are fitted with fine-toothed ratchets so as to prevent them slipping by vibration. A two-way switch, two 20 amp. armoured P. and R. accumulators, and a De Dion coil and De Dion float feed carburetter, with a tank to hold 1¼ gallons of petrol are also fitted. A speciality is an automatic swing crank, which allows one of the cranks to be back-pedalled to the same position as the other, the releasing of the pressure on the crank allowing it to resume its proper position. This firm also showed a very neat belt punch, capable of cutting a rivet out. It is well made in silver steel so as to prevent undue wear.

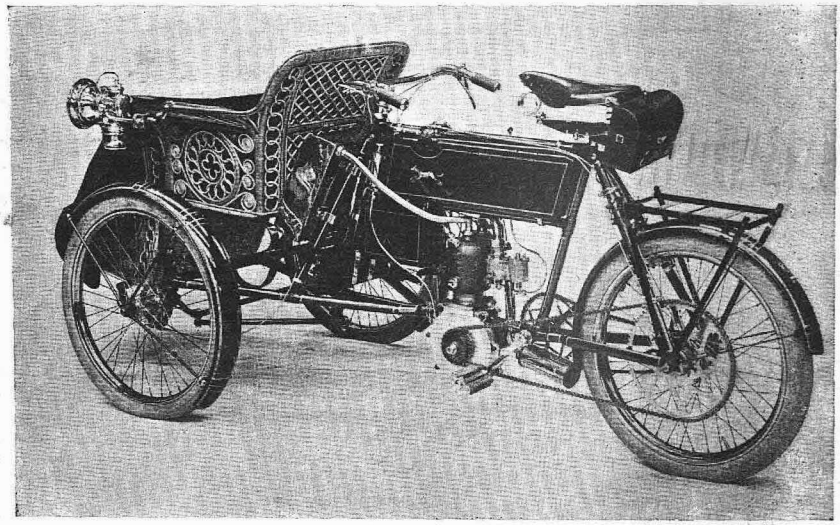


The Bramley Motor-Bicycle.

102. Messrs. J. R. Richardson and Co., Ltd., of Lincoln, are newcomers in the automobile world, but they have already created a fine impression with their 12 h.p. Richardson cars. These cars are well designed, being roomy and comfortable, whilst the mechanism is of the best and latest type. We hear with a considerable amount of pleasure that a 6 h.p. car is contemplated, particulars of which will not be available for some time, however.

98. A. Darracq and Co., 483, Oxford Street, London, W. This well-known French firm displayed a large selection of Darracq cars with engines from 8 h.p. to a racing 40 h.p.: all these have propeller shaft drive. A novelty is the pressed steel frame and under apron combined: in this, the side members of the chassis frame are pressed out of sheet steel, and a continuation of these extends under the engine and gear box, completely casing these details in from mud, etc. The thickness of the steel is graduated, giving plenty of strength in the side members, but being much thinner where it acts as a mud shield only. Some beautifully finished chassis were shown; also some fine specimens of coachwork. All Darracqs, except the single cylinder 8 h.p. engine, are fitted with the mechanically operated inlet valve.

129. The Wearwell Motor Co., Wolverhampton, are adopting the name of "Wolf" for their motorcycles. They had an extensive exhibit of motor-bicycles, several being fitted with fore-carriages. One of these has a 3¼ h.p. water-cooled engine, chain drive, and free clutch; this makes quite a little car, and is splendid value for the £75 asked. The standard motor-bicycle has a 3¼ h.p. air-cooled engine completely controlled from the handlebar by means of Bowden wires: the application of the back wheel rim brake cuts off the current; the throttle is worked by a twisting handle grip. Ignition is by the usual coil and accumulator system, the contact breaker being of a type giving the best results. The Wolf fore-carriage is specially easy of attachment and detachment; and it is generally admitted that there was no better type exhibited at either Show. All further particulars may be obtained by dropping a line to the firm's address, Pountney Street, Wolverhampton.

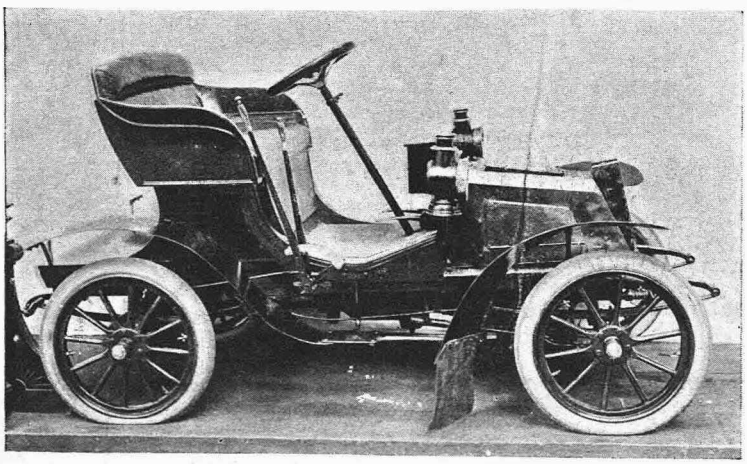


The Wolf Motette, exhibited by the Wearwell Co.

24. Cadogan Garage and Motor Car Co., Ltd., Sydney Street, Chelsea showed two motor-bicycles, and two cars. The motor-bicycles have 2¼ and 2¾ h.p. Antoine vertical engines, bolted into a loop in the frame. Flat or V belt is fitted, at purchaser's option. The Antoine has two special features:—A band brake on the back wheel belt rim, actuated by back pedalling, and a "one lever control," which lifts the exhaust valve, and closes throttle. The cylinder radiators are specially deep, giving extra good cooling. The petrol capacity is equal for 100 miles' running and the lubrication is by pump. Ignition on the usual electric system. Prices are £40 and £45 complete, including lamp, horn and full kit of tools. The De Cosmo cars have tapered channel steel frames, propeller shaft and bevel drive, three speeds and reverse, throttle lever on steering wheel and other standard fitments; they also embody several real novelties; the steering coupling rod is situated behind the front axle. Carburetter is the F.N. improved; a leather diaphragm actuates an auxiliary air valve, à la Krebs. Price £840 for a 24 h.p. four-cylindered car.

Mr. Stephen A. Marples was to have exhibited the Mercury car at the National Show. This is of Continental make. Unluckily, in the course of shipment, the car was dropped by accident, and the front of it badly damaged. This accounted for its non-appearance. Two good engines for motor-bicycles were shown, as well as the Windora car, on Mr. Marples' stand.

The New Little Star Car. The 6 h.p. Little Star was not ready for our inspection when our representatives made their round of the National Show, but it was placed on exhibition in time for the public view. This, the latest production of the Star Engineering Co., of Wolverhampton, is constructed on the very best lines. It seats two persons, there is ample room to move about, it is under complete control from the driver's seat, it has a long wheel base, and therefore should be a good steerer, and it is complete in all particulars. The frame is of ash, strengthened by flitch plates, carried right through. The engine is placed forward under a capacious bonnet, with the combined radiator and water tank of exceptionally large capacity a fixture in front. The engine is single cylindered, gives 6 h.p., drives through a clutch and gear box to the countershaft, two side chains taking the power thence to the road wheels. The gearing is of the sliding type, giving three forward speeds and a reverse, and is of ample strength. A foot-actuated brake is applied to the countershaft, and a hand-applied brake acts on the drums on the road wheels. A novel form of commutator with wipe contact is fitted, the device permitting of the most ready and simple adjustment for any wear. The body is comfortable, and large tyres are fitted, and as the car is well sprung it should prove exceedingly comfortable. The price is £175, and we feel certain that it will only be a large output which will make the type profitable to the makers at this price. The Star Company have earned a high reputation for the excellence of workmanship in their large cars, and this will be fully maintained in the new production. We hope to deal with the car in fuller detail on a later occasion.



The Addison Voiturette.

THE NEW REGULATIONS.

The Local Government Board's new series of regulations under the Act of 1903 comes into force on January 1st next, and that the County and County Borough Councils will shortly be ready to receive applications from motorists is shown by the fact that the publishers to the Local Government Board have issued their price list of registers and forms, so that it is probable that very soon after this appears in print the issue of numbers and licences will have commenced.

A motorist has new duties imposed upon him by these regulations, but it cannot be said that they are onerous. There are three matters for him to attend to.

1. To take out a driving licence.
2. To register his car or motorcycle.
3. To pay the tax to the Inland Revenue.

The licence to drive must be procured from the council in whose jurisdiction the applicant resides, but a car or cycle may be registered with any authority. It is scarcely necessary for us to give a list of the authorities. They consist of the county councils of every county or part of a county, and, in the case of the important towns and cities in the United Kingdom, of the councils of the county boroughs.

In the whole of these islands there are 127 county councils and 84 county borough councils. In the case of the former communications must be made to "The Clerk to the County Council of ——, County Council Offices, ——," and with the latter to "The Town Clerk, Town Hall, ——." The first letter should contain a request for:

1. An application for a driving licence.
2. An application form for the registration of a motor vehicle.

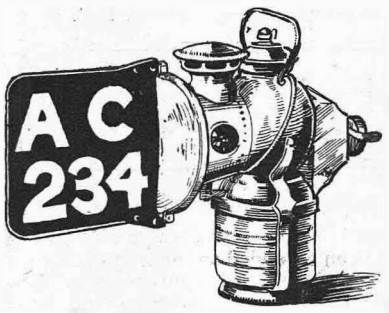
The forms themselves are clear and explicit, and no trouble will be found in filling them up correctly. Four of the questions on the licence application form, however, will be unanswerable this year, because they deal with former driving licences, endorsements thereon and disqualifications. A remittance must accompany the applications, the sum being as follows:—

	£	s.	d.
For registration of a car	1	0	0
For registration of a motorcycle		5	0
For driving licence		5	0

The driving licence remains in force for a period of 12 months from date of issue and may be renewed. The registration of a motor vehicle holds good until it be cancelled. Each vehicle owned by a motorist must be separately registered and a fee paid for each. This fact cannot be too greatly emphasised, because we have on more than one occasion come across persons who laboured under the impression that they had but to register one vehicle and get a set of numbers, and then use them on any car or cycle they pleased. The aim of the law is this: every driver on the road shall be licensed, and every motor vehicle shall be registered individually and separately.

With the "copy of the entry in the register," which will be issued to the owner, the council will assign a separate number to each car, together with instructions as to the form and style of the identifying marks, and then the owner must decide upon the best method of numbering the car, taking into full consideration the council's requirements. Two alternatives are provided. The plates may contain in one line the letter or letters which constitute the distinguishing mark of the council and the number, or the letters and the number may be on separate lines. The long narrow plate will, no doubt, be in the greater favour with motorists. Each character must be white on a black ground, and must be 3½ inches high, and certain margins and spaces are provided for. The regulations permit of the plates being only just large enough to carry the mark, and they provide for the supply of the plates by the council if it thinks fit and if the owner so desires, otherwise the owner obtains the plates commercially, has the number painted upon them and affixes them to his car. Or he may have the number painted direct on to the car and it may, if thought desirable, be included in a design. The regulations state that the marks shall be fixed in such positions (one at the front and one at the rear of the car) as shall satisfy the council, the owner when applying for registration stating the positions in which it is proposed to place the plates. If the council is not satisfied with the positions proposed, it may direct the owner to fix the plates in better positions. In the case of a motorcycle (defined in the regulations as a two or three-wheeled vehicle weighing not more than three hundredweight) the front plate may project from the head of the machine, provided it has duplicate sides with the number on each.

Illumination at night has constituted the great problem, and the Board has greatly simplified matters by only insisting on the illumination of the rear plate. On cars this is easily accomplished by means of a side glass to the usual red coloured lamp. In the case of a motorcycle the driver is allowed to illuminate either the front or rear plate. To make matters easier still, different identification plates may be used by day and night and on different occasions, and as the number may be illuminated at night-time by transparency, reflection, or otherwise, the owner is not bound down to any particular method nor is he able to assert that the regulations are unworkable.



Various suggestions have been made to the Board in order to provide a practical method of showing a lighted number on a motorcycle, but the only one which has been referred to, in the letter from the Board to the Councils, is the one which we illustrate. This suggestion has been followed up by Messrs. Joseph Lucas, Ltd., of Birmingham, who are prepared to supply plates and fixings. We hope that they will arrange to supply the plates in various sizes, because a driver who has had a small number assigned to him will prefer to secure the advantages of the smallest plate possible. The method suggested by the Auto Cycle Club is the use of a large lens in the lamp, with the number painted on it or shown through a stencil. The latter method was put forward because it was at first intended that the councils should actually supply the devices, but a painted number on a glass front or the sides of a lamp should be even better, and it is possible, now that the Board has decided to allow motorists to supply their own number tablets. For the front daylight number, we would suggest a plate with clips on the back of it to attach to the girder tubes of the fork. The plate must be upright, and may be square or have rounded corners. Facing forward, it would be less conspicuous than if facing sideways. For the rear plate, the position illustrated in our issue of September 23rd last, namely, on the back of the luggage carrier, cannot be beaten, unless the plate be attached to the extreme end of the mudguard.

There are other provisions in the Order of the Board which are worthy to be known and understood by motorists. For instance: (1) it is not necessary that personal application should be made for the registration of a car; (2) the police authorities, other licensing authorities and Inland Revenue officers have access to the information contained in the registers, but other people must show reasonable cause and must pay a fee; (3) for the purpose of ascertaining the weight of a car or cycle, water, fuel or accumulators shall not be included; (4) provision is made for all disqualifying orders from the Bench being reported to the proper authority.

In order that our readers may be conversant with the requirements of the Law, we refer them to a list, given in our "News" pages, of publications which should be obtained.

The Motor
INCORPORATING Motor Cycling & Motoring

The Circulation of "The Motor" exceeds that of ALL other motor papers combined.

Conducted by
EDMUND DANGERFIELD
and WALTER GROVES.

Manager:
ERNEST PERMAN.

Proprietors:
TEMPLE PRESS, LIMITED,
7. 9. 11, 13. 15. ROSEBERY AVENUE, LONDON, E.C.

OPINION

Motorcyclists Secure Fair Treatment.

Motorcyclists may congratulate themselves upon the moderate treatment which has been extended to them by the Local Government Board. If the whole of the concessions originally asked for on behalf of motorcyclists have not been secured, the only exceptions are in those cases where the Board has made it clear that it had not the power to do as was desired by motorcyclists, but even in those cases concessions have been made which will go a long way towards smoothing away difficulties. This good end has only been secured by reverting to the course originally proposed by the Auto-Cycle Club at the conference between it and the N.C.U. and the C.T.C. The danger in being grasping is the risk of losing everything—even that which is justly due, and we regard the attempt of a certain section (backed up by a journal which, had it genuinely had the interests of motorcyclists at heart, would have been more discriminating and discerning) to secure the inclusion of the quad amongst motorcycles as having created a very grave situation. At one time the quad was undoubtedly a motorcycle, but the up-to-date articles are more entitled to be classified with cars than with the simple motorcycle. The draft regulations issued towards the end of October clearly reflected the impression conveyed upon Government officials by the effort to ring in the quad. They instantly saw that there is no dividing line between the motorcycle and the car and, therefore, proceeded to tar the one with the brush of the other. Only by deliberately abandoning the quad and drawing the dividing line at three wheels and a moderate weight was it possible to secure different treatment for the motorcycle to that which is being meted out to the car. And since the Board's acceptance of the conference's definition, the Raleighette has been placed on the market to constitute an even closer tie between the two types. If the line were drawn at three wheels, the fore-carriage and the side-carriage would be included, as is only right, but also the Eagle and Century tandems, which is not right, because they are cars. It was thought that the weight limit of three hundredweight would keep the classes apart, but along comes the Raleighette, which is in every sense a car, with its clutch, and its absence of pedals, and enters our fold! However, we are fortunate to have been able to lay down a clear line of demarcation and to secure differentiation between the motorcycle and the car in the regulations. The request for a small number tablet and one which should not be angular has been granted, but we are compelled to carry two, although we are given an option with regard to the position of the front plate. We are compelled to illuminate the plate at night because the Act enforces it, but whereas drivers of cars are obliged to illuminate the rear plate, motorcyclists may please their own fancy as to how the number shall be displayed after dark, so long as they do it. It is made clear that the trailer speed limit is abolished from January 1st. The charge for registering a change of ownership is only to be a shilling. The licence issued to a driver over 17 years of age will permit him to drive either car or cycle. All of these were asked for and have been secured. With regard to the possible closing of dangerous roads, each proposal will be dealt with on its merits, and the interests of motorcyclists will not be neglected in any instance of an application to the Local Government Board, for the Auto-Cycle Club will make a point of watching all such applications.

