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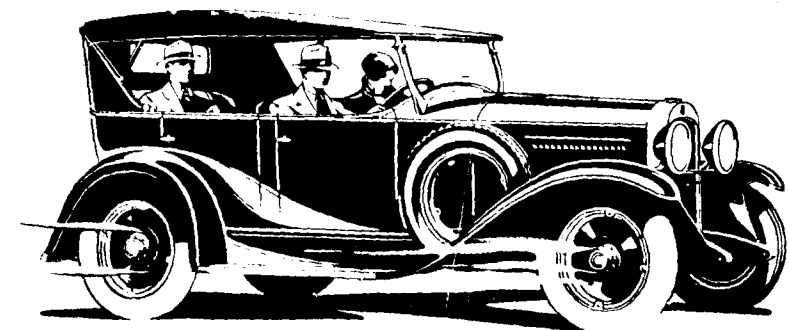
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The SOUTH INDIA MOTOR OWNER

SINGLE COPIES
As. 8.
January, 1930.
Vol. II. No. 1.

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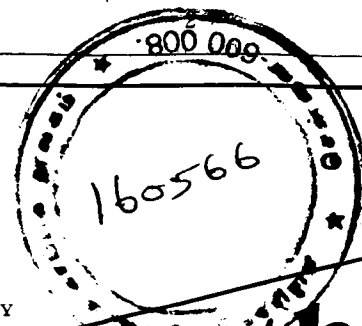
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EASTERN TECHNICAL PUBLICATIONS
VARADA BUILDINGS, MOUNT ROAD, MADRAS

USING
COMMON
SENSE
WHEN
DRIVING
PAGE 16

A
MONTHLY
JOURNAL
DEVOTED TO THE
INTERESTS
OF
SOUTH INDIA
MOTOR VEHICLE
OWNERS

Vol. II, No. 1.

January, 1930

Price, As. 8

Jottings from this Issue

PAGE	CONTENTS	PAGE
Sidecar drivers are worried by a feeling that the 'chair' is going to lift every time a left hand corner is taken ... 20	Reflections upon Reversing Faults ... 5	The hall-mark of a good driver is the ability to avoid disaster and foresee danger ... 18
Roads in Madras Presidency are much better than they are generally supposed to be 27	Owner-driver's Note Book ... 7	The average American car, as compared with the average British car, loses six miles per gallon in petrol consumption ... 19
Automatic chassis lubrication has done much to reduce the amount of upkeep called for by the modern car ... 13	Catalogues ... 9	Exhilarating for the man at the wheel but poor fun for the passengers ... 24
It is often more economical to scrap inefficient carburetors than waste time trying to adjust them ... 14	More Comfort and Less Effort ... 10	A new system of starting cars—on air, may soon be expected ... 30
The convenience of 'finger-tip' control is described on page ... 16	Spanners ... 11	An astonishing show-room recently opened in Paris by Citroën distributors ... 30
	Practical Side ... 12	
	Superior Overland Whippet. 14	
	Commonsense Driving ... 16	
	Driving a Sidecar Outfit ... 18	
	From a Passenger's View-point ... 22	
	Road Development in Southern India ... 25	
	Chota Flashes ... 28	
	News and Miscellany ... 30	
	Motor Cycling Notes ... 32	

EDITORIAL

Claims of Beauty and Utility

THERE is much speculation in automobile circles at the present time regarding the prospect of future design in chassis and bodywork, and the conflicting claims of beauty and utility are responsible for a marked division of opinion amongst designers. The utility school demands rear-engined chassis on which to build properly stream-lined bodies, contending that cars so shaped offer considerably less air resistance at speed as compared to the present day long bonneted models. These designers predict that cars with narrow-tailed, bulbous nosed bodywork will soon be general, largely because of the lower expenditure of power and petrol needed to propel them. Directly opposed to these notions are the technicians who strive continually for beauty of line regardless, within reason, as to the effect such artistry may have on general efficiency.

The Americans, however, seem to have hit upon the solution to the problem by stipulating that the appearance of a car should express the purpose for which it is intended, basing the idea probably upon old time philosophy which affirmed that what is useful is always beautiful. The vehicle which satisfies the eye of a discriminating beholder does so primarily because its design conveys to him a feeling of fitness—its lines strike him as suitable for the purposes for which it is intended. It is in the relative importance of these purposes that we must seek for the reasons underlying the 'useful beauty' of appearance possessed by various types of car. The sports model should look 'sporty', speedy and powerful; the tourer possess that 'solid reliability' appearance; and the saloon, cosy, unostentatious, almost 'matronly' to the eye of every beholder.

There is, nevertheless, much of custom in appraising car shapes, for the eye is influenced greatly by an unconscious conservatism as to the fitness of shape of anything—be it a car or

a cabbage. Even though we strive to consider the subject impartially, there is still great difficulty in imagining a rear engined chassis with egg shaped body work, simply because we have for so long been accustomed to seeing the bonnet placed at the front.

The trouble is, of course, that designers will insist on revolution rather than evolution. Instead of building special bodywork for a few cars with a definite purpose and use in mind, they wish to foist their notions upon the general car user, who is already quite satisfied that his present car is both useful and beautiful for its purpose. It may be that we, in company with the general motoring community, are too conservative about these matters, but we can hardly contemplate with equanimity the prospect of driving a pucca stream-lined model down to the club and parking alongside a more beautiful but less scientific present day saloon.

When the whole subject is thoroughly sifted, we cannot help but reach the conclusion that the average motor owner requires not so much a scientifically designed machine as something more in the nature of an unostentatious carriage. For motorists who desire to travel from Madras to Bangalore in the shortest possible time, there is much to be said for reduced air resistance obtained by stream-lined body work, but those who require merely speedy, comfortable transport ask but little more of bodywork designers in so far as exterior lines are concerned but would appreciate just a little more leg room, more attention to seating angles and an alliance with scientific utility toward eliminating engine fumes and heat from the interior of closed cars.

Which latter problem is assuredly a distinctly more difficult one than is the designing of revolutionary bodywork on half a sheet of squared paper—a statement admirably summed up in the old French proverb: 'Inventer n'est rien, contruire est tout!'

Random Reflections upon Reversing Faults

The Hon. Mrs. Victor Bruce writing for the 'Morris Owner' on a phase of driving in which the car owner is not always seen at his best

IF there is one item of motor car driving more than another in which the average beginner is admittedly weak, it is reversing. It is because the average instructor, whether a professional, a relative or a friend, quite rightly tries to avoid confusing his pupil by teaching him more than is absolutely necessary for the purposes of the moment. But one moment runs into another. He learns to steer; to brake; to control speed by the accelerator, and, when this is not sufficient, by clutch and brake pedals—and suddenly it is decided that he, or she, can drive.

Instruction in reversing is either deliberately avoided or accidentally neglected until the more immediately essential things have been mastered; but in each case only just the vital fact of where to put the lever—how to 'get into reverse'—is taught. And the novice thereafter strenuously resists the necessity for reversing. If he—or, as I said before, she—can possibly avoid reversing, no matter at what expense of unnecessary additional trouble, the said novice will do so.

Learning How

It is rather a pity, because not only is reasonably expert reversing a vitally essential accomplishment, but it isn't really so difficult—when you know how. And knowing how involves the employment of ordinary common sense more than anything else. More people try to impress upon the novice the fact that steering in reverse is the exact opposite of steering in a forward gear, but I never could quite see the point of this instruction, although, naturally, it is quite correct. The act of steering, whether backwards or forwards, must be unconscious and instinctive; if it isn't, then you simply cannot drive a motor car! As a matter of fact, you have no business to know where the steering wheel is, in regard to the degree to which it is rotated away from the straight. If you

do know, it means that you have not been paying full attention to where you are going—and that is the only thing that matters, whether you are going ahead or astern. How you get there is a detail.

It is beautifully easy, when you have the 'feel' of the steering, to reverse on any decent modern car. A wide rear window prevents you from regretting that the car is a saloon instead of an open tourer, if this is so; and for the less critical operations of reversing, the interior driving mirror tells you all you need or want to know about conditions behind you. Incident-

ally, for night reversing, a spot lamp which can be swung completely over to shine backwards is help, and the interior mirror is then just as useful as in daytime.

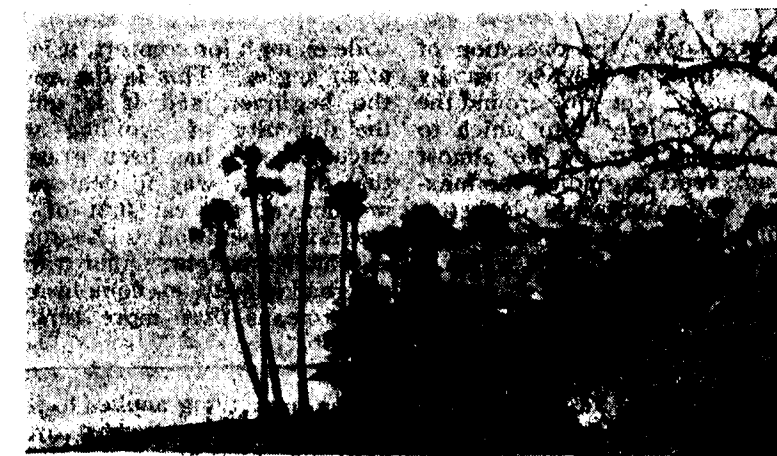
Difficult Places

The beginner who is not expert at reversing mostly gets caught either in public parking places in town, or in manoeuvring in a crowded garage.

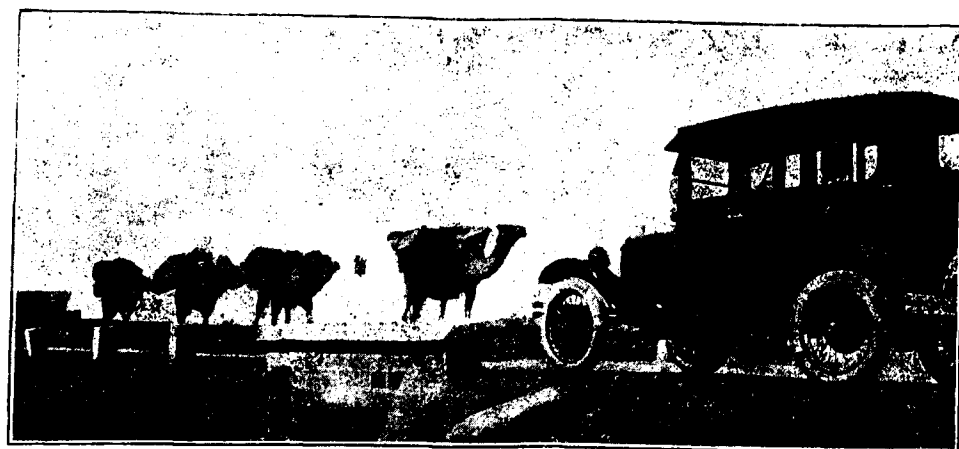
In the latter case it is generally possible to induce one of the garage hands to put the car in, or take it out. Quite naturally, one regards this as sixpence well spent; but it isn't!

That is just the time when self-consciousness should be suppressed. It doesn't matter what kind of a fool you make of yourself when there are plenty of people handy to get you out of the mess—if you do get yourself into one. The more people there are to laugh at your feeble attempts at reversing, the more there are to get you out of trouble! One naturally takes it that you will not let the clutch in with a bang and stand on the gas—in fact, it is to be supposed that you are aware that just as careful manipulation of clutch and accelerator pedals is necessary backwards as forwards in similarly pinched quarters.

I wish I could lay down a few simple rules for reversing—but there aren't any. You have to treat each situation as you find it, and the conditions are never the same, so far as manoeuvring the car in a



A PEACEFUL BACKWATER AT ENNORE—A FAVOURITE PICNIC SPOT FOR MADRAS MOTORISTS



TWO MODES OF TRANSPORTATION IN COMMON USE IN THE SIND COUNTRY

garage is concerned. Fortunately, the operation of parking the car in a public parking place is usually more or less of a standard task. You run around the park until you find that 'better 'ole' into which to creep. If there is a motorist near by, he almost invariably proves to be an expert at guiding the inexperienced into the narrow space, and you cannot do better than religiously follow his directions. If you do, you will probably be surprised at the ease with which a large car may be backed into a space which is apparently barely large enough to contain it. The next time, instead of being surprised you will endeavour to follow the reason for the various instructions; and after a few intelligent reversings in this way it should be possible to back the car in similar circumstances without help.

Too Close

And that's the time when the trouble begins! You think you can do it, and you disdain assistance. If the park attendant happens to be absent, so much the better—and ten to one you either park your car so close to the next one that it is impossible for the owner of either to open the adjacent doors, or you leave so considerable a space between the two that some late comer will go wandering through the streets throughout the luncheon period looking for the parking space of which your inexperience, laziness or negligence has deprived him.

Experienced Help

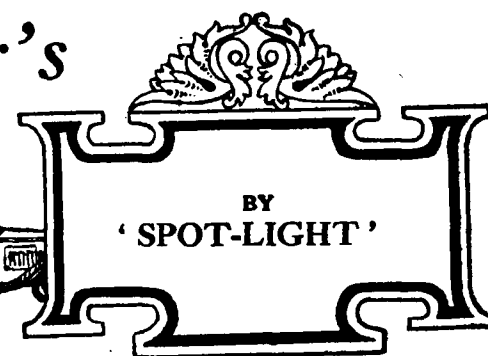
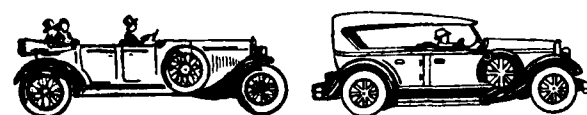
For the novice there is no better advice than to follow the directions of a helpful bystander, if, as I say, he is not, or isn't there, then you simply must manage by yourself. And the first thing to remember, if the space into which you want to back is no more than

wide enough for comfort, it is not to try to reverse at an angle. This is the most common mistake of the beginner, and it is quite unnecessary. When the difficulty of avoiding wing-scrappings in such circumstances has been grasped, it will be realised that the only way to deal with such a situation is to manoeuvre the car first of all so that the actual reversing operation can be done with the front wheels absolutely straight. Other traffic passing up and down the road sometimes complicates the matter, but this only means that more time must be taken over the job.

The same thing applies to reversing into or out of narrow garage entrances or gates. The latter in particular must be taken square, or there is an extreme likelihood of damaging a wing—and this applies just as much to driving forward as to reversing. I need not say any more on this score, because you will very soon find out the truth of it for yourself—if you haven't done so already!

These is just one other aspect of reversing to which I might refer. The borders of road offer a convenient extension of width which will reduce the number of 'tracks' necessary to accomplish the turn. Some people think it is clever to begin the operation by reversing on to the edge; it may be. But never when there is sand. Keep your rear wheels off this. The front wheels do not matter, since they have nothing to do beyond carrying the weight of the car. The rear wheels have to transmit the drive. They depend entirely upon their adhesion to the ground. In a very narrow road it may be inevitable that the driving wheels shall go on to the sand, and if there is any choice in the matter, let it be on the side of the road where the border is slightly uphill. The weight of the car will then be of considerable assistance, and may suffice to roll the car back on to firm ground.

From an Owner Driver's Note Book



The American Baby

I HAVE recently heard from a friend in Montreal P.Q. that Canadians are looking forward with eagerness to the American-built Austin Seven. As a motoring expert, however, my correspondent is a little concerned as to the Austin's road worthiness during heavy snows—advancing the argument that the narrow track Austin will find great difficulty under these conditions because of its inability to use the deep ruts made by the standard track vehicles. The obvious reply to this is that the big American cars will soon have great difficulty in keeping to the deep narrow ruts made by the Baby, because I am fairly confident that both Canadian and American motorists will soon learn to appreciate the wonderfully economical transport offered by these cars. What a triumph for British brains if the Austin became as popular in Canada and the States as it has done elsewhere!

which are so small that they cannot in any way be regarded as refuges of pedestrians. Is it in order to pass these on the off side—regarding them merely as obstructions—when this can be done with safety?

If, for instance, I am driving down a road having these lamp standards and a slow moving bullock cart adjacent to one of the pillars, both constituting obstructions logically, am I to treat them as obstructions legally and drive towards the off side of the road with, of course, due regard to safety and on-coming traffic?

Probably there is nothing in my fear of offending the law in this connection, but I have always kept a wary eye open for anything that may constitute a 'refuge' since learning that this is the greatest of offences during my last Home trip.

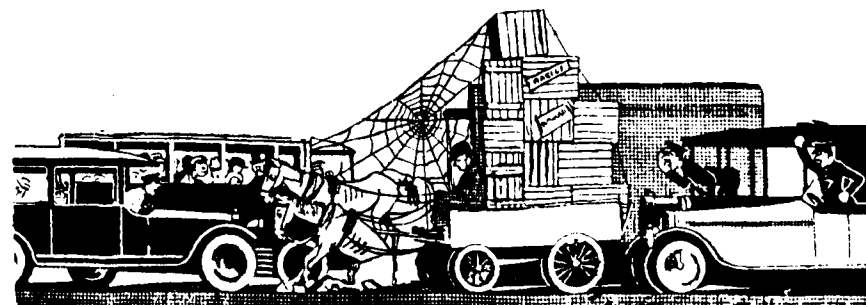
Perhaps readers who have the necessary legal knowledge would let me know just what the position is.

Puzzling Point

As a driver who is anxious always to keep within the spirit of the law, I have been rather puzzled recently as to whether it is permissible to drive on the 'off side' of one or more of a series of street lamps placed at intervals down the centre of a comparatively wide road. Madras readers will be familiar with the type of lamp I mean, the bases of

Better Display

There is no doubt that advertising in Southern India has proved its worth over and over again, but one is struck by the fact that many, many of even our big advertisers do not take full advantage of the fact. This is particularly apparent when a comparison is made between the advertisements published at Home and similar advertising



REGARDED AS MERE OBSTRUCTIONS.

issued here. It would seem that spending money on space is the acme of advertising achievement here in India—no care being taken as to what is inserted in that space. English and American advertising seems, on the other hand, to be considered from an entirely different view point—no space however small is taken but that it is filled with good illustrations and carefully written 'copy'.

As a layman I know little about the technique of advertising, but it appears to me that South Indian advertisers—particularly in the motor world—should strive to bring their advertisements up to a display standard equal to those published at Home. If results are worth while now, surely they would be vastly increased by better utilization of space!

Year not Necessarily Important

The present method of judging a car's 'age' by the year of its manufacture presents many disadvantages, particularly here in India. Take, for example, the case of new cars bought in, say, March 1929. One would think that the



THE SECOND-HAND VALUE.

purchase of a car on that date would definitely brand it as a 1929 model, but this is very often far from the case, because, whilst Indian dealers have still a stock of what we could term 1928-29 models, the factory at Home have put on the market a 1929 model some two or three months before, which means that the car bought new in March was, as far as year manufacture is concerned, a year out of date. This makes no difference at the time of purchase, but is likely to affect considerably the second-hand value of the car after 'twelve months' use. It may even mean—in the event of the 1930 models being early on the market in India—that I should be told politely that my model is *two* years old today. In the case of a make of car which changes very little in each succeeding model,

there may be not a penny to choose between my Indian 1929, the English or American 1929, and the present year's model, but the fact is incontrovertible that my car is 1928 and its price is fixed accordingly. This is surely a ridiculous state of affairs and serves no useful purpose that I can see.

What the purchaser of a used car should really want to know is the mileage covered before purchase, though even this can be considerably misleading. The only way to overcome the difficulty is for manufacturers to agree upon a classification of their models, not by year, but by model. That is to say, for instance, model 'XYZ' will always be known by that designation whether the model was turned out by the factory or sold by the dealer in 1920 or 1929.

Motor owners would soon learn to consider cars primarily as regards model and not as at present from the year of manufacture viewpoint. This would be a very definite step in the right direction toward solving the used car problem.

Perilous Police Duty

Madras motor owners who use Mount Road between the toll gate, and The Mount complain bitterly about the practice of placing policemen

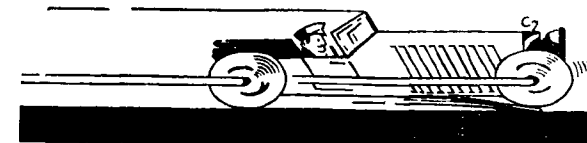
on traffic duty on this stretch—and I think they are justified in their complaint. Returning from The Mount the other evening, there were at least a dozen traffic police whose posts were extremely perilously placed just around corners in the 'middle of the road. If an on-coming car had even moderately bright lights, it was impossible for us to see the figure of the policeman, with the result

that he was nearly trapped between the two cars. After that unnerving experience, we slowed down to a very wary crawl, but even then the performance was repeated when we switched off headlights at the approach of another car.



FIGURE OF A POLICEMAN.

If it is necessary that police must be posted in such suicidal places, surely the authorities could either equip them with white tunics or a light of some description or other.



'FLASHING DOWN A STRETCH OF ROAD'

Makeshift Lamps

A woman's ingenuity in fixing up five makeshift lamps that failed to comply with the law was described to the Bourne (Lincolnshire) magistrates, when a motorist was summoned for failing to illuminate the real identification plate of her car. A policeman said he found an acetylene cycle lamp on the off side mudguard, with a flash lamp tied on the side of it. On the near side was an electric cycle lamp and a carriage lamp. At the rear there was a flash-lamp tied to the luggage-carrier with a piece of red tissue paper round it, the number-plate being attached to the mudguard.

The motorist's explanation to the constable was that the dynamo had ceased to charge, and that she did everything possible to comply with the law. The Bench were impressed by the attempt made to meet an emergency, and imposed a nominal fine.

A Tale of Two Cycles

One occasionally happens upon foolish remarks about motors and motoring in the lay press, and some terrible howlers are published. It has been, however, for a writer in the *Motor Cycle* to spot a film howler of interest to motor users, and I give his story.

Catalogues and Calendars Received

THE Indian and Eastern Car Agency of Old Bond Street, London, whose service to motorists Home on leave is so well known, have issued an attractive booklet which explains in a very lucid manner the firm's activities. It would seem that real personal attention to each client's requirements is the keynote of this Agency's business, and very many excellent letters of recommendation, unobtrusively published in the booklet, seem to indicate that the Indian and Eastern Agency have solved the leave car problem for many motorists.

A neat and picturesque wall calendar has been received from The Standard Motor Electric Works,

We have never, of course, had the slightest delusions about our lay papers so far as they concern themselves with motoring matters, but it was only last week that it came to my

notice that those responsible for the production of films also held the opinion that their public was not only quite ignorant of anything to do with motor cycles, but apparently that it was without the faculty of sight.

In the picture in question, the hero comes striding out of a mansion (which, to be in keeping with the story, should have been of Georgian design, but which actually bore all the hall-marks of the late Metro-Goldwyn era) and leaps into the saddle of a waiting 16H Norton. Next we see him flashing down a straight stretch of road, when, alas! the bad man, who was spending a quiet afternoon in an adjoining hedge, shoots him through the head. Rider and machine fall in a heap at the roadside.

Happening to have an urgent mission to fulfil, the villain steps out of ambush, kicks aside the fallen foe and—hey presto!—picks up a semi-stripped o.h.v. model of the same make, manufactured at least two years later than the 16H which he had just brought to earth.

Now the question arises, was the villain's mission so urgent that side valves would hardly meet the case or, alternatively, are the roadsides in those parts so liberally strewn with incumbent Nortons that one might drop one's own in the gutter and quite by accident pick up an entirely different model? I wonder.

Madras, which will serve to remind us during 1930 of the popularity which Universal batteries have gained amongst discriminating Madras motor owners.

Motor Reconditioning Station, Madras Presidency, distributors for Nash cars, send us a full range of catalogues describing the 1930 Nash models. On looking these over, there is every reason to believe that the new Nash is a much more beautiful car than in the past, and all the refinements called for by even the most fastidious motorist seem to have been incorporated.

We understand that the distributors will be pleased to furnish particulars of these new models to interested car-owners.

More Comfort and Less Effort

How the Automobile designer is striving to produce the perfect 'Owner-driver' Model.

THE improvements in comfort and efficiency which have lately characterized the new models produced by car manufacturers are undoubtedly the result of the efforts of the new school of automotive experts who are concentrating on producing a car which will provide effortless motoring for even the frailest owner driver. That their work is fruitful can be proved by the fact that all cars today are infinitely easier to drive than their prototypes of even a few years ago.

Distances which were once considered ridiculous are now covered in a single day by quite ordinary motorists, and men and women can nowadays step from their cars fresh and unfatigued after a 400 mile run—a good day's driving certainly, but not by any means the limit to which fatigue would at any time have kept them—and this on India's tiring roads.

This marked improvement in the driving of cars is due to those designers who have realized that requirements of the ordinary owner-driver must take priority over technical considerations, and the result is that manufacturers of the present day sell cars which, without exaggeration, could be handled by a child and can, therefore, be driven for long distances by even the frailest of adults.

The factors which have wrought such a difference in motoring, that have made possible such easy and effortless driving, are principally centred in the engineering skill which has designed steering, brakes, springing and general efficiency.

Light steering has been obtained by scientific design of gearing and the adequate lubrication of all moving

parts. The thin-rimmed, spring-spoked steering wheels now in general use insulate the driver's hands from shocks transmitted through the front wheels. The brakes, too, are operated without effort, thanks to a variety of systems the use of which helps the driver by doing all the work. The driver merely presses the pedal and the brakes apply themselves.

As regards maintenance, too, modern brakes are a great improvement on the older types, for in many cases they can be adjusted while the car is in motion and without leaving the driving seat. There is no longer any need to grovel beneath the axles, and the brakes can easily be taken up or slackened off according to the nature of the country traversed.

More powerful, more flexible, multi-cylinder engines have reduced the need for gear changing to a minimum, thus diminishing still more the work involved in actual driving, while on small cars, on which the hill-climbing powers are maintained by keeping the engine revolutions well up, easy-change gearboxes remove the worst bugbear of the ordinary motorist.

