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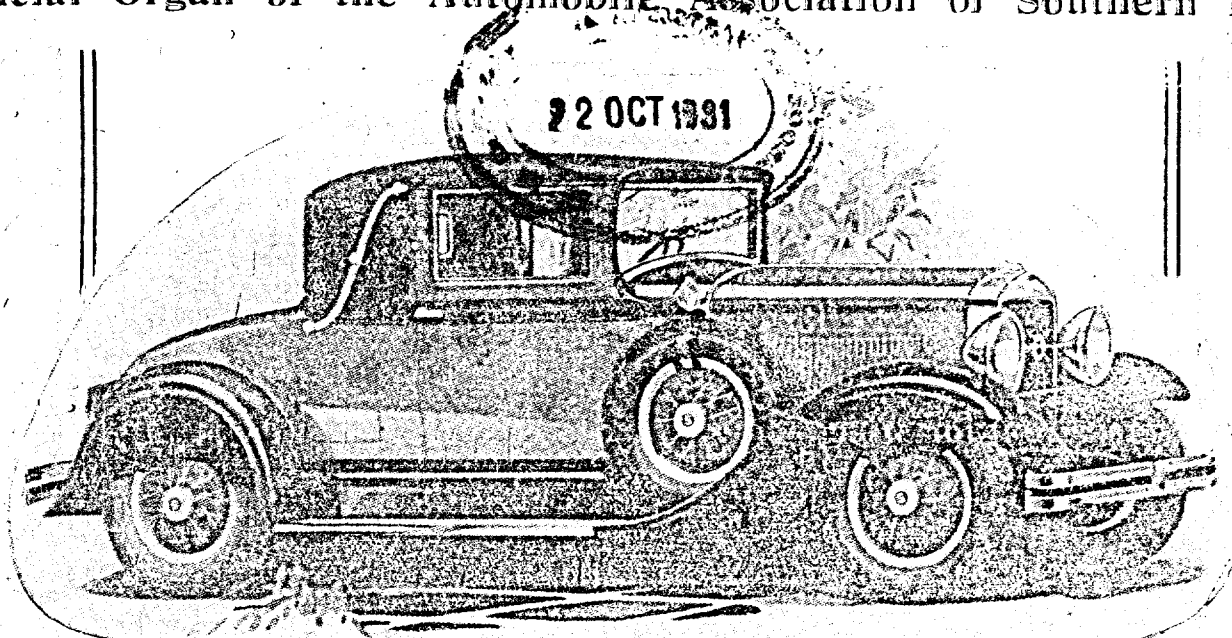
THE SOUTH INDIA

Registered.
No. M. 1515

MOTOR OWNER

306

Official Organ of the Automobile Association of Southern India



Whether you contemplate buying a car, a tyre, oil, or even the smallest accessory there are always certain considerations which, if taken into account, will help you to make a purchase of greater value. Recently we have had the pleasure of helping many of our readers toward the making of wise purchases and we hope that many more readers will permit the staff of the South India Motor Owner to assist them in this way.

EASTERN TECHNICAL PUBLICATIONS. MOUNT ROAD, MADRAS.

ARE YOU A MEMBER

of the

**Automobile Association
:: of Southern India ::**

THE Association's "Abolition of Tolls" campaign, after three years effort, has been successful—but at a cost. Efforts must now be directed toward reduction of the rates of taxation for which combination of motorists and others is essential.

TO protect themselves motorists must combine, and there is no better way of doing so than by joining the Automobile Association of Southern India.

WRITE to-day for details of the Association's activities, organisation, etc., and a form of application for membership to:—

The Secretary
Automobile Association of Southern India
Kardyl Buildings, Mount Road, Madras

Phone: 2439.

P. O. Box No. 1229.

'Grams "S.I.M.U."

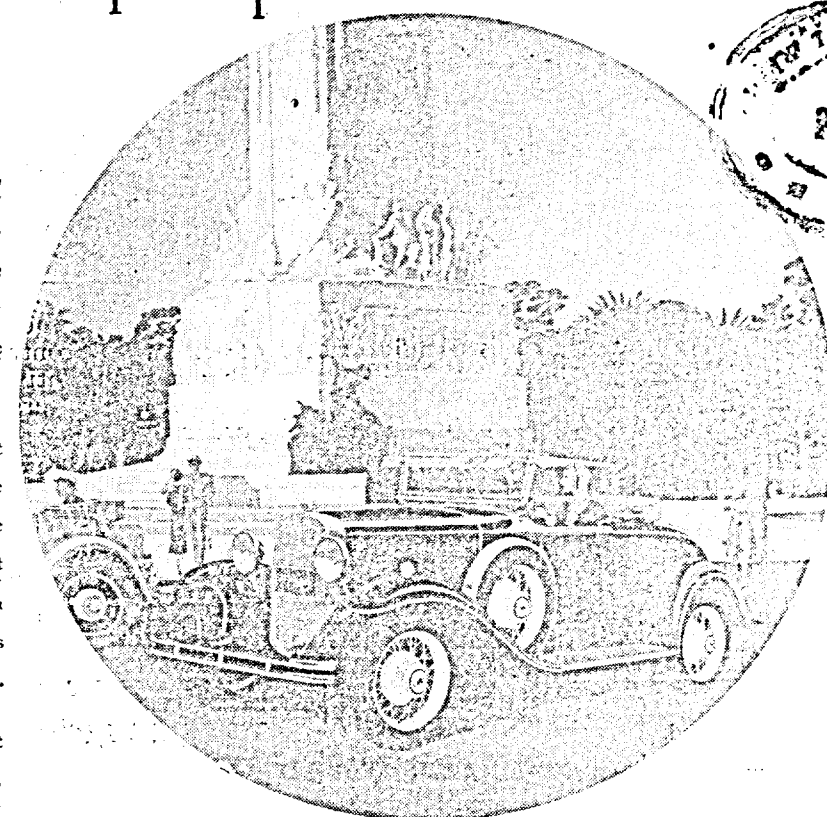
THE WORLD'S SMART THOROUGHFARES know the quiet purr of its motor

ON the smart avenues and streets of a hundred nations the soft easy purr of the Chevrolet motor tells the story of the world-wide acceptance of this beautiful car.

People of critical judgment have always welcomed the Chevrolet. It stands at the doors of the world's finest homes, shares garages with cars of expensive makes, and is seen wherever smart people are.

Although modestly priced it meets exacting requirements. The beauty of long lines and restrained colour is matched by the care given to every detail . . . the little touches that make so great a difference.

We invite you to see the new models. Your Chevrolet dealer will gladly give you a demonstration.



A Chevrolet DeLuxe Roadster near the Spanish Monument in Buenos Aires

On the world's most famous thoroughfares, at smart functions, the Chevrolet takes its place among the finest cars of all nations

Models priced from Rs. 2,600 upwards at port of entry



CHEVROLET

A Product of General Motors



THE SOUTH INDIA MOTOR OWNER

Sales and Service Guide

Arranged alphabetically under vehicle headings this guide should prove extremely useful to motor owners throughout Southern India. The up-to-date Service Station and Sub-Dealer will find entries in this section to be a profitable method of inexpensive advertisement. Each entry in these

columns is charged for at the rate of Re. 1 per line, but no contract can be accepted for less than six consecutive insertions. Correspondence both from Dealers and Car Owners invited in order to make this section as useful as possible.

CARS

Buick.

CALICUT ... The English & Scottish Joint Co-operative Wholesale Society Ltd.
MADRAS ... Byramshaw & Co., Ltd.
COLOMBO ... C. A. Hutson & Co., Ltd.

Cadillac.

MADRAS ... Byramshaw & Co., Ltd.
COLOMBO ... C. A. Hutson & Co., Ltd.

Chevrolet.

BANGALORE ... Nankervis Ltd.
BELLARY ... Asquith & Co.
COIMBATORE ... Stanes Motors (South India), Ltd.
CALICUT ... Stanes Motors (South India), Ltd.
ERNAKULAM ... Stanes Motors (South India), Ltd.
TRIVANDRUM ... Stanes Motors (South India), Ltd.
MADRAS ... Byramshaw & Co., Ltd.

MADURA ... T. V. Sundram Iyengar & Sons, Ltd.
OOTACAMUND ... The General Automobiles, Ltd.
SECUNDERABAD ... Hormusjee & Co.
TRICHINOPOLY ... Iyer Motor Co., Ltd.
VIZAGAPATAM ... The Andhra Engineering Co., Ltd.
COLOMBO ... Rowlands Garages Ltd.

Chrysler.

MADRAS ... Jones & Co.

Dodge.

COIMBATORE ... United Motors Ltd.

Erskine.

MADRAS ... Romer Dan & Co.

Hillman.

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

La Salle.

MADRAS ... Byramshaw & Co., Ltd.
COLOMBO ... C. A. Hutson & Co., Ltd.

Morris.

COIMBATORE ... United Motors Ltd.
MADRAS ... Addison & Co., Ltd.

Nash.

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

Peugeot.

MADRAS ... Romer Dan & Co.

Pontiac.

COIMBATORE ... Stanes Motors (S. India) Ltd.
COLOMBO ... Rowlands Garages Ltd.

Singer.

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

Studebaker.

MADRAS ... Romer Dan & Co.

Vauxhall.

COIMBATORE ... Stanes Motors (S. India), Ltd.
COLOMBO ... Rowlands Garages Ltd.

Wolseley.

MADRAS ... Union Company.

Studebaker Trucks.

MADRAS ... Romer Dan & Co.

TRUCKS.

Chevrolet Trucks.

BANGALORE ... Nankervis Ltd.
BELLARY ... Asquith & Co.
COIMBATORE ... Stanes Motors (South India), Ltd.
CALICUT ... Stanes Motors (South India), Ltd.
ERNAKULAM ... Stanes Motors (South India), Ltd.
TRIVANDRUM ... Stanes Motors (South India), Ltd.
MADRAS ... Byramshaw & Co., Ltd.
MADURA ... T. V. Sundaram Iyengar & Sons, Ltd.
OOTACAMUND ... The General Automobiles, Ltd.
SECUNDERABAD ... Hormusjee & Co.
TRICHINOPOLY ... Aiyer Motor Co., Ltd.
VIZAGAPATAM ... The Andhra Engineering Co., Ltd.
COLOMBO ... Rowlands Garages Ltd.

PULLING POWER

Pulling power in a journal is just as important as pulling power in an engine.

O O O

This is one of the reasons why small advertisement space in this paper has proved its value to advertisers throughout S. India.

The Next issue of the South India Motor Owner will be specially interesting.

Make sure of your copy now.

Dodge Trucks.

COIMBATORE ... United Motors Ltd.

Diamond Trucks.

MADRAS ... Cromandel Automobiles.

Fargo Trucks.

MADRAS ... Jones & Co.

Federal Trucks.

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

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CALICUT ... The English & Scottish Joint Co-operative Wholesale Society, Ltd.
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Overland Buses.

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

Madras Motor Directory, 1931.

Containing Madras Motor Vehicles Act, Madras Motor Vehicles Taxation Act and all connected Rules and Regulations. Also all registered numbers, names and addresses of all Motor Car owners in South India and Pudukottah State.

Says the MADRAS MAIL, 22-8-31: ".....Contains in handy form COMPLETE INFORMATION for those interested in Motors and Motor Trade.....Should find on the desk of business men....."

This will be brought up to date every month, till next edition, by the issue of Monthly Supplements with additions and change of ownership.

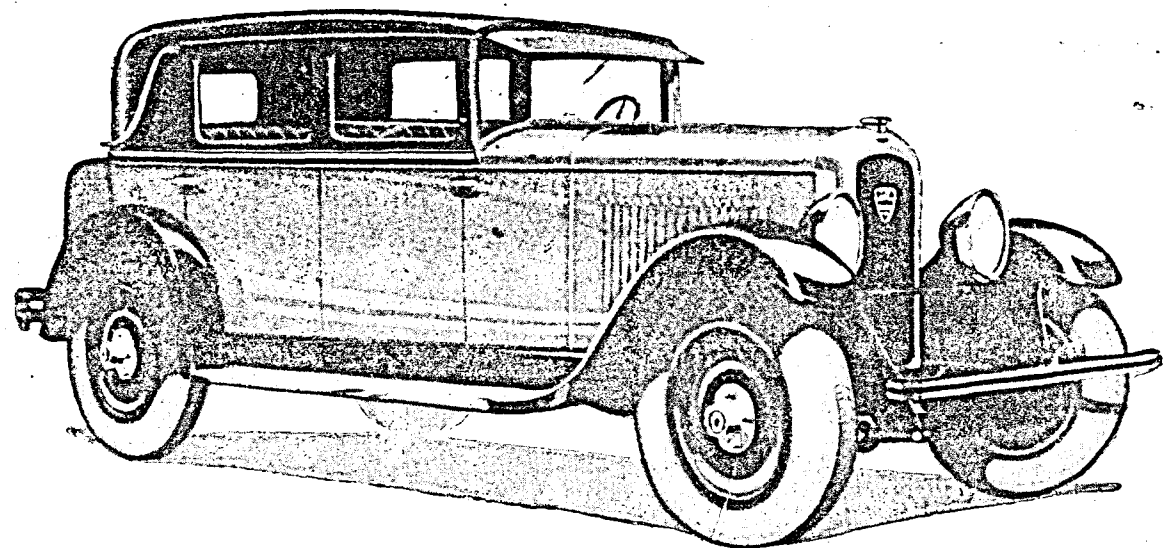
Price including Free Supply of Monthly Supplements Rs. 10/- Postage extra.
" without Supplements : : : Rs. 3/- "

PUBLISHERS:

DIRECTORIES & AGENICES LIMITED,

11, MOUNT ROAD

MADRAS, S. India.



SOLVES HALF YOUR PROBLEM

It is the first business of the advertiser to be interesting and in this he shares a common task with the publisher. The editorial pages of THE SOUTH INDIA MOTOR OWNER interest the motor owner upon motoring matters as no general magazine could. Thus the advertiser in these pages has the greater part of his first big task accomplished for him, and his advertisement reaches and interests a section of the public keenly interested in motoring and all matters connected therewith.

LET US HELP YOU TO PLAN YOUR ADVERTISING

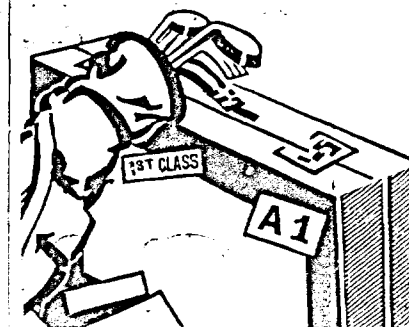
Advertisement Manager :

THE SOUTH INDIA MOTOR OWNER
MOUNT ROAD - - - - - MADRAS

THE HOGARTH PRESS

It is our earnest endeavour to produce good work at reasonable prices to the satisfaction of our customers. When next you have printing in mind ask us to submit our suggestions and estimates.

WOODS ROAD,
Mount Road : : MADRAS.



Drive A New Car

Spray-painting with DUCO can make your car look neat and new. The hood and upholstery too, can be renovated by our experts—so why drive a shabby car?

We are specialists in spray-painting and can quote you surprisingly low prices for complete renovation.

Our bus body building department is at your service too.

HAROLD & CO.,
General Patter's Road,
MADRAS.

MACKENZIE & CO.,
Automobile and Mechanical
Engineers.
37, South Parade,
BANGALORE.

NANKERVIS, LTD.

Automobile Engineers
25, South Parade,
BANGALORE.

Distributors of
Chevrolet Cars and Trucks
and Oldsmobile Cars
for the Mysore
Province and Coorg

Chevrolet Sales and Service.

BOUND VOLUMES
See page 266.

A regular small advertisement in the South India Motor Owner is both economical and effective. It is read by motorists who have learnt to search the pages of this journal for their needs, and who write to us for information before making a purchase.

Pack Your Bag
For A Long
Week-end

and stay at

**Lavender's
Hotel**
BANGALORE

Read
"The South India Motor Owner"
Every Month.

"A Double Event" ON CASTROL

**Miss Amy
Johnson's
RECORD
LONDON-
TOKIO
FLIGHT
10 DAYS**

**Mr.
Mollison's
RECORD
AUSTRALIA-
ENGLAND
FLIGHT
(2 days better than
Scott's Record)**

Here are two further examples of the supremacy held by Castrol in records achieved in the air. *There is a reason why Castrol is chosen by the World's most famous pilots for tests of endurance and speed. This reason is the efficiency of Castrol to give satisfaction in every respect—thorough lubrication to all parts of the engine—minimum carbon deposit—perfect piston seal—and unvarying high quality.*

Follow the experts' example—specify Castrol always for your car or motor cycle.

C. C. WAKEFIELD & Co., Ltd.,

Head Office—BOMBAY.

Calcutta, Delhi, Lahore, Karachi, Madras, Rangoon, Colombo, etc.

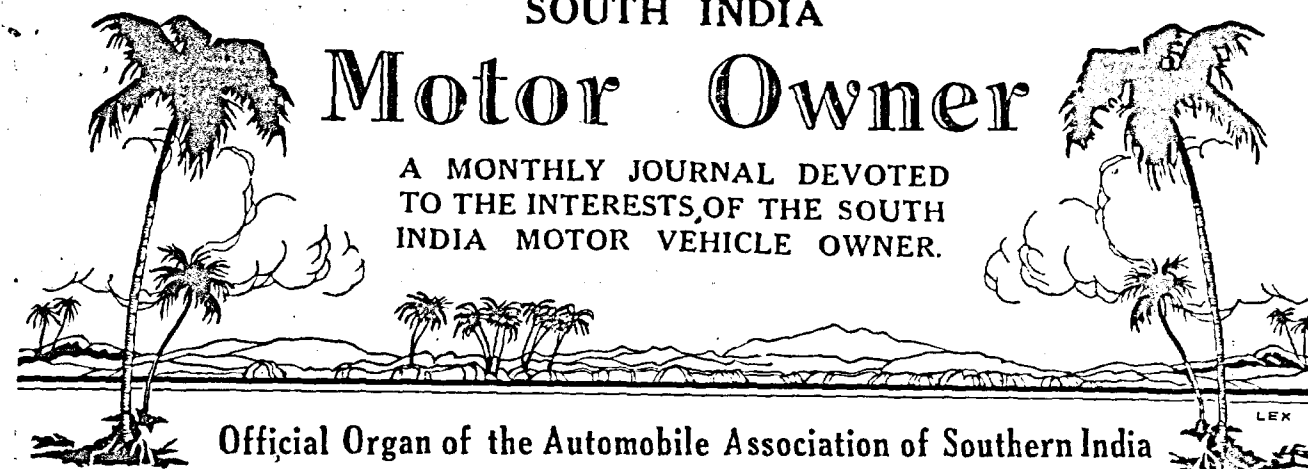
Distributors for Madras Presidency:—ADDISON & Co. Ltd., Madras & Branches.



THE
SOUTH INDIA

Motor Owner

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



Official Organ of the Automobile Association of Southern India

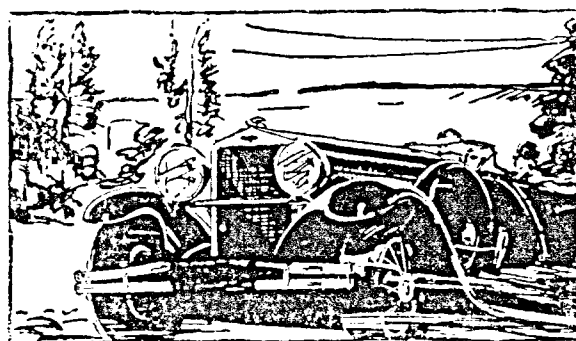
Vol. III, No. 9

September, 1931

Price As. 8

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Perhaps You Don't Know—?

A New Series of Articles
Explaining in Simple Fashion
Frequently Encountered Technicalities.

No. 1. Valve Timing and the use of Timing Diagrams.

IN every car makers manual much space is devoted to the importance of valve tappet clearances, and numerous articles appear month after month in every motoring journal stressing the point that valve clearances are essential to the efficient running of the c.r. The average novice, therefore, spends a lot of time with tappet spanners and feeler gauges, and probably makes quite a good job of it, but he is working in the dark most of the time because he doesn't know why tappet clearances are so essentially important.

Tappet clearances affect the timing of the valves, which are designed to open and close at certain periods during the various strokes of the pistons. Every makers manual describes the timing of valves by means of a valve timing diagram which, whilst it is a complete puzzle to the average novice driver, is a simple method of showing diagrammatically the points at which the valves should open and close.

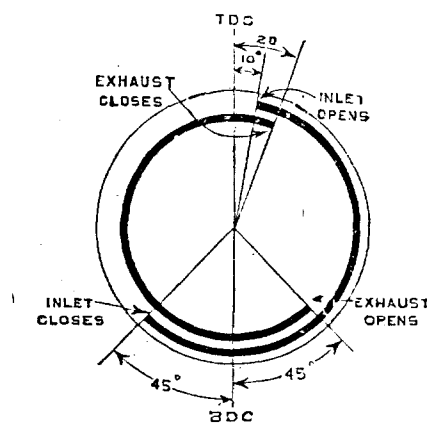
If we imagine the timing diagram as drawn actually on the engine flywheel, it is easier to understand its meaning. A circle drawn on a sheet of paper can have its circumference divided into 360 equal parts, when each division enclosed within lines drawn from the centre of the circle to form these 360 parts will be one degree (1°). As the crankshaft and the flywheel revolve we can describe its travel in degrees—thus a quarter turn would mean that the crankshaft had travelled through 90° . Keeping this in mind, the timing diagram is comparatively simple.

Let us assume that the piston is at the top of its stroke. In this position the crank web and the connecting rod will be in a straight

line. This is called the top dead centre position, so called because at this point the connecting rod cannot exert a turning movement to the crank pin. This position is usually abbreviated and written T.D.C., a similar state of affairs occurs when the crankshaft has made a full half revolution from this T.D.C. position when it arrives at what is written B.D.C. or bottom dead centre. These two positions are shown in a valve timing diagram by the vertical line cutting the circle, and these upper and lower points are usually marked T.D.C. and B.D.C. respectively.

On assuming the flywheel is rotated, the valve timing diagram shows that the inlet valve should open when the flywheel has turned through an angle of 10° and should remain open until the flywheel has travelled through an angle of 45° beyond bottom dead centre, at which stage the piston will be rising on the compression stroke.

This is a point where the novice is apt to be confused, because he naturally cannot reconcile the two facts—piston on compression stroke yet inlet valve open—for at first sight it would appear that a part of the indrawn gas will certainly be pushed out through the open inlet valve by the rising piston. Actually, the case is, that the charge of gas incoming through the induction ports possesses momentum—that is it pushes forward of itself—and the inlet valve is kept open so that full advantage of this may be taken in order to ensure as full a charge of petrol vapour as possible. At very low engine speeds a small amount of the charge may be forced back through the open inlet valve, but with engines of four and more cylinders this is not noticeable, as the "blow-back"



A conventional timing diagram, the points of opening and closing being indicated in degrees.

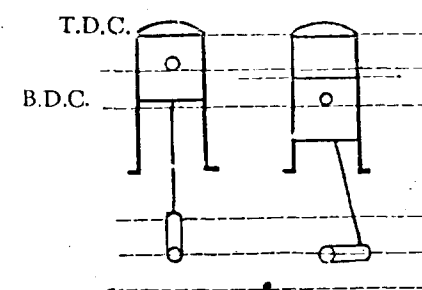
is absorbed by the induction stroke of another cylinder. In motor-cycle engines, however, it is often possible to detect this "blow-back" by placing a hand close to the air inlet of the carburettor.

Returning to the further revolutions of the flywheel as shown graphically in a valve timing diagram, as the flywheel is revolved further the piston continues rising on the compression stroke until ignition of the charge occurs about the T.D.C. position, and the piston is forced downwards on the working stroke. Having passed T.D.C. we are now going round the timing diagram circle for the second time, and we see that the exhaust valve should remain open from a point 45° before B.D.C., all the time the piston is on the exhaust stroke, and is only closed 20° after T.D.C.

This overlap of 10° between the opening of the inlet valve and the closing of the exhaust valve needs explaining. The reason is two-fold. We have already stated that a stream of gas in motion possesses momentum. So also does the gas at rest possess inertia—a resistance against being set in motion. It seems almost ridiculous thus to make allowance for these two almost negligible properties, but it should be realised that when an engine is running at fair speed the valves are only open for a period of time so small a fraction of a second as itself to appear almost negligible. This being so, the utmost endeavour must be made to render the ingress and egress of the gases as easy as possible.

We have mentioned that an understanding of the valve timing diagram is easier if we imagine it pasted on the flywheel, and frequently makers mark flywheel rims with notches corresponding to the various indications of the drawn diagram. A mark on the flywheel casing or a pointer attached to the engine close to the flywheel, will in these cases also be provided, and the relative positions of the marks and the pointer indicate what should be the position of the valves at that point in the engine's revolutions. Thus a line with T.D.C. against it shows that the piston of the first cylinder is at the top of its stroke, while if the flywheel is turned until a mark with the letters I.O. appear opposite the fixed mark, we know that the inlet valve of that cylinder should just be beginning to open.

From the foregoing explanation of the timing diagram it may appear that when the crank pin has moved through 90° , or a quarter of a revolution, from T.D.C., the piston would have moved down exactly one-half of its stroke. This is not, however, correct, assuming that the centre line of



Owing to the effect of the angularity of the connecting rod, the piston travels farther during the first 90° of the movement of the crank pin than during the second 90° .

the cylinder passes through the centre of the crankshaft. Actually, the piston will have moved rather more than half its stroke, and in the next 90° movement of the crank pin it will move rather less than half its stroke.

Off-set Cylinders.

This is shown in the accompanying diagram, and the explanation lies in the angular movement of the connecting rod. The shorter the connecting rod relative to the crank-throw, that is, the distance of the crank pin from the centre of the crankshaft, the greater will be the difference in movement between the upper portion of the stroke and the lower portion, as represented by the first 90° movement of the crank pin and the second 90° . The stroke of the piston is equal to twice the crank throw.

Many modern engines, however, are built with the cylinders off-set, their centre line being slightly to the side of the centre line of the crankshaft. Looking from the front of the engine the cylinders are slightly to the right of the crankshaft. This is done with the object of counteracting the effect of the angularity of the connecting rod during the downward stroke, and it has the peculiar effect that the piston stroke is no longer exactly equal to twice the crank throw. With off-set cylinders the piston stroke is actually slightly longer than twice the crank throw, although when the bore and stroke of the engine are given, as, for example 80×120 mm., it is twice the crank throw which is regarded as the stroke. In other words, the stroke is considered to be 200 mm., although actually the piston moves more than 120 mm.

Sometimes valve timing is not given in degrees according to the movement of the flywheel, but in inches according to the travel of the piston. For example, the inlet valve may open $1/64$ in. after T.D.C., and close $37/32$ in. after B.D.C., while the exhaust opens $37/64$ in. before B.D.C., and close $1/32$ in. after T.D.C. Usually, however, this method is not used unless the engine is so constructed that it is possible to insert a wire through a compression tap, or some other opening, perhaps the sparking plug orifice, into the cylinder head, so that its point rests on the top of the piston.

In such a case the engine will be turned round by hand until the T.D.C. piston of number one cylinder can be ascertained, the wire showing that upward movement of the position has just ceased. A steel rule will also be required, and will be set alongside the wire so that as the engine is slowly revolved it can be at once ascertained when the piston has moved down $1/64$ in., when the inlet valve should just be beginning to open.

Three Golden Insurance Rules

Hints that may save trouble and
Expenditure in the event of an accident

— By —

AN INSURANCE OFFICIAL

THERE are three golden rules which need to be observed by the private car owner who seeks insurance protection:—

(1) Don't be tempted to take advantage of the owner-only-driving (or named-driver, call it what you will) rebate, for if you do your policy will be endorsed to exclude all liability whilst the car is being driven by any other person. Consider for a moment what this would mean in certain circumstances.

Do you make it a practice to refuse to allow a friend, or relative, to drive the car on odd occasions—to take the wheel for a spell? And would you turn a deaf ear to the neighbour whose wife has been taken suddenly ill and who knocks you up in the dead of night for the loan of your car to hasten for a doctor? Of course, you could dress and go yourself, but what if the poor fellow is frantic and won't countenance a moment's delay? Or would you let him have the car, and risk it?

And what of your Third Party liability? It would be bad enough if the car itself were smashed up, but what if you were involved in a really serious third party claim? As owner of the car, *you are liable for accidents caused by the negligent driving of the car* if it is being driven at any time with your knowledge and consent.



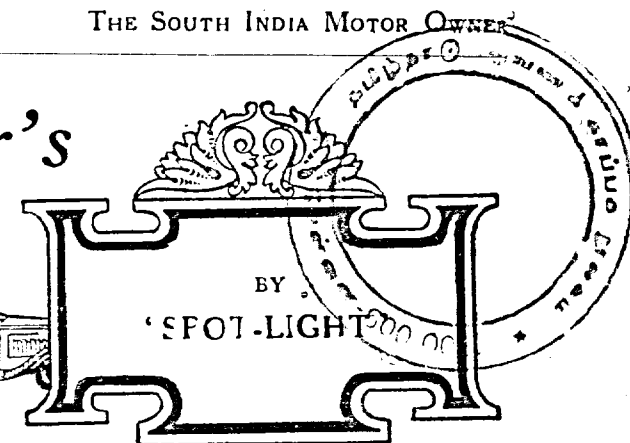
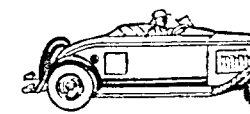
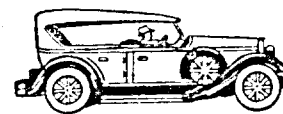
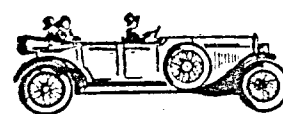
(2) Insist on an agreed value policy, and then you will know where you are in the event of a total loss. Under the ordinary policy you are only paid up to the amount of the market value of the car at the time of loss. This is in accordance with the principle of indemnity which lays down that an insured person shall be indemnified to the exact measure of his loss—no more, no less. A perfectly equitable principle, no doubt, but it does not adequately compensate the owner who takes such care of his car that it is, intrinsically, worth more than the prevailing second-hand market value for cars of its type.

(3) If you really do use your car for business purposes, even if only occasionally, declare the fact and pay the small extra premium required. Apart altogether from the question of honesty, which dictates that a proposal form should be correctly completed, the small amount of the additional premium charged makes it not worth while running the risk

of an accident happening in circumstances which would enable the insurance company to repudiate liability on the ground that they were not "on risk" at the time of accident.

Observe these simple rules, and you can take your car out in the definite knowledge that you are adequately protected. Ignore them, and vexation and ultimate loss await you.

From an Owner Driver's Note Book



Where Should a Tank be Placed?

CERTAIN motoring journals at Home have recently devoted a considerable amount of space to articles and correspondence concerning the safety of various positions in which petrol tanks are placed by car designers. The trend of opinion appears to be that there is a risk in putting the petrol tank under the bonnet of those small cars which are fitted with only two small doors. There is a great deal to be said in favour of this decision. Even under normal conditions there is often great difficulty in worming one's way out of these small cars so equipped, and it is impossible for the passengers in the rear seats to descend speedily in case of need.

At the same time, accidents in which persons are trapped in burning cars are so rare that it would hardly be policy to condemn one or any type of body. Accidents will occur under the safest conditions, and whilst two door bodies may be death traps in the event of the car catching fire, they reduce the possibility of passenger falling out of moving cars by half, either of which misadventure is as extraordinary as the other.

A Useful Booklet.

I have recently received from The Vacuum Oil Company Inc., a very interesting booklet entitled "I Wish I Knew more About". This is written in a most interesting manner, and unlike other literature of this type, deals with problems which confront the motorist in India. Really practical information is given on the subject of lubrication, and it is a book which motor owners will turn to repeatedly for reference.

Any readers who would like a copy of this booklet may drop me a line, when I will endeavour to obtain a copy for them.

Most Embarrassing

Twice this past week I have found myself the centre of a smiling throng of pedestrians, and all as the result of a funny, but never the less embarrassing, incident. Without any warning the electric horn on my car began to sound all by itself without the button being depressed. There was nothing to do but to pull to the side of the road, where the inevitable crowd rapidly appeared from nowhere, and there to search for the trouble.

Twice this has happened and on both occasions I found the cause of the trouble a simple short-circuit inside the horn switch, easily remedied, but aggravating whilst it lasts.

The Latest Driverless Car.

Here is rather a good story I heard the other day.

A Lancashire man was standing by the roadside waiting for a car to give him a lift into Preston. After several unsuccessful efforts to attract the attention of drivers he observed a car proceeding very, very slowly. He ran alongside it to ask the driver for a lift, when, to his amazement, he found there was nobody in it at all, so he jumped in. "By gum," he remarked, "they now have cars that go by themselves!"

He knew nothing about driving except tooting the horn, which he proceeded to sound continually. At length the car reached a cross-road where a policeman was holding up the traffic. The problem was to make the car stop. He tooled the horn more vigorously than ever. Just as it looked as if it would charge the policeman, lo and behold, this marvellous vehicle pulled up of its own accord—and a voice from behind shouted, "Stop blowing that blinking horn, and do a bit o'shuvvin." I've been pushin' this darned bus all the way fra' Blackpool!"

Two Reasons Why Goodyear is the Leading Tyre

1 The famous All-Weather Tread is superior in traction. Note how the deep-cut, tight-gripping blocks are placed in the centre of the tread where they belong. Press the palm of your hand upon this tread and feel how the blocks grip and pinch the flesh. This illustrates the All-Weather Tread's hold-fast action on pavement or road.

2 The Supertwist Cord Carcass is superior in vitality and long life. Under continued flexing or sudden road shock, where ordinary cords fatigue or snap, the extra elastic Supertwist Cords stretch and recover, like rubber bands. Ask your Goodyear Dealer to show you on his cord-testing machine the extra stretch — up to 60 percent greater — of Supertwist cord over the best standard cord.



GOOD YEAR

NEWS and MISCELLANY

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

Italian Highways Remade in Three Years.

THE recent third anniversary of the founding of the Azienda Autonoma Statale Della Strada, which is in charge of the upkeep of Italian State roads, centred attention on the splendid work this organization has performed in transforming the country into a motorists' heaven.

Three years ago, except for a few provinces which realized the importance of good communications, Italian roads were known as practically the worst which could be found in any civilized country.

They were covered with holes and ruts, causing frequent breakage of springs and axles, and in the motoring season, cars were smothered in dangerous and uncomfortable clouds of dust. Lack of visibility caused by dust, combined with the Italian's love of fast driving resulted in many accidents. To-day, it is possible to travel by motor car from one end of Italy to the other along good asphalted dust-free roads.

This aggressive road development programme is expected to give considerable impetus to the automobile industry in that country. Hitherto, it has been a problem whether the few motor cars in Italy were a result of the bad roads or the bad roads the reason so few persons found the upkeep of a car worthwhile.

The government decided to act by first improving the roads and leaving the automobile industry to benefit by the results and it is expected that within a comparatively short time, the number of motor cars in Italy will be doubled.

Italy is far behind other nations in the number of motor cars per head of population. With a population of 40,000,000, only about 250,000 automobiles are in operation.

France Ho'ds Fifty Records.

The 1931 automobile racing season opened with the French holding 50 of the 62 official world's records, the English 9, American 2 and Italians 1. These are records approved by the International Sporting Commission, a subsidiary of the Association of Recognized Automobile Clubs of the World, organized to control international automobile racing.

Six Million Persons Depend on General Motors.

Six million men, women and children derive income directly or indirectly from the activities of General Motors Corporation. These include 263,528 stockholders, an average of more than 175,000 and 500,000 workers employed in industries supplying products to the corporation. While the largest percentage live in the United States, practically all overseas countries are represented.

Exactly eighty different companies comprise General Motors. Banded together, they unite their purchasing power to assure quality materials at favourable prices. They exchange engineering talent, manufacturing experience and ideas. They join every resource for producing higher values and better service for the ultimate consumer.

Paris Will Synchronize Traffic.

Paris will soon try out a system of synchronized traffic regulation modelled on that of New York City. Because of the complicated way in which Paris streets wind about and cross each other at every angle, it has been impossible to apply synchronization as used in a geometrical city like New York but the scheme the French police will attempt is to open three or four blocks of continuous traffic on the principal thoroughfares. Traffic will be regulated by red and green lights.

Chevrolet Forges Ahead.

The production of the Chevrolet Motor Company for May 1931 was the largest single month's out of the Company since July 1929. During May 113,852 units left the assembly line. Chevrolet expects to produce 1,000,000 cars during the current year. With an accomplishment of 437,950 units for the first five months of the year, 562,050, or approximately 80,000 vehicles a month will be built between now and the end of December.

Top of a Wall Used as a Motor Road.

The ancient city wall of Tsinanfu, capital of Shantung Province, China, has been converted into a highway to which only motor cars are admitted. Broad approaches were built at the various city gates. These have been levelled and the top of the wall provides a comfortable thoroughfare for fast-moving traffic, comparable to some of the elevated highways that have been constructed in America.

India Replaces Elephants by Motor Cars.

Elephant power has been so largely supplanted by motor vehicles in India that the government recently had to auction seventeen elephants before buyers were found and then there were only half a dozen bidders.

Twenty years of Speed.

Captain Malcolm Campbell's achievement of a new world's speed record of 245.7 mile an hour at Daytona Beach, Florida, serves to emphasize the rapid development of the automobile.

Since 1904 when W. K. Vanderbilt drove his famous Mercedes at the rate of 92.3 miles an hour, that was considered as tearing through the atmosphere. Yet the next year Arthur MacDonald went over the hundred mark, making 104.65 miles an hour in a Napier.

That record lasted only a year. In 1906 Demogeot, in an eight-cylinder Darracq, accomplished 122.4

miles an hour and a few weeks later Frank Marriott, in a Stanley Steamer, burned up the track at 127.66 miles per hour. The next record shatterer was Barney Oldfield who attained a speed of 131.7 in his "Lightening Benz" only to have that record topped the following year by Bob Burman in a Blitzen Benz that travelled at the rate of 141.7 miles an hour.

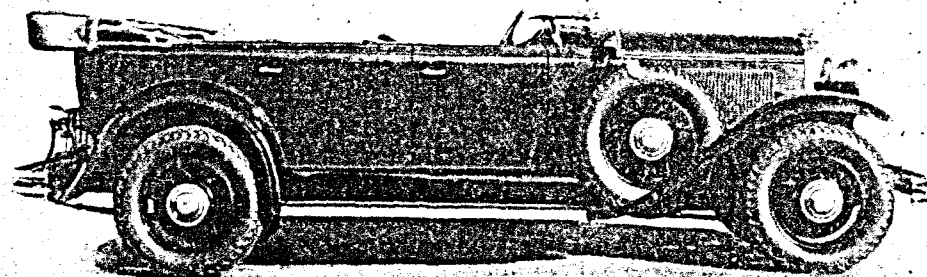
This record stood for eight years. It was not until 1919 that Ralph De Palma drove a Packard "900" at 149.87 miles an hour but a year later Tommy Milton, in a twin-engined Duesenberg, reached 156 miles per hour. Seven years after that in 1927, the late Sir H. O. D. Segrave appeared on Daytona Beach and set a new record with an English Sunbeam at 203.79 miles an hour.

Segrave's compatriot, Captain Malcolm Campbell, entered the contest in the next year and piloted a Napier Bluebird at 206.95 miles an hour only to lose his position of record-breaker to Ray Keech who attained 207.55 miles an hour in the Liberty Triplex. Segrave came back again in 1929 in his Golden Arrow and sped over the sands of Daytona at 231.36 miles an hour. This year Captain Campbell, in another Napier Bluebird, topped the Segrave record by going 245.73 miles an hour. Captain Campbell does not think he has come near the ultimate limit of motor car speed, he and others qualified to judge believe that 300 miles an hour will be attained within the near future. Yet when Mr. Vanderbilt went 92 miles an hour twenty-seven years ago, people thought the day of dizzy travel had arrived.

An attempt to better Captain Malcolm Campbell's automobile speed record of 245 an hour is planned for an early date by Norman Smith, Australian racer, on the beach at Kaitia, New Zealand.

The Smith engine, whose design is a close secret, is said to approximate 1,700 horse power and is expected to develop a speed of 300 miles an hour. The car is said to have a total length of 26 feet, with wheelbase of 13 feet 4 inches, tread of 5 feet, minimum ground clearance of 7½ inches and maximum height from the ground of 3 feet 2 inches. The body at its widest part will be only 19 inches.

The tyres are said to have been built to withstand a speed of 310 miles an hour. Streamlining, special radiators and a sloping nose to retain traction at high



The seven passenger Buick 8 Touring Car.

speed are among the outstanding features of the racer. The beach chosen for the run is 90 miles long, presenting a hard, smooth, natural track 30 miles long and 1,000 feet wide.

Turkish Officials to Ride in Buicks.

The Turkish Government has issued orders to the effect that whereas the President of the Republic, the General Chief of Staff, the Prime Minister and the President of the House of Representatives may purchase any make of car they choose, all ministers and inspectors of the Army Corps are to purchase Buicks.

French Adopt American Plan for Auto Controls.

France has adopted the American arrangement of foot pedals and gear-shift in an effort to make it possible for anyone who can drive one car to operate any other.

Until recently, there existed 17 different arrangements of pedals and accelerator, foot and hand controls. Now there is but one, the standard set by American car producers.

The standardized method is for the steering wheel to be at the left, the gear shift lever in the centre, the left pedal controls the clutch, the right pedal the brake. The accelerator pedal is located further to the right. As for the gear-shift, it starts at left-front for reverse; left-rear for low, right-front for intermediate and right-rear for high speed.

The French Automobile Standardization Bureau is still at work on hand controls for spark and fuel. The next will be to reduce the number of different sizes of rims and tyres. Cars would be divided into four classes by weight, making only four sizes of tires necessary and they would all be applied in the same way.

The German signal-mark, a red triangle, has also been adopted as standard for the rear fenders of cars bearing four-wheel brakes. Cars without the triangle would be considered as equipped with old style rear-wheel brakes.