An Enlightened View upon the Narrow Roads Question.

The attitude of the Local Government Board with regard to Sections 8 and 9 of the new Act is in striking contrast to that of some of the local authorities which have lately been measuring up their roads in order to see which were narrow enough to come within the operation of Section 8, and with a view to getting them scheduled as unsuited to motorcar traffic. These Sections of the Act constitute a particularly dangerous weapon; but, fortunately, it is in the hands of a President who is both enlightened and unprejudiced, and apparently he intends that it shall not be too lightly used by those otherwise inclined. The circular letter which is issued by the Local Government Board to the local authorities points out that it has been well established that upon suitable roads and in suitable circumstances the maximum rate of speed may be approached with perfect safety; whereas, in other circumstances, serious danger might arise from a motorcar driven at a slow speed. It was in order to meet this difficulty that the law was strengthened so as to make a driver of a motor vehicle responsible for his misdeeds without reference to a question of absolute pace, and the new Act makes provision for identifying offenders and for inflicting severe punishment upon them. In fact, as the Local Government Board clearly show, the driver of a motorcar is under considerably more statutory restraint than heretofore, and he incurs a much more serious liability if he fails to observe the conditions imposed upon him. In these circumstances the Local Government Board assert that there is ground for expecting a diminution in the number of cases of furious driving and of disregard for other road users, and therefore they are disposed to recommend local authorities to refrain from proposing any extended resort to the powers of Sections 8 and 9 of the Act until it is seen that such a resort is indispensable. The Board points out that any widespread imposition of restrictions and special speed limits would not only be burdensome to motorists, but would involve local authorities in considerable trouble and expense in complying with Section 10 and erecting notice boards along the prohibited roads, or on those where the speed of cars was limited. These views will commend themselves to motorists as being at once reasonable and considerate, and we can only hope that the local authorities, in those few cases where it is necessary, will soon gain the necessary enlightenment to enable them to see the matter from the same point of view. At any rate, motorists must ensure that their voice is heard in protest against any proposed application to close any road or to restrict speed upon it, and we hope that the guardians of our interests will keep in touch with the Local Government Board, so that no application may be considered in the absence of representatives of automobilism.

NEWS.

40,000!

The circulation of "THE MOTOR" last week reached 40,000 copies.

We continue our description of interesting novelties at both Shows in this issue.

Exhibitors in the forthcoming Parisian Show are now taking possession of their spaces.

Maurice Fournier, of motorcyclette fame, has been enrolled under the colours this year.

Full details of the Local Government Board Regulations are set forth in this issue, and the subject is also dealt with editorially.

The Werner motorcyclette has been bought by an English Syndicate, which is on the point of forming a company, the capital of which will be £120,000.

In this issue our readers will find a most useful table of light cars arranged in order of price. This list is striking evidence of the wonderful growth of the movement fostered by "THE MOTOR."

At Los Angeles, Southern California, last week, Barney Oldfield still further reduced his motorcar record for the mile by doing it in 54⅘ secs. We give a portrait of Barney Oldfield elsewhere in this issue.

We regret to learn of the death of the Count Gaston de Chasseloup-Laubat, the pioneer of motor locomotion in France, aged thirty-seven. A thorough mechanical genius and a sportsman, France loses a great man.

The Car and General Insurance Corporation, Ltd., College Hill Chambers, London, E.C., are now in a position to accept insurances and give quotations and all necessary particulars to motorists who are desirous of effecting insurances.

"THE MOTOR" will have the first and best illustrated report of the Paris Show.

The two series of trials for electric cars, and for steam and petrol cars, organised by "Le Monde Sportif," and announced to take place the last week in November, have been postponed until next year.

The Chevalier Rene de Knyff, one of the most interesting of the many interesting personalities who competed in the Gordon-Bennett race last July, is in Germany examining the proposed courses for next year's race.

"Look!" said a visitor, gazing at van Hooydonk's Trimo with double belt drive. "He's got two belts, so that if one breaks——" An eloquent silence completed the sentence, as if imagination failed to picture the result of such a catastrophe.

At the Bowden stand people stood transfixed before an engine-room indicator, signalling frantically "Half-speed ahead," "Slow astern," and similar nautical expressions, whilst lower down inquisitive visitors jerked a handle backwards and forwards, and wondered what was happening at the other end.

A Reliability Trial for touring cars is announced by the French Press for a fortnight in March next. The run will be from Paris to Rome in daily stages. Speed on the road will not enter into the trial, as times of departure and arrival will be neglected. The object of each car will be to achieve the lowest number of bad marks for: power relative to weight carried; cost of chassis; fuel and oil consumption; speed in special tests on the level, uphill, and over a course of half a kilometre (550 yards), starting from rest, and pulling up within a given line; brake trials, etc.

Municipal authorities in Germany are beginning to replace their old types of fire-engine with motor vehicles.

A Bill has gone before the German Federal Government for the uniform regulation of the motor traffic throughout the Empire.

The German Cyclists' Association (Bund) is arranging for a motorcycle Reliability Run from Frankfort-on-the-Main to Berlin early next season.

The English M.P.'s availed themselves largely of motor locomotion in Paris last week. A large number of cars were placed at their disposal by the French A.C.

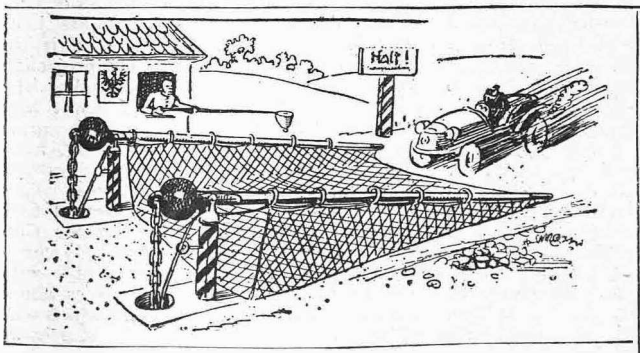
The conference called to discuss the advisability of forming an Automobile Federation will meet at the Inns of Court Hotel, London, on Wednesday this week.

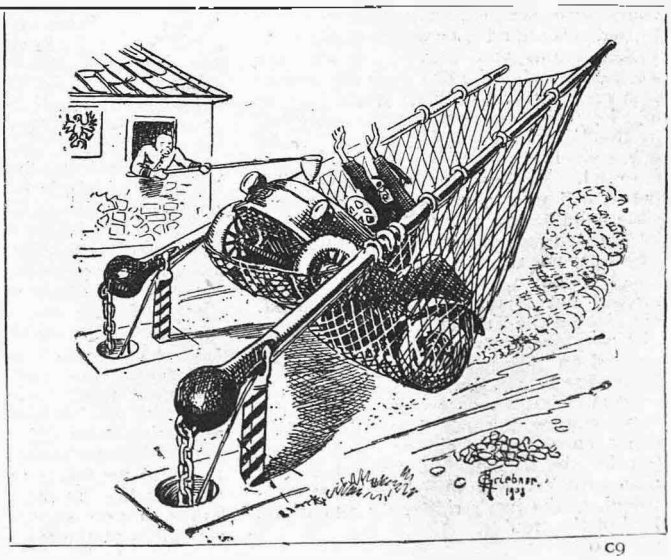
At Pittsburg, Pennsylvania, the occupants of a motorcar were shot at by boys, one of them being hit in the head and stunned, and another having his cap shot off. The assailants made good their escape through a wood.

The value of the Selden patent, on the strength of which the Association of Licensed Automobile Manufacturers proposes to "corner" the motorcar industry of the world, is to be tested in the Law Courts, the Association having entered an action against the Ford Motor Co., of Detroit, who, it is understood, will contest the suit to a conclusion.

At the Stanley the representatives of Messrs. Bowden made an unexpected raid upon several stands, where the motorcycles were fitted with alleged foreign infringements of the Bowden patents. The proceeding was carried out so quietly that few of the spectators knew what was happening. Some of the firms involved had Bowden brakes fitted at once to replace the captured specimens.

The General Accident Assurance Corporation, Ltd., 13, Pall Mall, have appointed an advisory London Motor Board consisting of the Hon. C. S. Rolls, Lieut.-Col. Mark Mayhew, H. Claude Hay, Esq., and J. E. Hutton, Esq. This list of names should surely inspire motorists with the confidence that here at least their interests are in good hands.





THE AUTOMATIC AUTOMOBILE CATCHER.

A refinement suggested by a German journal for the Surrey police.

Since our report of the French motor-cycle trials went to press we learn that the Pecourt machine has been re-measured, and placed in the "quarter litre" series instead of among the "third of litre" machines. The Pecourt has been ranked sixth on the list.

Where are the Spark Gaps?

The extraordinary boom in spark gap devices has fizzled out completely. Visitors to the Shows had to search for them pretty closely before they found even a few solitary specimens. At the time when all sorts of extravagant claims were made for these devices and when they were boomed right and left as an absolute panacea for ignition troubles, "THE MOTOR" held that these claims were not at all to be credited. One thing a spark gap does show is that the coil is actually giving a spark. It is no proof, however, that the spark is jumping the plug points or short circuiting through a crack in the insulation.

Know the Law!

In order that motorists should know the law, so far as it will affect them in future, we would suggest that they procure from Messrs. Eyre and Spottiswood, of East Harding Street, Fleet Street, London, copies of the following publications:—

1. Locomotives on Highways Act, 1896. One halfpenny.
2. Motor Car Act, 1903. Three halfpence.
3. Motor Car (Registration and Licensing) Order, 1903.
4. Motor Car Act; Circular of Local Government Board, November 20th, 1903, to Councils of Counties and County Boroughs.
5. Locomotives on Highways Act; Regulations dated March 18th, 1903, by Home Secretary as to storage and use of petroleum.

The prices of some of the above publications is not yet fixed, but a shilling should cover the total cost.

Lamps and Ladies: Dangerous Obstacles.

The danger attaching to the use of brilliant acetylene lamps has often been referred to, but motorists themselves have not been the sufferers so much as cyclists have been. After passing a powerful light a rider runs into a Stygian darkness, being temporarily blinded. The fatal accident to Mr. Siegmund Loewe, a director of Vickers, Sons and Maxim, on Sunday week is probably the first such occurrence to a motorist. His driver at the inquest told how he was for the moment blinded by the light of a passing car. Then he saw a girl in front of him running across the road. She hesitated, and turned back (when will women give up this reprehensible habit?), and, to avoid her, the driver had to turn the car towards the pavement. The pavement was struck, the girl knocked down, and Mr. Loewe was pitched out of the car on to his head. He died on the Tuesday. The jury's verdict was accidental death, and they expressed an opinion that the power of the lamps used on many cars was greatly in excess of what was necessary. But for the lamp coming towards him, the driver might have seen the girl on the road, and but for the doubling of the girl on her tracks the accident would not have happened, so the jury's rider only hits at one half of the trouble.

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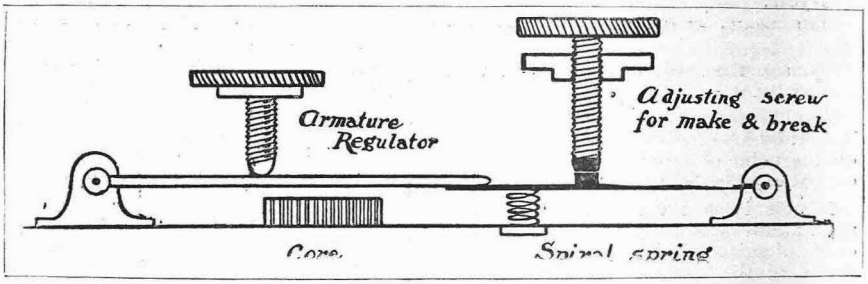
U.M.I. Specialities for 1904.

The United Motor Industries, Ltd., have a highly interesting display of all the latest things in motor accessories just now at their Great Marlborough Street, London, W., depot. Amongst the best lines they have a new Bassee and Michel trembler coil, made in a variety of sizes up to one suitable for firing an eight-cylinder motor. The special feature about the coil is the construction of the vibrator, which can readily be seen from the sketch. The armature is pivotted independently of the blade carrying the platinum contact, and can be adjusted by a screw, so that it allows the current to circulate round the core a sufficient time to saturate it with magnetism, then, at the moment this occurs, the armature presses down the contact blade, and separates the platinum tips. A spiral spring is fixed under the blade, and presses it and the armature back again, so that there can be no possibility of its sticking on the core. The consequence is that an intensely quick break—3,500 vibrations per minute—is effected, and the highest possible efficiency got out of the coil for a very small consumption of current. It is hardly necessary to say these celebrated French coils are beautifully finished. Another good thing is a four-cylinder positive make and break, with pivotted steel contact arms working against spiral springs. This is extremely neat for a four-cylinder contact, and works equally well with a trembler or plain coil. The contacts are pressed together, and as they run in oil, wear is minimised, and an instantaneous break assured. A very compact three-cell dry battery will appeal to motorcyclists. The firm guarantee this to run 2,500 miles, and to be equally well suited for a plain or trembler coil. It measures 6in. high, by 5¼in. wide, and 2¾in. wide, and costs 10s. only, fitted in a handsome case, and new batteries can be supplied at 7s. 6d. We are testing one of these batteries on a motor-bicycle. Another good line is a 2¼ h.p. motor for bicycles, which, in design and finish, will compare very favourably with the best on the market. It has a one-piece cylinder and head, spark-plug in the centre, large valves, neat valve lifter, vacuum valve, etc. It is English make, and retails at £15, including silencer. A set of box spanners in case and provided with ratchet handle is a speciality of the firm, and also a new carburetter, which will give good results using paraffin. It is of the suction valve feed pattern, and has a regulating valve and warm air inlet. Other good things to be seen are a watch holder in metal for fitting to the steering wheel, a speciality in acetylene and paraffin lamps, a new style of horn and several new sizes of the "Castle" accumulators.



New Bassee and Michel Coil Trembler

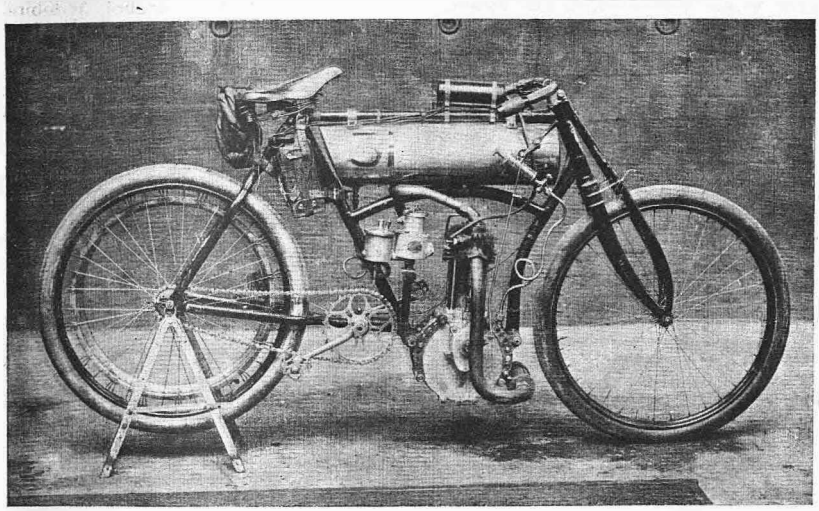
An important "Alcohol Exhibition" will be held in the Rotunda in Vienna next April. This exhibition will not appeal specially—as some who read its title may suppose—to the licensed victualler, but will demonstrate the practical uses to which alcohol may be put as a fuel for motive purposes. The exhibition will include motor vehicles and stationary motors worked by alcohol, and also alcohol launch motors.

Another Motor Danger.

An alleged scorcher is reported to have been arrested in New York in a novel manner by a zealous minion of the law. The constable boarded the car by taking "a flying leap into it from his bicycle." If this sort of thing continues, the motor-car of the future will have to be provided with a police net. The upshot of the affair being that for want of corroborative evidence the case was dismissed, the constable will now have time to consider whether his method of doing business is really in the public interest: an abandoned bicycle in the middle of a busy thoroughfare may prove to be more dangerous than a skilfully driven car—even at 25 miles an hour.

Next Year's Gordon-Bennett Race: the Course Selected.