The increased comfort of modern cars contributes largely to the effortless manner in which long distances may be covered. Long springs, efficient shock absorbers and the advent of independent wheel springing have made driving over the worst surfaces a comparatively easy matter. Big tyres have helped, too, in this respect, while steering gear ratios have been reduced so that the fitting of oversize tyres no longer results in heavy steering. The provision of a bigger steering lock on many cars also has reduced



A FINE EXAMPLE OF MODERN AUTOMOTIVE ENGINEERING—THE STUDEBAKER COMMANDER EIGHT

the amount of effort in driving, especially in the streets of a city, while so far as the physical comfort of the driver is concerned, pneumatic upholstery has, on all but the most expensive cars, beaten all other methods of stuffing cushions. Air cushions, provided they are not over-inflated, never become hard and do not now cause any rolling as did the first examples of this type of upholstery.

Even such easy operations as blowing the horn or switching on the lights have been made easier by mounting the controls for the horn and the lamps on the steering wheel. One or two cars have reserve petrol supplies which may be turned on from the dash without the necessity for alighting from the driving seat or lifting the bonnet.

Much Needed Improvements

Much can still be done, however, in the matter of maintenance by providing reservoirs for oil for the gearbox and back axle from which the supplies in these components can be brought up to the correct level without the need for pulling up the floorboards or crawling under the car. With the average unit construction of engine and gearbox, a neat dipstick for

the latter could be arranged so that it could be withdrawn by the driver without even leaving his seat, and the supply could be replenished from a tank in the scuttle by the simple turning of a tap.

Practically all involuntary stops and much work on the car could be eliminated if all automobiles had really efficient petrol and oil filters, while the use of efficient air cleaners would prevent an excess of road dust being sucked into the cylinders, there to add to the carbon deposit on the pistons and cylinder heads.

Automatic chassis lubrication has gone far towards reducing the amount of upkeep called for by the modern car. Instead of wasting half an hour or so going round with grease-gun, the driver can go straight from his garage in the morning, sending a charge of oil to all chassis bearings when he thinks fit, simply by depressing a pedal. When the driver can adjust his springing or shock absorbers to suit the load carried and the road

surface with similar ease, automobile designers will indeed have gone far on the road to progress.

Even in the finish of modern cars the work of upkeep has been reduced to a minimum by the use of untarnishable chromium-plating, cellulose finishes and durable coverings for the coachwork.



The Shortcomings of Spanners: Suggestions for their Improvement

SOMEBODY once said that every motor designer ought to be compelled to take down and re-assemble his machine with the tools provided in the tool-kit. Probably the suggested task would be quite arduous enough if confined to the removal of the cylinder heads and cylinders for decarbonising purposes, taking out the valves for grinding-in, removing the magneto, and taking down the gear box.

On a machine which I owned some little while ago, about 90 per cent. of the nuts could be turned with a single spanner having jaws of two sizes at each end. This was quite good, but each of the remaining 10 per cent. required special spanners, though in some cases the sizes were almost identical, and could easily have been made absolutely so. None of these necessary special spanners was provided.

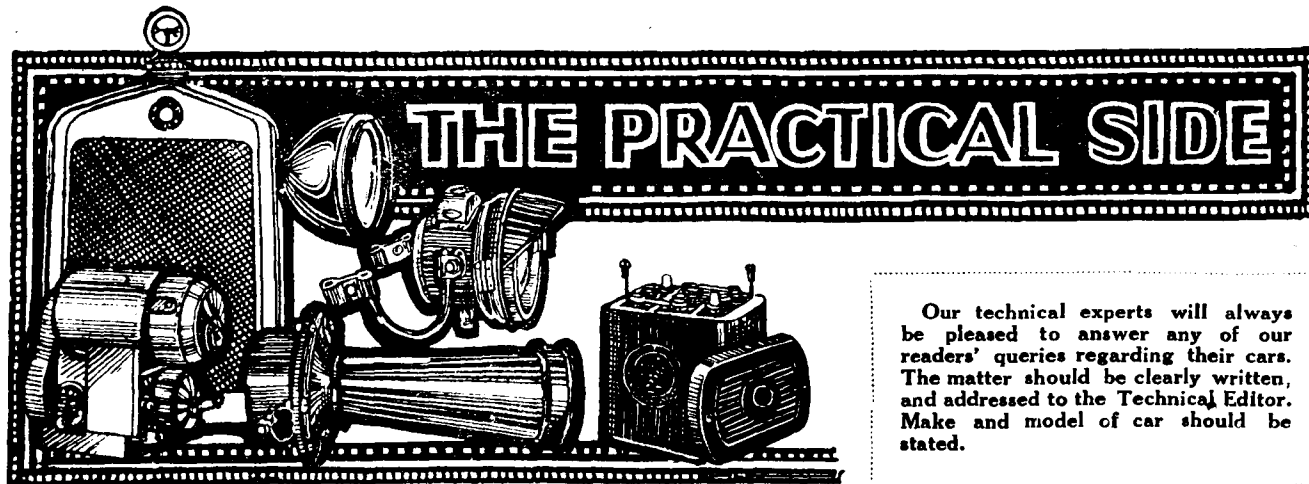
Most tool-kits contain an adjustable spanner, but the jaws of these are generally at right angles to the handle, so they are often quite useless for inaccessible nuts.

Hexagonal nuts must be turned at least 60 degrees at a time if they are to be screwed up with a single spanner of the usual type. There are places where a movement of 60 degrees is out of the question. Set spanners are made with the jaws cut obliquely, and

if such a specimen is turned over, the handle will take a different position; but most of these spanners are made with the jaws set at an angle of 30 degrees to the handle. In my opinion, 15 degrees would be better. An alternative would be to have a double-ended spanner, the jaws at one end being set straight and at the other at 30 degrees, so that each end could be used in turn to the best advantage.

When adjusting tappets, two spanners of the same size are required, and in many cases a third of suitable size is absolutely necessary. This is often forgotten when the tool-kit is being made up.

When a spanner is pressed against a nut to turn it, it may be noticed that the top of the jaw on one side and the bottom of the jaw on the other are doing the pushing. Now, if the latter jaw be shortened till the bottom part only is left, and the other filed away, leaving only the top to bear against the nut, it will operate in one direction and slide over the nut when turned in the other. When it is used the 'other side up', it can be used for unscrewing a nut. It is not altogether useful in the case of nuts that are screwed tightly home; its chief use is for running a nut on or off a long thread in a position where the spanner cannot make a full circle.



Our technical experts will always be pleased to answer any of our readers' queries regarding their cars. The matter should be clearly written, and addressed to the Technical Editor. Make and model of car should be stated.

Tuning Hints

A series of articles written entirely to aid motorists who are in the 'back of beyond' where technical advice is not available

Carburation

THE part played by carburation is a most important one. The ideal is that the mixture of petrol and air delivered by the carburettor should be as nearly as possible a gas, or a perfectly homogeneous mist, and should be of the same strength throughout the speed range of the engine. If the petrol is badly vaporized, there is a certain amount of disposition in the inlet passage; the charge, when compressed in the combustion space, is 'patchy' and so may not ignite evenly or rapidly and unvaporized and unburnt petrol may pass the piston to dilute and impair the value of the lubricating oil.

Incorrect mixture strength has the following results. If there is an insufficient proportion of fuel, the fresh charge burns slowly and is still fiercely alight when the exhaust valve opens. The valve and its seating are then subjected to a flame, under considerable pressure, which may be compared rather to a blow-lamp flame and liable to scorch and damage the parts. If the mixture is too rich, denoted by black exhaust smoke, there is a tendency to form much carbon in the combustion space, and again the charge burns slowly, because excessive heat is being used in raising the petrol molecules up to the ignition point.

Varied Mixture

A carburettor may give the correct mixture at certain speeds and incorrect at others, and it is surprising what a marked effect even a small variation of the mixture strength has on the running of a car.

Many defects in a car are often cured by fitting a carburettor that functions correctly at all speeds. Such troubles as bad starting, poor, uneven, slow running out of gear, sluggish acceleration, flat spots, harsh running of the engine, bad pulling on hills, lack

of speed on the level and especially poor petrol consumption can often be traced to incorrect carburation.

Sometimes these troubles are due to bad adjustment of a good carburettor, but very often the design of the carburettor itself is at fault, and it is not possible to get the correct mixture at all speeds and thereby overcome all the troubles mentioned.

Cheaper in the end

It is often more economical to scrap an inefficient carburettor for one that is made on a principle that has been proved to be correct over a period of years than to waste time trying to adjust an inefficient one. If the carburettor has not been designed on a sound principle, then no amount of adjustment will ever make it give perfect results.

Consequently, if your engine suffers from any of the troubles mentioned, and ordinary adjustment fail to effect a cure, then you can be sure that carburation is at fault, and the best thing is to fit a proved and reliable make of carburettor—easy to understand and adjust—proved to be correct in principle over a number of years.

Carburation ills and their cures

We know that the carburettor is generally blamed for most of the troubles and difficulties that occur with a petrol engine. Whilst in certain cases the carburettor is not really responsible for the troubles, yet, on the other hand, there are many instances where improved carburation will affect a definite improvement in the running of the engine.

I give you below a few of these instances, showing where carburation is directly responsible for bad results.

Difficult starting when the engine is cold

The petrol can only be drawn from the carburettor and atomized by suction from the engine, but when the engine is cold it is difficult to turn it at high speeds and the suction is generally weak. Some artificial means are necessary to increase the suction in the carburettor, this being done usually by a separate starting jet.

This starting jet is so arranged that its outlet corresponds to the practically closed position of the throttle.

Naturally, if one turns an engine over with the throttle practically shut, it means that a very high suction (or velocity) takes place at the edges of the throttle. The starting jet being arranged in this position, petrol is easily drawn from it and atomized.

The difficulty in starting a cold engine is nearly always due to the inability to get a sufficiently high suction or velocity through the carburettor to draw the petrol from it and atomize it correctly.

Inability to run the engine slowly and smoothly when idling

This arises from the same causes as difficulty in starting from cold, because when the engine is running slowly, the suction in the inlet pipe is very weak. Unless the carburettor is specially designed to compensate for this, really good slow running will never be obtained.

Atomization of the fuel is very important at low speed owing to the low gas velocity. Incidentally, individual engines are very sensitive to alteration in the mixture strength with regard to slow running.

The design of the valves, inlet ports, position of sparking plugs, timing of valves and magneto affect very greatly the adjustment of the mixture for slow running. Therefore, a really good carburettor should have a variable adjustment of the mixture strength for slow running, so that it can be easily adjusted to suit the actual engine with which it is used.

Sluggish Acceleration

When the throttle is opened to increase the speed of the engine, the air, being lighter than petrol, enters the carburettor at a greater speed. In an inefficient carburettor, therefore, when the throttle is opened, a certain quantity of air enters the carburettor and passes through the inlet pipe into the engine without taking a proportional quantity of petrol with it. This is because the petrol has not had sufficient time to get into motion. The result is a temporary weak mixture which causes sluggish acceleration.

Flat Spots

Those causes responsible for sluggish acceleration will often create a condition known as a 'flat spot' that if the throttle is opened suddenly to get an immediate acceleration there is an appreciable hesitation before the engine actually starts to speed up. In certain carburettors where there is a multiplicity of jets (or moving parts), flat spots can be caused by the period between each of the jets coming into operation, or alternatively, owing to the time taken for the moving adjustments to function.

(To be continued)

In the Burma Jungles



AN INTERESTING PHOTOGRAPH SHOWING FORD TRUCKS WORKING IN THE LUMBER DISTRICTS OF BURMA

'The Superior' Overland-Whippet

Description of an Interesting Low Price Car

Every year since the Great War motor car values have gradually increased, partly due to improved design of both chassis and bodywork and partly to the continual price reductions which big output has made possible and competition has enforced. This has made possible important developments in the low-priced car market; the introduction of a well equipped and roomy four-door tourer which, powered by a four cylinder engine of 16 h. p., sells for the exceptionally low figure of Rs. 2,595.

The car to be described is a development of the 1928 Overland-Whippet and bears the title of the 'Superior Whippet.' Broadly speaking, the layout for the chassis is planned on very similar lines to its prototype, but there the similarity ends for the engine is of slightly larger capacity and of more advanced design generally, while such items as the clutch, steering gear and rear axle have been modified to come into line with the improved engine performance. Most important of all, however, the appearance of the complete car has been entirely altered—even to the shape of the radiator. Many interesting features have been incorporated in the roomy body, while such a modern item of equipment as chromium plating has been standardized for all bright parts.

To give a brief description of the salient features of the chassis. In the first place, the wheelbase is now 8 ft. 7½ in. (instead of 8 ft. 4½ in.), but the general layout of the chassis frame remains much as heretofore. In the power unit, however, many alterations have been made. By increasing the length of the stroke from 111 mm. to 120.5 mm. the capacity of the cylinders has, of course, been raised without interfering with the power rating of 15.6 h.p. Further, the compression ratio has been raised considerably, which, in conjunction with an improved shape for the combustion chambers, has resulted in an overall increase in power and torque. Actually, the engine develops 40 h.p. at 3,200 r.p.m. in contradistinction to 31 h.p. as developed by the old type.

For the rest the design of the engine follows normal Overland practice, the cylinders and crankcase being cast en bloc and surmounted by a detachable head. A three-bearing crankshaft is used, likewise Invar strut-type aluminium-alloy pistons. A single-plate clutch and three-forward-speed gearbox with central control mounted unitwise with the engine transmit the power

to a spiral-bevel rear axle by means of an open propeller shaft.

Considering that the price of the car is under Rs. 3,000 the bodywork must be accorded as being particularly good. Both front and rear seats are really capacious, and the depth of the upholstered portions of both the squabs and the cushions is ample for any passenger of normal proportions. The front seat is particularly comfortable, for the squab reaches above the shoulders of even a tall person—a feature which should make a distinct appeal to the 'long-distance' driver.

There is a very interesting arrangement which has more to do with driving than anything else, the inclusion of what is termed 'fingertip' control. Actually, the starter switch, the lamp controls and the horn press-button are combined in one control knob,

which is located at the top of the steering column. By pulling the knob upwards the starter is brought into operation, while by turning it the lights are switched on, the first part of the movement bringing in the sidelights only, the second part switching on the headlights, while the third movement creates 'dipped' effect. The knob can be pressed in the ordinary way to sound the horn.

Like previous Overland models, the power unit is a notoriously easy starter. Even from cold the engine will fire after the first few revolutions of the crankshaft, a dashboard-operated strangler creating a sufficiently rich mixture to avoid any necessity for flooding. Thanks to an efficient hot-spot in the induction system, one can drive straight off so soon as the engine has run for about 10 seconds without any refractoriness being apparent, yet when properly warmed up the mixture does not seem to be unduly rich.

To all intents and purposes this model Whippet is a top-gear performer, main road hills taken in the stride of the car without perceptible slackening in speed. This does not mean, however, that the car is seriously undergeared, for it can exceed 50 m. p.h. without fuss or undue noise.

The slow-running capabilities, too, are exceptionally good, as we demonstrated by a special test. At 4 m.p.h. on top gear the driver's foot was banged hard down on the accelerator, and although the car did not bound away it accelerated smoothly and quickly

ENGINE: Four cylinders; side valves; bore, 79.4 mm.; stroke, 120.5.

TRANSMISSION: Single-plate clutch, three-forward speed gearbox with central control. Open propeller shaft, spiral bevel drive.

SPEEDS ON GEARS: Top, 51 m.p.h.; 2nd, 32 m.p.h.; 1st, 18 m.p.h.

BRAKES: Pedal operated f.w.b.

PETROL CONSUMPTION: 28 m.p.g.

TURNING CIRCLES: Right, 41 ft. 6 in.; left, 39 ft.

DIMENSIONS: Wheelbase, 8 ft. 7½ in.; track, 4 ft. 8 in.; overall length, 12 ft. 3 in.; overall width, 5 ft. 9 in.

WEIGHT: (as tested, with two up) 1 ton 5 cwt.

SIMPSON AND CO., LTD., MADRAS.

and reached 40 m.p.h. in 20 seconds. This must be accorded as being exceptionally good, for, although the engine has a capacity of rather more than two litres, it is not extravagant in the consumption of fuel; actually, we averaged over 28 m.p.g.

A word concerning the general equipment of the car. All the usual electrical gear is installed and, due to the 'finger-tip' control, the wiring is neatly carried out. A mechanical screen wiper is also a standardized fitment, likewise a rear-drive mirror which is fitted above the windscreen. The instruments, comprising a speedometer, an ammeter and an oil gauge, are neatly grouped in a panel in the centre of the fascia board, which, although made from a sheet pressing, nevertheless appears to be substantial and unlikely to give trouble by rattling, etc., after the car has been used for one or two seasons' running. The petrol system is planned on large-car lines, for the main tank is installed at the rear (and, by the way, is fitted with an accurate-reading gauge), the fuel being led to a Tillotson carburettor via a Stewart-Warner vacuum feed and a filter.

Summing up, we formed a very favourable impression of this latest Willys Overland Crossley product. Considering the price, it represents very good value for money, and as the car is fully equipped, and withal roomy, it becomes equally suitable to use either for business or pleasure.

Free Air For Madras Motorists

The Continental Company is to be congratulated on the manner in which they are educating motorists to get the best possible service out of their tyres. Not only by means of printed matter in the form of booklets, pamphlets, etc., dealing with the up-keep and treatment of tyres which have been issued from time to time, have they tried to reach this goal, but they have now fitted up a Delivery Van with a modern Compressor Pump for the purpose of practical demonstration.

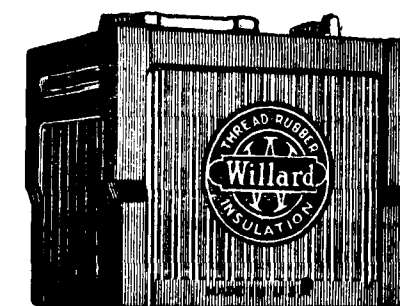
The life of a tyre, especially in a case of balloon tyres, depends to a great extent on correct inflation, and it is a well-known fact that a great proportion of tyres in use to-day fail sooner than they should because of this neglect of air-pressure.

The car which is illustrated on page 24 is fitted with an air-compressor pump driven by the motor, which speedily inflates the tyre to its proper pressure carefully checked with a precision gauge.

We are informed that this car will attend at taxi stands or wherever there may be a congregation of cars and whenever tyres are noticed, regardless of their make, which are over-or under-inflated, tests may be made and the matter put right free of charge.

We feel quite sure that this scheme will be welcomed by the majority of motorists and should prove extremely helpful. The car which is painted in a very attractive manner in the Continental colours (blue and yellow), will soon be a familiar and welcome sight in the streets of our city.

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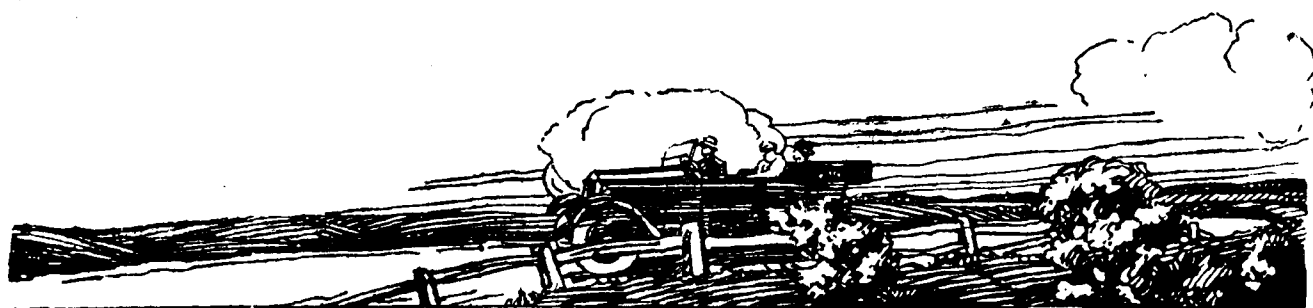
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Commonsense Driving



How imagination and anticipation marks the good driver.

TO drive a car well it is not necessary merely to guide the machine, to start it and stop it, and to avoid accident. The hall-mark of a good driver is that he is never caught unprepared in an emergency, and is never found wanting in a sudden crisis. His dangers are seen in time, his crises are never sudden, his disasters are avoided before they happen, and in a long journey he never has to confess to 'narrow shaves' and 'near things'.

How is it done? Many a driver may be described as 'clever but dangerous'. The skilful handling of a car in a difficult moment is commendable, but how much more so the driving of the man who foresaw the danger, was prepared for it and was not called upon to do a skid turn, to take to the verge or to execute any such brilliant or spectacular manoeuvre?

Every good motorist, every really experienced driver, and in rare cases drivers quite new to the game, possesses a unique quality which some call road-sense. It is a gift comparable with the extraordinary faculties possessed by the seaman, the mountaineer and the shikari who read signs and portents where the layman sees nothing. The greatest gift a road user can have, says 'Viator,' writing in *The Light Car*, is a vivid imagination. As his mileage is piled up behind him, his growing experience will instruct his imagination, until a combination of these two qualities will result in a greater or lesser degree of road-sense. He will be versed in the ways of the road, and the lore of the road is roadcraft.

During the most ordinary journey there are signs to be seen and warnings to be heeded which are hidden from many a driver. Let us mention a few of the lessons imagination may teach.

The secret of good driving is anticipation. Imagine that the other fellow is about to do something, and that he will probably do it wrongly. Imagine that there is a car round the corner parked on your side, or that another is rounding it towards you. Imagine a cyclist will shoot out of that gateway, or that a bullock cart will be just around the corner. Anticipate that the car you are about to overtake will pull out

to pass an unseen bicycle; foresee that motor cyclist skidding in those wet tramlines; remember that if you pull up sharply on overshooting a corner someone behind may be taken by surprise—and never be caught that way yourself.

Never forget all things while trying to find the right road. Too many cars are seen wandering about in the middle of a cross-road while the driver makes up his mind which way he is going! Never pull in too close behind a bus or other large vehicle before overtaking, thus losing sight of the road ahead. Do not forget you can often see through a saloon rear window and thus ascertain whether the road is clear, and that often the road can be seen underneath the chassis of large trucks.

In town driving there is room for plenty of roadcraft to be practised. The good driver never finds himself in the wrong line of traffic, and does not have to pull across the road to turn left. He knows that a bus is about to stop in front of him by the behaviour of the passengers. He reckons on a tram swinging out on corners, and knows that tramlines have a way of diverging towards the pavement just as one is about to overtake. He is ready for cyclists to skid on tramlines, and remembers in the wet that his own brakes may have lost some of their efficiency.

Pedestrians crossing a side road indicate that nothing is about to emerge, and shop windows on corners are always an effective mirror. Old stagers realize that native children may, for no apparent reason, run into the road, or chase each other across the street.

On the open road a quick and imaginative eye will notice a surprising amount before a more unskilled passenger has seen anything. Finger posts are excellent warning signs, showing hidden side turnings, and villages are passed with the full knowledge that goats, ducks, and other livestock are apt suddenly to appear on the road.

Many a driver who would not think of overtaking on a corner does so on a hill top without a blink, although the crest of a hill is often just as blind and

dangerous as a corner, and of course, hump-backed bridges may be a definite peril.

Night driving lends great scope for observation and imagination. Headlights are the finest warning signal, and switching off your own momentarily at a blind corner will allow the lights of another car to announce its presence.

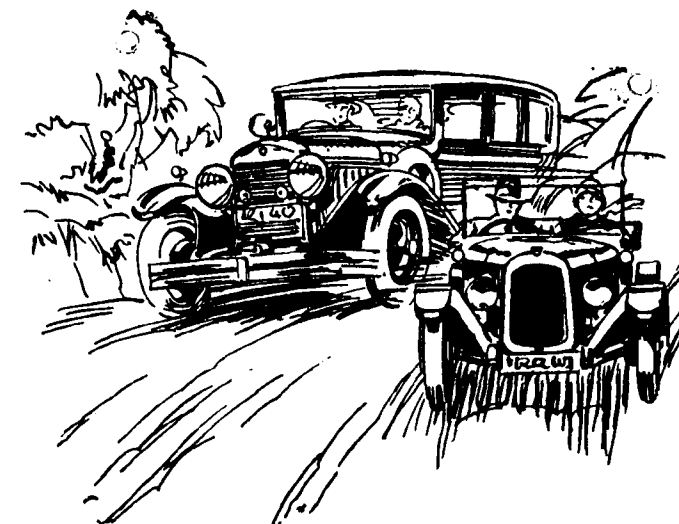
The dimming of lights may be left to individual choice, but the rule should always be 'safety first'. Do not dim if with side lights you cannot see a pedestrian or cyclist on the left of the road. If brilliant headlights are seen coming round a bend, sight along the edge of the road and see if all is clear, so that when the lights become blinding you can drive along your own edge of the road secure in the knowledge that there is nothing in the way. Always keep your eyes on the left of the road, and do not for an instant glance into the dazzling beams.

If you have swivelling lights, your own course is obvious, but even out of courtesy, should the driver of the other car put out his head-lamps, do not do so

yourself unless the side-lamps provide all the light that is needed.

These are but a few of the signs and hints and tips of roadcraft. Each driver will be able to supplement them from his own experience and his own imagination. With road sense fully developed there is an instinct which positively scents danger.

Many a hardened driver has forborne to overtake on quite a wide corner owing to this instinct, only to find that another car has come rushing round well on its wrong side. They have also slowed right down at a street crossing from which, day after day, they have never seen a car emerge, only to find in that end that a bullock cart is lumbering out and that caution, not seemingly



OVERTAKING ON A CORNER

needed, actually was all-important.

If anyone drove with imagination, anticipating dangers before they arose, the toll of the roads would be very much diminished, and average speeds would not be any lower than they are; also, there would be fewer 'narrow shaves' and 'near squeaks'.

When Changing Inner Tubes

When an inner tube is being refitted, or a new one is being fitted for the first time, it is a good plan to make a practice of applying a spanner to the locking nut of the valve seating, as this helps to avoid the annoyance of a slow leakage of air subsequently.

