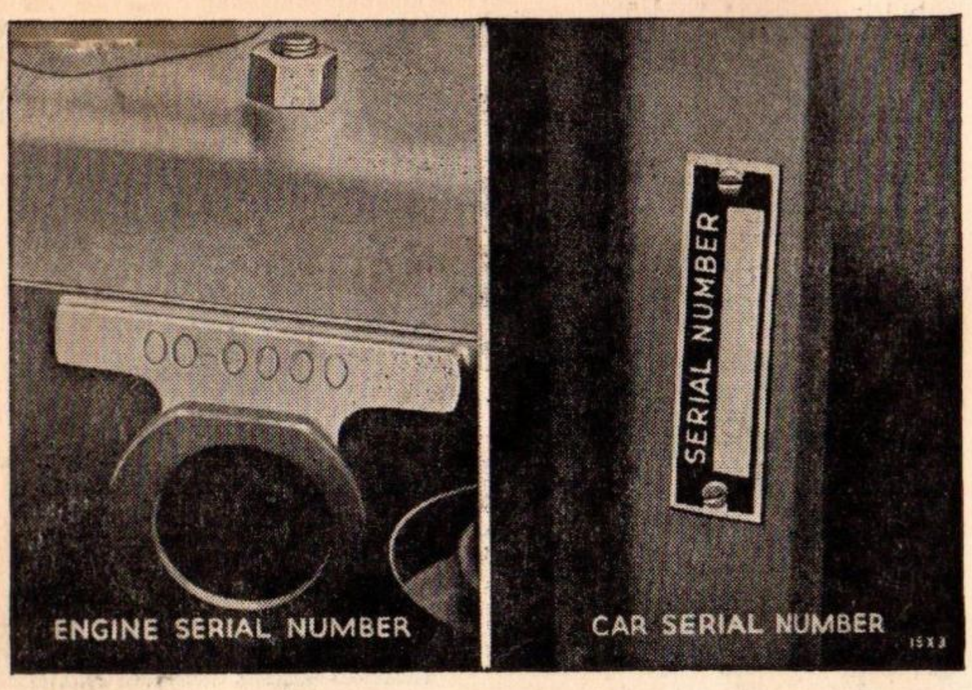
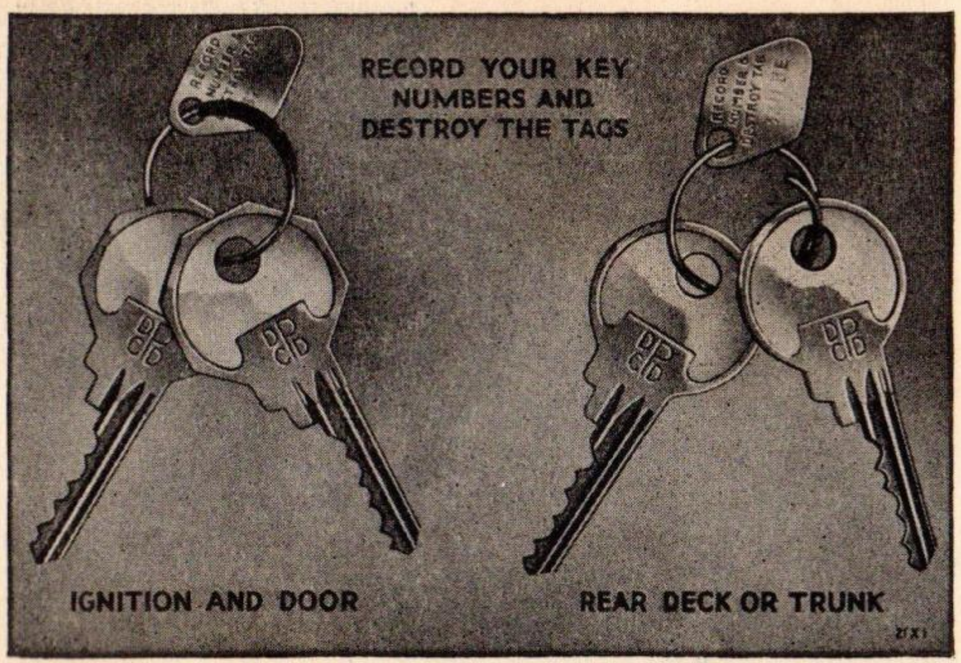
THE OPERATION AND CARE OF YOUR NEW