We learn from a special cablegram that the German Automobile Club met on Saturday afternoon and decided to adopt the "Circuit de Homburg," or the course 137 kilometres long lying close to Homburg, for the forthcoming Gordon-Bennett race. Homburg is a little to the north of Frankfort towards the south-west of Germany so that it is within a 24 hours' journey from London. The course is, in shape, an irregular oval with a projection representing two sides of a triangle. The start would be at Saalburg, about four miles outside of Homburg, and the route passes through Usingen, Weilburg, Limburg, Kirberg, Neuhof, Esch, Konigstein, Oberursee and thus to Saalburg. This circuit would have to be traversed four times in order to comply with the Cup rules. The route is over very hilly country, and our Berlin correspondent asserts that there are no less than 30 places which are particularly dangerous, and which will entail cautious travelling. Moreover, railways cross the road in six places so that from these two causes alone the checks sustained by each driver will number no less than 144! Compared with the proposed route, the Irish Course was a king! One part of the proposed route will probably be neutralised as being quite unsuitable for racing. The best feature of the route is the fact that the large towns will accommodate a large gathering.



The Griffon Motor-bicycle on which the Ardennes race was won. This machine was shown at the Stanley, and attracted much attention.

The tension in the motor spirit trade is now somewhat relieved and good supplies of .680 and .700 American spirit have arrived in this country. The future outlook appears more favourable than it did a month or two ago, but the price remains the same and there is no prospect of a reduction.

Result of the French Motorcycle Trials.

The official results of the motorcycle trials recently held in France were published last Thursday. The trials consisted, it will be remembered, of six daily runs from Paris and back, which have been described in previous issues of "THE MOTOR." The 18 machines which, out of a total of 36, completed their runs each day have been arranged in the following order, but it must be noted that these results refer to the runs regarded generally, and do not take into account special points such as silence of running efficiency of brake power, luggage carrying capacity, condition of machine after the trial, price, weight, etc., etc.—marks for which will be awarded at a special meeting to be held this (Tuesday) evening:—First series—Cylinder capacity limited to quarter litre:—(1) Moto Sacoche I.; (2) Moto Sacoche II.; (3) Gobron-Minerva; (4) Bruneau; (5) Bonnet; (6) Paillard; (7) Mauxion; (8) Lurquin et Coudert; (9) Doue; (10) Chantemède I.; (11) Georgia Knapp II.; (12 Breuil; (13) Moto Cardan I. Second Series —Cylinder capacity between quarter and one-third litre:—(1) Werner II.; (2) Pecourt; (3) Lamaudiere II.; (4) Chantemède II.; (5) Lamaudiere I. Among the larger motors the Werner has again taken the high position which it has so often occupied in previous trials, and the performance of the Pecourt is noteworthy. Of the smaller machines the two Moto Sacoche bicycles have achieved the most remarkable results: the cylinder capacity of these machines is only one-fifth of a litre; and they are in effect—as their name implies—"motor-assisted bicycles" rather than motorcycles. The Gobron-Minerva was particularly noticed all through, and its ease and silence in running will no doubt ensure it an even higher place in the subsequent classification.

King Victor Emmanuel the Third, our recent guest, has just taken out a license permitting him to drive a motorcar over the roads of Italy.

"THE MOTOR" is sending three special representatives to Paris this week to work in conjunction with our own correspondent and photographers at the Paris Show.

Signs of the Times in America.

We clip the following from the advertisement columns of an American motor paper:—(1) I want an automobile and in return will give a fine Kentucky-bred combination horse, excellent saddler and safe driver. A stylish animal with good gaits and action under the saddle and perfectly gentle for anyone's use, and cash for the difference in value if any. This horse is worth five hundred dollars, and I will also turn in a buggy and harness if desired. (2) Wanted a good automobile in exchange for an eighty acre farm. (3) Will trade my new strictly high grade seven hundred dollar piano for a good automobile.

Horses and Street Noises.

We observe that Mr. Briton Riviere has taken up the cudgels on behalf of the horse in London, urging the beauty of the animal as a reason for the retention of horse traction. With all respect to Mr. Riviere, we cannot see that his argument has anything to do with the question. The artistic points of the horse do not necessarily fit him for drawing heavy loads on slippery pavements, and although we flatter ourselves that we have an artistic eye and ear, we cannot see beauty in the spectacle of a brutal carter lashing his horse up a greasy slope, any more than we can admire the performances of the hideous piano-organ, which an anonymous Kensington artist informs the "Daily Mail" that he "loves." Everything has its proper sphere; the horse is not in his place in the City, and the piano-organ is better out of it during business hours; but in the country both of these things can be properly appreciated.

Another International Motor Launch Race.

Mons. Georges de la Néziere, a well-known French sportsman, and manager in France of the Wolseley Motor Car concern, is presenting a massive silver cup, valued at £400, for annual competition by motor launches. The race is to be run off every year in Paris on the Seine; the course is to be one of 200 kilometres —125 miles; and the conditions for competing boats are:—Maximum length of hull, 25 metres (82 feet); hull either of metal or wood; every competing boat to be constructed entirely, and in every detail, in the country which it represents; three successive wins by a motor of the same make (change in hull being immaterial) will carry off the cup outright. For this year's race (which is to come off sometime before the opening of the Salon de l'Automobile) in view of the shortness of the days and the brief notice given, the course will be shortened to 150 kilos.—93 miles—and the regulation as to the boats being entirely made in their own country will not be enforced. These events will be looked forward to with interest.

A 10 h.p. De Dietrich Omnibus which was observed at the recent Gaillon Hill climb.

The Shows through Foreign Glasses.

French epithets are not always to be taken quite so seriously as ours: bearing this in mind, the reader of the Paris reports of the Shows will be enabled to suppress his emotion when he reads of motorcars and cycles which are "marvellous," "adorable," "magnificent," "swift as the flying deer," "clothed in tints like unto those of the dawn" (this must have been a-roarer), or "incredible in the imponderosity of its frame."

Motorphobia in Austria.

In the Diet of Lower Austria a proposed code of regulations for motor vehicles contains the following clauses:—

The maximum speed shall not exceed five miles an hour in crowded streets, or 18 miles an hour on open roads.

All motor vehicles shall be provided with large number plates.

A registration fee of £2 shall be paid for motorcycles, and one of £4 for cars.

Infringements of the speed regulation shall be punishable by fines of from £2 to £40, or imprisonment.

Every mayor shall have power to close to motor traffic any road that may seem to him dangerous.

The proposer of this code carried it by a large majority, and the (alleged) representative of the public declared the motor vehicle to be a danger second only to the plague.

Motorcycle Reliability Run in Italy.

The "Sporting Gazette" of Milan is organising a reliability run for motorcycles early in the new year. The course will be from Milan to Nice and back, a total distance of about 430 miles. The outward journey will be due south from Milan, through Pavia to Genoa, and thence by the coast through San Remo and Monaco to Nice. The home run will be due north from Nice, across the Maritime Alps to Coni, and through Alba and Asti to Milan. Should the passes over the Alps be snowed up, as is not improbable in January at an elevation of 4,500 feet, the return route will follow the coast eastward as far as Port Maurice, before striking north. Reliability at a maximum speed of 22 and a minimum of 12 miles per hour, and touring qualities generally will be the main objects of the run. Brake tests and hill climbing trials will be included.

The Car that could only go Backwards!

We were at first puzzled and then greatly amused last week at a curious oversight in one of the cars on show at the Crystal Palace. The "sprag" on this car engages with teeth cut on a flange attached to the shaft as it issues from the gear box. Noticing that the teeth were cut in a certain direction we remarked that the new engine revolved to the left instead of to the right as heretofore. Then in trying to change the gears, an attempt was made to ease the car forward slightly, but it came to a sudden stop and refused to move. On searching over the mechanism for the reason, we found the sprag was holding it! The teeth had been cut to prevent the car going forward whilst it would be as useless as a fly in preventing the car from running backward downhill! The mistake arose through hurried construction.

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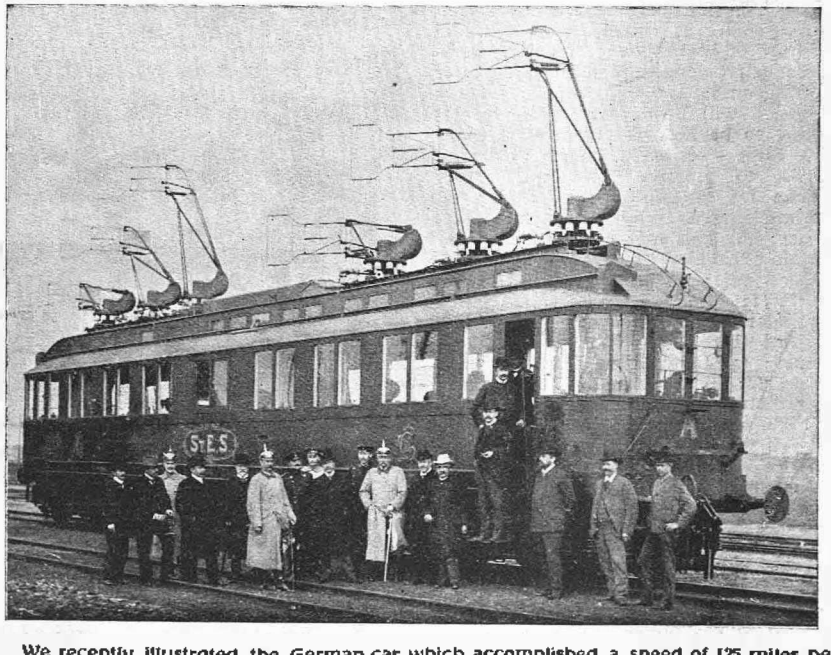
Colonel Crompton on the "Dust Problem."

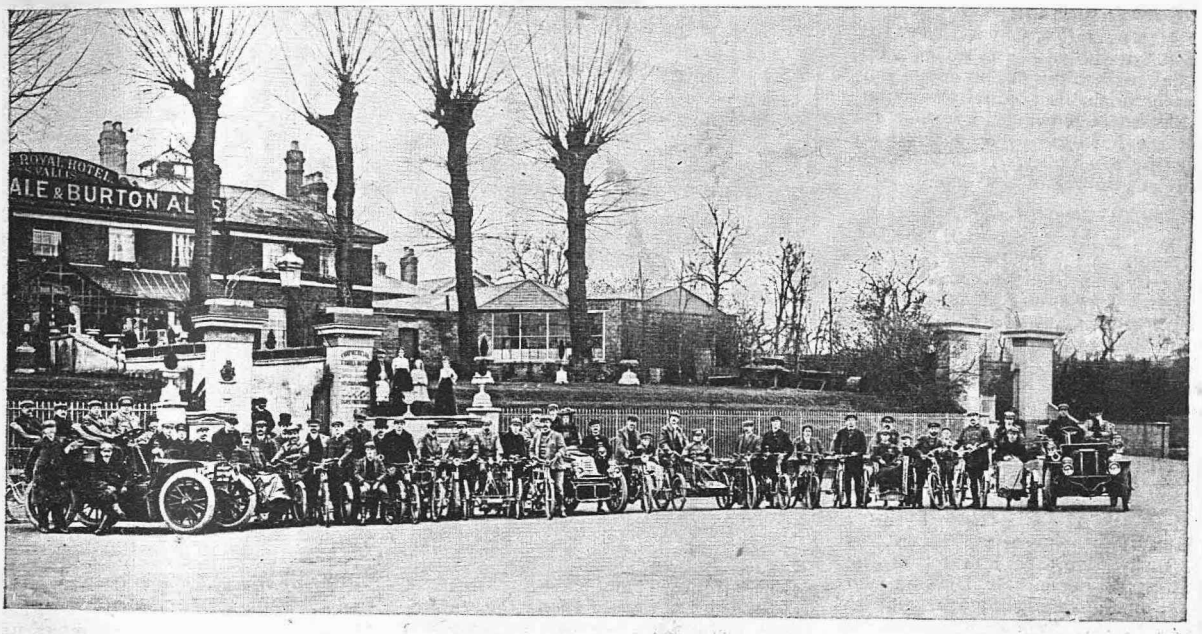
Col. R. E. Crompton read a paper before the Automobile Club, on Thursday evening last. He dealt with the tests made at the last reliability trials to show which cars had the best non-dust raising features. He was of opinion that as a result of the experiments, that alterations could be effected in the design of the cars which would greatly minimise the dust raising nuisance. A series of photographic tests were made on the Ripley Road which gave some definite results. The officials were able to get three photographs of the White steam car running at 18.22 and 30 miles per hour, showing the shape and size of the dust cloud very clearly. The author explained the scientific reasons underlying the formation of these dust clouds. Motorists unfamiliar with the laws governing movements of current of air jumped to the conclusion that the dust was raised by the tyres themselves. It was observed that the worst dust raisers were cars whose tool boxes or silencers were fixed across the back of the car, close to the ground so as to leave a very small air exit at the back. As to the effect of the diameter of the tyre on the amount of dust created, the author said that the difference was not so very marked. Although 120 mm. tyres raised more dust that 90 mm. tyres the extra amount does not affect the total cloud to nearly the same extent as comparatively small alterations in the front wings, or in the air entrance and exit. The author then explained the reason why elastic driving tyres raised more dust than rigid ones. Briefly, it was the tangential stresses produced in the tyre compressing the dust particles in front which were then flung backwards and upwards as the tyre advanced. As driving tyres revolve, the necessary resistance for driving the car can only be obtained by the tyre sweeping away the finer dust particles and a grip obtained on the coarse particles. The principal factors in the raising of a dust cloud were: (1) Any air thrown out sideways by obstruction under the car. (2) The inrush of air behind after the car has passed. The author particularly laid stress on the fact that a low built car is not necessarily a dusty one, nor is a high car dustless. Summarising the results of the experiments made, the author stated that: (1) Hard tyres are better than soft ones. (2) Narrow tyres are better than broad ones, though neither have a preponderating influence. (3) Flaring mudguards are bad, especially if they are fitted low down. (4) Cars that are low built are worse than a high built one, but smoothness of bottom shape and absence of forward coning are infinitely more important. (5) There is strong evidence that it is desirable that the car should slope upwards towards the back. The author recommends that further experiments should be made bearing on the subject.

The Brazing of Aluminium.

As a result of the experiments reported in "The Motor" a few weeks ago in connection with Mons. Laffererie's invention for brazing aluminium, much doubt is expressed as to the *durability* of the brazed joints, this being the weak point of all previous methods. Mons. Laffererie has, in consequence of this, produced specimens of joints which he affirms to have been brazed more than a year ago, and which appear to be as sound as ever. The young inventor challenges other inventors to the following test: Pieces of aluminium of the same dimensions are to be brazed in the presence of witnesses by each inventor according to each man's own special method; they are then to be tested for soundness and strength and sealed up in a perforated box. At the end of a given time the box is to be opened and the various specimens are to be submitted to a second test in order to prove which of them have, and which have not, suffered by prolonged exposure to atmospheric action.



We recently illustrated the German car which accomplished a speed of 125 miles per hour. The above is a photograph of the car which has beaten that wonderful record by attaining a speed of 131.253 miles per hour by electrical power.



The Motor Cycling Club held a special run to the Royal Hotel, Slough, on Sunday, November, 22nd. The above photo (taken by H. Kennett, Junr.) shows the record turn-out of members riding all types of motor vehicles. The run was the most successful ever held by the Club, a total of sixty members being present.

The Scottish Automobile Club (Western Section).

A PAPER ON "THE IDEAL TOURING CAR."