An air tube may have a perfect seal at the valve seating until it or the tyre as a whole is removed when a puncture occurs; but the drag on the valve, which can hardly be avoided in its removal from the rim, will not infrequently disturb the rubber of the seating and encourage a leak to occur when the tyre is again inflated.

With an old tube it will nearly always be found that the nut in question will bear tightening somewhat, and occasionally the one on a new tube will be found not quite tight. To avoid straining the seating, however, it is important that the seating plate—not the tube itself thereabouts—be held firmly with one hand while the nut is tightened with the other.

Where British Cars Score

That the average American car loses six miles per gallon in petrol consumption, as compared with the average British car, and only equals the British machine in other respects, is the moral of an interesting detailed analysis recently made by *The Autocar* from tests carried out on some eighty widely differing cars of both nationalities.

The points analysed were price, engine size, maximum speed, acceleration, fuel consumption and braking tests. The British cars range from Austin Sevens to Rolls-Royces and the Americans from Fords to eight-cylinder Stutz cars.

The results show that the average British car costs £526, is of 15.9 h.p., has a maximum speed of 64 m.p.h., a fuel consumption of 25 m.p.g., and can be pulled up to a dead stop in 27 feet from 25 m.p.h. The corresponding figures for American cars are: an average price of £508, a rating of 26 h.p., a maximum speed of 64 m.p.h., 19 m.p.g. of petrol, and a brake stopping power of 26 feet from 25 m.p.h.

Driving A Sidecar Outfit

A few Hints on the Handling of a Combination

THERE is an art in sidecar driving. I do not want to frighten beginners by implying that the piloting of a 'chair' is at all a difficult matter; on the contrary, it is as simple as A. B. C. But there are a few finer points, an understanding of which may make the ownership of a third wheel an even more pleasurable business than the novice already finds it.

These few words were addressed to the beginner at sidecar work by a writer in *The Motor Cycle*, and to those who have made a certain amount of progress. Taking an example to justify this statement, consider the case of a friend of mine who has been sidecarring for three months. The other day he said to me: 'Do you know, I've found that my outfit seems to steer much more easily when I pull out to the middle of the road? I wonder why.'

A Question of Camber

Apparently he had noticed this fact, but had not troubled to think out the why and wherefore of it. When I pointed out that he could always secure this easy steering by driving right on the crown of the road whenever it was safely possible, he said that it 'hadn't occurred to him'.

This matter of camber is always worth bearing in mind; but, whatever you do, don't hold the crown of the road so obstinately that you are an inconvenience to other road users. The advantage is one that should only be taken when conditions really permit.

But now we will suppose that the novice has put the theory into practice. To his surprise, however, he has found that the outfit still pulls to the left. If this is the case, then it is very likely that the sidecar is out of alignment, which indicates the necessity for a few minutes' work in the garage. The work consists of realigning the outfit by slackening the connections, placing straight-edged boards along the sidecar wheel and the wheels of the machine, and then re-setting the sidecar so that the boards, instead of being exactly parallel, are about half an inch nearer

together at the front ends; in other words, so that the sidecar is running-in slightly toward the machine.

That Left-hand Lift

It is also wise to make certain that the machine is not leaning towards the sidecar; it should be perfectly vertical, or even leaning slightly outward.

A newcomer to sidecar work is at first worried by a nasty feeling that his sidecar—especially if it is a light one—is going to lift every time he takes a left-hand corner. So it might, but not nearly so easily as he thinks; later he will learn that he has to take a left turn surprisingly fast before the 'chair' takes wings, especially if there is a passenger aboard.

It is an excellent plan for the novice to take his outfit to a deserted road, preferably one level at the sides—and deliberately practise putting the sidecar into the air. It is quite easy: travel at about 5 to 10 m.p.h. and suddenly turn sharply to the left; the sidecar will rise; get it up far enough, and you will find it possible to straighten out again and travel along with the sidecar wheel a good eighteen inches off the road.

Once you have found by this method what it really takes to put the sidecar up, you will find that you have complete confidence in your handling of the outfit.

Just for the first few days the beginner will find that he is rather uncertain as to the width of his vehicle; generally, he vastly over-estimates the amount of road he requires, and accordingly, on narrow roads, gives on-coming traffic an anxious time. A good plan is to make a line of chalk marks along the road at the width—plus an inch or two—of the outfit from the edge and then to drive along the line; you will be surprised at your close, yet safe, proximity to the near side.

A Word on Cornering

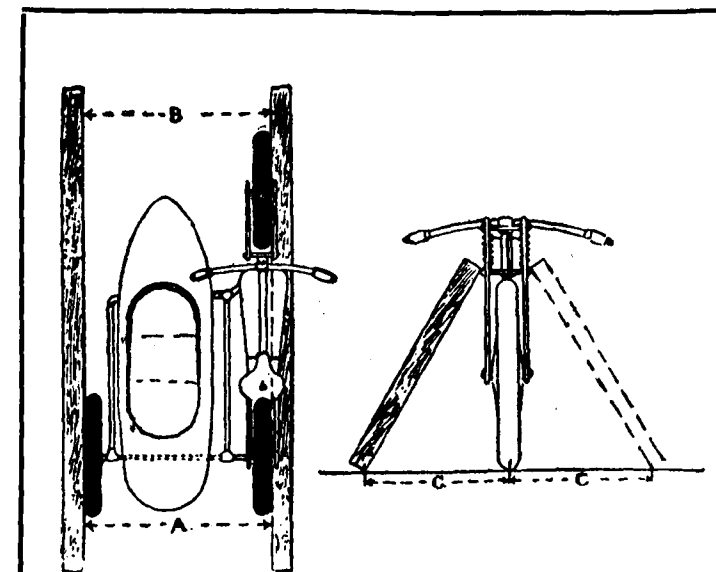
And now a word on cornering. The advice on how to take a sidecar round a corner has so often been

repeated that I need only give it briefly: for a left turn, slow right down to a crawl and then accelerate gently as you take the corner; the machine will then 'run round' the sidecar, and you will find the outfit can be steered round with the utmost ease. Conversely, for right-hand corners, approach rather faster and shut the throttle as you make the turn; the sidecar will then 'run round' the machine, with the same entirely gratifying results.

There is little advice that can be given as regards driving a sidecar on wet roads, for the simple reason that it is a vehicle which is more proof against the skid demon than any other. However, for work in the wet, see that your tyre treads are reasonably good, and assist the back brake by means of the front brake whenever possible.

Incidentally, as regards brakes, many novices, when attaching their first sidecar to a solo machine, feel worried as to whether their braking efficiency will be lowered. In actual practice they will be surprised at how little difference there is in this respect; probably the added stability of the sidecar outfit safely permits more vicious braking than is the case with the solo bus.

But the engine, on the other hand, will feel the extra weight. Therefore, if you are adding a third wheel, don't forget to fit a smaller engine sprocket to lower the gear ratio, to make generous use of the gear box on hills, and to handle the ignition control intelligently. Also, if the bus is a high-compression single, the minimum top gear speed (i.e. the speed at which the engine begins to thump—a motor cycle's way of calling out for a change down to lower gear) will probably be raised—that is to say, a change down will have to be made sooner.



The combination must stand on a smooth, level floor. Place a board alongside the wheels of the machine; these must be in line.

Procure a second board similar to the first one and place this with its edge touching the side-car tyre. Measure the distance 'A' in the diagram, which should be taken as near to the back tyre as possible. Similarly measure the distance 'B' taking this as close as possible to the front tyre. These two distances should be equal in running, but in practice it is permissible to have 'B' about 3/8" shorter than 'A', with the machine stationary. This ensures that the wheels are in correct alignment.

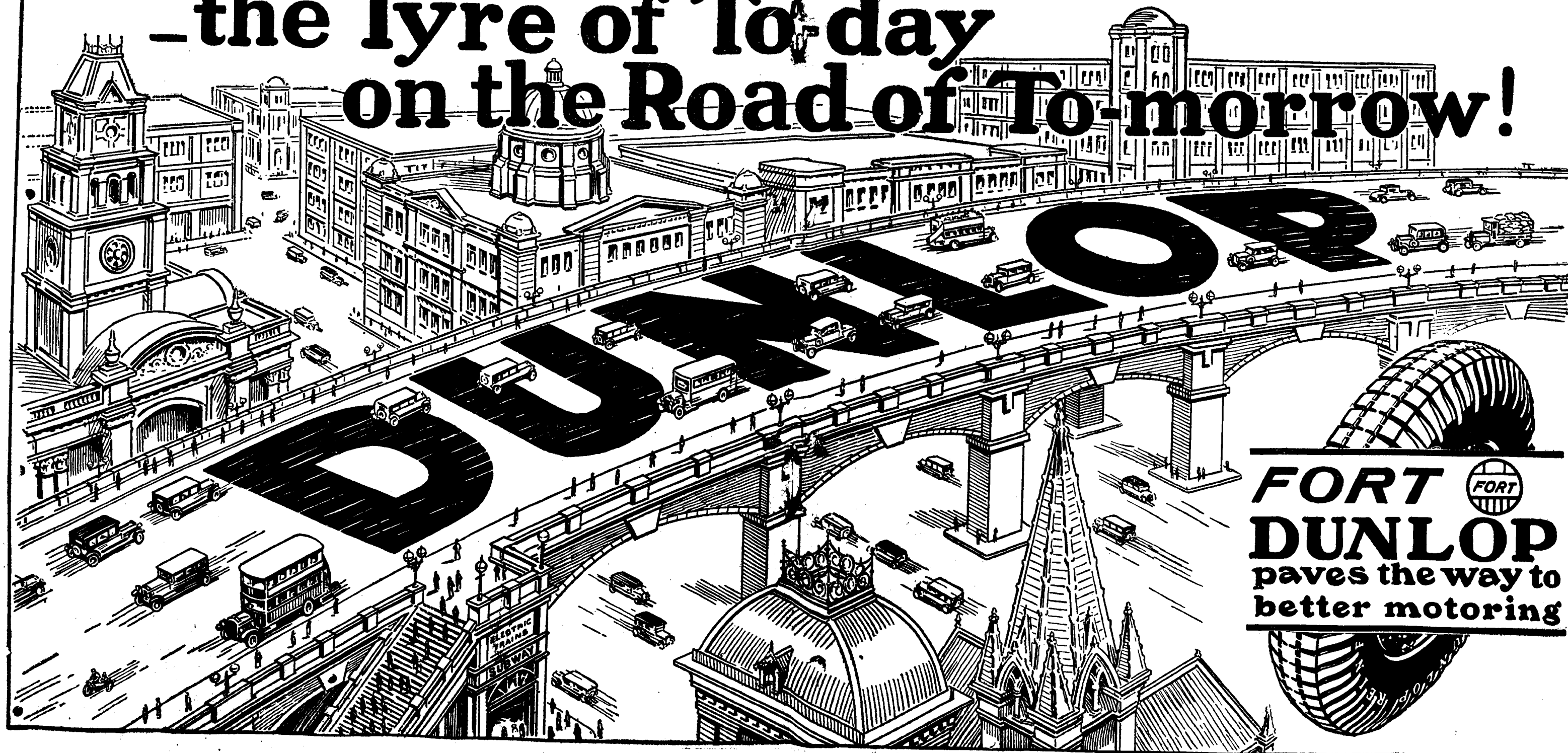
To see that the machine is standing perfectly upright. Without disturbing the boards, take a smaller one about 3 ft. 6 in. long, and rest one end on a given point towards the top of the front fork, the other end resting on the ground. Mark the ground where the board touches. Do this on the other side, placing the top end of the board in an exactly corresponding position, and again mark the ground. Then measure from each mark to the centre of the tyre where it touches the ground. These distances 'C' should be equal. If necessary, the setting of the machine must be altered so that this is obtained.

Remember your Passenger

Lastly, consider the comfort of your passenger; try the sidecar yourself, and try to remedy any little discomforts. When driving, be sociable and talk to your passenger, if only occasionally—but never take your eyes off the road.

With these few little points of knowledge at your finger tips, you should be able to get the utmost out of driving what is undoubtedly the safest type of motor vehicle on the road.

-the Tyre of To-day on the Road of To-morrow!



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From the Passenger's Viewpoint

The Impressions of a Driver Driven

MOST of us have memories of trips with owner-drivers which have been the reverse of pleasant. It is not that they are all bad drivers. Many are quite good, but they are so wrapped up in their precious cars that they quite forget the feelings of their passengers.

One proud possessor of a fast open tourer invariably does forty-five on the open road. He is quite snug behind his wind-screen, but forgets that the people in the back seats are blown to pieces by a fifty-mile-an-hour gale. Scenery has no attraction for him. Speed is what he takes his car out for and speed he will have.

We are all familiar with the driver who loves to cut things fine. A trip with him leads to rapid nervous exhaustion. Our feet press imaginary brake-pedals time after time as disaster seems narrowly averted.

The driver is probably quite sure of himself and of his car. He does not regard disaster as imminent, nor probably should we, were we driving in his place. It makes all the difference having the wheel and brakes under your own hand. A good driver can judge things to an inch and a split second. With a good car completely under control, there is often no danger at all in cutting things fine, but a passenger cannot appreciate it.

The experienced driver who happens to be a passenger suffers more agony in these circumstances than one who knows nothing about it. If he were driving himself, he would probably be quite content to take the same risks. But with his experience he appreciates the risks without being quite certain that the driver himself can react quickly enough. Cutting

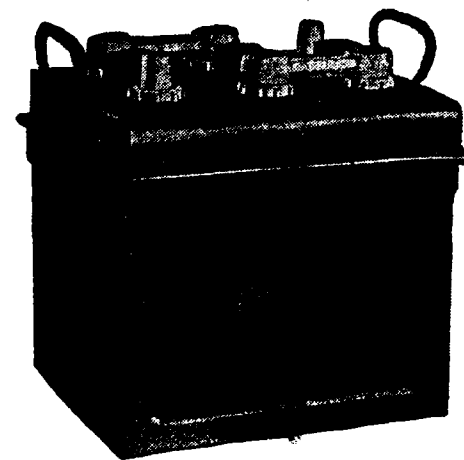
it fine is exhilarating for the man at the wheel, but is poor fun for everyone else.



A peculiarly unpleasant driver with whom to travel is he who is afraid of his gearbox. In traffic he keeps in top gear until the car is almost at a standstill, and slips his clutch in order to get under way again. The clutch sometimes consents to be used as a variable gear and sometimes does not. The engine must be kept 'revving' at an excessive rate to prevent stalling. The poor passenger is treated to a vibromassage from the whirring engine punctuated by spine-jarring jerks when the clutch suddenly takes hold. This is a form of rank bad driving which fortunately is not common.

Even quite a good driver sometimes forgets how sensitive his passengers are to sudden acceleration and deceleration. He has his hands on the wheel and his feet well down on the floor-boards and thus does not feel the effects of the throttle and brakes to the extent to which his passengers do. The driver who likes to dart quickly from corner to corner not only puts an unnecessary strain on his car, but keeps the minds and bodies of his passengers in a state of tension.

The ordinary passenger is not out for adventure and hairbreadth escapes. He likes a steady speed (not necessarily low) so adjusted to road conditions that the use of brakes is reduced to a minimum. The nearer the car approaches in behaviour to steady uneventful progress, the better he is pleased. The ideal driver, from the point of view of the passenger, is he who keeps his car, as a car, in the background.



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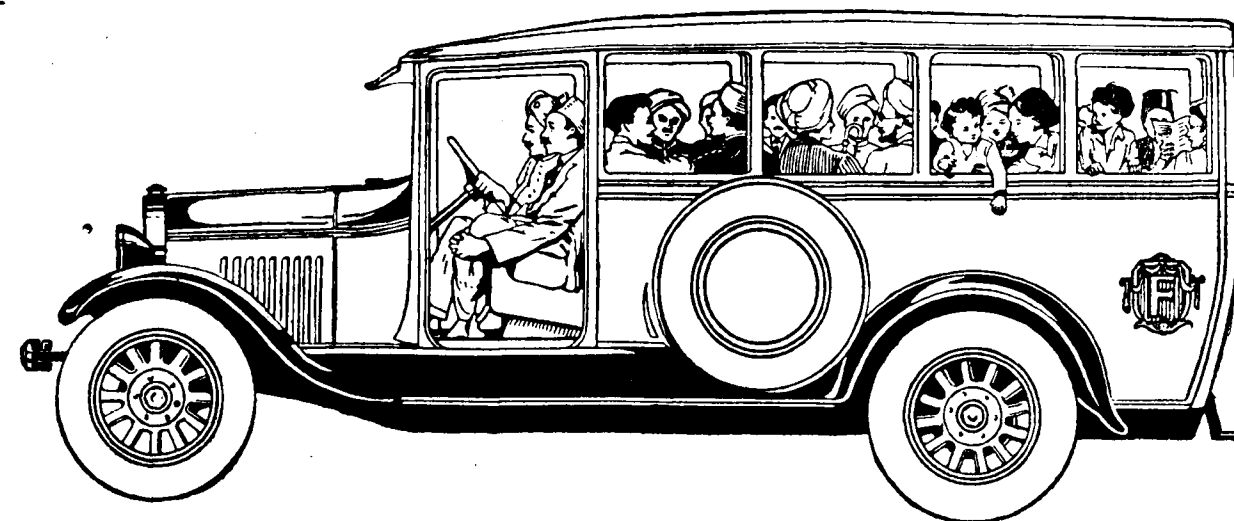
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An Interesting Hire Purchase Case

Hire-purchase and Bankruptcy Law

IT will, no doubt, come as a great surprise to motor firms and financing companies firm who undertake hire-purchase business to learn that legally 'a motor vehicle purchased under a hiring agreement and used for business purposes is not protected as against the Official Receiver in the event of bankruptcy.'



A PICTURE OF THE CONTINENTAL TYRE COMPANY'S 'FREE AIR' VAN DESCRIBED ON PAGE 15

This is the opinion of the Official Receiver, Cardiff, who has claimed a car hired by a motor trader in South Wales, and this opinion has been endorsed by the solicitor, handling the case who is of the opinion that the case cannot usefully be carried any further.

This is the gist of an interesting letter appearing in the latest issue of *The Motor* and opens up grounds for more than perfunctory discussion. It would be enlightening to compare the penal codes of India and England to learn whether such a state of affairs would be possible in India.

Here is an opportunity for hire-purchase firms to find out where they stand. In his letter the writer says he will be pleased to give anyone interested the fullest information, for it would appear that all companies transacting hire-purchase business are living in a fool's paradise.

Under this particular section of the Bankruptcy Act, a person need only purchase several buses, or several high-class hire cars, pay a few instalments, make as much profit as possible, then file his petition, and the vehicles automatically become the property of the Official Receiver.

Road Development in South India

Reclassification and the Prospect of Tolls Abolition

MR. HILTON BROWN, Secretary to Government, Local Self-Government Department, addressed the Madras Rotary Club recently on the subject of 'Road Development in South India'.

He began by saying that the development of roads was an even better object of expenditure than sanitation and education, because, the spread of education and sanitation followed up the opening of a modern road. This was especially the case in India where the millions of people living in the villages were content with low standards of living. The opening up of roads, which would connect these people, to cities and towns where a higher standard of living obtained, was the best way to get those people to aim at higher standards of life. A good modern road was the best means of raising the standard of living of backward people in the villages in India.

There is a general idea that the roads in this Presidency are in a very bad way. A critic stated in the Press that they were in an execrable state. He would completely refute that criticism. The roads in this Presidency were far better than they were generally supposed to be. Also, the critic had levelled a charge against the Government saying that they were very indifferent as to the condition of roads in the Presidency and that they did not exercise proper supervision over the Local Bodies who were responsible for the maintenance of the roads. The Government were not at all indifferent to the condition of roads and, in fact, carefully supervised the proper maintenance of trunk and second class roads by the Local Bodies concerned.

Proceeding, Mr. Hilton Brown referred to the recommendations of the Road Committee and said he was completely disappointed at the result of their prolonged labours. He expressed his disagreement with the recommendation that the extra revenue

derived from the imposition of an additional tax of two annas per gallon on petrol should be distributed by the Central Government for expenditure on approved schemes. If the sanction of the Central



Government was necessary for every item of expenditure, he said nothing really useful in the way of development of roads could be done. The revenue derived from the petrol tax would be too small (in the Madras Presidency it would be about Rs. 9 lakhs) to meet the cost of any large scheme of road development. The sub-committee's more practical suggestion of treating the additional revenue derived from the petrol tax to pay off the interest on a large

loan to be raised from the Central Government had unfortunately been ruled out. If only that suggestion had been adopted, it would have been possible to draw up an all-Presidency programme for the development of main trunk roads at least.

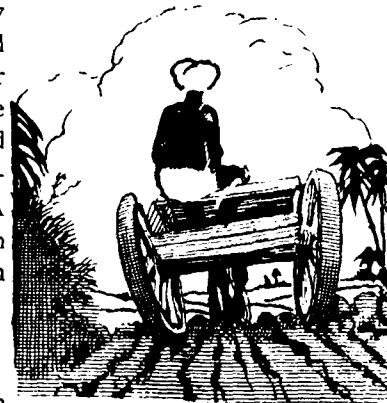
Factors in Road Reform

The lecturer then emphasized the need for road reform and said that in all matters relating to road development there were three important factors to be considered—construction, administration and management, and finance. Regarding construction, it was necessary to find an economical method of road building consistent with durability. It had been found that a mixture of tar and bitumen was the best surface for roads, yielding as it did a very hard and good binding material. In regard to administration and management, the history of road development in Madras had been rather haphazard. Till the Hon. Sir Thomas Moir drew attention to the possibility of drawing up an all-Presidency programme of development, the very idea of correlation had not been mooted and each Local Body had been left at liberty to do as it liked with the

roads in its jurisdiction. In the next budget it was proposed to tackle the question in a rational manner and Rs. 3 lakhs would be allotted for the improvement of the Trichinopoly-Villupuram Road. As to finance, the methods adopted were very haphazard. The Local Bodies relied mainly on Government grants for the maintenance of roads in their care and there was no regular method adopted in the granting of such contributions by the Government. A definite programme was called for in the matter of distribution of such grants.

Abolition of Tolls

The speaker had always been in favour of the abolition of the toll system. But there were very formidable difficulties in the way of accomplishing that. It was a very wasteful method in that only a portion of the amount collected at the toll gates were received by the Local Bodies who farmed them out, and even then the whole



of the money so received by that body did not go towards the upkeep of the roads. He had at present no hopeful message to give to them, but hoped that in a short time the abolition of toll gates would be an accomplished fact.

Concluding, Mr. Hilton Brown said that the reforms called for were reclassification of roads, as all-India, presidency, district and village roads, all of which, except the first, should be under the direct control and management of the local Government. Tolls should be abolished and some other tax substituted in its place and all revenue derived from that tax utilized for the maintenance of roads only. Each local Government should have a separate organization for the control and supervision of roads under a Minister of Transport. Finally the development of the motor industry in the country should be encouraged on all sides. Only then will good roads be assured.

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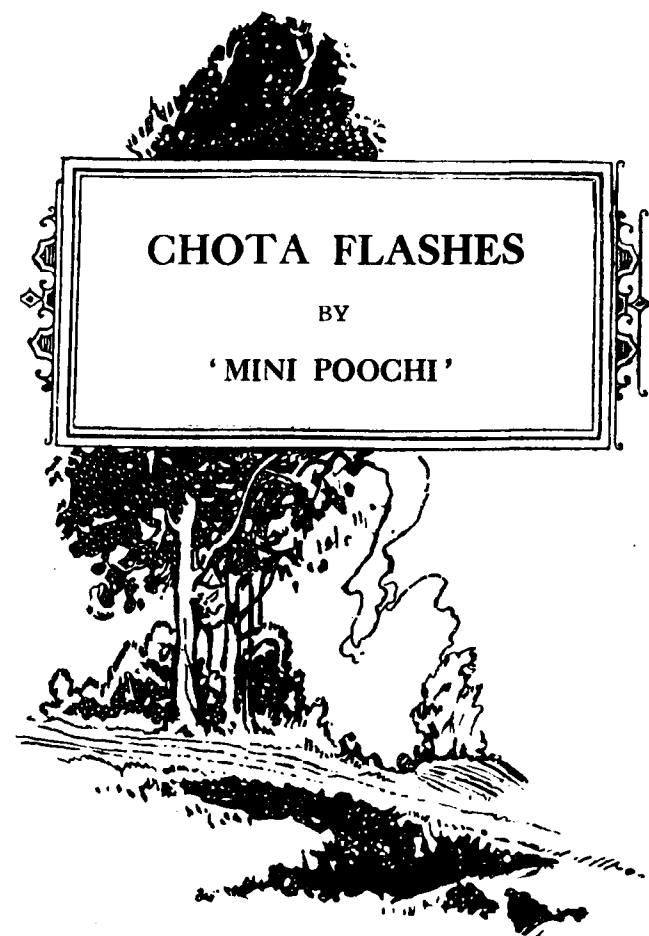
GOODYEAR

3-29-11

CHOTA FLASHES

BY

'MINI POOCHI'



Motorist: I've—I've come to replace a hen of yours I have run over. Farmer's Wife (surprised): Why? Do you think you can lay me some eggs?

A woman driver ran into an embankment and bent a wing. It worried her. She went to a garage and asked the mechanic:

'Can you straighten this so my husband won't know how it was bent?'

The mechanic looked at the bent fender and then at her, and said:

'No, madam, I can't. But I'll tell you what I can do. I can fix it up so that in a few days you can ask your husband how he bent it.'

Among the new maladies we hear about are croquet cramp, dominoes dyspepsia and motoring melancholia. We have also heard of a yachtsman suffering severely from 'outboard indigestion.'

Pat had been posted to keep guard over the entrance of a road which led to an old and unsafe bridge. Presently a car came along and he held up his hand.

'What's the matter?' growled the driver.

At that moment Pat recognized him as the county magistrate.

'Oh, it's yerself, yer honour,' he said genially.