Canada Third in Motor Vehicle Ratio.

According to a report on highways and motor vehicles in Canada recently issued by the Dominion Bureau of Statistics, Canada has more motor vehicles per capita than any other country, except the United States, and Hawaii. Only three countries, the United States, the United Kingdom and France, have a larger number of motor vehicles, irrespective of population.

There were 1,195,594 motor vehicles registered in Canada in 1929, which was an average of one motor vehicle to each 8.2 persons. Ontario, with 544,476 had the greatest provincial density of persons to motor vehicle.

The total revenue from motor taxation collected by all provinces amounted to \$41,256,441, including \$22,511,374 from licenses, permits, tax on motor buses and trucks and \$18,744,968 from gasoline taxes. In addition the dominion government

collects \$25,737,416 in import duties and excise tax, exclusive of sales tax on motor vehicles, tires and motor vehicle parts.

The road mileage open to traffic was 390,060 miles, including 72,157 miles of surfaced highways. Gravel roads, with 63,433 miles, constituted the greatest part of the surfaced mileage and water-bound macadam was second in importance with 4,349 miles. Ontario, with 33,222 miles of surfaced road in the southern part and 8,670 miles in the northern part, a total of 41,892 miles had 58 per cent. of the surfaced highway in Canada. Quebec was second with 12,124 miles and British Columbia third with 6,947 miles.

To Kabul by Car.

Word has been received in Bombay of the fact that Mr. F. G. R. Peterson a representative of the London Times driving a 1931 Chevrolet DeLuxe Tourer covered the distance between Kabul and Peshawar on Wednesday August 19th in less than seven hours, breaking all previous records for the trip.

As far as can be remembered, Mr. Peterson is the second journalist to visit Kabul since the war and very few have ever been there. This is not because they do not wish to go as every journalist has a desire to go to Kabul, but as a rule the authorities in India are strongly opposed to the idea and the Russian authorities are not any more favourable to an approach from their end. The other arrival was Mr. Viollis, special correspondent of the Petit Parisien. She arrived in Kabul by aeroplane from Tashkent at the same time as Nadir Shah's triumphal entry and obtained a story which was used by newspapers throughout the world.

From cable advice received from Mr. Peterson it is not clear whether he broke the motoring record purely for amusement or whether some of the local sniping schools happened to be having their weekly practice shoot. In any case to do the 190 miles from Kabul to Peshawar in less than seven hours is a mighty fine performance. Kabul lies at a height of 7,000 feet and there is a climb of about 6,000 from Peshawar.

The Lucky Truck Contest.

Recently Messrs. Byramshaw and Co., Ltd., conducted the Lucky Truck Contest, in which a free Chevrolet Chassis was the prize. The entrants were all persons who had purchased a Chevrolet chassis from this firm between April 14 and July 31 this year.

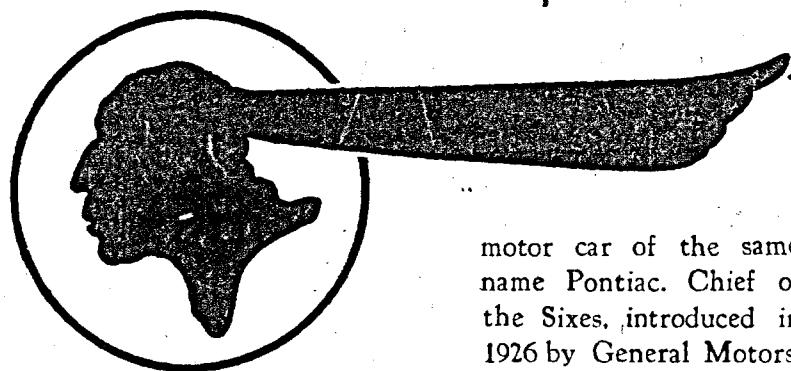
The tickets were drawn by Rao Bahadur P. T. Kumaraswamy Chetty, President, Corporation of Madras, at the premises of Messrs. Byramshaw and Co., Ltd., Mount Road. There was a large gathering and the chassis was on view in the centre of the hall, decorated with flowers and festoons. Mr. A. Balasundara Naicker, a sub bodybuilder of Royapettah, Madras was the lucky winner of the chassis. The decorated chassis was taken round the city in the evening by the winner.

Improvements in the Pontiac Range of Six Cylinder Models

A full description of the new range of models offered by General Motors under a well known marque.

DOWN through the pages of history comes the story of an illustrious warrior, shedding symbolic light upon a modern manufacturing skill bearing his name and carrying on the traditions which come to be associated with it.

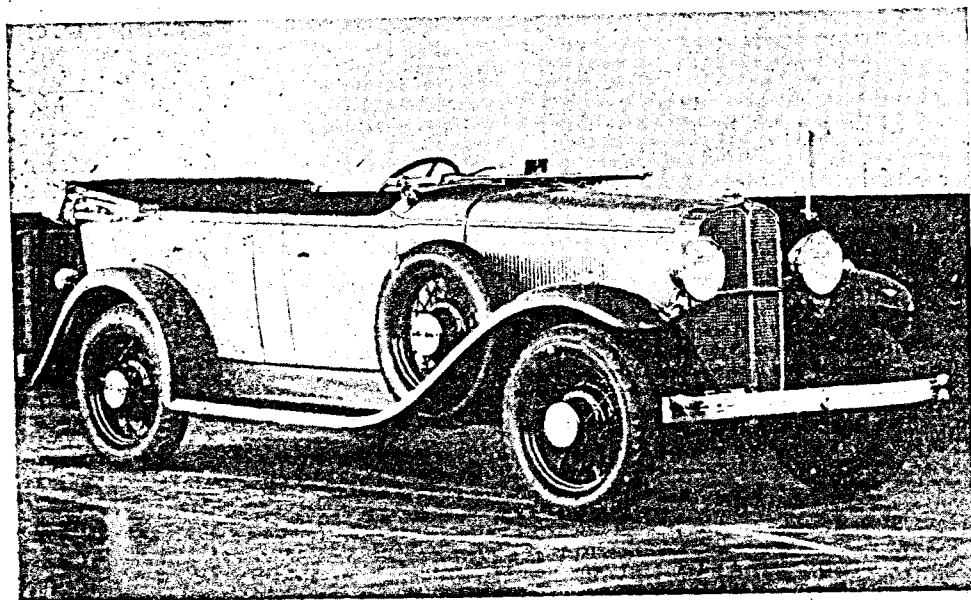
The warrior is Pontiac, chief of the Ottawa Indians, who ruled a vast empire in the forest fastnesses of the interior of the North American continent from 1720 to 1769. The product which stands as the modern symbol exemplifying his achievements, is the



The well-known Pontiac emblem—the American Indian Chief's head.

motor car of the same name Pontiac. Chief of the Sixes, introduced in 1926 by General Motors, and carried on with improvement year after year to the new models, a full description of which is given to all readers of the "South India Motor Owner" in the following pages.

Twelve improvements designed to add to Pontiac's already enviable reputation for efficiency, beauty and dependability are outstanding changes made in the 1931 models. These twelve improvements, all of which tend to make the new models surprisingly good value as compared to others of similar price field, can be summarised as follows.



The 1931 Pontiac 5-passenger Phaeton offers unusual value—riding comfort and ease of control being two of its outstanding features.

1. Improvements in the engine, which, with basic features retained, save from 3,000,000 to 6,000,000 revolutions of engine wear a year and hundreds of miles of piston travel.

2. New pointed radiator with chrome screen, reinforced for longer life.

3. New Fisher bodies styled for added attractiveness, comfort, and longer life.

4. Heavier frame for greater strength and longevity.

5. Four point rubber engine mounting, lessening vibration and hence deterioration.

6. Bigger brakes for greater safety and longer wear.

7. New spring suspension, adding to both comfort and longer usefulness.

8. New air silencer giving greater freedom from noise.

9. New bonnet catch giving added convenience and protection from dirt.

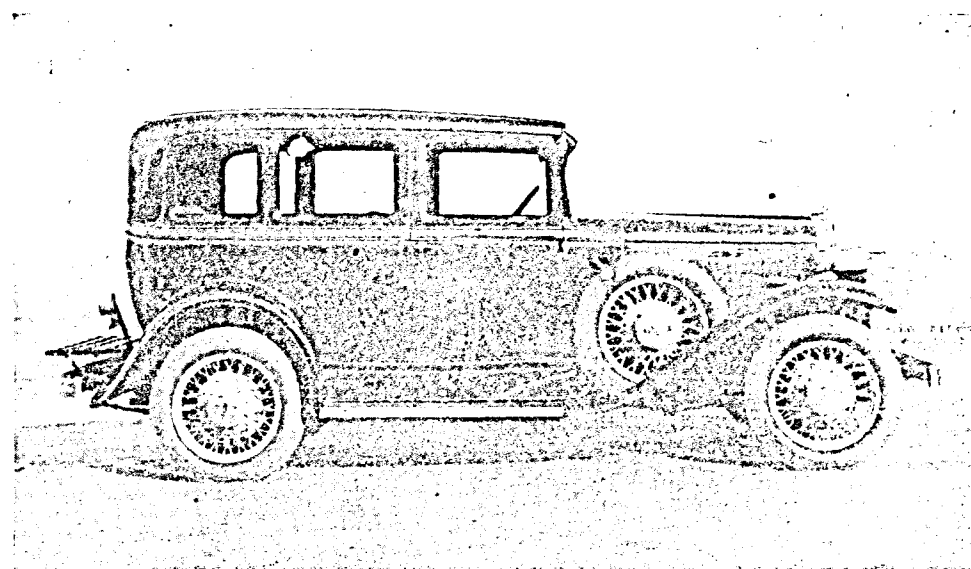
10. Longer wheelbase which adds to comfort and lessens deteriorating wear and tear on the body.

11. New wheel rim design allowing bigger air cushions and thus lengthening the life of the entire car.

12. New one-piece fenders which, besides adding to style, last longer.

The new Pontiac, as it flashes past on the road, more than ever creates an impression of fleet power. An increase in the wheelbase to a new length of 112 inches has permitted the designing of longer, lower appearing bodies, the latest achievement of Fisher craftsmen.

The most apparent external advancements in the styling of the distinctive new bodies are found in the sparkling chrome-plated screen which conceals and protects the radiator core, in the curved fender tie-bar supporting the new chrome-plated headlamps, in the longer hood secured by a single electro-plated handle lock on each side, in the one-piece full crown fenders carrying the indicator lamps, in the concave running board aprons smoothly carrying the body contour to the aluminium-bound, rubber-ribbed running boards; in the rear splash apron extending from fender to fender and in the slope of the narrow windshield pillars. New



The 1931 Pontiac 5-Passenger Sedan—a luxurious closed car, with body by Fisher. It has all the desirable qualities of the higher-priced cars.

belt mouldings and a new type of sun visor add further touches of distinction. Chrome-plated bumpers of a new design, employing a heavy, single convex bar, are provided on all models.

All the staunch qualities and basic features of design behind the reputation of Pontiac's 60 horse-power, moderate speed, long-lived 6-cylinder L-head engine are retained in the new car.

The body now literally is cushioned on rubber. Metal spring shackles having been replaced throughout by rubber bushings of a design originally developed in the General Motors Research Laboratories, the considerably heavier frame and the body now are entirely insulated by live rubber from the springs and axles. Incidentally, this design of spring shackle eliminates twelve chassis lubrication points.

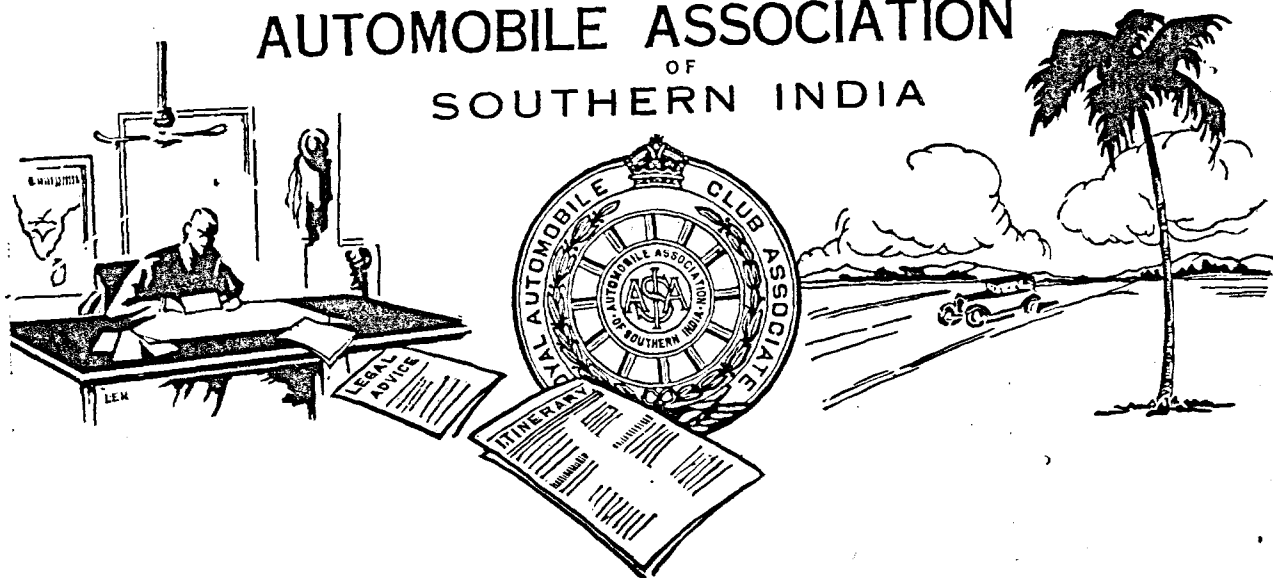
The four-point engine mountings also are of rubber and the transmission drive has been improved to include a rubber hub.

Despite the high road speeds at which the 60 horse-power engine is capable of driving the new Pontiac, the safety factor has risen further through the installation of the largest brakes in the Pontiac price class.

The new Pontiac is obtainable in four models for India, the tourer, custom sedan, sports coupe, and convertible coupe, all equipped with 6 wire wheels and the latter two with dickey seats.

The fact that Pontiac is the fourth largest selling motor car in the United States to-day irrespective of price should be ample proof to motorists India of the fact that the 1931 Pontiac line offers them unusual opportunities for carefree motoring.

AUTOMOBILE ASSOCIATION OF SOUTHERN INDIA



Secretary's Report for September 1931.

Committee Meeting.

1. The Committee assembled on 14th August 1931, and together with a number of routine items:—

Itineraries.

(a) Resolved to arrange for the issue of map cuttings with and to illustrate itineraries (The maps have not yet been received).

Demonstrations.

(b) Decided that the Secretary and District Representatives should be permitted to use their discretion when asked by Motor Dealers to observe demonstrations, reliability trials, etc., etc., provided the Association's settled policies not to advertise any particular firm or article and to promote Courtesy on the Road, are duly observed.

Petrol Prices.

(c) Decided to act in concert with other Automobile Associations in India with a view to bringing about a reduction in the prices of petrol.

M. V. Taxes.

(d) Confirmed a letter addressed to the Madras Government protesting against certain rules issued in a recent Press Communique regarding—

- (i) Only proof of payment of tax being endorsement on Registration Certificate.
- (ii) Permitting Licensing Officers to credit taxes tendered for a quarter earlier than that for which stated by payee.

(iii) Requiring payment of tax on vehicles not likely to be kept in the Presidency for more than 14 days.

(Note.—Government has declined to amend the rules, or to accept Association's suggestion that a Committee should be appointed to examine the Act and the difficulties arising thereunder. As a result a number of interested bodies including the A.A.S.I. have decided to form a Committee to collect data, prepare recommendations, and to depute the several Ministers concerned.)

License Fees for Vehicles Plying on Government Roads.

(e) Decided to oppose a bill about to be considered by the Madras Government by which heavy fees are to be levied on Public Service and Commercial Motor Vehicles plying on Government Roads in Malabar.

(f) Also decided to afford full support to the West Coast and Hinterland M. T. Association in a movement to effect a reduction of license fees now levied on Public Service and Commercial Motor Vehicles throughout the Presidency.

Insurance.

(f) Decided to extend the existing agreement with the N. E. M. General Insurance Association for the year 1932.

Decorated Car Procession.

(g) Decided to organise a Decorated Car Procession on "Poppy Day" 11th November 1931, in aid

of ex-service charities. Their Excellencies the Governor and Lady Beatrix Stanley have expressed their intention to grace the Procession with their presence.

(h) Confirmed a letter addressed to the Administration of Coorg, protesting against the police practice of seizing driving licenses.

District Representatives.

2. Mr. U. Sanjiva Rao has resigned duty as Honorary District Representative for Malabar, and has handed over to Mr. R. Sridhar Rao.

M. V. Tax & Members of A. F. (I).

3. It is understood that although the Madras Government have stated that M.V. Licenses should be issued free to certain member of the A. F. (I) there is considerable doubt as to the form of exemption certificate required, and the authority competent to issue it; also that the matter is under reference to the Government of India.

Pending a decision free licenses will not be issued, and no steps will be taken against such members of the A.F. (I) to enforce payment.

Roads.

4. A number of improvements have been completed during the months:—

Rice Causeway.

(a) Repairs to the Rice Causeway on direct Madras, Chittoor, Bangalore Road have been completed.

(Note.—Plans and Estimates are being drawn up for the construction of a bridge near the site of Rice Causeway.)

Wenlock Causeway Ranipet.

(b) Sanction has been accorded to the moving of the protecting chains from the upstream to the down stream side of the Wenlock Causeway. This will prevent vehicles from being washed off the causeway.

(Note.—A.A.S.I. water gauges will be erected at the Causeway when this work is completed.)

Palar River, Chingleput.

(c) Repairs to the Palar River Causeway (3 miles South of Chingleput) have been completed.

(d) Restoration of the Kiliyar River Bridge (near Madurantakam on G. S. Trunk Road) has been completed.

G. S. T. Road Tindivanam to Toledur.

(e) All bridges and Causeways between Tindivanam and Toledur on the G. S. T. Road have been completed though some are not yet officially opened for traffic, motorists are using them. The road is still under repair in places.

(Note.—Motorists proceeding to Trichinopoly and the South may now proceed by the direct (Vilupuram) road instead of via Pondicherry).

G. N. Trunk Road Bridges.

(f) The Vamsadhara (Ganjam District) and Yerucalava (Kistna District) River bridges on the G. N. T. Road have been completed and opened to traffic.

(Note.—Other unbridged streams on this road (except the Pennar, Kistna, and Godaveri Rivers) inside the Madras Presidency) are either being or are about to be bridged.

Kortaliayar River.

(g) The Kortaliayar River Bridge on G.N. Trunk Road in Chingleput District has been closed temporarily for repair to the decking. A diversion road has been laid in river bed but in case of flood traffic will be allowed to cross by the bridge.

(h) A small bridge is under construction.

Toledur—Trichy Road.

At mile 168 from Madras between Toledur and Trichy. A diversion road will be maintained. The stream floods and drains very quickly; some slight delay may be anticipated during inclement weather.

Madras-Ranipet Road.

(i) Certain culverts are being widened on the Madras-Ranipet Road. While work is in progress only one half of the roadway will be available for traffic so motorists should drive with caution.

Flood Damages.

(j) Heavy rains on the West Coast have caused damage to roads and bridges the most important of which are:—

Gudalur-Vayitri Ghat Road.

(i) A big landslide has blocked the road which will not be cleared until the middle of September.

Tellicherry-Mannantoddy.

(ii) A similar slip has occurred on the Tellicherry-Mannantoddy Road.

Mangalore-Mercara Road.

(iii) A bridge on the Mangalore-Mercara Road has been damaged.

Travancore Central Road.

(iv) The Periyar River between Angamalai and Perampavoor on the Travancore Central Road is impassable.

Cochin-Munnar Road.

- (v) The new Cochin-Munnar Road is closed owing to a slip near Munnar and the flooded state of the Periyar River at Neeramangalam.

Cochin-Alleppey Road.

- (k) A Government Ferry has been established at the backwater crossing eight miles South from British Cochin. This ferry can carry motor cars and thus opens the coast road to Alleppey.

Traffic Madras City.

4. In view of uncertainty regarding the procedure to be followed at road crossings where traffic is controlled by light signals, it has been ascertained that the following rules apply:—

Turning right:—A vehicle will pass the signal (or "stop line") while the light is green and turn right as soon as traffic passing straight across the road junction will permit.

Turning left should normally be done only when the green light is displayed, but filtration is permitted provided turning vehicles keep close to the left of the road.

Signposts.

5. (a) Steps have been taken to have danger signs erected at various places in the Presidency, notably on the Kodai—Madura road and at Damal on the Madras-Ranipet Road.

(b) In my last report I commented on the "3rd. class Road—Drive with caution" boards which are prevalent in Salem District. The District Board Engineer informs me that sign-boards have been erected by the District Board as a legal safeguard against prosecution by motorists who meet with accidents when motoring on such roads. They do not necessarily imply that roads so marked are not motorable, but that motorists using them do so at their own risk.

One Day Tours.

6. The weekly series of illustrated One Day Tours in The Madras Mail has been continued. It is hoped to collect the series and publish them in book form in due course.

Touring Overseas.

7. During the month a motor car belonging to Captain Appel was shipped to Port Sudan.

Guide Book.

8. (a) Information for the new Guide Book continues to arrive and collation is in hand. This refers particularly to Travellers' Bungalows and unbridged river crossings, in which connection much assistance is being received from official sources.

(b) The preparation of a revised Touring Map is progressing, the first sheet being almost complete.

Affiliations.

9. The Burma Motor Association has agreed to a reciprocal arrangement whereby members of both Associations can transfer from one Association to the other on permanent change of residence, and obtain road information free while touring temporarily in the areas of the other Association.

Head Light Dazzle.

10. The Commissioner of Police Madras has kindly amended the police regulation regarding Glaring Headlights so as to approve of special devices which cause the rays of light to be deflected on to the roadway. The simplest method accepted by the Police is the covering of the lower half of the reflector with deep pink or dark red paper. This is not necessarily the cheapest as it ruins the reflector, nor the best as it has to be removed when travelling over dark mofussil roads in order to get adequate light.

There are two devices available in Madras both of which fulfil police requirements while leaving the full value of the head lamp available for use on the open road. They are:

(a) "The Green Eye" (Price Rs. 8 per pair Simpson & Co.), a device for use with the ordinary lamp bulb, which reflects the upward rays of light down on to a green lens. Full instructions for fitting can be obtained with the device.

(b) "The Philips' 'Duplo' bulb" Rs. 4 per pair Crompton Engineering Company which has two filaments of which the fine used for town driving is sunk below the edges of a small metal bowl effectively cutting off all upward reflection; the second filament is clear of the bowl and gives full headlight power.

In fitting the "Duplo" bulbs care is necessary to ensure that the bulbs are of the correct voltage for the car; and that the bulb sockets in the headlamps are fitted with two points for double filament bulb.

Where the headlamps are of the "Depressed Beam" type common on most cars of recent manufacture, it is necessary to have the reflectors turned one quarter of a circle, a process that needs a slight knowledge of "fitting," but can be done in a quarter of an hour by any handy man.

Membership.

11. During the month four new members were elected while six resigned or were not traceable and struck off the register. The membership on 31st August 1931 totalled 930.

MADRAS. }
2nd Sep. 1931. }

F. CHURCH,
Major (Retd.),
Secretary.

IRISH GRAND PRIX

FOR THE THIRD YEAR IN SUCCESSION *

MR N. BLACK, on an M-G MIDGET

1ST

DUBLIN, 5TH JUNE 1931.

USING

SHELL OIL AND PETROL

* 1ST, 2ND, 3RD & 4TH IN 1929
1ST, 3RD & 5TH IN 1930

LE MANS

24-HOUR RACE

Both the GRAND PRIX D'ENDURANCE
and RUDGE-WHITWORTH CUP

Won by

EARL HOWE and SIR H. BIRKIN

(ALFA-ROMEO)

USING

SHELL OIL

BURMAH-SHELL OIL STORAGE & DISTRIBUTING CO., OF INDIA, LTD.,

Incorporated in England.

CALCUTTA.

BOMBAY.

MADRAS.

KARACHI.

Agents.

DELHI

Some more facts for Figure Fans.

IN terms of price per pound, the American Automobile is selling at an average of about 35% below 1924. When the added values in the form of riding and driving comfort, greater speed, reliability and durability are considered, the 1931 purchaser is getting more than twice as much automobile as he had for the same price in 1924. One readily would have paid a big premium, perhaps 100% to have obtained in 1924 a car with 1931 characteristics.

Despite the fact that some companies have decreased the size of certain models and others have increased them, the cost per pound has declined in all instances except Rolls Royce and Cunningham. The cost per pound for open cars has changed very little. In a list of five passenger sedans of 20 companies, one finds many examples of reductions ranging from 32 to 37.

It is difficult to identify exactly the corresponding car of 1924 with current models because of the many changes in the number of cylinders, wheelbase, etc., but the purchaser of a five-passenger Chevrolet four cylinder sedan was given a car weighing 2,065 pounds at a cost of Rs. 1-1-0 a pound in 1924 whereas the present six-cylinder car weighs 2,685 pounds and sells at 11 annas a pound, and the present car has a wheelbase about seven inches longer than the 1924 model.

General Motors units have added to car size while making a smaller reduction in car prices, from 1924, than manufacturers who have reduced the weight of their cars. Buick, for example, sold a five-passenger four-cylinder sedan in 1924 which weighed 2,995 for Rs. 1-7-0 a pound but today it has a five-passenger eight-cylinder sedan which weighs 840 pounds more than the 1924 model but sells for Rs. 1-4-6 a pound.

Buick also sells a five-passenger sedan which weighs 3,170 pounds for Re. 1 a pound, or Re. 0-7-9 a pound less than the 1924 car. Buick has consistently followed the plan of lowering the selling price of a particular model while adding to its size.

It is interesting to find that where bodies were relatively light and chassis heavy in 1924, the trend has been toward reversing this relation. That holds true despite the fact that chassis have been made heavier by increasing the size of frames, adding four wheel brakes, using larger tires and

ARAMGARH (KULU) FRUITS.

The finest obtainable in India and straight from the Orchards to your table
Delicious William Pears from about 15th July for 6 weeks only
Our Famous Kulu Apples from about 20th July

4, 6, & 9 lbs. net for Rs. 2-8-0, 3-12-0 & 5-2-0 respectively.
Finest French Plums from 15th July 5 lbs. nett for Rs. 5-0-0
Hygienic dried apples and pears Rs. 1-2-0 per lb. or Rs. 5-0-0 per 5 lbs.

Pure Himalayan Honey in 2 lbs. tins for Rs. 3-0-0.

Fine Flavoured Black Tea (Certificate of Merit) 1, 2, & 5 lbs. tins for Rs. 1-14-0, 3-10-0 and Rs. 8-10-0 respectively.

Per V. P. P. inclusive Postage and Packing.

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P.O. Raison, Kulu, Punjab.

Tele. "Forrest Aramgarh" Raison.

more cylinders and that bodies have been lightened by cutting down height, using more steel and the adoption of electric welding instead of nails and rivets. The Chevrolet body for example, weighed 1,395 pounds and chassis 670 pounds in the 1924 car. Today, the relation is 1,892 against 793. Where the body was 67.5% of total weight in 1924 it is now 70.4% of total weight.

A good illustration of how price a pound has declined without very much change in car size is found in the eight-cylinder Cadillac. The car is of the same approximate size of body and wheelbase as in 1924 and has same number of cylinders. In 1924 it weighed 4,480 pounds and sold at Rs. 2-10-0 a pound. Today approximately the same weight car, much improved, sells for Rs. 1-11-0 a pound. That is a reduction of 35% in price a pound since 1924.

Automobiles still are the cheapest machinery in the world. Against an approximate price of 11 annas a pound for Chevrolet cars, an electric refrigerator sells at Rs. 1-10-0 a pound, the hot air furnace Rs. 0-13-9 a pound, a gas range Rs. 1-0-9 a pound a motor boat Rs. 4-5-0 a pound, a sewing machine Rs. 2-6-0, typewriter Rs. 8-3-0 vacuum cleaner Rs. 12-2-6, and a washing machine Rs. 1-8-0.

Announcing a new oil for your car. If you drive a DeSoto—Dodge—Essex—Ford (Model A)

Hudson—Packard—your
engine's design requires
a change to the new

MOBIL OIL

"AF"

The lubrication needs of the cars listed above—and others listed in the Mobiloil Chart at the right—call for this new Mobiloil "AF."

It is heavier in body than Mobiloil "A" and lighter than Mobiloil "BB."

It is made by the vacuum process in the world's most modern lubricating oil plants.

It is made to fit exactly the requirements of the cars for which it is recommended.

See your Mobiloil dealer. Try this remarkable new lubricant in your engine. If you drive one of the cars for which it is recommended, you will feel new response from correct lubrication.

Use only

MOBIL OIL

VACUUM OIL COMPANY (INC.)

Makers of high-quality lubricants for all types of machinery.

Make this Chart your Guide.

This abbreviated chart shows the correct grade of Mobiloil for Engines of many passenger cars. You will find the complete Mobiloil Chart at your Mobiloil dealer's.

Name of Car.	1931 Engine	1930 Engine	1929 Engine	1928 Engine
Auburn, Models 6-80, 76, 6-85 ..	..	AF	AF	AF
Auburn (all other models)	BB	BB	BB	BB
Chrysler 8, Imperial 8 & Models 70, 77 ..	BB	BB	..	..
Chrysler, Imperial 6 ..	..	BB	BB	BB
Chrysler (all other models) ..	AF	AF	AF	AF
Citroen 10 h.p. B14, B15 ..	..	..	..	A
" 10 h.p. C4 ..	AF	AF	AF	..
" C.6 & C.G.L. ..	BB	BB	BB	..
De Soto ..	AF	AF	AF	..
Dodge ..	AF	AF	AF	AF
Essex ..	AF	AF	AF	AF
Fiat (Models 514, 522) ..	AF	..	..	..
Fiat (All other models)	BB	BB	BB	BB
Ford Model A ..	AF	AF	AF	AF
Hotchkiss ..	AF	AF	AF	AF
Hudson ..	AF	AF	AF	AF
Nash, Single six, Standard six 6-60, 8-70 ..	AF	AF	AF	AF
Nash (all other models)	BB	BB	BB	BB
Oakland ..	BB	BB	AF	AF
Oldsmobile ..	AF	AF	AF	AF
Packard ..	AF	AF	AF	AF
Peugeot 5 h.p. ..	..	BB	BB	BB
" 9, 10, 11 h.p. ..	..	A	A	A
" 12 h.p. six cyl. ..	A	A	A	A
" Model 201 ..	AF	AF	AF	..
Plymouth ..	AF	AF	AF	..
Pontiac ..	AF	AF	AF	AF

The Blade Problem.

Our Contributor has our Sympathies but if His Difficulties are not Complicated by the Presence of Gramophone Needles He has Much for which to be Thankful.

FOR years I have been trying to find out what to do with old razor blades. I know, of course, that I can buy a what-you-may-call-it which enables one to utilise an old blade as a pocket knife, cigar cutter and miniature hatchet. But that isn't the slightest use, for I cannot use a million cigar cutters. I cannot even find use for the eighty-nine I already have. I know, too, that the blades can be reground. Of course they can, I've had some done, but I think the regrinder did the job with a file. Or perhaps he had served his apprenticeship as a sansharpener. Or perhaps.....Anyhow, I refuse to have any more blades reground.

Once I tried the plan of throwing used blades away. The garbage can seemed to be the obvious place, but apparently it was too obvious because I am still paying exorbitant compensation to the mali who discovered the hiding place. Once in a fit of raging frenzy I hurled a handful of blades to the four winds of heaven. Only once, mind you, but everybody in the neighbourhood is still very annoyed about it.

I have thousands of razor blades. I have a millionten millions. They lie about all over the bungalow; we wade about knee deep in the things; we find them in the soup and in the bath-water; and everyday sees any hasty movement becoming more and more perilous. We are helpless to stem the rising tide, and I can see the not far distant day when we shall be driven out of house and home by these infernal blades.

Blades, blades everywhere Blades in the food, blades in the bath, blades in the bed. And it is getting worse. Every day we wonder what is going to happen next, and there has been one casualty already. Arethusa, my Airedale, disappeared a week ago, and though I know she is somewhere under this mass of blades all search has proved fruitless.

Whatever is to be done I am at my wit's end to decide. I might, of course, alleviate matters temporarily by using a razor of the old type, but knowing my capabilities for facial surgery with a razor of the safest safety type, I'm rather frightened to let

myself loose on my face with a naked blade. My face has nothing about it which would characterise it as a masterpiece among faces; but strange as it may seem, I yet have a certain regard for it.

Again there is the alternative of a beard. And yet, on second thoughts there is not the alternative of a beard. Far rather an ignominious death by blades than wander the earth looking like a moth-eaten lion. So it seems that I am doomed—fated to be crushed by millions of steel wafers.

Be warned, young men. Take heed in time. Blades are worse than drugs. Once you let them get a hold on you, you are the inevitable victim. When the time comes for you to resort to sterner measures than offered by a lighted candle to remove the down from your youthful cheeks, use an old fashioned razor; use a scythe; use a carving knife; use a lawn-mower; use anything you can, but don't—for goodness sake—don't become a blade addict. If you do you will be dragged down even as I am being dragged down.

Surely the authorities can do something. Cannot the P. W. D. send out some of their lorries with orders to proceed slowly through the residential districts with a notice pasted in a conspicuous place on each vehicle:

"Bring Out Your Blades"

Cannot Collectors have the collection of used blades added to their list of duties? The blades could be collected so easily, and far be it from me to offer the authorities suggestions as what they could do with them; and what is more, I don't care. All I ask is that they take them away from me. Right away somewhere.....

A moment, please.....My wife has just broken the news that the cook has been missing for three hours, and she wants me to help her look for him. I suppose I must, but I know it will be useless. Only too well do I know where he is. The blades have got him—even as in time they will get me, unless—unless.....

Oh! For pity's sake send something to take them away.

CONSTANT VALUE

Two Years ago The South India Motor Owner first made its appearance and the value of the journal has been consistently upheld. Good and instructive reading matter—neat illustration and a desire on the part of the publishers always to help the reader, make this journal invaluable. Have you ensured receiving your copy regularly by subscribing?

NATIONAL EMPLOYERS MUTUAL ASSOCIATION LTD.

BRITISH EMPIRE MUTUAL

MOTOR INSURANCE

We can offer you the best Policy obtainable in India to-day—Write for Particulars.

CHIEF AGENT:
ADDISON & Co., Ltd.
MADRAS.

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Publisher's Notices

The South India Motor Owner

Published Monthly by

Eastern Technical Publications,

Wood's Road, 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 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 page 247.

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.



Volume III.

The December 1930 issue of the South India Motor Owner concluded Volume II, and a limited number of volumes bound in full cloth are available for those readers who may wish to keep their copies for reference.

Complete Bound Volume Rs. 6.

Readers Own Copies Bound Rs. 3
plus postage.

Missing copies can be
replaced : As. 4 per copy.

As the stock of past issues is limited we would urge readers requiring bound volumes to order at once to avoid disappointment.

Eastern Technical Publications,
Mount Road,
MADRAS.

EASTERN MOTOR TRANSPORT

A New Monthly Magazine Devoted to Commercial Transport
and Allied Interests throughout India, Burma and Ceylon.

The rapid growth of motor transport in India and the East can be discussed by experts in this field. The New magazine here announced will aim to fill this need, and all interested readers of this paper are asked to get into touch with the publishers.

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EASTERN MOTOR TRANSPORT

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MADRAS.

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To EASTERN TECHNICAL PUBLICATIONS,
MOUNT ROAD, MADRAS.

Please place my name on the subscription list of the **South India Motor Owner** and send mecopies monthly until countermanded, commencing1931.

I enclose Rs.....being the post-free subscription for twelve months.*

Name.....

Address.....

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(Block letters are preferable.)

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Diamonds !

WHEREVER wealth and dignity are to be found, there also will be seen precious stones in abundance. To-day, when there are so many imitation "stones" on the market there is a still greater fascination in owning and wearing the finest diamonds.

Our experience and the advantage of cash purchases direct from the Continent is in your service

P. CUNNIAH NAYUDU & SON.
China Bazaar Road,
MADRAS.

For the small subscription of Rs. 3 the 'South India Motor Owner' will be sent to you post free for 12 months—there is a simple form over-leaf which is easily filled in.

T

HERE is a new force shaping and directing the intellectual and material life of mankind, guiding with a strong hand the destinies of the world—Advertising.

LET US HELP YOU TO PLAN YOUR ADVERTISING

Advertisement Manager:

THE SOUTH INDIA MOTOR OWNER

MOUNT ROAD, MADRAS

11134

Vol. III. No. 10

OCTOBER, 1931

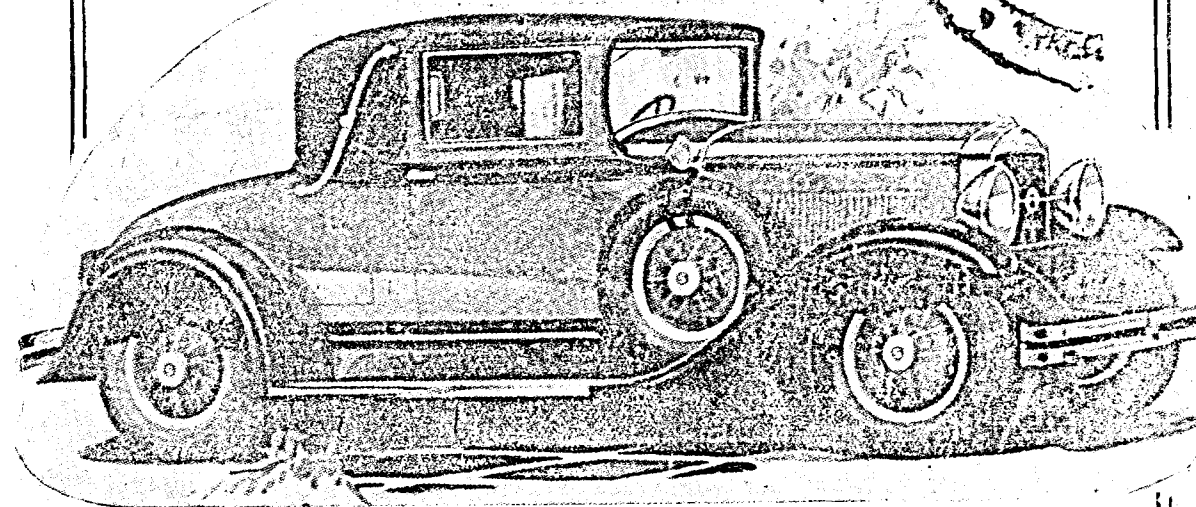
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THE SOUTH INDIA

Registered ..
No. M. 2515

MOTOR OWNER

Official Organ of the Automobile Association of Southern India



Whether you contemplate buying a car, a tyre, oil, or even the smallest accessory there are always certain considerations which, if taken into account, will help you to make a purchase of greater value. Recently we have had the pleasure of helping many of our readers toward the making of wise purchases and we hope that many more readers will permit the staff of the South India Motor Owner to assist them in this way.

EASTERN TECHNICAL PUBLICATIONS, MOUNT ROAD, MADRAS.

ARE YOU A MEMBER

of the

**Automobile Association
:: of Southern India ::**

THE Association's "Abolition of Tolls" campaign, after three years effort, has been successful—but at a cost. Efforts must now be directed toward reduction of the rates of taxation for which combination of motorists and others is essential.

TO protect themselves motorists must combine, and there is no better way of doing so than by joining the Automobile Association of Southern India.

WRITE to-day for details of the Association's activities, organisation, etc., and a form of application for membership to:—

The Secretary

Automobile Association of Southern India
Kardyl Buildings, Mount Road, Madras

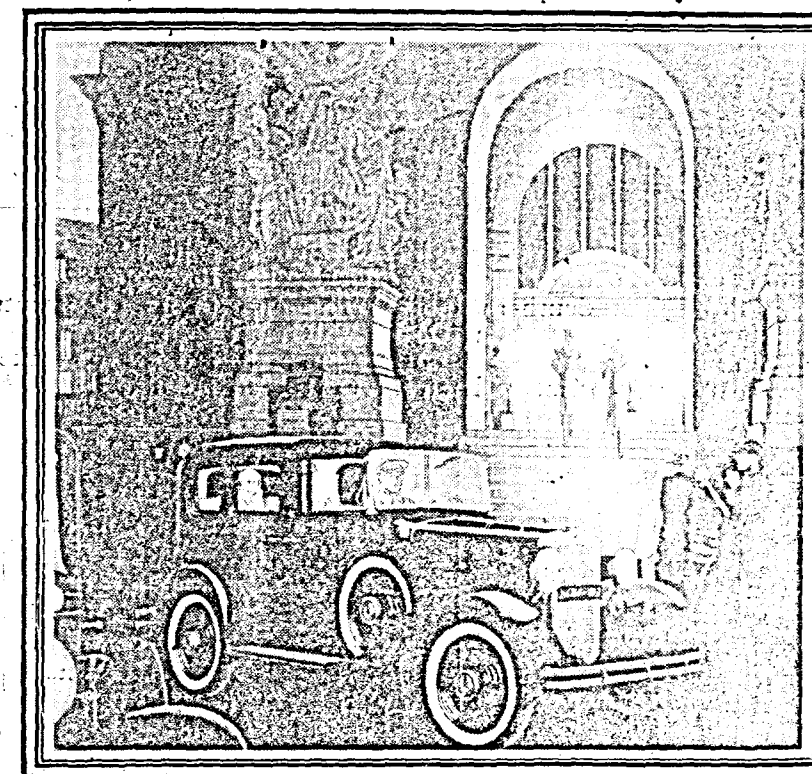
Phone: 2439.

P. O. Box No. 1229.

'Grams "S.I.M.U."

