

Indian Motorist.



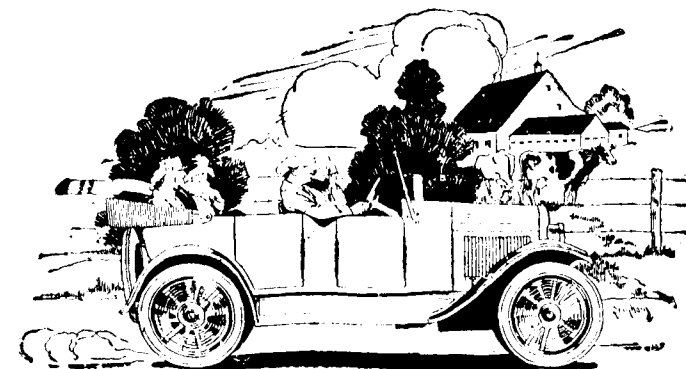
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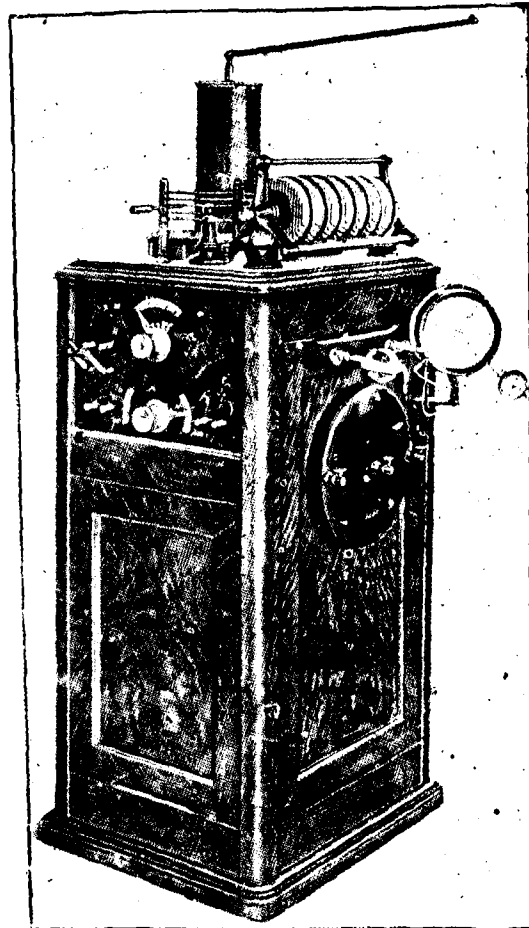
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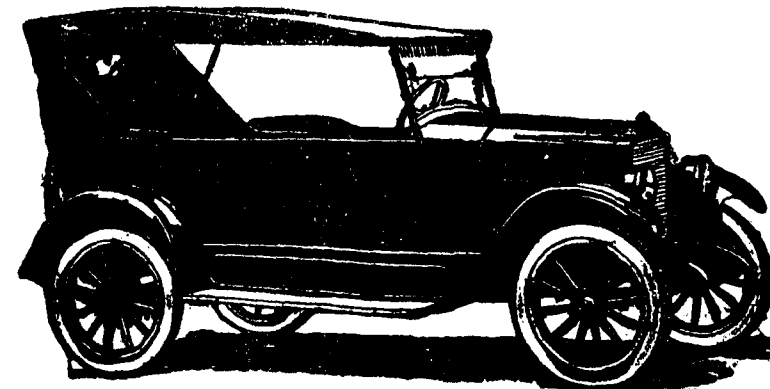
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SPECIFICATION.

MOTOR.—Continental Four-cylinder, L-head type, detachable head, bore 3 $\frac{1}{8}$ ", stroke 4 $\frac{1}{4}$ ".

CYLINDERS—Cast en bloc with upper half of crankcase.

VALVES.—1 $\frac{1}{2}$ "-5/16" lift.

CRANKSHAFT BEARINGS.—Front 1 $\frac{1}{2}$ " diameter x 1-25/32", centre 1 $\frac{1}{2}$ " x 1-9/16", rear 1 $\frac{1}{2}$ " x 2 $\frac{1}{4}$ ".

CAMSHAFT BEARINGS.—Front 1 $\frac{1}{2}$ " x 1 $\frac{1}{8}$ ", centre 1 $\frac{1}{8}$ " x 15/16", rear 1 $\frac{1}{2}$ " x 1-19/32".

COOLING.—Honeycomb type radiator; 16-inch fan, four blades, water pump, radiator capacity, 8 quarts.

FRONT AXLE.—Standard drop forged "I" beam section with Elliott type steering mechanism. Wheels are adjustably mounted on roller bearings.

REAR AXLE.—Semi-floating simple, design. With spiral bevel ring gear and pinion.

BRAKES.—External contracting, internal expanding, 10" brake drums. Easy and accessible adjustment is provided.

SPRINGS.—Front 33 $\frac{1}{2}$ " long; rear 49" long.

TIRES.—30" x 3 $\frac{1}{2}$ " all round. Open models, non-skid clincher.

OILING SYSTEM.—The oiling system is the force feed type. The oil pump driven directly from the rear of the camshaft.

CARBURETOR.—One-inch single jet.

STARTING, LIGHTING, IGNITION.—Generator, starting motor, and magneto.

CLUTCH.—Single plate, dry type, enclosed in flywheel.

TRANSMISSION.—Standard, selective sliding gear type, three speeds forward and one reverse.

DRIVE.—Right-hand drive, centre control; accelerator pedal mounted on foot-board. Spark and throttle levers mounted on steering column just under steering wheel. Speedo-meter, ammeter, oil gauge, choke, ignition and lighting switch, mounted on instrument board.

STEERING GEAR.—Semi-irreversible, worm and gear type. Sixteen inch steering wheel. Horn button on wheel.

GASOLINE SUPPLY.—Capacity of tank 11 $\frac{1}{2}$ gallons, placed at rear. Vacuum feed.

WHEELBASE.—102".

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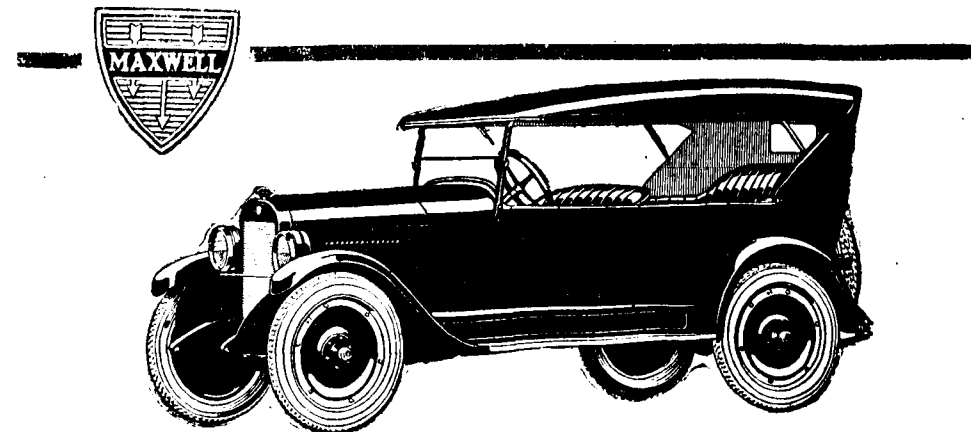
Indian Motorist.

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SPECIFICATION.**

ENGINE.—21.03 horse power, S. A. E. rating. 27.05 actual brake test. Unit power plant, Four cylinder, cast en bloc, removable head.

CRANKSHAFT.—Heavy drop forging of special steel supported by three large main bearings. Bearing lengths total one-third of actual length of shaft. Statically and dynamically balanced to eliminate vibration.

CAMSHAFT.—Drop forging, hardened and heat treated, supported by three large bearings.

PISTONS.—Light weight alloy. Maxwell slotted type design.

LUBRICATION.—Engine: Full force feed from pump driven off camshaft, through passage in crankshaft to main bearings and connecting rod bearings. Chassis: High pressure gun system through special connections.

COOLING.—Water. Thermo syphon circulation, Very large tubular radiator.

CURBURETOR.—Zenith.

IGNITION.—Bosch magneto.

STARTING AND LIGHTING.—Remy two-unit, six-volt system.

FUEL SYSTEM.—Vacuum tank on dash under bonnet. Gasoline tank in rear.

STEERING GEAR.—Irreversible worm and worm gear type.

FRONT AXLE.—Heat treated, drop forged, I-beam, full Elliott type.

REAR AXLE.—Semi-floating. Combination of ball and tapered roller bearings, Chrome nickel steel gears drop forged, heat treated.

WHEELS.—Artillery, filled with full balloon tyres 30" x 5' 25."

CLUTCH.—Single dry plate type.

TRANSMISSION.—Selective sliding gear-type, three speeds forward and one reverse.

BRAKES.—Service: External contracting on drums on rear wheels. Emergency: External contracting on drum on transmission shaft.

SPRINGS.—Unusually long, semi-elliptic type: Front; 36 inches long, 2 inches wide. Rear 53 inches long, 2 inches wide, underslung.

EQUIPMENT.—Motor driven horn; windshield cleaner; full set of tools, including high pressure lubrication gun; cowl lights; spare tire.

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A Monthly Magazine of Motor Matters.

VOL. 1.

MAY 1925

NO 1

Our First Word

**No Apology
Needed.**

But really a long word is not necessary to show that the "*Indian Motorist*" should do its Bit for the good of the Motorists and their Cars and Cycles.

**Car Kindness
Repays.**

To begin with, how often we forget to associate ourselves with car organism as we would deal with our Horses. Nay, we should try to realize that good and even humane treatment is as paying in the case of Cars as in the case of your favourite draught animal.

**Loving
"Domestic
Cars"**

Our Cars are for our pleasure, and useful pleasure, we all easily grant. Let alone the giant trollies for heavy work. The 'domestic car' is a thing of joy and use.

The busy man runs about in his car, spends plenty of his time in his car, and often he learns to treat his car as part of his Home. Naturally he gets to love his car, and would like to keep it as sweet and cheery as he can. Then his family also come in for their share of fun. So the car is the pet of the home. There are so many odds and ends you wish you knew to keep your pet trim and bright, and get over your car's 'little worries.' The "*Indian Motorist*" will help the lover of the car.

**Tips and Taste of
Indian Beauty Spots**

India is a land of pleasant places and beauty spots. Its hill tops and river plains, its forest play grounds and sacred Hindu and Muslim structures draw thousands of men and women from all parts of the World. They would not be sorry to have a tip and a taste of what they

would like to enjoy. We should like to take them round and tell them about the favourite haunts as best we can.

Victimising Motorists

The poor Motorist is a peculiar victim of many enemies. The man on the road sums up the Car and Motorist in one word: nuisance. The mighty Village-Headman takes a peculiar pleasure in creating a Toll bar with a bamboo where you least expect it and waylays you for quarter of an hour for a trifling fee. Petty local authorities vex you to the best of their might. Cities too tax motorists as if the motorists ought to be heavily penalized for the crime of being motorists.

Above all, there comes the Government, worse if it is the People's Government, which thinks that the Motorists must pay the heaviest taxes because motors are "luxuries." It is really kind of them that they did not call motors "Sins." But the "*Indian Motorist*" will make the paths smooth.

Motor Joy Is Mankind's

Motors, we shall soon learn, are

no more "luxuries" than rice or wheat. They are for service—for service of all—rich and poor alike. It is not the fault of the Car if the poor man cannot yet use it. And he must not snap his fingers at the "rich" Motorist as he buzzes away, because, rightly handled, there is no reason why every man, woman and child should not, in the near future, enjoy the culture and joy of a car drive.