Chrysler

CODE C-22





License Data

CAR SERIAL NUMBER—Located on right front door hinge post.
ENGINE SERIAL NUMBER—Stamped on boss, left side of cylinder block between numbers 1 and 2 cylinders.
BORE—3⅜″; Stroke—4½″; Number of cylinders—6.
A. M. A. HORSEPOWER RATING—27.34.
PISTON DISPLACEMENT—241.5 cubic inches.

Keys

Two sets of keys accompany your car. Duplicate keys are on a ring together with a metal tag. The numbers of the keys and locks are stamped on the tag. Remove the tag and make record of the number so additional keys may be ordered if required. For theft protection, the number is not indicated on either the keys or locks.

Breaking-in Speeds

Until your car has covered its first 500 miles, do not drive more than 35 miles per hour. During the next 2000 miles the speed may be gradually increased to complete the "breaking-in" process. Do not drive at continued high speeds during the first 2500 miles.

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Detroit, Michigan, U. S. A.

First Edition **D—4344**

Foreword

Facts for the Owner and Driver

You have an investment in your new Chrysler Royal which should be protected. You can protect it easily and at the same time enjoy the highest degree of satisfaction, pleasure and economy.

This book is intended to help you enjoy your new car. Read it carefully and abide by its guidance.

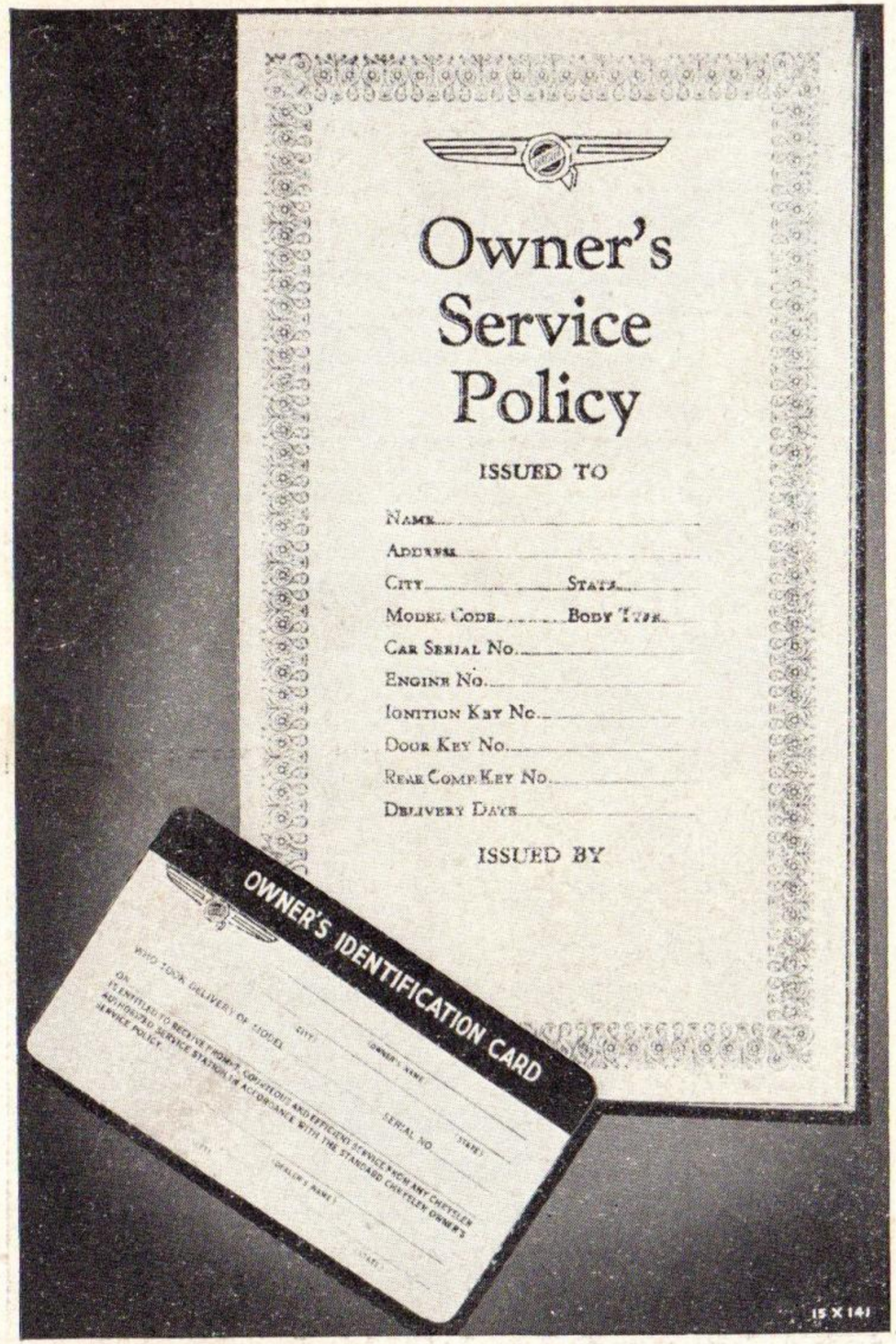
Proper lubrication is a vital factor in promoting the long life and smooth operation which have been built into your Chrysler Royal. A regular schedule of inspections will keep the maintenance cost down to a minimum. This book tells you how.