A meeting of the above club was held in the Windsor Hotel, Glasgow, on Monday evening, Nov. 23rd, Mr. John Adam, the chairman of the section presiding. Mr. John M. Ross read a paper on "The Ideal Touring Car." His views, he said, were based largely on the necessities of an automobilist who looks after his car himself. He thought a touring car should be fitted with an engine of sufficient power to give an average speed of 20 miles per hour on an ordinary give and take road, and which would climb hills at a good speed. This latter he thought more important than the ability to make high speeds on the level. It should also be able to climb any hill on its low gear, and to be possible of being driven slowly on the highest gear. The engine should be easy of access, more particularly those parts where adjustments are more likely to be required. The change speed gear box and differential gear box and the clutch should be so placed that they can be readily got at. Mr. Ross made a strong point of the brakes with which the car should be fitted, and held that on a touring car the absolute efficiency under all circumstances of both brakes was essential. In dealing with tyres, in which respect he indicated a preference for pneumatics, he mentioned that every touring car, if to be used in all weathers, must carry some non-slipping device, and mentioned one or two of these. The author then dealt with the shape of touring bodies which he thought should be of "tonneau" form. The accumulators should be in a box on the step at the driving side, and the whole space under the seat should be reserved for carrying coats and luggage. The tonneau should be sufficiently long for comfort, and locker accommodation should be provided below the seats. He advocated facilities for carrying a reasonable amount of petrol either in a spare tank or by fitting a box, which should be removable, beneath the car to hold four or five tins. The author said finally, that from an amateur's point of view the ideal touring car should have special attention paid to minor details of construction, such as the more extensive use of lock nuts and split pins, so that the worry and trouble to the owner would be the least possible. Chains should be run in a gear case, and some means should be provided whereby, when a car is left standing, the change speed gear handle, switch, petrol tap and lubricators could be so locked as to render interference with them impossible. Mr. James Burns, who introduced the discussion, claimed that by discussions of this kind the real necessities of amateurs, who were best able to judge of the cars most suited to their circumstances, could be determined. Mr. Burns thought it was an advantage that a checking tendency should be placed upon speeds by the inability of cars to take hills at the same speed as on the level, and he thought an essential feature of an ideal touring car was that it should be incapable of encouraging any tendency to scorch. He was strongly of the view that solid tyres were, until a more perfect pneumatic has been invented, the more suitable for touring purposes. Mr. Burns related some personal experiences of six years' motoring without any mechanical assistance of any kind, and stated that, while he had had petty troubles, there were none that could in any sense be called serious, and he had formed the conclusion that breakdowns of cars arose not from the fault of the cars, but from the lack of knowledge and inexperience of those in charge of them. Further discussion followed, in which various other details and features were criticised and commented upon. The meeting was a very successful one.

The supply of petrol motor vans for commercial purposes in California is said to be quite inadequate to the demand. Only one firm, the Oldsmobile Co., has been able to keep pace with its orders.

The Cyclists' Touring Club and Motor Cycling.

A meeting of the London members of the C.T.C. will be held in the Society of Arts Lecture Room, John St., Adelphi, W.C., on Tuesday, December the 8th, at 8 p.m., when some very interesting and instructive information will be given on the subject of motorcycles by two or three experienced riders, after which the meeting will be thrown open to discussion. Non-members who desire to attend this meeting can obtain a ticket of admission on application to the hon. sec. of the London district. Early application should be made as the number of such tickets is limited. No ticket is required in the case of a member or any friends who accompany him or her.

The Automobile Movement.

The Automobile Club of Great Britain and Ireland have issued invitations to the various automobile clubs of the United Kingdom, inviting them to a conference to be held at 119, Piccadilly, London, W., to discuss the present position of the Automobile movement, and the manner in which organised bodies of automobilists may best combine to advance it. The exact date of the conference has not yet been fixed, but it is proposed, if this should prove to be the most convenient date, to hold it during the third week in February, when the Crystal Palace Motor Show will bring many provincial automobilists to London. The various clubs have been asked to appoint two delegates each, and also to forward to the administrative secretary notice of any resolution or matter which they may desire to have discussed at the conference.

A Dog-dodging Device.

The "Motor Age" of Chicago, says that "the motorist who wishes to dodge a dog —or rather, wishes the dog to dodge him, —can accomplish his object by whistling loudly instead of blowing his horn. The noise of the horn means nothing to the dog, whereas a whistle attracts his attention and he gets out of the way."

Caught in the Wheel.

A curious incident occurred to Mr. Frank Arnott on the return journey from the Motor Cycling Club run from Slough. Some boys were playing football in the road with a tennis ball: one of them threw the latter at his machine as he passed, and some time after, when he dismounted to repair a punctured tyre, he was surprised to find the ball wedged in the spokes of the front wheel of his Werner. Fortunately it lodged in such a position that it cleared the front forks, or a nasty spill might have resulted.

J. B. Dunlop Still Inventing.

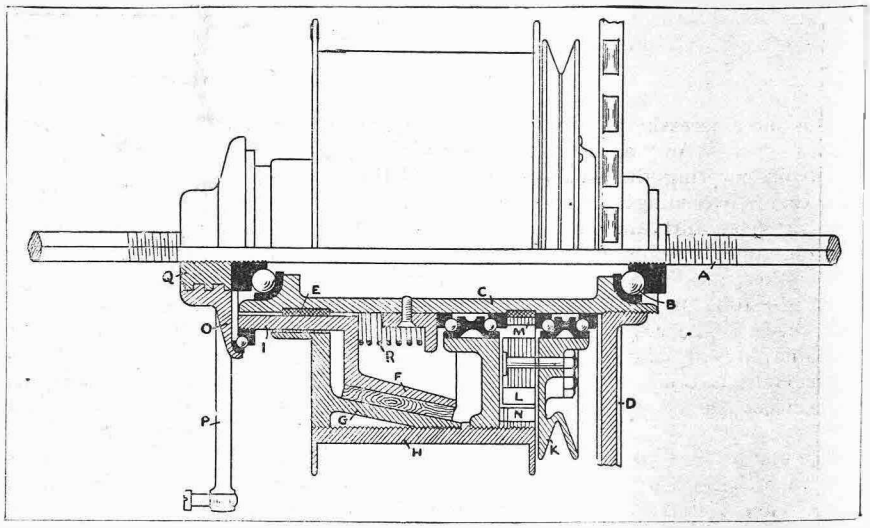
An interesting figure at the Shows was Mr. J. B. Dunlop, the inventor of the tyre bearing his name. Mr. Dunlop, who is a venerable looking gentleman, appears to have lost very little of his inventive faculties. At any rate, he informed us that he was busily engaged upon an improved form of carburetter for cars and motorcycles, and that he had also designed a new silencer, in which, according to Mr. Dunlop, explosions cannot possibly take place. We were promised full details of these inventions at an early date.

Results of the Endurance Run in America.

Owing to the abnormal weather conditions which prevailed during the recent motorcar endurance run in America, the executive committee have decided to suspend the rules and to give first-class certificates to the maker of each car which finally reached Pittsburg, and gold medals to the makers of certain cars which did exceptionally good runs. The certificate goes to 25 cars, the nine cars which dropped out at various stages of the contest being the only ones not to receive the certificate. Among the successful cars the best known in this country are the Oldsmobile, the Locomobile, the Toledo and the White steam car. The committee report very favourably on the general condition of the cars after their severe trial.

American Cars.

The motorist will doubtless have noticed that one of the characteristics of the American car is an unusually long wheel base. This was very perceptible in the racers which the Yankees sent over for this year's Gordon-Bennett and it is even more noticeable in some of their touring cars. "There is a reason," as they say of Grape Nuts: the American manufacturer is obliged to build the body of his car slightly higher from the ground to ensure the safety of the car over rough American roads, where the wheels are frequently several inches deep in ruts, and where, consequently, with a very low body, there would be a risk of striking obstacles in the centre of the road. In order to counteract the increased tendency to side-slip occasioned by this higher body, the maker has to provide a slighly longer wheel base. The Americans realise the importance of this fact.



The Johnson Two-speed Hub.

The proposed motor racing track at Juvisy appears to be well on the way towards realisation; but with regard to the engagement of Paul Baras as manager, which the French Press induced us to believe was a *fait accompli*, it appears that the celebrated chauffeur declines either to confirm or to deny the statement.

The Elswick Belt

We have had an Elswick twisted belt under test for some time, and have found that it possesses non-stretching features in a marked degree. This is due to the special treatment of the leather, which makes it impervious to moisture. Its strength is also remarkable, the holes for the belt hook having held for a very long period with no signs of them wearing through. It is a belt specially made in round and V sections, and suited for winter riding, and one we can recommend to riders who have had trouble with weak and stretching belts. The makers are E. and J. Richardson, Newcastle-on-Tyne. Sole agent, F. L. Anderson, 1, Furnival Street, London, E.C.

Reading Automobile Club's Annual Dinner.

A most enjoyable evening was spent on the occasion of the annual dinner of the Reading Automobile Club, which was held at the headquarters in Friar Street on Friday, November 20th. The president of the club, Dr. J. Hopkins Walters, presided, and there were also present Dr. Truman, Dr. Deane, Dr. Major, Messrs. Arthur Russell, C. Dodd, R. E. Rawstone, A. T. Cooper, A. H. East, L. Brigham, Joyce, Albert E. Newton (hon. sec.), Brewerton, Pocock, Smith, Vincent, E. K. Alexander Phelps, Phillips, and J. B. Moinet.

The question of joining the proposed federation was discussed, and the idea of the club was not to run counter with any such scheme, but to work harmoniously with such a body if it were established. With regard to automobilism in Reading, the club has undoubtedly made great strides in the direction of progress, and is quite capable of holding its own with clubs in other important towns. The past season has proved a very successful one in the club's history.

There is Danger in the Rich Man's Toy.

The "Daily Chronicle" refers to the motorcar as "the luxurious, if occasionally dangerous, style of transit." No wonder that some people's ideas about motor vehicles and motoring are erroneous, if this is the kind of stuff they form them on.

The Johnson Two-speed Hub.

This hub which gives two speeds and free engine is fitted to the G. and W. motor-bicycles illustrated in issue No. 93. The hub works on the following principle:—On the hollow axle C the chain wheel D is fixed, which is in connection with the engine. A coned drum E is mounted on this axle, free to move along. By moving this drum it is brought into contact with a coned surface G of the wheel hub H, which is mounted on the axle C and a sleeve I on the clutch drum F. Revolving on C is a band brake pulley K, and on this are mounted four pairs of pinions L which gear with the spur wheel M on axle C and with teeth N on hub H respectively; these pinions L being so arranged that they cause the hub H to revolve in the same direction as the hollow axle C. Abutting on the sleeve I of the drum F is a disc O which has an arm P and which screws upon a collar Q keyed to the axle A, by which the clutch drum F is moved axially, and upon the hub H is fixed a sprocket wheel geared with the pedal crank shaft of the bicycle. A spring R forces the cone F on to the surface of G. A band brake is fixed on the pulley K, actuated by a Bowden wire. In operation, when F is brought into contact with G of the hub H, the latter runs solid with the hollow axle C, the band brake being off K, and the hub is directly driven by the engine, this being the high gear. When F is in mid position, the band brake is still off and the engine is free. When F is over in its other position by rocking the arm P, the brake grips K and the engine motion is transmitted through axle C and the spur wheels thereon, the messenger wheels L carried by the pulley K, and the internal teeth of hub H, this forming the low gear. This arrangement gives a neat and efficient gear, practically all enclosed, and light in weight.

MOTORS FOR MILITARY PURPOSES.

(Concluded.)

This same necessity for ample clearance applies with equal force to cars. An " apron " (French " bâche "), preferably of metal, covering the whole underside of the mechanism of a car, is exceedingly useful in protecting the engine and gearing from dirt and wet, thus obviating the frequent cleaning otherwise necessary. Closely fitting mudguards, chain stays, fork crowns, and insufficient belt clearance are to be carefully avoided in the construction of the military motorcycle. The writer had frequent occasion to take his machine through long grass, and found it necessary to stop occasionally in order

TO CLEAR THE RIMS OF THE PULLEYS AND THE MUDGUARDS FROM THE GRASS

which had been caught up till it formed an obstruction.

It must be evident to all who have considered the question seriously that the military motorcycle should be built as light as is possible, consistent with strength. Where the machine cannot be ridden it must be moved by other means, and the fatigue involved in pushing a heavy machine is enormous. Moreover, since high speeds are by no means necessary at present (anything in excess of 30 miles per hour seems useless), an engine of 1½ h.p. fills all requirements, especially with the addition of a two-speed gear, enabling rough country to be comfortably tackled at a low speed, and assuring certainty of surmounting all gradients without undue effort.

There is no reason why, with scientific construction, a machine weighing 80 lbs. all on (and this includes lamp, portable stand and carrier—an indispensable adjunct, by the way—and all spares) fitted with a 1½ h.p. engine and two-speed gear, should not prove strong enough for the work. Very little kit need be carried by the military motorcyclist, although no transport was forthcoming during the recent manœuvres, and the motorcyclist was not so fortunate as the car driver, who, at least, had room for baggage as well as passengers.

It has, however, been definitely promised that this state of affairs will be remedied in future operations. All

DEVICES CALCULATED TO MINIMISE THE VIBRATION ON A MOTORCYCLE WOULD BE WELCOMED,

but, considering that such devices have got to be tested in peace, it would certainly be a somewhat risky experiment to fit them to machines destined to serve in war. A specimen of the spring frame machine was to be seen at the manœuvres, but, as this belonged to a machine of the exceedingly heavy type, which, in the writer's opinion, is not to be encouraged, it failed to be of interest from an experimental point of view. In the pneumatic wheel and the spring wheel we have two devices, which, in the end, may perhaps render us independent of the pneumatic tyre. At least one type of pneumatic wheel has been favourably reported on in England, while the application of the Rousel spring wheel to heavy cars in France serves to show that this invention may at least claim to be considered seriously. The limitations of the pneumatic tyre have already been insisted on, so we must look to the ingenuity of our inventors and the enterprise of our manufacturers to provide us with an efficient substitute. It may be pointed out that a device which saves the machine as well as the rider from vibration has many advantages as compared with one which only isolates the latter, while the most perfect arrangement undoubtedly consists in a combination of the two. To take a familiar instance: a pneumatic tyre and an ordinary seat pillar is

A BETTER COMBINATION THAN A SOLID TYRE AND A SPRING SEAT PILLAR,

while best of all is a pneumatic tyre and a spring seat pillar. A portable support which can be actuated rather more easily than the usual portable stand is a desirable addition to the military motor-bicycle. It is frequently necessary to halt, and a convenient gate-post is not always handy, while the motor-bicycle, unlike the pedal-propelled machine, cannot well be laid on its side.

So far, we have only dealt with the motorcycle as belonging to classes 2 and 3, although the machine may well have a limited use as a tractor. A motor-tricycle has already been successfully utilised for the purpose of hauling a light machine gun, and there seems no reason why the possibilities of this class of machine should not be successfully developed. The motor-tricycle seems just the machine adapted for this work, and fitted with a water-cooled engine of about 4 h.p. actual, and a two-speed gear, it should be equal to any demands made upon it. A tandem quadricycle might also be adapted for the purpose, and would have the additional advantage of furnishing a better service for the gun. A motor machine gun division would certainly prove a valuable auxiliary. Among the special instructions issued to members of the Motor Volunteer Corps before the recent manœuvres was one pointing out the undesirability of high speeds, owing to the extra wear and tear involved. This, while undoubtedly sound in itself, would, as events proved, have been unfortunate if it had had the effect of inducing owners of high-powered cars to bring out lower-powered vehicles.

OWING TO THE VAST AREA OVER WHICH MODERN MILITARY OPERATIONS TAKE PLACE,

it is of enormous advantage to commanding officers to be able, by means of the facilities offered by a fast car, to supervise and direct important movements in person.

Certain officers, both among the combatants and the umpires, were fully alive to this advantage, with the result that runs extending to hundreds of miles in the course of a single day were recorded. The perfect safety of a fast car in the hands of a skilful driver is fully admitted; while, provided the road be not impeded, this very quality of speed constitutes an element of safety, for the target offered by a rapidly moving car is exceedingly small.

This leads to a consideration of the devices which might be employed against motors in warfare; and here we are confronted with the chief difficulty, for it must be obvious that the very nature of the automobile renders it exceedingly vulnerable. It has already been pointed out that the motor, in order to be of any real service in warfare, must, if the necessity arises, be independent of the road. Nothing is easier than to render a road impassable: a series of trenches extending from side to side of the roadway, a tree felled and thrown across, a waggon hastily upset,

WOULD CONSTITUTE OBSTACLES SUFFICIENT TO COMPLETELY BLOCK THE PASSAGE OF A MOTORCAR.

The motorcycle would, however, be placed differently, for, provided it were sufficiently light, it could be lifted over an obstacle. The value of the ordinary pedal-propelled bicycle in warfare, and its ability to go practically anywhere, were amply proven in South Africa, and there is no reason why the motorcycle should not be rendered equally efficient. Thus, whilst the motorcyclists may well be in the advanced guard, the scope of the motorcar is far more restricted, although it may be utilised to a large extent on the lines

of communication. A car arranged to hold any number of men from ten upwards, somewhat on the lines of the public service vehicles now being extensively introduced, would form an effective means of hurrying combatants to the front. Such a car might be adapted so serve as a shelter for the occupants by the exercise of a little ingenuity, thus forming a self-contained "laager." Shelter for the motors would seldom be forthcoming, and it would therefore be advisable for the cars to be provided with a canopy or similar fixture for efficient protection against the weather. Waterproof covers for the cycles could be carried on the machines, and are indispensable when these latter are left in the open. A leafy tree forms a protection to some extent, but even this is not always to be found.