"Indian Motorist" Helps you

The "*Indian Motorist*" will aim at making it possible for the Motorist to carry on without being a victim to annoyance and tyranny from high and low, or even to his own ignorance.

The *Indian Motorist* will clear doubts and answer questions.

Helping Hand For "The Trade"

The Trade, too, is no pest, though the Government thinks it a good milch cow. Its place has to be understood. Its wheels and its varieties must be given the best chance. The "*Indian Motorist*" will be the peacemaker between the Trade and Public and would do its Bit for all concerned.



Adjustment, Care and Repair of Clutches.

FUNCTION OF THE CLUTCH IN THE POWER TRANSMISSION SYSTEM—CLUTCH TROUBLES—SERVICING THE CONE, MULTIPLE DISC AND DRY PLATE TYPES.

Although a motor car cannot be driven without manipulation of the clutch, few motorists realize the importance of this unit and many have not even the slightest conception of how it is constructed and how it operates. It does not take much driving to discover that its purpose is for the smooth and gradual application of power from the engine to the rear wheels, but why it is necessary is not so readily understood.

The engine cannot start without some external assistance and must be started by means of a hand crank or some other starting device. In the modern motor car, the starting motor supplies enough torque to rotate the crankshaft, but it only provides enough torque to just turn the engine over against the compression in the cylinders so that it becomes necessary to disconnect the engine from the other driving units of the car to permit the starting motor to function. If it were impossible to disconnect the power of the engine from the driving units of the car, it would be necessary to stop the engine every time the car made a stop. Fortunately the neutral positions of the transmission provide for this, but in driving the car difficulty would be encountered, as the car would then have to be driven by the throttle entirely.

For this reason, a device must be used which will allow a complete disconnection of engine power from the driving units and at the same time a certain amount of slippage under driving conditions to permit the speed of the engine to be reduced to correspond to the vehicle speed required or gradually accelerated as conditions may demand.

This feature is accomplished by the clutch which is always inserted in a position just behind the fly-wheel with which it co-ordinates. A single clutch is employed, which serves to connect the engine to the driving wheels through all of the different gear reductions. Reduced to its lowest terms, it consists of two surfaces, one of which is attached to the driven shaft and the other to the driving shaft. These are normally held in engagement by spring pressure and controlled through the foot pedal, which permits releasing the spring pressure, thus disconnecting the power of the engine from the driving units. The clutch is of necessity frictional in its operation and these friction surfaces are bound to give rise to certain circumstances or conditions of wear which will demand attention from the user at varying intervals, according to the treatment the clutch has received. It is an important factor in the operation

of the car, for, a clutch that engages smoothly and is entirely free from jerking minimizes the stress on the power transmission units. The operator is more generally to blame than the clutch when trouble arises, for, though present day clutches are as near perfect as modern science can make them, their very action and duty make it imperative to use care and judgement in their operation.

The majority of trouble that does originate with power transmission members can be attributed to the sudden excessive loads thrown upon them in starting the car by a harsh acting clutch. A clutch that instantly grabs, whenever the friction surfaces are engaged shakes the whole chassis as the shock which is set up under such condition must be absorbed by the power transmission units and the engine. Therefore, the clutch must be so constructed that it takes hold gradually, but this involves hardships both to the metal surfaces and the friction members.

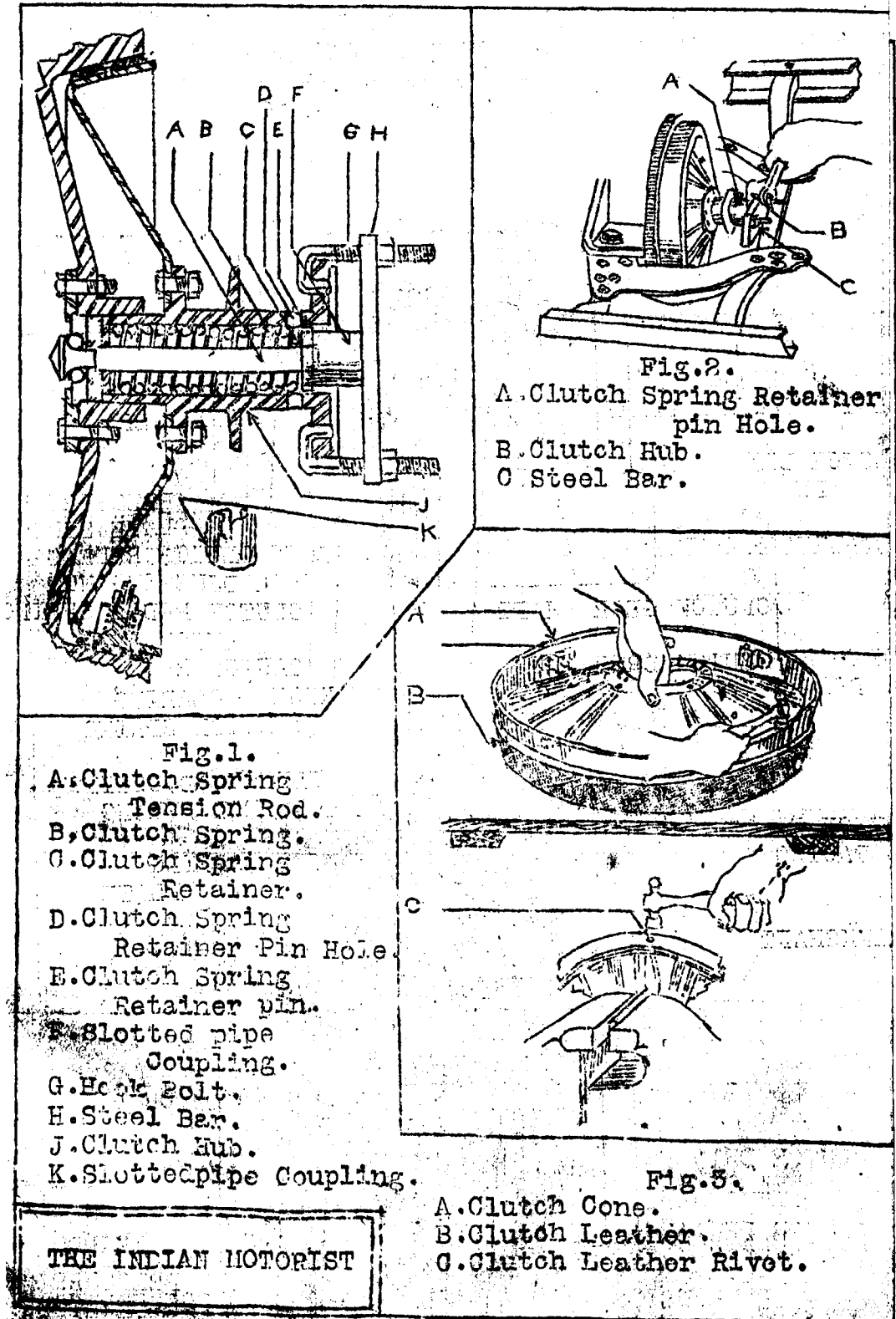
Clutch Troubles.

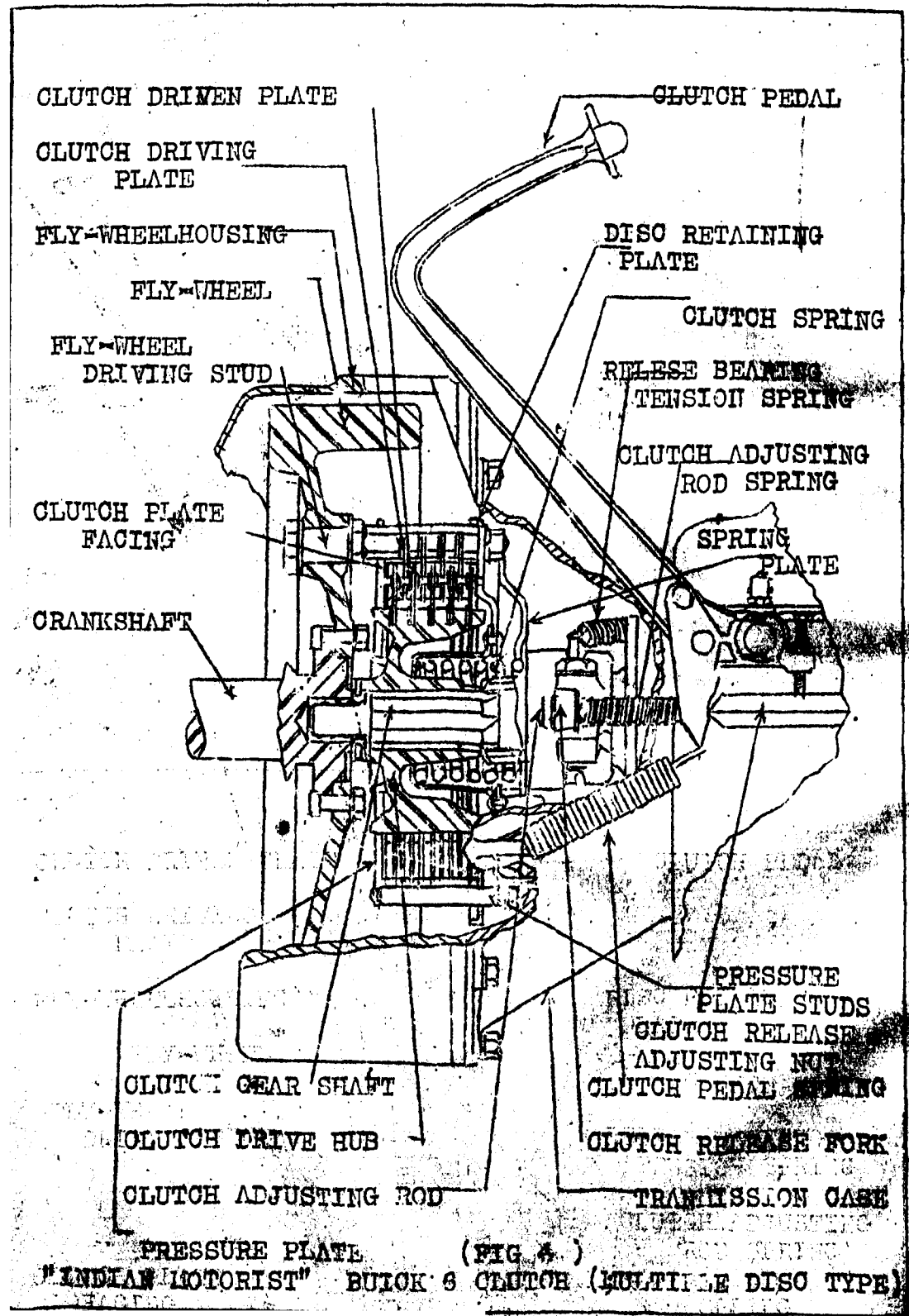
It is important that clutch troubles be readily recognised as the power, capacity and speed of the car will be affected if the clutch action is not as it should be. Considering first the general troubles which are apt to materialise with all types of clutches, we may consider as the most important a too sudden or harsh engagement which causes grabbing and causes failure to transmit the entire engine power, lack of

capacity due to failure to engage properly, and poor or slow release which results in spinning or dragging as it is more generally termed. Clutches that employ friction material as a facing will not act properly if the material becomes worn or if it is glazed over. Besides the troubles due to the friction members, there are other portions of the clutch that demand care and attention. Weak or broken springs and worn or poor adjustment of the disengaging members will also cause serious trouble in time.