We recommend your authorized Chrysler dealer's service station as being the best place to have your car inspected periodically and necessary adjustments made. Communications with your dealer regarding your car should give the purchase date, car serial number and total distance it has traveled.



CHRYSLER CORPORATION

CHRYSLER SALES DIVISION



Owner's Service Policy

Your Service Policy, which was issued by the dealer from whom you purchased your Chrysler Royal, indicates the interest we all have in making certain that your new car gives you the satisfaction to which you are entitled. Read the policy carefully. Use the coupons as directed for free inspection and adjustment service during the "breaking-in" period to assure you of proper attention being given to your new Chrysler Royal. This is important. The Owner's Service Policy is for your protection—use it.

After the expiration of your Owner's Service Policy, be sure to continue with the practice of inspections at regular intervals by your authorized Chrysler dealer. We are sincere in this recommendation and confident that you will enjoy many thousands of miles of motoring satisfaction.

Further protect yourself by employing the services of a factory approved service station for any service which your Chrysler Royal may require. Here you will find mechanics well trained in servicing your car as well as mechanics who are kept up to date concerning such service by means of various literature, bulletins, etc., as published at the factory.

The Controls

It is important that you learn the location and operation of each control lever, pedal and button before driving; then you will find the driving easier than trying to develop your knowledge while driving. All of the controls are placed for your convenience and ease of operation.

Gear Shifting Lever

The gear shifting lever is at the right just under the steering wheel. Always have the gear shifting lever in neutral (central position) before starting the engine.