The handiness of the motor-bicycle was once more evidenced by the fact that the writer was enabled to bring it into his tent, leaning it against the tent pole; the machine was thus always under shelter overnight: this, of course, would not be possible in a crowded tent.

CARS SHOULD BE PARTICULARLY WELL SPRUNG,

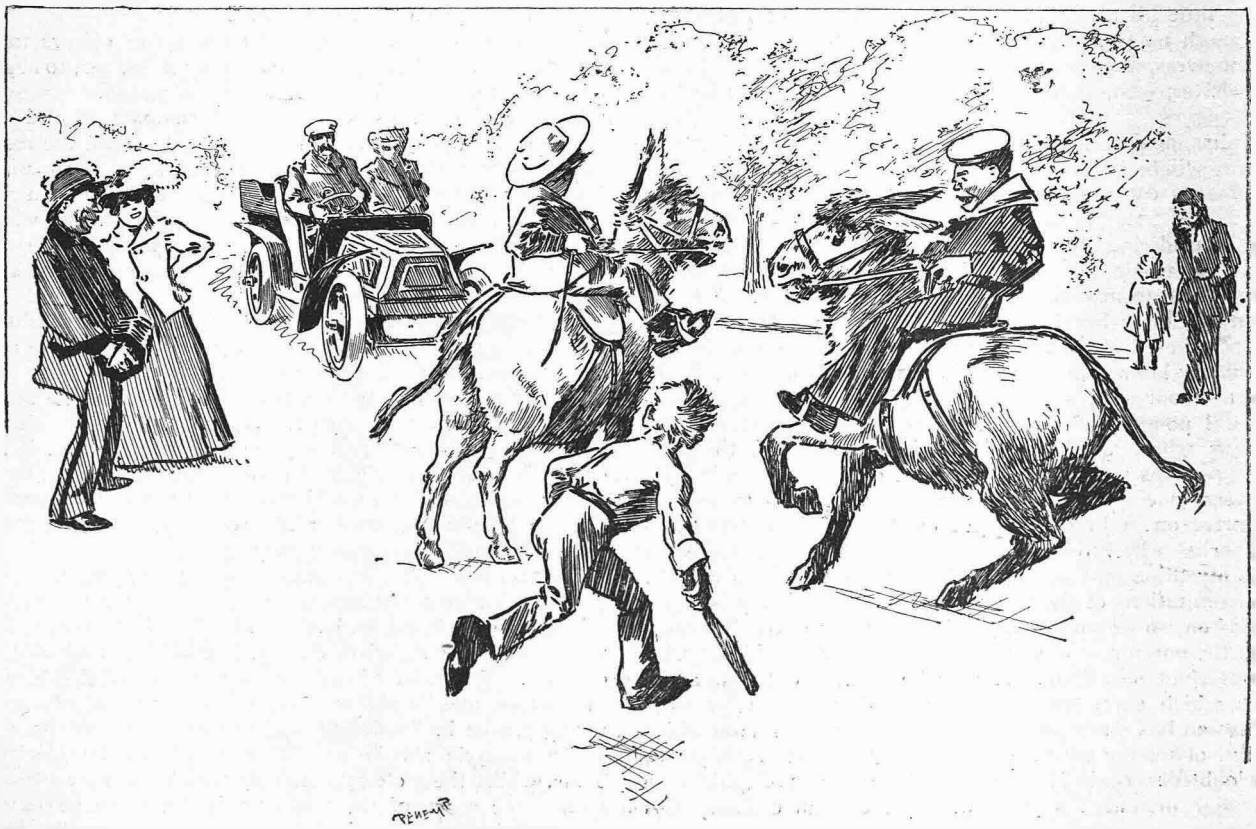
the springs being of extra strength and length, owing to the rough country it is necessary to traverse. The clearance of the axles and distance rods should be more than usual, as, indeed, should be the case with the whole underframe, for the reason already indicated. Petrol and lubricating oil tanks should have an increased capacity, and a plentiful reserve supply of both fuel and lubricant should be carried. Supplies of everything necessary for the motors could be carried on a special car, in charge of an expert mechanic, such a car being attached to each division.

Allusion may be made to the armoured motor, types of which have actually been constructed both in this country and abroad. The home product is an unwieldy vehicle, not adapted for use on the road, but constructed to run on an ordinary railway track, although driven by a petrol engine. Approximating as it does to the armoured train (which can hardly be said to have proved particularly successful as an instrument of warfare) it probably has all the disadvantages of the latter, together with a few additional ones peculiar to itself, and can only be regarded as a very doubtful experiment. Magneto ignition was incorporated in the design, this being a good point in a motor for military work, as it may often be impossible to recharge accumulators, while spare batteries do not quite answer every requirement, as they become exhausted in time, although not in actual use.

TWO SYSTEMS OF IGNITION ARE DESIRABLE AT ALL TIMES,

and particularly so on the military motor. A two-seated car, with an armoured tonneau body, containing a Hotchkiss quick-firer, was constructed to the order of the French Minister of War, and was exhibited at the last Paris Salon. This car, with the exception of the tonneau, was practically identical with an ordinary fast touring car. It is difficult to see what practical object could be served by the armour plate, unless it be for protection against rifle fire, and even here the enormous penetrative effect of the modern rifle bullet would make it necessary to increase the thickness of the armour to such an extent that the added weight would make the car far too unwieldy to be handled with success. The salient qualities of the motor vehicle should not be sacrificed to what, after all, is a practically obsolete means of defence in land warfare. The arm which suggests itself as most suitable for the military motorist is a repeating or magazine pistol of the Mauser type, which combines great portability with long range, and can be adapted for use as a carbine. In the present state of our knowledge of the value of motors for military purposes, practically everything remains to be learnt in the school of experience, but it rests with motorists themselves to develop the undoubted possibilities of the machines and to show what these are capable of in war as in peace.

"PETROLIA."



EQUAL RIGHTS. A HOLIDAY SKETCH.

OTHER PEOPLE'S VIEWS.

NOTE.—These columns are set apart for the discussion of motor topics by bona-fide readers of "THE MOTOR," and trade letters containing veiled advertisements are not admitted.

The Editor invites correspondence on any motor subject, but owing to the very large number of letters received he directs attention to the following rules:

1. Plain Writing. Type-writing for preference.

2. All letters to be written on one side of the paper.

3. Letters to be kept as brief as possible.

4. For the purpose of illustrating any letter, rough diagrams may be sent, which will be worked up by one of our artists.

The Editor is not responsible for opinions expressed by correspondents in this section.

A Reply

Sir,—The following may help "A.S." (Blackheath), who wrote in a recent issue. (1) Is "perfect compression" he mentions due to burnt lubricating oil and jammed piston? (2) The engine never does start, with Humber spray carburetter, without throttle full open and most of the air cut off.—Yours faithfully,

ROZ WALKER.

The Numbering Problem.

Sir,—Out here in Darmstadt all bicycles, whether motor or ordinary type, have to be numbered. This is done by fixing a tin plate, enamelled with black letters on a white ground, on some conspicuous part of the bicycle, generally the front brake, just below the lamp bracket. It is no doubt unsightly, but it would overcome the difficulty of lighting the number by night, if the L.G.B. made this compulsory. Another way often seen here is to fix the plate on the hub of the front wheel. This could also be illuminated by a lamp on an ordinary hub lamp bracket.—Yours faithfully,

Q. G. R.

Police Methods.

Sir,—There is a police trap for motorcyclists at the bottom of Streatham Common, extending, as far as I can see, right across the width of the common along the main road, and people coming from London or from the South, travelling at anything over twelve miles an hour (or under, for the matter of that) are stopped from the far side. I saw a policeman on a recent Sunday spring into the middle of the road, in front of a motorcyclist, and before it was possible for him to come to a dead stop the constable caught hold of the back of the saddle and the motorist's shoulders, and upset him, he and his machine falling on the kerb. This hardly seems the right proceeding. It is distinctly dangerous, and if the motorist were a criminal he could have hardly received rougher treatment.—Yours faithfully, A. W. S. A.

The Side-carriage.

Sir,—As a considerable number of motorcyclists seem to be in doubt as to the safety of a side-carriage (thereby depriving themselves of a great deal of extra enjoyment), because of the power they think it would absorb, the following may tend to reassure them. On October 9th, with my Peugeot motor-bicycle and side-carriage, I took two passengers (one about 10 stone and one a small child) a certain amount of luggage, a basket of provisions, etc., fastened under seat, spare tin of spirit, and various other spares, making the total weight, including the machine, about a quarter of a ton, from Eltham, in Kent, to Great Yarmouth, a distance of nearly 130 miles, on about a gallon and a half of spirit, although, as it had rained continuously the day before, the roads were very heavy. We found no difficulty in attaining a speed of 25 miles an hour on the level, and the only thing we had to attend to on the way was the low tension wire, which came loose from the terminal, a detail which, of course, did not take a minute to put right. With reference to the trouble several of your readers seem to have with side-carriages when riding the machine without a passenger, if they will just incline the bicycle slightly towards the side-carriage, they will find the difficulty entirely overcome.—Yours faithfully, JOHN CHANT.

Magneto Ignition, Tyres, etc.

Sir,—In your issue of September 16th I notice that your correspondent D. Herbert makes a request for information re magneto ignition. I think I may be able to give him a little of the information he requires. To begin with, I may say I use a Singer motor-tricycle, which, as is well-known, is fitted with magneto ignition. I have driven the motor now for over a year, practically every day, covering a total distance of close on 3,000 miles. Only once throughout the whole of this period has the magneto ignition required adjustment, and during the last thousand miles I have not even cleaned or inspected the sparking gear in the cylinder. Yet the motor never misfires, and starts up immediately. This, I think, should tend to prove the superiority of magneto ignition over the usual high tension system. Of course, some people bring in against magneto-ignition the argument that this system absorbs a considerable amount of power. I consider it quite inappreciable, however, as will be understood when I say that with a 2½ h.p. tricycle I have climbed a hill of 1 in 8 gradient at 21 miles an hour (accurately timed), and, of course, without pedalling. Besides this, the motor has taken a hill of 1 in 6 (with very slight help only when within a few feet of the summit). Perhaps I ought to say that my weight is over eleven stone. In the same issue of "THE MOTOR" a correspondent writes as to difficulties with his Clipper-Reflex tyres. I have been using a couple of 2in. Clipper-Reflex motor-bicycle tyres on a double trailer for over a year, and have not had the slightest trouble, whilst the tyres appear scarcely worn. They have been severely used, too, often supporting the weight of two persons—about 24 stone—and I have never had them punctured. On the tricycle itself I have 2in. Dunlops on the side wheels, and a 2½ inch Dunlop on the driving wheel. The former have each punctured once, but the latter never. Does not this tend to show that 2½ inch tyres are more efficient for motorcycle work than 2in. tyres? You may also be interested to know that the motor runs just as well with methylated spirit as with petrol.—Yours faithfully,

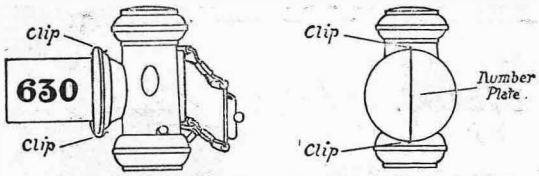
G. SHAW SCOTT.

Overheating of Fore-carriages.

Sir,—With regard to the above subject now under discussion, while being thoroughly aware of the fact that criticism generally assists us to come nearer to perfection, I must strongly object to the letter written by your correspondent, who signs himself "A Competitor in the Trials." His statement is nothing but a perversion of the truth. If, as a competitor, he managed to survive the first few days, he must have seen, like the other competitors, that, when another carburetter was fitted to my Trimo, it did good work in piloting the men out into the open country, with myself and Mr. Basil Joy on board. Many competitors remarked how well the machine was running up the hills. It also carried its full load up the test hill near Guildford, and, on this occasion, all the judges were present. Mr. Joy rode the machine both before and after the new carburetter was fitted, and remarked that it made a different machine of it. Another official in the trial, Mr. Victor Hunt, occupied the front seat for about sixty miles, he checking miles inside two minutes, over up and down road, remarking that, of all the various motor vehicles he had driven between Guildford and Ditton, he only once equalled the speed up hills, and this on a 24 h.p. car. Again, Mr. Campbell, the Press photographer, has been my passenger for over a hundred miles at a stretch, up and down hill; while Mr. Roberts, the hon. secretary of the Motor Cycling Club, was driven by me up Bengeo Hill, Hertford, and Wades Mill Hill, near Ware. Each of these gentlemen saw the machine at the trials, and can testify to the truth of my statement. I look upon the letter as a direct accusation of attempting to say one thing while believing another, and this sort of thing should not be written by "A Competitor" unless he has direct proof.—Yours faithfully,

J. VAN HOOYDONK.

BIQ



Illustrating letter from G.S.S.

A Mysterious Accumulator.

Sir,—I see "Radio" says that if the electrolyte in the two cells was in communication the voltage would drop to two and the capacity would be doubled. This is, I contend, entirely wrong, as the terminals of the accumulator, being connected by the electrolyte, the battery would discharge itself through it, and the capacity and voltage would be reduced to nil in one cell, and nearly so in the other. It is a practical impossibility for an amateur to re-paste an accumulator plate in the manner described by "Radio." I would advise "No Charge" to get the cell repaired by a competent man.—Yours faithfully, A. R. HOLMES.

Tricycle Experiences.

Sir,—In answer to "Trike" (Tipton), I have not found the wear on tyres excessive, neither have I worn out a gear wheel in three years; but I have broken three axles through back fires, and am now fitting a Bowden wire from valve lift so as to retard the spark when starting, and prevent a back fire from this cause. The tricycle, in my opinion, is one of the safest machines on the road. If "Trike" cannot climb hills, my advice is to lower the gear. I am running a Beeston quad, 2¾ h.p., air-cooled, with a gear ratio of 11½ to 1, without overheating, and it climbs hills magnificently, besides going quite fast enough on the road to get one fined.—Yours faithfully,

J. D. WALKER.

Two-speed Gear for Motor Bicycles.

Sir,—Referring to "C.B.'s" recent letter, may I say that the two-speed gear exists in a practical form, as the Clement-Garrard firm turn out nearly all their machines with two-speed gears? The free engine feature was tried and dropped. The reason was that the engine, not being governed, raced terribly when suddenly clutched out. In my experience there is really very little need indeed for a clutch. The Clement-Garrard model admits of the machine running or being pedalled free without turning the engine round, whenever the rider pleases. He merely has to keep the gear at the "low." Now, when he has got going, and reached a favourable place, he brings the engine into motion and starts. The same thing is done when riding down a long hill. The motor stands still till a suitable spot is reached, then it can be gradually set going again without any pedalling. This gear clips on to the tube, and involves changing the motor pulley to a chain sprocket, otherwise there is practically no alteration necessary. I use the very small high speed motor, 55 mm. bore, and pass lots of heavy motors going in the same direction. The two-speed gear, I find, gives me advantages over the big and heavier machines.—Yours faithfully,

London. C. R. GARRARD.

B20

Misfiring Troubles.

Sir,—I notice that a correspondent writes that he has a 2¾ h.p. Humber, and has experienced trouble owing to misfiring. I had the same trouble for several weeks, and, after carefully going over the electrical portions, I found that it was caused through the 2 to 1 gear getting a film of oil between the teeth, and also on the spindle that it turns on. It would go all right at half compression, owing to the small tongue coming between the valve lifter and the 2 to 1 wheel, thus making a contact. I found that by putting a coil spring between the inside of cap (covering the wiper) and the bush or sleeve that the insulated disc is attached to (thus making a permanent contact by the sleeve rubbing against the spring), the misfiring instantly ceased, and I have never had any more trouble. I feel sure that this is the reason of nearly all the misfiring, except when caused by the wiper spring being too weak, and thick grease getting under it.—Yours faithfully,

E. A. PARKER.

Illuminating Number Plates.

Sir,—With regard to police traps, it appears that there are two in the neighbourhood of Walsall. The first is on the Birmingham Road, and consists of a measured quarter of a mile between the Malt Shovel Inn and Walsall. The second, which is also a measured quarter, is situated at the country end of the Mellish Road. Whilst on the subject of police traps, perhaps it would be advisable to consider another subject, in which doubtless the police will soon be interested. I refer to the question of the illumination of number plates at night. The chief difficulty seems to be in discovering a suitable method of attaching the plate for efficient illumination. A few weeks ago I saw in Sweden a system of illumination which seemed simplicity itself. The number plate was fixed in front of the lamp by means of a pair of clips (as in sketch), and was parallel to the line of motion of the machine, so that the light from the lamp shone on both sides of the plate. This system seems better than some suggested, as there is no need to alter the lamp, and suitable clips could be placed on the market at, say, a shilling a pair. In this system, too, the amount of light is not appreciably affected, as the thickness of the plate is so small. This idea I think would be worthy of imitation on the score of simplicity and efficiency.—Yours faithfully, G.S.S.