Friction and heat go hand in hand, as efficient destroyers of every class of machinery and it is therefore necessary to avoid slippage as much as possible. This, of course, means that the pedal must be left free while the clutch is engaged and not used as a foot rest. Riding the clutch, or in other words using it as a substitute for the still familiar "brass rail," compresses the spring enough to cause a gradual but constant slippage. The heat thus generated will eventually char the frictional material and may even be enough to burn the plates.

The springs which hold the frictional surfaces in engagement set up a resistance when the clutch is disengaged and thus cause wear of the disengaging members, hence the necessity of sufficient lubrication. Adjustments are invariably provided for increasing the spring pressure and also for compensating for the natural wear of the frictional members. The latter adjustment is usually incorporated in the pedal or dis-





engaging linkage so as to make accessible. As wear of the frictional surfaces takes place, the clutch disengaging pedal gradually rises until it strikes the floor board and when this happens, it becomes necessary to correct the adjustment as the pedal then holds the clutch partially disengaged and causes slippage which generates heat and gives a shock to the frictional members. When a clutch slips for a period of time, as it does when riding the pedal, or the pedal strike the floor boards, the question of heat becomes important. The amount developed is, of course, independent of the type of clutch used and depends upon the output of the engine and the degree of slippage. The temperature will depend upon the rate of heat radiation and the liability of damage by heat depends upon the temperature and the nature of the materials affected by it.

Clutch Types.

Various designs have been employed, ranging from the simple cone type to the more complicated multiple disc type operating in an oil bath. The most popular clutch is the single dry plate and the dry multiple disc clutch, both of which are extensively used. The construction of each type varies with the materials used for the frictional surfaces and the details of design. This is also true of the method of mounting the clutch in the flywheel and the means of disengagement. While clutch adjustment and maintenance may be described in general, the variety of designs in use demands a discussion of each

type to present the operations in detail.

The Cone Clutch.

will serve to illustrate the construction of the cone type of clutch. In this design, the flywheel forms the male member of the clutch. The cone is faced with a frictional material which may either be leather or asbestos fabric similar to that used for lining the brakes. When leather is used, it is important to keep it soft and pliable which is accomplished by a dressing with neats-foot oil. When the leather dries out, it becomes hard and causes the clutch to grab.

Clutches of this type are usually adjustable to prevent grabbing by a series of spring inserts under the facing as shown in the insert in which present a slightly raised point of contact. A small section of the lining is expanded by each spring and this is in contact with the flywheel until such time as the clutch has been completely engaged.

To make adjustments for grabbing or taking a hold too quickly turn each of the expander nuts from right to left until a thickness gauge of about .005 inch in thickness can be placed between the nut and the clip. In the event of the clutch's slipping or not holding when engaged, turn each expander nut from left to right until they touch the clip, then give them one-half turn in the opposite direction. This is necessary to allow the expanders to act properly under the clutch lining. It is essential to obtain the same adjustment on

all expanders as an uneven adjustment would not allow the clutch to engage evenly in the flywheel and would cause the lining to burn in spots; also producing a squeak or rasping noise when being engaged.

When the clutch leather becomes worn so that it functions improperly, it must be renewed. This should only be done when treating with neats-foot-oil fails to soften it. To instal a new leather it is necessary to remove the clutch which requires the removal of the transmission and the various control rods and pedals. These operations are quite simple and will readily be apparent by careful inspection.

To remove the clutch from the flywheel it is first necessary to release the spring pressure which may be done by compressing the spring and driving out the pin which holds it in position. To do this, secure a piece of pipe large enough to fit over the clutch spring tension rod and cut a slot in one end deep enough to clear the pin when the spring is compressed. Place this over the tension rod and with a steel bar, compress the spring until the pin can be driven through the hole in the clutch hub. The clutch cone and its hub can then be removed.

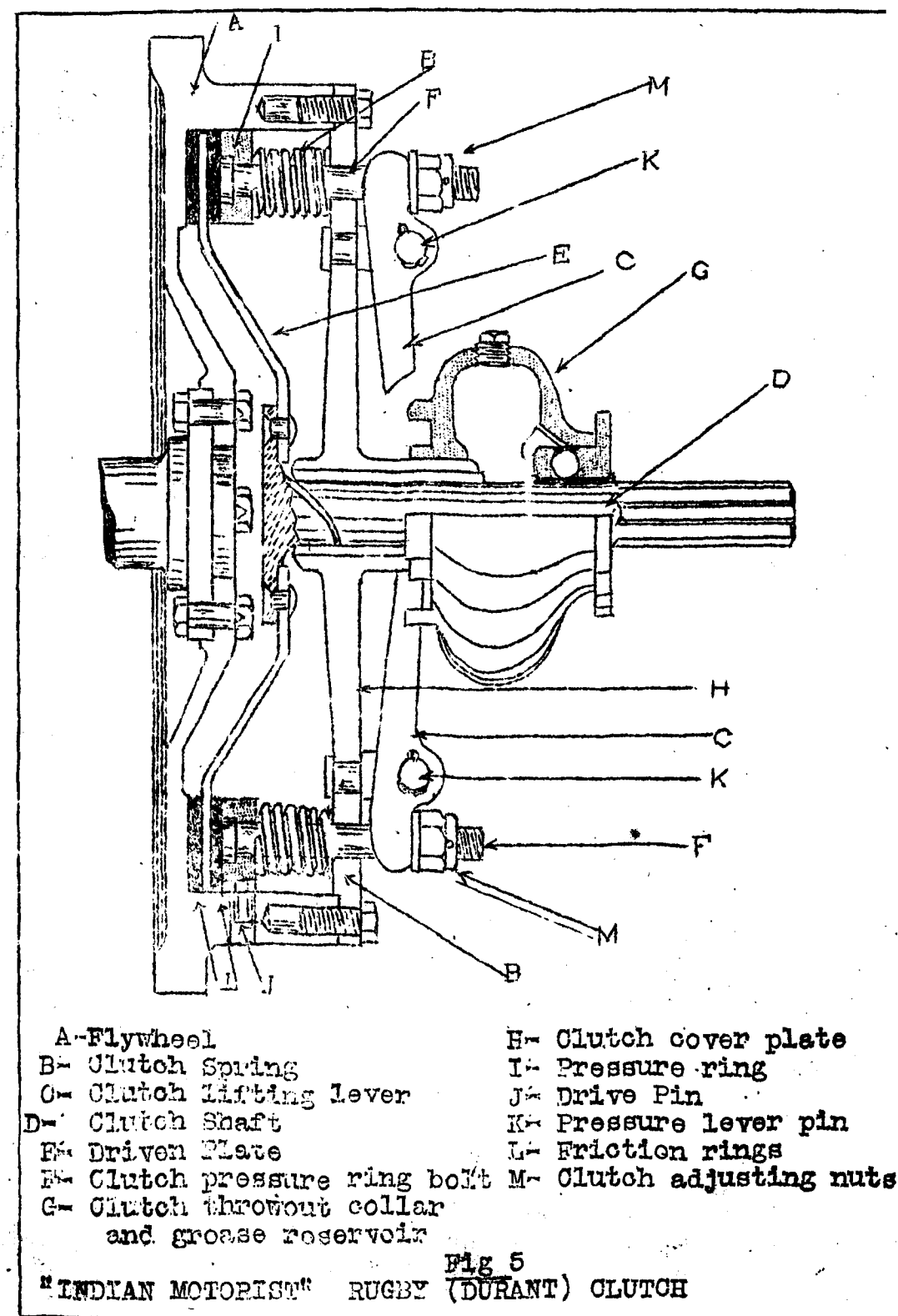
To instal a new leather, remove the rivets which hold the leather in place. Soak the new clutch leather in water for a short time so that it will stretch slightly, also see that the clutch cone is perfectly smooth so that the new leather will fit evenly. Place the new leather on a perfectly flat

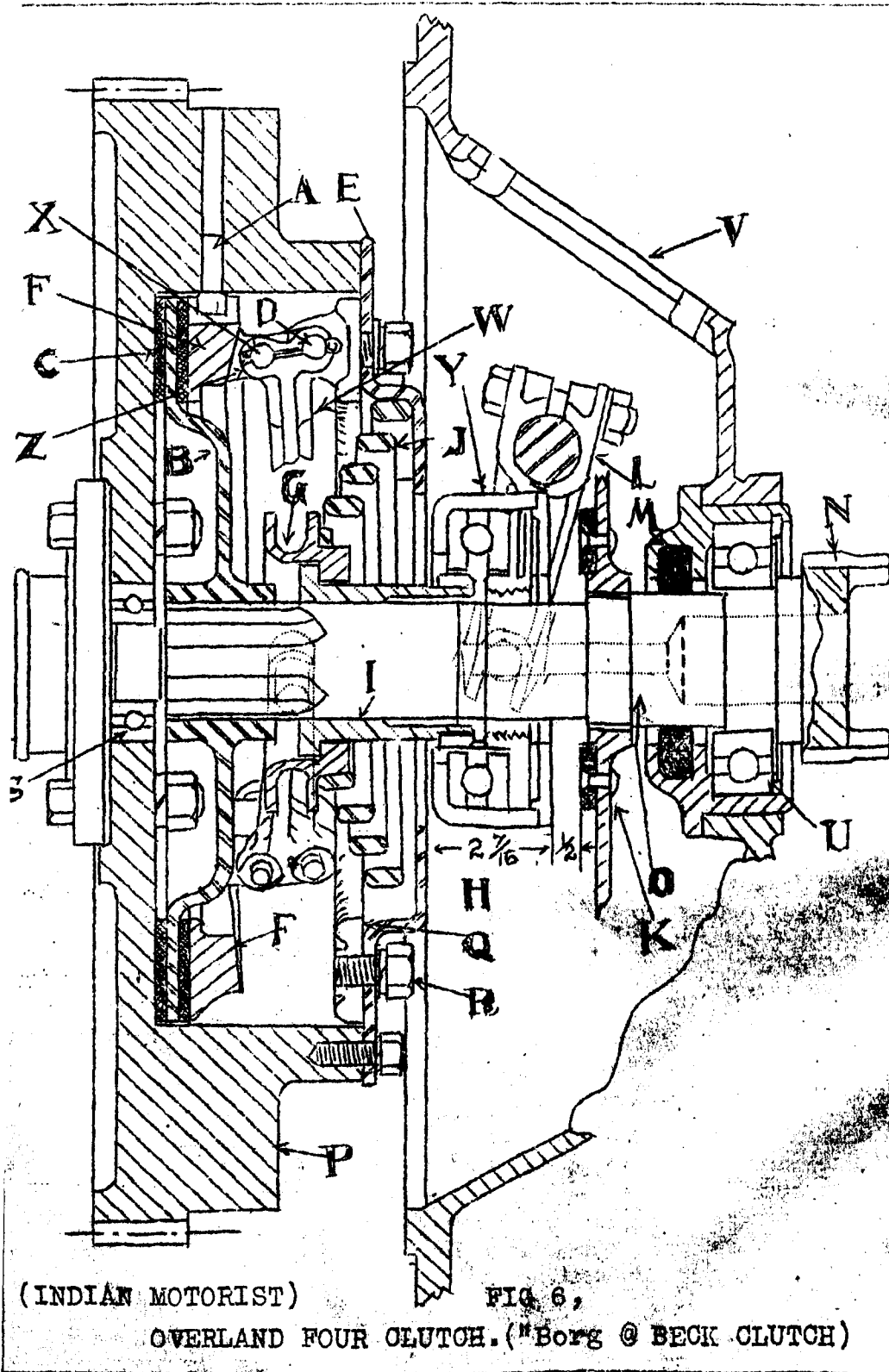
surface so that the large diameter faces towards you. Press the cone into the leather with the hands, then tap lightly with a hammer around its circumference until it is completely inside the leather. Punch or drill holes into the leather to correspond to those in the face of the cone. Use split rivets to hold the leather and sink the heads below the surface of the leather by holding the divided prongs of the rivet, which pass through the cone, over a chisel, while the ball head of the hammer forces the head well below the surface. After the clutch has been assembled to the fly wheel, the expanders should be adjusted as previously described.