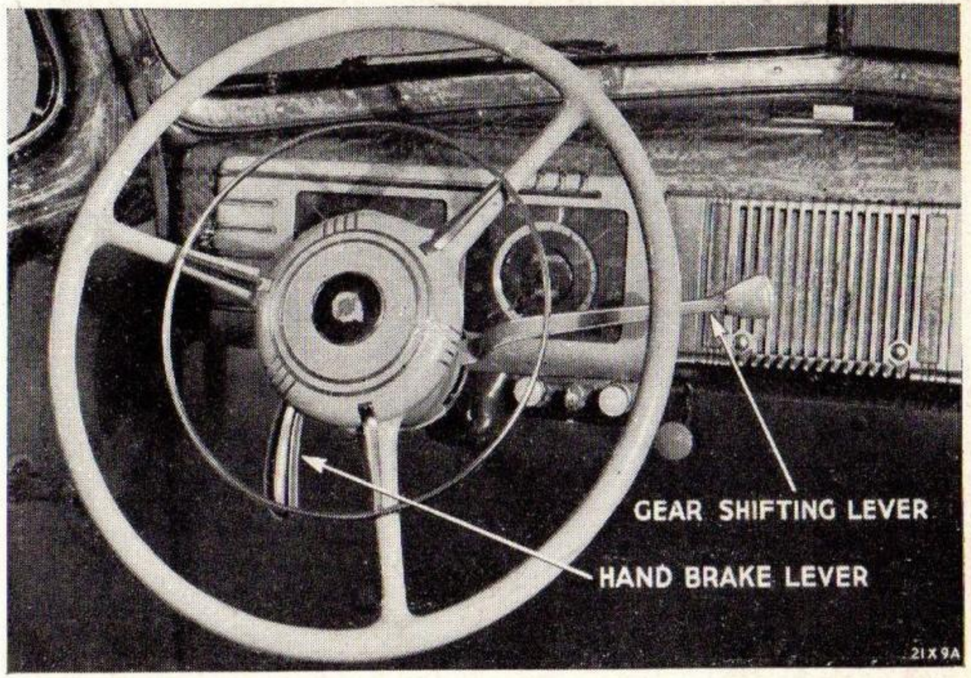
Hand Brake

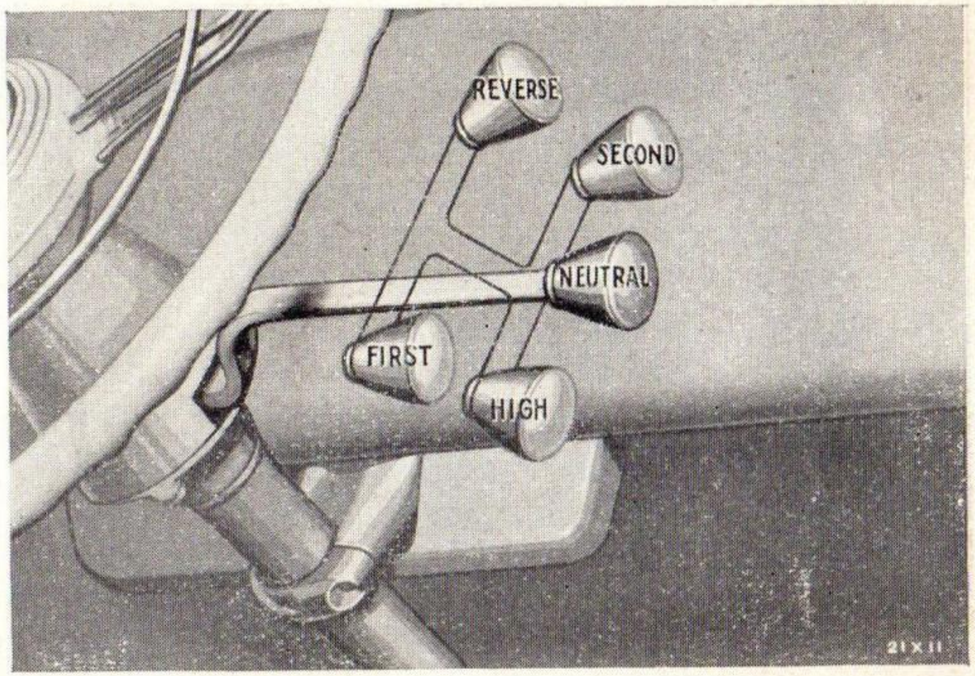
The hand brake lever extends downward from the instrument board at the left of the steering column. When pulled back, the hand brake is latched "on." It is easily released by pulling back on the lever slightly and at the same time squeezing the "pistol grip" of the lever. Then while squeezing the grip, push the lever forward. Always be sure to release the hand brake before starting your car. It is always best to apply and latch the hand brake when you stop and leave your car, even if the road is level.