A Criticism.

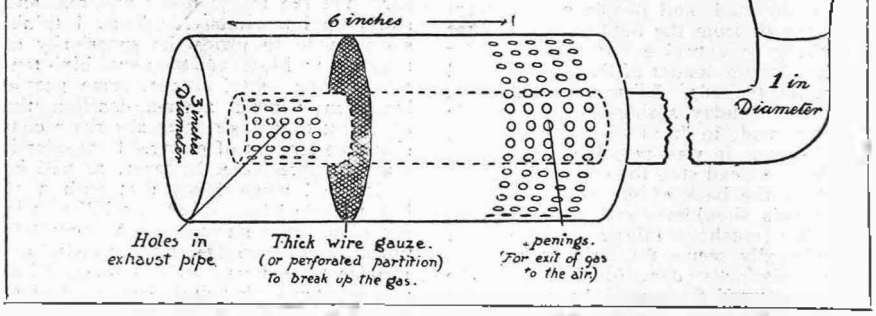
Sir,—I should like to know what authority Mr. Mervyn O'Gorman has for his assertion that a countershaft entails a loss of 15 per cent. of power. The Humber's performance in the 1902 reliability trials as well as on the Canning Town track is prima facie evidence to the contrary. Also what does Mr. O'Gorman call his unsupported bracket, behind his back wheel centre, but one of the worst forms of countershafts? Mr. O'Gorman forgets that simple "provision for slip . . . . necessary to save the chain . . . . or the back tyre, is obtained" by the insertion of an automatic free-wheel in the transmission. Such an authority as Mr. S. F. Edge has declared that most of the damage done to chains and tyres is due to miss or back fires, and not to the forward driving of the engine. Now that the subject of transmission is receiving so much attention it would be interesting to hear other opinions.—Yours faithfully,

J. NORMAN LONGFIELD.

Silencers.

Sir,—The problem of an effective silencer on a motorcycle is still, to a great extent, an unsolved one. Therefore, with your permission, I will take the liberty of sending you an idea which I think would, to a great extent, eliminate the noise of the exhaust. In the first place, you will see that the exhaust pipe is enlarged for some part up its length. This would allow the gases to expand to some extent, and the back pressure would be overcome by having the pipe leading into the silencer a little larger than the one leading into the expansion chamber. Now, as to the silencer itself. Properly speaking, it only consists of one chamber, divided into two partitions by a piece of thick wire gauze. This would help to split up the gas particles, and the exhaust would find its way into the open air through the holes, considerably expanded, and therefore more silently. For an engine of not more than 2½ h.p., the measurements given would be sufficient to effect a very silent running engine.—Yours faithfully,

C. J. FARRELL.



Illustrating letter from C. J. Farrell.

The N.A.B. Spring Pillar.

Sir,—In reply to H. W. Turner's letter on "Vibration on Motorcycles" in a recent issue, to which my attention has just been drawn, permit me to say we fitted the N.A.B. appliance to a cycle axle some years ago, before determining to utilise it for the seat pillar and handlebar, but we were met with this difficulty—namely, that we could not apply the brake, and it meant a variation of chain drift. The only place we could apply the brake would be on the driving axle: this would mean depending on the chain, there being no Bowden brake on the market at that time. After all, the success of the N.A.B. handlebar remains much with the rider. A little experience will teach the amount of pressure to apply to it, according to the spring you have fitted. Again, we had to consider the adaptability—getting something that could be applied to any machine in a few minutes; whereas the other meant converting the manufacturers to our ideas instead of the individual rider. It would be interesting to know if Mr. Turner is referring to our speciality or some other.—Yours faithfully,

F. SOUTHARD.

Perfection in the Motor-Bicycle.

Sir,—I have read with interest Mr. Leopold Canning's article, and, like Mr. Canning, I have been thinking over the subject lately, and have been reflecting on my chief sources of trouble during the season now ending; and as in my time I have had a fairly large experience with different types of machine, and have done an average of 400 miles for several weeks' running this summer, I feel I have some title to speak on the matter. Some time ago I discarded everything in favour of the Humber chain drive, and found myself immediately rid of the greater part of my troubles; but by no means of all, as I will explain after devoting a little more attention to Mr. Canning. First of all, as to that "monster compression tap," his chief contention seems to be that this would facilitate starting, aid cooling, and improve coasting. With the engine clutch, and the chain gear and bicycle clutches, the Humber Company realised Mr. Canning's chief ideas of perfection long ago, although he does not seem to be aware of the fact. I wonder what system of chain driving wore out Mr. Canning's back tyres so quickly, and gave such jars and shocks to his engine? Certainly not the Humber, judging from my experience, especially if he kept the spring clutch in order. I am so glad that when speaking of the chain drive Mr. Canning did not do it further damage by condemning it with the stock phrase, "too positive." Too positive! I wonder how many times I have heard that; and in every case from men totally ignorant of the design of the spring clutch of the Humber Company. I presume all that talk of "J'y suis, J'y reste," with regard to chains, was only meant facetiously. Of all the bicycles of which I have yet heard, the Humber suits my purpose best; but even this make I consider is far from perfection. I have had to have new spokes put in the driving wheel of mine, and, amongst other things, the bicycle clutch repaired. But the greatest trouble of all is with the tyres; the Dunlop tyres are hard to get off, and too light. I firmly believe the greatest source of danger at the present time is side-slip; on an average, taking all weathers, I run the greatest of risks, I should say, once every 50 miles; and my worst enemy could not call me a careless driver. The chief point then, I consider, to which attention should be directed is the prevention of side-slip, and, unless this can be done entirely with the tyres, it will mean that the engine will have to be placed lower, and so upset the present in many-ways fine disposition of the Humber machine. Now, when the great army of motor-bicycle riders is reflecting on the season's failures as well as the season's successes—alas! the failures seem uppermost in the mind—now seems to me to be the time when "THE MOTOR" can do incalculable good by opening a discussion as to what most needs improvement.—Yours faithfully,

G. E. WILKES.

Mr. Leopold Canning's Ideas.

Sir,—I can hardly think Mr. Canning can be thinking of the modern motor-bicycle as now manufactured by many first class firms. To be brief, I will just take the points as he brings them before us in his recent article. Starting.—If a rider will take the trouble to have his machine well adjusted and in good order there should be no difficulty in this. As for a larger compression tap, an exhaust valve, if lifted as it should be, gives in a 2¾ h.p. motor an opening of 1¼in. area. Does Mr. Canning think of fitting a larger tap than 1¼in.? The starting difficulty is only experienced when cold, when the friction of the heavy cylinder oil requires power to overcome. Just a drop or two of paraffin is all that is wanted. Free-wheeling.—Easing in traffic, etc., is all done with a well fitted exhaust lifter, and much better than a tap would do it. Two-speed gear.—Even if a machine will climb most hills, would this not be an advantage in traffic where the pace sometimes becomes too slow to allow the engine to fire properly? The idea of having two pulleys and two belts, changing these when necessary, can hardly be named "perfection." Engine position.—An engine so placed that it is shielded from the cooling air, warms the rider's legs, and gives a very short belt drive likewise, will hardly appeal to most of us as the ideal one. Transmission.—The belt has done and is still doing good service. However, not one of us would attempt to call this "perfection"; cutting a piece out, etc., does not occupy much time, only it is unpleasant if it happens to be raining; and if one has to make a call shortly afterwards a good wash is necessary. The cost of belts, likewise, we would all like to see very much reduced—not prime cost, but cost per mile of running. A disengaging clutch is a much easier way of disconnecting the engine than slipping off a greasy dirty belt. Free exhaust.—A well-designed silencer overcomes this, and for the warning of people, dogs, etc., a good horn appeals to me as more reasonable and as effective. Handlebar control.—Surely this is a step towards perfection! Stand and carrier.—Mr. Canning evidently forgets the stand carrier, and mudguard as fitted to the Phœnix in the reliability trials; removing the guard to enable one to repair a tyre is worth consideration. We all wish to attain perfection in motor-bicycles, but I hope not according to Mr. Canning's ideas.—Yours faithfully,

J. VAN HOOYDONK.

Humber Motor-Bicycle Experiences.

Sir,—I see by a recent issue that you confirm what I found to be the trouble with my machine, and I thank you for pointing out the faults re carburetter supply tap, etc. I watched the timing gear you may depend. I have studied all your articles up to now and knew what to look for; the pinions I found are marked. The experience has been a welcome one to me, and in future I can go direct to the seat of the mischief from such indications. The Humber is first-class once more, but the exhaust tappet and pinion with cams will need replacing. To my surprise, I found that the cam failed to lift exhaust tappet sufficiently to permit fired gases to escape, although both the cam and end of tappet are nicely hardened, and appear exactly as they did four months ago, when new. The tool marks on the end of the tappet indicate how the makers had cut away, until satisfied the tappet was right, yet (although not apparent at the time) they faced off too much, as I am quite convinced Humbers' work does not wear to such an extent in so short a time. I fitted piece on cam and found all to be right.—Yours faithfully,

A. SIMMONS.

Carburetter Troubles.

Sir,—I was rather amused when reading the letter in a recent issue of "THE MOTOR" by J. H. Hubbard re his spray carburetter, with which he could not reduce the speed of machine below 20 miles per hour. We have had a great many different views given regarding the surface and spray carburetter, but this is the latest objection I have heard to the spray form of carburetter. I have been using a spray carburetter for three years on a tricycle, having covered over 12,000 miles in that time, and I have found none of the many troubles which writers are always complaining about, and I believe most of the trouble is caused by the carburetter not being properly adjusted. Some of the float feed carburetters are not placed properly on the machine, having the float and spray nipple in line with machine: the result is that going up or down hill alters the level of petrol in the nipple. We often read of machines which will run on the stand, but when on the road refuse to go: this is frequently caused by the tilting up of the hind wheel on the stand, which brings the petrol to a good working level in the spray nipple. A good spray carburetter should scarcely ever require touching after being once properly adjusted: the engine should start at the first turn, and run at any speed without altering the air or petrol. Such a carburetter I have been using; it is very simple, has no float, and is not liable to get stopped up: by applying the brake slightly I can travel about four miles per hour and not misfire, and I have never cleaned my petrol tank out yet, and over 100 gallons have gone through it, as well as paraffin oil sometimes: I have also seen lever for adjusting carburetter rusted up tight for want of use. The defect mentioned by C. A. Palmer of machine stopping after half an hour's run, is caused, I should think, by the petrol tank having no air hole to allow air to enter to replace the petrol being used, or possibly the petrol pipe is close to some hot portion of the engine and evaporates the petrol before it gets to the nipple.—Yours faithfully,

R.E.S.

Weak Forks: a Warning.

Sir,—Allow me to warn readers of "THE MOTOR" against taking off their 1¾ h.p. motor from the frame, and substituting a 2 h.p. I did so last May, and did not take the precaution of strengthening my front forks, as I thought them strong enough at the time. But whilst riding down a hill shortly after making the conversion they broke away, without giving any warning. Fortunately, I was going slowly at the time, or it might have resulted in a serious accident.—Yours faithfully, "CAUTION."

Mysterious Accumulator Defect.

Sir,—Although not wishing to deny that "Radio" may have hit upon the real fault of the battery of "No Charge," and whilst admitting his right to differ with me, I must protest against his contradiction of my statement. It *is* possible for a leak between the cells to form part of a circuit, the other parts being the remainder of the electrolyte and the two sets of plates which are connected together outside the cells. Also, the capacity of the cells would not be doubled, unless they were disconnected and the plates joined in parallel instead of series, which proceeding would have the same effect without the cells being in internal communication. When I offered a suggestion I also explained how to prove whether I had pointed to the real fault or not.—Yours faithfully, NOEL PATON.

Ignition Experiences.

Sir,—I can quite bear out your remarks re the E.I.C. coil and double contact breaker on page 221 of "THE MOTOR" of October 14th. My experience is as follows:—I had an ordinary contact breaker, etc., fitted to machine (2¾ h.p. Excelsior) when sent. The machine ran, when filled up, from Leeds to Newark on about one gallon of petrol. The contact breaker, etc., was not to my liking; I had trouble with misfiring, and uneven running. I then had an E.I.C. contact breaker and coil fitted, and found a wonderful improvement in the running of the machine, misfires being a thing of the past. The machine now runs on a whiff of petrol, and never gives me any trouble. On riding to London on same conditions as before I was surprised to find that the machine ran to Stilton with the same quantity of oil as it took to Newark on a previous journey, approximately a distance of 50 miles further. This, I conclude, was brought about by being able to use a very weak mixture; and I find I have no trouble running with petrol at .720 sp. gr., and can use Pratt's "B" spirit with surface carburetter. The machine now starts with first touch of the pedal; nine times out of ten I simply give it a push, drop exhaust valve, and the machine starts. I may say I have never had a break down on the road since I had E.I.C. fittings, and I have ridden over 3,000 miles this season. I think if other motorists were to try these fittings their difficulties with misfiring, etc., would in many cases cease. I quite agree with Mr. Swain and think 2½in. tyres should be fitted to the 2¾ h.p. machines. I may say I have no interest in the E.I.C. ignition fittings, and might add in conclusion that the treatment I received from Messrs. Bayliss, Thomas and Co. was most courteous.—Yours faithfully,

H. WALKER.

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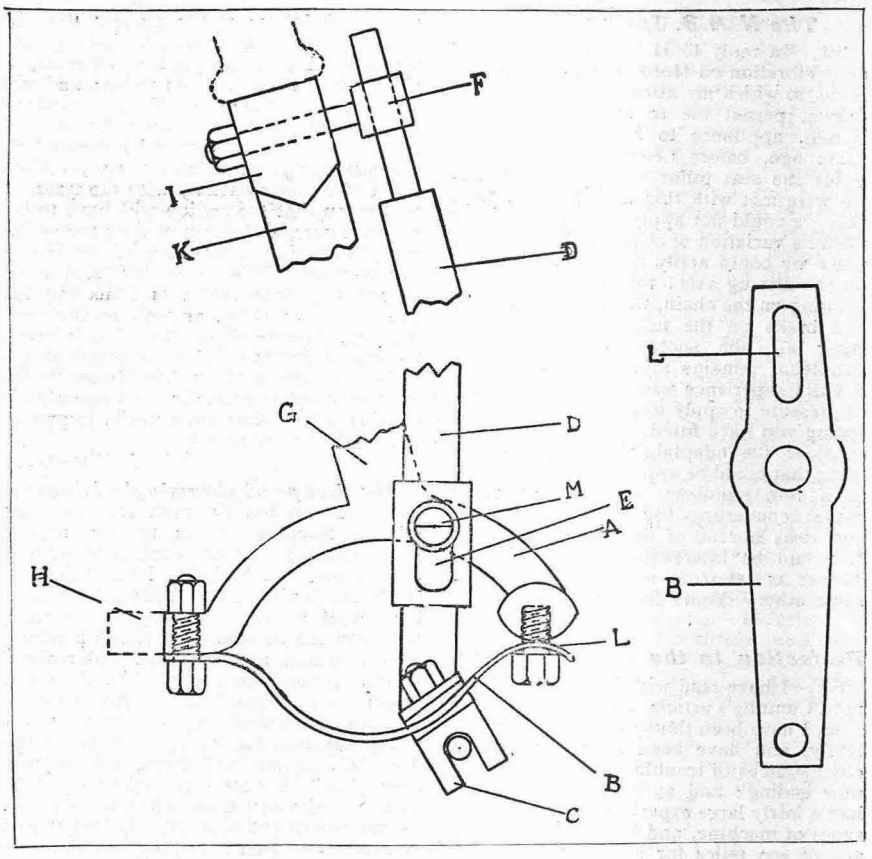

Illustrating letter from H. Rippon-Seymour.

An Anti-Vibrator.