Multiple Disc Type.

The multiple disc clutch operating in a bath of oil usually consists of a number of discs, the frictional surfaces being formed by adjacent surfaces of the discs and are metal to metal. If this type of clutch slips, the housing should be drained and then thoroughly washed out with kerosine before it is refilled. Proper operation depends entirely upon the bath of oil, as heavy or gummy oil will cause the discs to adhere and the clutch will spin or drag. The heat generated through slippage will carbonize the oil and pit the plates or coat them with a gummy carbon paste. It is therefore essential to renew the lubricant regularly.

In the past it has been customary to provide adjustment for this type of clutch by varying the spring pressure; however, in the





modern type it is usually incorporated in the clutch pedal. Thus, in the Buick Clutch Adjustment, compensation for wear is obtained by means of a small set screw and lock nut located on the stop of the clutch pedal shaft. When the clutch is fully engaged, there should be a clearance of $\frac{3}{8}$ inch between the pedal and the floor board.

The Ford clutch also operates in oil and its adjustment is quite simple. By removing the plates on the transmission cover under the floor boards at the driver's feet, an adjusting screw is revealed on the end of the clutch finger. To make the adjustment, remove the clutch finger adjusting screw cotter pins and turn up the adjusting screws about one-half turn with a screw driver. Turn the clutch over and repeat the operation for all adjusting screws.

Be sure to give each the same number of turns and do not fail to replace the cotter pins. After considerable service it will be necessary to replace the discs. If the car has an inclination to creep forward when cranking, it indicates that the clutch lever case, has become worn and requires an extra turn to the right to hold the clutch in the neutral position.

Multiple Dry Disc Type

The multiple Dry Disc Type of clutch is similar in construction excepting that the discs which form the driving members are faced with fabric friction material. In some designs, the connection between the flywheel and the plates is by means of studs, the

plates being supported from these studs while in others internal and external spur teeth are used.

Dragging with this type of clutch is often due to the teeth or the studs becoming rough or indented and this prevents free movement of the plates, or when the edges of the plates become burred over they prevent full contact and thus cause slipping. Excessive wear or improper seating of the rivets will result in grooves being worn in the driven plates as shown in Generally, slipping is the result of insufficient clearance between the disengaging levers and the release collar which should be from $\frac{1}{16}$ to $\frac{1}{8}$ inch when the clutch is in driving position. Should the clutch continue to slip with the levers properly adjusted, it will be necessary to disassemble the clutch to determine the condition of the facings attached to the driving discs. If they appear to be highly glazed or saturated with oil, place them in a gasoline bath and scrub the frictional facings thoroughly with a wire brush. Before reassembling, wash the inside of the flywheel with gasoline and pack the bearings with grease. If the friction surfaces show considerable wear, a condition brought about by excessive slipping, the only satisfactory repair is to relined the discs.

As this design of clutch is similar to the multiple disc type, the adjustments for wear and pedal position are also incorporated in the disengaging members. Two adjustments are provided as depicted in one to compensate for the wear of the friction surfaces

and to maintain the proper relation of the disengaging levers with respect to the release collar and the other for the proper pedal position. The former adjustment is located on the end of the disengaging shaft at the right hand side of the clutch housing and consists of a set screw and a lock nut which acts as a stop to maintain the levers in their correct position. The clutch pedal is not rigidly mounted on the disengaging shaft, but is attached to it by means of a cap screw passing through a slot in a lever keyed to the shaft. Releasing the cap screw permits adjusting the pedal to its correct position.

Wet Plate Type.

The wet plate type of clutch consists of but three plates and is simple in adjustment. It requires practically no care except to lubricate the release or disengaging mechanism. Continual slipping with this type is a bad condition as it may ruin the friction rings, drive plate, bearings and in fact the entire clutch. It is usually caused by continual pedal pressure on the underside of the floor board which holds the clutch partially out of engagement.

The usual adjustment for this type of clutch is depicted in consisting of two cap screws mounted in circular slots in the clutch cover. To adjust the clutch, first release by depressing the clutch pedal. Next, loosen the cap screws and move either of them to the right or clockwise about one-half inch. Let the clutch into engagement and if the

distance between the cover plate and the release collar is more than it should be, disengage again and tap either bolt back or counter-clockwise far enough to get the correct adjustment. Ordinarily, moving the adjusting screws to the right automatically lowers the clutch pedal, and to the left raises the pedal. If slipping is caused by too loose an adjustment or wear in the plates, the same adjustment will remedy it.

An inspection plate is generally provided on the clutch housing and adjustment may be made through the opening provided by removal of this plate. Crank the engine slowly until the adjusting screw in the slot of the clutch cover is at the top. Loosen this adjusting screw and turn the engine over until the other adjusting screw can be loosened. When straight wrenches are used to loosen the adjusting screws, a string should be tied to the wrench so that in case it should slip out of the hand, it can be recovered without removing the transmission. When the adjustment has been completed, each adjusting screw should be firmly locked in position.

Dragging, which makes gear shifting difficult, arises from the failure of the clutch to release properly and so allow the driven plates to come to rest. It is usually due to too light an adjustment of the clutch or failure of the clutch brake action, when this is provided.

Dry Plate Type.

The type of clutch described above has a central spring, while the Durant clutch employed on

- FIG 6 BORG & BECK PARTS. (DETAILS)
- | | |
|---|--------------------------------------|
| A. CLUTCH DRIVE PIN. | Q. CLUTCH ADJUSTING RING |
| B. CLUTCH DRIVEN PLATE. | R. CLUTCH ADJUSTING SCREW |
| C. CLUTCH FRICTION RING. | S. OR SLOT BOLTS. |
| D. CLUTCH BELL CRANK PIN. (1/8) | S. CLUTCH SHAFT BALL BEARING (FRONT) |
| E. CLUTCH COVER. | T. CRANK SHAFT. |
| F. CLUTCH THRUST RING or DRIVING PLATE. | U. CLUTCH SHAFT BALL BEARING. |
| G. CLUTCH THRUST COLLAR. | V. INSPECTION PLATE OPENING. |
| H. CLUTCH RELEASE BEARING. | W. CLUTCH PRESSURE LEVER |
| I. CLUTCH RELEASE SLEEVE. | X. CLUTCH BELL CRANK PIN (MOVABLE). |
| J. CLUTCH SPRING. | Y. CLUTCH RELEASE BEARING HOUSING. |
| K. CLUTCH BRAKE. | Z. CONTACT BLOCK. |
| L. CLUTCH RELEASE FORK. | |
| M. FELT WASHER. | |
| N. CLUTCH GEAR. | |
| O. CLUTCH SHAFT. | |
| P. FLYWHEEL. | |

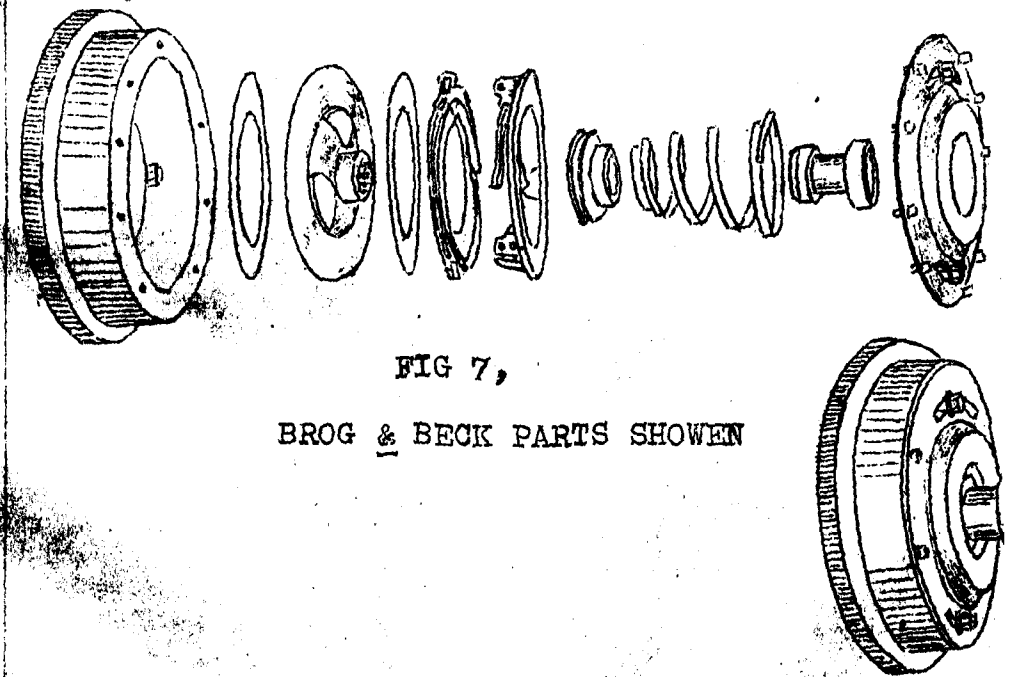


FIG 7,

BORG & BECK PARTS SHOWN

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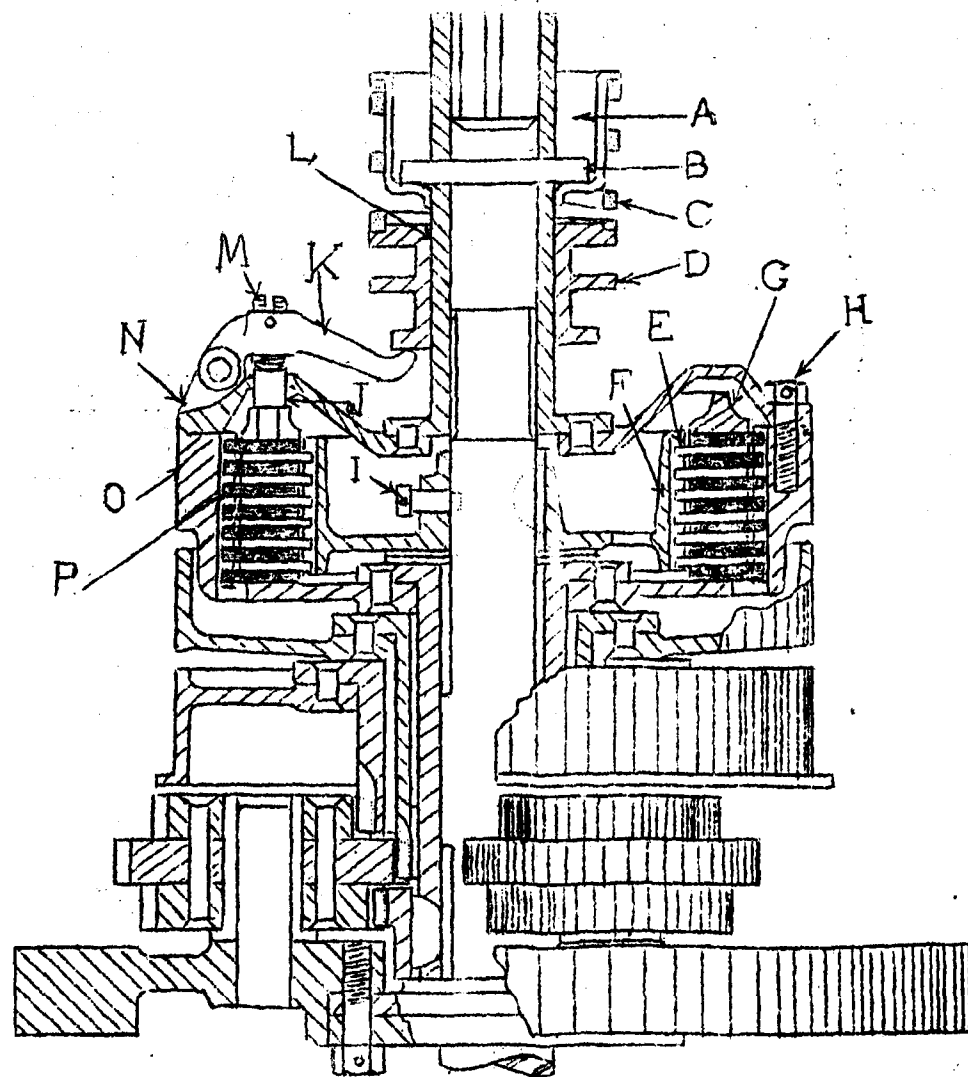


FIG 8.