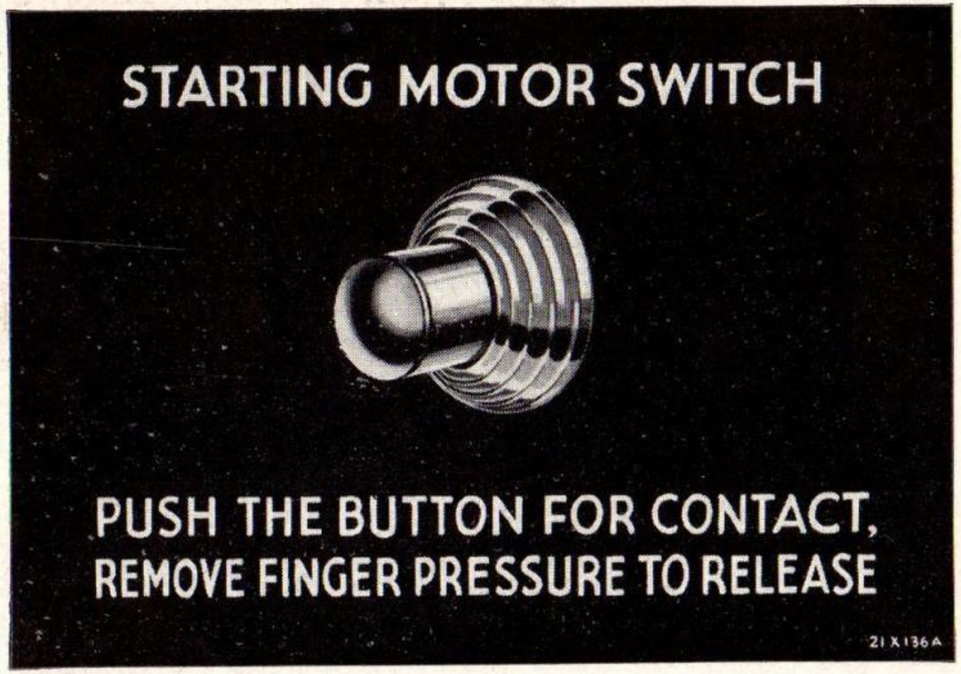
Windshield Wipers

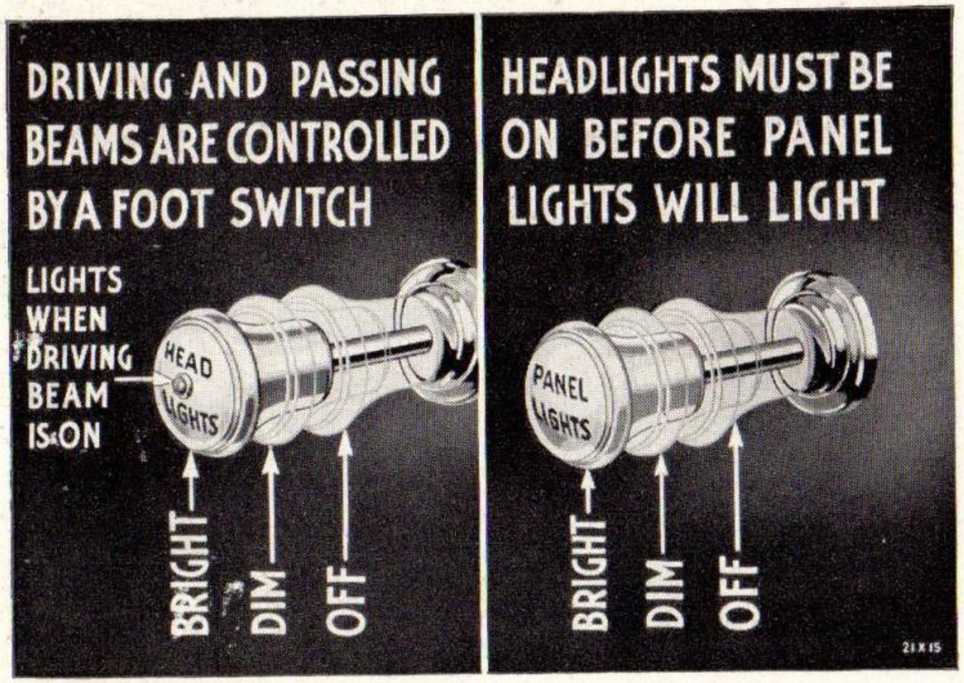
The windshield wipers are electrically operated. The switch button is in the group of control buttons at the panel. Push or pull the button to control the operation of the wipers.