'Yes, it is!' was the snappy answer.

'Tis all right then' said Pat, as he stepped politely out of the way. 'I got orders to let no traffic through because of the rotten bridge; but seein' it's you, yer honour, 'tis a pleasure—go right ahead sir!'

I have received permission from the Editor to point with pride to the fact that *The South India Motor Owner* is the only large sale paper in Madras which has:—

NO INSURANCE
NO COMPETITIONS
NO COUPONS
NO CIRCULARS
NO FLOWERS BY REQUEST

A fashion note states that new pullovers are being made with fancy edgings to the pockets as well as to the cuffs and collars. This should be of great assistance to those golfers who fumble so much getting to their pockets when at the nineteenth.

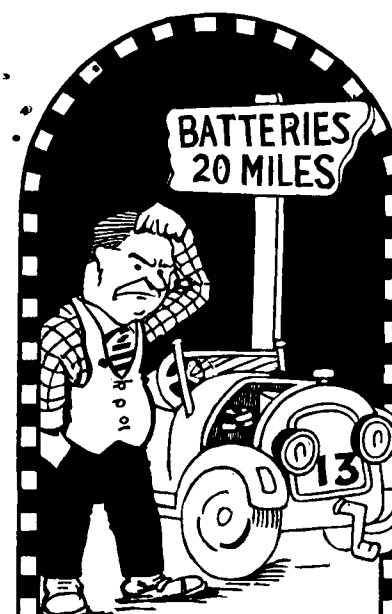
I have recently been in receipt of letters from readers of *The South India Motor Owner*, and some of these disclose such strange facts that I must publish them in these columns from time to time. There is one for instance from an anonymous correspondent, which runs as follows:—

'Dear Sir,

A few days ago on descending from the Bangalore Express to gather flowers my eye was attracted by something glittering in the sand. On stooping more closely to examine this object, I found it to be a bottle of whisky, or, to be more accurate a whisky bottle, presumably dropped by some passer-by. The bottle and the cork were intact, but the tinfoil wrapping which covers the cork normally, had been completely corroded by the action of the sand, so that no trace of tinfoil was left. Even more remarkable than this, the intense heat of the sun had caused the entire liquid contents to evaporate through the glass. Is it any wonder that with such intense solar activity that whisky is the price it is?

Yours very truly,

On reading this letter over, I could not help thinking that, had the writer made a more minute examination of the cork, he would have noticed a small hole through which the contents had no doubt evaporated in the usual way.



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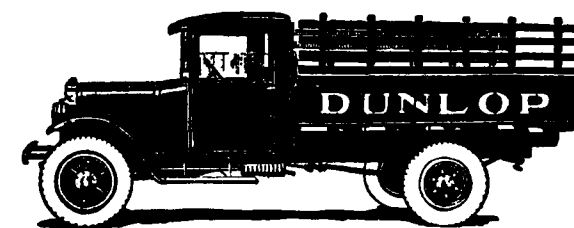
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MOTOR TRUCKS

RAJAGOPAL MOTOR WORKS
MADRAS



NEWS and MISCELLANY

Presenting the News of the
Month together with Interesting
Notes from all Sections of
the Field.

WHEN a woman motorist applied to the Bench at Shoreham, Sussex, for the removal of the suspension of her driving licence, her application was opposed by the police on the ground that she was too old. The lady in question, who is seventy years of age, was involved in an accident resulting in a charge of dangerous driving, which was followed by suspension of her licence for six months. It was stated that the accident was caused by an error of judgment, and the contention of the police was that the lady's age rendered her too nervous to drive.

Whatever may be the merits of this particular case, this action seems to be entirely without any support in law, since there is no age limit for drivers, and on the expiration of the period of suspension a driving licence automatically becomes effective again.

Some seats, even although they are perfectly comfortable for a short journey, tend to grow hard after a hundred miles. It may be that a slight alteration to the rake of the cushion will be all the adjustment that is required to render them comfortable for an indefinite period. This may be effected by packing the cushion at the forward end with a wooden block firmly secured in position and having a metal lip to stop the cushion slipping.

A new system for starting cars may soon be on the market. It employs a small air cylinder, together with a compressor in a most compact form, and is almost noiseless. Besides replacing the starter motor, the device can also be used for pumping up the tyres.

In order to overcome the increasing number of car accidents caused by drunken drivers, the Burgomaster of Ghent has formed a special detachment of plain-clothes police to keep an eye on cars drawn up in

front of the cafes, bars and similar haunts of the thirsty. When a car has been left outside such an establishment for more than a reasonable time, these officials must enter the premises, find the driver, and ascertain whether he is at all under the influence of alcohol. If this is the case, they are empowered to detain him at the police station until he has become sober. The car is impounded, and released only on payment of a heavy fine. This system would appear to be a possible solution to the clearing of the roads of dangerous pests.

The Sunbeam with which Kaye Don is to attempt to beat the world's land speed record at Daytona next March has been named 'The Silver Bullet.' It is interesting to recall another 'Bullet,' 25 years ago, the famous record-breaker designed by the American, Alexander Winton. This car also participated in the 1903 Gordon-Bennett race, while in the following year an improved 'Bullet,' driven by the famous Barney Oldfield, competed in the International Automobile Association's speed trials at Daytona beach. Oldfield then raised the flying mile record to 77.25 m.p.h., and had for a passenger a woman spectator.

What is perhaps the most astonishing motor showroom in the world has just been opened in Paris by the Garage Marbeuf, distributors for Citroën cars. The building has 10 floors, including two underground. The main garage which lies behind the showroom accommodates 500 cars and is provided with a spiral ramp rising to the roof. The showroom takes the form of a stupendous shop window or show case in which 300 cars are exhibited on shelves. A good deal of space is obviously lost in this arrangement, but the designers consider that this loss is more than outweighed by the amount of light received through the big window and the attractive method of displaying cars which is rendered possible.

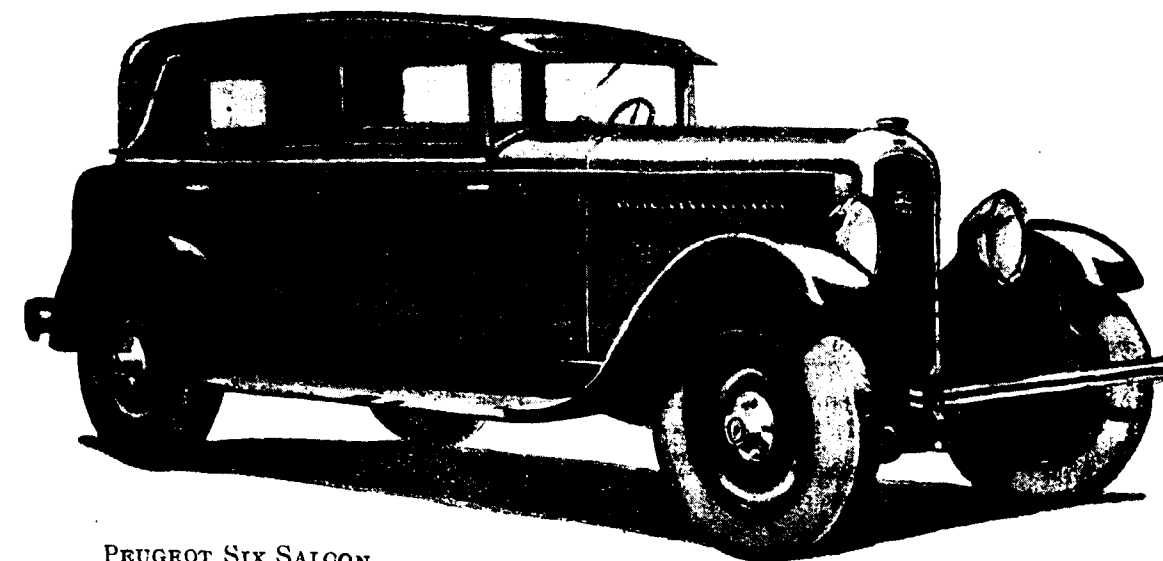
South India
motor owners
demand speed
dependability
and low first
cost.



Of these three, low cost is perhaps the first importance; yet low cost must always be coupled with dependability, power and speed. Peugeot cars have, for many years, had a wonderful reputation on all these points, and now that the economical small model may be obtained for Rs. 2,250, there must be many more South India motor owners who will soon become Peugeot owners. To those motorists who are concerned with economical motoring we would like to send full particulars of these low-priced Peugeot models. May we send you the complete Peugeot story?

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Motor Cycling Notes

A MOTOR Cycle is far too often judged only by the flexibility of the engine and the speed that can be attained. These are, of course, most important considerations, but there is another part of the outfit which ranks equally high. This is the braking system. It is essential in these days when the roads are so congested, and there are so many novice drivers on them, that one should be able to pull up in a matter of yards when the need arises.

Motor cycle manufacturers have not rested content with improving the engine and transmission part, they have evolved a braking system to match. On the really up-to-date machine, the old fashioned band brake and rim brake have been superseded by motor car type.

All Ariel models are now fitted with powerful internal expanding brakes on both wheels. The brake shoes are of aluminium and are equipped with Fibrax linings.

Dual internal coil springs are employed for withdrawing the shoes the moment pressure on the brake pedal or handlebar lever is released. A great feature of the Ariel brake is that the braking plate is arranged to overlap the brake drum; hence water and mud are effectually excluded from the shoes.

THE average motor-cyclist covers round about 10,000 miles in two years. The majority of riders select their weather conditions, since it is only a small minority who may be reckoned as all-weather men. During this two years the various working parts of the machine do a tremendous amount of work. What do you think of two motor cycles covering this great distance in three weeks? It sounds impossible, yet it has been accomplished by a 248 c.c. and 497 c.c. Ariel.

Do you realize what this implies? These two machines started out on a road test after being selected from standard stock by officials of the Auto Cycle Union. The total distance covered was 10,006 miles and the total running time was 530 hours. The engines made 90,000,000 revolutions, day and night, and it will take you a year.

The valve cams hit the tappet rods and the tappet rods the valve rockers—the two models were fitted with overhead valves—180,000,000 blows and yet at the end of the run the amount of wear on these parts was inappreciable. No fewer than 80,000 sparks took place at the plug points and the magneto contact-breakers would open and close the same number of times. The total vertical height climbed by the two machines if all hills climbed were placed on end, would be nearly 20 miles.

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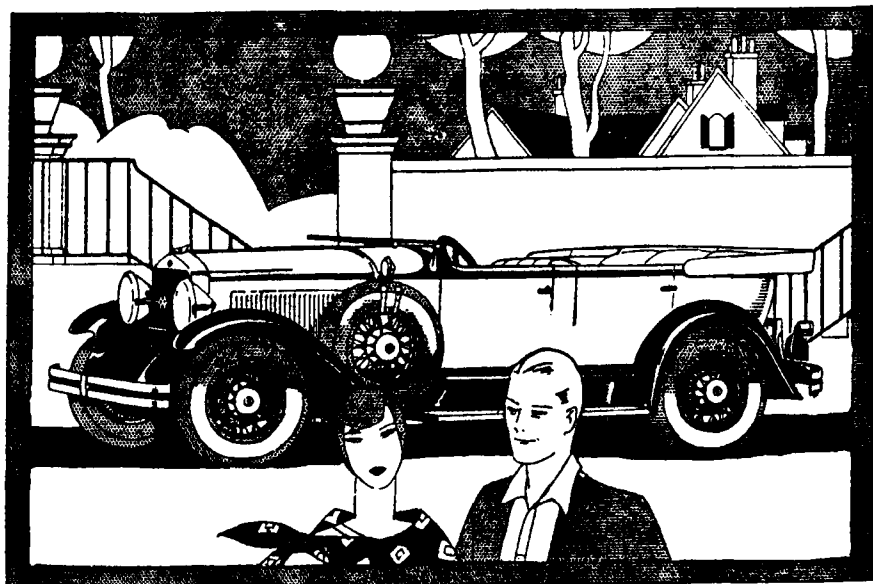
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CHAMPION performance that thrills your heart, as superlative beauty delights your eye, are two reasons Studebaker now sells more 8-cylinder cars than any other manufacturer on earth!

This distinctive new Commander Tourer is a shining example of the smart styling and smooth running that has enabled Studebaker to win leadership in both performance and sales. Here is a new and

more swanky sport model, either a five or seven seater.

Because of Studebaker's advanced engineering and three years experience in building moderate priced eights, this new Commander Eight is more sparing of petrol and lubricant than many less powerful sixes! However, if you prefer, you may also enjoy Commander performance in a six-cylinder chassis built to Studebaker's champion car standards.

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THE last day on which copy will be accepted for inclusion in this section is the 10th of the month. Whilst every care will be taken to ensure accuracy, the publishers will not be responsible for printer's errors or for non-inclusion. In this regard it should be noted that advertisement copy, received early, will obtain closer attention than that rushed through for inclusion at the last moment. Other business and advertisement notes will be found on page 39.

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A full Directory of car owners in South India. This publication is invaluable to motor dealers and all who sell to South India motor owners.

With this Directory by your side your motor owners' mailing list is always right up-to-date by reason of the correction slips mailed to you each month.

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INDEX TO ADVERTISERS

	PAGE
Addison & Co., Ltd. ...	
Bar-Lock Typewriter Agency ...	
Brady & Co., Ltd., W. H. ...	24
Chakravarthi & Co. ...	36
Champion Automobiles ...	29
Charles Morgan & Co., Ltd. ...	
Continental Tyre Co., Ltd. ...	iv cover
Crompton Engineering Co. (Madras), Ltd. ...	15
Dhanalakshmi Motor Service ...	
Dhanam & Co., K. J. ...	
Diocesan Press ...	32
Dunlop Rubber Co. (India), Ltd. ...	20-21
Ford Motor Co. (India), Ltd. ...	23
Goodyear Tyre Rubber Co., Ltd. ...	27
Hotel Metropole ...	38
Jones & Co. ...	
Lavender's Hotels ...	39
Madar Saib & Co. ...	35
Madras Automobiles ...	ii cover
Madras Motor Sales Co. ...	
Metropolitan & Co. ...	33, 36, 37
Moorthy Bros., S. K. ...	
Morde, H. A. V. ...	

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INDEX TO ADVERTISERS

(Continued)

	PAGE
Motor Reconditioning Station ...	1
Mutual Indemnity & Finance Corporation (India), Ltd. ...	
Oakes & Co., Ltd. ...	
Palany Andavar & Co. ...	26
Rajagopalan & Co., V. S. ...	33
Rajagopal Motor Works ...	29
Ramanuja Iyengar, T. S. ...	
Rane, Ltd. ...	37
Ranga Transport Company. ...	
Ratnavelu & Bros., V. M. ...	33
Romer Dan & Co. ...	31, 34
Savoy Hotel ...	38
Simon & Co., P. ...	29
Simpson & Co., Ltd. ...	
(Front cover)	
South India Motor Co. ...	
Standard Motor Electric Works ...	22
Sunderasamy Iyer, M. ...	
Tinnevely Petrol Supply Agency ...	
Texas Oil & Co. ...	
Vacuum Oil Co. ...	
Wakefield & Co., Ltd., C.C. ...	2
Yelkur Elliah Chetty ...	
Zeckaria Sait & Sons ...	

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Published monthly by

Eastern Technical Publications,

Varada Buildings, Mount Road, Madras

'THE South India Motor Owner' is issued on the 15th of each month. It aims to furnish the latest and most authoritative information on all matters relating to motors and motoring under South India conditions. Contributions and correspondence on all matters coming within the scope of this journal are solicited and prompt remittance will be made for all acceptable matter. Contributions should preferably be illustrated.

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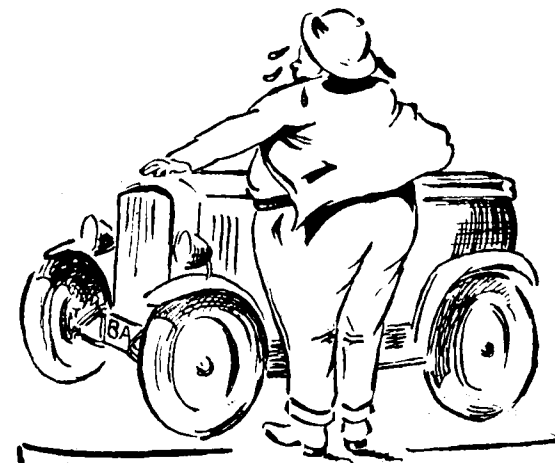
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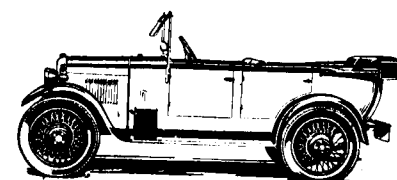
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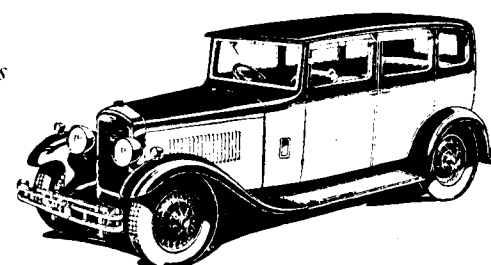
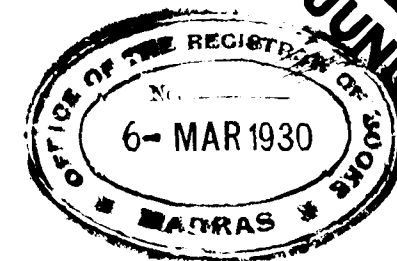
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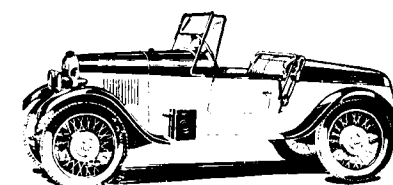
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A
MONTHLY
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DEVOTED TO THE
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OF
SOUTH INDIA
MOTOR VEHICLE
OWNERS

THE
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**MOTOR
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EFFICIENT
ENGINE
LUBRICATION
PAGE 56

Vol. II, No. 2.

February, 1930

Price, As. 8

Jottings from this Issue

	PAGE		PAGE
When an engine is idling, very few pumps give adequate circulation of cooling water ...	53	Few things are so annoying as elusive squeaks and rattles, but even the most awkward ones can be cured by careful attention ...	52
The vogue of low-looking exteriors in car design has a disadvantage in that the occupants are forced to remain in unnatural positions which produce fatigue in a short space of time ...	70	What is the use of running four seats around when only one or two are used regularly? ...	48
What a pity we have no strong men who would dare to say 'Tush' to the Commissioner of Police! ...	47	A test of road conditions throughout Southern India will reveal the true state of affairs ...	45
The idea that the manufacturer loses interest in the car he makes immediately it is sold is as antiquated as the one cylinder engine ...	69	The number of experienced drivers who neglect to use their ammeter is appalling ...	49
The dangers of lubricant dilution have been exaggerated—provided dilution is not so great as to permit metal-to-metal contact, there is no danger ...	55	Dirt, grit and road dust most detrimental to an engine ...	56
A confession of poor form consequent upon a big figure at the nineteenth ...	47	A description of the 1930 Singer models will interest readers ...	60
The manufacture of unsplinterable glass is now in the hands of three or four firms who are producing on a commercial basis ...	52	It is a rather popular fallacy that the hotter the spark the more power an engine will develop ...	67
		Corrosion prevented and wear reduced by an oil with a plating action ...	74
		A girl of exceptionally decorative design adds to the perils of the road ...	50
		Even new springs, if not suited to their work, can cause a lot of trouble ...	64

CONTENTS	
	PAGE
Road Conditions in South India ...	46
Omer Khayyam—Motorist ...	47
Owner-driver's Note Book ...	48
The Problem of Safety Glass ...	51
Squeaks and Rattles ...	52
Importance of Efficient Lubrication ...	53
The Practical Page ...	58
The New Singer Models ...	60
Valve Springs ...	64
Maintaining Maximum Power ...	67
Service Jottings ...	69
Correspondence ...	70
News and Miscellany ...	71
Remarkable New Lubricant ...	74

EDITORIAL

An Old Question and a New Problem

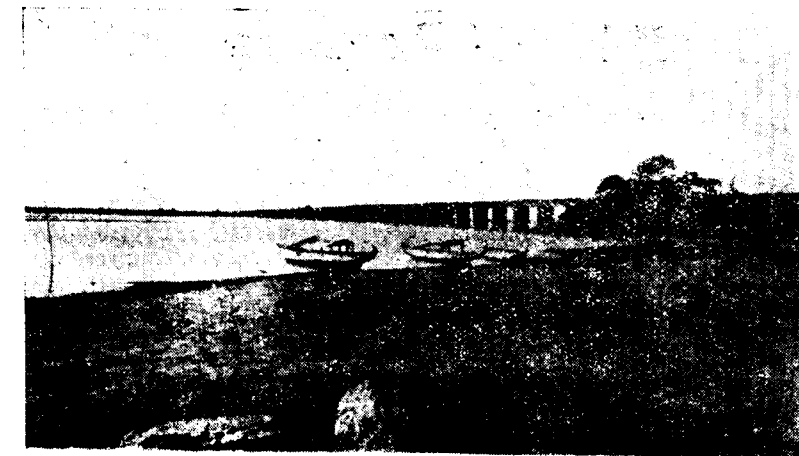
WHEREVER motorists are gathered together there will discussion take place, many old fallacies will be voiced, and many old problems call forth all the heat of argument unseparable from gatherings of motorists, fishermen and golfers. Only the other evening we heard the old query raised as to whether an engine really runs better at night than it does during the day time. Strangely enough, the majority do affirm that their cars appear to be more efficient after sundown, the explanation which is put forward being that this improvement in running is due to the general effect of a colder and denser night atmosphere with its presumably higher oxygen content. This explanation fails, because there is no scientific corroboration of the fact that the atmosphere is richer in oxygen at night. Neither can the density theory be considered within the bounds of possibility, because density in its application to the atmospheric oxygen content has nothing whatever to do with temperature, but is solely a question of barometric pressure. If the density of the atmosphere actually increased at night, the barometer would rise in indication thereof, but unfortunately the barometer does not so conveniently confirm the supposition, but varies quite regardlessly of light or darkness.

Other variations based upon this theory are those which put forward the suggestion that the dew point or vapour content of the atmosphere is responsible for this supposed increase in the power of an engine. This is also fallacious, for dew points vary just as much as barometric readings, and it is easy to prove on the test bench that dampness of the air, unless accompanied by a marked barometric change, has but very little effect upon an engine—certainly not sufficient to effect in any way the running of a motor car as a complete unit.

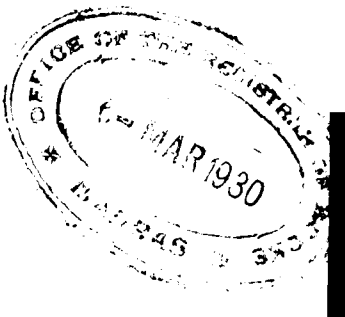
This brings us to the explanation that temperature has a lot to do with it, and there is little doubt that here, at any rate, we have the first sound suggestion which may prove the original contention, and is most likely to be a probable cause, particularly here in India. There is no doubt that the greater number of cars and motor vehicles working in Southern India during the day time are working at a temperature well above that critical point at which a high speed internal combustion engine works best, and it is possible that the temperature drop after sundown could effect a noticeable improvement in the running of a vehicle. Yet this could only take place within clearly defined limits and cannot be accepted as an explanation of the consistent after-dark improvement claimed by many thoroughly experienced motorists.

To put the matter very frankly, we are of the opinion that this increase in power which is said to be noticeable at night is purely imaginary and no doubt due to the exaggerated effect of speed and acceleration which invariably accompanies driving in confined spaces, such as through a tunnel or on a narrow road between high hedges. The effect of a dark road is so similar as to give motorists just the same impression as that obtained under the conditions mentioned.

The effect also is very marked when passing lights in the dark, due probably to the fact that lights do not appear to be coming towards the motorist until the on-coming vehicle is within a few yards of the observing driver. Thus he has no opportunity to compare speed until the other car is almost past him. Furthermore, he has no stationary objects with which to compare his speed with the on-coming car's speed, and the sudden passing of the two vehicles gives both drivers the impression that is responsible



WHERE MADRAS MOTOR OWNERS OFTEN WANDER FOR BATHING PICNICS—ENNORE BACKWATER



for the assertion that a car is speedier and more efficient at night.

This exaggerated effect has frequently been tested for on the bench, and dozens of engines have failed to show any appreciable difference between day and night efficiency readings. It is certain that, had there been any difference sufficiently marked to affect the running of a car, then that difference would surely have been detected.

It is only fair, however, whilst mentioning the subject of bench tests, to point out that there is one phenomenon which has never yet been satisfactorily explained, namely that an engine frequently develops its best power on the bench about four o'clock in the morning. The difference is slight, so slight that it could not have the least possible effect upon road work; but it is there and, so far as we are aware, this proved fact has never been satisfactorily explained. It is interesting to note

too that, in observing this test due allowance is always made for density and other variable factors.

There will be many motorists who will disagree with this ruthless shattering of their favourite fallacy and we expect that we shall be in receipt of letters from both owner-drivers and technical men, stating specific instances of having fully proved certain cases, with figures and data *ad lib*. On the one question we shall require a deal of convincing as there are no definite scientific proofs that cars run better at night than during the day time, but we would really appreciate confirmation from one of our readers upon the fact that an engine does run slightly better about four o'clock in the morning. We believe that this phenomenon was first noticed by aero experts and mechanics during the war, and if there be any such amongst our readers, we would like to have their opinion on this subject.



The Condition of Roads in South India.

An Interesting Investigation which is being made.

A MILD controversy has arisen in Madras following the recent debate in the Rotary Club on the subject of roads in the Presidency, a report of which appeared in our January issue, and Mr. Hilton Brown's statement to the effect that 'all things considered, the roads in the Presidency are wonderfully good.'