FORD CLUTCH (MULTIPLE DISC WET TYPE)

- | | |
|------------------------|---------------------|
| .CLUTCH SPRING SUPPORT | J.PUSH RING PIN |
| .CLUTCH SPRING THRUST | K.CLUTCH FINGER |
| RING PIN | L.DRIVING PLATE HUB |
| .CLUTCH SPRING | M.CLUTCH FINGER |
| .CLUTCH SHIFT | ADJUSTING SOREW |
| .DRIVING DISC | N. DRIVING PLATE |
| .CLUTCH DISC DRUM | O.BRAKE DRUM |
| .CLUTCH PUSH RING | P.DRIVEN DISC |
| .DRIVING PLATE SOREW | |
| .CLUTCH DISC DRUM | |
| SET SCREW | |

(INDIAN MOTORIST)

the Rugby chassis has a series of springs located near the periphery of the friction plate. If this type of clutch takes hold too quickly, causing the car to start with a jerk when the clutch is engaged slowly, the lifting levers should be equalized. This is accomplished by either tightening or loosening the castle nuts holding the levers so that each has an equal pressure on the throw-out collar. When the clutch slips, it is necessary to increase the spring tension on the friction plate by backing off the three castle nuts on the ends of the studs. These must be backed off an equal

amount on each nut so as to retain an even pressure.

Grabbing causes the car to jump and shake as the clutch is let in and shows uneven gripping of the plates. This is generally caused by misalignment in installing, and to correct it, the unit must be disassembled and provided with a correct alignment. If it is caused by a scored driving plate due to over-heating from slipping, it will be necessary to replace all of the plates. Sometimes this condition is caused by the accumulation of dirt or foreign matter on the plates.



Through the Motor Show Rooms

AT SIMPSON'S

NEW BUICK STANDARD SIX A SLIGHTLY SMALLER
: REPLICAS OF THE LARGE BUICK SIX :

Showing a strong belief in the superiority of the six-cylinder motor car for general use, the Buick Motor Company is building nothing but Sixes for 1925. The greater flexibility, more rapid acceleration, and much better range of performance in high gear of the six-cylinder engine, we are given to understand, have been the factors that influenced the Buick Motor Company in making this decision.

Another point that has helped influence Buick to concentrate on Sixes is the ever-growing popularity of the large Buick Six, which has made an excellent reputation for itself throughout the world, and has led to the desire by many automobile owners for a Buick six-cylinder car with the same qualities of power, flexibility, safety and endurance at a price more within their means. By building the new Standard Six to sell at a considerably lower price than the larger Buick Six, the Buick Motor Company believes it has satisfactorily met the needs of these buyers. A much greater number of people will now be able to own Buick Sixes than has been the case heretofore.

The Buick Models for 1925 comprise two separate groups of six cylinder cars. One group of models is built upon the Master Six chassis with 120 inch and 128 inch wheelbase—greatly similar to the large Buick six-cylinder chassis of 1924. The other group consists of six open and closed models built upon the new Standard Six chassis. The principal features of the new Buick Standard Six line are modeled directly after those of the Master Six, with slightly smaller dimensions throughout. Being an entirely new product, the Buick Standard Six naturally holds the greater interest for our readers from a descriptive standpoint.

The engine of the new Standard Six is identical in most respects with that of the Master Six. It is of the valve-in-head type—always a feature of Buick engines—with cylinders cast en bloc, the head being detachable. The bore and stroke are smaller than those of the Master Six engine, being 3 inches (76 mm) and 4-1/2 inches (114 mm) respectively. The engine has a piston displacement of 191 cubic inches.

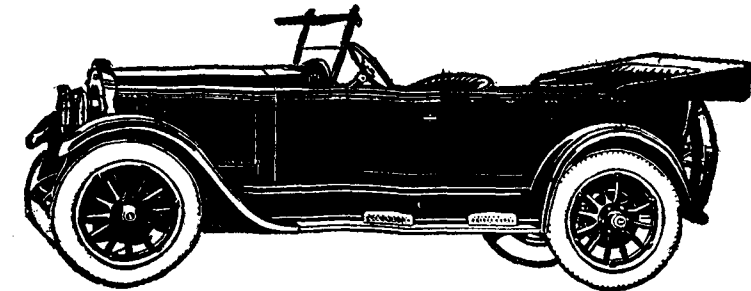
The crankshaft has four bearings of hard babbitt with a high tin content. Connecting rods are drop-forged, of heat-treated carbon

steel with bearings cast in the rods. The camshaft is also of drop-forged, heat-treated carbon steel, with integral cams. The camshaft has four bearings and is driven through gears.

The standard Six engine, like that of the Master Six, is full pressure lubricating, the crankshaft being drilled for oil circulation to main and connecting rod bearings. There is also a pressure oil lead extending up to the top of engine, where it lubricates the rocker arm mechanism and the push rods, the oil passing thence down to the timing gears and the front camshaft bearing. The

motor generator is used. The wiring system throughout the car is of the single wire, grounded return type, all exposed wiring being protected by flexible metal covering.

The new Buick Standard Six has a Marvel carburetor of the automatic float feed type. This carburetor is similar in most respects to that which proved so successful on the 1924 Buick. It includes two different systems of control for the exhaust gases that are used to preheat the mixture. One of these systems is automatic, varying in accordance with the speed of the car, and the other is



other camshaft bearings, the cylinders and the pistons are lubricated by oil thrown off the crankshaft.

Cooling water is circulated by a centrifugal water pump, driven by spiral gears from the camshaft. The radiator is of the cellular type, and cooling is aided by a four-blade pressed steel fan driven by a flat belt. Ignition is by the Delco high tension distributor system, with automatic spark advance as well as the manual control on the steering wheel.

Starting and lighting is also Delco, operating on a six-volt current. A Delco single unit

controlled by hand for quick starting in cold weather.

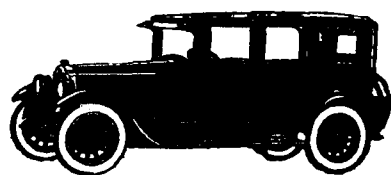
The clutch is of the multiple dry disc type, with eight plates. It has a small ball-bearing release collar lubricated by a special grease connection. The transmission is of the selective gear type, with three speeds forward and one reverse. Chrome nickel steel gears are used, and the main bearings are New Departure.

The universal joint is enclosed in a ball joint at the front end of the torque tube, and is automatically lubricated from the transmission. The propeller shaft is fully enclosed, torque being

taken through the shaft housing and the ball joint.

The rear axle is of the three-quarter floating type, with pressed steel housing. A one piece differential case is used. The front and rear bevel pinion shaft bearings, together with the differential bearings, are a New Departure.

Brakes are of the Buick mechanically operated four-wheel type. The service brakes, operated by pedal, are external contracting on front and rear wheels. The hand brakes, operated by lever, are internal expanding on the rear wheels only. These brakes were used on a quarter of a million



Buicks last year, and proved so satisfactory in every respect that no change of importance has been found necessary for 1925.

The frame is of reinforced pressed steel, channel section, with deep side and cross members. Springs are semi-elliptic front, and cantilever rear. The wheelbase is 114 inches (2.89 meters).

Open cars furnished on the standard Six chassis include a two-passenger Roadster (Model 24) and a five-passenger Touring Car (Model 25). Enclose models comprise a two-passenger and a four-passenger Coupe (Models 26 and 28 respectively), a five-passenger Sedan (Model 27), and a five-passenger All Service Sedan, which is an enclosed car selling for a

price lower than that of the regular five-passenger Sedan, with different upholstery and designed for business use as well as for private transportation. This All Service Sedan is called Model 21.

Equipment on all the new Standard Six cars includes a complete set of tools, electric motor driven horn, transmission lock, rear fender wings, spare rim or wheel carrier, extra rim or wheel, rear vision mirror, and windscreen wiper. The instrument board contains a complete set of instruments with black dials and white numerals. The various enclosed models have such additional equipment as foot rests, carpets, and heaters. The Touring Car and Sedans also have robe rails.

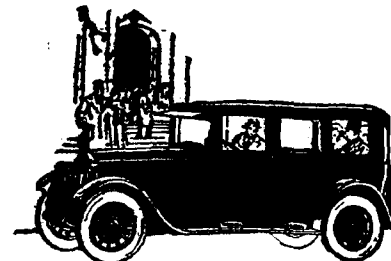
The Buick Master Six for 1925, while resembling in most respects the large Buick Six of 1924, contains improvements that give it a still greater appeal to the buyer who wants exceptional roadability, safety and power.

In the first place, low pressure tyres have been adopted. These tyres it should be added, are used on all Buick cars for 1925—both Standard and Master Six Models. Those on the Standard Six are 31 inches by 4.95 inches, and those on the Master Six are 32 inches by 5.77 inches.

These new low pressure tyres built to be driven with a degree of inflation considerably less than the usual cord tyre help greatly to reduce road shocks, as well as lessen wear on the mechanism of the car due to road vibration. Engineers of the Buick Motor Company assert that the added

degree of riding comfort obtained by the use of these tyres is so great that one must ride in the car to appreciate it adequately.

In order that the Standard and Master Six cars may be fully as easy to steer as formerly, despite the smaller degree of inflation of the tyres which makes the area of the shoes in contact with the road a greater one, the steering gear used on both Sixes differs from that on the 1924 Buicks. The ratio of movement between the steering wheel and the front wheels of the car is a greater one than before, meaning that a greater leverage is exerted. This adds appreciably to the ease of steering, as does also the stiffened form of steering gear construction made possible by certain changes of a mechanical nature in the design of the steering column.



Another improvement making for better steering is the use of ball thrust bearings in the front axle king-bolts in place of the plain bearings used heretofore. This helps to facilitate the swivel motion of the wheels.

The oil pump on the Buick Master Six engine is now positively driven, instead of friction driven as in 1924. There is a new reinforced oil screen of fine mesh, non-collapsible, with a by-pass

tube which comes automatically into play, should the screen be clogged. A special pressure lubrication system is used for the fan, a small gear pump being located in the front end of the fan-bearings. Another change that has been made is in the main engine bearings, the upper half of which are now bronze-backed. This helps to reduce bearing wear and play, the upper half of the crankcase being of aluminum whereas the lower half of the bearing is a steel forging.