The wipers are connected to the ignition switch circuit and can be operated only when the ignition switch is turned









"on." A fuse is placed in the windshield wiper circuit as a protection against a short circuit.

Reading Light

The reading light switch is conveniently located on the door pillar post at the right of the front seat.

Headlamp Switch

The headlights and tail lights are controlled by pulling or pushing the switch button in the group of instrument control buttons. When the headlamp control button is pushed "in" (forward) to the limit of its travel, the head and tail lights are switched "off." Pulling the button out one notch turns on the parking, license, and tail lights; then out one more notch turns on the powerful headlights, license and tail lights, but turns off the parking lights. The instrument light cannot be turned on without turning on either the dim or bright headlights.

Starting Motor Switch

The starting motor switch is at the lower left corner of the instrument panel just to the left from the fuel gauge. Merely press "in" this button, to the limit of its travel, for cranking the engine. It will operate only when the ignition switch is turned "on."

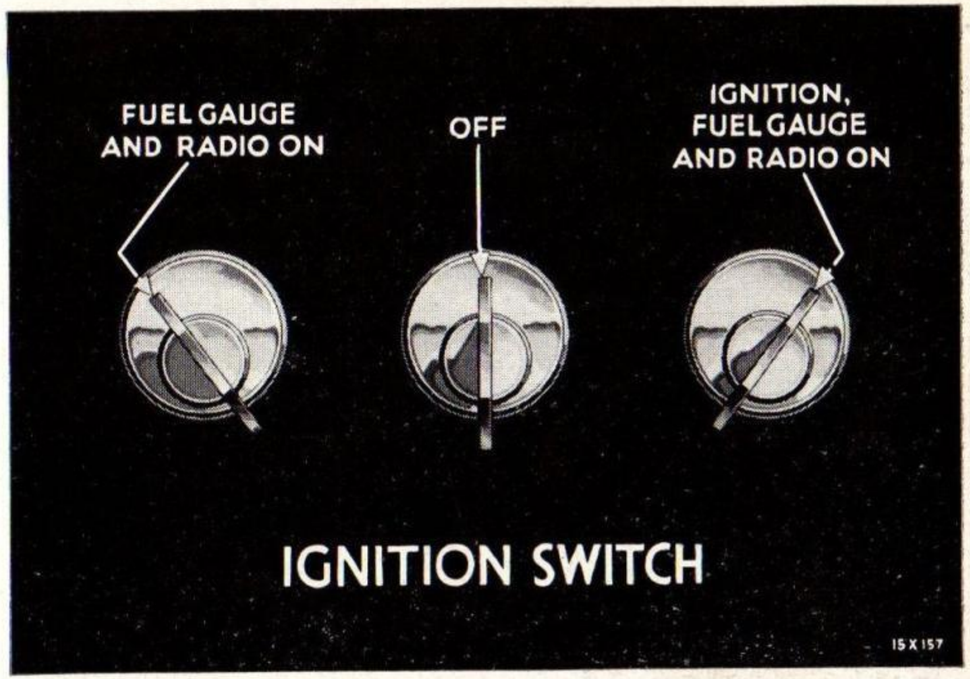
Instrument Panel Light Switch

When the button for the instrument panel lights is pulled out one notch the dim lights are "on" for the instruments (providing the headlights are "on" for either parking or driving)

and "out" one more notch turns on the bright lights for the instruments.