Sir,—I send herewith diagrams of an anti-vibratory arrangement of springs, to be applied to the axles (front and rear) of motorcycles, etc., patent of which I have applied for. I claim the following special advantages for the invention. (1) The almost complete absorption of road shock and vibration. (2) The provision of a constant braking surface at the rim of both wheels, at the usual place, thus doing away with the necessity of devising special brakes. So far this has been one of the most difficult things to overcome, where spring forks, allowing movement of the axles, have been tried, owing to the periphery of the wheel constantly changing its path. (3) The simplicity of the contrivance, which can, if necessary, be easily repaired by any roadside smith. (4) Its perfect safety. (5) Its cheapness. The following will explain its action:—B is a flat spring (or springs) carrying near its centre an axle holder C, and having at its end a slot M. On sudden pressure or shock the spring tends to flatten, and moves upward and forward along this slot. In order to prevent one spring moving without the other, they are both bound by a laterally inflexible fork D, having at its upper end a sliding pin, moving in a bearing F, after the manner of a brake rod. To guard against accident through the breaking of a spring, a slot L is cut in the fork D, and is engaged by a bolt connected with the steering. G is a strut for brazing the whole appliance to the end of the fork blade K; and H is a strut for fitting to the rear forks.—Yours faithfully, H. RIPPON-SEYMOUR.

92, Marchmont Road, Edinboro'.

The Vibration Question.

Sir,—We were much interested in the letter dealing with the vibration question in your paper of November 4th, written by James T. Towlson. We have for some time been carrying out a series of trials on two new petrol cars, fitted with two balanced cylinders, which is described by Mr. Towlson as a new type. The cars fitted with these engines are known as the Yale cars, and are of 12 h.p. The company manufacturing these cars in the United States selected this form of motor after carrying out, on an extensive scale, a large number of experiments, with a view of getting best results possible out of horizontal engines; and with our experience in connection with the various makes of cars we have had through our hands, we know of no arrangement of cylinders which gives such excellent results as regards steady and smooth running. We have been designing a small 3 h.p. slow running motor, which we think is admirably adapted for the motor-bicycle. Of course, it necessitates a slight alteration in the frame of the machine. We propose to drive from the crank shaft to the rear wheel with a chain, in combination with a suitable clutch. By this means one has the advantage of being able to start the motor up by hand. One can thus mount the machine and pedal for a short distance, gradually bringing the clutch in, an advantage which we think will make the motor-bicycle more popular, for many riders do not care to pedal their machine for some time before their motor starts running.—Yours faithfully,

CLOUD AND NICHOLS.

Strand-on-Green, Chiswick.

Favours a 1¾ h.p. Motor.

Sir,—I have read Mr. Fawcett's recent article, and should like to say a word or two in defence of the 1¾ h.p. motor-bicycle. As the owner of one, I ought to know a little about their capabilities. The chief reason why riders go in for a higher powered motor, I think, is because they do not know how to work the 1¾ h.p. motor to its best advantage. According to my experience, I find three out of every four riders do not get more than 75 per cent. of the power which they ought to get out of their machines, the chief reasons being want of compression, and a bad drive from the engine pulley to the driving wheel. With my 1¾ h.p. I can climb any gradient up to 1 in 7, with a slight amount of pedalling, the reason being that I keep my compression as near perfect as possible, and am a firm believer in a chain drive. Anyone possessing a good 1¾ h.p. engine can do 35 m.p.h. on the flat, and climb most hills. This will meet my requirements for the next three years. A light two-speed gear and free engine would make this type of motor-bicycle perfect for the ordinary conditions of motoring for a single rider.—Yours faithfully,

HAROLD ASHTON.

Belt Transmission and How to Improve It.

Sir,—I was much interested in Mr. O'Gorman's recent article on the above; but from practical experience I beg to differ from him on one or two points, which, I think, may be of interest to your many readers. The round belt, I contend, may be discarded at once, as it is useless for high powers: it slips, stretches, and tears out at the hook. Also the metal hook (not the belt, as it is generally understood) rapidly wears the pulley smooth and U shaped. The Brittain pulley is apparently the best method of using the round belt for medium powers. The V belt is far from perfect. It frequently slips, and also rapidly wears out, which (considering its high initial cost) is a serious item. If the V belt is perfect, why are so many of the standard makers of motor-bicycles fitting chains for next year? We have only the flat belt left, and there I beg to differ from Mr. O'Gorman when he states that the flat belt slips after 100 yards of heavily watered road. This is probably true of the straight flat belt drive, but Mr. O'Gorman must remember that there are others. My experience this year has been on a flat crossed belt drive tandem, with 3 h.p. motor, and I have ridden for considerable distances in the rain without any slip. This is the best method for transmitting the engine power that I have yet tried. Firstly, cheapness—the belt costs about 3s. for a tandem, or only about 2s. for a single, and will last at least 2,000 miles. Secondly, flexibility—it ensures obtaining the best results from the motor. Thirdly, simplicity—no chains, clutches, etc. The belt stretches when new, as every belt does, and has to be taken up occasionally, but the limit of stretch is soon reached. It must be noted that the belt has stood the test of driving a tandem and two riders, weighing about 11 stone each. I have also occasionally towed a third person on an ordinary bicycle. Dust, however, causes the one small objection that I can find, as it necessitates the belt being scraped about every 400 miles. Latterly the belt has seldom required cleaning, as everybody knows the dust has been conspicuous by its absence for several months. Mr. O'Gorman's diagram suggests the possibility of remedying this one fault, and I am now making designs for my new machine for next year. My present idea is to adopt his method, with the exception that I shall connect the two pulleys (which should be perforated) by a 1 or 1¼ inch flat crossed belt, and then, with a light casing, which must be quickly detachable, we have the perfect belt drive. I do not think Mr. O'Gorman will regret the trouble if he takes an early opportunity of testing the crossed flat belt.—Yours faithfully, E.H.

The Chain Drive.

Sir,—In regard to the letter from "M.I.M.E." in a recent issue, in which he deplores the scarcity of chain-driven motorcycles, and asks why such is the case, I would say that it appears the belt has held sway because the public have imagined that chains suffer from the shocks of driving, and cause damage to tyres. Possibly a lot of the prejudice against the use of chains has arisen from the fact that the chief example of this form of transmission has up to now been very apt to give trouble in starting, this being due to the low ratio of pedalling on to their engine, which means very hard work to overcome the compression and give sufficient suction to a sluggish carburetter. I can, however, assure "M.I.M.E." that when the right form of chain drive comes along he will have no need for his lament, as I am convinced that, were the form of drive which I at present use better known, there would be a very decided decrease in the number of belt users. If "M.I.M.E." or others feel interested I would be pleased to answer any inquiries.—Yours faithfully,

G. L. BENBOUGH.

22, Tivoli Place,
Ilkley, Yorks.

Benz Car Details.

Sir,—*Re* the queries of W. B. Nicholson in a recent issue concerning Benz cars, I have sometimes found the same difficulties in starting that he complains of, but it is generally a question of getting the correct mixture, and I find it requires a little more gas to start the engine than it takes when running; that is to say, when running more air is required. Then he will find an easier start is obtained if, when unused, he will put a bit of an old bicycle air tube round the orifice of the carburetter. By this means the volatility of the petrol is retained. But what is better still is to empty the carburetter after each run, and then let in fresh petrol when next going out. It does not make much difference, I find, which petrol is used, as the carburetter is warmed from the exhaust; the difference is only noticeable in starting. A Ratcliffe inlet valve is a decided advantage, and, being so cheap, should certainly be procured. The firm will fit the cam for him for about a shilling if he sends on the wheel to them. The little brass cap is for the lubrication of the exhaust valve stem with paraffin, not lubricating oil on any account. If ordinary care is taken, and little adjustments made directly they are required, a lot of pleasure can be got from these little cars. They are absurdly cheap at prices as now advertised. They are thoroughly well made, and nothing but the best has been used in their construction. They have wipe spark contact, and throttle control.—Yours faithfully, "BENZITE."

Some Tips about the "Benz."

Sir,—In reply to W. B. Nicholson, who writes in a recent issue, I may say that he will have no difficulty in starting the motor if he will squirt a little petrol from a small oil can round the inlet valve before starting the engine. If he does this he will find the engine will start on the first stroke. The fly-wheel should be pulled round sharply. If carburetter is a spray he should see that it is flooded by operating the needle valve before he starts. A mechanical inlet valve lifter is a great advantage, but care must be exercised in the adjustment: experience has shown me that the exhaust is driven out under pressure; consequently, when the exhaust valve is closed at the end of the stroke a certain amount of compressed gas remains, and if the inlet valve opens immediately, this blows through and forces back the fresh gas: the inlet valve should open a fraction after the completion of the exhaust stroke. The greatest trouble with these cars is taking out and putting in the sparking plug: the nuts holding in the plate are in a very awkward position, so that it is impossible to get an air tight joint on the road. All owners of Benz cars would do well to follow my example:—I sent the plate of an old plug to Messrs. Bransom, Kent and Co. requesting them to make an adaptor to take any ordinary plug De Dion size. This they did, and I may say made an excellent job of it, and sent by return post. I can now screw in any plug having De Dion size thread, which I can buy in any motor shop from 1s. upwards, without having to remove the plate; whereas before the delay, cost and trouble in having a Benz spark plug repaired constituted a great objection.—Yours faithfully, "GERARD".

Improving Old Type Werner Carburetter.

Sir,—I have read with interest "Ujbanya's" remarks on "How to get good results from an F.D. Werner." I also had some trouble with the carburetter with which the machine was fitted; so I removed the flimsy non-absorbent material wrapped around the "meat-safe" box and substituted a halfpenny "sponge-cloth," the thicker strands of the latter leading up to the top of box and hanging down to the bottom of the carburetter chamber. The sponge-cloth was doubled in two, wrapped round twice and tied lightly; and the result was very satisfactory; so much so that the former owner was very much astonished at its good going. The machine starts off at once—no vigorous and exhausting pedalling such as some of the later spray types of carburetter at times require, and with the air regulator at the right hand, a perfect mixture is almost instantaneously secured, not to speak of the corresponding increase of power. I have run with Pratt's "B" spirit in summer; but I find Carless' works better with this form of wick carburetter in winter, a charge of half a gallon of the latter carrying me 70 miles on averagely hilly roads. I have no doubt that if Mr. A. Harris devotes a little time and patience to carrying out the alteration (other fitments being efficient, of course) he will derive a great deal of pleasure from the "Old Werner."

Yours faithfully, "EAGLE."

[Although we have again devoted five pages to correspondence, a large number of interesting letters are crowded out.—ED.]

OUR INFORMATION BUREAU.

SPECIAL NOTICE.

The Editor is at all times pleased to answer any queries put to him by the readers, or to receive correspondence from readers upon any motor topic. In consequence of the large number of letters received, however, he must insist upon the following simple rules being strictly adhered to :—

1. Plain writing. Type writing for preference.

2. All letters to be written on one side of the paper only.

3. Questions to be clear, terse, and to the point, without tedious preamble or needless flattery.

4. Should an immediate reply be required, an envelope must be enclosed bearing a penny stamp, and the name and full address of the sender. NOT a stamped undirected envelope.

H. Taylor (Manchester).—The taxes will amount to £2 for 1904, as against 30s. under the former Act.

W. Harding (Wolverhampton).—The following details may assist you. (1) Exhaust valve diam., 1 5-16ths, lift full ¼in. inlet valve diam. 1⅛ by ¼in. lift; (2) cylinder walls 5-32nds thick; (3) main shaft ⅜ths diam.; (4) pulley side bearing 2½in.; other side 1½in. long; (5) make valve stems 5-16ths; (6) bore 80 mm., stroke 84 mm. These should give good results.

G.E.B. (Dundee).—If you are convinced that the overheating trouble does not lie with the carburetter, we believe you would find it caused by one of the following: (1) Exhaust valve does not open its full amount; this is readily adjusted in the C.G. motor by the push rod screw. (2) Inside of cylinder and head are thickly coated with burnt lubricating oil. Take off the head and thoroughly clean. (3) Exhaust elbow partly blocked. (4) Silencer wants cleaning out, and a few more, say twenty, very small holes drilled in silencer will assist in relieving the exhaust.

Principle of the Coil.

"Electrical" (Yarmouth).—You ask us to explain how it is possible to have several thousands of volts at the high tension end of the ignition coil whilst there is only a current of 4 volts going into the coil from the accumulator, and how can the power be so very largely increased as it were.—The coil does not increase the "power" at all. Electrical power is always expressed in "watts" and watts are made up of two components multiplied together, namely, amperes and volts. As a matter of fact a good deal less "power" or watts comes out of the coil than goes in. By the principle of induction what the coil does is simply to very greatly increase the "volts" component at the expense of the amperes. You send into the coil considerable current at low pressure and simply convert it to a current having great pressure but very little quantity.

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J.D. (Ealing).—You will doubtless be able to get the sprockets from Brown Bros., who are very large factors in fittings.

P. B. Murray (12, Lever Street, Manchester) would be glad if any reader could tell him of a German book dealing with motor-bicycles, and introduced this year; also the name of the author and publisher.

H.G.A. (Stevenage).—(1) The specification you send is, on the whole, a good one. (2) Any standard make of V belt. (3) Certainly not advisable to have coil near enough to the motor to get heated; it would be risky for the insulation.

"St. Crispin" (Whitley Bay).—We cannot suggest any reason for the float sticking, if everything is as you say. It very often happens that the petrol gets inside through an exceedingly small crack or hole in the float. The 1904 Minerva 2 h.p. motor is 68 mm. by 70 mm. The new F.N., we believe, is 70 mm. by 80 mm., 2¾ h.p. Other details as to weights of various parts we cannot give you; doubtless the makers would supply these. Best speeds about 1,650 revolutions. Both silencers are good. The Fairfax has the advantage of a cut-out.

"Petrocyclette" (Sunderland).—(1) The 3½ h.p. car you mention is not a really practical one for general road work. The 4½ h.p. would prove much more satisfactory and quite equal to the hills of 1 in 9. (2) The reason so few of the smaller powered cars are offered for sale is obvious. (3) If the car had been carefully handled you might reasonably expect after a season's use to get two-thirds of the price you originally gave.

Side-slip: What do Readers say?

"Side-slip" (Cheltenham) asks if the theory as to a very hard blown tyre being the least liable to skid is, after all, another fallacy, which ought to be knocked on the head at once. He says many riders, putting a childlike faith in this theory, keep their tyres pumped up as hard as solid rubber, and experience great discomfort from vibration thereby. He contends that there is very little difference in the actual tread surface exposed on a greasy road between a hard blown and a moderately blown tyre. and from experiments he has made he has found the moderately blown tyre the safest. He thinks that others readers should be invited to give their experiences, so as to see what the consensus of opinion is.—For our part, we hold strongly to the opinion that a hard tyre is the safest. A lot depends on the diameter of the tyre, and the actual nature of the greasy surface. There are some conditions of greasy mud on which it is probable that a moderately blown 2in. tyre would be as safe as a dead hard 2½in. tyre. We certainly think that if large tyres come in vogue for motor-bicycles it will be desirable to have a narrow running tread at least. What have our readers to say on this matter?

H.M. (Skyehouse).—(1) You should have a high-class 4 h.p. motor with water-cooled cylinder to do the work you specify easily. (2) De Dion-Bouton and Company are making a speciality of motors designed for stationary work. Write to the makers for particulars.

Webb (Birmingham).—We cannot state the exact weight of the motor-bicycle you mention · certainly not less than 180lbs. fully equipped. The power (3¼ h.p.) is certainly a tall order for a beginner. The make is good; but you would, in our opinion, be more comfortable on a 2 h.p.

Launch Details.

M. A. Burnby (Liverpool) writes:—I recently purchased a launch in which was an under-driven petroleum oil engine—working on friction cones—viz.:—A large brass cone attached beneath the driving wheel, working on two steel cones fixed on the propeller shafting, one cone being for "a head" motion, the reverse cone being for "a stern." I find when engine is working that they make a great noise, also, as the steel cones on the propeller shafting are smooth and bright, feel sure they lose a lot of power. Upon looking in another launch driven by a similar engine I found the steel cones covered with what appeared to me to be some kind of vulcanite; this I discovered made them work quite noiselessly, also gave them a good firm grip, with no apparent loss of power. Could any of your readers inform me where I could get my cones covered with same material?—It is probable that the cones are covered with vulcanised fibre. Very likely there are severa' local firms who would do the work. If this meets their eye perhaps they would let our correspondent know.

Alterations to a Quad.

H. A. Appleton (Wigan) writes:—I find my 2¾ h.p. De Dion quad, with water-cooled head and two-speed gear, rather under-powered; and I am thinking of fitting a second 2¼ h.p. engine. I propose to fit the second engine on the stay between the bottom bracket and the head, with a chain drive on to the existing pedal chain. (1) Do you consider this practicable? (2) Would the differential stand the extra strain? (3) Would the tube from the bottom bracket to the head be strong enough to support the engine? (4) Would another 2¼ h.p. give sufficient power for ordinary purposes, or would a 3½ h.p. (water-cooled) be better? (5) Would there be much annoyance from the engines not being timed together?—We do not think the proposed conversion a desirable one. It would make a most complicated machine, and we question if the parts would stand the strain. It would be much more satisfactory to dispose of the 2¼ h.p. motor and adopt a 3½ h.p. You can run this safe enough with air-cooling if you do not keep the low gear on for lengthy periods. The alterations would not be so costly to adapt the 3½ h.p. motor as to experiment with the additional 2¼ h.p. motor.