AT SMART PLACES EVERYWHERE
well-known people are seen in this Beautiful Car

In England
At the Royal Ascot Races
At the Carlton Hotel, London
In France
At the Paris Opera
At the Ritz
At the Casino in Biarritz
In Germany
At the Hotel Stephanie
at Baden-Baden
At the Hotel Aldon in Berlin
In Spain
At the Teatro Real in Madrid
At San Sebastian
In the East
At the Willingdon Sports Club
in Bombay
At the Imperial Hotel in Tokio



A new Chevrolet Town Car before the Opera in Paris

EVERY part of the world has these centres of social life . . . the theatres, clubs, hotels and fashionable places where smart people gather.

Why do people who frequent these smart places so often choose the Chevrolet . . . place it in their comfort, finished in

in their garages alongside of the most expensive cars?

There are many reasons. Chevrolet is chosen for its convenience, its smartness. It is the ideal personal car . . . even the standard models are ample

in their comfort, finished in

every detail of their appointments, always satisfying in their steady smooth flow of six-cylinder power.

Also, Chevrolet now offers a series of De Luxe models . . . cars with extra touches of luxury, smartness and comfort.

The New Chevrolet Models are priced from Rs. 2,600 upwards.



CHEVROLET . . . A PRODUCT OF GENERAL MOTORS

THE SOUTH INDIA MOTOR OWNER

Sales and Service Guide

Arranged alphabetically under vehicle headings this guide should prove extremely useful to motor owners throughout Southern India. The up-to-date Service Station and Sub-Dealer will find entries in this section to be a profitable method of inexpensive advertisement. Each entry in these

columns is charged for at the rate of Re. 1 per line, but no contract can be accepted for less than six consecutive insertions. Correspondence both from Dealers and Car Owners invited in order to make this section as useful as possible.

CARS

Buick.

CALICUT	... The English & Scottish Joint Co-operative Wholesale Society Ltd.
MADRAS	... Byramshaw & Co., Ltd.
COLOMBO	... C. A. Hutson & Co., Ltd.

Cadillac.

MADRAS	... Byramshaw & Co., Ltd.
COLOMBO	... C. A. Hutson & Co., Ltd.

Chevrolet.

BANGALORE	... Nankervis Ltd.
BELLARY	... Asquith & Co.
COIMBATORE	... Stanes Motors (South India), Ltd.
CALICUT	... Stanes Motors (South India), Ltd.
ERNAKULAM	... Stanes Motors (South India), Ltd.
TRIVANDRUM	... Stanes Motors (South India), Ltd.
MADRAS	... Byramshaw & Co., Ltd.

MADURA	... T. V. Sundram Iyengar & Sons., Ltd.
OOTACAMUND	... The General Automobiles, Ltd.
SECUNDERABAD	... Hormusjee & Co.
TRICHINOPOLY	... Iyer Motor Co., Ltd.
VIZAGAPATAM	... The Andhra Engineering Co., Ltd.
COLOMBO	... Rowlands Garages Ltd.

Chrysler.

MADRAS	... Jones & Co.
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Dodge.

COIMBATORE	... United Motors Ltd.
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Erskine.

MADRAS	... Romer Dan & Co.
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Hillman.

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

La Salle.

MADRAS	... Byramshaw & Co., Ltd.
COLOMBO	... C. A. Hutson & Co., Ltd.

Morris.

COIMBATORE	... United Motors Ltd.
MADRAS	... Addison & Co., Ltd.

Nash.

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

Peugeot.

MADRAS	... Romer Dan & Co.
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Pontiac.

COIMBATORE	... Stanes Motors (S. India) Ltd.
COLOMBO	... Rowlands Garages Ltd.

Singer.

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

Studebaker.

MADRAS	... Romer Dan & Co.
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Vauxhall.

COIMBATORE	... Stanes Motors (S. India), Ltd.
COLOMBO	... Rowlands Garages Ltd.

Wolseley.

MADRAS	... Union Company.
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Studebaker Trucks.

MADRAS	... Romer Dan & Co.
--------	---------------------

TRUCKS.

Chevrolet Trucks.

BANGALORE	... Nankervis Ltd.
BELLARY	... Asquith & Co.
COIMBATORE	... Stanes Motors (South India), Ltd.
CALICUT	... Stanes Motors (South India), Ltd.
ERNAKULAM	... Stanes Motors (South India), Ltd.
TRIVANDRUM	... Stanes Motors (South India), Ltd.
MADRAS	... Byramshaw & Co., Limited.
MADURA	... T. V. Sundaram Iyengar & Sons., Ltd.
OOTACAMUND	... The General Automobiles, Ltd.
SECUNDERABAD	... Hormusjee & Co.
TRICHINOPOLY	... Aiyer Motor Co., Ltd.
VIZAGAPATAM	... The Andhra Engineering Co., Ltd.
COLOMBO	... Rowlands Garages Ltd.

PULLING POWER

Pulling power in a journal is just as important as pulling power in an engine.

O O O

This is one of the reasons why small advertisement space in this paper has proved its value to advertisers throughout S. India.

The Next issue of the South India Motor Owner will be specially interesting.

Make sure of your copy now.

Dodge Trucks.

COIMBATORE	... United Motors Ltd.
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Diamond Trucks.

MADRAS	... Cromandel Automobiles.
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Fargo Trucks.

MADRAS	... Jones & Co.
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Federal Trucks.

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

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ARAMGARH (KULU) FRUITS.

The finest obtainable in India and straight from the Orchards to your table
 Delicious William Pears from about 15th July for 6 weeks only
 Our Famous Kulu Apples from about 20th July
 Finest French Plums from 15th July
 5 lbs. nett for Rs. 5-0-0
 Hygienic dried apples and pears Rs. 1-2-0 per lb. or Rs. 5-0-0 per 5 lbs.
 Pure Himalayan Honey in 2 lbs. tins for Rs. 3 0-0.
 Fine Flavoured Black Tea (Certificate of Merit) 1, 2, & 5 lbs. tins for Rs. 1-14-0, 3-10-0 and Rs. 8-10-0 respectively.
 Per V. P. P. inclusive Postage and Packing.

Apply

C. FORREST,

Managing Partner,
 Aramgarh & Raison Orchards,
 P.O. Raison, Kulu, Punjab.

Tele. "Forrest Aramgarh" Raison.



MOTOR INSURANCE

We can offer you the best Policy obtainable in India to-day—Write for Particulars.

CHIEF AGENT:
ADDISON & Co., Ltd.
MADRAS.

SHELL SUCCESSES 1931

BROOKLANDS DOUBLE-12"

FIRST

M-G. Midget driven by Earl of March and C. S. Stainland
65.6 M.P.H.

Also TEAM PRIRE

IRISH GRAND PRIX

FIRST

M-G. Midget driven by Norman Black 64.76 M.P.H.

Also won PHOENIX TROPHY, R.I.A.C. TROPHY,
ASORSTAT CUP

LE MANS GRAD PRIX

FIRST

Alfa-Romeo driven by Earl Howe and Henry Birkin
78.13 M.P.H.

Also RUDGE-WHITWORTH CUP

ULSTER T. T.

FIRST

M-G. Midget driven by Norman Black 67.9 M.P.H.

All on

SHELL OIL AND PETROL

BURMAH-SHELL OIL STORAGE & DISTRIBUTING CO., OF INDIA, LTD.,

Incorporated in England.

CALCUTTA,

BOMBAY,

MADRAS,

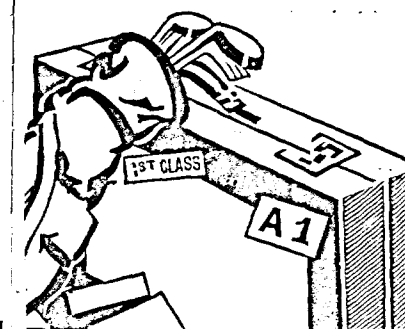
KARACHI,

Agents.
DELHI.

THE HOGARTH PRESS

It is our earnest endeavour to produce good work at reasonable prices to the satisfaction of our customers. When next you have printing in mind ask us to submit our suggestions and estimates.

WOODS ROAD,
Mount Road : : MADRAS.



Drive A New Car

Spray-painting with DUCO can make your car look neat and new. The hood and upholstery too, can be renovated by our experts—so why drive a shabby car?

We are specialists in spray-painting and can quote you surprisingly low prices for complete renovation.

Our bus body building department is at your service too.

HAROLD & CO.,
General Patter's Road,
MADRAS.

MACKENZIE & CO.,
Automobile and Mechanical
Engineers.
37, South Parade,
BANGALORE.

NANKERVIS, LTD.

Automobile Engineers

25, South Parade,

BANGALORE.

Distributors of

Chevrolet Cars and Trucks

and Oldsmobile Cars

for the Mysore

Province and Coorg

Chevrolet Sales and Service.

BOUND VOLUMES
See page 294

Pack Your Bag
For A Long
Week-end

and stay at

**Lavender's
Hotel**
BANGALORE

Read
"The South India Motor Owner"
Every Month.

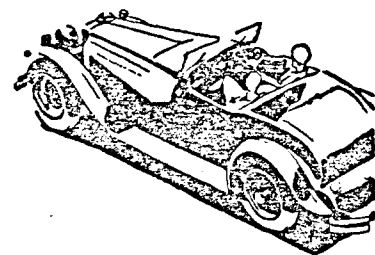
A regular small advertisement in the South India Motor Owner is both economical and effective. It is read by motorists who have learnt to search the pages of this journal for their needs, and who write to us for information before making a purchase.

Announcing—

AN UPPER CYLINDER LUBRICANT by WAKEFIELD

"Castrollo"—as remarkable as Castrol itself!

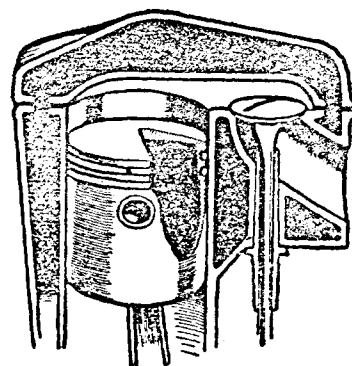
FOR some time past, motorists have been advised to mix a little light oil with their fuel to aid the lubrication of those parts of the engine which are, in the ordinary way, inaccessible. In April, 1930, Mr. H. P. McConnell, M.S.A.E., A.M.I.A.E., F.I.M.T., wrote in the "Riley Record": "I have always advocated the advisability of introducing a little oil in with the petrol."



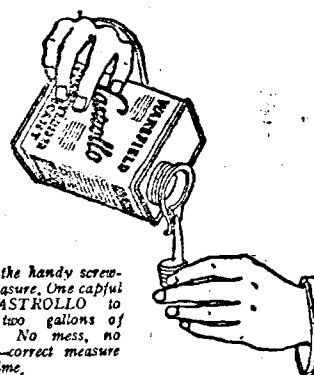
Easier starting. Better all-round performance on the road.

Wakefield's were quick to realise the need for a really efficient and economical upper cylinder lubricant. Many attempts were made to produce an ideal oil, and, at last, "Castrollo" was evolved, and was found, under test, to be eminently satisfactory in every way.

"Castrollo" has solved the problem for the conscientious car-owner. "Castrollo" gets just where you want it. . . . the top end of the cylinders, piston rings, valves and valvestems. As carbon is unable to stick to an oily surface, "Castrollo" effectively reduces carbon formation, the moving surfaces of the combustion chambers being entirely covered with a thin oily film. Valves do not stick, and starting is made very much easier. All-round performance of many cars is improved, the car remaining much



As carbon is unable to stick to an oily surface, CASTROLLO minimizes carbon formation, the moving surfaces of the combustion chamber being entirely covered with a thin oily film.



Here's the handy screw-cap measure. One capful of CASTROLLO to every two gallons of petrol. No mess, no bother—correct measure every time.

"livelier" for a longer time before the final decarbonisation.

"Castrollo" is remarkably economical. A quart tin costs Rs. 4/-, and contains sufficient oil to treat 160 gallons of fuel—considerably less than $\frac{1}{2}$ an anna a gallon. "Castrollo" is also sold in pint tins at Rs. 2/4/. Each tin has a screw-cap which acts as a measure, one capful being sufficient for two gallons of fuel. This simple device saves much time and trouble, and when filling up the whole operation should only take a few seconds.

Why not give "Castrollo" a personal trial? It is obtainable from most dealers or if preferred, direct from any of our offices.

WAKEFIELD

CASTROLLO

Rs. 4-0 QUART TIN

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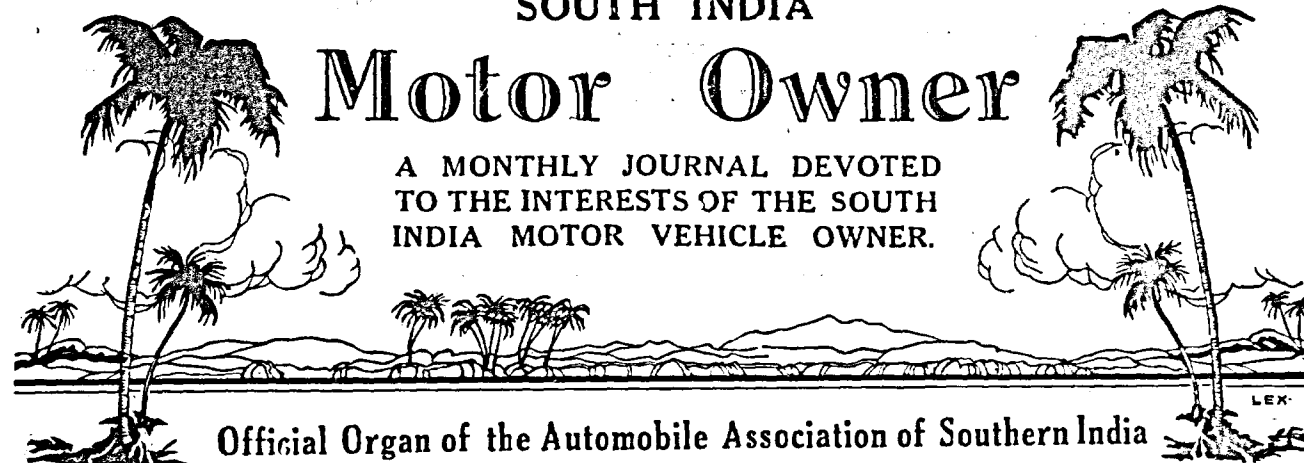
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Motor Owner

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TO THE INTERESTS OF THE SOUTH
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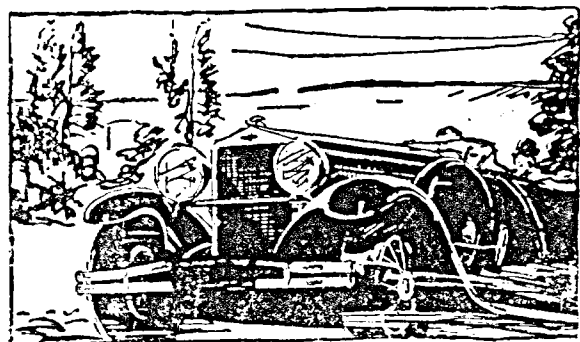
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Perhaps You Don't Know-?

A New Series of Articles
Explaining in Simple Fashion
Frequently Encountered Technicalities.

No. 2. How Engine Speeds are Limited.

THE power output of an internal combustion engine depends upon the speed at which it runs. Every motorist will have experienced the result of trying to run too slowly on top gear—even the slightest additional load will “stall” the engine. Automobile engineers, keeping this fact in mind, have increased engine speeds considerably of recent years in order to obtain greater power from the engines they design. A quite common engine speed at the present time is 3,500 r. p. m., at maximum road speed, whereas even a few years ago 2,000 r. p. m. was considered high for a power unit of similar type. During the past year or so, however, the engine speeds of private cars produced as standard models have remained more or less constant, so that it is interesting to consider whether a limit has been reached or whether this is just a “flat-spot” in the curve of progress.

The Meaning of Power.

First of all we can consider just what is meant by power and the reasons why power can be increased by raising the number of R. P. M. A definition of power often used is that it is the rate at which work is being done. It will be seen then, that the power output of any engine depends upon the explosive “punch” exerted on the pistons and the number of punches delivered per minute. Hence there are two ways of raising the output, these being, first, to increase the “punch” either by using bigger cylinders or by raising the compression, and, secondly, to increase the number of explosions occurring per minute by raising the revolution speed of the crankshaft. Both these methods have been employed on British and American automobiles

and each has its limitations. Increase in engine size often makes imperative the reduction in weight to an inefficient minimum of the interior moving parts. Again, high compression is productive of rough running and knocking unless special fuels be used. The second method has therefore commended itself as enabling greater power to be obtained without altering the size of the engine or the compression, and in order to utilize the higher engine speed, top-gear ratios have been progressively lowered until the average figure has become 5 to 1. Additionally, the tendency to use small wheels has increased the rate at which the engine turns for a given road speed.

In passing it is interesting to note that at one time doubts were expressed as to whether the burning gases could expand fast enough to propel a piston if the engine speed became very high. Modern research has, however, shown that the rate at which the explosion occurs can be controlled according to the shape of the combustion chamber, and it is in any case adequate to allow the use of a higher piston speed than that employed at the present time.

Another difficulty which arises at higher engine speeds is to persuade the petrol-air mixture to fill the combustion chamber in the time available on the induction stroke. At a normal modern engine speed of 3,000 r. p. m., there is only the space of about 1—100th part of a second for the gases to pass through the open inlet valve.

Advantages of the Superchargers.

Despite the progress which has been made in the design of valves and valve gears it is difficult to

combine in one engine the capability for inducing a full charge at high speeds with smooth running and good pulling power at low speeds. This is why the supercharger may well come into its own for touring engines; by delivering the mixture under pressure it solves the difficulties ordinarily experienced with induction and distribution.

There remains, however, a grave problem associated with high speeds which we have not yet mentioned. This is the excessive loading of the bearings which is caused by the inertia of the working parts—that is, the pistons, gudgeon pins and connecting rods.

No matter how fast an engine may be running, each piston must come to a standstill at the end of its stroke in order to be able to restart in the opposite direction. Towards the middle of each stroke it is travelling at a very high speed—60 m.p.h. or more in many cases—so that to bring it to a standstill and reverse its motion requires the exertion of forces of very large magnitude.

The natural inclination of a piston that is moving upwards a high speed is to fly out through the cylinder head, and it is only restrained by the connecting rod which couples it to the crankpin. Consequently, very heavy loads are placed on the bearings and these loads (in many high-speed engines) actually exceed the forces set up by the exploding gases.

In a similar way, the lower end of the connecting produces a continual load on the big-end owing to the fact that it is being whirled in a circle. This load is simply due to centrifugal force and at the end of each stroke it becomes added to the inertia load produced by the piston. Both these loads increase in proportion to the square of the speed, so that if the revs. be doubled the inertia forces applied to the big-end are quadrupled.

Weight Reductions.

The obvious remedy is to reduce the weight of the working parts to a minimum, and this has been done, first, by using light aluminium alloys for pistons and connecting rods, and, secondly, by increasing the number of cylinders so as to reduce the size of individual working parts.

A very interesting analysis was made by Mr.

E. W. Sisman in a paper read before the I.A.E. some time ago, and reported in “The Motor,” in which he compared the inertia forces acting upon the crankpins in four similar engines each of 3 litres capacity. These forces were calculated for engines with four cylinders, six cylinders, eight cylinders and twelve cylinders, and, depicted graphically in a diagram reproduced, the forces are, roughly, halved in a straight-eight as compared with a four-cylinder engine of equal capacity.

An increase in the number of cylinders produces other advantageous effects such as smoother torque, absence of vibration and so forth, so that it may be expected that this trend will continue and will be responsible for slight increases in engine speed. It is not likely that any further reductions can be made in the weight of pistons and connecting rods required for a given size of bore until metallurgists evolve alloys which are still lighter than those which are at present in use.

Unfortunately, light aluminium alloys such as are in common use for pistons have shown a tendency to produce rather rapid cylinder wear, but before long this trouble may be entirely obviated by the general use of hard steel or iron liners. In this way the use of still lighter alloys for pistons may be made possible and further increases in engine speed would follow.

Are Fast Engines “Fussy?”

“Fast engine are fussy” used to be a favourite dictum with motorists fond of high top gears and large, low-speed power units. At one time there was some justification for this criticism, but the modern multi-cylinder engine has been made so smooth and silent that it no longer becomes obtrusive when turning fast.

A more serious criticism of fast-running engines is that they are not economical, in that they wear out more quickly and use more petrol than the slow-speed type. Current improvements in transmission systems are providing the remedy by giving the driver at least two silent speed ratios and an easy change from one to the other. He is thus enabled to use “revs” for acceleration or hill-climbing and to reduce the engine speed for fast cruising on main roads.

Creosote as a Substitute for Petrol

Successful Experiments

with

A New and Economical Fuel.

A NEW non-inflammable petrol substitute which has been evolved at the Belfast Corporation Gas Works has now been submitted to exhaustive tests, and is giving every satisfaction from the point of view of mileage per gallon and cost of production. The Belfast Omnibus Company have adapted eight of their buses for using this coal tar oil. The Omnibus Company at their works are converting a number of lorries for private firms into coal tar oil burners. The cost of the adaptation is about £50 but it is calculated that this sum will be saved in a few months in lower cost of fuel and increased mileage.

Early Experiments

The first experiments with the object of producing from coal tar oils a motor fuel suitable for use in the ordinary type of internal combustion engine with magneto ignition were made in March, 1929, when an unwashed fraction of light creosote, distilling between 0.950 and 0.990 specific gravity with 29 per cent. tar acids, and having a closed flash point of 147 degrees F., was used. The experiment was made on an A.E.C. engine with the usual magneto ignition, using a mixture of 50 per cent. light creosote and 50 per cent. commercial petrol but the results were not satisfactory.

The report of further experiments appearing in a recent issue of Motor Transport shows that the oil washed free from tar acids gave no more satisfactory results as approximately 40 per cent. naphthalene settled out; but after further experiments it was considered that more satisfactory results could be obtained with an oil containing at least 15 per cent. tar acids to which was added 10 per cent. water white solvent naphtha to hold the naphthalene in solution.

First Test.

The first practical test on this mixture was not altogether successful the engine being very sluggish on starting up and in running but it led to the conclusion that the oil would give satisfactory results provided certain alterations were made.



Four buses have now been in service for about two months, and the company is so satisfied with their performance that it is equipping six more buses.

Starting on Petrol.

It is necessary to start the engines with petrol, owing to the high vaporising temperature of the creosote in the usual way, and consequently two carburettors are provided—one a horizontal Solex for dealing with the creosote and the other a vertical one for petrol. The engine is started up and the bus is run on petrol until the exhaust manifold has become sufficiently heated to ensure vaporisation of the creosote. This can be achieved in a distance of about fifty yards, and thereafter the creosote carburettor is operated alone, the supply from the petrol carburettor being automatically cut off and completely out of action. The petrol carburettor automatically comes into operation when the creosote is out of service, but when stopping for the purpose of picking up or setting down passengers the vehicle can be driven off on creosote.

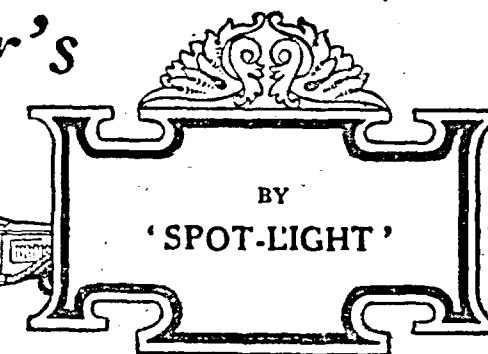
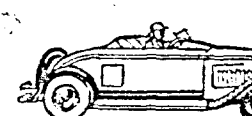
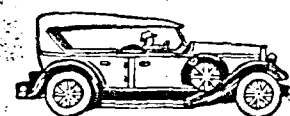
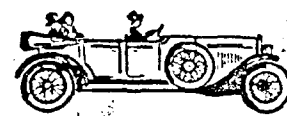
Carbon Formation.

With regard to carbon formation, one engine using creosote completed 15,000 miles without showing any need for decarbonising. This is no doubt due to the tremendous antidetonating properties of the fuel. There is no increase over petrol in the rate of fuel dilution of the crank case oil, and on such parts as valves, pistons and cylinders the wear is actually below normal.

The performance under normal running conditions of the fuel on the buses which have been using it has been most satisfactory from the point of view of climbing ability, maintenance of speed, absence of knocking and fuel consumption.

The fuel consumption when using petrol alone worked out at an average of eight miles per gallon but when running on the creosote mixture the consumption is greatly reduced, and an average of over twelve miles per gallon of creosote is being maintained. The fuel can be marketed at about 40 per cent of the price of commercial petrol.

From an Owner Driver's Note Book



Millions of Tyre Miles.

IF the average tyre is good for 7000 miles, it rather staggers one to contemplate the distance which could be travelled on a thousand sets of tyres; to tot up mentally the number of wheel revolutions, and to imagine the puncture potentialities of such an endless stretch of road. Fortunately, there are few sparks to set alight the train of thought leading to such mental gymnastics, and the reason I have come to think of these matters is the result of a visit recently paid to the office of the Goodyear Tyre Company in Madras, when I was permitted to take a stroll through the stock warehouse attached to the office.

Here there must be thousands of tyres stacked in the racks set in long towering alleyways running from one end of the building to the other. There are big tyres and little tyres; thin cycle tyres and huge truck tyres; and though there must be millions of tyre miles stacked on these shelves, they are emptied and filled many times during the course of a year to supply Southern India motor transport with yet more trouble free miles.

A Valuable Handbook.

I have been permitted to see advance proofs of the Handbook and Diary which is being produced by the publishers of this journal, and these show that the book is one which will prove of the greatest assistance to owner drivers throughout India. The subject matter deals in a comprehensive, yet simple manner with technicalities of interest to the average motorist; and the information with regard to motoring in general is such that all owners who desire to obtain the best service from the cars

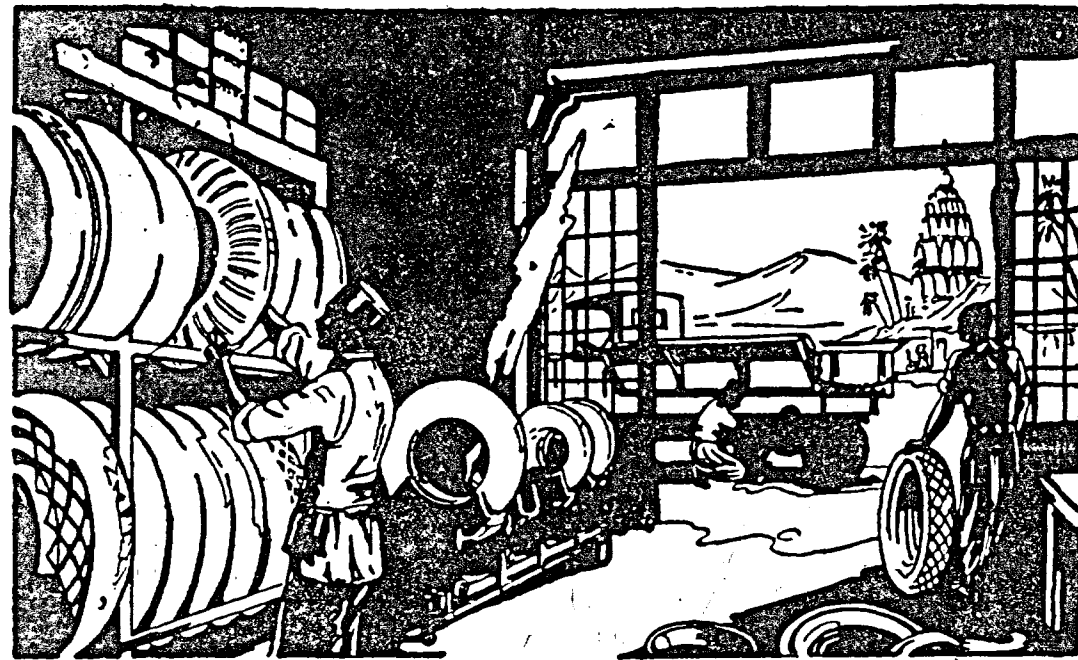
and the utmost pleasure from their week-end trips cannot afford to neglect the opportunity of acquiring this book.

The Diary section is laid out in a most useful way, and the inclusion of running-cost and expenses sheets for each month provides the motorist with a means of detecting extravagances and noting economies. I understand that full particulars may be obtained by all who may be interested from the publishers of the S.I.M.O. on receipt of a postcard.

Comparing Notes.

One of the advantages of being a keen motorist instead of just an ordinary kind of rider in a motor car, is that one gets endless good fun in swapping fibs with another of the same species. When two or more motor 'fans' are gathered together engrossed in automobilious conversation there are usually some hefty stories to be heard, but apart from the pleasure derived from capping the previous crammer, I frequently pick up some quite useful tips.

The other evening, for instance, the subject of thefts of small removable parts was under discussion. Plated accessories such as radiator cap mascots, bulb horns and what-not are expensive items to be continually replaced. Though the locking of all such parts with a small tapped hole and a grub-screw makes it rather troublesome whenever the petrol tank is being filled or water added to the radiator contents, this method is nevertheless an excellent way of foiling the chaur wallah, as it is extremely unlikely that the thief carries a screw-driver small enough to extract the locking screw.



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Thorough Repairs are handled using methods, materials and workmanship identical with those employed in manufacture.

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GOODYEAR

Owner Driver's Note Book—(Continued)

Speedometers.

Very few owner drivers seem to pay any attention to the speedometer drive. In fact, this hard working instrument is easily the most neglected accessory on the car, although the only attention it needs is periodical lubrication. Once every five or six thousand miles the drive should be disconnected—a moments' work with a spanner—and a small quantity of gear oil poured in. Should the oil be rather thick it is a good idea to warm it up until it is quite fluid, when it will penetrate to the limit of the drive.

The whole job barely occupies five minutes, and if the work is carried out at regular intervals one need never fear a fractured drive or listen to the burr-burr of a noisy connection.

Appearance Matters So Much.

In these days of mass production and tech-

nical efficiency, anyone can purchase a car of any well known make with the certainty that he has made a sound bargain. This is one of the reasons why cars of the present day are so much better to look upon than they used to be—the manufacturer realising that the buyer nowadays is influenced to a great extent in his selection by consideration of outward appearance. Unfortunately the human body remains a constant quantity, so that bodywork has to sacrifice beauty to the less aesthetic considerations dictated by the size of the passengers.

At the same time, the difference between the appearance of one make of car and another is not to be entirely accounted for on these grounds, as many examples of bodywork produced to day could be slightly altered in line at no additional cost and without sacrifice of passenger comfort, to provide those graceful proportions which are the hall work of beauty.

INSURANCE REPAIRS.

Of the Need for Careful Examination of the Car before a Claim for Compensation is Lodged by J.L.C.

WHEN making a claim on an insurance company after an accident there is a point which is often overlooked by the insured and his repairer alike.

Many policies entitle the insured to have work put in hand up to Rs. 150 or so without delay, and without the necessity for first getting the approval of the insurance company in question. That is a very excellent clause for the man who, using his car in business, meets with some minor accident such as a slight collision. He can go to his local repairer, obtain a written estimate, and if it is under the stipulated amount have the work put in hand at once.

The danger lies in being too hurried and not having a thorough expert examination made of the chassis and steering members. Two such instances that recently happened will illustrate the pitfalls that may await the unwary.

A motorist whose car had been rammed by another went to his local repairer and instructed him to estimate for the fitting of a new mudguard and the repairing of head lamp—a matter of some Rs. 60. The amount was duly paid by the insurance company, and the owner went on his way rejoicing.

After a month or so, during which time his driver drove the car and made no complaint whatever, undue wear began to manifest itself on the front tyres. The car was taken back to the repairers, when it was found that the steering had been slightly strained by the recent collision. In addition, the front axle was actually cracked, which was a far more serious matter. A further bill of

some Rs. 170, odd was incurred, which the owner had to pay in full, being unable to obtain further recompense from the insurance company.

The second case had far-reaching results. A large car had been left standing outside a shop, and a three-ton lorry had reserved into it, smashing the radiator and head lamps. This damage was duly repaired and the claim met by the insurance company.

After 1,000 miles the back axle broke. A new one was fitted, which broke after 500 miles. A third axle was obtained, and this broke in its turn before a further 1,000 miles had been covered. Finally, the owner sold the car in disgust at a loss of several hundred rupees. It was subsequently discovered that the chassis had been badly distorted by the collision, thus causing undue strain on the entire transmission system, with the resultant broken axles. The insurance company, however refused to recognise any further claim.

In both these cases a certain amount of blame attached to the respective repairers, who should have made more than a superficial examination of the damage. Doubtless, the anxiety of the owners to get their cars on the road again was a contributory cause.

The moral is obvious. After anything in the nature of a collision, however slight, the chassis and transmission should be examined by an expert before a definite amount is claimed from the insurance company.

Preventing Piston Troubles.

Causes of Rapid Cylinder Wear and High Oil Consumption. Precautions to Observe to Obtain the Best Service.

TRAVELLING rapidly up and down, violently thrown this way and that by the force of explosions and by its own inertia, heated by flaming gases, and forced heavily against the side of the cylinder, the life of a piston is not an easy one. Under these arduous conditions it covers a surprising distance during the course of its work, and a piston actually travels some 2500 miles up and down in the cylinder for every 5000 miles the car travels. Taking into consideration the load which it carries, its difficult duties of providing a seal to prevent the escape of gases at high pressures and the prevention of excess oil from passing upwards into the combustion chamber, and the very great difficulty of lubricating sliding surfaces subjected to high-temperature flames, the average piston really performs its work with a commendable degree of success.

It is nevertheless true that in quite a large number of engines produced during the past few years epidemics of piston trouble have been experienced. From what has been said regarding the working conditions it is clear that in any case the margin of safety is bound to be somewhat narrow, so that a slight error in design on the one hand, or, on the other hand, unreasonable treatment on the part of the owner, can make all the difference between satisfactory results and excessively rapid wear.

There is a distinct tendency to ascribe piston troubles on cars of recent make to the utilisation of aluminium alloys. Those who make this assertion are apt to forget the tremendous advance which has been made in the power output per cylinder of given size during recent years. An increase of power per unit of capacity can be obtained in two ways. The first consists of increasing the mean gas pressure on the piston, and the second of increasing the speed. This means that the piston must not only carry a heavier load, but must carry it many more times a minute.

First, there is a direct increase due to higher gas pressures and temperatures, and secondly, there is the inertia loading caused by high speeds. A piston must be stopped and restarted at each end of every stroke, and this requires enormous forces, often amounting to a ton or more when an engine is turning at high revs. Furthermore the force increases in proportion to the speed squared.

In round figures it can be said that during the past seven years the engine revs. corresponding to an ordinary cruising speed on top gear have

increased by at least 50 per cent. and if pistons had remained the same weight this would have implied an increase in the inertia forces of about 125 per cent. To meet the situation, and to bring the loads carried by the bearings reasonably low the designer is forced to reduce the weight of the piston as far as is practically possible. In some cases weight reduction has perhaps been carried to excess, but the importance of light piston construction to the success of the modern high speed engine can hardly be overestimated.

Aluminium alloys are particularly attractive for pistons, first because of their lightness and secondly because of the excellent heat-conducting properties of the metal. The facility with which heat is conducted also depends upon the thickness of metal available, and here aluminium scores again, as a piston made of this material can be provided with a thick crown without increasing the weight beyond reasonable limits.

It is true that a few makers of high repute still employ cast-iron pistons and have never accepted an aluminium alloy as a substitute. By extreme care in piston design they have obtained good results, but it is important to note that most of the pistons in question are being used in large engines working at what an engineer would call a relatively low power factor. Conditions are very different in the small high speed engine from which every ounce of power must be extracted.

Three Kinds of Trouble.

Turning now to the troubles which have been experienced with pistons in heavily loaded high speed engines, these may be divided into three heads:—Piston slap, rapid wear, and heavy oil consumption. Before describing ways and means to avoid these troubles, we can well devote some space to the consideration of the causes of these troubles.

The clearance between the skirt of an aluminium piston and the cylinder walls is greater than is the case with cast iron pistons as the rate of expansion of aluminium is greater than that of cast iron. Consequently in order to prevent a piston from seizing when hot the clearance when the engine is cold must amount to about 4-1,000th's of an inch for an engine with a 65 mm. bore. Now it has been proved that an audible tap will be produced if the piston clearance is 5-1,000th in. or more, from which it can be deduced that it is exceedingly difficult to prevent such a tap from being heard

when the cold engine is started after a slight amount of wear has occurred in service.

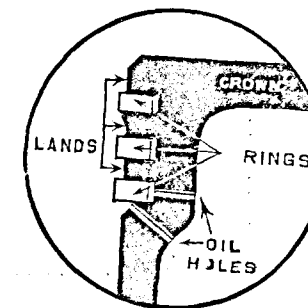
The tap is caused by the piston being thrown violently from one side of the cylinder to the other, when the compression stroke ends and the firing stroke begins. In normal circumstances the noise is only slight and should disappear when the engine warms up. No harm is being done and there is no reason why the owner should become disturbed by this phenomenon.

Nevertheless, the antipathy with which piston slap is regarded by motorists has led to the production of innumerable ingenious forms of close-fitting aluminium alloy piston.

Two typical and well-known design of close-fitting piston are (1) the British B.H.B. type, in which the skirt is separated from the head by a circumferential slit and is itself slit longitudinally by a slanting cut. Inclined webs connect the crown to gudgeon pin bosses forming one piece with the skirt, so permitting a breathing action which makes seizure practically unknown. (2) The other example is the ingenious Invarstrut type of piston, which originated in America some six years ago. The gudgeon pin bosses are cast in one piece with the crown and the halves of the split skirt are connected to the bosses by cast-in struts of Invar metal, which do not expand appreciably with increases of temperature.

Next there is the big subject of piston lubrication. Few people seem to understand that in most engines oil which the cylinders receive is almost wholly derived from the spray or mist produced by the big-ends. The pump feeds the lubricant to the crank shaft and the oil travels through passages in the crankshaft to the big-end bearings. The surplus escapes from the ends of these bearings and is thrown around by the whirling action of the shaft, so becoming deposited in considerable quantities upon the exposed lower surfaces of the cylinder walls.

The piston, in moving up and down, obtains its lubrication by picking up oil deposited in this way. It is essential that it should receive sufficient lubricant; oil is still cheaper than new pistons and re-ground cylinder blocks! On the other hand, only a very slight excess is needed to make the difference



General arrangement of piston rings, showing oil holes.

between a reasonable oil consumption and one open to criticism as being too heavy.

Functions of the Rings

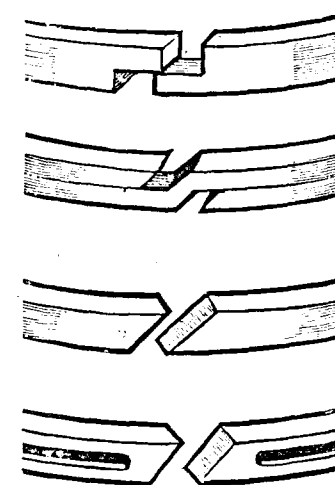
The piston is provided with springy rings that press outwards upon the cylinder walls with considerable force, those at the top being mainly provided for the purpose of preventing gases from escaping downwards. The rings fit in grooves and the parts of the piston which project between them are called lands. The clearance between a land and the cylinder bore is always considerably greater than the clearance at the skirt and can be allowed to become quite large without doing any harm.

The lowermost ring usually serves as an oil scraper, small holes being frequently provided through which the oil scraped from the walls can escape to the interior of the piston. There are also various excellent forms of scraper ring specially designed to increase the efficiency of oil removal.

This scheme works well enough so long as the rings fit closely in their grooves, but when a certain amount of up-and-down play develops a pumping action takes place which leads to a rapid increase in oil consumption. This action is made clear by a drawing reproduced on the following page which shows how a loose-fitting ring moves to and fro in the groove as the piston traverses the cylinder.

This is one of the most important causes of high oil consumption, the oil being delivered to the combustion chamber where it is burnt. The pumping pressure which rings develop is surprisingly high, and consequently, contrary to popular belief, the pressure above the piston is not of much moment. In other words, the amount of oil burnt when the engine runs at full throttle is almost as great as when the throttle is closed and when the considerable suction developed on the inlet stroke is popularly supposed to assist oil to pass the rings. It is true that the characteristic blue smoke disappears under full throttle conditions, but this is mainly due to the fact that the cylinder temperatures are then sufficient completely to burn the oil.

Apart from wear of the rings and grooves there is the general wear which gradually makes a piston a slacker and slacker fit in the



Various Types, of Piston Ring.

cylinder. With cast-iron pistons this wear is more or less confined to the area of the cylinder walls swept by the rings, but in an aluminium piston wear occurs through out the stroke. It is, however, mainly the relatively hard cast-iron cylinder which suffers, very little change occurring in the size of the piston.

This paradoxical state of affairs has been explained by various theories, the favourite being that any grit in the oil becomes embedded in the soft aluminium and is rubbed up and down, abrading the cylinder. It has also been suggested that the hard components of the alloy may become segregated and produce the same result. Whatever theory may eventually be proved correct the fact remains that, with the majority of aluminium-alloy pistons, cylinder wear is more rapid than with cast-iron pistons.

Consequently, there is much to be said for various schemes which are now coming into favour, one being the use of special centrifugally cast-iron liners for the cylinders. The structure of this material is more dense than that of ordinary cast iron. Then there are new aluminium alloys, such as the Rolls Royce series. These are harder and stronger than the older varieties, particularly at high temperatures.

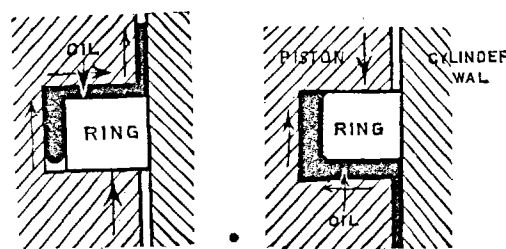
There is also the excellent practice, employed by several important concerns, of making the piston in two pieces; an aluminium alloy is used for the head and ring-carrying part, whilst the skirt is made of cast-iron or steel.

How Owner-Drivers Ill-treat the Pistons.