Ignition Switch

The ignition switch is of the locking type and can only be operated when the key is inserted and turned to the right (clockwise). This position turns on the ignition, fuel gauge and radio (if so equipped). The switch is in the "off" position when the thumb piece of the key is vertical. When the key is turned to the left from vertical the fuel gauge and radio (if so equipped) are connected. The radio also has an independent switch at the volume control. The added connection of the radio with the ignition switch prevents use of the radio when the key is removed.



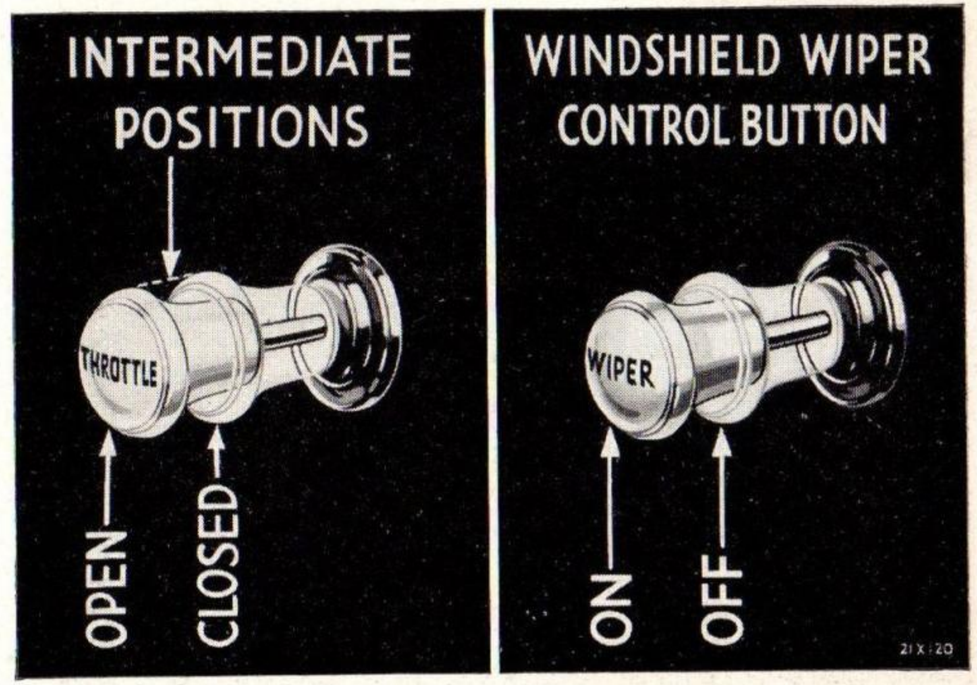
Throttle Control

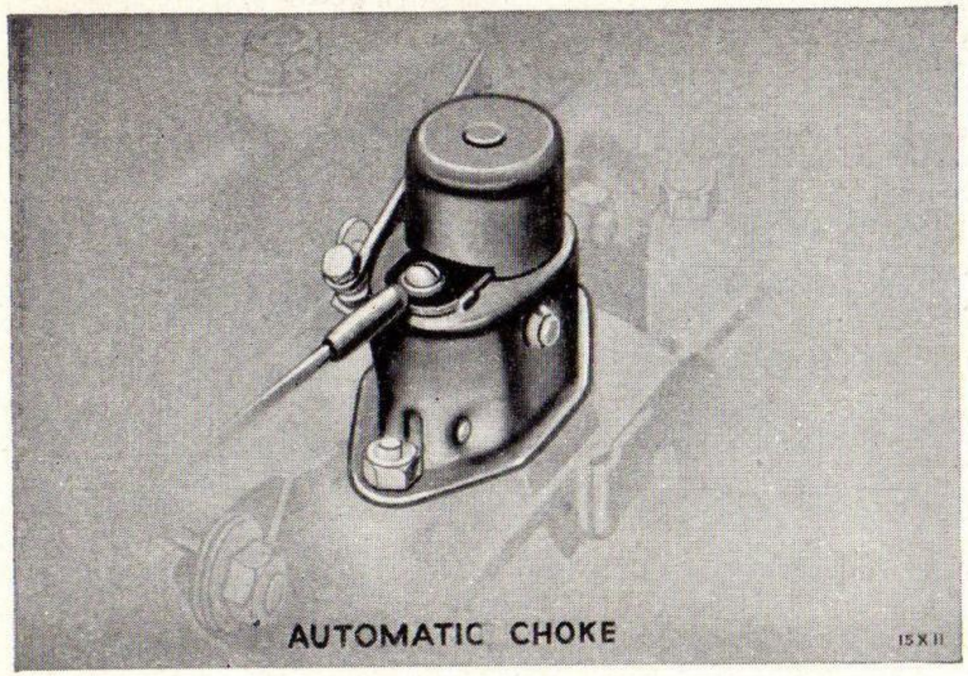