The throttle valve of the Marvel carburetor used on all Buick Sixes for 1925 is placed higher up within the heat-jacketed mixture chamber, thereby eliminating any of the mixture to condense by striking against a cold valve. There is a new design water-pump, whose casing is fastened to the pump-mechanism itself rather than to the cylinder-block, thereby doing away with any possibility of leakage due to misalignment.

The speed range of the Buick Motor Six for 1925 extends up to 75 miles per hour. The car is exceedingly comfortable, new springs with a greater number of leaves having been fitted. Both the Master Six and the Standard Six have the new Zerk system of chassis lubrication, in which a grease-gun and nipple mechanism is used which is both simpler and more efficient than that formerly employed.

Improvements have been made in the equipment of the Master Sixes for 1925. All models, for example, except the standard Roadster and five-passenger Tour-

There are new instruments, black with white numerals, and with a very attractive border consisting of a narrow "ribbon" of black finished metal with a thin strip of nickel on either side.

Arrangements have been made to supply special new export tops on all Buick Touring cars for 1925 shipped either from the American or the Canadian factories. These export tops fold down readily. By the use of a special bow construction in connection with special drab duck top material, the new tops assume, when folded down, an appearance considerably better than the domestic top in the same position. They extend perfectly flat and horizontal, and do not mar the symmetry of the rear of the car.

Twelve different open and closed models are supplied on the 1925 Buick Master Six chassis. Open cars include a two-passenger Roadster (Model 44), a five-passen-

Closed cars include a four-passenger Coupe (Model 48), a five-passenger Sedan (Model 47), a seven-passenger Sedan (Model 50), a two-passenger Country Club Special Coupe with a dickey seat in the rear (Model 54 C), a five-passenger Brougham Sedan (Model 51), and a seven-passenger Town Car (Model 57).

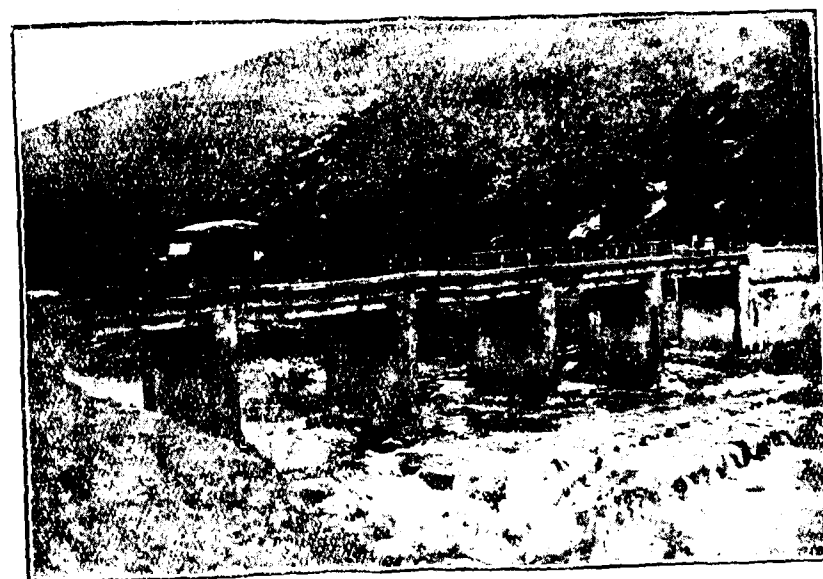
It is the belief of the Buick organization that with its 1925 series of cars—which includes seven—teen different models on the two six-cylinder chassis every need is met of the buyer who wants the luxury and satisfaction of six-cylinder transportation. Certainly the beauty and numerous mechanical advancements of the 1925 Buick cars seem to entitle them to a market even larger than that which Buick has possessed heretofore. The six-cylinder engine is generally admitted to be ideal in its qualities of flexibility, power and acceleration, and Buick has given convincing proof of its faith in the dominance of the Six by concentrating its unrivalled resources on building the most complete group of six-cylinder automobiles of high quality yet introduced by any manufacturer.



Motor Excursions from Ootacamund

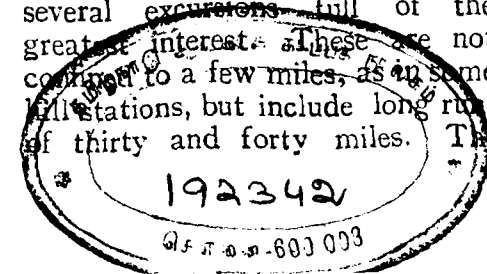
BY E. W.

when a party is held in the Government House, the number is seen to be very large indeed. They form two long almost never-ending rows, consisting of every possible make. Naturally the Fords and Chevrolets are there in great numbers, and occasionally some weird construction which a wealthy Parsee has expended his money upon. Apart from the usefulness of the car for running about the place, and there are still hills which one soon tires of having to climb, the motors are a source



BRIDGE OVER THE PYKARA RIVER.

a chance of using their cars under conditions as near like those in England as possible. Every year the number of motors in the station increases, and though, in ordinary moving about the number does not appear over large, yet of great pleasure to the visitor in that they enable him to make several excursions full of the greatest interest. These are not confined to a few miles, as in some hill stations, but include long runs of thirty and forty miles. The

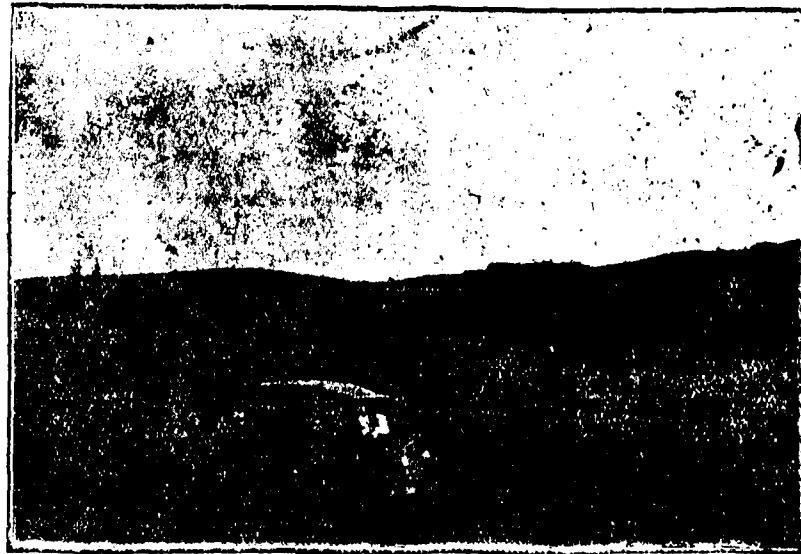


DS13

fact that the roads are kept in good condition adds to the joy of the motorist, and we are sure he does not grudge the tax the Municipality puts on all kinds of motor traction. In this I want to give some idea of the motor trips it is possible to take from Ootacamund as the centre.

First, there is the run to Kotagiri, another hill station which has been rising in popularity in recent years, and which will, before long, become an important hill station. It has the advantage of a climate which is not so cold

value will go even higher. It may be that the time for laying a railway line, either from Coonoor or direct from Mettupalium will not be for many years, but the authorities have paid considerable attention to the roads, and the number of hired cars available is increasing. But this method of transport is still too expensive for most people, and until a railway is built Kotagiri cannot expect the rapid development taking place in some other hill stations. But Kotagiri will always attract a large number of visitors both



ON THE DOWNS OOTY.

as Ooty and not so mild as Coonoor. The land is now being rapidly bought up, and houses are steadily being erected in the most convenient places. The prices asked are now more than double those asked a few years ago, and whenever there is a prospect of more suitable transport arrangements than at present exist, the

from Ootacamund and Coonoor, who will always enjoy the run across the downs. There are two ways of getting to Kotagiri from Ootacamund. There is, first, the road via Coonoor, which is to be preferred by those who desire a road that can easily be manipulated, for there are few difficulties to be met with in the

way of the hair-pin corners etc. Then, the second, is the direct route over the saddle of Doddabetta, a shorter but more difficult road. If the motorist should take the former, he will run out of Ooty at the point known as Charing Cross. There is a steady rise for about three miles until he reaches the tollgate. After this, the run into Coonoor is simplicity itself, for the road, which is always in good condition, is downhill until the station is reached. He now passes through Wellington, the convalescent depot for British

junction with the road running direct from Ootacamund. This road is certainly used most by motorists for it is easy, and though it may add a few miles, this is not considered of any account. But to the man who prefers to do a little driving and manipulating moderately difficult corners, the road that leads from above Ooty Church affords the most attraction. Passing along the road known as Snowdon road, the motor gradually reaches a point from which he has an extensive view of the lake and town. The road passes above the



CROSSING THE WELLINGTON BRIDGE

soldiers, and along a road that rises and falls practically all the way to Kotagiri, a distance of about 12 miles. On the way he will pass a number of small temples belonging to the Badagas, and he will also note a few of their villages. A few miles before reaching Kotagiri he will pass the

Government Gardens, and on the right, one notices a small "Canadian" shack on the top of a hill. This was used by the children of Lord Pentland for their studies during the time he was Governor of Madras and resided in Ooty. Then there is a gradual rise, the road winding round the hill over-

looking the town, until the saddle of the Doddabetta is reached. This is the highest point we shall touch in the run across. The road is now more tortuous, but the surface is kept in fair condition. One needs to exercise care, for there are several hairpin corners which have to be manoeuvred rather carefully. The road can be seen winding from one hillside to the other, and the short run is soon over. After the junction previously referred to, the run is easy. Kotagiri is not seen for a considerable time, though we can come across solitary bungalows

level in Kotagiri, but it is possible to get some excellent runs out into the districts where the tea and coffee estates are to be found. Those who are not pressed for time, but can stay a day or two in Kotagiri, will find several excellent motor excursions which will be thoroughly enjoyable. Whichever of the above two routes the motorist takes, he will pass through fine country, on all sides the great stretches of the downs that form so characteristic a feature of the hill stations of the Nilgiris.