We can now turn to the ways in which the owner-driver ordinarily ill-treats the pistons of his engine. In the first place, how many people really take sufficient care over the essential process of running-in a new car? It takes quite a long time to produce a good working finish on the rubbing surfaces of the pistons and cylinders and, until this is obtained, over-driving is bound to harm the parts, even if it does not actually cause seizure.

If the engine gets anywhere near to seizing point the aluminium becomes very soft and is apt to be badly "scuffed," or rubbed, so tending to fix the rings in their grooves and, of course, to ruin the bearing surface.

Next there is the vital matter of lubrication. In a new car the big-ends all fit fairly tightly, so that the oil escaping therefrom, upon which piston lubrication depends, is apt to be meagre in quantity. It



Showing the Pumping Action due to Piston Ring Movement.

is, therefore, an excellent plan at all times—but particularly when the engine is new to use a special upper-cylinder lubricant mixed with the petrol in the tank or introduced in some other way. This will be carried through the engine by the mixture with beneficial results.

Supposing that a car has been run in with due care, there remains the duty of giving the pistons a reasonable chance to prove durable. By far the most common form of ill-treatment consists of starting the engine after a night in the garage and immediately forcing it to propel the car. It cannot be too strongly emphasized that this thoughtless action may cause as much wear as, perhaps, 100 miles of ordinary running on the road.

When the engine is cold or has been standing the oil is sluggish and it may be as long as half a minute before any reasonable quantity is thrown off the big-ends and into the cylinders. During this period the pistons, with their stiff scraper rings have rapidly removed from the cylinders every vestige of oil that may have clung to them overnight, a process which is assisted by the wet petrol mixture drawn in, particularly if the strangler be used.

Consequently, bone-dry pistons and rings are rubbing up and down for 30 seconds or more before anything like adequate lubrication commences. If, during this period, the engine is quietly idling no harm will be done, but if it be made to drive the car the parts become heavily loaded and the rate of wear is naturally very great indeed.

A minor point, but one well worth remembering, is that in addition to draining and replenishing the sump periodically (in itself a job that is only too frequently neglected) it is as well to have it entirely removed at intervals of about three months, so that every particle of sludge may be extracted. Air cleaners and oil purifiers are, of course, of great service in preventing rapid contamination of the lubricant, particularly when a car is used on dusty roads or on the coast.

Another kind of misuse can best be described as over-driving. An engine should be treated with a reasonable amount of consideration, but many modern owners are apt to forget this. Unduly high speeds on the gears, for example, rise the revolution speed of the power unit to a figure such that inertia forces produce excessive loads on the parts. Heavy pinking due to unsuitable fuel or too great a spark advance is almost equally detrimental. Heavy slow-speed slogging on top gear should be avoided.

Causes of High Oil Consumption.

The causes of excessive consumption after an engine has been in service for some time should now be fairly obvious. Wear will have increased the working clearance of the big-ends so that a relatively large quantity of oil is thrown up into the cylinders; wear of the rings in their grooves and of the cylinder bores will render these parts incapable of preventing much of this oil being pumped upwards into the combustion chambers.

After all, only a very minute quantity of oil wasted per stroke is sufficient to result in a heavy consumption; as Mr. L. H. Pomeroy pointed out some time ago, in the average six-cylinder engine

driven at 30 m.p.h. the infinitesimal quantity of one ten-thousandth part of an ounce of oil wasted per revolution represents a rate of consumption of 480 m.p.g.

When the rate of oil consumption shows a noticeable increase it is not at all a bad plan to have the sump removed and the big-ends taken up. This alone may check the oil consumption for a time, but eventually it will be necessary to have the cylinders rebored and new pistons and rings fitted. Of course, if examination shows that the piston clearances are not excessive it may be sufficient to fit new rings, including a scraper ring of one of the many excellent varieties available.

A Survey of Three Years' Car Building in India.

General Motors Produce 25,000th Chevrolet.

THE acceptance of modern transportation in the East is revealed by the statement issued by Mr. G. C. Seers, Managing Director of General Motors India Limited, of the production of the 25,000th Chevrolet on October 5th, 1931. It was only on December 4th, 1928 that the assembly plant (still the only one of its kind in India) was established in Bombay, when many prominent people witnessed the production of the first Chevrolet car built by Indian labour. The spectacle of a modern factory highly organized to assemble cars and trucks on a mass production basis made a deep impression on everyone present, particularly in regard to the adaptability of Indian labour to new conditions.

Since that day—less than three years ago—twenty-five thousand Chevrolets have been distributed by General Motors India Ltd. throughout India, Burma and Ceylon and exported to East Persia. Everywhere these products have been favourably commented upon for their finish and workmanship; the efficiency of the Indian workmen having some time ago reached a point which has permitted General Motors India to affirm that cars can be built, upholstered and painted in India every bit as well as they can be done in Europe or America. The great precision and care employed in making Chevrolet products, together with the minute inspection and tests to which they are constantly subjected is a striking feature of the efficient production methods followed by the Bombay Plant. It is always open to any member of the public to visit the assembly plant at Sewree, Bombay, to view the different operations connected with the assembly of cars and trucks.

A volume of 25,000 units assumes an interesting aspect when it is reduced to concrete figures. The

value of these 25,000 Chevrolets, for instance, is a little over 4 crores, 80 lakhs of rupees (in addition to which there have been a large number of sales of Buicks, Pontiacs, Cadillacs, La Salles and G.M.C. Trucks during 1928-31).

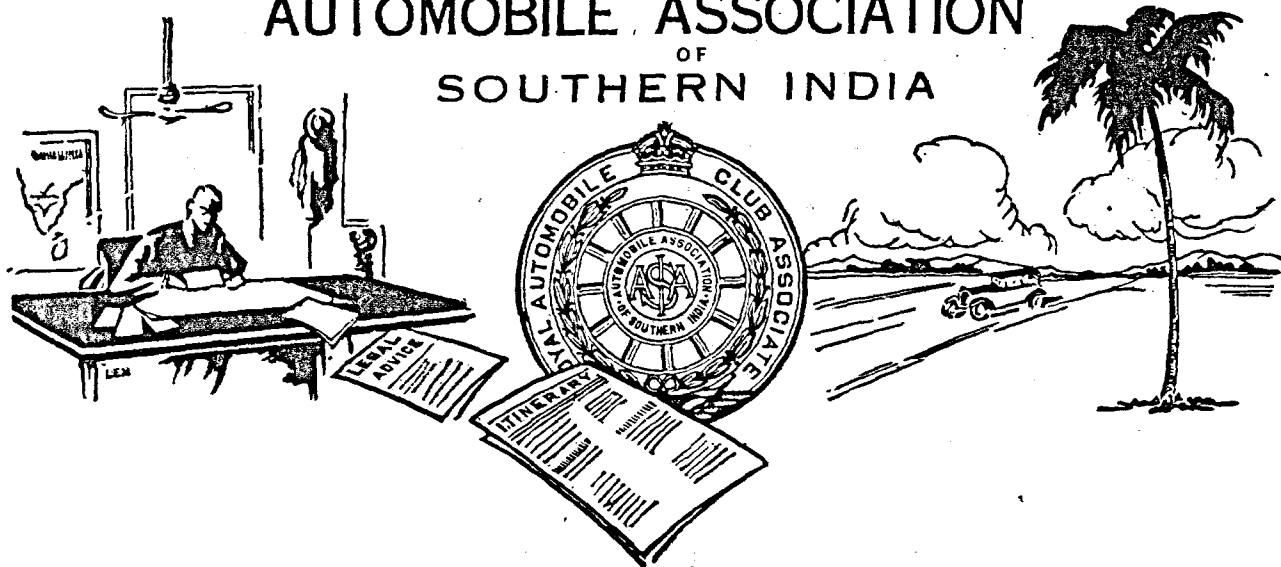
The relation of these monetary values to the revenues of this country also makes interesting reading, in showing the economic contribution of General Motors towards the country's resources. For the period under review, General Motors India paid Rs. 44,58,228 in import duty, Rs. 18,75,000 on freight charges on cars and trucks sent out from Bombay and Rs. 6,76,734 in taxes.

The factory gave employment to 800 workmen, on an average, during the period 1928-31, of which 94% was purely Indian labour. The amount paid in salaries and wages to Indian personnel was Rs. 14,84,807.

A remarkable total of Rs. 33,98,735 sales of Chevrolet parts to owners in this country has been made. This goes to prove that the great network of dealer's service points is fulfilling a long-felt need, as not long ago motorists experienced great difficulty in securing a ready and adequate supply of spare parts whenever they needed them.

The above figures show that General Motors India Ltd. is making a considerable contribution toward the economic prosperity of this country. Not only this, but Indians of all classes are receiving a sound training in modern methods of manufacture in an industry which is playing an important role in the industrial and economic development of modern India.

AUTOMOBILE ASSOCIATION OF SOUTHERN INDIA



Secretary's Report for October 1931.

Committee Meetings.

1. The Committee assembled on 11th September 1931, and in addition to routine items of business, dealt with the following:—

New Committee Member.

(a) Elected to the Committee Mr. A. A. Hayles.

M. V. Taxation.

(b) Read a letter from Madras Government regretting inability to agree to the Association's suggestions for modifying certain rules relating to Motor Vehicles Taxation or to assemble a Committee to examine the working of the Act until it had been in force for a year.

M. V. Taxation.

(c) Read a letter from The Madras M. V. Importers and Allied Merchants' Association requesting that Major F. Church (Secretary) be allowed to serve on a Committee that was being convened by that body to collect data and draw up recommendations regarding the M. V. Taxation Act, for submission to Government. The appointment of Major Church was approved.

Affiliations.

(d) Approved of a reciprocal agreement with the Burma Motor Association.

(e) Considered advisability of protesting to Government that the fee for a duplicate driving license (i.e., double that for the (original license) was excessive. Resolved that Government's Policy which is designed to limit misuse of driving licenses, is not open to criticism.

Membership of Regimental Messes.

(f) Considered possibility of permitting Regimental Messes and similar bodies to acquire joint membership of the association at a fixed rate of subscription. Decided to obtain legal advice as to whether the Articles of Association would permit such a procedure, and if not, what amendments were necessary to provide for this measure.

M. V. Taxation: Members of A.F.I.

2. This matter is, it is understood, still under reference between the Military Authorities and the Central Government.

Roads

Madras—Chittoor—Bangalore Road, Iruvaram River.

3. The Iruvaram River Bridge about two miles West from Chittoor Town, which was damaged in 1931, will not be restored before July 1932. In the meanwhile an undervented dam will be maintained on a diversion road, which will be negotiable by motor cars so long as the depth of water in the river does not exceed 2 feet. (Not three feet as stated in last report.) Barricades will be maintained on both sides of the bridge. These barricades will be marked by a red light at night. The barricade on the Western (Bangalore) side of the bridge is some distance from the point where the diversion road takes off to the left at a point where a branch road joins. A watchman has been posted here to direct traffic on to the diversion road, while a notice board with reflectors should guide traffic arriving from the direction of Bangalore.

Rice Causeway.

5. Although freshets occurred in the Ponnai River, the Rice Causeway, at no time during the month, became impassable.

G. N. Trunk Road Pennar River.

6. The Pennar River flooded during the month and the Anicut near Nellore became impassable on 1-10-31. However motors could cross without difficulty.

Gundlakama River.

7. The Gundlakama River freshed during the month, and was not passable on 30-9-31.

8. Other streams between Madras and Bezwada were passable practically every day.

9. IT IS NOT SAFE TO REGARD THE G. N. Trunk Road MOTORABLE FURTHER NORTH THAN NELLORE DURING THE LAST THREE MONTHS OF THE YEAR.

Nandyal-Cuddapah Road.

10. This road is not motorable between Allagada and Chengalamart as a stream 26 miles from Nandyal carries deep water and the causeway is damaged.

Gooty-Gundakal Road.

11. This road, from Guntakal to Allur is little better than a cart track and is not really fit for motors.

Gooty-Adoni Road.

12. This road, via Pallikonda, is motorable. There is a broken bridge 12 miles from Gooty where caution is necessary as no barrier has been erected. The District Board Engineer is being addressed.

Gooty-Nandyal.

13. The roads between these two places via Tadpatri, via Barganapalli and via Koilkuntla are all impassable owing to heavy rains.

Bangalore-Anantapur Road.

14. The road via Hindupur is not in good condition. Motorists are advised to use the Trunk Road via Chickballapur.

Anantapur-Bellary Road.

15. The bridge over the Pennar River on this road is not yet completed, though it is nearing completion. The river carries deep water here and is frequently unfordable during the last five months of the year.

Gudalur-Vayitri Road.

16. The landslide on this road was cleared and through communication restored on 28-9-31.

Gonikopal-Manantody Road.

17. A bridge on this road will be closed for repairs on 22nd, 23rd and 24th October 1931. No diversion road will be available.

Ooty-Mysore Road.

18. This road is motorable though the surface is bad in places.

Madras-Trivellore Road.

19. The new road from Madras to Trivellore via Avadi (parallel to the M. & S. M. Railway) is not fit for motors.

Great Southern Trunk Road.

20. This road is now motorable to Trichinopoly, all rivers having been bridged or provided with causeways. The surface is not good in places, but this will soon be remedied. Beyond Trichinopoly the Chitanatham Nadi is the only obstacle, and the bridge over this river is nearing completion.

M. V. Taxation.

21. A Committee of which the Secretary is a member assembled three times during the month. Considerable data has been collected and a deputation to the Chief Minister arranged. The Committee is dealing principally with the license fees levied by District Boards on buses and lorries.

Tolls in Indian States.

22. Information has been received that the Abolition of Tolls in Mysore State is being considered, but no definite bill has yet been drafted.

The Cochin Darbar has decided not to consider the abolition of their tolls until the Madras Government Act has been in force for one year, and more experience gained.

Madras M. V. Taxation Act.

23. The Madras Government has intimated its intention to furnish the Secretary, A.A.S.I. with a copy of all General Orders issued on the subject of the Act.

International Touring.

24. The Madras Government has authorised the A.A.S.I. to act as a Competent Authority under the International Motor Vehicles Circulation Rules 1931; (i.e., to sign certificates to cover the grant of International Travelling Passes for Vehicles and Permits for Drivers.

Madras M. V. Rules.

25. The letters G.O. have been assigned to East Godavari District and G.O.W. to West Godavari District as distinguishing letters for motor vehicle registrations.

Petrol Rates.

26. No progress has been made with regard to the movement to obtain a reduction in the price of petrol. Recent events indicate that no good result is likely to follow and it may be advisable to postpone the measure for the present.

Customs Duty, Hyderabad State.

27. Arrangements have been concluded whereby the A.A.S.I. is empowered to issue a guarantee to

the owner of a motor car entering Hyderabad State (H. E. H. The Nizam's Dominions) temporarily, which will obviate the payment of customs duty on the car in each at the point of entry.

To obtain a guarantee, a member proposing a visit to Hyderabad State must furnish to the Secretary, A.A.S.I. a Banker's Guarantee for the amount of Customs duty leviable (at 5% ad valorem). The Secretary, A.A.S.I. will then issue a formal guarantee to the member who will hand it in to the Customs Naka at the point of entry (railway station if imported by rail) and receive in exchange a permit which will cover transit of the car through the Dominions for six months. When leaving the Dominions the permit must be handed over to the Customs Naka and the Secretary, A.A.S.I. promptly informed so that the Banker's Guarantee can be released.

Itineraries.

28. Many itineraries have been issued to members during the month; itineraries have also been provided to the Military authorities for inclusion in the Madras District Directory and special brief epitomes of long distance routes (e.g., Madras, Bombay, Madras Cape Cormorin, etc., etc.) have been supplied.

Flood Reports.

29. Efforts have been made to make the current season's flood report system as far reaching as possible. Members are advised to communicate with the Secretary immediately before commencing a trip in order to get up to date information regarding unbridged river crossings.

Seizure of Driving Licenses in Coorg.

30. At the request of Coorg Planters' Association, from whom the original complaint was received, a representation made to the Chief Commissioner in Coorg on the above subject has been withdrawn.

Maps.

31. The completion of an A.A.S.I. Touring Map is progressing satisfactorily; one sheet—the most complicated one—has been completed and sent to press and the second sheet is well in hand.

Guide Book.

32. Information for inclusion in the new guide book continues to arrive from District Board and State Officials.

Decorated Car Procession.

33. H. E. The Governor and Lady Beatrix Stanley have kindly consented to judge the exhibits at the Decorated Car Procession on the 11th November 1931, and to distribute the prizes.

With the kind permission of the O. C. 2nd Bn. Royal Ulster Rifles and his officers the band of that Battalion will play during the judging and distribution of prizes.

Official Magazines.

34. Members are reminded of the importance of communicating changes of address to the Secretary. If this is not done there is a possibility of copies of the official journals going astray in the post. Several complaints have been received, especially from Bangalore.

Finance.

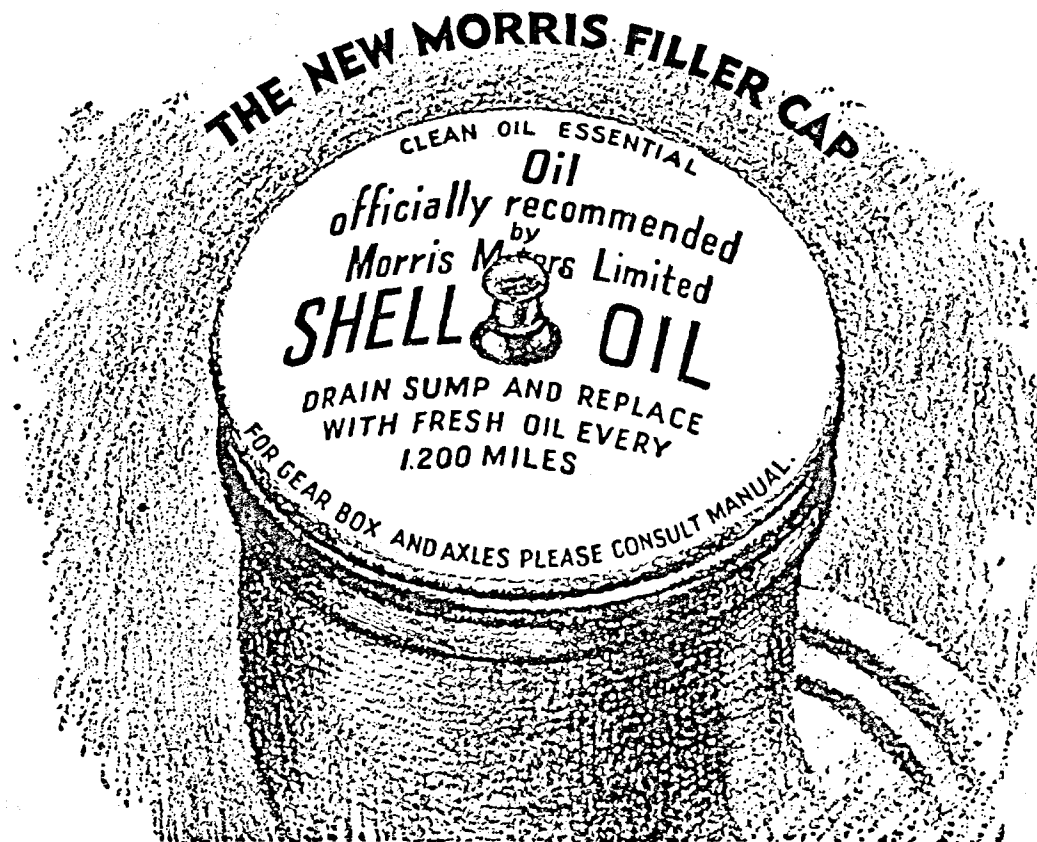
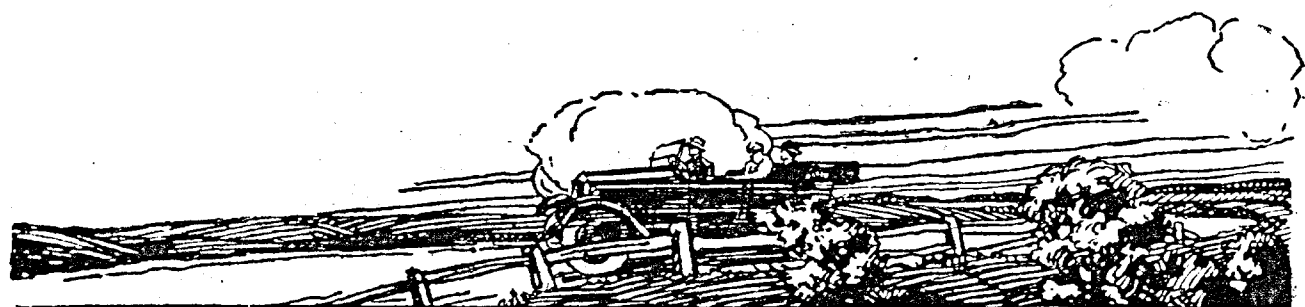
35. A large number of subscriptions for the current year remain unpaid. Members concerned have all been notified and it is trusted that remittances will soon come to hand. Funds are low and further delay in the payment of subscriptions due may lead to a curtailment of the Association's activities in several essential directions.

Members.

36. During the month ten new members were elected, while there were twelve resignations or removals of names from the register. The total membership on 30-9-31 was 928.

MADRAS. }
2nd Oct. 1931. }

F. CHURCH,
Major (Retd.),
Secretary.



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NEWS and MISCELLANY

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

Gear Changing by Pedal.

MANUFACTURERS, not only in England, but all over the motoring world, are interested in the problem of easy gear changing. Among other devices developed abroad is one sponsored by Progressive Motor Devices Corporation, 2,450, Michigan Boulevard, Chicago, Ill.

By means of this device, instead of changing gears with a hand lever, it is possible to accomplish the operation by depressing the clutch pedal. To secure different speeds the foot is placed on a button toward the left side of the pedal for low speed, on the centre for second, and on a button toward the right for top gear. Reverse speed selection is accomplished by pulling a button on the instrument board. An emergency gear lever is mounted immediately above the floorboards and, to use it in changing gear, it is pulled upwards about four inches. Neutral position of the transmission is obtained by a partial (three-fourths) depression of the pedal. The device uses conventional transmission and clutch units and merely joins their controls. It is claimed that the fitting can be installed on a car in an hour.

A Generous Gift.

Only last year Sir William Morris gave £ 47,000 for the rebuilding of the Orthopaedic Hospital at Headington, Oxford. Now he has capped this gift by presenting £ 25,000 to the British Empire Cancer Campaign for the establishment of a research Fellowship in Radiology at the Mount Vernon Hospital, near Northwood, Middlesex. The gift brings the sum total of Sir William's donations in the medical field alone to more than half a million pounds. Such figures are a tribute both to his

personal generosity and to the amazing success of the company he has built up and now controls.

Magneto Conversion Set.

A robust and simple magneto conversion set for Ford cars has been produced by Walters and Dobson, Bailey Street, Sheffield, whose old-type set for the Ford model T was well known and is still available. The latest set consists of a platform for the magneto, and below this is a gear wheel which couples with the existing fibre timing wheel. This pinion is housed in a fitment which is designed to take the place of the existing end cover of the timing wheels, thus avoiding the need for any drilling.

The gear wheel is coupled to a short shaft which transmits the drive through two further pinions to the drive for the magneto. These gear wheels are on ball bearings. The magneto coupling is quickly detachable, and is provided with a vernier adjustment. The set is designed to admit the largest size magneto.

New Automobile Dealers.

We have been asked to inform readers of the fact their Messrs. The Union Company, Madras have taken over the S. India distribution of Hupmobile cars. The latest models are on view in their Mount Road show rooms, and demonstration runs will be given to all interested motorists.

The Madras Office of The Texas Company (India) Ltd is being transferred from Mukker Nallamuthu Street to more suitable premises in Errabalu Chetty Street, from which new address the distribution of Texaco lubricants will be made from October 15th.

? ? ? ? ?
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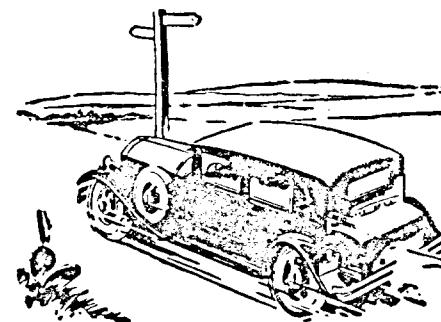
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Madras Motor Directory, 1931.

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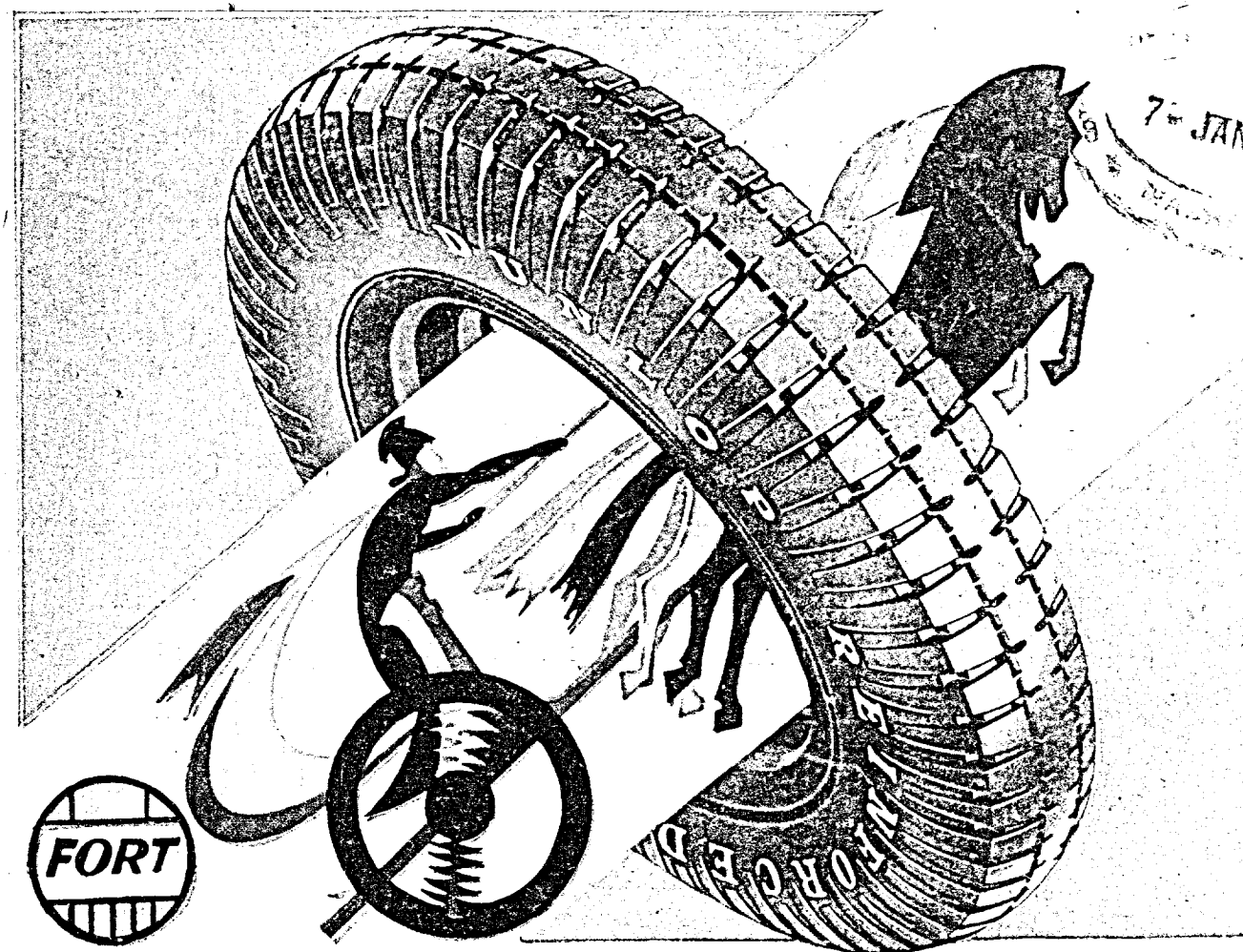
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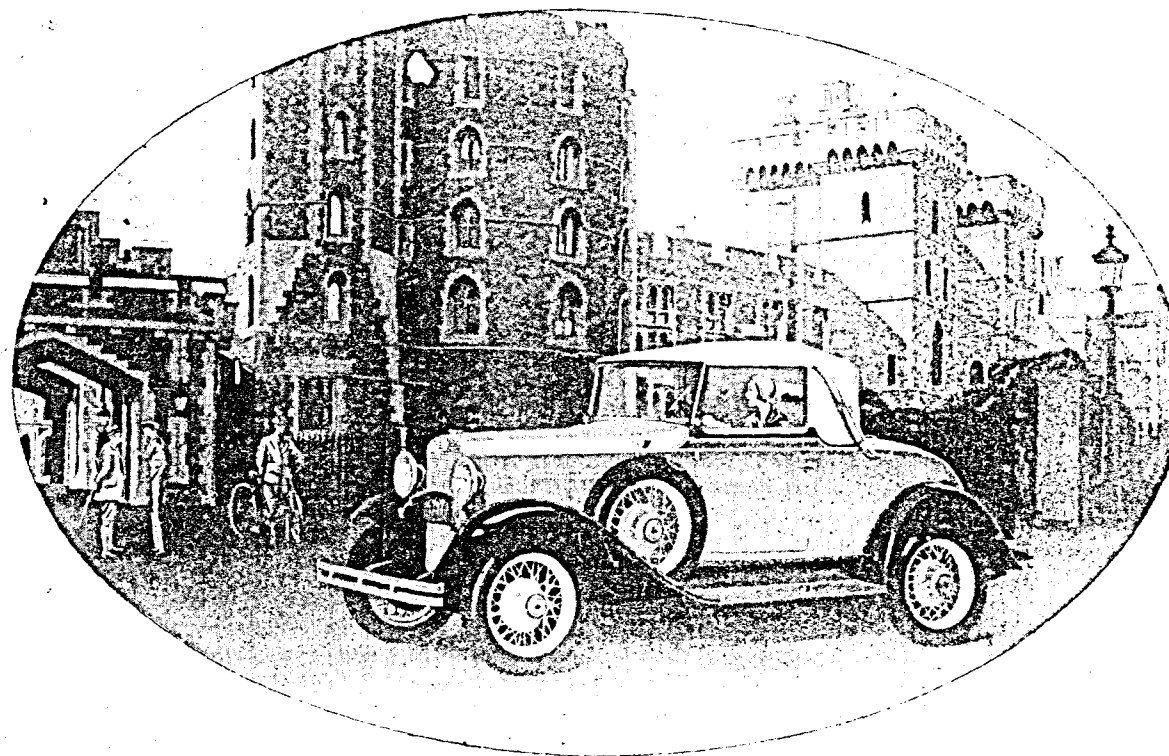
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CHEVROLET

A PRODUCT OF GENERAL MOTORS

THE SOUTH INDIA MOTOR OWNER SALES AND SERVICE GUIDE

Arranged alphabetically under vehicle headings this guide should prove extremely useful to motor owners throughout Southern India. The up-to-date Service Station and Sub-Dealer will find entries in this section to be a profitable method of inexpensive advertisement. Each entry in these

columns is charged for at the rate of Re. 1 per line, but no contract can be accepted for less than six consecutive insertions. Correspondence both from Dealers and Car Owners is invited in order to make this section as useful as possible.

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Pulling power in a journal is just as important as pulling power in an engine,

o o o

This is one of the reasons why small advertisement space in this paper has proved its value to advertisers throughout S. India.

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Madras Motor Directory, 1931.

Containing Madras Motor Vehicles Act, Madras Motor Vehicles Taxation Act and all connected Rules and Regulations. Also all registered numbers, names and addresses of all Motor Car owners in South India and Pudukottah State.

Says the MADRAS MAIL, 22-8-31: ".....Contains in handy form COMPLETE INFORMATION for those interested in Motors and Motor Trade.....Should find on the desk of business men....."

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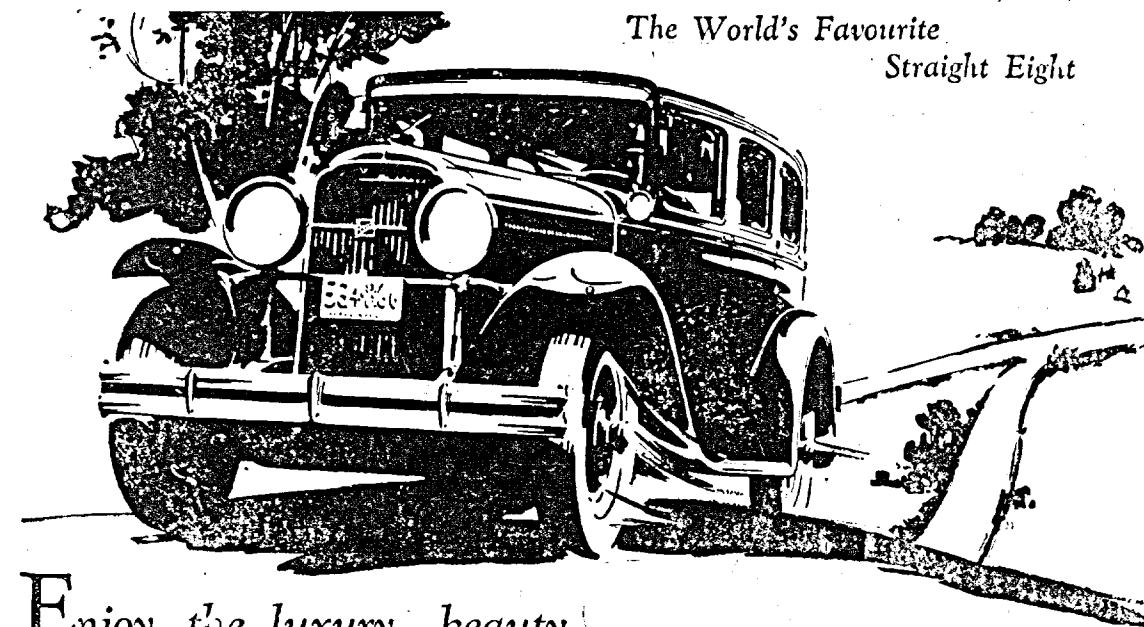
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MADRAS, S. India.





The World's Favourite
Straight Eight

Enjoy the luxury, beauty
and dependability of the

NEW BUICK

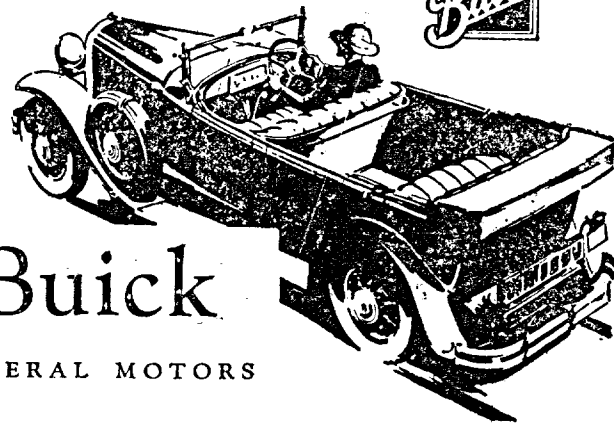
IN the new series of Straight Eights, Buick offers a wide choice to motorists of all classes. Each is built to the highest standards of style, comfort, luxury and dependability. For this reason the new Buick is outselling all competitive makes in its price class by a very high margin.

The Buick Eight is equipped with the new Syncro-Mesh Transmission—the unique device that eliminates the clashing of gears when changing. You shift now without effort—with the dexterity and sureness of an expert driver

And you do this with absolute safety and silence at all speeds.

Take the wheel of the new Buick—test the spirited performance of its valve-in-head eight cylinder engine and enjoy the luxury and comfort of the new body by Fisher—insulated against heat and noise. Your nearest Buick dealer will gladly give you a free trial run.

You can own one of these models now by using the liberal G. M. A. C. easy payment plan



The New Buick

A PRODUCT OF GENERAL MOTORS

Job No. G. M. 149 Art Nos. 610 & 604 9" x 6" India Magazines November 1931



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Finest Dried Apples and Pears	Rs. 1-2 per lb. or
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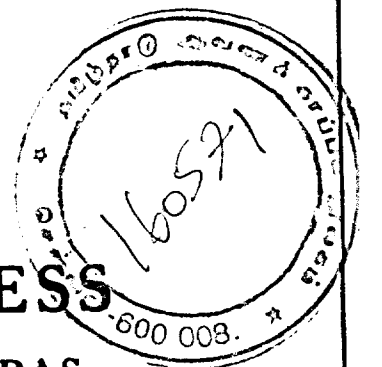
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WOODS ROAD, MOUNT ROAD, MADRAS.



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Most men can make progress for themselves and their firm when conditions are favourable, but the true test of a business man's methods and efficiency is during a trade depression.

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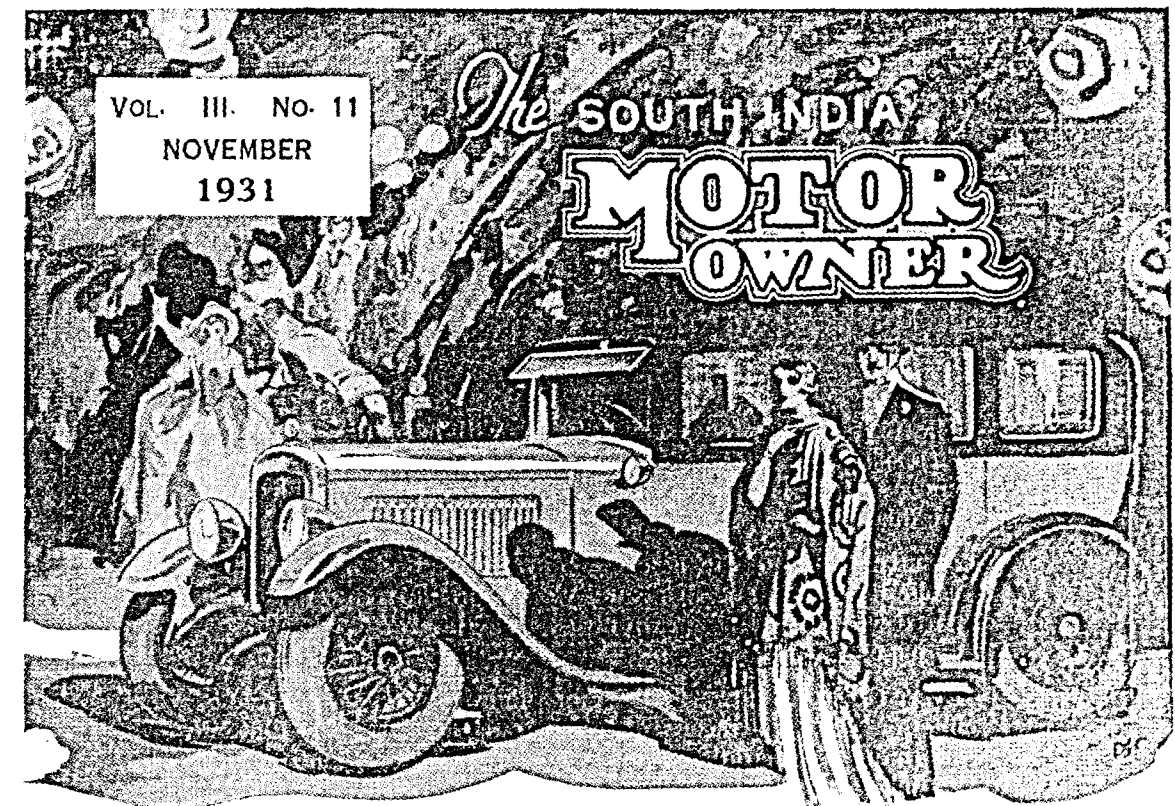
A good business man will also know that to save money is to earn money. A man who uses the right kind of Wakefield's Castrol Motor Oil in his car saves and thus will reduce inevitable repair bills.



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WAKEFIELD'S CASTROL MOTOR OIL



Official Organ of the Automobile Association in Southern India

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Jottings from this Issue

The fitting of larger wheels or tyres will have the effect of increasing the gear ratio, whilst actually the ratios remain unchanged. This, and other interesting gear ratio problems, are discussed on page ... 310

Figures showing the amazing development of automobile usage in France, and this country's registration returns compared with other leading countries make informative reading on page ... 320

Every step taken toward the more thorough opening up of interior India by means of road transport will contribute enormously toward the social and economic development of the inhabitants of the country ... 305

An untidy hood mars the whole appearance of a car, and a little care and attention upon the lines suggested in the article on page 307 will be time well spent ...

Interesting Southern India motoring news is to be found in the A. A. S. I. Secretary's report which appears this month on page ... 322

Of all the components of a modern car, the carburetter is, perhaps, the leading example of a compromise. For this reason it is best to strike the happy medium when adjustments are being made—and leave well alone ... 311

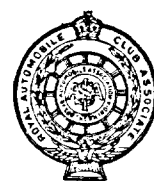
The chance discovery of the principle of safety glass, and the amazing development of the industry of recent years, described on page ... 315

Depreciation is one thing if you sell, and quite a different story if you keep ... 312

Glare and dust affect motorists with sensitive eyes. Exercises will, however, afford great relief and though the time spent upon them may be wearisome after a long journey, they are well worth the trouble ... 314

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PLEASE MENTION "THE MOTOR OWNER" WHEN REPLYING TO ADVERTISERS



Official Organ
of the
A. A. S. I.
in
Southern India

THE
SOUTH INDIA

Motor Owner

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

Proprietors:

EASTERN TECHNICAL PUBLICATIONS

Mount Road, Madras.

Of Special Interest
to the
Owner-Driver

The Hood and Its
Care ... 307

How to Calculate
Gear Ratios 309

Correspondence on
these subjects will
welcome from
readers.

Vol. III, No. II

November, 1931

Single Copy, As. 8
Annual Subscription Rs. 3, Post Free

Taxation and the Need for New Roads.