The *Madras Mail*, acting in collaboration with the South Indian Motor Union, has come to the conclusion that, in view of the existing conflict of opinion on the point, the best means of forming unbiassed conclusions on the condition of the Madras roads is to send out a sufficiently expert representative to make a personal inspection of characteristic roads of the Presidency.

To this end, the South Indian Motor Union, which is equally concerned in this subject in the interests of its members, is sending a qualified representative with wide experience of roads in other parts of India, as well as in Europe, on an extensive tour of the Madras roads. The tour will be as follows: Pondicherry-Trichinopoly-Dindigul-Udamalpet-Munnar-Calicut-Cannanore-Pollibetta-Mysore-Bangalore-Chittoor-Madras. There is no intention to choose out-of-the-way roads which would not be normally used by the traveller.

Many difficulties.

Mr. Hilton Brown welcomes the test. In view of the terms of the reference, however, he says it is a pity that, according to the advertised itinerary, at least a third of the mileage will be covered outside the limits of the Madras Presidency; but Mr. Hilton Brown admits that it is difficult to arrange a round tour any other way, and it will be instructive for the paper's representative to observe what the Coorg, Mysore, French and Travancore administrations have made out of similar material to that obtaining in Madras. He stresses the point, however, that the really important words of his 'challenge' be not lost sight of, namely, 'all things considered.'

Quite apart from difficulties of soil, season and climate, Mr. Hilton Brown points out that roads of the

Southern Presidency are made and maintained by engineers for the most part of moderate qualifications working through subordinates often with no qualifications at all; the charges of these engineers are in almost all cases absurdly expensive and their road work is but an item in a miscellany: and they are inevitably supplied with funds utterly inadequate to modern conditions of road maintenance.

Finally, Mr. Hilton Brown suggests that in the anticipated reports, mile and furlong be quoted and general terms, such as 'fair', 'good' and 'poor' avoided. If the investigating representative finds things wrong, let us know exactly of what he complains—ruts, potholes, loose surface, bad drainage, or what-

ever it is. It is impossible to take any interest in vague expressions relating to unspecified stretches of road.

Lack of Funds.

An 'Observer', writing to the *Madras Mail* strongly criticises Mr. Hilton Brown's description of Madras roads in his address to the members of the Rotary Club. A member challenged his opinion, remarking that the only road Mr. Hilton Brown probably had experience of was the Madras-Ootacamund road. Mr. Hilton Brown did not at the time contradict this, but later on, he travelled over another road, road-hogging over 60 miles in about two hours and favoured the public with his opinion thereon.

The writer claims to have an intimate acquaintance with the main roads in Tinnevely, Madura, Ramnad, Trichinopoly, Tanjore, North and South Arcot Districts, and even the Nilgherries, apart from two roads from Mettupalayam and Gudalur leading to Ooty, and he could, he says, point out several sections of main road therein that are positively disgraceful and almost impassable for motor vehicles. In making the statement, he imputes no reflection on the road-making authorities concerned, and being what is termed a technical expert on road maintenance, he knows that the chief reason for their unsatisfactory condition lies in want of sufficient funds.



CARS PARKED IN THE SHADE OF THE TREES AT ENNORE—A POPULAR SPOT FOR SUNDAY PARTIES A FEW MILES OUT OF MADRAS.

Omar Khayyam—Motorist and Golfer

A Few Suspicious Passages from the Rubaiyat which may Prove the Writer's Case

IT is certainly strange, considering the recrudescence of attention which has in recent months been given to the Rubaiyat, that nobody has written frantically to the daily press raising the important question as to whether Omar was a golfer and a motorist. Most people, it is true, could quote a portion which undeniably has a more than subtle bearing on the great game of Golf—

The Ball no question makes of Ayes or Noes,
But Right or Left, as strikes the Player, goes.

But single instances do not help to prove our argument, and the object of this article is to show that there is a continuous thread of open allusions to Golfing and Motoring running right through the Quatrains. When this evidence is closely studied, nobody will be bold enough to plead impossibility on the grounds of accident and coincidence. Thus Quatrain 10, beginning—

With me along this strip of Herbage strown

contains an exact description of that soft strip of grass which every ardent motorist seeks when he has to crawl beneath his car to tighten up his shock absorbers, and indicates that Omar had a justifiably poor opinion of mud or dust for the purposes mentioned. Indeed he confirms the antipathy later on in Quatrain 19.

And this reviving Herb, whose tender green
Fledges the River-Lip on which we lean.

This alluding to his pleasure in having a spot of grass on which to rest his shoulder blades, rather than damp the seat of his shorts in a muddy puddle.

The Worldly Hope Men set their Hearts upon appeared to be a distinct reference to his chances of winning the Club Handicap, though the reason for his inability to record having at any time done so seems to be given further on in Quatrain 2, which mentions how some—

Have drunk their Cup a round or two before,

this being apparently a confession of poor form consequent upon a big figure at the nineteenth. This is a pity, but we can all of us sympathise with old Omar as most of us have experienced the perils of afternoon tea in the early rounds.

To return, however, to motoring, it is obvious that old Omar had some experience of touring mofussil, a supposition which is borne out by his bewilderment in Quatrain 30.

What, without asking, hither hurried whence?
And, without asking, whither hurried hence?

This being obviously a description of a moment of mental stress following on asking the way of a Tinnevely policeman. Another theory on this stanza is that, sojourning too long at the nineteenth, Omar

may have been just a wee bit wobbly, because, as he says in Quatrain 32—

There was a Door to which I found no key;
There was a Veil past which I could not see.

Now we have all occasionally lost the key to the garage door and, the Veil being present, the keyhole too, so that we clearly understand what is meant here.

Quatrain 41 is one of the most intriguing in the whole poem:

For 'Is' and 'is Not', though with Rule and Line,
And 'Up and Down' without, I could define . . .

A little consideration shows that the first line refers to a stymie so doubtful as to be measured with a pocket line. 'Up and down' hints at a new method of attacking the ball; 'without', one may surmise, meaning without a follow through—a defect inseparable from Omar's style of play.

And lately, by the Tavern Door agape,
Came stealing through the Dusk an Angel Shape

records the passing of a sports model or something like that. One can well understand friend Omar gaping as an 'Oakesford Special' swooped past an open tavern door. Omar of course never liked to be personal, particularly when referring to the car of a fellow motorist, so he preferred to call the car by the fanciful name of 'Angel Shape' rather than dub it unpoetically as a Legstrong-Widdley or what not. Whilst Quatrain 51 may refer to a strokes competition at Naishapur, I am rather of the opinion that Omar refers to his speedometer.

The moving Finger writes; and, having writ,
Moves on
Nor all thy tears wash out a Word of it.

He was probably due for leave and desirous of selling his car, and under circumstances such as these every hundred miles make a big difference to one's total speedometer reading and subsequent cash obtained for the sale of the car. Quatrain 57 contains an undoubted reference to the bunkers on his course.

Who didst with Pitfall and with Gin
Beset the Road I was to wander in.

This is a particularly interesting passage, as the last word of the first line may refer to a particular hazard on the course, or it may be that Omar's opponent took a mean advantage prior to the round.

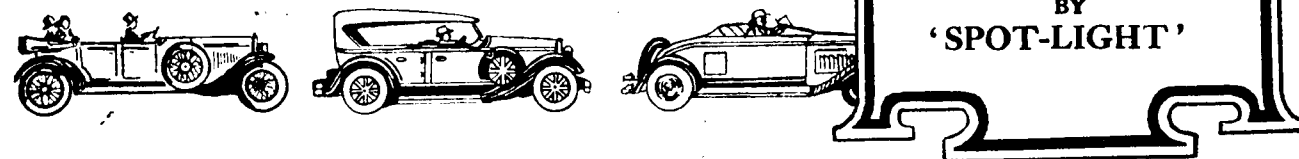
There must have been some kind of police regulations in Omar's days, and the matter of proving ability to drive before being granted a licence must have cropped up, vide Quatrain 63.

They sneer at me for leaning all awry
They talk of some strict Testing of us—Pish!

which proves that Omar had the right stuff in him—that 'Pish' being really expressive. What a pity we have nowadays no strong men who would dare even to say 'Tush' to the Commissioner of Police, never mind 'Pish'!

E. F. P.

From an Owner Driver's Note Book

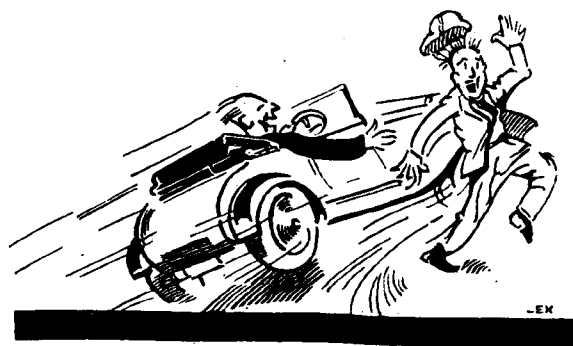


Are Two Seaters Selfish?

I AM told that I am selfish and unsociable because I prefer a two-seater to the big tourer which holds four or five. I like cheerful company as much as any one does, but I have, I must admit, an honest preference for the snug bus in which two may chat and exult in secret. You must know, it is very snug, that two-seater feeling. There is none of the vast empty space at the rear—none of the back seat questions which are such a nuisance when conversing with friends in a touring model and above all, what is the use of running four seats around when only one or two are ever used regularly! This matter of accommodation surely depends on personal requirements—not of one's friends but of oneself.

Our Shrinking World

In an attractively written brochure the Empire Marketing Board asks the intriguing question, 'How long is a mile?' The unimaginative will answer that a mile is just what it has always been: an unaltered measure of distance. But it is worth considering that in point of time the mile which represents a 20 minutes' walk to the pedestrian, or a six-minute ride to the cyclist, is covered in 70 seconds by a motorist on a main road or in 10 seconds by a Schneider Trophy machine. Similarly, Sidney was 80 days away from London 100 years ago, but the same journey



DEPENDS ON PERSONAL REQUIREMENTS

represented only 15 days to Mr. Bert Hinckler. So the world may be said to have shrunk to less than a quarter of its original size in a century.

A Well-deserved Honour

To motorists the outstanding feature of the New Year's honours list is the peerage conferred upon Sir Charles Cheers Wakefield. Without it being generally known beforehand, it was Sir Charles who took a leading part in securing for Great Britain the world's speed championships on land and sea. When Sir Henry Segrave returned last spring after achieving his great successes at Daytona with the 'Golden Arrow' and at Miami with 'Miss England', he declared in a broadcast description that Sir Charles had been more than a father to him. Quite recently he put the seal to his encouragement of the successful effort of Sir Henry Segrave by purchasing the 'Golden Arrow' for presentation to the nation. He has devoted his personal services and resources to secure for England the long-distance flight records by Sir Alan Cobham to South Africa and back, and to Australia by Bert Hinckler, to mention only

two. I should imagine, too, that we have by no means heard the last of him in so far as speed records are concerned, and venture the opinion that, far from resting on his laurels, the new peer will in the near future help to amaze all plodders at the motoring game.

Evidence for Sale

Discussing motoring accidents the other day, I had to agree with a friend the newspaper reports of recent accidents to pedestrians seem to point to many instances of falsehood on the part of witnesses. In many cases it is very evident that statements by supposed independent witnesses are but brazen and unashamed perjury and the offence is permitted to go unpunished. As the underlying reason for this can usually be found in the prospect of subsequent damages

nervous breakdown because, after months of experimenting with various economising (so-called) excrescences that they have seen advertised, they have failed to reduce fuel consumption to a figure they have been told is possible. It is the same with oil and grease. They ought to remember that two engines of exactly similar design and dimensions seldom give identical performances. I can't explain it, but there it is. Thus if it is found that one engine has a larger appetite for fuel and oil



'LOITERERS NEAR THE SCENE OF AN ACCIDENT'

to relatives, it is high time that an example be made of one or two lying witnesses. It is to be feared that there is a certain class of unscrupulous lawyer who is only too pleased to approach loiterers near by the scene of an accident in order to concoct evidence against a motorist involved in an accident, even though the unfortunate victim be entirely to blame.

It cannot be denied that many juries are inclined to be over-generous in the matter of damages in motoring cases, and this has brought to being the perjured witness and sharp lawyer who together make a case, however slender may be real evidence of negligence.

It would seem that there is room for the laws and regulations which are supposed to prevent such tampering with the scales of justice to be considerably tightened up.

Expensive Economy

I have come across motor owners having bought new vehicles who have nearly had a

than its twin sister, and refuses to bear economy beyond a certain point, it's no use spending a lot of money in trying to get her to do the impossible. If you load her up with patent extra air and spark gap devices, or dope her fuel with poisonous preparations, she will get her own back in the end, and you will be no better off than when you started.

Elusive Rattle

The other day an owner complained of a strange noise that she was unable to locate. I took a ride in the car and was also unable to find it at first. It couldn't be heard at ordinary cruising speeds, but only when the car was accelerating rapidly. It sounded as though it was occurring somewhere in the neighbourhood of the dash, but I soon found it was not there. Lifting up the seat—it was a coupe—I found some of the tools disarranged and riding on the metal surface of the bottom. I placed rags in the bottom, replaced the tools, replaced the seat, and the rattle was gone.

Use the Ammeter

The number of people driving cars who have no conception of the use of the ammeter is appalling. This instrument indicates in amperes the amount of current passing to or from the battery. The pointer resting on the scale marked 'charge' indicates that the generator is charging the battery. The pointer resting on the scale marked 'discharge' indicates that more power is being used than is being produced by the generator, or, in other words, that the battery is discharging. With all of the lights off, the ammeter should read 'charge' at speeds above ten miles an hour. If the motor is idling, it should read 'discharge', but the pointer should swing to the 'charge' side of the dial when the motor is accelerated. If your ammeter does not perform in accordance with these specifications, see a service man immediately.

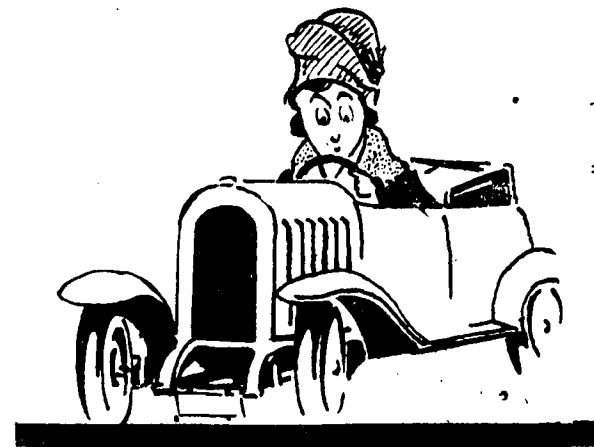
Danger—Lady Driver

I was discussing with a friend—a very bitter misogynist, by the way—the question of dangerous and inconsiderate driving. In his opinion, every car driven by a woman should carry upon it a distinguishing signal such as a front number plate or a four-wheel brake sign, inscribed with unmistakable clarity the words, 'BEWARE! LADY DRIVER!' He was sufficiently ungallant to add that the warning might well be capable of illumination for night use. Now much as I dislike generalising about either sex, I am not prepared to say that women motorists are in any way more or less inconsiderate than the sterner sex in the treatment of their cars or in their regard for the rules of the road.

Yet I don't think Kipling had in his bonnet any motoring bee when he wrote.

'When husband meets the hunter
Both will tell the self-same tale,
That the female of the species
Is more deadly than the male.'

I am not inclined to agree with my friend that in proportion to their numbers, women drivers are the cause of more accidents than men. Obviously, insurance companies do not think so, and they are by experience perhaps the best of judges. That they do not demand higher premiums for women is a good sign.



'MORE DEADLY THAN THE MALE'

There are, of course, good, bad and indifferent drivers of both sexes, and as for the suggestion that women rarely give signals—well, I've noticed that they *do*. Especially those with pretty arms!

Without admitting that either sex can be held responsible for the greater number of accidents, I do think that men and women, especially young men and women, in conjunction, are more dangerous upon the road than they are when apart. A youth with a girl of the highly-ornamental type by his side is almost invariably seized by a frantic desire to 'show off.' In his desire to impress her, and to make her think that he is a brilliant driver, he will step heavily upon the juice at every possible opportunity, will race every car upon the road, cut in, flash by cross roads, and disregard both speed limits and white lines.

If the girl be of exceptionally decorative design, she may add to the perils of the road because her companion may find it is impossible for him to fix his attention upon the road ahead. Instead of 'eyes front', it is 'eyes left' most of the time, and while admiring a maiden blush, or a well pencilled eyebrow, it is quite possible that he may hit a bullock cart, or cripple some very expensive pedestrian, such as a coolie who is the sole support of a large family.

To sum up, I do think that the enthusiasm with which ladies have taken to motoring has increased the troubles and the perils of the road, not because they are less cautious than men, but, indirectly, in the ways I have attempted to set forth.

The Problem of Safe Safety Glass

The manufacture of safety glass is gradually emerging from the experimental stage—and many companies now manufacture a sound article.

IN the event of an accident, the most serious risks are from flying fragments of glass. In accidents in which public service vehicles are involved, it will generally be found that cuts or wounds are inflicted by broken glass. Glass is essentially a very brittle substance, and when hit, particles of needle-like sharpness are liable to fly like bullets and then deepwounds are usually caused.

The general use of unsplinterable glass has for many years been advocated. Its production was at one time in the hands of only one concern, which prevented its more universal adoption.

The manufacture of such glass, however, has ceased to become a monopoly and is now the *raison d'être* of quite a large number of companies, some of which have turned the product out on a commercial basis, while others do not appear as yet to have emerged successfully from the experimental stage.

Each concern has its own patented methods of making unsplinterable glass, which naturally take time to develop, but it now appears, affirms a writer in *The Motor*, that certain concerns are emerging from the chrysalis stage and will shortly be able to turn out reasonably satisfactory glass in quantities.

The general method of manufacture is to make a sandwich consisting of two sheets of glass between which is a sheet of a substance such as celluloid. To carry out the analogy still further, both pieces of glass are first 'battered' with a certain preparation which is an important feature of getting adhesion.

Requirements of Safety Glass

There are several requirements desirable in unsplinterable glass. In the first place, so far as the windscreen is concerned, it must be optically true; a glass which distorts one's view makes driving difficult

and at night time dangerous. It is also important that the rear window in a saloon car is of equally good glass, so that good vision is obtained by means of the interior mirror. For the side windows it is not of so much importance, except perhaps in the highest class of cars. Optically true plate glass is expensive and the supply appears to be limited, hence it costs more than sheet.

The next requirement is that the glass when made should be as nearly as possible water clear and, furthermore, that it shall not change in colour. To-day the best unsplinterable glass is so clear that it is difficult

to detect it from the ordinary article, and while it may, under the influence of light, darken slightly, the effect will not be greatly noticeable. When the glass acquires a slight tint, however, it protects the driver from the glare of the road in bright sunshine, so that a slight tint is not exactly a disadvantage.

Then—and this is a very important factor—the unsplinterable glass must be so made that, in the event of fracture, pieces will not be readily detachable. It is probably impossible under certain conditions to prevent small fragments of glass being sheared, but such fragments being very small they are not likely to fly, or cause serious injury. To obtain this result the sandwich must have good adhesion, and that is one of the most difficult parts of the process of making the glass.

The next and final requirement is also very important, and that is, it must be so made as to prevent the ingress of air, or moisture, which would cause bubbles or blisters. Generally, in faulty glass these blisters form at the edges and gradually extend along the whole sheet, and they are caused by the edges not being properly sealed, so that the process of sealing the edges, which is covered by patents, or the adoption of other methods of preventing air or moisture partially separating the sheets of glass and spoiling its translucency, is an essential factor.



WHERE A RANGOON DEALER TESTS ALL HIS CARS
THE PICTURE SHOWS A FORD SEDAN JUST READY TO UNDERGO THE TRIAL

One Process Described

The manufacture of unsplinterable glass is now in the hands of three or four firms who are producing on a commercial basis. The method of manufacture is very similar in all cases—the only variation being in the material of which the centre part of the sandwich is made, and in the composition of the material used for sealing.

Pieces of glass are cut to a size by means of templates, in the case of intricate shapes, and there is a special department dealing with these. Three templates are made for every order, one of which goes to the glass cutters, the second to the final inspection department for checking the product, and the third to a 'library', where it is indexed for reference, so that a replacement order can be executed at any time.

An Elaborate Machine

Paired glass sheets, after cutting, pass into a separate shop on rubber-wheeled trolleys, where each glass piece is automatically carried through an elaborate machine. It is cleaned and passes into a tunnel, where electrically warmed air dries the surfaces. A coating of transparent enamel of special composition is then applied, following which the glass is again dried and another coat of enamel applied.

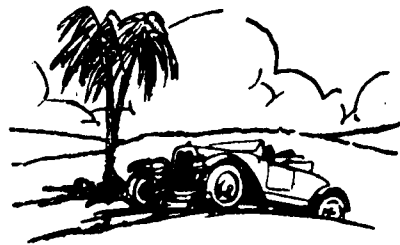
The pair of glass pieces which have been enamelled, together with a piece of flexible celluloid cut to the same shape, are next taken to a pressroom in which the sandwich is formed. Here there

are batteries of hydraulic presses. The sandwich is placed in a press, where it is subjected to a pressure of many tons per square inch and is heated.

Following this the product is taken to a most ingenious grinding machine. Here it is placed on edge in a weighted carrier and is moved slowly along by a conveyer chain which takes it over five wheels in succession; four of these are carborundum grinding wheels of various grades, whilst the fifth and last is a polishing buff.

In the next operation the flexible celluloid is trimmed away for a narrow margin all round each 'sandwich' in order to leave a thin groove-like gap between the two sheets of glass, in which a filling compound is inserted to prevent the atmosphere from attacking the celluloid or the enamel in course of time. This margin is formed by a secret chemical process which eats away the celluloid to the depth required in a very short time. The margin is then filled up with a viscous varnish. Following this come cleaning and inspection processes, and the material is then branded, and ready for use.

On examining many samples some of which, we were told, had been in use on cars for several years, only the slightest tint could be detected and the translucency of the product is very good indeed. The flexible middle sheet employed to make the 'sandwich' is in the case of the samples inspected a non-inflammable substance, said not to discolour or become brittle after prolonged exposure.



Squeaks and Rattles

How a small amount of attention can eliminate them

FEW things annoy one so much as a rattle or a squeak; very often a particularly elusive rattle may be cured by a little attention given to the doors. It will usually be found that the doors are fitted with rubber buffers and that by continual use these have become flattened. It is not always necessary to renew them, for by fitting a small piece of paper or tin behind the rubber the trouble can sometimes be cured. At the same time attention should be given to the door locks, for, if a few drops of oil are used occasionally at these points, squeaks will disappear as if by magic.

Unless tools are packed well with rag, or in special containers, they will cause a tremendous amount of

rattling. It should also be remembered that, if tools are used on the road, they should be packed away carefully again.

Loose floorboards are another common source of rattle; it is a very good plan to tack a strip of felt or of rubber to the edges so that, in the event of their rubbing against one another, they will not give rise to squeaks. If felt is not available, try lightly greasing the edges of the boards.

By placing a piece of felt cut to the correct size under the floor mats a feeling of comfort is given to the feet, and engine vibration will be prevented from reaching the passengers. This has the extra advantage of keeping the feet cool.

The Importance of Efficient Engine Lubrication

The Effect of Traffic Conditions and Warm Weather

DEVELOPMENT of automotive transportation since the war has been conspicuous for its leaning towards higher temperatures of engine operation.

From an operating point of view, this may be regarded as due to modern traffic and driving conditions; from the mechanical angle, as a result of the trend towards the adoption of engine design involving higher running temperatures.

All this has a decided bearing upon engine lubrication and the determination of the proper grades of oils which will effectively meet these conditions. It will, therefore, be of distinct interest to the motorist to discuss these latter, and the degree to which his own particular mode of driving, or type of engine, may require consideration when he buys his oil.

Modern traffic imposes a decidedly severe load upon a motor oil. Average speed conditions are higher, traffic regulation is more rigid and the range of travel has become increased to a marked degree. All are conducive to more frequent starting and stopping, and to longer periods of idling, especially when driving through traffic to any extent.

Stops are more frequent, and a minute of idling at each, especially on a hot day, will frequently be the cause of an overheated motor, due to the fact that when an engine is idling very few pumps give adequate circulation of cooling water. Nor will speeding up for a short time help to alleviate such a condition once begun, even though less heat is developed by the burning of a smaller amount of fuel during such operation.

And yet, no real detriment can result. Nor should car operation be any more difficult, for engines are designed to-day to meet such conditions. In fact, by the adoption of certain types of design many engine builders themselves have created a mechanical condition which will result in higher operating temperatures, regardless of driving or traffic requirements. But this must be taken into account when selecting motor oil.

Trend in Engine Design

The trend in modern engine design is towards higher compression; that is, the pressure of the mixture of gas and air in the cylinder of the modern engine just prior to explosion is higher than formerly. This means that there will be more work done for each explosion, and the lubricating film will have to carry a higher pressure momentarily. While for a

very short time the temperature in the combustion chamber may be higher than usual, the average temperature is lower due to the fact that more energy is used up in useful work and less is passed out of the exhaust and to the cooling water.

The ultimate load, of course, must be borne by whatever motor oil is used to lubricate the engine bearings, cylinder walls, valve stems, timing gears and such other parts as may be served by the lubricating system according to the design of the latter and the method of lubrication employed.

There are a number of angles from which such an oil should be viewed when it is to be selected for service in the modern automotive engine, viz.:

The Viscosity,
The Carbon Residue Content,
The Flash and Fire Tests, and
Crankcase Dilution.

It is a characteristic of most liquids to become thinner or more fluid when subjected to an increase

in temperature. For the information of the motorist, in the petroleum industry this is termed reduction in viscosity. It will be of further advantage to the layman to know that viscosity is regarded as a measure of the relative fluidity of an oil at some definite temperature of observation. In brief, it is that inherent property by virtue of which the flow of certain liquids will be retarded. It is possessed by all lubricating oils to a varying degree, depending on their source, range of distillation, and extent of refining or blending.