A shorter trip may be taken to



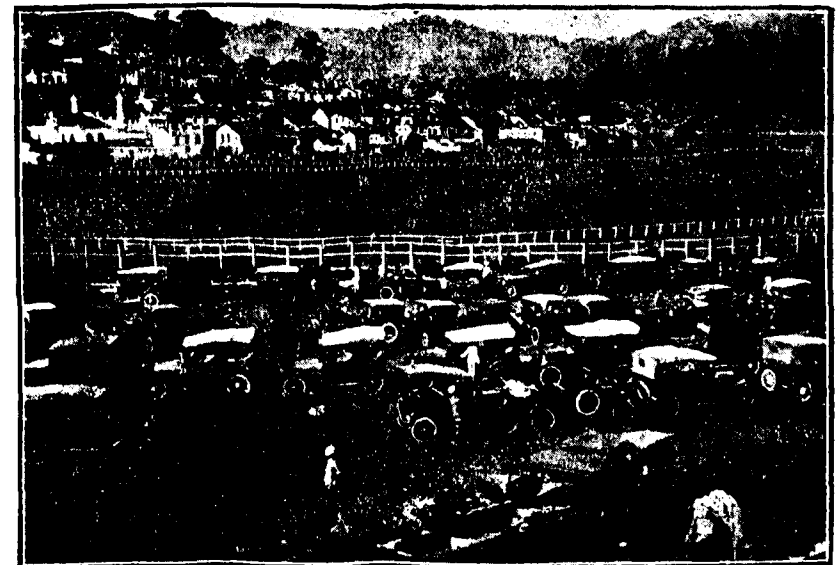
NEAR KOTAGIRI.

which have been built by residents. There is a growing tendency to purchase land on this side of the town, and it is most likely that the development will be on this road. There follows a long run downhill, and after this an uphill pull before the club is reached. You cannot go many yards on the

the Kalhutti Falls which are not distant. These falls are the outcome of the stream that carries off the surplus waters of the Ootacamund lake and are 170 feet deep. The motorist is not able to go the whole distance in the car, but it will bring him sufficiently near to enable him to do the short

distance of a mile or so with little discomfort. The road first rises until the town is left, the road passing the club and gradually rising till the junction near the golf house is reached. The road, from this point, descends gradually until a small motor house is reached. This was built by a gentleman who built himself a bungalow not far from the falls, and who also kept a farm of considerable size. He regularly motored out from Ooty and found

mastering it. Only a very high powered car and a skilful driver ought to attempt, and he is warned that he is risking both his own life and that of his car if he attempts it. The wise motorist will be content to leave his car not far from the garage referred to. He will then walk to see the falls which are well worth a visit. Near the falls is a bungalow which formerly belonged to the German Basel Mission who had a missionary stationed here. It is



OOTY RACES THE MOTOR CARS PACKED.

this garage the most convenient spot for housing his car till the next morning. The run is short, but if taken in the early morning, makes you thankful you have brought rugs with you. The cold is very piercing. We now reach the top of the famous Sigur Ghat. Several daring motorists have ventured both up and down this ghat, but few have succeeded in

in a beautiful situation, and has been handed over to the Mission which is now responsible for the work on the Nilgiris. It is being used only as a holiday bungalow during the season, but there are many motorists who would not be sorry to have such a bungalow at their disposal. The journey to the Sigur Ghat can be done either in the morning or the evening, but it

is well, if the former is chosen, falls in their round, and those not not to delay the start too long, as fortunate in the possession of a car, the walk back might otherwise can easily engage one from the prove a little tiring. Practically garage in Ootacamund. all visitors include the Kalhutti



Balloon Tyres

A FEW WORDS ON THEIR INFLATION

There is little or no doubt in the mind of the motor world to-day that Balloon Tyres, the large section, low pressure covers that are now being fitted as standard equipment on many English and American Cars, have come to stay. They are a change that has brought increased riding comfort to the motorists, but with them a greater amount of care is necessary than was the case with the fast-fading high pressure tyre. The successful behaviour of Balloon Tyres depends chiefly on the pressure at which they are run; they are sensitive to the extent that a pound or two variation in the pressure makes all the difference to their life. This was not the case with the high pressure cover, where a variation of five pounds made no appreciable difference. If a Balloon Tyre is inflated too hard, it loses one quality which it is already famous for, namely, that of shock absorbance, whereas, if insufficiently inflated, it is liable to damage due to excessive flexibility of the side walls, resulting often in the extreme damage of a burst.

All motorists, therefore, who own cars equipped with Balloon Tyres would do well to adhere very closely and strictly to the advice as to pressure etc., given by the makers. In the absence of there being any information as to correct pressures to be maintained in the instruction book supplied as a rule with a car, it is advisable to obtain particulars from the makers of the particular tyres fitted to one's car. Close attention to this point will enable any owner to obtain the extreme comfort which Balloon Tyres really afford.



Fun from here and there

"They call me Mag—it's short for Magneto."

"Magneto?"

"Yes, everything on me is *heavily charged*."

✱

Passenger: "Good Lord, how did you ever get a driving license?"

Taxi driver: "The testing officer gave it to me without a trial. He was scared to go out with me."

✱

The street corner orator was warming up to his subject.

"He drove straight on to his goal," he cried, waving his arm, "he looked neither to the right nor to the left, but pressed forward moved by a definite purpose. Neither friend nor foe could delay him nor turn him from his course. All who crossed his path did so at their peril. What would you call such a man?"

"A motor-car driver", shouted a man in the audience.

✱

What is the difference between a Herring lying in a muddy gutter and a Motor Car?

Well, one is a muddy bloater and the other well, well, a—
——Motor Car.

✱

Magistrate: "The constable says you were going thirty five miles an hour."

Accused: "Very well."

Magistrate: "You are the first motorist I have seen who did not seem angry with the constable."

Accused: "Well, you see, it is the first compliment any one's paid to my old bus."

✱

In the middle of a ploughed field the motor car lay helplessly on its side. It had skidded off the road and through the hedge. The motorist stood looking at it disconsolately.

"Hello?" called a curious passer-by.

"Had an accident?"

"Oh, no, not at all," the angry motorist answered sweetly.

"I've just got a new car so I brought this old one out into the field to bury it. Have you got a pick-axe and a shovel in your pocket you could lend me?"

The Ford Electric System.

HOW THE LIBERTY TWO-UNIT SYSTEM IS APPLIED

: DIRECTIONS FOR CARE AND ADJUSTMENTS :

The starting and lighting system on the Ford Car is of the two-unit type and consists of the starting motor, generator, storage battery, ammeter and lights, together with the necessary wiring and connections.

The starting motor is mounted on the left hand side of the engine and is bolted to the transmission cover. When in operation the pinion on the Bendix drive shaft engages with teeth formed on the periphery of the flywheel.

In starting the engine, the spark and throttle levers should be placed in the same position on the quadrant as when cranking by hand, and the ignition switch should be turned on. Current from either battery or magneto may be used for ignition. When starting, especially when the engine is cold, the ignition switch should be turned to "battery." As soon as the engine is warmed up, turn switch back to "magneto." The magneto was designed to furnish ignition for the Model T Engine, and better results will be obtained by operating the engine on the magneto when warmed up than can be expected from battery ignition. Special attention must be paid to the position of the spark lever, as a spark too far advanced will cause serious back-firing, which in turn will bend or break the shaft in the starter.

The starting motor is operated

by a push button conveniently located in the floor of the car at the drivers feet. With the spark and throttle levers in the proper position and the ignition switch turned on, press on the starter button with the foot. This closes the circuit between the battery and the starting motor, causing the pinion of the Bendix driveshaft to engage with the teeth on flywheel, thus turning once the crankshaft. When the engine is cold it may be necessary to prime it by pulling out the carburettor priming rod, which is located on the instrument board. In order to avoid flooding the engine with an overrich mixture of gas, the priming rod should be held out for only a few seconds at a time.

If the starting motor is turning the crankshaft over and the engine fails to start, the trouble is not with the starting system. On this event, release the button at once, so as not to discharge the battery unnecessarily, and inspect the carburettor and the ignition system to determine the trouble.

If the starting motor fails to act after pushing the button, first inspect the terminals on the battery and the two terminals on the starting switch, making sure that all of the connections are tight. Then examine the wiring for a break in the insulation that would cause a short-circuit or ground. If the wiring and connections are in good condition and

the starting motor fails to act, test the battery with a hydrometer. If the hydrometer reading is less than 1.225 the trouble is no doubt due to a weak or discharged battery.

Should the driver accidentally step on the starting button while the engine is running, no harm will result. The pinion merely touches the revolving flywheel gear once and immediately rotates with the threaded shaft out of contact with the flywheel in the same manner as when it has been demeshed by the engine starting.

The generator is mounted on the right hand side of the engine and is bolted to the cylinder front end cover. It is operated by the pinion on the armature shaft engaging with the large timing gear. The charging rate of the generator is set so as to cut-in at engine speeds corresponding to ten miles per hour in high gear, and it reaches its maximum charging rate at 20 miles per hour. At higher speeds the charge will taper off, which is a settled characteristic of battery charging. This operation of cutting-in and cutting-out at suitable engine speeds is accomplished by the cut-out, which is mounted on top of the generator. This cut-out is set properly at the factory, and should not, under any circumstances, be tampered with.

The starting motor is lubricated by the Ford splash system, the same as the engine and transmission. The generator is lubricated by a splash of oil from the timing gears. In addition, an oil cup is located at the end of the generator housing, and a few

drops of oil should be applied occasionally—whenever the ignition commutator or timer is oiled.

The introduction of the battery current into the magneto will discharge the magnets, and whenever you are repairing the ignition system, or working at the wiring in any way, do not fail to disconnect the positive wire from the storage battery. The end of this wire would be wound up with tape to prevent its coming into contact with the ignition system or metal parts of the car.

The ammeter is located on the instrument board. This indicator registers "charge" when the generator is charging the battery, and "discharge" when the lights are burning and the engine is not running above ten miles per hour. At an engine speed of 15 miles per hour or more the ammeter should show a reading of from 10 to 12 amperes. If the engine is running above 15 miles per hour, and the ammeter does not show charge, first inspect the terminal posts or the ammeter, making sure that the connections are tight; then disconnect the wire from the terminal on generator, and with the engine running at a moderate speed, take a pair of pliers or screw driver and short circuit the terminal stud on the generator to the generator housing.

If the generator is right, a good, live spark will be the result. Do not run the engine any longer than is necessary with the terminal wire disconnected. Next inspect the wiring from the generator to the ammeter to the battery, for a break in the insulation that might

result in a ground. If the trouble is not located, then remove the dust cap from the end of the generator and thoroughly clean the commutator, using for this work a fine grade of sand paper. With the engine running, hold the sand paper against the commutator with the fingers until all dirt has been removed and a bright surface has been attained.

The lighting system consists of head lights and a tail light operated by a combination lighting and ignition switch located on the instrument board. The bulbs are 6-8 volts, double contact, double filament. A 2 C. P. bulb is used in the tail light. All of the lamps are connected in parallel or multiple, so that the burning out or removal of any one of them will not affect the others. Current for the lamps is supplied by the battery. Do not connect the lights to the magneto, as this will result in burning out the bulbs and might discharge the magnets.

If either the starter or generator fails to give proper service, the owner should at once consult an authorised Ford dealer. If the trouble is not found in the wiring or connections, commutator, etc., as outlined, the dealer will remove the starter or generator—or both, if necessary—and return them intact to the nearest branch for repair or replacement. Dealers or owners should not attempt to repair or tamper in any way with the mechanism of the starter and generator.

When removing the starter to replace transmission bands or for any other reason, first loosen the

engine pan on the left hand side of the frame and with a screw driver remove the four small screws holding the shaft cover to the transmission cover. Upon removing cover and gasket, turn the Bendix driveshaft around so that the set-screw on the end of the shaft is in top position. Immediately under the set-screw is placed a lock washer, designed with lips or extensions opposite each other on the outside diameter. One of these is turned against the collar and the other is turned up against the side of the screw head. Bend back the lip which has been forced against the screw and remove the set-screw. As the lock-washer will, no doubt, be broken or weakened in removing the starter, a new one must be used when replacing it.

Next pull the Bendix assembly out of the housing, being careful that the small key is not misplaced or lost. Remove the four screws which hold the starter housing to the transmission cover and pull out the starter, taking same down through the chassis—this is why it was necessary to remove the engine pan. Extreme care should be used in removing the Bendix drive and other parts that none are misplaced or lost and that they are replaced in their former position. In replacing the starter, be sure that the terminal connection is placed at the top. If the car is to be operated with the starter removed, be sure to put the transmission cover plates in position. These plates may be obtained from the nearest Ford dealer.

When assembling the Bendix drive to the starting motor shaft, care must be used to see that the top nut or bearing which enters the mounting bracket on the starting motor is not too tight; also that the bearing is in proper alignment with the bracket. The bearing should be oiled and then fitted, so that it can be turned readily with the fingers. If the bearing is too tight it should be dressed down with an oil stone: tight a fit will cause the bearing to freeze to the bracket, resulting in serious damage to the starter.