From time immemorial it has been stated that India's prosperity lies mainly in the development of the agricultural wealth of the country, and though it will take decades to transform the Indian ryot into a modern agriculturist employing up-to-date methods to win the utmost wealth from the soil, the time will be appreciably shortened by opening up easy methods of communication between village and village, and village and town. Any attempt to elaborate the idea so admirably expressed by Kipling in the phrase "Transport is the life-blood of civilization" stamps the elaborator as a monotonously unoriginal individual, and yet it fully recognised the world over that efficient means of communication have a marked effect on the growth of agriculture, commerce and industry within the country so served. The development of a well thought-out system of road transport facilities in present day India would have a marked influence on the general out-look of the people; mofussil people would be encouraged to look further afield for a market for their produce than that at present offered within the narrow confines of their own locality, and the restricted village existence and its attendant under development would be forgotten on the establishment of

simple methods of inter-village communications.

Every step taken toward the more thorough opening up of interior India will contribute enormously toward the economic and social development of the many million inhabitants of this vast peninsular. Already a definite stimulus has been given to agriculture and industry by the partial motorization of a number of mofussil districts. What is now required is a road system which will adequately link up those districts which have internal transport systems operating at the present time—which inter-communication, once laid down, would contribute in no small way toward bringing India and her people nearer to that worthy independence so near to the hearts and minds of her wise men.

Prominence has recently been given in the Press to correspondence urging the need for drastic revision of the M. V. Taxation Act. This correspondence, which it must be pointed out, emanates from "trade" sources, deals only with the matter of taxation as a factor influencing the ready purchase of vehicles, and ignores altogether the fact that these taxes are levied for the construction and maintenance of roads.

Despite the difficulties under which business has been conducted for the past twelve months, and contrary to all expectations, there is no appreciable drop in the total sales of cars within the past few months as far as Southern India is concerned. There are more motor vehicles on the roads of S. India today than ever before, and though distributors of private and commercial vehicles may affirm that high taxation is hindering sales, we venture to predict that if every contributor toward the development of motor transport—car dealers,

commercial vehicle operators and private car owners—made some effort to ensure the expenditure of their contributions on new roads, there would be such a boom in vehicles as to leave dealers wondering whether the factory could supply.

Taxation is heavy, admittedly, but if we make sure we are given rupee value for every rupee contributed, not one of us will be disposed grumble at the wise legislation which today adds a little more to our burdens in order to build for future prosperity.

The Last Word.

In a police court prosecution a lady motorist observed,

"If I am not allowed to contradict the police I cannot say anything."

How true are the lines which follow:—

This lady, in her summing up,
Nutmegs the situation.
It cuts no ice in court to give
A constable's affirmative
A motorist's negation.

For if the constable says "No."
It's no good vainly "Yessing,"
Or holding a prolonged debate,
Or, quibbling, though his estimate
May be like cross-word guessing.

His word is It. What he says goes.
What you say doesn't matter.
In Law one party's right, one wrong,
He's always in the former throng,
You always in the latter.

You need not waste the time in court,
By making contradictions.
The constable his case will state,
And that is that. The magistrate
Will act on his convictions.

When lovely woman gets a summons
And finds too late that traps betray,
Though bench be mild or awful strict
No use to kick or contradict,
The only way is—smile and pay.

FAILURE TO RENEW YOUR LICENCE

ON TERMINATION MAY INVOLVE YOU
IN SERIOUS DIFFICULTIES UNDER CERTAIN CIRCUMSTANCES.

Register Your Name for "Free Licence Reminder Service"
which the "South India Motor Owner" has established.

THE HOOD AND ITS CARE

Hints, many and various, which, if carefully followed, will prolong the life of this most important component of two-seater and touring models.

Courtesy "The Morris Owner"

THE life and usefulness of the hood of any touring car depends entirely on the handling this long-suffering accessory receives. With careful usage the hood should last for several seasons, and a demise in the second year of the car's life, as sometimes happens, can usually be attributed to neglect of one sort or another.

First and foremost, it would be well to call attention to the most common form of ill-treatment to which the hoods of open cars are subjected, the hasty, and haphazard folding of the fabric covering. Bad or clumsy folding inevitably results in chafing and cracking of the in turn leads ultimately to holes.

When this process of disintegration has reached a certain stage, no amount of care can avert the fabric, which necessity for a complete re-cover.

It should be very carefully borne in mind that not only will damage accrue, but also the hoodsticks will not fold down properly unless all the folds of the fabric are carefully pulled outwards, i.e. away from the supports. Not until this has been done will it be possible to fit the sticks down snugly on to their supporting brackets, or to slip the hood itself neatly into its envelope.

In this connection, a little point that is frequently overlooked is the fastening down of the sticks with their respective straps; another attention, neglect of which can be the cause of premature wear.

If examination of the hood fabric reveals a small hole or holes which it is desired to repair, it is com-

forting to know that a nice job is well within the capacity of the average amateur handyman. The work must, of course be neatly done to avoid unsightliness, and it will well repay a little extra care.

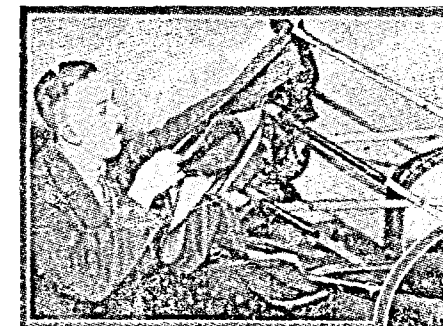
Some fabric cloth of the same colour and quality as the original should be obtained, and a patch cut to a neat oval amply large enough to cover the hole. This must be smeared with ordinary rubber solution on its underside, the hood itself being similarly treated after being carefully cleaned.

Affixing a Patch

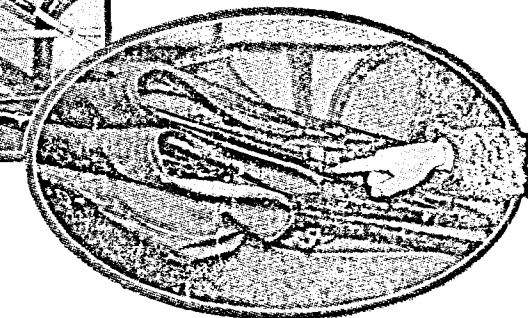
On no account must petrol be used for the cleaning process, as this will destroy the proofing of the material. It will suffice if the hood is thoroughly brushed with a clean, stiff brush.

The patch is next carefully stretched over the hole and firmly pressed into place. When it has had time to adhere thoroughly it may be reinforced with a double row of neat stitches round its edge, followed by a thin application of solution. "Mend-a-Tear" applied to the hood with a board behind it to take the pressure of the flat-iron is useful for small holes.

When it appears that a hood is losing its waterproof properties it is a simple matter for the owner to do his own re-proofing with the aid of one of the many excellent dressings now available. It is only necessary to paint on these preparations with a flat brush of good quality. They penetrate into the material, and a single application will often give the hood a new lease of life. Leather or leather substitutes may also be renovated with the dressings.



○ ○ ——— ○ ○
Careless folding is the cause of most hood troubles. The left-hand picture shows how the fabric is creased and nipped by the hood sticks; whilst that on the right shows the material carefully withdrawn.



Do not forget the hood paintwork itself when renovation is under consideration. It is more than likely that the wood and metal work will be found in need of a touch of paint, and more likely still that the working joints can do with just the smallest quantity of lubricant. Stiff joints are a contributory cause of maladjustment of the hood as a whole, to say nothing of being the source of sundry annoying little creaks.

If the metalwork shows signs of rust anywhere, this should be thoroughly eradicated before painting, rust being just as injurious to the fabric as to the metal.



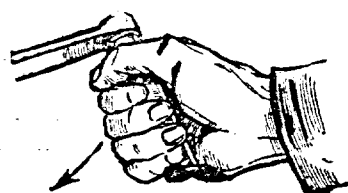
It is a simple matter to apply a patch to a hole in the hood. Cleanliness in the secret of success.

Cleaning Side-Curtains.

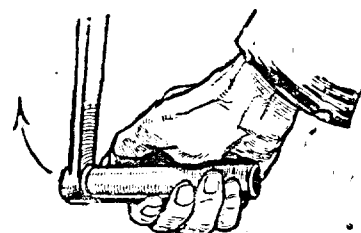
Celluloid side-curtains that have become dim or scratched should be cleaned with a good metal polish, applied with a clean, soft rag in long horizontal strokes—not smeared on anyhow. They should be removed from the car and laid on a clean flat surface, and a final polish given with a soft dry cloth.

Apart from the necessity of keeping the hood in a good and weatherproof condition, it is well to remember that an untidy hood mars the whole appearance of the car. A little care and attention upon the lines suggested will indisputably be time well spent.

Using the Starting Handle.



The left-hand illustration shows the incorrect method of using the Starting Handle the right hand picture shows the correct way.



Hospitals in Madras have recently had to treat a number of cases of broken wrists which have been caused by motor car engines back firing on the starting handle.

These "accidents" are always avoidable, and there is no excuse for the man who suffers a broken or dislocated joint from this cause.

The illustrations show how the handle should

be used: the thumb be free, and even if a back-fire does occur no damage can be done.

A quick upward pull will start a car far more easily than laborious "winding." apart, however, from the view-point of danger from back firing, owner drivers will find that gripping the handle in this way is much more comfortable, and not so likely to cause sore hands as if the handle is gripped with the palm.

Trade Notes.

Messrs. The County Chemical Co Ltd., are the proprietors of "Chemico" Hand Soap, a cleanser which is claimed to be efficacious in a variety of uses. Primarily intended for the motorist's purpose after a dirty job, this soap can be requisitioned for cleaning paintwork, windows, lavatory basins and the like, and according to the makers' claims there is scarcely any branch of home use for which it is unsuitable. Literature informative of this preparation may be obtained free of charge from the manufacturers, whose address is Chemico Works, Birmingham.

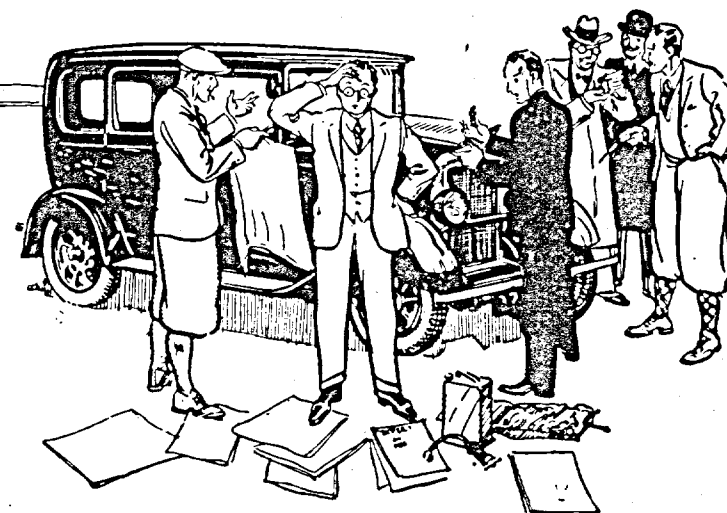
Rough roads and steep hills offer no obstacles to modern automobiles and now the problem of crossing water is in a fair way of being solved.

Emil Gross, a young mechanic who lives in Berlin, has evolved an idea which may convert the motor car into an amphibious vehicle. He has demonstrated that with the special equipment he has constructed, an automobile can be converted into a seagoing hack in fifteen minutes.

At a recent test in Germany, a Chevrolet touring car was used for the experiment. An inflated cushion at the front and one at the rear of the car and two inflated pontoons, one on each side of the body, were utilized to keep the vehicle afloat.

Perhaps You Don't Know - ?

Explaining Frequently Encountered Technicalities.



An
Interesting
New Series
Specially written
in Simple Fashion for
the
Owner - Driver

No. III. How to Calculate Gear Ratios.

IN handbooks on motoring and in makers' catalogues and specifications, the gear ratios of a car are usually given as, for instance, 10.2, 6.9, 4.5. In this case even the novice knows that the engine makes 10.2 revolutions per every revolution of the rear wheels when the gear lever is in "1st position", 6.9 revolutions in "2nd position", and 4.5 revolutions in "Top gear" position. If, however, the gear ratios of a car are not known, it is a comparatively simple matter to measure them, and there are two easy methods from which to choose.

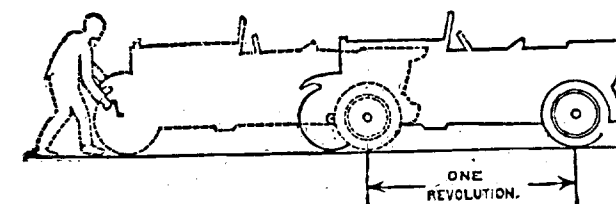
First Method: Jack up one back wheel, engage the gear the ratio of which is to be calculated, and note carefully that the ignition switch is in the 'off' position. An assistant is required to turn the starting handle. On the jacked up wheel a chalk mark is made on the lowest part of the tyre and also on the ground, so that one can tell when the wheel has made one revolution.

Starting with the handle in a vertical position the engine (in gear, of course) is turned over slowly and the number of turns of the handle

carefully counted; the observer stationed at the back wheel watches until the back wheel has nearly made one revolution, when he gives warning so that the last few degrees travel of the starting handle can be made sufficiently slowly to stop when the chalk marks coincide once again. If the last turns are made too quickly it will be found difficult to arrest the movement until too late. In order to prevent over-running the observer at the rear wheel can help by using his hands as a brake on the tyre just before the chalk marks come together.

It will be found in, say, the case of testing top gear ratio that the starting handle makes only two and a quarter turns to make the back wheel complete one revolution, and this must be multiplied by two to give the gear ratio—in the case of top gear 4.5. This multiplication is necessary because of the action of the differential gear in the final drive which halves the true figure when one of the gear wheels is stationary.

Other gear ratios are computed in a similar manner.



Showing how the car is moved forward by means of the starting handle, a gear being engaged. When using this method care should be taken to ensure that the front wheels are kept perfectly straight.

HOW TO CALCULATE GEAR RATIOS,

(continued from previous page)

Second Method: The front wheels of the car should be set perfectly straight, a gear engaged, and a chalk mark made on the lowest point of one of the rear wheels. With the ignition switch off, the starting handle is turned and the car will move forward. This forward movement should be continued until the mark on the rear wheel indicates that the wheel has made one complete revolution. If top gear is engaged, then four and a half turns of the handle will be made for one turn of the rear wheels, showing a top gear ratio of 4.5 to 1.

Owing to differential action it is important to see that the front wheels are perfectly straight, for if the two rear wheels do not each make a complete turn the figure obtained will be incorrect.

It should be unnecessary to add that great care should be taken in this second method to see that the engine is switched off. A good plan is to remove the plugs, for there is then no chance of the engine starting up, and the work on the handle is much easier.

Gear ratios are often given in terms of actual reduction made in the gear box, and not in terms of engine revolutions as compared to road wheel revolutions. In this case, however, the final drive reduction is always given, and to obtain the ratios in terms of engine revolutions for one revolution of the road wheels the gear box ratios should be multiplied by the final drive ratio.

Underlying Principles.

Occasionally the ratios will be given in an even more complicated form, the number of teeth being given on the various gear box pinions and on the pinion and bevel wheel of the final drive. Thus the first gear pinions might be given as 16×36, the multiplication sign in this case being only a tie between the two numbers, just as it is when we say that an engine has a bore and stroke of 5 × 100 mm. What the expression does mean is that the pinion on the driving-shaft has 16 teeth, and that on the lay-shaft 36 teeth, so that there will be a reduction of $\frac{16}{36}$ to 1 in this step of the drive. The lay-shaft pinion has 20 teeth and the pinion on the driven shaft 32 teeth, so that there is a further reduction of $\frac{20}{32}$ to 1. In addition, the spiral bevel final drive would be described as 10×47, the pinion having 10 teeth and crown wheel 47 teeth; in other words, the final drive ratio is $\frac{10}{47}$ to 1, or 4.7 to 1. The total reduction on first gear is, therefore, $\frac{16}{36} \times \frac{20}{32} \times 4.7$ to 1, and this equals 3.6×5 to 1, which equals 16.5 to 1.

Similarly, the second gear reduction may be $\frac{18}{36}$ to 1, so that the final reduction on second gear is $\frac{18}{36} \times \frac{20}{32} \times 4.7$ to 1, which equals to 10.2 to 1.

Effect of Tyre size.

We now come to a problem which, it must be confessed, has been known to puzzle experienced motorists. If larger wheels and tyres are fitted, the effect will be similar to that of increasing the gear ratio, but actually, of course, the gear ratios remain unchanged, since they are determined by the number of teeth on the various gear wheels, as we have seen. This brings us to the important conclusion that gear ratios in themselves mean very little, and they must be considered in relation to the size of the wheels and tyres.

Let us assume that a car has a top gear ratio of 4.5 to 1 with 28 inch tyres. We will assume also that the effective diameter of the tyre when properly inflated is 2 in., then the circumference of the tyre, i.e., the distance which the car will move forward for one complete revolution of the road wheels, will be $28 \times \pi$ in., π being the symbol standing in this instance for the constant 3.1416.

It is not necessary, as we shall see later, to work this expression out, but it will, perhaps, help to explain matters if we do, and we accordingly see that the car travels 28×3.1416 in., or 87.9 in., for one revolution of the road wheels, i.e., for 4.5 revolutions of the engine on top gear.

If larger tyres are fitted, say, 29 inch we shall have $29 \times \pi$ in., as the distance travelled by the car for one revolution of the road wheels, or for 4.5 revolutions of the engine on top gear. In other words, the car has travelled just over 3 in. farther for 4.5 engine revolutions, and what we want to know is how many revolutions of the engine it will take for the car to travel 87.9 in. with the larger wheels. This is a simple problem in proportion, and if the car travels 91.1 in. for 4.5 engine revolutions, it will travel 1 in. for $\frac{4.5}{91.1}$ engine revolutions, and will

travel 87.9 in. for $\frac{4.5 \times 87.9}{91.1}$ engine revolutions.

which equals 4.34 engine revolutions. We may say, therefore, that a gear ratio of 4.5 on the 28 in. diameter tyres is equivalent to a gear ratio of 4.34 with 29 in. diameter tyres.

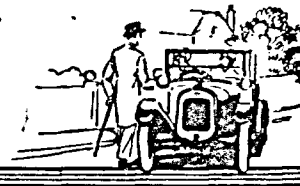
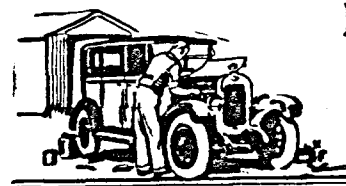
That the circumference of the tyres need not actually be worked out is soon seen, for we may say that the car travels $29 \times \pi$ in. for 4.5 engine revolutions, so that it travels 1 in. for $\frac{4.5}{29 \times \pi}$ engine revolutions, and $1 \times \pi$ in. for $\frac{4.5 \times 28 \times \pi}{29 \times \pi}$ engine revolutions.

In this expression π cancels out, and if we work out $\frac{4.5 \times 28}{29}$ we obtain the answer 4.34.

In a similar way the effect of fitting smaller wheels and tyres may be easily worked out.

From an Owner Driver's Note Book

Random Jottings upon Motoring Matters of the Moment



by

"Spot—Light"**Leaving Well Alone**

THE last thing in the world that the sensible motorist will do is to tinker about with his carburetter. The temptation to do so is, however, very strong, for in all of us is the desire to get just a little bit more for our money. Now, therefore, that petrol has once more gone up in price there is every indication that carburetters all over South India will be frantically adjusted in an effort to obtain just a few more inches per hour.

But is it worth while?

Of all the components of the modern car the carburetter is perhaps the leading example of a compromise. It has to fill so many roles, many of which are incompatible. We all want easy starting, rapid acceleration, maximum speed, and minimum petrol consumption. Even a moment's thought will show that we cannot have all these things at once, no matter how hard the carburetter tries to oblige, and at the best all that can be done is to adjust the setting of the instrument to give the best all-round results. If this adjustment is altered in any way, one or other of these functions are necessarily impaired; as for instance, if matters are so arranged as to increase the mileage per gallon, then both speed and acceleration must be sacrificed to a certain extent.

When all is said and done, the makers of a car should know the best setting for the carburetter fitted to their cars, and any monkeying about with their setting will assuredly prove to be uneconomical in the long run. In this matter, as in many others connected with motoring, one can be as wise and rupee foolish.

On Starting and Stopping.

A recent battery advertisement published in the Home motoring papers reminds me of an incident which occurred in the early-early days when cars were uncertain and motorists hard cases.

The advertisement runs: "When you've said 'Well, I think I'll be pushing off'—when you've said 'Good-bye' and, by way of further emphasise 'Well, good-bye'—at this point it is best and happiest to get away before somebody again says 'Well'. If the engine declines to start the situation is ruined, and your smiles begin look to as if they were fixed on with pins. Fit an X—battery and when you want to start—start"

The advertisement attracted my attention because of its featuring the way one says 'Well' whenever a departure is being made. The incident it called to mind occurred some years ago on the visit of a friend. He climbed into his rather hefty latest model, said 'Well' at least half a dozen times, waved good-bye, and tried to start up.

To cut a long story short, and to gloss over memories of filthy hands, ruined clothes and tattered tempers, all that remains to be said is that despite the many 'wells', my friend had to stay the night—and a considerable part of the following day also before he got that car to start.

The Thruster

WHEN negotiating towns and villages, I suppose we have all come across the man who seems to ignore their very existence. He is not as a rule a fast driver, but he seems to keep up a uniform speed

(continued on page 313)

FOR SOUND ECONOMY



**Resolve Now:
"I will buy only
the leading make
of tyre."**

Why do more people the world over ride on Goodyear Tyres than on any other make? It is not because the price is lower. It is because the value is greater.

There can be no other explanation of why Goodyears outsell all other tyres each year—by increasing millions.

Two chief reasons account for this Goodyear supremacy—the famous All-Weather Tread and the Super-twist Cord Carcass. These are found only in Goodyear Tyres.

For economy and satisfaction, it will pay you to say: "I will buy only the leading make of tyre."

GOODYEAR

OWNER DRIVER'S NOTEBOOK.

(concluded from page 311)

regardless of conditions. You slow down in some narrow and congested street and he passes you with much horn blowing; barging his way through the traffic like a fire engine. His actual speed is not usually more than, say, thirty to thirty-five miles an hour; but it is just about double the speed most careful drivers would consider safe in such conditions. Having reached open country and resumed your normal gait, you generally re-pass him within the first mile, still doing his thirty to thirty-five.

The same man will usually pursue his thrusting tactics on a badly congested main road, when traffic has become a procession. On such occasions the sensible driver resigns himself to regulating his speed to that of the procession and is content to keep station, but our friend the thruster seems to think no risk too great if he can move up one place.

A USE FOR RAZOR BLADES.

At last I have found a use for old razor blades! A recent contributor to the South India Motor Owner lately complained that he had some ten million blades—and I really think I have just as many.

However, I am going to put four or five (carefully wrapped up, by the way) in the toolbox of my car. There are endless little cutting jobs on which a razor blade can be used both in the garage and on the road, and I should think that a blade could well take the place of a feeler gauge for testing tappet clearances.

What a pity my brother contributor never thought of offering a prize for a practical solution to the blade problem.

CONCERNING DEPRECIATION

This is a subject which rarely enters into the calculations of the average motorist owning a car of the usual mass-production type, for depreciation is so small an item as to be hardly worth taking into account if the car is to be kept in service till it is no longer roadworthy.

On the other hand, the financial aspects of depreciation as it affects large and expensive cars are really terrible. Use a car priced at Rs. 10,000 but once on the road—unless it is of one or two especially favoured makes—and it immediately depreciates in value by at least Rs. 2500. This is an excellent example of the lightning depreciation of luxury articles; but serving as a basis for contrast comparisons are very illuminating.

I daresay Spencer & Company would make me a gold topee if I ordered one from them; they would charge me quite a lot for it, but it wouldn't be worth four annas as a topee if I decided to sell it after the first time I wore it. It is just the same with other things. You might buy a fifty rupee suit and I one worth fifteen, but if we tried to sell them to an old clothes dealer we should both get about two rupees for our suits.

It all boils down to the one big fact that depreciation is one thing if you keep and an entirely different matter if you sell. After being once dabbled my suit would be second-hand, and most difficult to sell even at two rupees; but if I prefer to keep the suit, depreciation is not thirteen rupees a week, but over, say, twelve months a matter of about three annas a day.

In just the same way, the depreciation of a small car is infinitesimal provided it is used throughout its useful life.

GENERAL MOTORS' OWN SHOW

As General Motors will not participate the forthcoming Paris Annual Automobile Salon this year, arrangements have been made for a private display of its products during Show Week. Fifteen to twenty models of General Motors' cars will be on display on the first floor of the new National City Bank Building, at 60 Avenue des Champs, Elysees.

WOMEN BUY HALF OF ALL CARS SOLD.

Surveys show that women buy about half the motor cars sold, drive them more than half the time and

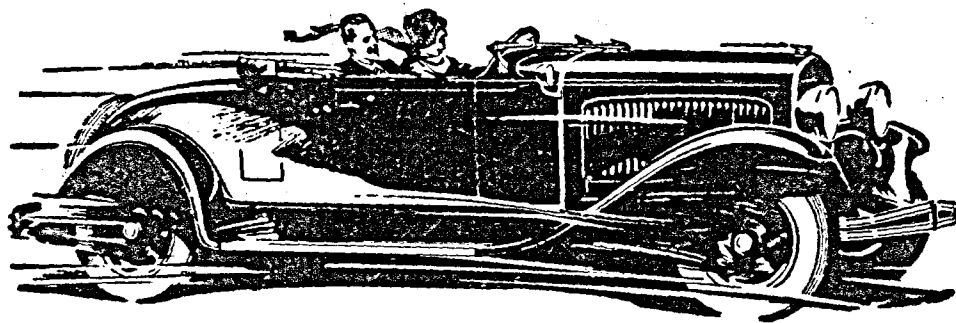
buy from one-third to one-half the gasoline, oil and service. There are more than 10,000,000 women drivers today and they actually own and operate 3,500,000 cars. The figure of 10,000,000 women is based on an average of 1.75 drivers for each of the 20,000,000 cars in operation and is a conservative estimate.

A. A. A. OFFICIALS SAIL FOR TOUR OF EUROPE.

Thomas P. Henry, President of the American Automobile Association and Ernest Smith, general manager and executive vice-president, sailed from New York recently for a motor tour of Europe.

*When replying
to Advertisers
please mention
THE SOUTH INDIA
MOTOR OWNER*

Care of the Eyes when Motoring.



AN INTERESTING ARTICLE UPON AN IMPORTANT SUBJECT.

OFTEN when motoring, glare has been the cause of much suffering to travellers with sensitive eyes, and having discovered a method for strengthening them and affording relief, I pass on the information for the benefit of readers, says a contributor in a recent issue "The Record", the official organ of the Automobile Association of Ceylon.

Most of us subject ourselves to massage of facial muscles; to the care of hands, feet, and body; but leave the eyes unattended until they of themselves send forth an S.O.S. for help. We strain them in so many ways,—by our emotions, tears and laughter, by prolonged reading and writing, by force of the weather, and by glaring sun, and the result frequently necessitates the use of glasses long before we have arrived at the age that normally demands them. Nature records our want of attention by the shrinking of tissues and the resultant network of wrinkles, or by drooping eyelids, and hollow ridges.

We therefore owe it to ourselves to protect our eyes as much as possible. Motorists should wear sun-glasses that are mildly dark unless otherwise prescribed, not only to prevent glare, but also to guard against germ-laden dust and irritation. (I have read of a motorist who glued cuttings from photographic films inside a plain glass lens for a protection against sun, when unable to purchase splinter proof goggles, and with excellent results). At the end of a dusty journey it is refreshing to bathe the eyes with boric water, though it may be considered a wearisome business when one is fatigued, but is well worth the trouble.

It is a relief after concentration on close work, to lift the head erect, and without moving turn the eyes in every direction. First to the right and then to the immediate left. Then upwards and immediately in a downward movement, finally rolling them in a circle without opening the lids. Another refreshing exercise is to focus the eyes at a distance, and then quickly shorten your range of vision to within a couple of feet of your chair. This should be done several times, and

those who are keen on etching and engraving will find these exercises invaluable.

Many people suffer by the excessive use of certain muscles in the eyes, and by neglect of others which are not as active, owing partly to astigmatism. Amongst exercises which bring these muscles into play is the following which I have found most beneficial:—

Close the eyes, drawing down the lids, and count twenty or twenty-five, and then open them and look steadily at a soft light and count again. This exercise, however, should cease the moment the eyes feel tired.

Another exercise well recommended is to hold the brows firmly with both hands and close the eyelids quickly several times without moving the forehead. This movement helps to strengthen the lids, but on no account should pressure be placed on the eye-balls.

A further strengthener is to raise the eyebrows without wrinkling the forehead, and support them with the fingers while the eyes are closed. Move the eyelids up and down, and this will result in the lower lid meeting the upper one, and exercising the muscles underneath.

In all cases a little face cream should be patted into the eyelids before exercises, but rubbing should be carefully avoided as it wrinkles the skin.

Those who indulge in sports, and more especially in the low-country often suffer from blood-shot eyes. This is usually the result of concentration as much as from glare, and can be relieved by hot fomentations. Smear the lids with grease, make two pads of cotton-wool, and dip into water sufficiently hot for comfort, and place over the lids for a few minutes. Instantaneous relief follows. Care should be taken to prevent chilling afterwards, and it is advisable to place a cold compress on the eyes after the fomentations, more especially if one is going out of doors again. This treatment is refreshing for those who suffer from insomnia.

So many of our headaches are entirely due to eyes, and those who are subject to them, should always wear coloured glasses when travelling either by car or by train.

Safety Glass Comes of Age.

THIS year is the twenty-first anniversary of the first attempts to make safety glass on a commercial basis.

A correspondent in a recent issue of the *Times* writes the following interesting story of its accidental discovery and the later story of its commercial development.

"Safety glass has become prominent among motorists within the past year or so, not only because the leading manufacturers have emphasized it as being part of their standard equipment, but because the U. K. Government has introduced legislation concerning it. It is a coincidence that this should have happened during what is virtually the coming-of-age of this material. It was in 1910 that the patent now most generally used was filed, and, although some forms of unsplinterable glass are believed to have been in use even so far back as 1900, it was only after 1910 that any serious attempt was made to manufacture it on a commercial and scientific basis.

It is now generally known that the new Construction and Use Regulations of the Minister of Transport (Great Britain) make safety glass compulsory in certain instances. It must be fitted on the windscreens and in the case of double-decked omnibuses, in the lower front, windows of all new motor vehicles after January 1, 1932, and, in the case of vehicles already in service after January 1, 1937.

These regulations were an attempt to bring public vehicles into line with private cars, most of which have had "triplex all round" in the standard specification for some time past. As regards commercial vehicles, however, the regulations fall far short of the ideal. In the event of an accident to a public passenger vehicle, for instance, it is from breakage of the side windows that the occupants are most likely to suffer injury, and side windows are not included in the regulations.

It was a motor accident that led to the commercial development of safety glass in the first place. The man who filed the patent was Edouard Benedictus, poet, philosopher, painter, musician, chemist, and inventor. He was of Dutch origin and a descendant of Spinoza. Benedictus was born in Paris in 1879 and died in January, 1930.

Although Benedictus's greatest enthusiasm was for music, he was induced to take up chemistry, and he established his own experimental physiochemical laboratory in Paris. In 1903, when he was moving some bottles from one shelf to another, one slipped from his hands and fell the entire height of the room. On picking it up Benedictus found that it was starred inside like a crystal, but unbroken because of some strong interior support. Fifteen years before, he found from his records,

the flask had contained a mixture of alcohol, ether, acetone, amyl acetate, and trinitrocellulose, which had evaporated in the course of time, coating the interior with a celluloid-like enamel of high tensile strength. Its cohesive power was so great that at the moment of shock not a splinter of glass was detached from the flask or appeared likely to become detached.

Benedictus replaced the bottle and thought no more about it till he heard of two accidents in which young women were injured by

flying glass. Then he recalled the bottle and spent the whole night in his laboratory planning a programme which he ultimately carried out. The first piece of safety glass was manufactured with the aid of a copy press.

Safety glass is a sandwich of two sheets of glass with celluloid in between, the whole being welded together with a solution of high tensile strength. It was because of its three-ply construction that Benedictus called his invention "triplex" glass. Very little was done for two years with the invention until Mr. Reginald Delpech, a pioneer English motorist, acquired the patent, founded the Triplex Company in this country, and began to produce safety glass on a commercial basis.

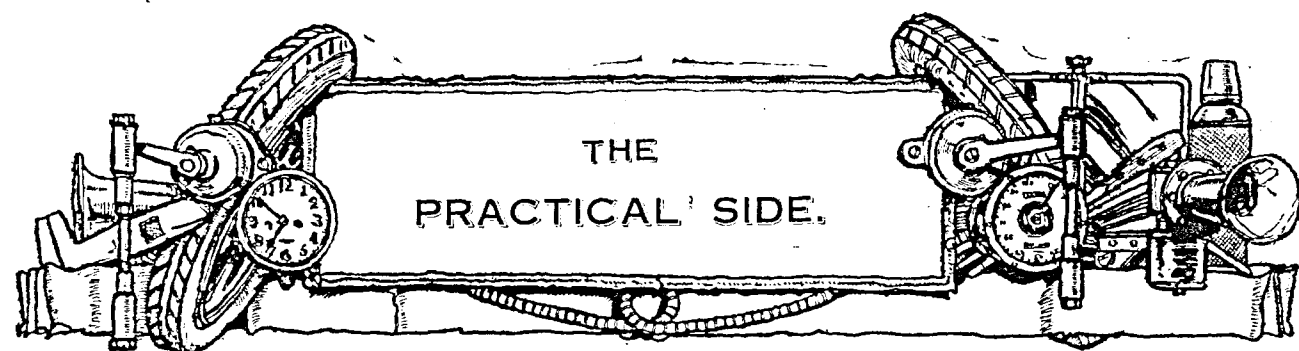
When manufacture began there was little enthusiasm for the idea. Motoring was still in its early stages, and motorists regarded cuts from broken screens as one of the necessary perils of the road. Pavlova, realizing that disfigurement by broken glass would ruin her dancing career, was one of the first people to fit safety glass in her car. Mr. Delpech began a campaign to urge on motorists and manufacturers the danger of ordinary glass in motoring, but before he had carried it very far the War came and with it a wide demand for safety glass in innumerable forms, from aeroplane windshields to bullet-proof windows for tanks and periscopes for submarines.

The War had created a vast number of potential motorists who knew of safety glass, but it was not until 1927 that real progress was made in its adoption. This was when Mr. Ford himself was involved in a motor accident. Within seven months he had standardized triplex on all Ford cars in America.

A few months more and it was a "standard extra" on many of the more important British makes. Riley was the first company to make it a standard fitting without extra cost, and they were followed in due course by all the other leading manufacturers.

This increasing popularity of safety glass has meant the growth of a new industry, employing hundreds of people. In 1914 the sales of the principal concern making safety glass were only 15,500 square feet per annum. To day the figure is over 2,000,000."

Some interesting notes upon the discovery and development of safety glass. How production has increased from fifteen thousand square feet per annum to over two million.



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.

IT is very usual to find that the carburetter is to novice motorists one of the most puzzling piece of mechanism on the car, and many and varied are the explanations which are often given or guessed at as to the functioning of this particular item of a car's equipment. On analysing the fundamental principles upon which the carburetter works there is little to understand. But it is the improvement and elaboration of this first principle which makes the carburetter a puzzle and a problem. Nevertheless all carburetters of the present time are constructed on the same basic principle and once this principle has been grasped the motorist will have no difficulty in reconciling the particular make fitted to his car with these first principles.

Petrol is poured into the tank of the car in a liquid state but before it can be used to produce "power" in the engine it must be vapourised and mixed with a pre-determined proportion of air before it becomes that highly efficient explosive mixture which is necessary for

the generation of power. As is well known, petrol itself cannot burn without atmospheric oxygen and only when a proportionate mixture of twenty parts of air to one part of vapourised petrol are present is an explosion possible. If less air is present the mixture will not burn, if more air is present the resulting explosion loses much power. It can therefore be seen that it is essen-

PRINCIPLES OF THE CARBURETTER.

tial the correct petrol and air mixture be introduced into the combustion space of the engine in order to obtain maximum explosive value.

It is the object of the carburetter to perform this function, and this piece of mechanism regulates the introduction of the requisite petrol and air mixture into the combustion space. It has been found that the best way to vapourise fuel for use in an internal combustion engine is to draw the original liquid through a minute orifice or jet which breaks it up into fine spray which, with the heat of the engine, rapidly becomes vapour. To obtain this result petrol is forced by pressure or fed by gravity into that portion of the carburetter known as the float chamber the purpose of which is to maintain the level of the fuel in the carburetter constant whatever may be the demands of the engine. When the piston descends on the induction stroke air must be drawn into the space which (were no induction tube or orifice present) would of necessity be a vacuum. Thus

a strong stream of air flows through the induction pipe. Into this stream projects the jet from which the liquid fuel is drawn by the air stream and carried along into the combustion place. This fact can only be understood if one compares the way in which scent is sprayed from a scent bottle, or, to use as basis of a simile, a more common place article in use in Southern India,

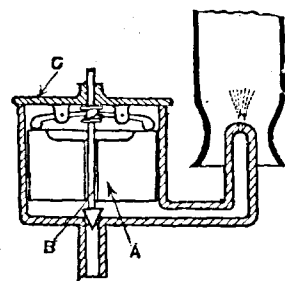


Fig. 2. Simple Float Chamber and Jet, showing the needle inlet valve.

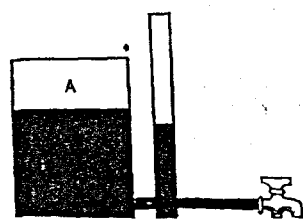


Fig. 1. Showing how the Petrol Level of the Float Chamber determines the height of the Petrol at the Jet orifice.

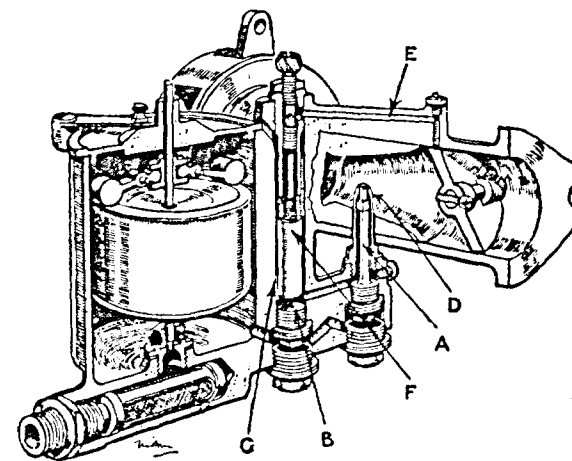


Fig. 3. The Zenith Carburetter. This is fully described in the text.

compare the way in which Flit is sprayed from an ordinary Flit can. Once this principle is grasped it is easy to see that jets of varying size enable varied mixtures of air and petrol to be conducted into the cylinders in accordance with the demands of the engine at the moment. For instance, when starting the engine a rich slow burning mixture is required as the engine cannot be rotated quickly either by hand or by the selfstarter. When accelerating, a quick burning slightly rich mixture is necessary; and when fast running on a level is to be done a comparatively weak mixture with a very rapid explosion is required. Unfortunately the speeding up of an engine, and the consequent greater volume of air drawn into the cylinder, does not increase the delivery of the petrol in the proper proportion, and it is here that carburetter design becomes slightly involved, in that varied forms of jets or air regulating devices have to be employed to ensure the best petrol-air mixture for the work to be done. We propose therefore to describe a few of the better known makes of carburetters amongst which every car owner will find either that make fitted to his own car, or a make so similar as to make comparison relatively simple.

In all carburetters the petrol flows from the tank through a pipe to the float chamber where it is controlled by a needle valve—a needle with a taper point fitting into a tapered seat. This valve automatically controls the flow of petrol by means of a float fitted with levers. This has been shown simply in Fig. 2. but examination of the carburetters illustrated will make clear the mechanism of the float. As the float lies on the bottom of the empty chamber the levers draw up the needle and petrol enters the float chamber. As the float rises it pushes the levers up and their action presses the needle down into its seating again, until the chamber is filled with petrol to the desired level when the needle valve is completely closed.

Meanwhile, as will be seen in Fig. 2. I the petrol flows along the communicating passage to the jet, the desired level of the petrol in the float chamber being that at which the petrol is just about to overflow the

jet orifices. When the engine is started up petrol will be drawn from the jet, the level of fluid in the float chamber will fall, the valve opens again, and more petrol is allowed to enter to keep the level constant. This cycle continues indefinitely.

THE ZENITH CARBURETTER.

In examining actual carburetters the various fundamentals outlined above should be borne in mind. The diagram of the Zenith carburetter shown here appears to be infinitely more involved than the simple sketch Fig. 2. The principle however is the same. The small jet C and the tube E are additions to provide quiet "idling" and should be disregarded for the moment. Two other jets are to be seen. A the main jet supplied direct from the float chamber, and D which can be likened to the pipe between the two portions of Fig. 1. This jet being supplied by a pipe in which there is a restriction B, is known as a submerged jet or compensator.

This jet regulates the petrol-air mixture, and acts in company with D to give the correct proportion of petrol and air at all engine speeds. The comparative slowness of the fuel level in well C to fall to the correct level compensates for the slowness of the petrol stream to respond to the rapid acceleration of the air stream on opening the throttle wide.

As will be seen, the design of this carburetter ensures that the third jet, F, does not come into operation unless the throttle is almost closed. In this position the throttle centres all the engine suction on the narrow opening of the passage E. Under these conditions this jet supplies just sufficient fuel to keep the engine "idling" slowly, but at any other throttle opening the jet becomes inoperative.