More technically speaking, viscosity could also be regarded as a measure of the resistance which the particles or molecules of an oil will offer to one another as they come past each other in circulation through the lubricating system.

Modern Engine Conditions Require Higher Viscosity

It is perfectly evident, therefore, that our modern conditions of higher automotive engine temperatures will lead to an increase in the degree of fluidity of the motor oil which is used for lubrication. Especially will this be true in warm climates, when the amount of external cooling will be appreciably lower than under colder conditions, or under lower atmospheric temperature conditions.

This will call for the utmost care in the selection of the proper grade of motor oil for warm weather operation. Haphazard choice without adequate

An authoritative article which shows how lubrication efficiency is affected by running conditions. Dilution and lowered viscosity not as harmful as may be generally expected.—

knowledge of the approximate 'operating viscosity' of the proposed oil may be the forerunner of too great a variation in the fluidity of the oil in service, with oft-times ineffectual lubrication of certain of the wearing parts of the engine. The ultimate occurrence of scored or burned out bearings, of abnormal wear on cylinder walls, and an excess of oil pumping past the piston rings, will all lead to increased cost in car maintenance and a natural decrease in power output or engine efficiency.

The Motorist should be informed

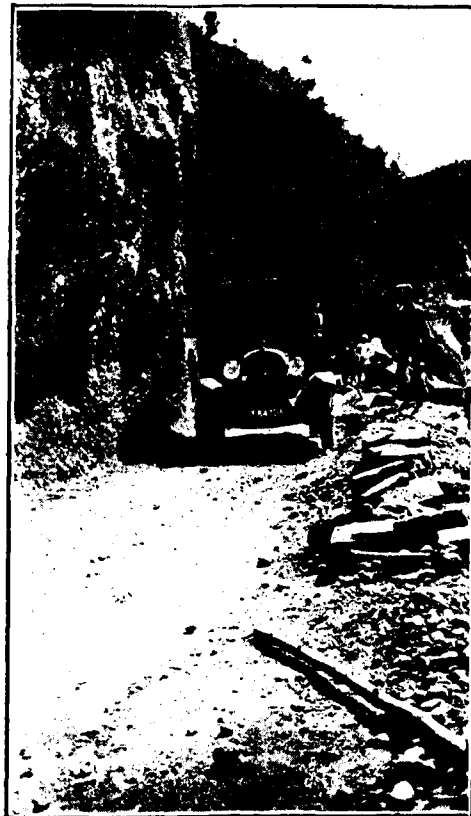
In view of the importance of the viscosity characteristic, and the attention which should be given to it by the motorist when buying his motor oil, he should be informed both as to the method of test and the range limitations for the several accepted grades of motor oils. In other words, he should know the approximate range of viscosity involved when he buys a grade of 'heavy' motor oil, for example, regardless of who it is manufactured by.

In this way he can frequently detect any attempt to supply him with improperly refined oils which may be out of line in regard to the 'operating viscosity' requirements of his particular engine.

For example, say he should call for a quart of motor oil heavy of 'X' brand. In some cases the colours of certain motor oils are so nearly alike as to be deceptive. So the dealer in question has had a chance to stock up with a grade of 'Y' oil at a low price and of a comparatively low viscosity. This product he foists on the unsuspecting motorist who called for 'X' motor oil.

An approximate viscosity comparison is an easy test to make, by simply filling bottles of approximately the same capacity with various oils, corking them and inverting simultaneously, watching the rise of bubbles in each. The more rapidly these rise, the lower the viscosity.

Such a comparison test affords an ideal opportunity for checking up on any dealer who may be imposing on both the motoring public and the reputable oil company for whose product he is attempting to sell inferior substitutes.



A FORD BUS NEGOTIATES A FEW DIFFICULTIES

It is invaluable to the motorist to be able to study motor oils from this point of view, for it will be bound to lead to a more intelligent selection of an oil which will be capable of assuring effective lubrication by virtue of its proper 'operating viscosity' at the mean operating temperature of his particular engine.

In addition, it is important to state that the motorist should guard against any hasty impression that motor oils of lighter colour will have less body than comparative products which may be darker or more opaque. The viscosity test is the sole criterion and should be used as the only comparison when body is in question.

Colour has absolutely no bearing upon viscosity, though it is a very vital factor as an indicator of lubricating ability, for it is a direct guide as to the probable carbon residue content of any oil.

Carbon Residue a Detriment

In the selection of a suitable grade of motor oil for warm weather service in practically any automotive engine it is decidedly advisable for the motorist to have an understanding of the detrimental effects which may result from the use of a lubricant which shows a high percentage of carbon residue.

Broadly speaking carbon can never be eliminated. It is an essential component of any lubricating oil, and therefore must pass through every engine.

It is only a detriment, however, in the form of soot or deposits of carbonaceous tarry matter. These may, of course, have a very decided effect upon the operation of the engine and the amount of power developed, according to the extent to which carbon deposits are formed on the plugs, pistons, cylinder heads, around the rings, on valves and valve seats, and in the crankcase or oil sump.

Factors Governing Carbon Residue Content

Of course, the amount of ultimate carbon will all depend upon the degree of heat present, the extent of refinement of the lubricant, and the base of the crude from which it is made. From particular types of crude, for example, distillates can be produced which

will show an almost negligible carbon residue, 0.05 being a fair idea of the amount to be expected.

The use of residual oils, however, for the purpose of blending and increasing the viscosity may easily raise the carbon residue percentage in the ultimate product to above 1 per cent. Such oils can be distinguished by their dark green colour.

As a general rule the carbon resulting from blended oils of paraffin base residuals will be harder and of a more abrasive nature than carbon from lubricants having equal viscosity but which are wholly of a distilled nature. Where hard carbon remains in the combustion chamber or on piston heads 'knocking' and lack of power will be the noticeable consequences.

From an efficiency point of view these are decided detriments. In addition, however, where these residual oils are used there will also be the potential danger of scored cylinders and worn rings due to the abrasive nature of the resultant carbon, for a certain amount of this will always be developed on the upper part of the cylinder walls to be retained by any lubricant that may be present, and ultimately carried past the piston rings by diluent or unburned portions of fuel.

Hard abrasive carbon does its greatest damage at this stage as a promoter of wear in so passing through the engine.

Of course all the carbonaceous deposits in the average automotive engine do not entirely come from the lubricating oil. Operating in such a manner as to involve incomplete combustion of the petrol or an abnormal amount of dilution of the lubricating oil will also tend to increase the amount of carbon formation.

Effect on 'Operating Viscosity'

Relative to this question of dilution it is advisable to remember that the lower the 'operating viscosity' of the lubricant, or the thinner the film on the cylinder walls, the more readily will it fill the crankcase with a fine lubricating mist. This may, though not always, (depending upon the design of the engine) increase the possibility of pumping or forcing of the lubricating film up into the combustion chamber where it will be ultimately burned. The direct result is the development of more or less carbon deposits therein.

The intensity of this latter will, of course, depend upon the residual carbon content of the oil. Where the latter burns cleanly the amount of such deposits will be relatively small. Furthermore, if the oil is properly refined from a crude of suitable base, and adapted to the purpose in hand, such carbonaceous matter will be soft in appearance, low in quantity and comparatively easy to remove.

Over extended periods of operation, however, carbon deposits whatever their nature will be bound to increase. Furthermore, where pumping or forcing of too great an amount of lubricating oil into the combustion chamber occurs, the ultimate oil consumption will be higher, with a reduction in the mileage developed per gallon.

In addition, dilution may involve the possibility of a certain amount of loss of compression due to impairment of the piston seal when the viscosity of the oil is so reduced that the lubricating film is comparatively readily wiped off by the piston rings.

Essentials of Correct Operation

So it is important to operate an engine at all times with a view to reducing both the formation of carbon and the occurrence of crankcase dilution as much as possible. To bring this about and promote the efficiency of operation, and extend the life of the engine bearings and cylinders, certain precautions must be observed. In brief, they are:

1. Run on as weak a mixture as possible in conformation with atmospheric temperature and the load to be handled.
2. Do not flood the carburettor.
3. Prime as little as possible.
4. Keep the engine warm, especially in cold weather.
5. When necessary to use the choke, let the sound of the engine be the guide. As soon as one or two revolutions are made and the engine indicates steady running, push the choke back in or turn the handle to 'hot' position according to the make of the car.
6. Never flush the crankcase with kerosene alone except where arrangement of the oiling system permits complete drainage of the case. Always give it a final flushing with light motor oil. Kerosene is helpful in removing heavier particles of adhesive sludge.
7. Change the oil at frequent intervals. The cost of oil is negligible in comparison with the cost of lay-up and repairs on the average motor vehicle.

Rate at which Dilution Occurs

It is decidedly interesting to note the accompanying curve, which shows the rapid drop in viscosity, due to dilution. As can be seen it does not require very much diluent mixed with the motor oil to reduce the viscosity or thin down the oil sufficiently to perhaps render it less effective as a compression seal. It has often been determined that dilution occurs very rapidly over the first few hours of operation after the lubricant has been renewed in the crankcase.

There has been an extensive discussion as to just how important this matter of dilution really is and just what harmful effects may result from its occurrence. The dangers therefrom have, of course, been exaggerated, as is always the case. Up to this time any efforts which have been made to overcome dilution have provided for elimination after occurrence. Usually these have involved heating of the oil. This is not really desirable as it inevitably gives rise to oxidation. Where oil dilution exists it is logical to expect that more power will be developed at the crankshaft, due to the decrease in internal friction in the lubricant, provided it is not diluted to such an extent as to allow metal-to-metal contact.

It will appear that from a lubricating point of view there is little probability of bearings being actually

burned out, because the viscosity of the lubricant has been reduced to the extent that it would be under average cases of crankcase dilution.

Any number of instances are on record where motor trucks have experienced dilution to the extent that their crankcase oil was decreased to less than one-fifth the original viscosity. Yet they operated effectively and on examination their engine bearings showed no ill effects. When trouble is experienced it will usually be due to abnormal operating conditions.

Incomplete Combustion

Incomplete combustion is regarded by many authorities as an important source of carbon difficulties. In general it will be the result of faulty ignition, or carelessness or ignorance in regard to carburettor adjustments, the resultant mixture of petrol and air being unsuited to the power requirements and engine conditions involved.

Carburettors, of course, should not be tampered with too frequently, nor by any one inexperienced as to their design and construction. They should, however, receive attention commensurate with atmospheric temperature conditions. Normally they are adjusted when hot in order to obtain the best fuel economy, and to prevent dilution as much as possible.

The use of too much lubricating oil is another frequent reason for abnormal carbon deposits. Theoretically a very small amount of oil is necessary to maintain the requisite lubricating film on the cylinder walls and serve the respective bearings; actually, however, a considerable excess of oil will be used.

Provided the piston rings are sufficiently well fitting to give the proper degree of seal and the cylinder walls are not abnormally worn, or scored, little of this oil should pass to the combustion chamber. This is easily ascertained by observation, for either burning oil or incomplete combustion will be indicated by the smoky appearance of the exhaust.

A certain amount of free carbon will also be present in practically every crankcase after the lubricant has been in service a short time. In part this is caused

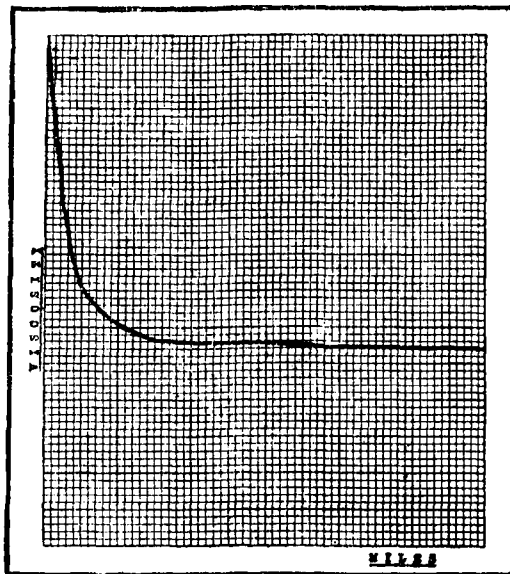
by breaking down or partial decomposition of the lubricating oil; and in part, as stated, to incomplete combustion of the fuel. Normally such carbon is frequently carried into the crankcase, as has already been stated, by the diluent portions of the fuel, or the lubricating film on the cylinder walls. Carbon in the crankcase is detrimental in that it not only promotes the formation of crankcase sludge, but as well is influential in producing emulsions.

External Foreign Matter Also a Detriment

Dirt, grit and road dust must also be considered in a discussion of crankcase deposits. Foreign matter of this nature is perhaps the most detrimental to any engine. Not only does it tend to become a part of any real carbon deposit above the piston, but also when present in the lubricating system there will always be a possibility of the bearings being scored.

Dirt, grit and other abrasive particles may find their way into the lubricating system in a number of ways. The oil may originally have contained such foreign matter if it has not been carefully refined; the oil storage or measuring containers may have been dirty; the operator may have neglected to replace the cap on the filling pipe, or have accidentally brushed some dirt from the hood or engine into this pipe or his filling measure; or road dust, etc., may have been taken into the engine with the air, either by way of the carburettor or the crankcase breather device.

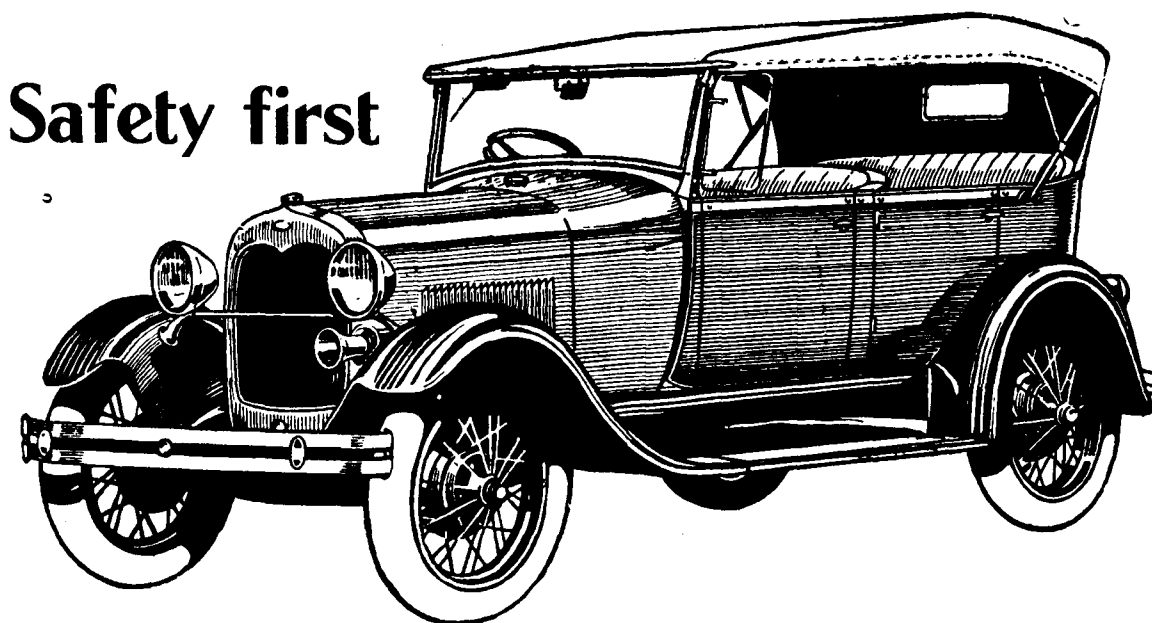
Just as long as the lubricating film is sufficiently thick to prevent any such foreign matter from coming simultaneously into actual contact with both bearing surfaces, little or no damage will result, and the possibility of scoring will be negligible. But as soon as the viscosity of the lubricant becomes so lowered by dilution that the film thickness is materially decreased, it will no longer serve as a covering medium for abrasive foreign matter. In other words, such particles of grit, dust or dirt as may gain entry to the bearings will be carried through them in actual contact between the wearing surfaces, and scoring will be bound to occur. This indicates clearly, then, the need for great care being taken to ensure as cleanly a condition of the unseen parts of an engine as is humanly possible. If this is done the life of the engine will be considerably prolonged and lubrication really efficient.



A CURVE SHOWING THE RAPID DROP IN VISCOSITY BROUGHT ABOUT BY DILUTION

Shatterproof!

Safety first



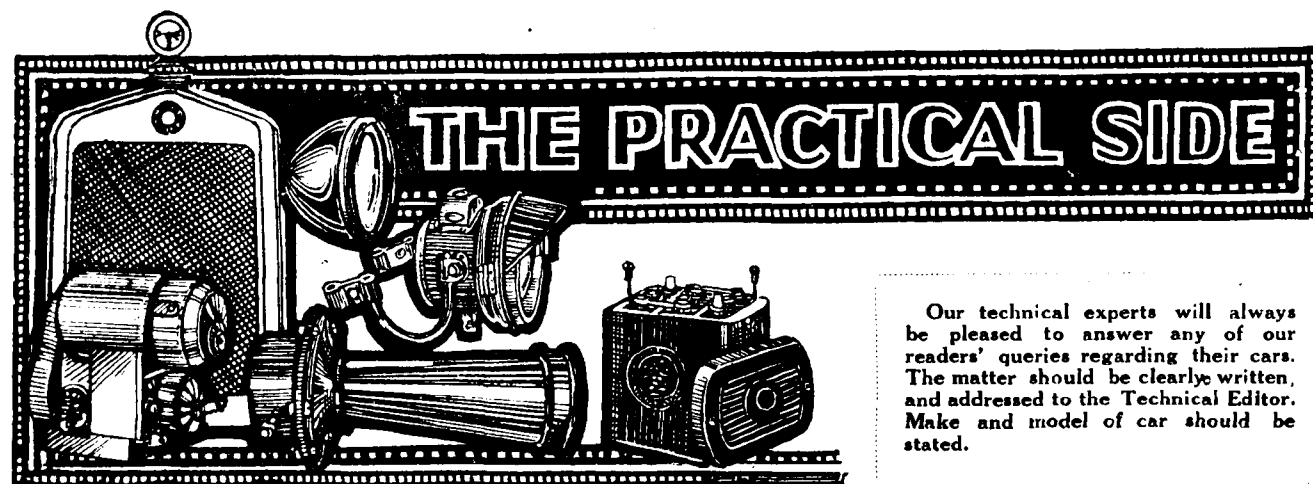
Windscreens

Under severe impact Ford windscreens will crack—but the glass will not fly nor will there be any jagged edges exposed—the glass is held together by a patented process.

This safety feature is standard equipment on every Ford Car.

are dangerproof

Ford Motor Company of India, Limited, Bombay.



Our technical experts will always be pleased to answer any of our readers' queries regarding their cars. The matter should be clearly written, and addressed to the Technical Editor. Make and model of car should be stated.

Protecting Battery and Car

It is a good plan, especially on cars fitted with coil ignition, to fit a main switch in the battery circuit so that the whole lighting and ignition system can be isolated. If the switch be tucked away out of sight, it will be found very useful when the car is parked in daylight as, if the engine will not start at once, no thief will spend time in trying to find the cause.

Another plan which should work well would be to wire a heavy switch into the starter motor circuit and to fit it in a concealed position. Many cars now have detachable starting handles so that with the switch 'off' the engine could not be instantly started. Furthermore, in a garage, it would not be possible for employees to run down the battery by excessive use of the starter.

A good laminated-contact switch of suitable size is not very expensive and can be obtained through any dealer in electrical fittings. An incidental advantage offered by 'main' switches is that the battery can so easily be isolated when work is being carried out on the wiring or switchbox—thus there is no risk of an unexpected 'short' should the screwdriver slip.

Cleaning Nickel Plate

Stained or tarnished nickel plate should be cleaned with a good-

quality metal polish or plate powder and given a final polish by means of a wad of ordinary newspaper, as in many cases this will be found more effective than rag. After polishing, it is a good plan to cover the surface of the plating with a thin film of olive oil applied by means of a small piece of cotton wool. The oil will protect the plate without dulling it appreciably, and will also prevent marking by rain spots.

Blotting Paper for Joints

It is not always realized that blotting paper is an excellent material for making an airtight joint when bolting a carburettor on to its flange. Owing to the fact that it is very soft and compressible, it beds down well into any irregularities in the surface and will work fairly well even if used dry. It is better, however, to coat each side with gold size or shellac varnish. So far as cutting the washer to the right size is concerned, the well-known method of placing a sheet over the flange and tapping round the outline with a hammer is probably the best.

Water-level Indicator

For those who would like to have a visible indicator of the level of the water in the radiator, it is very

simple to fit one of the glass-tube-type petrol-level indicators on the side of the radiator, where it is readable from the driving seat. Small holes can be drilled in the outer casing of the radiator to secure the gauge by small nickel-plated bolts and a small hole drilled just below the gauge for the tubing to pass into the inside of the bonnet. Here it can be soldered to a tyre-valve body which can be secured in a hole in the rubber jointing of the water connection between the top of the radiator and the engine.

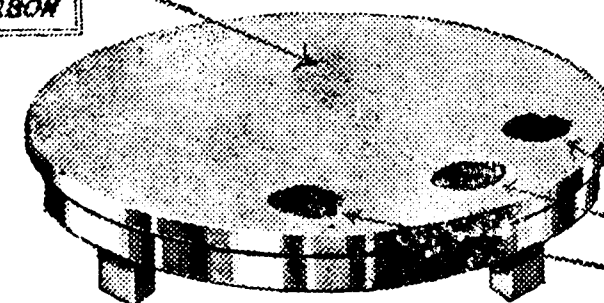
Aluminium Number Plates

Metal polish is a solvent of most cellulose brushing lacquers, and this fact can be turned to good account when an aluminium number plate becomes shabby. If cellulose is used, there is no need to trace laboriously round the polished letters and figures, as any cellulose which finds its way on to them can quickly be cleaned off with a rag and metal polish, which will thus serve the double purpose of removing surplus cellulose and polishing the aluminium at one and the same time. It is best to carry out the latter part of the job before the cellulose is dry, but care must be taken to avoid touching the wet background of the plate.

We offer proof

We are prepared to demonstrate this test at any time to interested users of Motor Oils. Why not write to us direct so that your dealer can arrange a demonstration?

TEXACO
DROPPED HERE
LEFT NO CARBON



Other Oils
dropped
HERE
left this Carbon

The HOT-PLATE TEST

We spare no pains in proving that Texaco does not leave hard carbon. This is how we do it. We take a steel plate and heat it to 750°F. Then Texaco is dropped on it.

Ssz! Ssz! Only a trace of it. Just a mark. Hardly anything to show where Texaco touched the plate.

Other oils leave a sooty circle. Carbon!

With every stroke of your engine a little oil is burned away. With every stroke a

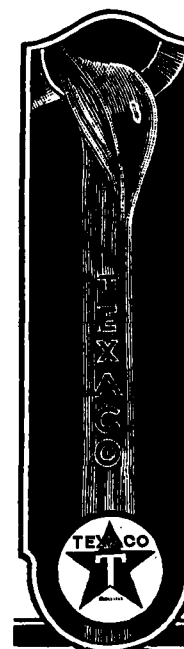
little hard carbon is deposited—unless you use Golden Texaco. Texaco is oil and nothing but oil. Full bodied—with no foreign bodies. It contains no impurities—nothing that can deposit hard carbon.

The hot-plate test is simple proof of what we say. The final proof is in your engine. Change to golden Texaco and notice its value in months of better running and seasons of reduced repair bills. There's a Texaco oil for your car. Ask for it.

THE TEXAS COMPANY (INDIA), LTD.

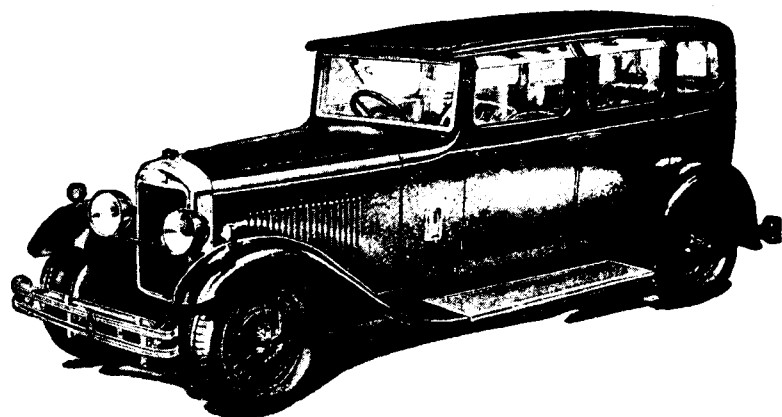
Muker Nallamuthu Street - - - MADRAS.

TEXACO
MOTOR OIL



The New Singer Models

A brief description of the 1930 models made by the famous Singer concern—
a model for every owner driver's need.



WE recently had the opportunity of putting to the test the 1930 Singer Junior Touring Car and the New 1930 Singer Six Saloon, and we were agreeably surprised at the extremely fine performance put up by both of these cars. Elsewhere in this article we give the abridged specifications which in both cases are very interesting.

On the Junior Tourer which we tried, a speed of 48 miles an hour was easily attainable after the engine had been well warmed up. We took note of the petrol consumption and found this to be between 38 and 42 miles per gallon. Roadability is exceptionally good at all speeds and there is no tendency to roll or sway even on corners taken at 40 miles per hour. The engine is very quiet and smooth—the exhaust note being really very pleasant. On the whole, the car is pleasant to handle—gears being very easy and the steering exceptionally light. The Junior Model, although small in appearance, has ample accommodation for four adult persons, and one is inclined to think that the manufacturers are responsible for an optical illusion. When seated in the car, the whole vehicle appears to be much larger than an exterior view would have one believe.

Both the front seats are independently adjustable, and when the driving seat is set back as far as possible, a driver topping six feet has ample leg room. The finish of the car is above the average and every modern requirement is fitted.