If it is found necessary to remove the generator, first take out the three cap screws holding it to the front end cover, and by placing the point of a screwdriver between the generator and front end cover the generator should be forced off the engine assembly. Always start at the top of the generator and force it backward and downward at the same time. Plates may be obtained from the nearest dealer to place over the timing gears if the car is to be operated with the generator removed.

When installing a generator the drive pinion must be properly meshed with the large timing gear.

The generator bracket, that is, the section to which the generator is bolted—is separated from the cylinder block, and the meshing of the generator driving pinion with the large timing gear can be regulated by the use of one or more paper gaskets between the bracket and the cylinder block. The bracket should rest tightly on the crankcase gasket and line up with the face of the timing gear case. If these grears are meshed too tightly a humming noise will result; also, the generator shaft will be thrown out of proper alignment.

If for any reason the engine is run with the generator disconnected from the battery, as on a block test, or when the battery has been removed for repair or recharging, be sure that the generator is grounded to the engine by running a wire from the terminal on the generator to one of the valve cover stud nuts. A piece of wire 1/16 inch or more in diameter may be used for this purpose. Be sure that the connection at both ends of the wire are tight. Failure to do this when running the engine with the battery out will result in serious injury to the generator.



Thro' The Editors' Windshield

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Days were when Madras was backward place. But to-day her sister Presidencies might well envy her. There are about 200 Lady Motorists in Madras, whereas even advanced Bombay cannot boast of more than fifty. The old adage is coming true after all. "A Motor Mother makes a Motor Son."

Electricity bows

To Petrol.

But who would think of it? The Madras Electric Tramway Co., are putting on the roads about a dozen motor buses. So that the Electric cars have to join hands with the petrol-driven buses. After all has been surveyed and rails laid, nothing like a petrol car at a pinch.

"Motor Dangerous

To People"

That is a cheap cry. People wax eloquent about a death here and a death there and prove their case. But whose fault is it? If in busy cities, any crowded city for

that matter, you haven't enough policemen and sergeants to regulate traffic, accidents will be plenty. Better increase your police; don't hang the chauffeur.

Corporation has

No Conscience.

You collect extra super tax on the motor vehicles. And yet your roads are carefully strewn with nails, hooks, glass bits as they did in the Battle of Bannockburn. Now, the tyres are more sinned against by the roads than sinning, and you add the extra grace of nails to puncture them. Poor helpless Tyres! They can only weep out the air in them when punctured!

More Kerb-Pumps

Than Cars :

The speed with which Kerb-pumps are jutting out their write heads! Pump here, Pump there, Pumps everywhere. Where are the cars, one asks, to keep the Pumps pumping. "Well, if, there aren't enough cars to keep the pumps going, at least it is some consolation that there are enough pumps to keep the cars running."



Questions and Answers.

High and Low Tension Magnetos.

Q.—What is the difference in construction of high and low tension magnetos? How may one determine whether a magneto is of the high or low tension type?

*A.—*There is no marked difference in general design of high and low tension magnetos. The principle difference is in the armature winding, which has two windings in the high tension type and one in the low tension type. In the former, a current of sufficiently high potential is delivered directly to the spark plugs, while in the low tension type the secondary winding is not incorporated in it. Thus, in a single ignition, the low tension type of magneto system will always require a high tension coil.

Why Defective Mixture Causes Overheating.

Q.—Won't you be kind enough to explain why a defective mixture will cause over heating and how is the carburettor adjusted to overcome this condition?

*A.—*A mixture that is too rich, or, in other words, contains too much of gasoline vapor, will be slow burning and will have more heating value without producing correspondingly more power than one of proper portions or having an excess of air, as combustion is not perfect, the engine will not deliver its full power and the surplus heat liberated by the fuel must be

absorbed by the cooling system. Instructions for carburettor adjustment can not be given, as this varies with each type of carburettor, but as a general rule the adjustment should be changed so that less fuel will be used in the mixture. This is either accomplished by reducing the fuel or increasing the air.

Poor Lights.

Q.—The lights on my Overland are bright until I start the car, when they go down. When driving about 25 m. p. h. the lights are bright, but as soon as I drop below that, they get dull. What is the trouble?

*A.—*Your battery may not be properly charged, you may have loose connections in the lighting circuit and the connections may also be corroded which sets up a high resistance.

Ford Knock.

Q.—What causes my 1922 Ford to knock on a hard pull? The sound is like striking iron against iron. This same knock is produced on a little down grade.

*A.—*This noise is probably a worn piston pin bearing or a piston slap, most likely the former.

Gravity of Electrolyte.

Q.—At what specific gravity should the electrolyte be mixed

for a new, uncharged storage battery?

A.—Ordinarily, a solution of 1.6 to 1.8 gravity can be used.

Ford Gear Ratio.

Q.—How is it that it is necessary to turn the steering wheel of the Ford four times to get one revolution of the steering column shaft, since the ratio is 3 to 1?

A.—The reduction in movement of the steering wheel shaft is due to the reduction in the gearing which you mention. To get one complete turn of steering gear wheel to one of the steering shaft, the ratio of these gears would have to be one to one instead of three to one.

Ford Lights.

Q.—I want battery lights on my 1917 Ford touring car. Is there some kind of an electrical apparatus that will change or take the juice from the magneto and deliver it to the storage battery?

A.—A storage battery requires a direct current and the Ford magneto generates an alternating current. Thus you can readily see that the charging a battery from the magneto would not be practical.

Excessive Fluctuation of Ammeter Needle.

Q.—I would like to know what causes the ammeter needle on my Ford to play back and forwards

while the generator is charging and how to remedy the trouble.

A.—Fluctuation above normal conditions of the ammeter needle indicates a loose connection in the circuit on excessive resistance at intervals. Be sure all connections are tight and corroded as the latter will set up a resistance to the flow of current and thus reduce the charge the battery is receiving. Poor seating brushes on the generator armature or a short circuit in the wiring may also cause such trouble.

Dodge Gear and Light Troubles.

Q.—We have a Dodge truck that will jump out of high gear. It seems to work alright after it is in high to stay, but you have to get it just right. We had the transmission out but can't find a thing wrong. What is the cause of it? Also, we have a Dodge touring of which the lights throw a dark spot. Isn't there some way of focusing the bulb or reflector?

A.—The trouble with the Dodge truck may be due to the clutch dragging or the shifter lock may be worn or burred so that it will not permit a complete shift only under certain conditions. The shifting mechanism may also be bent out of alignment.

Focusing of the lamp is accomplished by moving the bulb in relation to the reflector. Dodge have used several types of lamps. However, the method of focusing will readily be evident by an inspection after the cover is removed.

Use of Hydrometer.

Q.—Please tell me how to test a storage battery with hydrometer—both six and twelve-volt size and what should be the normal strength of each cell as shown by hydrometer?

A.—In testing batteries with hydrometer, the voltage is disregarded, as each cell of the battery must be tested. As the voltage is equal in all cells and the total voltage of the battery is the product of the voltage of the cell and the number of cells, it need not be considered in making this test. The hydrometer gives only the specific gravity reading of the electrolyte in the cell. It is inserted in the cell with the bulb compressed. While inserted in the cell, release the bulb so that a portion of the electrolyte will be drawn into the instrument. Remove the Instrument from the cell and hold level with the eye so that the gravity can be read on the float within the instrument. This reading for a fully charged battery should be from 1.280 to 1.300. When the test has been made return the electrolyte to the cell from which it has been removed.

Essex Lights burn Dim.

Q.—My Essex 4 car, Delco Ignition, has the fault of the lights burning very dim below 15 miles per hour. Above that speed and when the engine is at rest, they are all right. The battery tests full charge and the ammeter readings are normal under all

conditions; all connections are tight.

A.—You either have loose contacts at the switch or some other part of the system. It is also possible that the switch is defective in that it sets up a high resistance under certain conditions and thus causes the lights to burn dim.

Gear Jumps out

Q.—My Maxwell car stays in first and reverse gear, but jumps out of second and high and back to neutral. Everything else seems alright as new gears were replaced. What can be done?

A.—The trouble you are having is in the shifter lock which is probably worn, or the spring is broken so that the shifter rod can move end-wise. Replacement of parts will correct the trouble.

To Remove Dodge Camshaft.

Q.—In order to take the camshaft out of a Dodge motor (touring) is it necessary to take the motor out of the chassis? In putting in a new set of camshaft bearings, what is the easiest and best way of removing the old ones?

A.—To remove the Dodge camshaft, it is best to take the engine out of the frame, although the front end could be raised so that the timing gear housing would clear the front cross member of the frame, but the camshaft thrust blocks and other parts make it difficult to work with the engine in the frame. The bearings for this

engine are also formed directly in the crankcase and this will mean dismantling the engine so that they can be reamed to fit an oversize shaft or to fit bushings after the case has been bored out. This is really a job for the service station that has the tools to do a good job.

Negative or Positive Ground ?

Q.—I would like to know why

some car manufacturers use the negative terminal of the battery for a ground and some use the positive for a ground wire ?

A.—Either circuit may be used, depending upon the general design of the system. Some claim that using the positive lead as the ground return reduces the probability of trouble.



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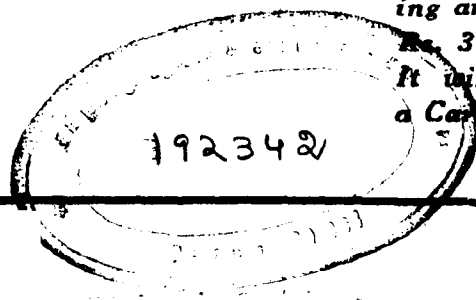
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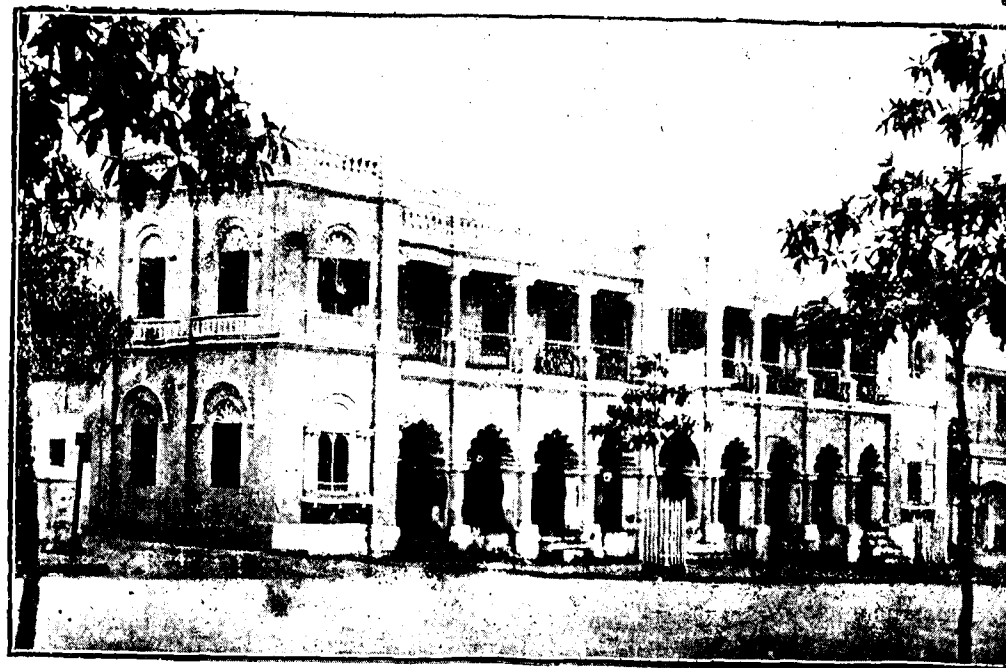
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