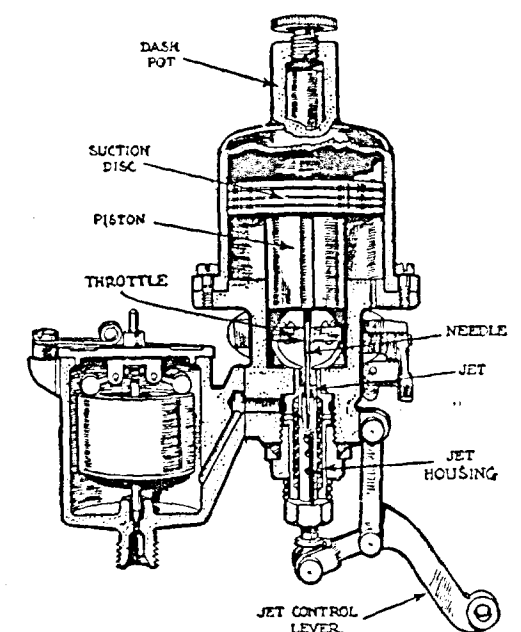


Fig. 4. The S. U. Carburetter as fitted to all Morris Models.

(continued on page 326)

The Fastest speed ever attained by a—

Motor Car . . .	246 m. p. h.
Motor Cycle . . .	150 m. p. h.
Lady Driver . . .	140 m. p. h.
3-Wheeled Cyclecar . . .	115 m. p. h.
Baby Car . . .	110 m. p. h.
Motor Boat . . .	110 m. p. h.
Diesel-Engined Car . . .	100 m. p. h.
Outboard Motor Boat . . .	54 m. p. h.

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NEWS ITEMS & MISCELLANEOUS NOTES
on Matters of Interest to Motor Owners,
Gathered from all Sections of the Field.

"From Delhi to
Damascus, Kantara
to Cathay"

Do You Know a Better One?

A reader tells us that a friend of his, who recently bought a Morris Minor on his advice, when asked how he liked his choice declared that it was everything he could want except for the absurd provision for filling up the sump.

Not being able to appreciate this complaint, our correspondent asked him where he had filled it to which his reply was: "Why, down the little hole which has the stick in it at the side of the engine."

Something like an Order.

Messrs. Crosse & Blackwell Ltd., the well-known preserved provision manufacturers, have recently been supplied with the following fleet of cars for use of their representatives:—

- 55 Morris Minor Saloons,
- 2 Morris Minor Two seaters,
- 3 Morris-Cowley Two-seaters,
- 1 Morris Cowley Saloon.

A Helping Hand.

Failing to notice a traffic policeman's uplifted hand, a motorist nearly ran into the constable.

Very slowly the stalwart man in uniform strode over to the car, and thrusting a huge hand through the side-screen opening, held it, palm stretched and fingers apart, about six inches from the motorist's face.

"Now, d'ye see it?" he enquired.

A Booklet Published by the A. A. Of Interest to Flying Club Members.

For the benefit of its members who are interested in flying, the Automobile Association, London, has prepared an informative booklet. It includes a synopsis of the regulations with which a pilot who desires to obtain the Air Ministry's "A" licence must comply. A list of addresses of all clubs throughout

the British Isles where flying instruction can be obtained, together with the cost of such instruction, is included. Copies of the booklet may be obtained free on application to any office of the A. A. This booklet would prove of interest to all Madras Flying Club members who are shortly proceeding on leave.

Could it be Done in India?

Selling Cars in Switzerland.

The following is a free rendering of an advertisement now appearing in the Swiss papers as given in a recent issue of "The Autocar."

"Buy a Car"

Without payment of so large a sum down as to disturb your capital. Our system enables you to know in advance exactly what the monthly cost of your car will be, as our terms include:

1. Car tax for two years.
2. Insurance against third-party risk for two years.
3. Insurance against damage to the car, even if through the driver's own fault, for two years.
4. Insurance against theft and fire for two years.
5. Books of coupons which will

allow you to draw free sufficient petrol and oil for 1,000 kilometres a month from all Shell filling stations in Switzerland.

We are always willing to give you a demonstration of the Austin car, which brilliantly proved its superiority as regards construction, convenience and speed in hill-climbing in the last Gurnige Race."

One must take into account the fact that all petrol costs substantially more in Switzerland than most places and also that the "1,000 kilometres a month" is pretty certain to include a deal of mountain climbing.

It would be interesting to calculate what similar privileges would cost the Southern India car dealer.

HERE AND THERE.

NEWS AND MISCELLANCY FROM ALL SECTIONS OF THE FIELD

(continued from overleaf)

France Led World Automobile Registration in 1930.

Some Interesting Facts and figures Regarding world Registration.

For the first time in the history of the amazing development of automobile usage, France, in 1930, assumed the crown for the largest increase in motor vehicle circulation, displacing the United States. In 1930, France registered an addition to circulation of 178,000 cars in contrast with only 126,094 in the United States. In a comparison of percentage increases, the achievement of France stands out even more emphatically with a 13.5 per cent rise recorded as against 0.5 per cent for the United States.

The dozen countries of the world leading all others in new motor car registrations at the close of 1930 are as follows:

New Car Registrations.			
France	178,000		
United States	126,100		
Great Britain	83,700		
Germany	49,700		
Canada	45,600		
Italy	28,000		
Argentina	21,700		
Belgium	17,700		
Holland	17,000		
New Zealand	16,000		

South Africa	14,600
Sweden	14,300

There is one car in France for every 28 persons, a record for Europe. The United States has one car for every 4.6 persons, Canada and New Zealand have 7.5 and Australia 10.

In total automobile registration, France ranks slightly behind Great Britain. French circulation gained 95,000 over English during 1930 and needs only to surpass the latter by 58,000 in 1931 to reach a higher total enrollment of motor vehicles.

The five countries with largest circulation are:

January 1931.			
United States	26,691,000		
Great Britain	1,558,000		
France	1,500,000		
Canada	1,215,000		
Germany	659,000		

The sharp tariff rise on automobiles passed by the French Parliament is taking severe toll on the foreign business done in that country. Production in France has fallen off about 20 per cent on the last year.

How Opinions Differ.

Anomalies in Indian Motor Vehicle Rules.

There is a clause in the Calcutta Motor Vehicle Rules which strictly prohibits the use of polished aluminium number plates, one reason for this bar being that Calcutta authorities allude to the poor visibility of such plates at dusk or at a distance.

We have now heard that Bombay has expressly legitimised the use of

such plates, and it would appear that the standard of eyesight in the latter Presidency must be higher than that of Calcutta. Similarly, the transparency of the atmosphere at dusk must be better in Western India.

Surely it is time such anomalies were removed, and a set of general motor vehicle rules draughted for the whole of India?

Slow Motion Aids Car Manufacture.

The slow motion cinema camera deserves much credit for the steering ease first offered by the Cadillac V 16, and later on the Cadillac V-12, V-8 and LaSalle.

Through the use of such a camera, engineers discovered steering facts which the eye did not reveal. They learned new things about the cause and effect of tramping and shimmying, about the behaviour of front springs and axle under different driving conditions, about the reaction of tyres and shock absorbers to different driving conditions, about the reaction of tyres and shock absorbers to different roads.

To obtain this information, the engineers set up a slow motion camera, capable of shooting as low as 48 frames a second, in the rear of a car. They trained the camera on the front end of the V-16 which was to follow. The two cars started, and the operator of the camera turned the handle.

Then, to get another story of what was happening, the car carrying the camera ran parallel with and alongside the V-16 under test. In this manner, a side view graphic account of steering was secured.

The result of these pictures, and of the subsequent study of them, is the effortless steering which Cadillac and LaSalle cars provide. Use of the slow motion camera is another example of the thoroughness of Cadillac manufacturing methods, and the high quality which these methods

assure.

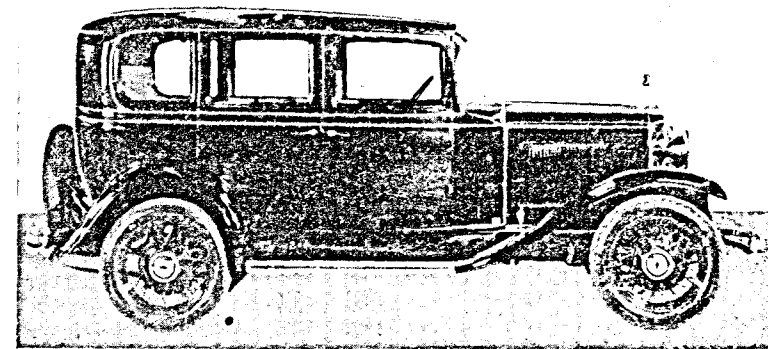
£ 100, 100 M.P.H. and 100 M.P.Q.

We recently gave an account of how a Morris Minor S. V. covered the flying mile at Booklands at over 100 m.p.h.

Following upon this comes the news that the same car, without its

HERE AND THERE: NEWS OF THE MONTH

WOMEN SHARE IN CAR SALES



supercharger has covered 104½ miles upon a gallon of petrol! This fact was accomplished on ordinary main roads in England under R. A. C. supervision and observation.

The Standard Chevrolet Sedan—
a model which makes monsoon
motoring a pleasure.

Hurry-up, Hurry-up, Hurry-up

The State of California has just passed a new traffic law forbidding motorists to drive so slowly that the reasonable flow of traffic is retarded. Traffic officers have full authority to arrest drivers who persist in holding up the movement of other vehicles on the road. It is as dangerous to drive at a speed that hinders traffic as it is to speed along the road at an excessive rate.

Good Milage in Test.

Armand Vezina took a new Chevrolet from the Mount Plaisir Garage at Drummondville, Quebec, recently and after being chained to the wheel drove it for 80 hours without stopping. During that time he covered 861 miles at an average speed of between ten and twelve miles per hour. The motor never stopped running, the car was kept in motion even while refueling. The average gas consumption was 19.15 miles per gallon, an excellent record considering the low speed and the fact that the car had previously travelled only 399 miles. After this gruelling test the car was in perfect order in every respect.

to a wide variety of punishments meted out for violation of traffic laws but one Judge in the Motor City set a new precedent. The boy was sentenced to six months, probation with the understanding that each month he must have a brake inspection to satisfy the Court as to that safety factor.

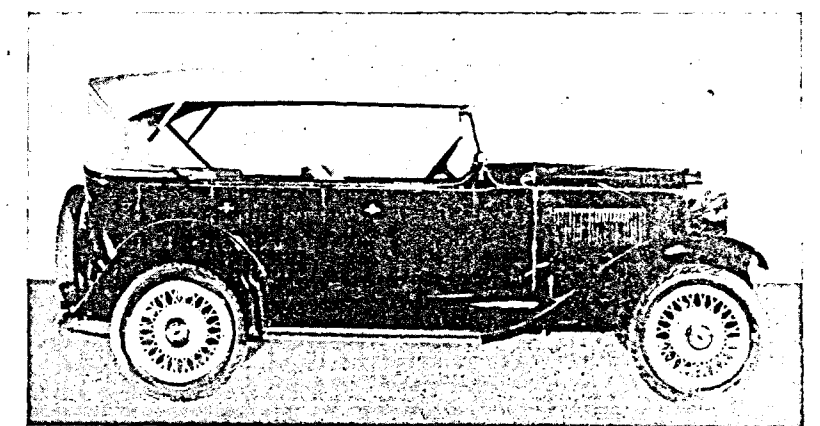
Buicks Join the Army.

The United States War Department recently purchased twenty-four Buick limousines for official use. These cars are for assignment to commanding generals at headquarters for use in military operations requiring movement over long distances and at high speeds.

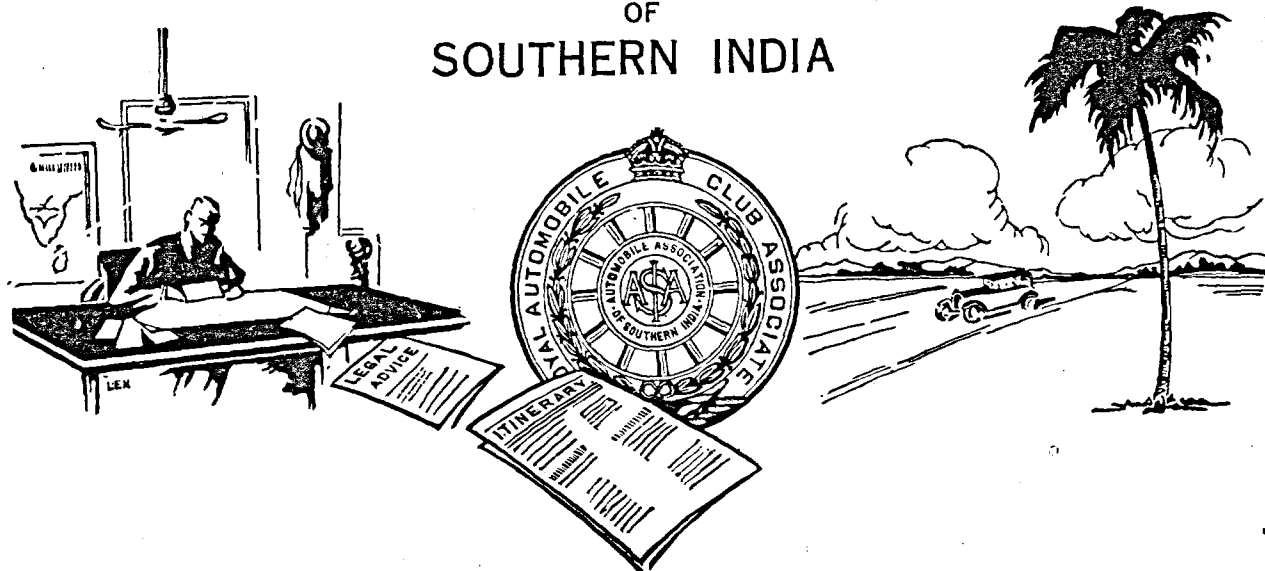
Crosses Continent without Single Mishap.

To complete a cross continent journey of 4,566 miles without a mishap of any kind and minus even tire trouble is the achievement of Horace Kennedy, former chief of Halifax detectives, who drove a Chevrolet Sedan from California to Halifax. He changed the oil and had the car greased every 1,000 miles but never had to add to the oil. The result of the Chevrolet's remarkable mechanical performance on such a long journey was that Mr. Kennedy arrived fresh and untired at the end of his continental trip.

The illustration below shows the
Standard Tourer of the Chevrolet
range. One of the best looking
cars on the road.



AUTOMOBILE ASSOCIATION OF SOUTHERN INDIA



Secretary's Report for October 1931.

Committee Meetings.

1. The Committee assembled on 9th October 1931 and together with a number of routine items dealt with the following:—

Road Signs.

(a) Considered a suggestion that large commercial concerns should be invited to subscribe a number of road signs for posting in various parts of the Presidency, on terms similar to those obtained by other Automobile Associations in India. It was decided to collect further details of the scheme, in view of the Association's policy to refrain from advertising, the products of any concern.

Skeleton Maps.

(b) Reconsidered the question of supplying skeleton maps free with all itineraries and decided to defer the matter till the finances of the Association improved.

Membership of Unit Messes.

(c) Read legal advisors report on the subject of admitting Unit Messes to joint membership and decided to ascertain what was being done in this direction by other Automobile Associations.

Customs Duty in Hyderabad State.

(d) Read letter from Customs Authorities in Hyderabad, approving of a scheme whereby the A. A. S. I's guarantee would be accepted to cover the importation of a member's car into H. E. H. The Nizam's Dominions for six months and so avoid actual payment of duty in cash. Decided to give the system a trial for 12 months and then examine its working.

Note—Members projecting a visit to the State should communicate with the Secretary for particulars of this scheme.

Madras M. V. Taxation.

(e) Read and approved of a draft letter to the Madras Government protesting against a Government Order

which requires immediate payment of tax on a vehicle entering the Presidency temporarily, with the opportunity of claiming a refund at the end of the quarter, if the period of the visit does not exceed 14 days; also asking for information as to

Payment and Reclaim of Tax on Private Vehicles Entering the Presidency.

- (i) What evidence is required to support a refund claim, and
- (ii) Whether such claim must necessarily be submitted to the licensing officer to whom the tax was paid.

Note:—Government's reply indicates that it is not proposed to modify the order and that the procedure should be as follows:—

On entering the Presidency the owner or driver of a vehicle should report the date of entry in writing to the nearest licensing officer pay the tax and obtain a license, receipt and the arrival report duly endorsed by that officer.

On leaving the Presidency report the date and place of departure to the licensing officer in writing and obtain his endorsement thereon.

These two documents must accompany the claim for refund.

Road Information.

2 (a) During the early days of the month heavy rains caused much damage to roads in the North-eastern portion of the Presidency, while most of the unbridged streams on the East Coast northward from Madras showed signs of flooding. At mile 135 from Madras a bridge over the Ubbali Vagu was damaged and has

(continued on page 324)

SHELL SUCSESSES 1931

BROOKLANDS "DOUBLE-12"

M-G. Midget driven by Earl of March and C.S. Stainland
65.6 M.P.H.

Also TEAM PRIZE

FIRST

IRISH GRAND PRIX

M-G. Midget driven by Norman Black 64.76 M.P.H.
Also won PHOENIX TROPHY, R.I.A.C. TROPHY,
ASORSTAT CUP

FIRST

LE MANS GRAND PRIX

Alfa-Romeo driven by Earl Howe and Henry Birkin.
78.13 M.P.H.

Also RUDGE-WHITWORTH CUP

FIRST

ULSTER T. T.

M-G. Midget driven by Norman Black 67.9 M.P.H.

FIRST

All on

SHELL OIL AND PETROL

BURMAH-SHELL OIL STORAGE & DISTRIBUTING CO., OF INDIA, LTD.,
Incorporated in England

CALCUTTA,

BOMBAY,

MADRAS,

KARACHI,

DELHI.

Agents.

Automobile Association of Southern India:**Secretary's Report.***(continued from page 322)*

been closed to traffic as being unsafe and likely to collapse under a load.

Northern Trunk Road.

It should be taken for granted that the Great Northern Trunk Road will not be motorable beyond Nellore during the months of November and December, while there will be short periods when it will not be possible to motor beyond Nayadupet (83 miles from Madras).

There may be short intervals when the road will be open—Members should consult the Secretary.

Roads in the Deccan.

(b) The above remark (a) also applies to the trunk roads between Ongole and Kurnool and Cuddapah and Kurnool and the District Roads in that area.

Southern Trunk Road.

(c) Heavy rains on the Madras Coast and inland caused floods in the rivers south of Madras but at time of writing the water level in these rivers had dropped from three feet to one foot.

Rice and Wenlock Causeways.

(d) So far as can be ascertained the Wenlock and Rice Causeways (on the Calicut and Bangalore Trunk Roads) had not been affected materially and are open to traffic though carrying shallow water. Members proposing to use these roads should ask the Secretary for latest information.

West Coast.

(e) On the West Coast, practically every road is now open to traffic. S. W. Monsoon damages having been repaired. However the Charmadi Ghat Road (between Mangalore and Kadar) and the new Cochin Munnar Road have not yet been restored. The latter will not be opened till the end of November, in the section in the High Range, as the removal of landslides is not yet completed; the Charmadi Ghat will not be opened until December or January.

Krishnagiri-Salem Road

(f) At mile 263 from Madras this road is closed for regrading—the work will not be completed until February or March. A good diversion road has been laid on which careful driving is necessary.

Bangalore—Bombay Road.**Bangalore-Kurnool Road.**

(g) These roads are in motorable condition and are not likely to be effected by the N. E. Monsoon.

Chidambaram-Shiyali.

(h) There is no means of crossing the Coleroon on this road. Motorists must proceed via SETTIYATOPU and The LOWER ANICUT.

Singareni Collieries.

(j) Information has been received that there is no motorable road by which to reach these Collieries in H. E. H. The Nizam's Dominions, beyond Hanamkonda on the North and Khammam on the West.

Flood Reports.

3. A comprehensive system of collecting early information regarding the state of unbridged rivers on main roads, and of the opening and closing of bridges and roads during flood periods has been evolved and, it is hoped, will prove of value this year.

However, since Government has modified the activities of the Madras Observatory and discontinued the issue of daily weather reports, it will be difficult, if not impossible to forecast weather conditions and the effect of rains on the various rivers, as was possible hitherto.

Endeavours are being made to obtain suitable information from other sources.

M. V. Taxation.

4. During the month under review the unofficial committee, of which I am a member, did much work in collecting data regarding taxation of motor vehicles in the Presidency and the working of the various clauses, and subsidiary rules. The Committee interviewed the Chief Minister on the subject and endeavoured to obtain his consent to assemble an official Committee at an early date to go into the whole question of taxation of motor vehicles with a view to obtaining relief and equitable treatment in various directions. The Chief Minister would not consider the suggestion for a Committee, but promised to look into several points represented.

Much propaganda work was also carried out.

NOTE: The Madras Legislative Council at its present sitting has voted for the Assembly of a Committee, which should assemble shortly.

Abolition of Tolls in Indian States.

5. The question of abolishing tolls in Indian States is being examined closely by the several Governments, and is, it is understood, being viewed liberally.

Decorated Car Procession 1931.

6. Considerable clerical work has been involved in the organising of the usual Decorated Car Procession for Poppy Day, and arrangements are well in hand. A number of cups, donations, motor accessories etc., have been collected for use as prizes, and much canvassing for entries and advertising has been done. The Madras Cricket Club have very kindly agreed to let us have the use of their enclosure for the function, which should enable us to improve on last year's arrangements.

Guide Book.

7. Information for inclusion in a revised guide book continues to arrive from various sources, and collation is well in hand.

Touring Map of Southern India.

8. An Association Touring Map of the Association's territory has been compiled in three sheets, which are now going to press.

Insurance.

9. It has been ascertained that only 150 members of the Association have insured their Cars with the official insurers, there are therefore, some 800 members who are not availing themselves of the 10% premium reduction.

(continued on page 328).

Pack Your Bag For A Long Week-end

and stay at

Lavender's Hotel BANGALORE

MACKENZIE & CO.,
Automobile and Mechanical
Engineers.
37, South Parade,
BANGALORE.

When writing a small Advertisement

- Imagine you are buying a car—and then put down all the facts *you* would want to know.
- Give full particulars of the make, model and year of manufacture with any points about speciality fittings which may interest the buyer.
- Use a box number it insures privacy.

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Automobile Engineers

25, South Parade,
BANGALORE.**Distributors of**

Chevrolet Cars and Trucks

and Oldsmobile Cars

for the Mysore

Province and Coorg

Chevrolet Sales and Service

Drive a New Car

Spray-painting with DUCO can make your car look neat and new. The hood and upholstery too, can be renovated by our experts—so why drive a shabby car?

We are specialists in spray-painting and can quote you surprisingly low prices for complete renovation.

Our bus body building department is at your service too.

HAROLD & CO.,

General Patter's Road,

MADRAS.

PRINCIPLES OF THE CARBURETTER

(concluded from page 317)

The U. S. Carburetter.

In this carburetter a single jet is used which is closed or opened by means of a movable needle with a long taper point, attached to a piston working in a small cylinder. The movement of this piston is due to suction, as the cylinder or piston chamber is open to atmosphere. When the pressure drop in the induction pipe increases, an increase in the air flow takes place. Simultaneously the disc and piston rise because the upper portion of the chamber is in communication with the induction pipe. This increases the area of the choke tube above the mouth of the jet, so as to keep the air speed across the jet unchanged. As however the air will not pass so closely over the jet as before the tube was enlarged, its decreased effect is compensated by the withdrawal of the needle as the piston rises, thus increasing the jet aperture.

As conditions often demand an increase or decrease in the quantity of petrol delivered by the jet in propor-

tion to the air flow, the body of the jet itself is constructed so as to slide up and down the needle, thus making the jet aperture larger or smaller as desired. The lever operating the jet motion is usually connected up to a control on the fascia board or steering wheel, thus enabling the petrol-air mixture to be adjusted to suit all conditions of running.

The Solex Carburetter.

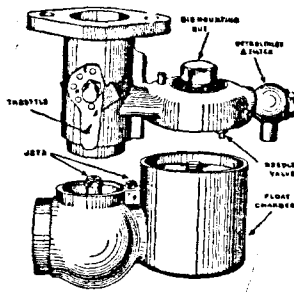


Fig. 5. The Solex Carburetter—Simplicity

Simplicity and accessibility characterise this carburetter. Indeed, it is of such simple construction that it is almost necessary to assure those owner drivers who have been accustomed to intricate designs, of its real technical efficiency. Without hesitation we can recommend the Solex to all readers who, lacking mechanical skill, dread to investigate the innards of the carburetter in case of trouble. On unscrewing a large nut situated conveniently in the centre of the float chamber, the latter together with both jets comes clear-

away without disturbing any of the other connections. In fact so simple is this dismantling that one can easily attend to the work in darkness.

The accompanying diagram shows the construction of the Solex, and following the notes on other types no description of this make should be necessary.

Trade Notes and News

It is the policy of the Fiat concern not to introduce new models seasonally but to incorporate improvements as they are deemed desirable. Thus, although particulars are now available of the firm's program for 1932, there are no outstanding changes in existing cars.

The 10-30 h.p. four-cylinder model, known as Type 514, and the smallest car of the range, which has been on the market for some considerable time, was brought out earlier in the year in a de luxe form and now undergoes no further change. The modifications referred to were that the equipment was increased and the interior finish improved, whilst, mechanically, the engine mounting in the frame was altered, better breathing facilities were provided for the crank case so as to prevent fumes reaching the interior of the car, the ignition coil was placed in a more accessible position, the clutch was altered slightly to give a smoother engagement, the brakes were made more powerful, and rubber bushes were adopted for various bearings so as to reduce to a minimum the need for lubricating the chassis with a grease gun. Further, the back axle and springs, as well as the universal joints, were modified, and hydraulic shock absorbers were fitted, all these points being the result of experience, so stabilising what was a new model in its final form.

Known as Morrisol, a new oil is to be available for Morris and Wolseley cars; one of the features of it is that it is suitable for all Morris productions.

Morrisol is being specially made to Sir William Morris' exacting requirements by Alexander Duckham and Co.

Hitherto different oils have been necessary for the various engines in the Morris and Wolseley ranges, and, also, different grades have been recommended for summer and for winter use. Morrisol, by contrast, is claimed to meet the needs of all Morris engines throughout the year. It is sufficiently fluid not to cause "gumming up" in cold weather, yet of adequate body to ensure lubrication under the highest temperatures likely to be met with in this country.

The saving to the motorist in time and trouble achieved by the use of one single oil is considerable. It means that he can buy his oil in bulk, and thereby save money, with the foreknowledge that no change of grade will be necessary as the year progresses.

Dealers should anticipate a big demand for these lubricants immediately they are placed on the market in India.

Hans Renold, Ltd., Burnage Works, Manchester, have issued an illustrated price catalogue. This firm states that transmission chains under the Brampton trade mark have now been withdrawn, but that alternatives will be available under either the Coventry or the Renold mark.

TO-DAY EVERYONE IS ECONOMIZING.

How cheap is cheap oil?

TO-DAY everyone is saving where he can. That is the very reason why more than ever you cannot afford to take chances on low-grade oils.

LOW-GRADE OILS

are

CHEAP TO BUY but
EXPENSIVE TO USE

They bring you pumping pistons, hard carbon, pitted valves and

A GOOD ENGINE GONE
BEFORE ITS TIME

"Cheap" oils are "costly" oils—they lead to wasted money

BE THRIFTY

USE MOBIL OIL

Mobil oil stands up—Step by step the famous Vacuum process has built up Mobil oil. Mobil oil not only protects your engine but it costs you less per running mile—and that counts. Prove Mobil oil stamina in your own car to-day.



Mobil oil

FOR REAL ECONOMY

Made by VACUUM OIL COMPANY, Inc.

Automobile Association of Southern India Secretary's Report.

(concluded from page 324)

tion and other benefits which the official Insurers offer. Members about to renew their insurance policies should communicate with the Secretary for terms and rates.

Petroleum Act Licenses.

10. The Madras Government have approved of the necessary license to possess and transport not more than 20 gallons of petrol with a motor vehicle being endorsed on Registration Certificates in future, instead of issuing a separate license as hitherto. Members so desiring may have this license endorsed on existing registration certificates, so as to obviate the necessity for possessing two separate documents. The Commissioner of Police, or D. S. P. of the area can make this endorsement.

Level Crossings.

11. Several complaints regarding unnecessary delay at level crossing gates have been received and referred to the railway authorities, with satisfactory results in most cases.

Members who may come across level crossings which are not marked by the appropriate lamps after dark, are requested to communicate details of place, date and time, in order that the railway authorities can take appropriate action in each case.

Cancellation of Registration Certificates.

12. Members are again advised of the necessity for obtaining the cancellation of the registration certificates of any totally unserviceable motor vehicle. Until a registration certificate is cancelled, the registered owner of a vehicle remains liable to pay tax for the vehicle even though it be a total wreck and definitely irreparable.

To obtain a cancellation, an owner must send the registration certificate and a declaration as follows to the Commissioner of Police or District Superintendent of Police:—

"I hereby declare that motor ^{car}_{cycle} bearing registered No.....and registered in the name of..... has become permanently unusable on.....and will not again be used for transport purposes. It is desired that the registration be cancelled and the enclosed registration certificate endorsed accordingly and returned to me."

Membership.

13. During the month 5 new members were elected, while 12 resigned or were struck off the register as untraceable. On 31st October 1931 the membership totalled 921.

MADRAS. }
3—11—31.

F. CHURCH,
Major (Retd.)
Secretary.

Don't Neglect the Ignition Lever.

Through ignorance or carelessness, or merely because they do not realise the effect of advancing and retarding the ignition, too many motorists fail to obtain the best results from their cars in respect of power and economy by making insufficient use of the ignition timing control—frequently called the "spark lever." The commonest fault is running with the lever too far retarded, probably owing to its having been observed that in this position there is no tendency for the engine to "pink" when it is pulling hard and slowly. That policy, however, encourages waste of fuel, overheating, burning of the valves and failure to secure the best results in power development.

To take an extreme case, if an attempt be made to drive at, say, 50 m.p.h. on a level road with the ignition lever fully retarded, approximately one-sixth to a quarter of the stroke of the piston is

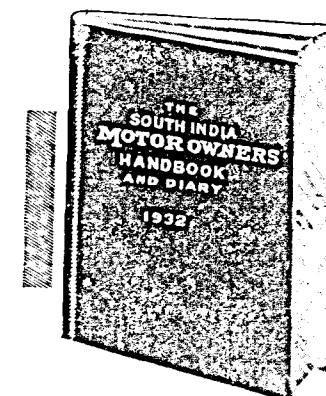
"wasted"; in other words, the fuel mixture in the cylinder is not fully ignited—the "explosion" is not complete—until the piston has travelled through a considerable proportion of its movement on the power stroke.

This implies, further that the gases are still burning when the exhaust valve opens, so that the valve and its seatings are liable to be overheated, and become pitted and due for re-grinding after a very much smaller mileage than is normal.

The best plan is always to keep the ignition as far advanced as possible, short of giving rise to pinking. True, it is not possible in practice always to secure that ideal, but it is one that should be the aim of the driver. Roughly speaking, it means that at all speeds on top gear above 25-30 m.p.h. the ignition lever should be fully advanced.

PLEASE MENTION "MOTOR OWNER" WHEN REPLYING TO ADVERTISERS

THE SOUTH INDIA MOTOR OWNERS' HANDBOOK AND DIARY FOR—1932



THIS publication, which will be available on or about the 15th of December is very handsomely produced; bound in strong covers, its 250 odd pages are neatly printed and fully illustrated, and the book is of a convenient size to fit your pocket or grace your bookshelf. The diary portion contains ample space to keep records and expenses, and there is a wealth of practical information for motorists in general. The edition of the Handbook and Diary is limited and to prevent disappointment we strongly urge you to complete the Order Form at the foot of this page.

PRINCIPAL CONTENTS

FULL INFORMATION regarding the Construction, Maintenance and Repairs of the motor car.	MOTOR CAR REGULATIONS and the New Taxation explained in simple language.	DIARY PAGES FOR 1932 with ample space for the recording of mileages, petrol consumption, running expenses, etc.
ARTICLES BY EXPERTS upon Tyres, Electrical Systems, Lubrication, Tuning for Speed, etc., etc.	ROUTE PLANNING together with information regarding Hotels, Dak-Bungalows, etc.	INDEX MARKS, Petrol Prices and Road Distances.
LUBRICATION AND TYRE DATA.	USEFUL HINTS and Aids for Owner Drivers.	PLACES to visit.

READY DEC. 15TH, 1931. ORDER YOUR COPY NOW!

Cut along this line,

MOTOR OWNERS' HANDBOOK & DIARY.

To Eastern Technical Publications,
Mount Road, P. O., MADRAS.

Please send on publication.....copy, (copies) of the S. I. Motor Owners' Handbook and Diary for 1932, at Rs. 2-8 each, for which I enclose Rs.....

Name.....

Address.....

(In Block Letters).

Publishers' Notices**The South India Motor Owner**

Published Monthly by

Eastern Technical Publications.**General Patter's Road, Rount 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

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Rates for display space will be furnished on application. For small advertisements and entries under 'Sales and Service Guide,' see page 298.

Advertisements to secure insertion in any month's issue should reach this office not later than the end 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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MOTOR OWNER

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DECEMBER, 1931.

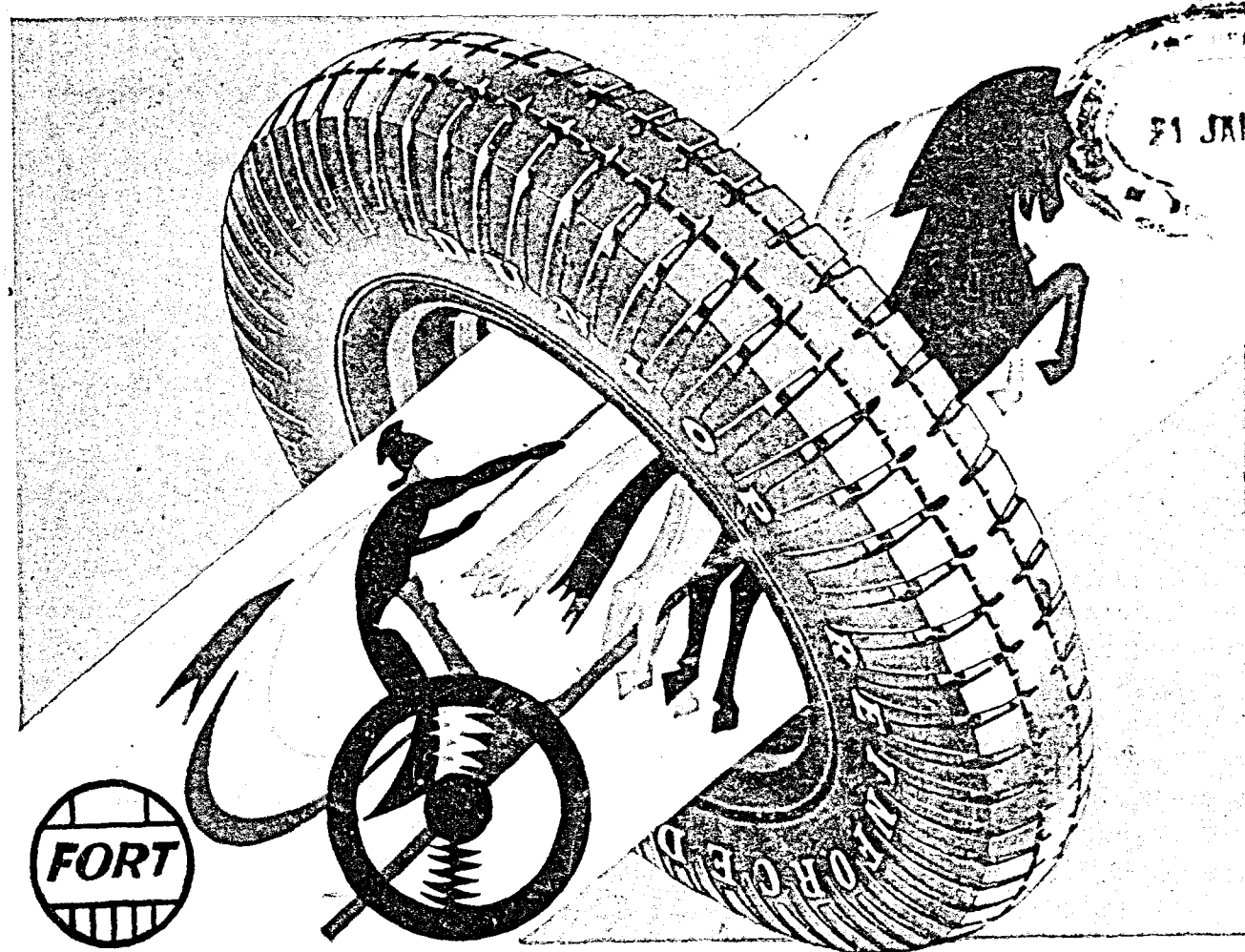
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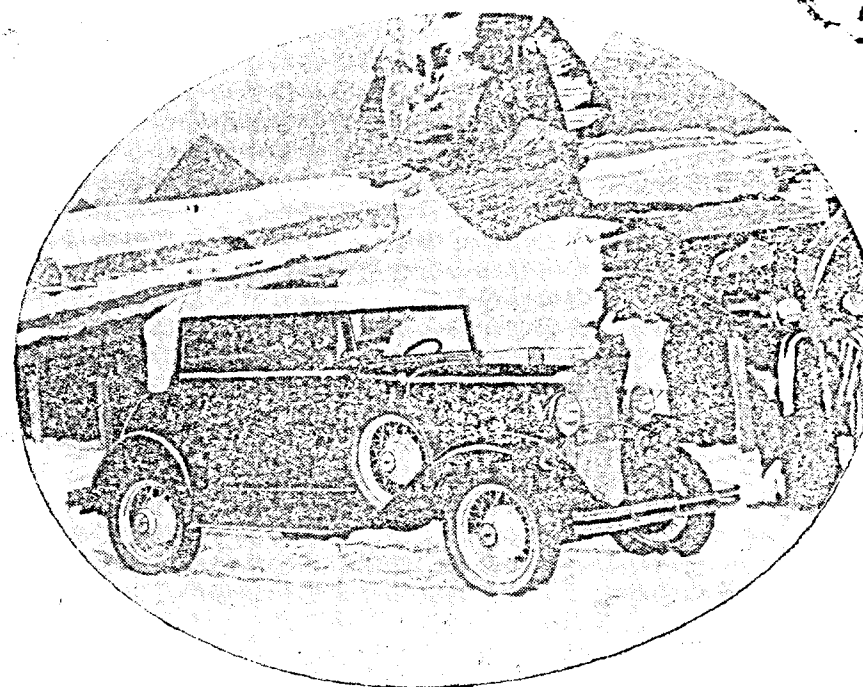
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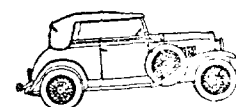
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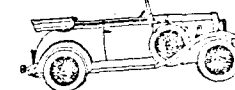
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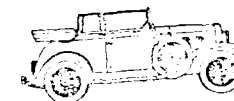
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Arranged alphabetically under vehicle headings this guide should prove extremely useful to motor owners throughout Southern India. The up-to-date Service Station and Sub-Dealer will find entries in this section to be a profitable method of inexpensive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

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Madras Motor Directory, 1931.

Containing Madras Motor Vehicles Act, Madras Motor Vehicles Taxation Act and all connected Rules and Regulations. Also all registered numbers, names and addresses of all Motor Car owners in South India and Pudukottah State.