J. Chipchase (Darlington).—If you write to Messrs. Bates, Ltd., St. Mary's Mills, Leicester, we believe they would supply you with a pair of special cushion tyres for the back wheels. Retain pneumatics on front. You will not get quite the same speed as formerly.

H. H. Adams (Dunoon, N.B.).—(1) The Castle accumulators are A1. (2) P. and R. charging battery; this has special lifting arrangement for the zincs. (3) There is always one way of connecting the accumulator up to the coil to give the best results; hence one terminal is always marked positive.

F. Petrie (Rochdale).—The type of 3½ h.p. motor you refer to is quite an obsolete pattern. The motor shaft was arranged parallel with the wheel axles, and gearing was of the planetary type. Horse-power was supposed to be brake h.p. It is doubtful, however, if it ever gave this in practice.

Why not Static Electricity for Ignition?

"Igniter" (Liverpool) writes to say he is surprised that no firm has yet attempted to devise an ignition gear working on the principle of the static electric gas lighter, which gives powerful sparks. The working parts of this machine are exceedingly simple, being merely two little vulcanite drums revolving one within the other. The power required is very small, and the weight of the whole apparatus would only be a few ounces compared with the great weight of accumulators and magneto dynamos. He asks us if we can tell him why no one has adopted this idea.—Makers of ignition gear are, of course, well aware that there are possibilities in this direction; but there is one fact that renders all static electrical apparatus of only limited use, and that is its susceptibility to changes in the weather. If there is any trace of damp about, as a rule, they will not work. Then, again, there would be considerable difficulty in providing good insulation, and the whole affair would be nothing like so simple as our correspondent imagines. Our opinion is that we are not likely to have a practical device of this kind for a long time. It is not unlikely that the dynamo and coil combined will be the ignition of the future. This means, of course, retaining the usual form of sparking-plug.

W.E.A. (Clifton).—The idea you submit for making a non-slipping belt is not at all practicable. The pins projecting through the leather would not keep in pitch with the perforations in the pulley for more than a few miles.

Carburetter and Ignition Queries.

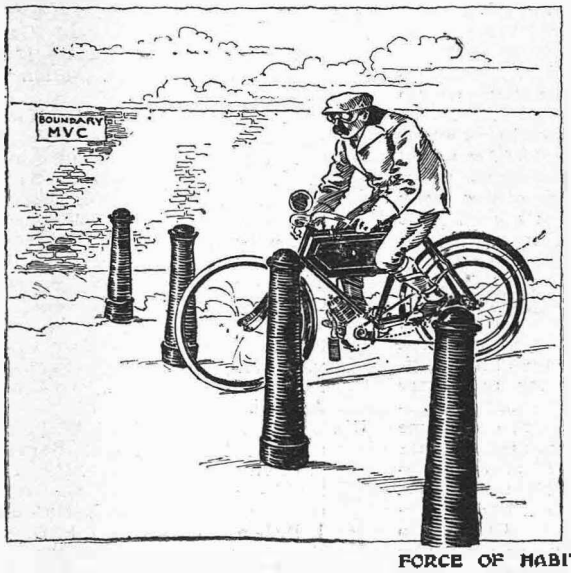
P.E.B. (Rugby) writes:—I experience misfiring during very cold weather. The machine is a 1903 2½ h.p., surface carburetter, and I use Pratt's B spirit. Ignition, compression and valves are good, and petrol is fresh. The machine runs beautifully in slightly warmer weather. Must I have Pratt's A spirit, or try Carless'? (2) I possess a small pocket accumulator, capacity 2.75 amp.-hours at .25 amp. discharge. Would this be any use as a "spare," used in conjunction with an almost run-down Castle? If so, should it be wired in series or parallel with big accumulator? (3) Are De Dion pattern sparking-plugs any good as sold at 1s. and less at depots?—It is very probably the spirit at fault, judging from numerous similar cases we have heard of. It is an easy matter to try some lighter spirit. Many users of surface carburetters swear by the .680; whilst others say that they can run with the heaviest spirit made, even in frosty weather. A good deal depends, of course, on the carburetter, and the way it is manipulated. (2) The accumulator is very small, but it is quite possible, if it is well charged, to run, say, 20 or 30 miles with it. If you do use it, we should use it coupled direct to the circuit in place of the large one. If you joined it in parallel with the large one it would begin to charge it on account of having a higher voltage, and if placed in series you would have too much voltage for the coil. (3) Candidly speaking, we have not found very cheap plugs satisfactory. We believe in a standard article.

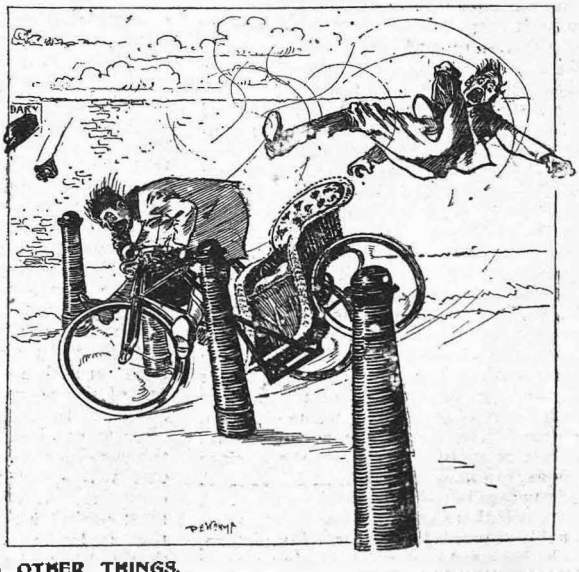
M. W. Roe (Penrhyn).—Personally, we do not think there is any likelihood of the local authorities carrying out what you suggest. We should not defer taking up motoring on that account.

C.H.L. (Blackburn).—(1) We do not think it is any use tinkering with a cracked cylinder. Better get a new one at once. (2) As you have had trouble with the exhaust valves burning out so often, you had better investigate and see if you are not throttling the exhaust, perhaps by a defective silencer or too small a pipe with a right angle bend in it. This is a very usual cause of valves going.

"Amateur" (Glasgow) asks how he can make the wheels of his motor-bicycle firm in the forks. At present both wheels are quite loose, and he thinks this was responsible for a side-slip he had recently.—"Amateur" should have no difficulty in adjusting the wheel bearings as follows: First, slacken the axle nut of front and back wheel on the left-hand side. Then obtain a cone-adjusting key to fit the slots on the cone which is just inside the forks; give this cone a turn to the right, and then screw up the axle nut. If the wheel has still an amount of play, give the cone a further turn till the wheel is firm. Care must be taken to see that the wheels revolve perfectly free.

T. Atkins.—There are a fair number of motor-bicycles in use in South Africa. We are sure that any of the standard makers would equip you with a suitable machine. Desirable features might be a chain drive, specially low gear—as you have exceedingly steep hills to climb—not less than a 2½ h.p. motor and tyres of special strength and 2½in. diameter: magneto ignition would doubtless be the most convenient, although we hear that accumulators can be charged in the large towns, or you could manage it yourself with a charging battery, taking a supply of chemicals with you. You will also be wise to take a set of spare parts with you, such as valves, chains or belts, driving pulley or motor sprocket, spare tyres, etc., and the usual small accessories.





FORCE OF HABIT—AND OTHER THINGS.

1.—Motesby invariably "took" these boundary posts at top speed with perfect confidence on his two-wheeler.

2.—He left the side-carriage, however, entirely out of the calculation. Most awkward, you know, just when he had almost convinced his old crony that moting was the sport of Kings and the King of sports!

A17

T.D. (Southbourn).—The machine you refer to fitted with high tension ignition is a good one. The coil and accumulator system is being brought to a high degree of efficiency and reliability. The pros and cons of the two systems are too lengthy to discuss here. Much has already appeared. Look up your back issues.

W. Orchard (Hitchin).—(1) The De Dion and M.M.C. engines, although high in price, have a splendid reputation for fine workmanship and reliability. (2) You can safely go up to 3½ h.p. with air-cooling. A two-cylinder motor has its advantages, of course, giving smoother running and less likelihood of overheating. On the other hand, it takes up more space, has twice as many parts likely to go wrong, and the electrical gear is more complicated. (3) The chain drive you refer to has done good work. (4) We can also speak well of the Bowden. (5) Steel bearings are excellent, provided the lubrication is seen to. It all depends how much care you take with them. Some riders will get a fired bearing on the first ride; whilst they will last indefinitely with a careful rider.

2½ h.p. Minerva Queries.

C.J.R.S. (London) writes:—Acting on your advice, I have bought a 2½ h.p. Minerva, fitted with the Longuemare carburetter, with which I am perfectly satisfied. There are, however, one or two points I should like to ask your opinion on. (1) How can I tell if the engine is overheating? After running about five miles I find it is too hot to place my hand on it, though the air inlet to carburetter is nearly fully open, and the gas cut down to a minimum. If I throttle it down another notch the engine misfires. (2) I find a gallon of petrol only carries me about 80 miles. What distance should it drive the machine? (3) What is the cause of a spark at the top of the plug extending down the side of the porcelain? This lasts for about 150 yards when starting. (4) Given a good stretch of road, and under favourable conditions, what is the best speed obtainable, and for how long could such a speed be kept up? The machine is only three weeks' old, and runs very well. (5) Is it powerful enough to take a trailer up ordinary hills? (6) Do I require a license before the end of the year?—(1) There are not many engines that will keep cool enough to let you hold the hand on the cylinder head after running five miles. An overheated engine misses badly on hills, especially if you give it more gas, and the heat can be detected easily eight or ten inches away from the radiators. But, of course, it requires judgment to say if the heating is abnormal under all conditions. (2) We should say the carburetter is not acting well, or, to speak more accurately, you have not got the best combination of sprayer and choke tube. You require a sprayer with a less number of slots, or else block up one or two of the present ones. There is evidently a waste of petrol going on. The distance you can run on a gallon of spirit depends on the surface of roads, gradients and skill in driving. A good average is 110 miles to the gallon. (3) Looks as if there was a leakage of current, probably caused by a film of moisture, which dries away as soon as plug warms up. (4) You might safely reckon on 27 to 30 miles per hour, but it is not really possible to give definite figures. (5) Yes. (6) Yes. It will cost you 7s. 6d.

H. Knowlman (Cullompton).—For economical running have as much air in the mixture as possible, keep the throttle closed as much as possible, and spark well forward on fairly level roads.

C.H.D.—Provided you were able to effect perfect combustion of the paraffin, it should develop more power. Paraffin has the higher calorific value. We cannot say whether the makers' claim is an extravagant one; we should not advise you to be too sanguine of the result.

A. E. Benham (Lyme Regis).—The connections have been given many times. All you have to do is to connect the accumulator in series with a 32 c.p. lamp, taking care that the positive pole of supply goes to the positive terminal of accumulator. You will find very full directions in the "Motor Manual."

Testing a Defective Coil.

A. Watson (London) writes:—I should feel obliged if you would give me the benefit of your advice in relation to my motorcycle which refuses to spark. The low tension current seems all right: by connecting one of my test lamp terminals to the positive terminal of accumulator and the other to the handlebar I get a bright light, so evidently both accumulator and connection are all right for the low tension current. To test the high tension wire I connected one end of the wire to one of the accumulator terminals, and joining the test lamp to the other end of the wire and then to the other accumulator terminal it again glowed all right, showing that the insulation was all right, at any rate for 4 volts, though it might not be for the current after passing through the coil; but assuming that it is all right for the high tension current, the coil itself seems to be the only part left that could be defective. I may say also that I took the plug off the wire and tried to get a spark when holding the wire about ¼in. from the cylinder, but I could get none. The platinum tips of contact breaker are all right, as the machine has never been used. It is a Minerva 2 h.p. with M.I. valve. I might mention that previously I had got a spark every time I tried, so that there is no possibility of the wiring being wrong.—The Minerva wiring is simple enough, so you are hardly likely to be connected up wrong. The test you applied to the high tension wire, of course, would only prove that the wire inside was intact; it would not show if the rubber insulation was defective. Still you can judge of this easily enough; that is to say that a good piece of cable will be quite free from any cracks. What may be the matter is that one end of the secondary winding is broken. An easy test for this is to join one end of the accumulator to the M terminal of coil, and touch the B or high tension terminal with a wire from the other terminal of the accumulator a few times very quickly. In a dark room it should be possible to see just a faint spark every time the wire touches and leaves the terminal: this will show the secondary circuit is complete. If this is all right then it is most probable that the condenser connection is broken inside coil. Unless you thoroughly understand it we do not advise you to attempt to repair connections yourself. Best to take it to one or other of the firms advertising in "The Motor" who make a speciality of these repairs.

H. Stevens (Small Heath).—The "lead" the exhaust valve should have is a slightly variable quantity, depending on other factors. As a rule there is nothing gained by having more than ⅛th of stroke lead. But it is most important that the cam should allow the valve to close dead on the seating just as the piston reaches the dead point on exhaust stroke.

ANSWERS BY POST.

In addition to answers appearing on these three pages the following correspondents have been replied to through the post:—

Thursday, November 19th.—A. W. Dawes (Willenhall), F. J. Caparn (Port St. Mary), F. Batten (Cullompton), G. Dennison (Birmingham), G. W. Matthews (Shoeburyness), H. G. Dearden (Cambridge), T. C. Haigh (Staines), G. F. Nalder (Truro), M. A. Prickett (Sandy), G. P. Rumsey (London, W.), E. Holroyd (Morecombe), E. W. Walford (Coventry), G. Tresnon (Lancaster), F. G. Baldwin (Cheltenham), G. W. Richardson (Liverpool), W. Parker (Cardiff).

Friday, November 20th.—H. Dishley (Leek), H. Parkes (Quinton), H. R. Carson (Stafford), C. A. Buckingham (Coggeshall), A. H. Moore (Leatherhead), A. Hudson (Barnsley), B. Freeman (London, E.), S. E. Atkins (Hatherleigh), C. R. Stephens (Falmouth), G. Hallas (Alloa), J. I. Cheshire (W. Bromwich), J. T. Bean (London), J. Perkins (Market Harboro').

Saturday, November 21st.—Thompson and Sons (Ketteringham), W. E. Brittan (Malvern), J. J. Morrin (Naas), D. Cox (London), J. B. Butler (Middlesbro'), B. Bell (Grinsdale), A. Harvey (Sittingbourne), A. Watson (Stockton-on-Tees), A. Evans (Bridgwater).

Monday, November 23rd.—T. H. Scott (Crumlin), J. Wheway (Cheltenham), J. McKerrow (Cumnock, N.B.), A. Brown (Well Hall), M. A. Prickett (Sandy), T. B. Flint (Buxton), H. Wimpenny (Dunedin, New Zealand), J. R. Hall (Ealing), J. G. Chipchase (Darlington), G. H. Ward (Grange-over-Sands), H. B. Stocks (Acocks Green), G. Shaw Scott (Sutton Coldfield).

Tuesday, November 24th.—J. MacLean (Dundee), A. Warnery (Westcliffe), C. Hethrington (New Wandsworth), A. S. Graves (Edinburgh), H. W. Bowman (Ashwell), J. Fryer (Bury), H. Curtis (London), J. W. Bancroft (Oxenhope), C. Sutton (Redditch), C. H. Urmston (Edinburgh), E. J. Tiffin (Sunderland), W. Windebank (Brighton), A. Lester (Yoxhall), J. Tinniswod (Workington), W. Grosset (Leven, N.B.), R. A. Parkhill (Burton), M. Shiel (Adamstown), J. E. Appleyard (Salisbury, Rhodesia), R. A. Glen (London).

Wednesday, November 25th.—W. P. Wright (Hythe), E. D. Fawcett (Bayswater), J. S. A. Jewell (London, E.C.), T. J. Stubbs (Stafford), S. G. Harrison (London, W.), G. Snaith (Hartlepool), J. B. Brown (Edinboro'), F. B. Morris (Leicester), J. Marshall (Blackpool), P. A. Revell (London, W.), M. A. Prickett (Sandy), H. Vernum (London, S.W.), E. J. Saunders (Winkleigh).