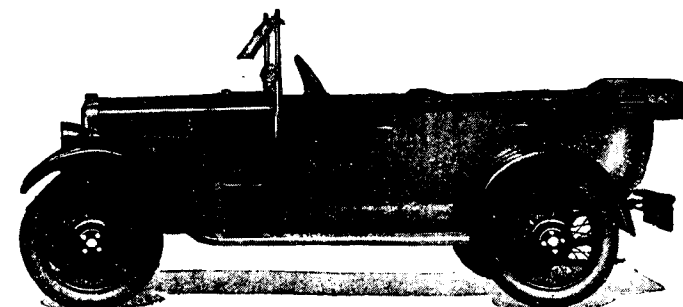
Outstanding features of the general specification include four-wheel brakes which are instantly responsive to the slightest touch, wire wheels, all bright parts are chromium plated, Triplex safety glass wind-screen with automatic wiper, hydro-pneumatic shock absorbers, four doors (not usually found in small cars) and rigid side screens, these last providing adequate all weather protection. The car, we understand, is

produced in five different models, viz.—Four Seater Tourer, Two Seater with dickey, Four Seater Saloon, The Porlock 'Sports' (the car that climbed the notorious Porlock Hill in England 100 times in a day under official R.A.C. observation) and lastly the 'Sportsman's Coupe'.

So much for the small models. Now we turn to the New Singer Six which really introduces every feature of luxurious road travel, as only the better British manufacturer understands it, at a very moderate price. The Six Saloon which we tried seats five adult passengers comfortably. Both the front seats are adjustable and the four wide doors permit of very easy ingress and egress. A special feature which is of interest is that the tops of the doors are fitted with glass weather shields which project at an angle of about 30 degrees, thus allowing the windows to be partly open during rain. This is a fresh air idea which has long been needed on Saloons and is much to be appreciated. The interior of the body is trimmed and upholstered in real leather, and a walnut fascia board and cappings add a pleasing finishing touch to interior appearance. Pile carpets to match the general colour scheme are furnished and other accessories include roof lamp, ash-trays, interior drawing mirror, and blinds for the rear side and back windows. The instruments on the fascia board are centrally grouped with concealed lighting.

All external bright parts are chromium plated, and the equipment includes bumpers in the front and bumperettes at the rear, hydro-pneumatic shock absorbers, luggage grid, spare wheel and Triplex safety glass throughout.

The Six Cylinders have a bore and stroke of 65 and 90 m.m. respectively giving a capacity of 1,792 c.c. The engine is R.A.C. rated at 15.7 h.p., but develops a horse-power of 23.2 at 2,000 revolutions per minute



SHOWING THE NEAT LINES OF THE SINGER JUNIOR

and 37 h.p. at 3,000 r.p.m. The valves are situated on the near side and the cylinders are cast in one with the upper half of the crankcase. The crankshaft runs in four large bearings with a vibration damper in front. Lubrication is by force feed. Petrol feed is by the gravity system, a large capacity tank being installed under the bonnet. The ignition coil and distributor are of Rotax manufacture with an automatic advance. The cooling system is a very efficient thermo-syphon type with large size water-leads and a large radiator, self-(adjusting), single plate dry clutch and a three-speed gear box centrally controlled simplify gear changing, and a very sound point is that the clutch bearings are automatically lubricated from the gear box. The self starter is built in on the left side of the clutch. The drive is taken by an open propeller shaft with metal universal joints through the spiral acceleration and performance that it will prove itself a worthy hill climber for any South India

Springs are semi-elliptical and the hydro-pneumatic motorist.

SINGER JUNIOR

ENGINE: Four-cylinder water cooled; bore 56 mm.; stroke 86 mm.; 148 cc. Rating, 7.78.

GEARBOX: Central change lever with reverse catch. Ratios: 5.4 to 1, 9.7 to 1, 18 to 1. Reverse, 23.4 to 1.

SUSPENSION: Semi-elliptic springs front and rear, supplemented by Newton Hydraulic shock absorbers.

BRAKES: All brakes internal expanding. Foot brake on all four wheels. Right Hand brake ever operating independent shoes on rear wheels only.

DIMENSIONS: Wheel base 7 ft. 6 in.; Track 3 ft. 8 in.; Ground clearance 8 in.

MAXIMUM SPEED: 45 m.p.h. fuel consumption 40-45 m.p.g., coil ignition gravity petrol feed.

SINGER SIX

ENGINE: Six-cylinder side-by-side valve; bore 65 mm.; stroke 90 mm.; 1792 cc.; four bearing crankshaft.

GEARBOX: Central change lever with reverse catch. Ratios: 5.22 to 1, 9.89 to 1, 17.15 to 1. Reverse, 17.15 to 1.

SUSPENSION: Semi-elliptic with Newton hydro-pneumatic shock absorbers front and rear.

BRAKES: Internal expanding on all four wheels.

DIMENSIONS: Wheel base 9 ft 3½ in.; Track 4 ft. 4 in.; Ground clearance 8 in.; coil ignition gravity petrol feed.

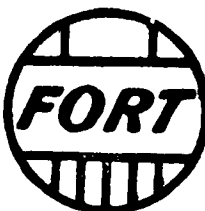
SIMPSON & CO., LTD., MADRAS

shock absorbers with which they work in conjunction are obviously part of the design and do not look like additions. The four-wheel brakes are mechanically operated and these are extremely efficient. Cables are used in front and rear and ordinary adjustment is by winged nuts at each end of the six cables.

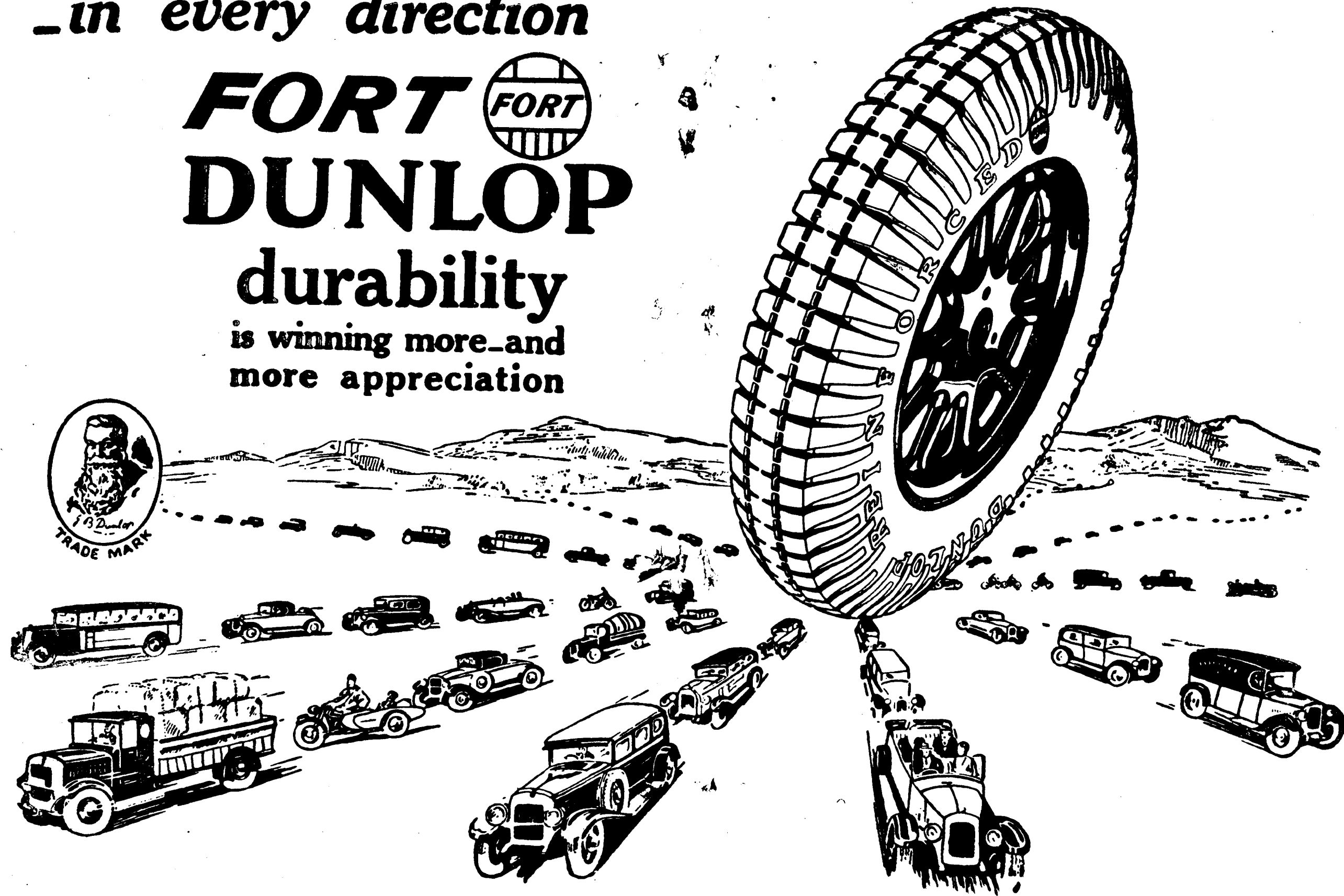
On the road we found the engine very quiet, and even when travelling at speed kept very cool. It is a very steady car and can be driven with absolute ease of control. A speed from 5 to 55 can be made on top gear, the gear ratios being 5.22, 9.89 and 17.15 to 1. The steering has a good lock and the suspension particularly is excellent.

On the whole the car is an exceptionally good product all round. Although not so far tried on the hills, we judge from its rapid

in every direction

FORT 
DUNLOP

durability
is winning more and
more appreciation



Valve Springs

Engine Efficiency Depends Largely Upon the Perfect Functioning of these Little Components

THERE are probably many owners or drivers of motor cars who live in blissful ignorance of the very existence of such a device as a valve spring. Probably their cars run neither better nor worse than those of many other motorists who now all that there is to be known about such things. However, although it is not strictly necessary to understand the anatomy of the automobile, there are many who feel some sort of desire to become at least slightly acquainted with the very remarkable machinery which may now be bought for some eighteen pence a pound.

To commence with the elements, explains a writer in *The Motor*, a valve functions as a bung, filling up a hole or port. At certain times the valve has to be moved out of the hole temporarily to admit or to release gases, and at other times it must be held firmly in place to prevent leakage.

During the period known as the induction stroke, when the piston is disappearing into the depths of the cylinder, there is a tendency for both valves to be sucked out of their holes. It happens that one of them, the inlet valve, must necessarily be open at that time, but it is equally important that the other, the exhaust valve, shall be held closed. Here, then, is the simplest of the duties of a valve spring: it must be sufficiently strong to keep its valve closed even although the piston is endeavouring to beguile it from its duty.

The springs have a much more difficult task when their respective cams come into action. Each cam is entrusted by its designer with the task of opening the valve (in other words, with the job of pushing the bung out of the hole) at the right time. Further, it must allow the valve to close again, also the right time and not before. The cam has been brought up in a hard school and has acquired a forceful personality. Consequently the spring finds itself suddenly and rather rudely compressed.

During that process the spring serves no very useful purpose; in fact, it obstructs the cam in the

lawful pursuit of the latter's duties. However, the cam is a strong (although not always silent) fellow, and the only danger is that if the spring be badly tempered it may fall to pieces.

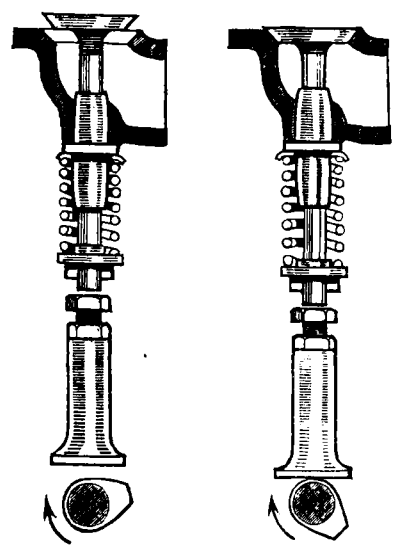
Immediately afterwards comes the turn of the spring. When the cam signifies that it is time to go home again, it is up to the spring to persuade the valve to move back into its hole. Furthermore, the time available is very short indeed, as may be realized from the fact that from start to finish the whole valve movement occupies only about one-fiftieth of a second at ordinary touring speeds.

Naturally, there are several ways in which the spring may fail. It leads a fairly strenuous life and even the best of springs is liable to become disheartened as a result of operating at a rate of more than a thousand cycles per minute. Consequently, the spring eventually loses interest in its work and is liable to take too long over it. When that happens, the right and proper thing to do is to set a new gang of springs to work.

Even when springs are new and in the best of health and temper, they may cause trouble if they are

not entirely suited to the work in hand. A particular spring may operate excellently at slow speeds and may be quite admirable at high speeds; yet at some intermediate point it will not work properly. This is because every spring has what is known as a 'natural frequency'.

Take a spring (preferably quite a weak one, so that things happen slowly enough to make them visible) and secure one end to a nail in the wall, attaching a suitable weight to the other end. Now pull the weight down a little and then let it go. You will see that it bobs up and down for some little while, and if you care to count the number of 'bobs' per minute (or per second) you will find that they are always the same for that particular spring with that particular weight. This, then, is the natural frequency of that particular combination.



AT ULTRA-HIGH SPEEDS THE SPRING NOT BE STRONG ENOUGH TO MAKE THE VALVE AND TAPPET FOLLOW THE RETREATING CAM (RIGHT). AN INSTANT LATER THE VALVE CLOSSES 'WITH A BANG' (LEFT).

Valve 'Flutter'

For any well-designed valve spring, loaded with its valve, the natural frequency is too high to be observed with the naked eye, but it exists all the same, and if the engine speed happens to match it, the valve may 'float' or 'flutter'. That is to say, when the cam moves away, the spring takes no notice, and actually assists the valve to dance about in the cylinder head.

If this departure from the straight and narrow path is not very marked, it may be possible to accelerate to a higher speed at which the spring returns to its senses and gets on with its work. In a well-designed engine, of course, the natural frequency should be so high that it is beyond the normal range of revolutions.

When that is so, the spring may give trouble in another way which, to be frank, is not its own fault. If the rest of the engine is capable of revolving at very high speeds, the point may be reached where the spring is simply not strong enough to get the valve home again in the time allowed. The cam, being strong-minded and having done the main part of its job, gets back, but the valve does not follow closely, so that, when it does return, there is nothing to guide it gently down on to its seat and it lands with a bump, producing a characteristic clattering noise.

That sort of thing does no good to anyone, so that the right thing to do is to keep the speed within the capabilities of the spring. If more revolutions are needed, it is necessary either to fit a stronger spring to the valve or else to add another to help the one which is already there.

This last arrangement, indicated by the term 'double valve springs', is quite frequently used, especially in sport engines, one spring being placed with the other. Occasionally, and particularly in motor cycle engines, there are as many as three springs per valve, again arranged telescopically. A year or two ago some special racing engines were built with no fewer than seven springs to each valve, but in this case they were not 'nested'. Instead, the valve collar was of unusually large diameter, and the springs were arranged in a circle round the valve stem.

The experiment was apparently not too successful; at any rate, the idea has not been developed, and it seems quite probable that trouble would occur if any of these seven springs was either weaker or stronger than its mates, for in that case there would be a tendency to tilt the valve. Even if this did not jam, there would be unnecessary friction and consequent wear in the valve guide.

Earlier in this article there was a hint that valve springs are not always of the simple coil type used in compression, although these are quite the most usual in car engines. A somewhat similar form of spring is occasionally used in tension, but this is rarely to be seen except in heavy stationary engines, where sometimes a couple

of tension springs, operating at one end of a lever or bell crank, serve to close the valve.

'Hairpin' Springs.

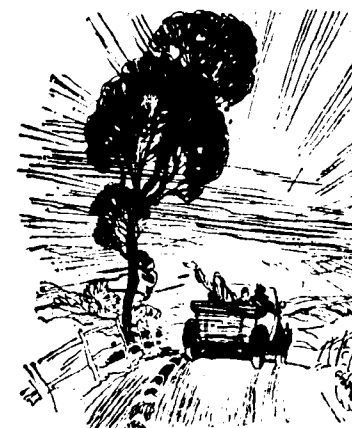
Another form of wire springs, known as the hairpin type, has been used very successfully on certain air-cooled engines. In the simplest form it consists of a coil spring with the wire at each end of the spring sticking out tangentially as a straight piece. One of these arms is attached to the valve stem and the other bears upon some part such as the cylinder head. When the valves open, these two arms are, of course, forced closer together, so that the coiled part of the spring is wound up more tightly. A very familiar example of this type of spring is the ordinary safety pin.

Usually two such springs, coiled in opposite directions, are placed end to end, and sometimes there are two sets of this kind, one on each side of the valve, so as to remove all side thrust on the stem. The advantages claimed for hair-pin springs are that a greater strength may be obtained than with the normal type without lengthening the valve stem, that a smaller part of the weight of the spring has to be accelerated when the valve is opened or closed, and that the business part of the spring is farther away from the hot cylinder head, and so it is less likely to lose its temper.

Yet another kind of spring which is sometimes used for valve control is the leaf spring, a miniature of the kind used between the axles and the frame of the car. As on the chassis these may be quarter-elliptics, or they may be half-elliptics; even a full elliptic might be used with advantage, and there is something to be said for an arrangement resembling what is known as the cantilever in car suspension. When this last scheme is adopted, one spring controls two valves, the centre of the spring being pivoted and the two ends being suitably attached one to each of the valve stems.

Leaf springs were used on the war-time Beadmore aero engines; they were also employed on smaller racing cars built by the late J. G. Parry Thomas, and

have figured in other designs down to at least one 250 c.c. motor cycle engine. They offer certain attractions, amongst which may be noted a self-damping effect, due to the friction between the several leaves, but considerable difficulty is found in designing satisfactory and reliable leaf springs to fit into the comparatively small space available for them when the cylinder dimensions are small. On a large engine they may well be excellent, but the very greatest ingenuity would be necessary to incorporate them satisfactorily in, say, a compact 1,500 c. c. six-cylinder power unit.



World's 10 miles Land Speed Record

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Mobiloil

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148.637 miles per hour



On the 17th January 1930, on a 90 miles stretch of beach at Auckland, New Zealand, Norman Wizard Smith driving a special car, designed by Don Harkness, equipped with modified Cadillac chassis and 350 h.p. Rolls-Royce Aero Engine using Gargoyle Mobiloil BB, covered 10 miles in 4 minutes 2 1/5 seconds and broke the World's 10 miles Automobile Record.

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Maintaining Maximum Power

A Few Reminders to Owner-Drivers on the Causes of Engine Inefficiency

FOR an engine to operate economically and efficiently, it must be able to develop its maximum power from the fuel which it consumes. An engine which is unable to pull its full load, and at the same time have a reserve of power for emergencies, is almost as bad as an engine which will not run at all.

Inasmuch as the cooling system of an engine is designed to keep the engine from overheating in the hottest weather, it is obvious that when the atmospheric temperature gets down, the temperature of the engine is likely to be too low.

Carbon deposit prevents the development of full power in three ways—by filling part of the combustion chamber space it prevents a full charge of explosive mixture being drawn into the cylinders; it causes pre-ignition by becoming incandescent and igniting the incoming mixture prematurely; it prevents the free transmission of excess heat, through the walls of the combustion chambers, into the water in the cooling system, thereby causing overheating.

The formation of carbon is unavoidable, but it can be reduced to a minimum with a little care. It is principally formed by running the engine on too rich a mixture, using a poor grade of oil, and by worn piston rings or scored cylinders.

Allowing an engine to idle for long periods is also conducive to carbon formation. It does not form nearly as rapidly in a hot engine as in one which is running too cool, and it is not so likely to accumulate in an engine working under normal or full load as in one which is doing light work.

The explosive mixture has a very decided effect upon the power developed by an engine. While, to develop full power, there must be enough fuel present to utilise all the oxygen in the air which has been mixed with the fuel vapour, on the other hand, if there is too much fuel present, the pressure generated will be too low to develop maximum power. Therefore, the mixture must be neither too lean nor too rich.

Temperature of an engine has a great effect upon the development of power. The most efficient operating temperature is at, or just below, boiling point; any temperature much below this will prevent the obtaining of maximum efficiency in operation.

Whilst experienced drivers are fully aware of the chief causes of inefficiency in the running of internal combustion engines, there are many less well informed who are not obtaining the most economical results through neglecting to take certain precautions and by indulging in wrongful practices. The accompanying article deals briefly with some of the more important points to be observed to avoid loss of power, faulty running and premature repairs.

Whereas a low temperature has adverse effects, likewise does too high a temperature prevent the best results being obtained. The entering charge of mixture is heated to such an extent and expanded so greatly that, when the explosion takes place, less expansion is possible than if cooler air and a correspondingly larger quantity had been admitted.

Poor oil prevents the development of maximum power, partly because it does not keep the wearing surfaces apart, permitting unnecessary friction. Also because it does not seal the spaces between the pistons, with their rings, and the cylinder walls, thereby allowing the compression to escape on the compression stroke.

Occasionally the ignition system may cause a lack of power, either

by the spark being too far advanced, or too far retarded, or by being too weak. It is rather a popular fallacy that the hotter the spark the more power an engine will develop. So long as a spark is hot enough to fire the charge, there is no measurable difference in the power developed than when an exceptionally hot spark is employed.

If the valves do not open and close at the proper time, or do not open as fully as they should, an engine cannot develop maximum power. This is easily overcome by adjustment of the tappets or by reseating the valves.

It occasionally happens that an examination of an engine, for the cause of low power output, fails to show anything wrong mechanically. In such cases the trouble may often be traced to a blocked exhaust pipe or silencer, by which the exhaust gases are prevented from escaping properly, and forming back pressure in the cylinders.

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- 4** Tread materials embody the famous Goodyear principles of rubber toughening.
- 5** Materials, workmanship and inspection are to the strict Goodyear standard.
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Service Jottings

Use Your Dealer's Service Facilities

The idea that the responsibility and interest of the manufacturer cease when the new car is delivered by the dealer is as antiquated to-day as the one-cylinder automobile.

In the world-wide dealer organization of car manufacturers the sale of a new car marks the introduction into the 'family circle' and the beginning of a spirit of friendly co-operation that continues indefinitely. The combination of trained mechanics and the well equipped shop keeps the car performing at the highest point in efficiency.

After the new car has been operated around 1,000 miles, it should be given a thorough inspection. The alignment of the front wheels and axles must be checked, bolts re-tightened, sparking plug and distributor point gaps examined and carburettor adjusted. Tappet clearances, ignition and valve timing also require the attention of expert mechanics at this particular period in the life of a motor.

The colour blind driver speeding through red lights into a smash-up and the new automobile owner who forgets to remember that an ounce of prevention is worth a pound of cure have much in common. Both are on the road that leads to the service stations and repair bills. It is difficult to educate the driver of a new automobile in the care of his machine. A majority appear to pursue a 'let well enough alone' policy. Because the engine hums along smoothly and quietly, periodical inspections and important lubrication operations are overlooked, trouble develops and vital parts wear prematurely.

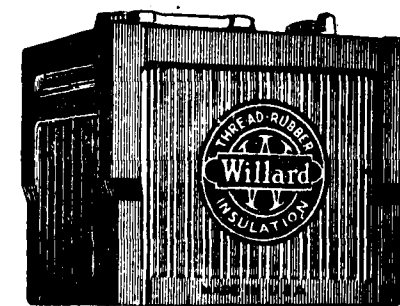
Proper Lubrication Important

Proper lubrication is of paramount importance always. The wise driver insures himself against inferior grades of oil by dealing with reliable concerns. Factory tests show that crankcase oil should be changed at the end of the first 250 miles of operation and again at 780 miles. After that new oil should be substituted for the old at every 1,000 to 1,500 miles. The levels of transmission and differential greases should be checked frequently and the grease examined from time to time. A general lubrication of the chassis is also required now and then; air pressure of the tyres kept at the point recommended and the battery solution at the required level.

Engines must be broken in gradually and the driver who takes the road to smash all existing speed records while the first hundred miles are being registered on his speedometer, must expect to pay in grief and repair bills when the thousands are reached.

Service departments too often are looked upon as necessary evils by the average car owner. If the driver would only obey the few simple rules of the manufacturer, laid down after exhaustive tests and years of research in the automobile industry, his troubles soon would approach the vanishing point.

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2. Those fitted with Willard Patent Threaded-Rubber Insulators, at a little extra cost but giving thousands of miles more service.

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Correspondence

The Editor does not hold himself responsible for the opinions of his correspondents. All letters should be addressed to the Editor and must be accompanied by the writer's Name and Address.



Seating Position and Attention to Exigencies of the Road.

SIR,

In connection with the article in your current issue (January) I am quite in agreement with your contributor that much has been done to make the present day car still more easy for the owner driver to manage, and have nothing to say when he tells us how improved, more easily controlled, and practically perfect is the modern motor car.

There are, however, very few signs that attention is being paid to the matter of blind spots created by unnecessarily thick front corner pillars and screen standards. The position of these obstructions is roughly at 45 degrees from the straightforward line of sight, and, consequently, exactly where it is essential that the driver shall have a perfectly clear view in order to detect the first signs of traffic about to emerge from side roads.

The root of the trouble goes deeper. The vogue for a low-looking exterior has brought the roof down and seat level down, while the floor level, due to chassis design, must remain as high as before. The result is that the occupants are forced to remain in entirely unnatural positions which produce fatigue and even pain and acute discomforts of various kinds in a short space of time.

Thus, the driver sits low with his legs straight on practically the same level, and in some cars actually with his feet higher than the seat, in order to operate the pedals. This becomes uncomfortable unless the back rest is raked to a certain extent. But as it is necessary to keep the head as nearly vertical as possible, the result is a permanently craned neck, which is exceedingly tiring and painful after quite a short time, and which causes the victim to relax his attention.

The trouble is aggravated by the mistaken notion that comfort consists in deeply sprung cushions with a lot of rebound. In point of fact, continual bobbing about is very tiring. Comfort consists in a resilient but firm seat which is free from rebound.