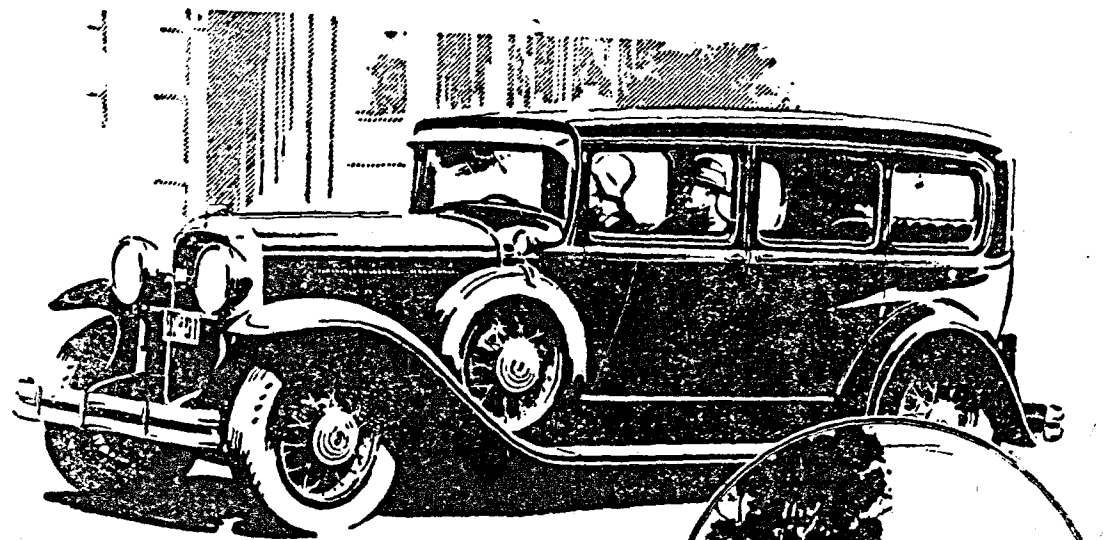
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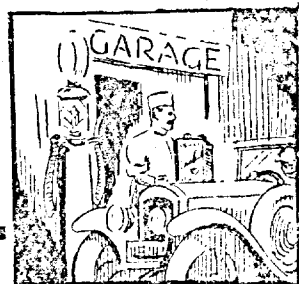
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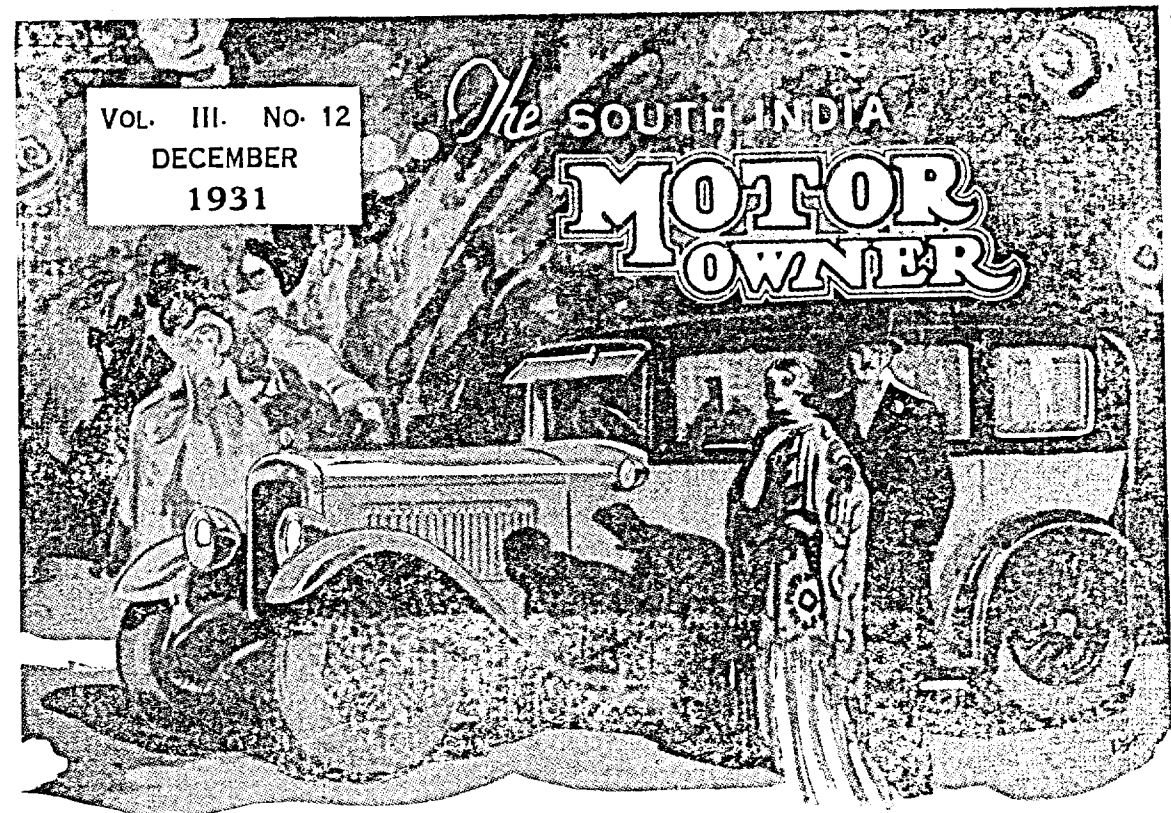
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Official Organ of the Automobile Association in Southern India

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Jottings from this Issue

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Road and rail transport supplement each other, and neither must be considered competitive as each have a different service to perform ... 350

Ford says that the commercial salvation of the world is, in part, dependent upon public understanding that the profit of life is life and not money ... 362

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The man who makes no resolutions makes nothing, but the man who makes resolutions even though he break them immediately afterwards has at least made an attempt to grapple with his own fate ... 342

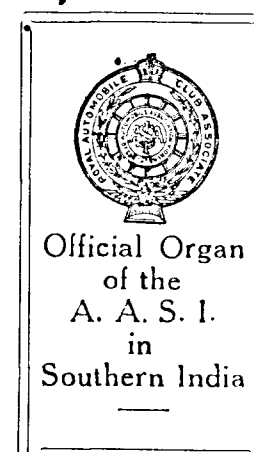
Most of us have nowadays to exercise economy in our motor-ing, and though our pleasure is none the less on this account, it is not always easy to differentiate between true and false economy ... 344

The New Morris Cars carry a two years guarantee with the 1932 range 349

The difficult desert route from Beirut to Bagdad now carries a regular car service ... 357

Madras coloured light traffic signals can be improved. Some interesting notes on page ... 346

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December, 1931

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Prospect and Retrospect

THIS is the time of the year when we all feel broken—sometimes ere they are made. in that particular retrospective frame of mind. Granted. But then the very fact of having invariably induced when the old year is pass- made an attempt to do something better ing and plans for the future are still sketchy indicates clearly that we are aware of our and unformed. It is a time when we look shortcomings. It also shows that we are back over the old year and think of all we prepared to make some effort towards an improvement, and indicates that we have failed to accomplish; when we are in that particular mood we glance over the road we have come and realise how badly we have loitered on the way; above when we are prepared for overhaul, and seriously recon- all it is the time when we feel sider putting ourselves in the we could have been of more repair shop. use to ourselves and to the world in general if we could have the privilege of living the year again.

It is a pleasant time, this, when we are on the point of turning into an unexplored road with all its boundless possibilities, and is perhaps one of the reasons why all of us—though scoffing outwardly at the idea of good resolutions—do really attempt to plan things better for the coming year. In fact, we all grin rather good-naturedly when any mention of this resolution business is made because we know that good resolutions are invariably the past from which we could no more escape than if we were tied by invisible elastic. By utilizing a method of distinctly apportioning time we are able every twelve months to start, as it were, afresh; to turn down the old page with all its entries, erasures, alterations and blots, and to say to ourselves 'This year I will write more neatly.'

TO
ALL OUR READERS
**A MERRY
CHRISTMAS**
AND A
**HAPPY
NEW YEAR**

If, of course, we have decided we have nothing to learn and nothing to improve, then it would be useless to make resolutions and time has no further use for us. If this is the case, the coming year will have nothing to offer us and we shall have nothing to offer it, and we might just as well drift away into a very lonely place where the world, and those to whom the world offers something, could forget us. It is an incontrovertible fact that the world has no more use for the man who has no more use for it. On the other hand, if we think that there is something to learn in this coming year and we realise that we can, all of us, do with a thorough overhauling, then there is every hope of squeezing more than a mere existence out of 1932.

Human nature is proverbially weak and it takes a long time and a great deal of persuasion to be forced towards one particular goal,

and that is why every resolution we make at this time of the year is a definite step, however small, in the right direction. The man who makes no resolutions makes nothing, but the man who makes resolutions even though he breaks them immediately afterwards has at least made an attempt to grapple with his own fate.

Progress along any line of thought or activity is a mixture of luck, pluck and sound common sense—three very excellent ingredients. The luck, of course, is beyond our control, but the pluck and good sense we can acquire if we can screw up our courage to the crucial point. If everyone succeeded just one wee bit in keeping the spirit of this ideal before them, this old world of ours would be a very much more pleasant place for human beings to live in.

Resolution.

Turn your mind from the ease that's bought
The sloth of a stagnant brain,
See how the sapling, storm distraught,
Turns to the wind again.

Toss to the winds the useless things
The leaves and the blossom gay,
But keep and cling to the hope that brings
Strength for another day.

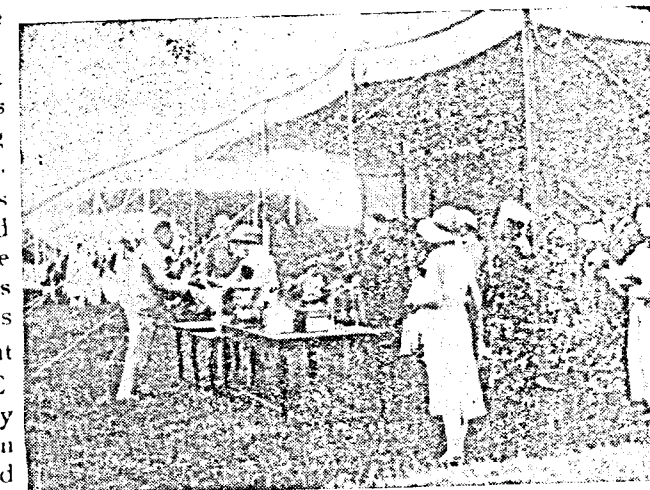
Fling a curse at the wind and sleet,
And rage at the driving rain;
Mock to the time of aching feet,
And turn to the path again.

E. F. P.

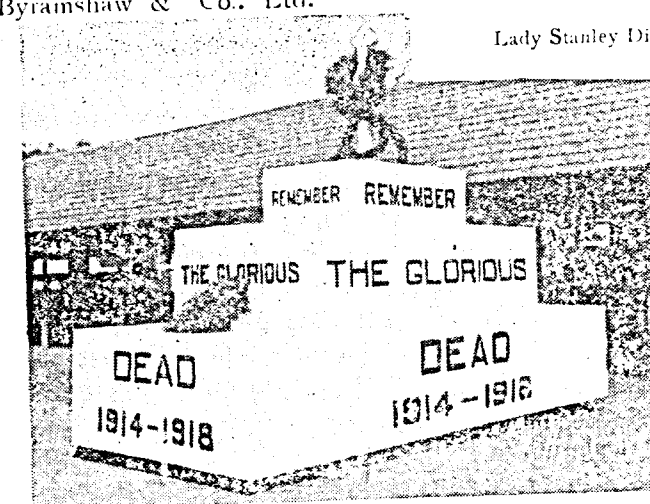
Poppy Day Celebrations in Madras.

The better organisation which this year characterised the decorated car procession produces some outstandingly clever exhibits.

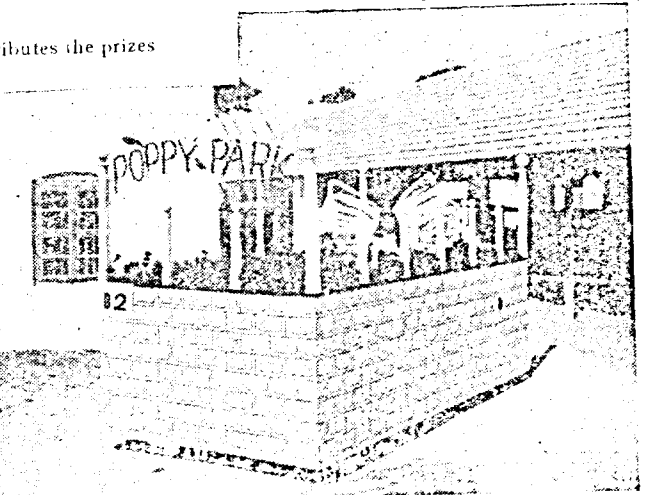
FOR the second year in succession Poppy Day was observed in Madras with a procession of decorated cars and trucks under the patronage of His Excellency the Governor of Madras and Lady Beatrix Stanley. The event was held in the grounds of the Madras Cricket Club under the auspices of the Automobile Association of Southern India. It proved a great success owing to the show being unusually spectacular. Huge crowds of spectators attended and contributed towards the Fund. The provision of prizes was made possible by generous donations from prominent people including H. E. the Governor and Lady Stanley. Messrs. Simpson & Co., Ltd. and Byramshaw & Co., Ltd. both General Motors dealers, headed the list of prize-winners by winning first and second prize respectively with their beautifully decorated floats. Byramshaw & Co. were also awarded the Governor's Cup for the most original decoration aptly called "Poppy Park". This display was constructed by them on a Buick and vied in attractiveness with most of the real parks in the city. The effect was realistic in every detail from the fresh green grass with poppies to the inclusion of real and artificial birds and a human "butterfly" in the person of the youngest sister of Mr. A. F. Byramshaw, Managing Director of the Firm. This setting was enclosed with appropriately decorated pillars and



Lady Stanley Distributes the prizes



Symbolic of the occasion this representation of a cenotaph was entered by Messrs. Byramshaw & Co. Ltd. and was awarded second prize in the competition for motor dealers.



This beautiful model park was pronounced the most original decoration of the show. The figure of the butterfly is that of the youngest sister of Mr. A. F. Byramshaw, Managing Director of the firm.

(Continued on next page)

Poppy Day Car Procession*(continued from overleaf.)*

chains domed electric lights being mounted at all four corners. The illusion was as perfect as possible and it was difficult for the onlooker to believe that there was a motor car beneath the structure.

Among the entries for motor dealers, Messrs. Simpson & Co.'s prize entry, "Miss England II", which was mounted on a Chevrolet Truck chassis, was a realistic replica of the record-breaking motor boat, complete with men garbed in overalls and motoring goggles, stationed at the wheel. This float proved a real 'draw' and it was not surprising that it captured the first prize of the show.

However, Messrs. Byramshaw & Co., Ltd. ran a close second with their representation of a cenotaph which was eloquent of the spirit of Armistice Day.

This model was mounted on a GMC T-19 Truck chassis. The structure stood 14 ft. high with a base of 8 ft. x 18 ft., effectively symbolising the occasion with real wreaths as well as wreaths made of artificial poppies; the following words were painted on the four sides of the cenotaph: "REMEMBER THE GLORIOUS DEAD, 1914-1918". The chassis itself was completely shrouded and the lettering showed in bold relief on a marble-white background. As the Madras Mail puts it, it was "simple in design and perfect in execution".

His Excellency the Governor and Lady Stanley, who were present, themselves judged the entries and Lady Stanley distributed the prizes. Following the prize-giving the cars moved in procession from the grounds and passed between the lines of spectators along the main streets of the city, while four aeroplanes hovered overhead and dropped poppies—an altogether picturesque and arresting scene.

Differentiating between True and False Economy

Trade depression, enhanced taxes and the thousand and one added expenses of everyday life have made a marked impression upon the motoring people of India. Most of us have nowadays to exercise a careful economy in our motoring, and even though our pleasure and profit is none the less on this account, it is not always easy to differentiate between true and false economy. The inability to appreciate these differences is more marked in the case of the novice driver than it is with the owner-driver who understands his car thoroughly. Whilst the clear saving of a few rupees may appear justified to the tyro the expert delves deeper into the problem and often proves this initial saving to be more than offset by ultimate expense.

OIL ECONOMY.

Economising by using cheap oil is not economy at all, but it can be practised quite effectively by buying good oil in bulk instead of in the usual pint or quart tins. A five or even ten-gallon drum of oil is considerably cheaper per gallon, and one thus gets the advantage of economy without sacrifice of quality.

Another form of false economy in connection with lubricating oil is to use the same oil for too long a period. In the car's early days the reservoir should be drained frequently—at the end of 500 miles and again after 1,000, for instance—but thereafter the same oil may be added to and used over greater distances.

It must be remembered, however, that because an engine appears to be extraordinarily economical and scarcely uses any oil at all, the oil itself must gradually lose its lubricating qualities, and should be completely renewed every 1,500 miles or so.

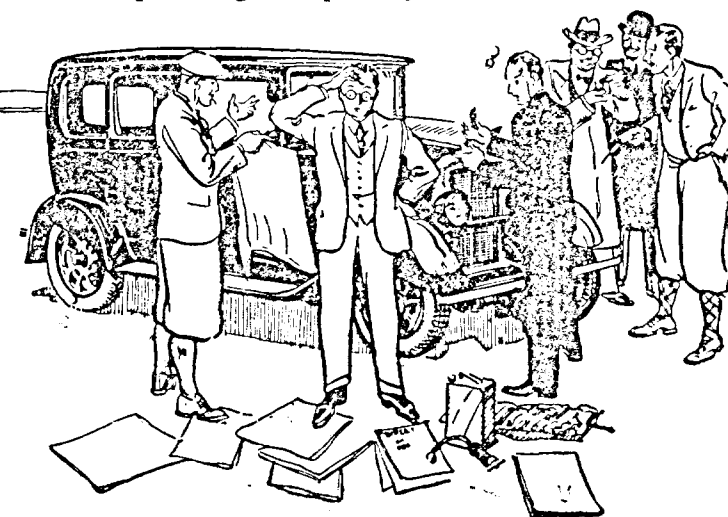
And then tyres—we are all apt to be uneconomical with them. If, instead of running them until they fall in tatters from the rim, we committed the apparent extravagance of purchasing a couple of extra covers, we could have the tyres in actual service retreaded, two at a time, as soon as the treads had worn smooth, but before any actual damage had been done to the cord foundations.

Apart from this, however, the practice of running a set of tyres right out is costly in tubes, because when a cover does eventually go beyond repair the resultant burst is usually so bad that the tube as well is practically destroyed, apart from the possible danger of an accident through a burst at speed.

BATTERIES TOO!

One has only to pay a visit to the battery dealer or service station to learn that motorists are purchasing the cheapest batteries procurable. This is one of the cases which, fortunately, soon proves itself uneconomical. Purchasers of cheap batteries pay in service fees much more than their initial saving of twenty rupees or so. A good battery is worth every anna of its purchase price and will prove the means of saving money and the long run.

There are many ways in which economy can be practiced in motoring as the above notes show, but the greatest care should be taken to observe closely whether a rupee saved in one direction is not going to cause the spending of two rupees in the future.

Perhaps You Don't Know - ?**Explaining Frequently Encountered Technicalities**

An
Interesting
New Series
Specially written
in Simple Fashion for
the
Owner - Driver

No. IV. What the Map should tell us.

HAVE you ever envied the driver who, after propping up a map in front of his eggs and bacon, will start up, without further ado, on a long drive in strange country, seldom missing the best view-points in the scenery and never needing to ask the way or pause to decipher a signpost?

There is no magic in such a feat and certainly nothing beyond the capabilities of reasonably intelligent people, when one or two elementary principles of map reading are understood and have been practised.

Visualising the Landscape.

It needs no great skill to find one's way from place to place by the map, but to choose the most interesting route requires an ability to visualise the country itself, and in doing this there are two capital difficulties to be overcome—namely, the recognition of conventional signs and the formation of a correct mental picture of the country from whatever means are adopted in the map to show the relief of hill and valley features.

Heights are shown on the map in two ways, by means of spot levels and contours.

If the reader will examine a good map he will find figures here and there on the roads which give the exact heights of the roads at those spots. These are the spot levels.

In addition, there may be irregular lines, running all over the map, and numbered in fifties or hundreds of feet above sea level. These are the contour lines.

If a contour is numbered, say, one hundred and fifty, then every spot on that contour, wherever it may run, is one hundred and fifty feet above sea level. Similarly, all the spots touched by the two hundred contour are two hundred feet above sea level.

Further, if the contour lines are close together, it means that the slope is steep, for the rise in height is performed in a short distance gone forward. It follows, then, that if the contours are wider apart, the slope is more gentle.

Gradients.

The gradient of any slope can be worked out easily. Take the difference in height between the top and bottom of the slope, and place it as the numerator of the fraction. The denominator will be the distance of the slope expressed in feet. For example, the gradient of a slope would be obtained as follows:—Suppose the height between the two contours is 50 ft. The distance is one mile. Thus the fraction is 50 ft/1 mile; or, 50 ft./5,280 ft.; which cancelled down is roughly 1/105. This, of course, means that the ground rises one foot for every 105 ft. gone forward.

Signs and Symbols.

The conventional signs are generally set out and explained in the left-hand bottom corner, and they are the first thing at which a skilful reader will look.

These signs have to be used whenever there is no room on the map to show an actual picture or to write a description—as, for instance, with a church, a post office, or a signpost. The smaller the scale, the greater are the number of signs that must be employed, and, as the radius of action of the motor-car necessitates the adoption of a fairly small scale, it is important that the motorist should be on familiar terms with the signs employed in his particular map. It is especially important to be able to pick out well-wooded country, as this usually leads one to the best scenery.

It is an advantage to work always with the same kind of map. It would be invidious to mention any particular publisher, but a smaller scale than four miles to the inch is not recommended for motoring, and the writer prefers the so-called half-inch—i.e. those with a scale of two miles to the inch. Unless the map is finished in the new waterproof glaze, a leather map case with a celluloid front is a real economy.

There are several ways in which the relief of hill and dale can be indicated in a map, but the only

satisfactory method for the motorist is that known as "contouring," preferably combined with distinctive colourings of the various contour intervals.

The contour system is simple. One has only to imagine that the sea has risen to the number of feet represented by the contour line, and the line itself would then be along the water's edge.

Contour Lines.

The position of the contour lines with reference to one another and their form clearly show the shape of the ground, and from them it would be perfectly simple to build a relief or model of a hill or to draw a section of it on paper. What is required is to be able instantly to build such a model in the mind's eye. To this end one is often enjoined to study the country, map in hand, and compare the two; but this is not always possible, not is it the quickest way to become handy at map reading.

A better plan is to use an occasional wet day to make a few sketches from the map, first of single hills, and then, as one progresses, of the chain or panorama as it should appear from some given point. By comparison of these sketches with the land itself, as opportunity offers, one can quickly learn to make such use of a good map as will not only double the pleasure of motoring, but will earn for oneself the reputation of a wizard with the uninitiated.

Coloured Light Signals

NO motorist in Madras will deny that the coloured light traffic signals installed at various places in the city are a real boon. Nevertheless, there are times when such signals are apt to give rise to confusion, for they are efficacious only when they are properly observed.

Several times recently I have seen cases where a driver just in front of me had to pull up quite suddenly owing to the light turning against him when he really should have been given right of way. The biggest trouble is, however, caused by the lights being situated in by no means conspicuous positions, in which case it is difficult to see the light at all under certain circumstances.

An example of this is to be found at Central Station crossing, where it is impossible to see the light from some twenty yards from the front seat of any rather high seated car. Furthermore, this light is quite masked for a considerable distance in the event of a tram car being held up, and—largest danger point of all—there is a red Shell Pump globe exactly opposite oncoming cars in one direction which is easily mistaken for the danger signal.

I have often wondered in connection with these traffic lights, whether one is permitted to take the right angle turn to the left when the red light is showing. Some traffic police seem to expect stoppage to the left in this way, whilst others glare most ferociously whenever I attempt it.

MORRIS 1932 MODELS.

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All Six-cylinder Models now have Four-speed Twin-top Gearboxes

All Coachwork Vastly Improved

"Eddyfree" Front to all Closed Models

Two new Economical Roomy

Closed Cars coming between the Minor

and Cowley Models

—: o :—

TO say that the excellent cars of the current year have been improved out of all recognition for 1932 is a bold statement to make. But such are the advances which have been accomplished during the past twelve months that it is difficult to believe that a range of cars selling at a strictly moderate price could be embellished to the standard represented by the 1932 Morris models.

One important advance in design is the fitting of a rear petrol tank on all models. There can be no gainsaying that a rear petrol tank is to be preferred on the score of safety and accessibility, but as instal-

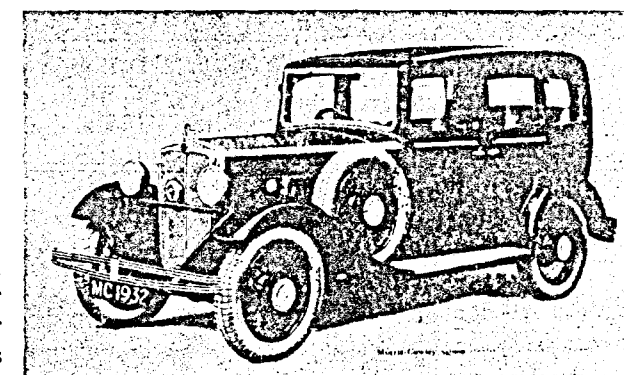
With a handsome new radiator, Magna wire wheels, an open roofed model available on every chassis, and hydraulic brakes on all except the Minors, a petrol tank fitted at the rear, and still roomier coachwork of exquisite line, the broad range of Morris models for the coming season offer remarkable value in high-grade cars.

lation costs are obviously increased, hitherto it has always been restricted to higher-priced cars. The Morris concern, however, has once more coped with what previously appeared an insuperable difficulty, on the question of expense and henceforth even the little Minors—the lowest-priced cars in the range—will be so equipped.

All Models Improved

Without exception every model has been improved, not merely in detail, but constructionally, and the appearance of the new models, together with their added refinements, must definitely place them at the forefront of their respective price classes for sheer value, good looks and all-round performance.

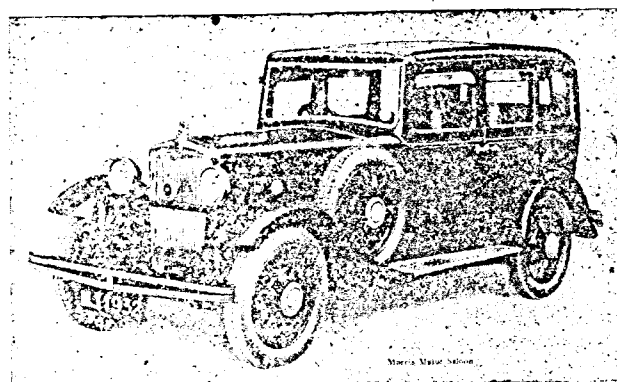
Coachwork, without exception, is now more roomy, yet at the same time has still more distinctive lines, assisted by a lower chassis. A handsome new radiator which, with slight modifications, is standard on all models, and what is termed an "Eddyfree" front, which not only improves the appearance but materially lessens wind resistance—a vital factor at high speeds—has been adopted.



The Morris Cowley Saloon.

All closed models will now be available with a Pytchley sliding roof, a well-tried fitting which is instantly operated, and constructed on a principle which ensures that its joint is definitely climate-proof, an important consideration in countries where it may be subject to extreme variations of temperature.

Another valuable feature common to all models, irrespective of price, is the adoption of chromium finish for all bright fittings, interior as well as exterior, while Lockheed hydraulic brakes are now standard on the Family Eight, Cowley and Major, as well as the Oxford and Isis.



The Morris Major Saloon.

Tools to Hand

Two other important improvements are a tool kit accommodated in the dash on Cowleys and Majors, and remote control for the door handles on all enclosed models.

And now for the individual models: let us begin with the Minor.

In addition to the rear petrol tank, chromium finish on all bright parts and other embellishments already mentioned under general improvements, the saloon models of the Minor have very much improved coachwork. The body is far more roomy, and wider doors with winding windows—which, of course, are fitted with Triplex glass—are fitted. The Karhyde upholstery has been embellished with a line of piping, while the driver's seat is immediately adjustable, and the other front seat also can be altered to suit passengers of varying height. All Morris Minors have the efficient side-valve engine of 847 c.c., and continue unquestionably the most economical *real* car, both as regards running expenses and first cost, in the world.

Coming between the Minors and the Cowleys is an entirely new model termed the Morris Family Eight. Propelled by an 8 h.p. overhead-valve engine, having an exceptionally good turn of speed, and equipped with Lockheed hydraulic brakes, the Morris Family Eight, while costing only a fraction more to run than the Morris Minor, has a good-sized four-seater body as a coachbuilt saloon model, and it is also available as a Sports Coupe with two wide doors, giving ready access to the rear seats. Both models are equipped with a Pytchley sliding head.

The new model breaks new ground in combining rapid and comfortable motoring—with plenty of leg room—for four grown-ups, with supreme economy of upkeep. It can attain the creditable speed of 55 m.p.h., and can put up an average which will bear favourable comparison with much larger cars.

Cowley Models

Ever since its introduction the Morris-Cowley has led the field in the moderate-priced "full size" car market. When four-wheel brakes were introduced, the Cowley was among the first British cars to be so equipped; immediately chromium finish had shown itself to be satisfactory, it became part of the standard Cowley equipment, although previously it had only been found on the most expensive cars.

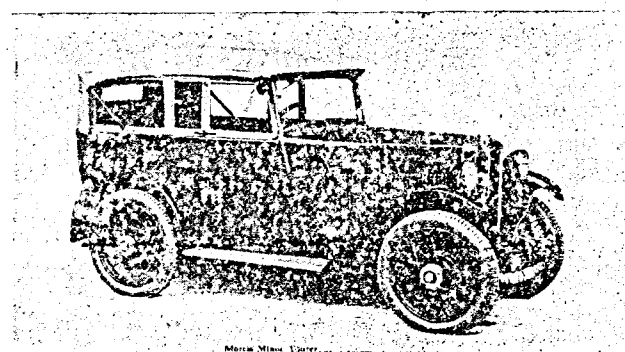
In its 1932 guise the Morris-Cowley, while sacrificing nothing in the matter of long life for wearing parts, economical running expenses, a reliability which has become proverbial, and an outstanding all-round performance, has a frame entirely re-designed, to give a lower body line, longer springs, and now incorporates Lockheed hydraulic brakes operating on large reinforced drums.

The four-cylinder engine and three-speed gearbox with its easy change remain unaltered except for duralumin connecting rods, which give it an even higher average speed. It has, however, the benefit of a combined air cleaner, pre-heater and fume consumer in the cylinder head, which definitely prevents the possibility of vitiation of the atmosphere in a closed car.

The attractive new radiator and excellent body lines, which incidentally confer still greater seating capacity, render the Saloon a truly handsome car. A choice is offered of a model with a fixed head at a very attractive price, and the Pytchley head saloon already mentioned is available at a slightly greater cost.

The Handsome Two-seater

There is also the Two-seater—now one of the best-looking two-seaters on the market—a two-door Coupe, admirable for a man, his wife and two or three children, and a Sports Coupe, which, despite its moderate price, is lavishly appointed and presents



The New Minor Tourer.

coachwork which can vie with the best in its beauty. Almost needless to add, the Commercial five-door Saloon, which proved so successful with gentlemen of the road last year, will hold its place in the range.

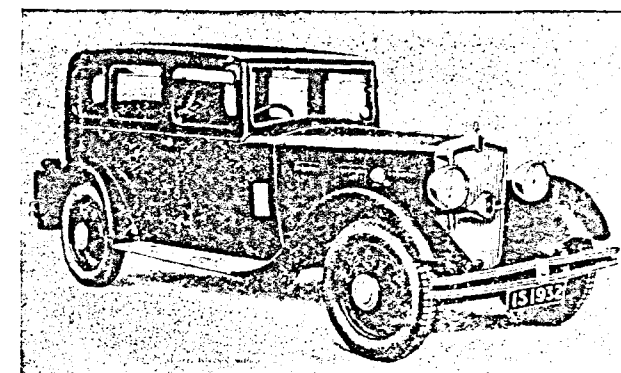
One of the most important features of the new Cowleys will be the choice of an 11.9 h.p. or 14/32 h.p. engine at the same price. Where economy is of some importance, and where the car spends most of its time with only two people as freight, many will prefer the smaller engine but to others the additional horse-power is available without extra cost, and will add still greater utility to a car which, outnumbering every other model—Morris and otherwise—upon the road, has already proved itself worthy of its popularity.

The New Majors

We have recently had a number of letters of praise for the Morris Majors in our columns in reference to the 1931 model, but in its 1932 form this car easily surpasses anything which has previously been attempted in moderate-priced six-cylinder cars on the British or any other market. To begin with, the new models will have a four-speed twin-top gearbox, rendering the car still more valuable in hilly country. On the lower of the two top gears the car has a good turn of speed, and will be capable of negotiating any but the worst main road hill without a further change, and on its highest ratio it has a reserve speed which renders it one of the fastest cars of its engine size upon the road.

It is interesting to note that the engine retains its air-cleaner-fume-consumer head and of course, this model now has the benefit of hydraulic brakes. The automatically operated radiator shutters, it should be noted, are now chromium finished.

The track has been increased to 52 in., and a full five-seater body is now fitted, there being ample room for three passengers at the rear, and an arm-



The Morris Isis—the largest model of the range.

rest has been added. The new Majors are available as an open Tourer, Coupe, fixed head Saloon, sliding head Saloon and Sports Coupe, and in themselves cover a range of requirements which is particularly broad.

The twin-top gearbox has been added to the Morris-Oxford models; still better lines have been introduced into the body which is also roomier and embraces head-rest cushions as a standard fittings. For the coming season the Morris-Oxford will be available as a two-door Coupe, a four-door five-seater Saloon, and a Sports Coupe of superb line. All these Oxford models unreservedly will embrace the Pytchley sliding head.

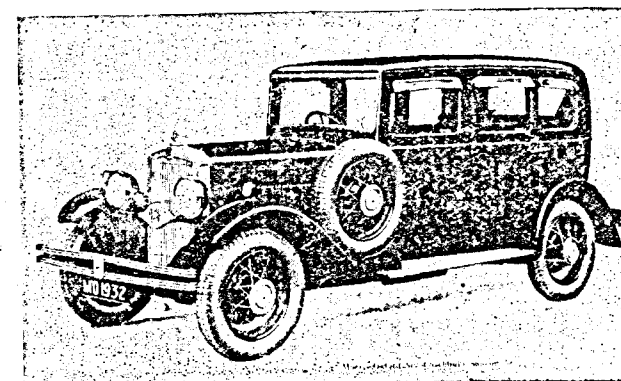
Isis Models

The Morris Isis—the largest of the Morris cars—fully justifies its position at the top of such a range already described and has, of course, undergone further modification and improvement.

It has been given a longer wheelbase, and down-swept frame which carries a coachbuilt, four-door Saloon body of truly handsome proportions, while its appointments and comfort at all road speeds bring it into the class of car in which price is a purely secondary thought.

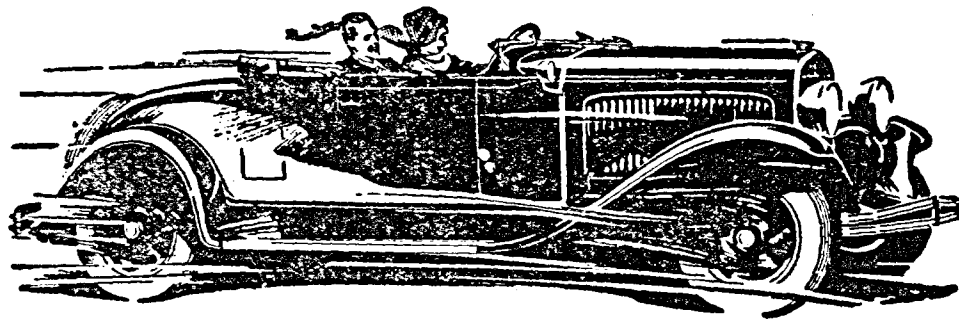
Perhaps we might take this opportunity to remind old readers, and tell new ones, that at the introduction of the Isis price considerations were definitely ignored. Having produced a car which should be fit for any occasion, embracing all that was best and most valuable in modern automobile practice, by a system of elaborate costing and up-to-the-minute production methods, it was possible to offer it at a price which should bring it within the reach of the man in comfortable but not necessarily affluent circumstances.

(Continued on page 351)



The Morris Oxford Coachbuilt Six.

Low Cost Roads Aid Transportation



India's Need for More and yet More Roads which will Open up New Country for Further Development.

UNTIL the past few years India has depended on railways as the principal means of transportation. They have served their purpose well, but it is now realised that to enable a country to continue the development of its potential wealth, roads must be opened up and improved not to supplant the railway in moving goods and people over long distances, but to provide a properly coordinated supplement to railway transportation by the establishment of feeder routes, to open new areas for development, and to bring rural and primitive communities into closer contact with the more highly developed centres.

The introduction and development of steam railways in India over the past 70 years has been the cause of the old main roads falling into disuse, and becoming of only local importance. To day, with the introduction of the internal combustion engine in the form of the modern automobile, we have another method of transportation which due to its flexibility, speed and economy demands that these old main roads receive the necessary attention to accommodate the ever increasing demands of the automobile for the transport of passenger and goods traffic.

It has been truly said that the motor vehicle and railway train have an entirely different public service to perform, both for goods and passenger traffic. The motor lorry aids the railway in transportation, the roads are feeders to the railway, while in the case of personal transport the "bus" reaches points that cannot be reached by train and makes stops along the road to the railway where there are no railway stations. Thus motor and rail transport supplement each other. Motor transport must not be considered as competitive with the railways.

To enable the millions in India to enjoy fully these modern methods of transport which promote the national welfare and give the people a better understanding of each other and develop its huge national resources, more roads and better roads are urgently needed.

A well organised scheme of road construction is needed throughout India to supplement the railways and for this purpose the low cost and cheap road is the most suitable in the first place.

The United States has been almost entirely developed by rail transport and until about 15 years ago, though she had 3 million miles of tracks (roads) she was practically without roads as they are understood to day. Of these tracks 662,450 miles or 21.9% are now surfaced and of this mileage 112,500 miles or 17% are surfaced with high class material. The work of construction and maintenance in the United States is being pushed forward at the rate of 55,000 miles a year, on which during 1930 they spent 351 millions sterling. Still, in spite of the expenditure of this huge sum it is scarcely sufficient to meet the immediate needs, let alone the needs of the future.

Think of this vast sum in comparison with expenditure on road construction and maintenance in India which probably does not exceed 8 crores of rupees per annum (about six million sterling). India is lagging behind because the value of this vital means of communication has not been fully realised. The necessity of extending our roads is every day becoming more apparent; the economic loss caused by the inaccessibility of agricultural districts in the rainy season is no doubt considerable; and this cannot be remedied until the system of trunk and feeder roads to railways are more adequately developed.

To the most disinterested member of the public, it is apparent that it would be impossible in any reasonable period of time, to construct anything like an adequate road system, unless some cheaper form of road construction, suitable for country roads, could be substituted for the more expensive types. A very careful survey of traffic possibilities is necessary before spending large sums on road building. Where for instance there exist only bullock tracks between important villages, it is clear that it would not be

economical nor a feasible expenditure to construct immediately macadamised roads in their place—the construction and type of road constructed must be made progressively with the demand made by motor and other forms of transport passing over it, but no road should be improved to any extent in excess of immediate future requirements.

Let us therefore consider the aspect of this low cost kachcha road. We have to help us the experience of many countries where conditions are very similar to those in India, and also the experience of many government officials in India in the development of this low cost road. Due to the shortage of labour and its high cost in other countries road making machines have been devised, consisting of a long cutting blade fixed on a strong framework carried on wheels. This plough or "grader" as it is called, is dragged along the road by a motor tractor. By various levers the blade can be adjusted so that it cuts the earth, making ditches and giving a camber or shape to the road. Such a machine with tractor complete can be bought for about 15,000 rupees—and a new road can be cut through virgin

country for quicker and at less cost than it could be done with cooly labour. Immediately upon finishing a car can travel such a road at 25 miles per hour.

It has been found in certain parts of India that as soon as a new road is opened a motor bus service immediately springs up, and the villages which were at one time isolated are consequently afforded modern facilities of transportation.

These kachcha roads as traffic demands can be metalled and later be surfaced, but as has been mentioned earlier only to the extent of their traffic requirements.

Under present financial conditions no type of road construction will be possible on a large scale for some years to come, and it is preferable that with the urgent necessity which exists for linking up roads and opening up new country, a fair percentage of all funds which can be made available should be spent on the construction and improvement of the kachcha road.

Issued by the Indian Roads & Transport Development Association Ltd.

The New 1932 Morris Range.

(Concluded from page 349)

Saloon and Sports Coupe

The capacious four-door Saloon body is luxuriously upholstered in leather and has a folding arm-rest at the rear, while a wide choice of colours is offered. On the same chassis there is the Sports Coupe to appeal to the man who does not demand so much body space, and therefore leaves the designer still more scope for an attractive line. The highly efficient overhead-cam-shaft engine returns in performance every penny expended in petrol, and will cruise all day at a speed which will prevent any but a highly tuned sports car keeping pace with it.

It will be noticed that in almost every range of cars we have mentioned a Sports Coupe. From the Eight to the Isis, every chassis has a sports coupe body which will meet the needs of the man who

requires something a little different from the family type saloon, and is prepared to sacrifice a little seating space. These five models offer, we believe, a wider choice of sports coupes than has ever previously been offered by a single manufacturer. Here is a selection which must assuredly delight the enthusiasts for this type of coachwork.

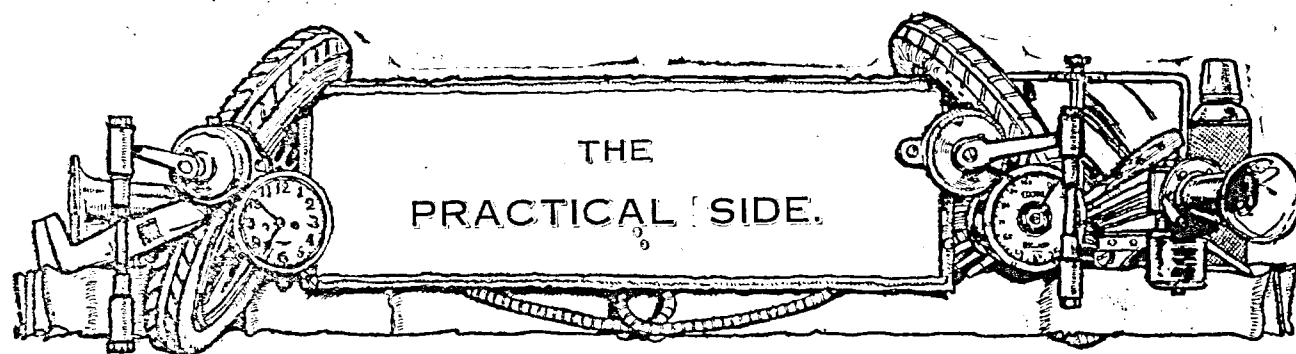
Two Years' Guarantee

Another big point we must mention is that henceforth Morris cars will carry a two years' guarantee, instead of the twelve months. This surely offers abundant evidence of the confidence of their makers in these new models, which once more set a standard of car values not only for the British car market, but for the automobile world in its entirety.

FAILURE TO RENEW YOUR LICENCE

ON TERMINATION MAY INVOLVE YOU
IN SERIOUS DIFFICULTIES UNDER CERTAIN CIRCUMSTANCES.

- Register Your Name for "Free Licence Reminder Service" which the "South India Motor Owner" has established.

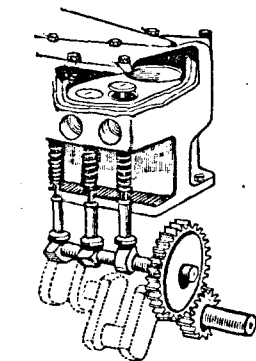


Our technical experts will always be pleased to answer any of our readers' queries regarding their cars. The matter should be clearly written, and addressed to the Technical Editor. Make and model of car should be stated

VALVES AND VALVE SYSTEMS.

THE correct mixture of air and petrol is prepared for introduction into the combustion chamber by means of the carburetter. The functioning of which was fully described last month. It follows that were the explosion to take place without any closing of the aperture through which the mixture enters, the expanding gases would take effect back through the way by which the mixture entered. In order to prevent this a valve or tap must necessarily be fitted, which is capable of being opened and closed at certain given periods. On the other hand it can also be understood that the waste gases of the explosion must have some orifice through which they may be discharged prior to refilling the combustion space with explosive mixture. These conditions, then, demand two openings in the combustion chamber; one through which the explosive mixture may be admitted, and the other through which the products of the explosion may be discharged. Both these apertures must be controlled by some mechanism which will permit them to be closed and opened at certain definite periods in the cycle of operations.

As power developed depends upon the force of the explosion, it will be readily understood that it is of the greatest importance that no leakage should be allowed through the valve ports during the process of combustion, nor again should gas escape when the piston is coming up on the compression stroke. At the same time it is essential that when the orifices are required to open they do so promptly and without hesitation.



Typical Side valve mechanism. Showing the arrangement of the camshaft and camshaft drive.

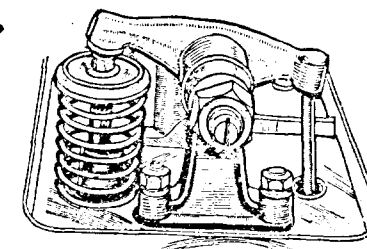
is of the "poppet" or, to use as a more descriptive name, "mushroom" type. As will be seen from the accompanying illustrations, these valves are so shaped as to fit closely into the ports. They are designed so that the pressure of the explosions or of the compression stroke only serves to seal them still tighter against leakage. The rapid closing of these valves is controlled by external springs, the opening by a cam on the cam-shaft. When the valve is in a closed position the valve head makes a gas tight wedge in its seating, but when the correct moment in the cycle of operations is reached, the valve is raised from its seating by the cam mounted on the cam-shaft which is driven by suitable gearing from the engine. Immediately the valve is released by this cam a strong spring brings the valve head once more firmly down upon its seating.

Two valves are necessary to every cylinder: an Inlet Valve which permits the ingress of the explosive mixture at the proper moment, and an Exhaust Valve which permits the discharge of the gases resulting from combustion.

Various Valve Systems.

Perhaps one of the most important parts of an internal combustion engine is the valve gear—the mechanism controlling induction and exhaust. Not only have the valves to function in perfect time, but

The opening and closing of these ports is controlled by valves which are of such design that they will withstand the full force of the explosion and yet remain gas tight under all conditions. The valve which is usually employed



Overhead type of valve showing the push rods and rocker arm.

they also control to a large extent the amount of power which can be developed by the engine. Valves which are sluggish in action do not permit the greatest possible quantity of mixture to be admitted to the cylinders in the time available on the induction stroke, neither do they allow complete scavenging or expulsion of the products of combustion on the exhaust stroke. It will be seen that sluggish valve action means that not only will a smaller quantity of explosive mixture than is desired be drawn into the cylinders but still further useful space will be occupied by unexhausted gas from the previous power stroke. The efficiency of a valve therefore depends primarily upon its rapidity of opening and closing exactly when required. The usual type of valve is known as the poppet valve, and this type has in practice proved itself to be extremely efficient though it has one or two mechanical disadvantages, the chief of which is that its rapidity of closing is dependent upon the speed of action of a spiral spring. Thus the poppet valve can generally be said to be as efficient as the spring which controls its closing.

Many types of valve action have been produced from time to time but only three have proved themselves sufficiently trouble proof to warrant general usage.

1. The poppet valve, which is undoubtedly the most popular.

2. The double sleeve valve which is fitted on all Knight engines. This is a system which is not only efficient but has the added advantage of extreme quietness of operation.

3. The single sleeve valve of which one or two well known examples exist.

Poppet Valves.

Poppet valves mechanisms may be divided into three distinct types:—

SIDE VALVES, which are extremely accessible; but enforce limitations in cylinder head design which are detrimental, particularly if large head valves are used.

OVERHEAD VALVES of the push rod type: these are actuated from a cam-shaft in the crankcase operating push rods which reach from the cam-shaft to a position above the cylinder, thus permitting the valve to be placed head downwards in the top of the combustion chamber. This is possibly the most efficient type of poppet valve mechanism.

THE OVERHEAD CAM-SHAFT TYPE O. H. V. This particular system is in use generally upon highly

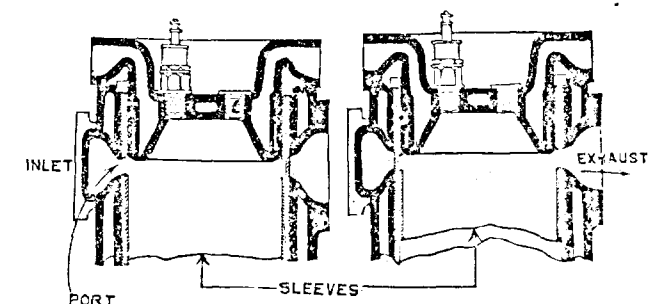
temperamental, ultra efficient racing engines, but a number of problems have yet to be solved before this mechanism could be standardised for the popular car for the owner driver; never the less, many makers are nowadays standardising the type.

The two illustrations show the operating features of side valve systems, and the rocker arm fitting which operates the valve through the long push rod used in O. H. V. systems. As will be seen, the cam-shaft operating the valves is geared, either by chains or wheels direct to the crankshaft; and usually the other auxiliary drives, such as that to the magneto, are incorporated in the train of gears.

Sleeve Valves.

Engines fitted with this type of valve mechanism are characterised by extremely silent running, as the motion of the sleeves is a sliding one. The latest type of thin steel sleeve faced with white metal still further reduces any sound of operation. Engines fitted with this type of valve are capable of being run for considerable periods without decarbonisation as the cylinder head can be designed to provide perfect combustion of fuel.

The mechanism is shown clearly in diagram form from which it will be seen that two sleeves are arranged one inside the other between the cylinder and the piston.



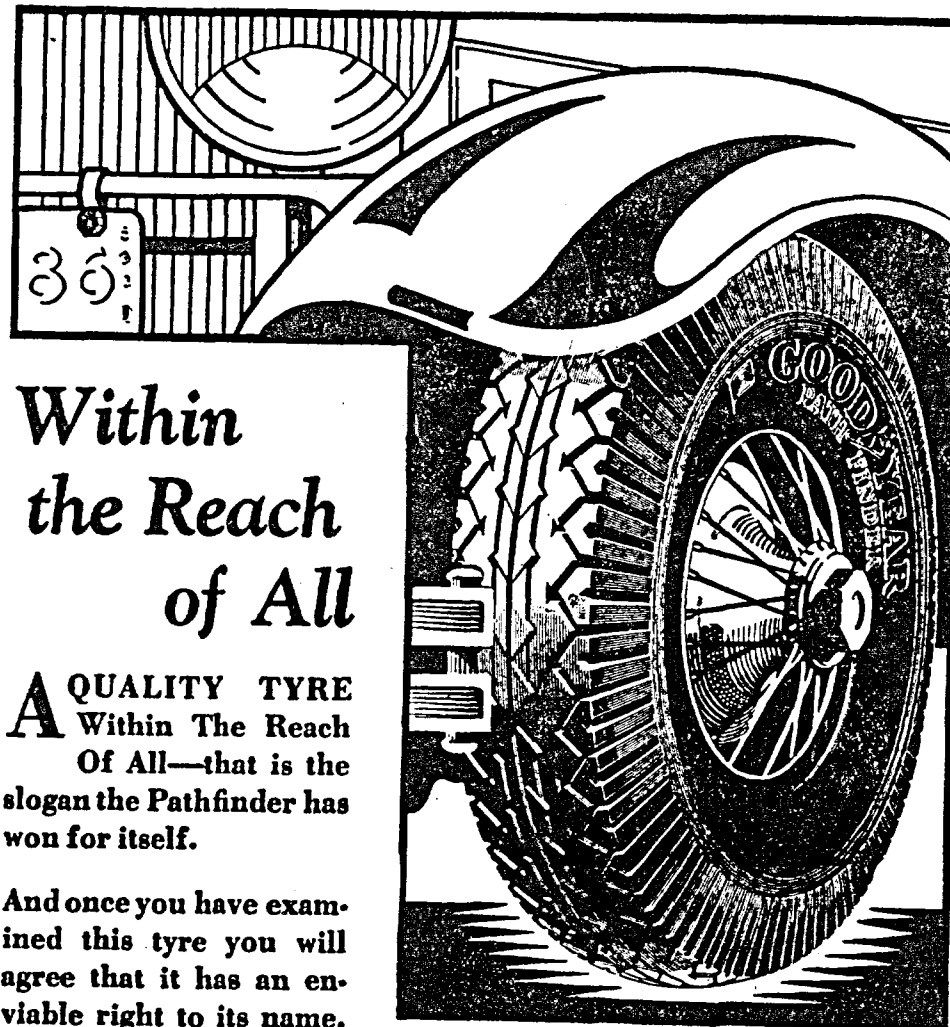
The Principle of the Double Sleeve Valve System.

Slots or ports are cut in the sleeves in their upper portion at different heights. On the induction stroke the ports on the inlet side of the two sleeves register one with the other, and the fuel charge is drawn into the combustion chamber. During the compression and working strokes all four openings in the sleeves are out of line, but as the piston rises on the exhaust stroke, the two other apertures coincide and provide the exit for the burnt gases.

The action of sleeve valves is positive, the sleeves being actuated usually by a series of cranks on the slow (half-time) shaft which takes the place of the cam-shaft. Closure of valves does not depend upon springs, and opening depends upon direct connecting links and not upon disconnected push rods or valve stems following the contour of cams. Furthermore the construction lends itself to really large gas passages facilitating the entry of larger quantities of fuel in a much shorter

(Continued on page 364.)

A Quality Tyre



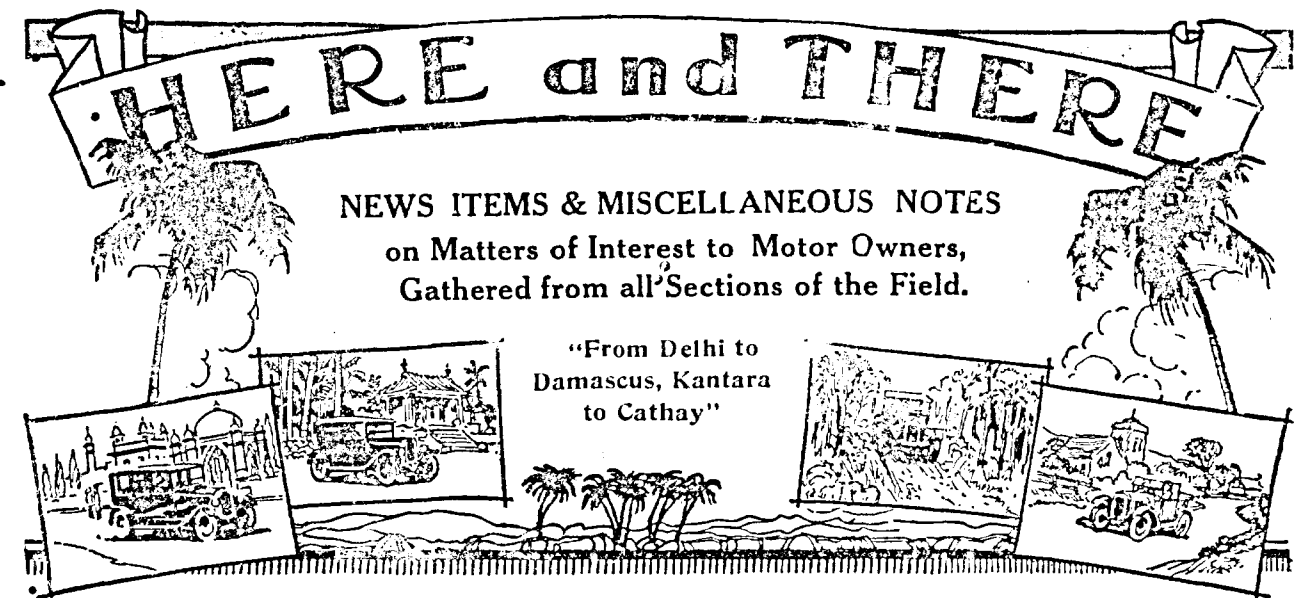
**Within
the Reach
of All**

A QUALITY TYRE
Within The Reach
Of All—that is the
slogan the Pathfinder has
won for itself.

And once you have exam-
ined this tyre you will
agree that it has an en-
viable right to its name.

It is generously big. You can see its strength and feel its toughness.
Then to make it still better, it is built with that famous Supertwist
Cord And it costs less.

Pathfinder
GOOD YEAR



IMPROVEMENTS IN THE NEW BUICK

The new Buick line, powered with straight-eight valve-in-head motors, is reported to have created a marked sensation, and this fact is borne out by the large increase in Buick sales since that time. Models of the new Buick line have already made their appearance in India and are on view at Buick dealers throughout India, Burma and Ceylon.

For many years Buick has traveled under the slogan "When better automobiles are built Buick will build them;" every year Buick has lived up to the slogan and once again

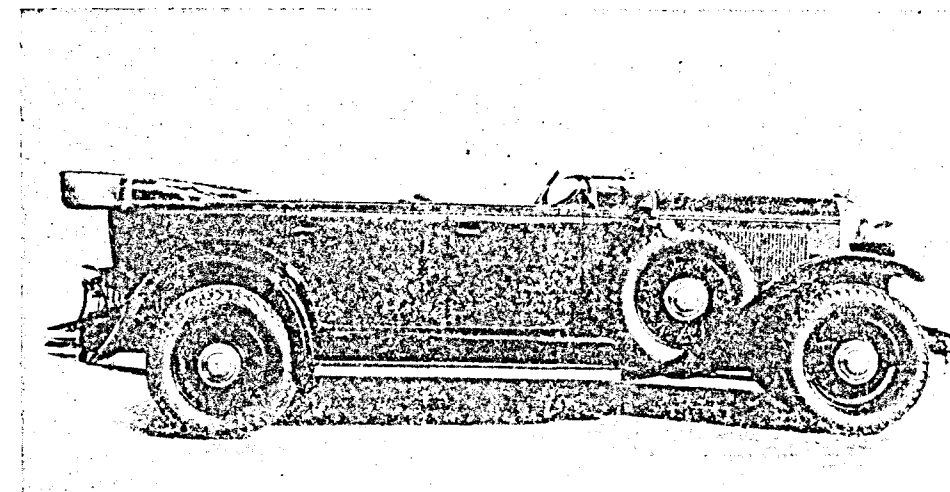
Buick has scored an automotive achievement.

General Motors engineers believe that this product represents the soundest and most efficient construction ever built into a motor car. They base the belief upon the three years of tests through which the car was put before they were satisfied to release the improvements to the public.

Although the New Buick retains the general appearance of the 1930 models many refinements have been incorporated in the beautiful new

Fisher body, and changes in construction have been employed to strengthen it structurally and eliminate any possibility of noise or fumes from the engine.

Among the engineering advancements are the synchro mesh transmission and dual carburation on the 8-60 and 8-90 models with an oil temperature regulator, combined intake silencer and air cleaner, new crankcase ventilating system, improved steering gears, onepiece rear axle housing, new clutches and four-point rubber insulated engine mountings on all models.



The Seven Passenger Buick 8 Touring Car.

Three different wheelbase lengths will be included in the line for this territory. The six models in the 8-50 series are carried on a 114 inch wheelbase and powered with an eight-in line overhead-valve motor, which has a bore and stroke of 2½ by 4½ inches, is rated at 77 horsepower and is capable of 70 miles per hour.

In the 8-60 series five models are offered on a 118 inches wheelbase, and the motor used in this series develops 90 horsepower.

HERE AND THERE

NEWS AND MISCELLANY FROM ALL SECTIONS OF THE FIELD

(continued from overleaf)

Motoring Journalist's Adventures.

Exploits of a Special Correspondent.

Kabul to Peshawar in 9 hours 55 minutes—this was the remarkable performance recently established by a Chevrolet Tourer driven by Mr. F. G. R. Peterson, Special Correspondent of the London Times in India.

The road that links India with Afghanistan is as full of difficulty as it is of romance. It was the road taken by Alexander the Great and his armies hundreds of years ago, and history has been made along almost every mile. Settled conditions on the Afghan side of the border make the journey safer than it was a few years ago, but even now it is a land of mystery to most people and Mr. Peterson is one of the six fortunate Englishmen who have penetrated to King Nadir's capital since the new regime was established two years ago.

The journey is a severe test of a car's efficiency. Once the traveller who has left Peshawar behind on the outward trip has left the narrow corridor of the Khyber Pass behind him and crossed the jealously guarded frontier post beyond Landi Khana, he finds that the character of the road changes very quickly. After fifty odd miles of rough going across the Jallalabad Plain where the car has to negotiate stony water-courses and rocky defiles, the road begins to climb steadily. Often it runs along the brink of steep precipices and winds around perilous hairpin bends on the face of the mountains. It is a journey full of historic reminiscences—first the ancient forts at the other end of the Khyber that frowned down on Alexander's march; then Dakka, the limit of the British advance in the short war of 1919; Jallalabad and

Gandamak with their associations with earlier campaigns, and the tragic valley of Jagdalak from which one man alone escaped to tell the story of the massacre of Elphinstone's 6000 men in 1843.

The driver of the modern car, however, has little time for historic reflections as his attention is fully occupied with keeping the car on the road. He has had extensive experience of driving in other unfamiliar parts of the world as he drove his own car from Nairobi to the Belgian Congo and then northward through Uganda and the Sudan in 1927. He was also one of the first to motor across the Syrian desert from Damascus to Bagdad. On his return to Peshawar after what he was informed was a record journey from Kabul, he expressed his unqualified admiration of the Chevrolet for its response to the exacting test to which it had just been put. He was particularly struck by the car's quick acceleration after it had been forced almost to crawl through a bad bit of road, by the smooth running at high speed, and (what is most important on a long and arduous journey in a temperature over 110 degrees) the roominess and comfort of the design. Its hill climbing powers were fully tested in the long ascent that begins from the valley of the Tezin river and, in a few miles, climbs to nearly 10,000 feet before dropping down again into Kabul.

We recently gave a short description of Mr. Peterson's trip in these columns, but readers will find the above further notes of real interest.

Remarkable Reliability Test.

The Ford Motor Company recently organized a unique 72-hour reliability demonstration; 194 cars ran for this period at an average speed of approximately 24 m.p.h. without stopping the engine. They were not highly-tuned cars, but standard stock models, some brand new and some two and three years old. The total distance covered without an engine being stopped was 334,930 miles, a distance which is equivalent to over thirteen times round the world. The Ford Company have always been famous for the originality of their demonstrations, but in this case they excelled themselves in giving practical proof of the reliability of their products.

British Petrol Refinery Increase.

Additional generating plant costing £80,000 is to be erected to cope with increasing demands for petrol refined in Great Britain.

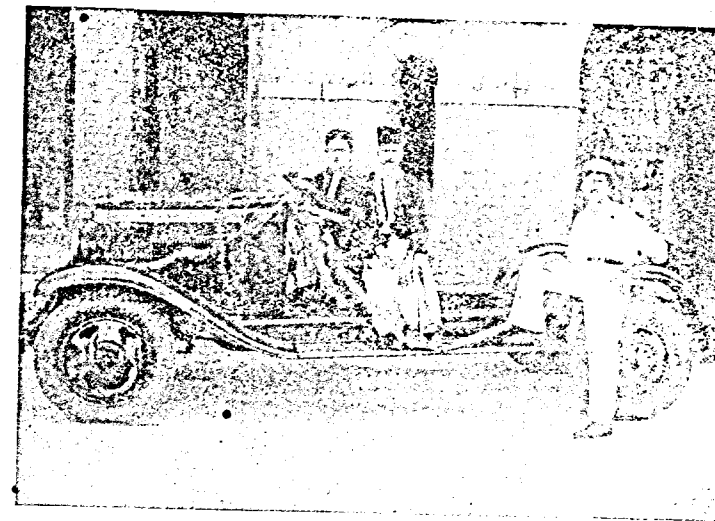
"Refining is only in its infancy in the country," an official of the Anglo-American Oil Company said. "Last year 800,000 tons of oil products were handled, in and out, at Fawley, and the work there has increased in three years by 350 per cent."

Petrol storage at Fawley is also to be increased by the construction of four new tanks, seventy feet in diameter and thirty feet high.

A Seasonable Tip.

Now that the season of road tarring is with us, the following hint for removing tar blemishes, which is not general knowledge, may be apposite. Common eucalyptus oil is a solvent of tar, and if a small piece of clean rag be well soaked and applied to the stain, the latter will be at once removed. No harm will be done to bodywork of any finish.

• HERE AND THERE: NEWS OF THE MONTH



The Chevrolet Truck chassis which was given away in the recent contest organized by a Madras Chevrolet dealer. The lucky winner, Mr. A. Balasundaram Naicker, a local bus-body builder, is seen seated, facing the camera.

Beirut to Bagdad Route

Comfort for Passengers over the Desert.

A Buick roadster, with trailer attachment, accommodating passengers, mail and baggage, has recently been added to the famous Beirut-to-Bagdad transportation line across the Syrian desert. This line, known as "The Desert Mail", now operates five Buick-cars, as well as several buses. Cars are also operated over an extension of the line that has been made to Teheran, the Persian capital, several hundred miles beyond Bagdad.

The Beirut-to-Bagdad line links the Mediterranean, on the west, with the Tigris river, flowing into the Persian Gulf, on the east, and saves a month's journey by steamer in reaching the Persian oil fields. It is a stiff drive, taking about thirty hours and covering 500 miles of mountains and burning desert each way, testing the stamina of cars as well as drivers to the utmost.

Leaving Beirut, the line passes over the Lebanon Mountains, 1,500

feet high, and the Anti Lebanon range, with 1,200 feet altitude, to reach Damascus, on the edge of the desert. From Damascus it is 500 miles to Bagdad, over the trackless, barren, sun-scorched wastes of the Syrian desert. There is but one



Paul L. Hoessler, the explorer of "Africa Speaks" fame, discussing automobile matters prior to his trip through India.

water-hole, at Ruba Wells, 840 miles from Beirut, on the rock-strewn bank of the Wadi Hauran, a dried up watercourse.

On this round trip of 1,100 miles, despite the heat, the high speed maintained and the climb each way over the mountains, the Buicks have established a remarkable record for economy of fuel and water, as well as furnishing dependable performance and comfort for passengers.

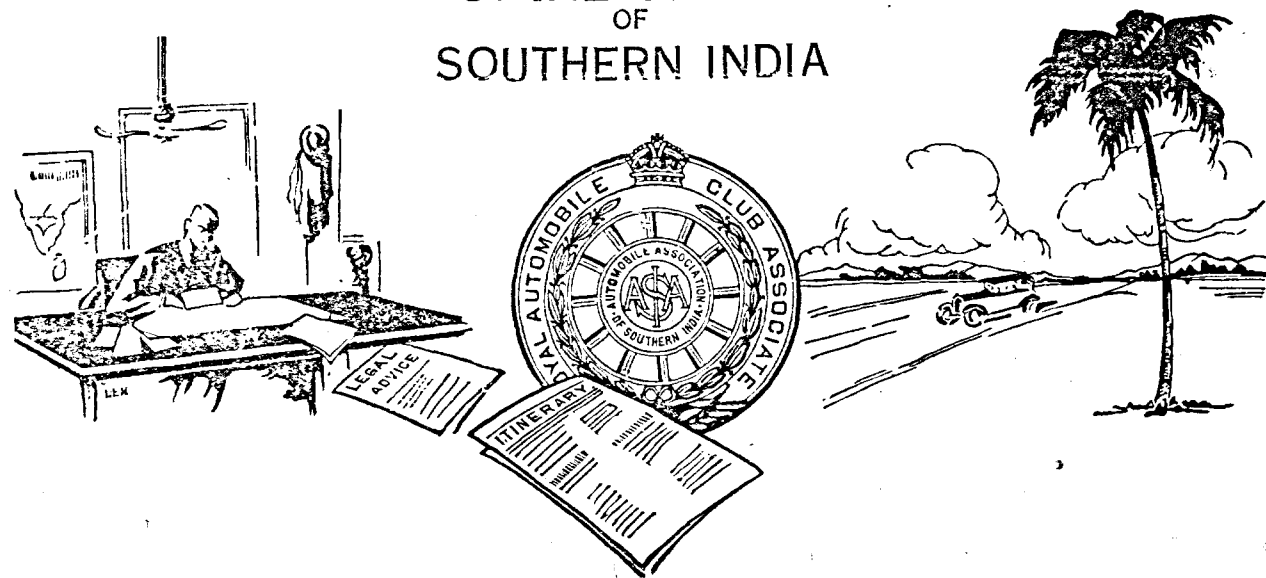
A Gallant Guide

From time to time Road Guides are able to perform some public service which, although it many lie outside their normal daily duty, is of unquestionable value to the whole community.

An instance of such an act occurred recently when an R.A.C. Guide named North assisted a police constable in arresting a man who was driving a car and who was later sentenced to seven years' penal servitude for having in his possession a firearm with intent to endanger life.

At the conclusion of the case the judge addressing North, said, "You rendered assistance to the police in circumstances of no little danger. You behaved yourself like a true Englishman and I am proud to have the opportunity of expressing my appreciation of your assistance."

AUTOMOBILE ASSOCIATION OF SOUTHERN INDIA



Secretary's Report for November 1931.

Committee Proceedings

1. The Committee assembled on 20th November 1931, and in addition to normal routine business, dealt with the following subjects as shown :—

M. V. Taxation Vehicles Visiting Presidency

(2) Read letter from Madras Government declining to accept Association's protest against levying M. V. Tax on vehicles entering the Presidency for a brief visit, or merely passing through a portion of it, en route for another province or State.

Resolved that the decision be accepted temporarily, in view of the fact that Government has assembled a Committee to go thoroughly into the working of the M. V. Tax Act.

M. V. Taxation Method of Issuing Licenses

(11) Read and approved of a letter addressed by Secretary to Madras Government protesting against the Nilgiri District Licensing Officer's ruling that owners of motor vehicles must appear in person or by messenger to obtain a license;

(b) Also suggesting that once registration certificate has been endorsed by a licensing officers to show correct amount of tax due, subsequent taxes may be paid to and licenses obtained from post offices.

Note:—Government has intimated that the suggestion contained in subpara (b) above is being investigated.

M. V. Taxation Tax on Cars Deposited with Dealers for Bonafide Sale

(111) Read letters from several members protesting against the ruling that tax must be paid on motor cars which are deposited for commission sale with recognised M. V. Dealers.

Resolved to await the result of the recommendations of the Committee recently appointed by Government to consider the working of the M. M. V. Taxation Act—it being understood that one of the main points for consideration is the relief from taxation of vehicles

which do not use public roads during the whole of a Tax period.

Level Crossings

2. Approved suggestion that railway administrations should be approached with a view to level crossings on mofussil roads being carried askew across railways so as to straighten out the many acute bends which now exist at many level crossings.

Traffic at Madras Race Course

3. Decided to approach the D. S. Police Chingleput District and the Race Club with a view to allowing two way traffic on the roads leading from Mount Road to the several race course entrance gates.

Note:—The Race Club has indicated its approval and asked the D. S. P. Chingleput to conform.

M. V. Taxation

4. Two Bills have been introduced for consideration by the Madras Legislative Council at its next Sessions; i.e. (a) Limiting the amount of license fees leviable on motor vehicles by District Boards and Municipalities; and (b) exempting from the payment of license fees motor lorries not used for hire.

M. V. Taxation

5. It is understood that the liability of members of the A. F. I. for motor vehicles taxation on their private cars and cycles is still under consideration by Government.

Roads West Coast

6. (a) The new road from Cochin to Munner via Neeramangalam, which was blocked by a landslide near Pallivasal has now been cleared and opened to through traffic.

(b) Road damages incurred during the S. W. Monsoon have been repaired and through communication again restored on all main roads.

(continued on page 360)

Pack Your Bag
For A Long
Week-end

and stay at

Lavender's
Hotel

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MACKENZIE & CO.,

Automobile and Mechanical
Engineers.

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writing a small
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Imagine you are buying a car—and then put down all the facts you would want to know.

Give full particulars of the make, model and year of manufacture with any points about speciality fittings which may interest the buyer.

Use a box number it insures privacy.

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HAROLD & CO.,
General Patter's Road,
MADRAS.

Industrial Leader's Views upon Present Economic Conditions.

THIS magazine is pleased to present herewith the views of Henry Ford on world business. As head of the great Ford Motor Company and directing genius of its vast properties in many countries, Mr. Ford is one of the few men today who can speak with world import and whose opinion is of significance to all peoples. Mr. Ford's answers to the questions placed before him by the American Automobile (Overseas Edition) should therefore be of guidance and aid to every reader of this magazine.

1. IN WHAT MANNER WILL THE WORLD DEPRESSION BE BROKEN?

The depression is a wholesome thing, in general. It has done less harm to the people and the country than a continuance of our previous false prosperity would have done. More people will survive this period than would have survived a continuance of the former period. Our so-called prosperity was not prosperous in any sense. It did great harm to business and to the morale of the people. The depression will be broken (1) when people cease to believe that something can be obtained for nothing; (2) when the people get back their self-dependence; that is, when they cease to lean on the initiative of a few either to provide work or charity, and (3) when the public understanding is capable of seeing that the profit of life is life and not money.

2. WILL QUANTITY PRODUCTION PRINCIPLES BE RADICALLY ALTERED AND WHAT, IF ANY, GENERAL CHANGES WILL BE MADE IN OUR PRESENT INDUSTRIAL AND COMMERCIAL STRUCTURE?

Instead of halting quantity production, the effect of the present experience will be to increase it. Our greatest production in every line has fallen far short of supplying the need. Changes in financial structure will facilitate the exchange of goods more easily than before. Men, materials, money, need are all present; by breaking through a few economic fallacies and by revising archaic financial procedure, the four elements of continuous business and prosperity will be enabled to function normally.

3. AS UNSOLD SUPPLIES OF RAW PRODUCTS (RUBBER IN THE FAR EAST, COPPER IN VARIOUS PARTS OF THE WORLD, COFFEE IN BRAZIL, SUGAR IN CUBA, ETC.) AND RESULTANT LOW PRICES HAVE HALTED BUSINESS IN MANY TERRITORIES, WHAT IS YOUR THOUGHT AS TO THE USE OF THESE SUPPLIES, THE COURSE OF PRICES AND THE RESTORATION OF NORMAL BALANCE OF OUTPUT AND CONSUMPTION?

As a general rule we must oppose curtailment of production price fixing or other artificial economic make-shifts. Although a temporary inconvenience, a surplus is more than balanced by the good results

produced by the pressure of that surplus. New uses are not found for goods except there be a surplus of them. The new uses mean new markets and larger production. These are not discovered except under pressure of a surplus.

Henry Ford gives his opinion upon questions of present day importance. The relief of trade depression and a return to real prosperity are matters which Ford covers in the space of this reported interview, and his words are of the greatest interest to all readers of this journal.

4. MANY PEOPLES ARE UNDER-CONSUMING TODAY AND HAVE LOW STANDARDS OF LIVING. THERE HAS BEEN MUCH PROGRESS IN VARIOUS SECTIONS OF THE WORLD IN IMPROVING LIVING CONDITIONS. WILL THIS IMPROVEMENT BE CONTINUED AND EXTENDED OR WILL IT REVERT TO THE LESS PLEASANT CONDITIONS OF AN EARLIER PERIOD?

Improvement of living conditions the backward parts of the world will not merely continue but will be accelerated by the planting of industries in every country. The exploitation of new countries has definitely ceased in favour of development of these countries. "Foreign" markets must continuously grow fewer and fewer, as the various peoples become more and more sufficient to themselves and this, of course, means a higher standard of living than when these peoples were mere "foreign markets". There will be no recession anywhere from a higher standard except for occasional extravagant developments which are sometimes mistaken for a "standard".

5. IS THE WORLD GOING THROUGH IN "OLD-FASHIONED" BUSINESS DEPRESSION, SUCH AS WE HAVE HAD PERIODICALLY IN THE PAST, FROM WHICH WE WILL EMERGE IN DUE COURSE?

This is not the old-fashioned cyclic depression but the consummation of an ascending series (or at least its beginning) of depressions. The final convulsion may last for some time in its various phases, but it cannot escape the accompaniment of large revision of the social system, not as changing the system we have, but as enabling it to accomplish all we said that it could accomplish in the way of opportunity and prosperity.

6. SPECIFICALLY CONCERNING THE AUTOMOBILE BUSINESS, WHAT IS THE EXPECTATION OF COMING REPLACEMENT SALES AND THE EXTENSION OF MOTOR USE IN VARIOUS COUNTRIES?

The automobile is an established and dominant factor in transportation. It will develop along the line of greater refinement—refinement of product, distribution etc.

7. WILL YOU COMMENT ON WAGE SCALES, EITHER IN GENERAL OR AS SPECIFICALLY APPLYING TO THE FORD COMPANIES, IN THE UNITED STATES AND OTHER COUNTRIES?

(Concluded on page 364)

TO-DAY EVERYONE IS ECONOMIZING.

How cheap is cheap oil?

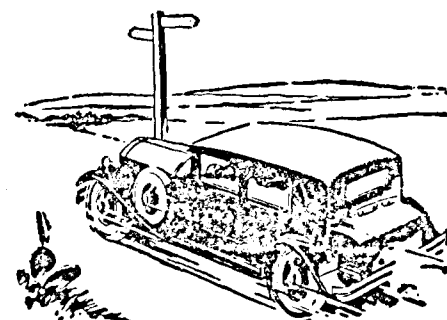
TO-DAY everyone is saving where he can. That is the very reason why more than ever you cannot afford to take chances on low-grade oils.

LOW-GRADE OILS
are
CHEAP TO BUY but
EXPENSIVE TO USE

They bring you pumping pistons, hard carbon, pitted valves and

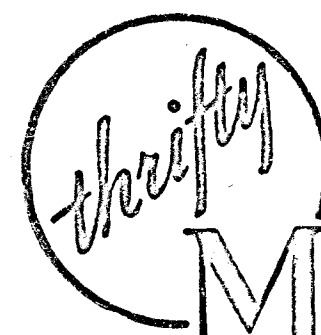
A GOOD ENGINE GONE BEFORE ITS TIME

"Cheap" oils are "costly" oils—they lead to wasted money



BE THRIFTY
USE MOBIL OIL

Mobil oil stands up—Step by step the famous Vacuum process has built up Mobil oil. Mobil oil not only protects your engine but it costs you less per running mile—and that counts. Prove Mobil oil stamina in your own car to-day.



Mobil oil

FOR REAL ECONOMY

Made by **VACUUM OIL COMPANY, Inc.**

Henry Ford on World Economics*(Concluded from page 362)*

Industry grows large only by the patronage of workers and workers cannot patronize industry unless they receive sufficient wages. Wages is our basic purchasing power. Anything that increases wages,

increases business; anything that lowers wages injures business. Wages however must be earned. Higher wages can come only of higher and better production. The task of enabling labour to earn more is peculiarly the task of management and is accomplished through a continuous improvement in method. In fact labour earns more, with less effort, when management does its full share.

Trade Notes and News.**Defying Rust**

A LARGE gathering of members of the motor and other trades were recently introduced to the Parkerising and Bonderising processes of rust prevention by the Pyrene Co. Ltd., at their Works at Brentford.

Every motorist knows that there is a number of processes by which metals may be treated, usually in the nature of paint, to prevent rust. The process of Parkerising differs from most in that the parts to be treated are submerged in a chemical solution, which, adding merely two-thousandths of an inch to the dimensions of the parts immersed, forms an intensely hard crystalline deposit on the metal. It has enormous powers of resistance to rust in a damp and even a salt-laden atmosphere.

One peculiarly valuable characteristic of this process is that even if the surface becomes damaged, exposing the metal beneath, although this section naturally will rust, it is impossible for the rust to spread under the coating, as it does in the case of a protective paint. This interesting process is applied merely by dissolving a soluble powder (Parker powder) in a solution of boiling water, and immersing the parts, and it is thus suitable for quite small as well as large installations. It is available to the small manufacturer and even to the handy man who makes articles for himself.

Fuller details can be obtained from the Pyrene Co. Ltd., Great West Road, Brentford, Middlesex.

Everyone His own Magician

POSITIVELY uncanny in its operation, a new window display apparatus, especially adaptable to motor showroom windows, has recently been put on the market.

What at first sight appears to be a picture frame with a small aperture in it is hung against the window, and passers-by invited to pass their hand over the

opening. When they have complied with this request, as if by magic the whole window, previously only dimly lit, comes into a blaze of light, and remains brilliantly illuminated for the space of half a minute or so. Then the lights are switched off automatically until another would-be magician works the spell.

Quite apart from its novelty and the apparent magic of its operation, the device has the obvious advantage that the expense of illumination is only sustained for the brief period when there are actually spectators outside the window, so that it can be left functioning all night at very little cost. Incidentally, a number of sets have already been installed in different parts of the country, and before long doubtless we shall see a great many more.

Needless to add, the apparatus itself is closely allied to a wireless set, and indeed is one of the many devices invented as a direct result of the radio, which would surely have caused their sponsors to be burnt at the stake as wizards if they had been produced three hundred years ago.

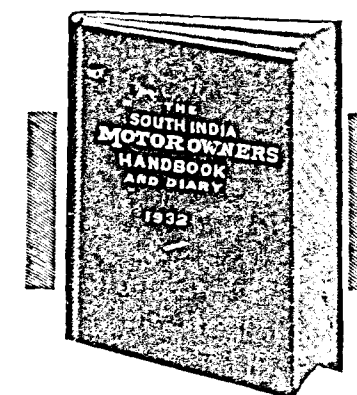
VALVES AND VALVE SYSTEMS.*(continued from page 353)*

time. Similarly, the burnt gases are expelled from the combustion chamber were effectively on the exhaust stroke.

These are the only two types of valve which are likely to be of interest to owner drivers, as there are only a few examples of single sleeve valve engines; and cuff valves and rotary valves are hardly likely to progress much beyond the present experimental stage.

Some examples of cars equipped with Side valves are:—Essex, Ford Morris and Overland; Overhead valves:—Fiat, Buick; Sleeve valves: Willys-Knight, Daimler.

THE
SOUTH INDIA
MOTOR OWNERS'
HANDBOOK
AND DIARY
FOR—1932



THIS publication, which will be available on or about the 15th of December is very handsomely produced; bound in strong covers, its 250 odd pages are neatly printed and fully illustrated, and the book is of a convenient size to fit your pocket or grace your bookshelf. The diary portion contains ample space to keep records and expenses, and there is a wealth of practical information for motorists in general. The edition of the Handbook and Diary is limited and to prevent disappointment we strongly urge you to complete the Order Form at the foot of this page.

PRINCIPAL CONTENTS

FULL INFORMATION regarding the Construction, Maintenance and Repairs of the motor car.	MOTOR CAR REGULATIONS and the New Taxation explained in simple language.	DIARY PAGES FOR 1932 with ample space for the recording of mileages, petrol consumption, running expenses, etc.
ARTICLES BY EXPERTS upon Tyres, Electrical Systems, Lubrication, Tuning for Speed, etc., etc.	ROUTE PLANNING together with information regarding Hotels, Dak-Bungalows, etc.	INDEX MARKS, Petrol Prices and Road Distances.
LUBRICATION AND TYRE DATA.	USEFUL HINTS and Aids for Owner Drivers.	PLACES to visit.

READY DEC. 15TH 1931. ORDER YOUR COPY NOW!

Cut along this line.

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Address.....

(In Block Letters).

Publishers' Notices**The South India Motor Owner**

Published Monthly by

Eastern Technical Publications.**General Patter's Road, 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 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.

A red reminder slip is always placed in the subscriber's copy issued prior to expiry.

Advertising Rates

Rates for display space will be furnished on application. For small advertisements and entries under 'Sales and Service Guide,' see page 334.

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

THE
SOUTH INDIA**MOTOR
OWNER****Volume III.**

The December 1931 issue of the South India Motor Owner will conclude Volume 3, and a limited number of volumes bound in full cloth will be available for those readers who may wish to keep their copies for reference.

Complete Bound Volume Rs. 6.**Readers Own Copies Bound Rs. 3.**

plus postage.

**Missing copies can be
replaced: As. 4 per copy.**

As the stock of past issues is limited we would urge readers requiring bound volumes to order at once to avoid disappointment.

Eastern Technical Publications,**Mount Road,
MADRAS.**EASTERN
MOTOR TRANSPORT

**A New Monthly Magazine Devoted to Commercial Transport
and Allied Interests throughout India, Burma and Ceylon.**

The rapid growth of motor transport in India and the East can be discussed by experts India during recent years, and clear evidence in this field. The New magazine here announces that still greater progress will be made in the future has shown plainly the need for a journal interested readers of this paper are asked to in which problems of commercial transport in get into touch with the publishers.

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OCT, 1931

Diamonds!

WHEREVER wealth and dignity are to be found, there also will be seen precious stones in abundance. To day, when there are so many imitation "stones" on the market there is a still greater fascination in owning and wearing the finest diamonds.

Our experience and the advantage of cash purchases direct from the Continent are at your service.

P. CUNNIAH NAYUDU & SON.

China Bazaar Road,
MADRAS.

For the small subscription of Rs. 3 the 'South India Motor Owner' will be sent to you post free for 12 months—there is a simple form over-leaf which is easily filled in.

T HERE is a new force shaping and directing the intellectual and material life of mankind, guiding with a strong hand the destinies of the world—**Advertising**

LET US HELP YOU TO PLAN YOUR ADVERTISING

Advertisement Manager.

THE SOUTH INDIA MOTOR OWNER
MOUNT ROAD MADRAS

OCTOBER, 1931

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THE SOUTH INDIA MOTOR OWNER

NO WASTE CIRCULATION



Haphazard methods of advertising, out of date sales systems and inefficient organization will no longer sell cars to South India motor owners. Times have changed in company with the gradual improvement in the conditions of motoring in this area.

Advertising methods and advertising media which served their purpose quite well years ago, now no longer appeal to the discriminating South India motor owner, and it is necessary therefore for Southern India automobile distributors to utilize the specialized trade press which is represented here by the SOUTH INDIA MOTOR OWNER. Only by using this journal can motor dealers hope thoroughly to cover the market for cars which is undoubtedly offered by Southern India.

Rates for advertisements will be furnished gladly on application to the Advertisement Manager

EASTERN TECHNICAL PUBLICATIONS
WOODS ROAD, MOUNT ROAD, MADRAS.

SOUTH INDIA AGENCY



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