A really natural and comfortable sitting position cannot be provided until chassis are designed to permit of a floor level, both at the back and in front, which roughly coincides with the present level of the running board or step on the outside. A further advantage which would accrue is that ease of entry

and exit could be retained together with the low roof line, because as long as the head room from the floor level is good, there is little discomfort for even old and stiff persons in having to step over, say, an eight-inch threshold formed by the chassis frame on to the step outside, and even direct down on to the pavement in the case of the 9 h.p. of car.

The lower position for the feet allows a nearly vertical position for the back, which gives a natural and comfortable attitude for the whole of the body.

All the defects which I have enumerated combine to affect the comfort and alertness of drivers and passengers and indirectly, therefore, contribute to causes of accidents. When these defects have been remedied, then I shall be only too pleased to agree that designers have achieved something toward making a car for the owner driver.

M. T. R.

BANGALORE.

South Indian Motor Union

SIR,

In my letter, No. 147/7 of the 13th December, I furnished information on two important points of interest to the motoring public in general on which the Committee of the South Indian Motor Union had passed resolutions. One related to the allocation of revenue derived from excise duty on petrol and the other to revision of the Indian Motor Vehicles Act.

I regret that an error has occurred in my note introducing the resolution relating to the allocation of excise duty on petrol, and will be very grateful if the following amendment can be published in your valuable paper:—

There is no doubt with regard to the allocation of the revenue derived from the additional two annas per gallon excise duty on petrol. This is to be definitely allocated to roads. The S.I.M.U. Committee's resolution has reference only to the allocation of the original excise duty of annas four per gallon on petrol, of which it is desired that a fair proportion should be allocated to roads, in addition to the whole of the additional (two annas) revenue.

MADRAS

Yours faithfully,
J. CHURCH,
Secretary,
South Indian Motor Union.



Presenting the News of the
Month together with Interesting
Notes from all Sections of
the Field.

Lord Wakefield of Hythe

A Brief Sketch

LORD Wakefield of Hythe is undoubtedly one of the most popular men in the city of London. It is common knowledge that he controls a great business, and is a munificent donor to all good causes; but that in itself scarcely accounts for the affection in which he is held. Popularity is always difficult to explain; but in the case of Lord Wakefield it is simple. It is due to his humanity. He is affable and intensely sympathetic. It does not matter whether a man is a dustman or a prince, Lord Wakefield has the happy knack of 'understanding', and of being able apparently intuitively and without effort, to be interested in his affairs.

He is, of course, an idealist, and earnestly desires a better world. Labour (unpolitical, and without the capital 'L') has in him a sincere friend. Some years ago he heard that there was a sense of grievance among certain of his employees. Directly it came to his ears, he went into the matter, took train for Liverpool, and settled the question not only generously but personally. He left behind satisfied and gratified employees. This is but an instance of his ability to command intense loyalty.

He is the very opposite of the hard-headed business man; and life, which so often tends to turn out cynics, has made him humbler, and more capable of understanding the foibles of his fellows.

Born in Liverpool, he is the founder and governing director of the great firm of C. C. Wakefield & Co., Ltd., and a director of the North British & Mercantile Insurance Company.

He became a member of the Common Council in 1904, and served as Sheriff in 1907-8. At the close of his year, he received the honour of knighthood and became Sir Charles Wakefield.

In 1908 he succeeded the late Sir Frederick Prat Alliston as Alderman of Bread Street, and became Lord Mayor in 1915. This was, perhaps, the most trying period of the Great War and much was expected of the occupant of the Mansion House. Sir Charles threw himself into duties of his office with tremendous energy.

During the year he inaugurated the Lord Kitchener Memorial Fund, which met with phenomenal success.

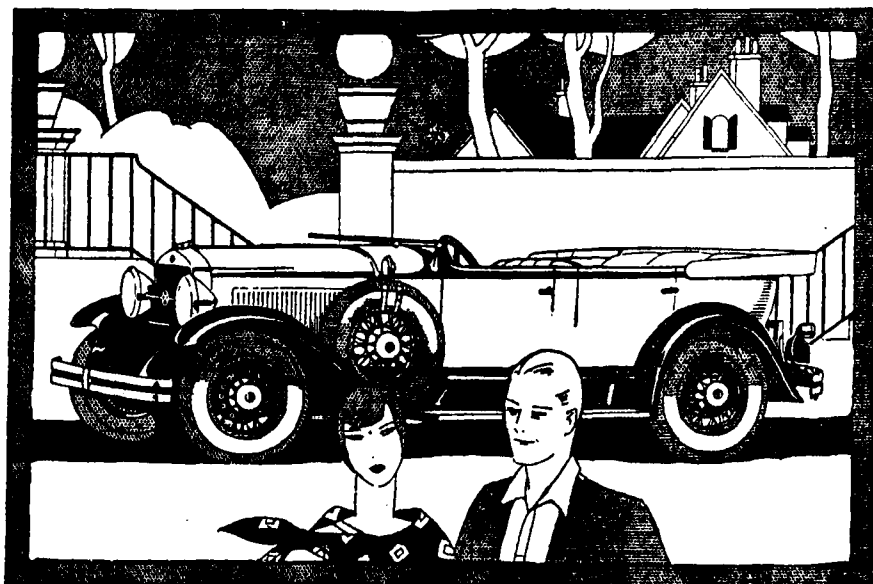
Towards the end of his year, when the last efforts were made to keep the Army on a voluntary footing, Sir Charles did yeoman service. He addressed meetings, opened the Mansion House as a Recruiting Station, and personally administered the oath to many of the men. Moreover, he spent money as well as time on perfecting the organization, and his appeal by poster to 'young men of famous London Town' was extraordinarily successful. In this way he gave a lead to other municipalities; and for his exceptional work he was honoured by the thanks of the National leaders.

He was the first Lord Mayor to go the Front, where he addressed London troops; while he paid a most heartening visit, as the guest of Lord Jellicoe, to the Grand Fleet at Scapa Flow. At the close of an unusual and strenuous year, there was a movement to ask him to go on for a further period; but Sir Charles was not the man to break away from tradition so long as the supply of Aldermen willing to serve was available. He, undoubtedly, earned the baronetcy which was conferred upon him.

Aviation had in him a keen supporter, and it was due to his backing that Sir Alan Cobham was able to

(Continued on page 73)

Two reasons why STUDEBAKER Outsells Every Other Eight!



COMMANDER REGAL TOURER — Five or seven-seater with your choice of six or eight cylinder power. Six wire wheels, folding luggage grid and folding windscreen of nonshatterable glass, standard equipment.

CHAMPION performance that thrills your heart, as superlative beauty delights your eye, are two reasons Studebaker now sells more 8-cylinder cars than any other manufacturer on earth!

This distinctive new Commander Tourer is a shining example of the smart styling and smooth running that has enabled Studebaker to win leadership in both performance and sales. Here is a new and

more swanky sport model, either a five or seven seater.

Because of Studebaker's advanced engineering and three years experience in building moderate priced eights, this new Commander Eight is more sparing of petrol and lubricant than many less powerful sixes! However, if you prefer, you may also enjoy Commander performance in a six-cylinder chassis built to Studebaker's champion car standards.

ROMER DAN & COMPANY
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Telegrams
'ROMERDAN'

Telephone
3567

News and Miscellany—(contd.)

make his famous flight to Australia. In the same way, Sir Henry Segrave and Captain Malcolm Campbell were able to bring records to this Great Britain.

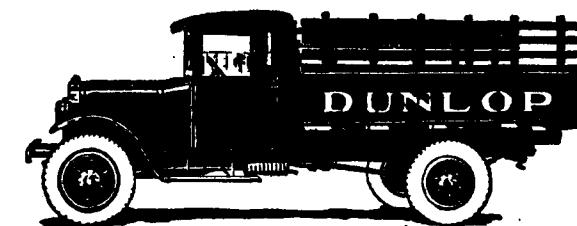
It has been said that the secret of Lord Wakefield's popularity is his humanity. He himself would not admit it. He credits much to the inspiration of Stephenson. In the course of one of his world tours, he met the great 'R. L. S.' who said: 'Fill your life with sunlight, laughter, and radiate happiness; that is the best kind of success.' Lord Wakefield has achieved 'the best kind of success'.

It would be ungallant to close, however short a sketch of the new Peer, without some reference to Lady Wakefield. Lord Wakefield would be the first to admit her influence upon him in his widespread activities. Indeed, he publicly acknowledged her assistance by dedicating his last book—'On Leaving School and the Choice of a Career'—to her in the following terms: 'To my wife, to whose companionship and encouragement I owe my happiness and whatever success life has brought me.'

Ford Automobiles (India), Ltd., Bombay, took in a practically new Daimler on trade for a new Ford Car. This proves that expensive car owners are beginning to realize that they can get better performance, and as much comfort from a Ford Car, as they can from the highest priced cars, and at a much lower cost.

One of the most interesting features of the New York National Show is that two well-known car manufacturers have used stainless steel instead of nickel or chromium plating for all bright work. This will in all probability oust chromium plating for this class of work in the near future, and two years' frantic research work to perfect this form of plating will have been wasted. Such, however, is the path of progress.

For Passenger and goods transport



STEWART trucks are slowly but surely becoming the standard for South Indian commercial work. For 16 years Stewarts have been known as quality trucks, dependable and economical, yet moderately priced; and to-day Stewarts are undoubtedly the outstanding commercial transport value of the age. These trucks have all the latest worthwhile features which clever engineers can build into them and you must, if you are eager to improve your transport service, specify

Stewart

MOTOR TRUCKS

RAJAGOPAL MOTOR WORKS
MADRAS

Remarkable New Lubricant

Corrosion Prevented and Wear Reduced by an Oil with an Electro-plating Action

IT is a fact well known to engineers that parts which are subjected to a very rapid succession of localized stresses are apt to exhibit a mysterious kind of corrosion after a certain period of use, and it has recently been proved in America that this phenomenon may materially reduce resistance to wear and may even lead to eventual fracture. Instances of such corrosion are sometimes found (in motor cars) in ball and roller bearings and in the teeth of gear wheels used in the transmission and in the final drive.

Some months ago the engineers, who are developing the Keenok transmission, were troubled by an aggravated state of corrosion in the special form of roller-bearing steel friction wheel which they employ, and although the degree of corrosion varied to a certain extent with the lubricant used, it was in all cases so serious as to threaten the success of the mechanism. Consequently, very active measures were taken in an attempt to discover the cause of the phenomenon, and it was eventually decided that it was due to electro-chemical action.

This theory has since been fully confirmed, it being found that a potential difference is produced by subjecting metal surfaces to fluctuating stresses of high frequency, and that the voltage depends both upon the speed and the intensity of the load. The lubricant acts as an electrolyte and enables the potential difference to produce an electro-chemical effect, which results in corroding the steel.

Deposit on Working Surfaces

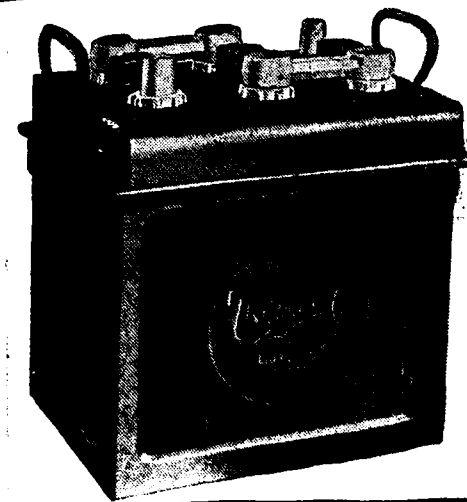
The next step was to produce a special lubricant which would be anodic to the steel. In other words,

such a lubricant would reverse the electrolytic action, and it was thought that it might either stop the corrosion or, in addition to doing this, might lead to a plating effect whereby metal would be deposited on the working surfaces.

As the outcome of many tests, zinc oxide in a finely divided form was thoroughly mixed with a mineral oil in various proportions, and eventually a lubricant was made in this way, which has proved eminently satisfactory. It was, for example, placed in the rear axle of a well-known type of car, and we were shown the pinion and crown wheel taken from this car after 25,000 miles' running, which exhibited no corrosion or wear whatever. On all the working surfaces of the teeth there was a very thin plated film of zinc with a mirror-like surface, which had actually been deposited from the oil by electro-chemical action set up by the working parts themselves. This film adheres very strongly, and there is no risk of it disturbing dimensions of the parts, as it is found that when a certain very small thickness is reached—less than 1-200th of a millimetre—no further deposit occurs.

That this almost fantastic effect is perfectly genuine is fully substantiated by a report furnished after tests by Dr. Rosenhain, of the National Physical Laboratory. So far the lubricant has been used only in gearboxes, back axles and similar parts, but experiments are now being conducted with a view to making it suitable for engines. There is no doubt that this novel lubricant represents a most important development about which a great deal more will be heard in the near future.

—The Motor.



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A good battery outlasts two cheap ones. Universal batteries are built to excel. Not undersell.

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J. BIGNAN on a FIAT also from Jassy

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Madame DORE on a CHENARD WALKER
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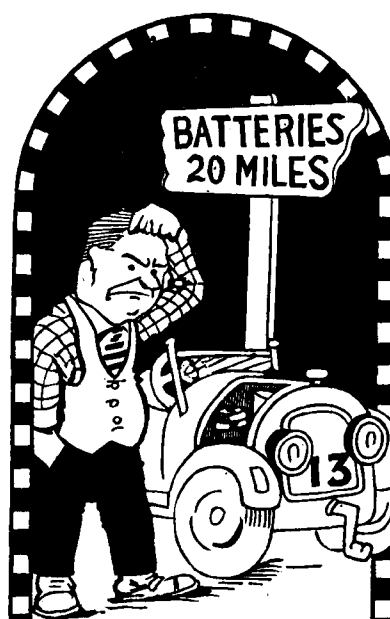
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METROPOLITAN & CO.,
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For three rupees you can
obtain the *South India*
Motor Owner post free
for twelve months.

Turn to page 84



When you are a long
way from home and your
battery goes 'phut' you
realize fully how much
you have to depend upon
this vital item of auto-
mobile equipment.

It pays—both in time
and temper—to use
U.S.L. batteries, because
with the services we
give they will stand
up to all the hard work
asked of them.

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THE SOUTH INDIA MOTOR OWNER

Sales and Service Guide

Arranged alphabetically under vehicle headings columns is charged for at the rate of Re. 1 per this guide should prove extremely useful to motor line, but no contract can be accepted for less owners throughout Southern India. The up- than six consecutive insertions. Correspondence to-date Service Station and Sub-Dealer will find both from Dealers and Car Owners invited in entries in this section to be a profitable method of order to make this section as useful as inexpensive advertisement. Each entry in these possible.

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Armstrong-Siddeley.

BERHAMPORE ... K. M. Paul & Sons.
SALEM ... V. S. Rajagopalan & Co.

Buick.

CALICUT ... English and Scottish
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Cadillac.

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MADRAS ... R. Patel & Co.
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COLOMBO ... C. A. Hutson & Co.,
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Chevrolet.

BANGALORE ... G. H. Booley & Co.,
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BELLARY ... V. G. Asquith & Co.
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mobile Agency.

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COIMBATORE ... T. Stanes & Co.,
Ltd.
KOTTAYAM ... Ramkrishna
Chettiar & Co.
MADRAS ... Motors & Services
Limited.
MADURA ... T. V. Sundram Iyen-
gar & Sons., Ltd.
OOTACAMUND ... Stanes Motors (Nil-
giris) Ltd.
SECUNDERABAD ... Hormusjee & Co.
TRICHINOPOLY ... Aiyer Motor Co.
VIZAGAPATAM ... Andhra Engineering
Co.
COLOMBO ... Rowlands Garage
Ltd.

Chrysler.

MADRAS ... Jones & Co.

Chrysler Plymouth.

BERHAMPORE ... K. M. Paul & Sons.

Dodge.

BERHAMPORE ... K. M. Paul & Sons.
COIMBATORE ... United Motors Ltd.
SALEM ... V. S. Rajagopalan &
Co.

Erskine.

MADRAS ... Romer Dan & Co.

Ford.

BEZWADA ... Ford Stores and
Service Station.

CUDDALORE ... S. Gopala Iyer.
KATPADI ... V. M. Ratnavelu &
Bros.
VELLORE ... V. M. Ratnavelu &
Bros.

Hillman.

MADRAS ... Simpson & Co., Ltd.
OOTACAMUND ... Simpson & Co., Ltd.
TRICHINOPOLY ... Simpson & Co., Ltd.

Hupmobile.

BERHAMPORE ... K. M. Paul & Sons.
SALEM ... V. S. Rajagopalan &
Co.

La Salle

CALICUT ... English & Scottish
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SECUNDERABAD ... Madras Cycle &
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COLOMBO ... C. A. Hutson & Co.,
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Ltd.
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SECUNDERABAD ... Madras Cycle and
Motor Mart.
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Ltd.

SALES AND SERVICE GUIDE—
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COIMBATORE ... United Motors Ltd.
SALEM ... V. S. Rajagopalan & Co.

Nash.

BANGALORE ... Hanumanthappa & Co.
MADRAS ... Motor Reconditioning Station.
PUDUKOTTA ... Motor Trading Co.

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COIMBATORE ... T. Stanes & Co., Ltd.
COLOMBO ... Rowlands Garage Ltd.

Oldsmobile.

BANGALORE ... G. H. Booley & Co., Ltd.
BELLARY ... V. G. Asquith & Co.
BERHAMPORE ... Cycle and Automobile Agency.
BEZWADA ... Row & Brothers.
COIMBATORE ... T. Stanes & Co., Ltd.
KOTTAYAM ... Ramkrishna Chettiar & Co.
MADRAS ... Motors & Services Ltd.
MADURA ... T. V. Sundram Iyengar & Sons Ltd.
OOTACAMUND ... Stanes Motors (Nilgiris) Ltd.
SECUNDERABAD ... Hormusjee & Co.
TRICHINOPOLY ... Aiyer Motor Co.
VIZAGAPATAM ... Andhra Engineering Co.
COLOMBO ... C. A. Hutson & Co., Ltd.

Overland.

MADRAS ... Simpson & Co., Ltd.
OOTACAMUND ... Simpson & Co., Ltd.
TRICHINOPOLY ... Simpson & Co., Ltd.

Peugeot.

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COIMBATORE ... T. Stanes & Co., Ltd.
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Singer.

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MADRAS ... Romer Dan & Co.

Willys-Knight.

MADRAS ... Simpson & Co., Ltd.
OOTACAMUND ... Simpson & Co., Ltd.
TRICHINOPOLY ... Simpson & Co., Ltd.

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Chevrolet Trucks

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MADRAS ... Jones & Co.

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MADRAS ... Simpson & Co., Ltd.
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Ford Trucks.

BEZWADA ... Ford Stores and Service Station.
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KATPADI ... V. M. Ratnavelu & Bros.
VELLORE ... V. M. Ratnavelu & Bros.

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SECUNDERABAD ... Madras Cycle and Motor Mart.
COLOMBO ... C. A. Hutson & Co., Ltd.

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Stewart Trucks

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COIMBATORE ... Lakshmi Motor Works.
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MADRAS ... Madras Automobiles.

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Triumph.

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on Motoring

for the South India Owner-Driver.

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accessories.

This handbook is clearly written in non-technical language, so
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your copy now?

Publisher's Notices

The South India Motor Owner

Published monthly by

Eastern Technical Publications,

Varada Buildings, Mount Road, Madras

'THE South India Motor Owner' is issued on the 15th of each month. It aims to furnish the latest and most authoritative information on all matters relating to motors and motoring under South India conditions. Contributions and correspondence on all matters coming within the scope of this journal are solicited and prompt remittance will be made for all acceptable matter. Contributions should preferably be illustrated.

Subscription Rates

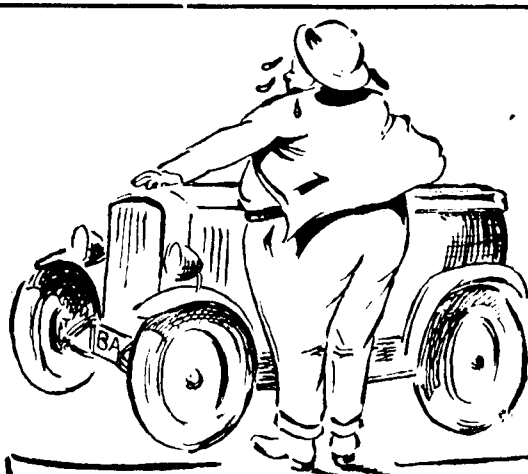
One year . . . Rs. 3 postage free payable in advance or recoverable by V.P.P. with the first issue mailed. Sample copies annas eight each plus postage. All remittances for subscriptions should be made payable to the Eastern Technical Publications, Madras.

When subscriptions expire, unless previous notification has been received from the subscriber the first issue following the expiry will be sent to the subscriber V.P.P. for a further twelve months' subscription. It is therefore advisable, if any subscriber wishes to discontinue *The South India Motor Owner*, to notify the publishers a month in advance.

Advertising Rates

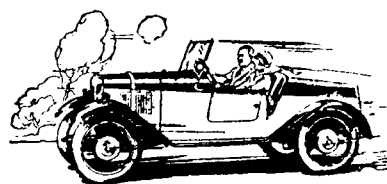
Rates for display space will be furnished on application. For small advertisements and entries under 'Sales and Service Guide,' see pages 77 and 81.

Advertisements to secure insertion in any month's issue should reach this office not later than the 20th of the month preceding. The publishers of *The South India Motor Owner* reserve the right to reject any advertisement for any cause.



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The — Motor Co.
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at once. Unable to get
into my car as had
tiffin at LAVENDER'S
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H. Fredwell



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Turn to page 84

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All small paragraph advertisements whether of fifteen words or less will be charged for at a minimum rate of Rs. 3/- and all such advertisements are strictly prepayable.

Box Numbers are available for those advertisers who desire to utilize them, and a nominal charge of 4 As. will be made to cover cost of booking

and posting replies. The words Box No. XXX, c/o 'The S. I. Motor Owner', must be included in the advertisement and will be charged for.

THE last day on which copy will be accepted for inclusion in this section is the 10th of the month. Whilst every care will be taken to ensure accuracy, the publishers will not be responsible for printer's errors or for non-inclusion. In this regard it should be noted that advertisement copy, received early, will obtain closer attention than that rushed through for inclusion at the last moment. Other business and advertisement notes will be found on page 80.

ONE CITROEN 1927 model. Run only 10,000 miles, in perfect order with two sets of cushion covers, etc., good paint Rs. 2,000.

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With this Directory by your side your motor owners' mailing list is always right up-to-date by reason of the correction slips mailed to you each month.

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INDEX TO ADVERTISERS

	PAGE
Addison & Co., Ltd. ...	
Bar-Lock Typewriter Agency ...	
Brady & Co., Ltd., W. H. ...	
Burmah-Shell Oil Stor. Co., Ltd. ...	75
Chakravarthi & Co. ...	82
Champion Automobiles ...	76
Continental Tyre Co., Ltd. ...	iv cover
Crompton Engineering Co. (Madras), Ltd. ...	69
Diocesan Press ...	83
Dunlop Rubber Co. (India), Ltd. ...	62-63
Ford Motor Company of India Ltd., Bombay ...	57
Goodyear Tyre and Rubber Co. ...	68
Hotel Metropole ...	76
Lavender's Hotels ...	80
Madar Saib & Co. ...	
Madras Automobiles ...	ii cover
Madras Motor Sales Co. ...	
Metropolitan & Co. ...	76, 82
Moorthy Bros., S. K. ...	
Morde, H. A. V. ...	

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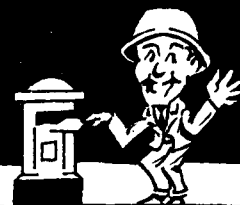
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H
I
L
L
A
N
T

INDEX TO ADVERTISERS (Continued)

	PAGE
Motor Reconditioning Station ...	41
Oakes & Co., Ltd. ...	
Palany Andavar & Co. ...	
Rajagopalan & Co., V. S. ...	
Rajagopal Motor Works ...	73
Rane, Ltd. ...	81
Ranga Transport Company. ...	
Ratnavelu & Bros., V. M. ...	
Romer Dan & Co. ...	72
Salem Automobiles ...	
Savoy Hotel ...	76
Simon & Co., P. ...	76
Simpson & Co., Ltd. ...	
(Front cover)	
South India Motor Co. ...	
Standard Motor Electric Works ...	74
Sunderasamy Iyer, M. ...	
Texas Company, Ltd. ...	59
Tinnevely Petrol Supply Agency ...	
Vacuum Oil Company ...	66
Wakefield & Co., Ltd., C.C. ...	42

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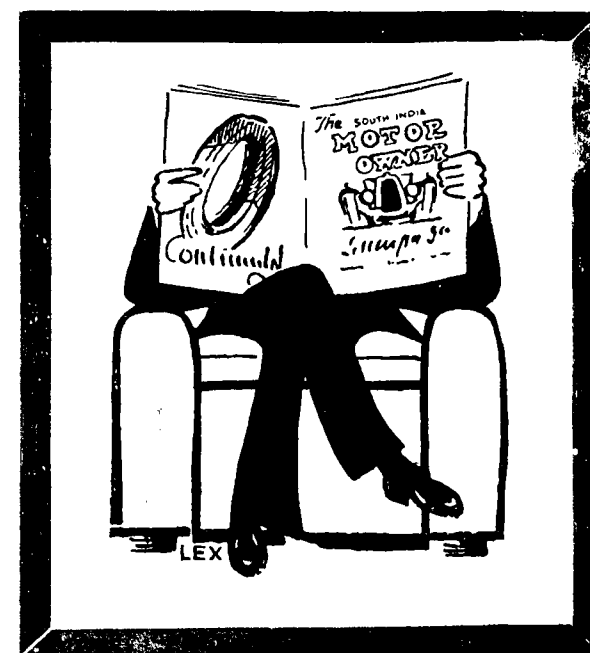
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