The accelerator pedal is used for opening or closing the carburetor throttle, but sometimes it is desirable to control the throttle by hand instead of by foot. Pulling the throttle hand button outward opens the throttle.

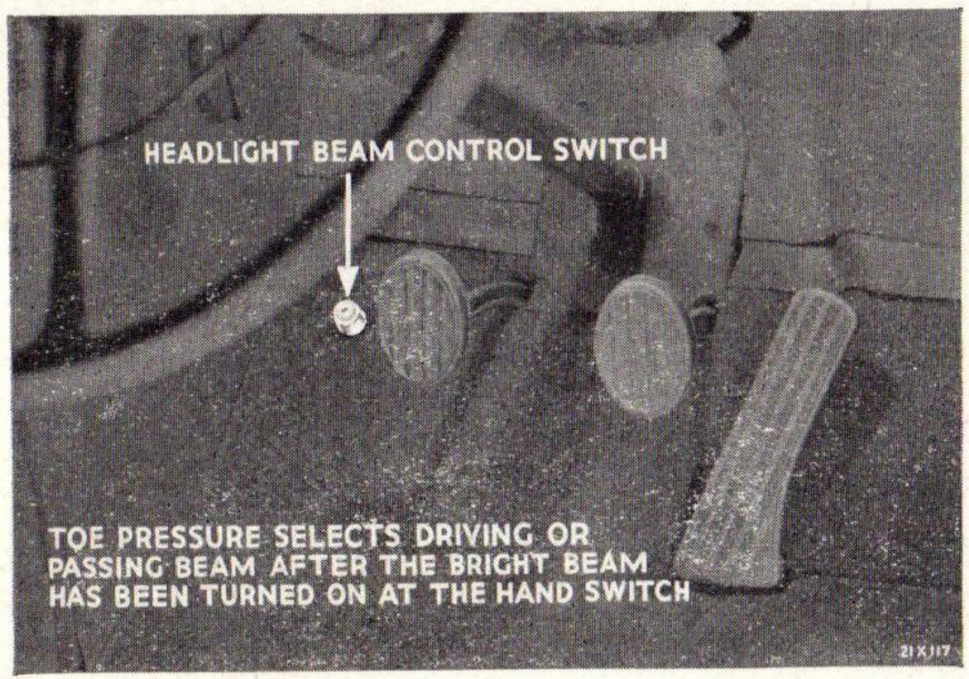
Your Chrysler Royal has an automatic choke control. If for any reason you should "flood" the engine when cranking with the starter, open the throttle wide by pulling the control button out to the limit of its travel. Then crank the engine a few times, with the throttle wide open, until the engine starts. Then close the throttle.

Headlight Beam

The button on the toe board, next to the left side panel of the cowl, is for controlling the high and low beams of the pow-







erful headlights. (This only operates when they are turned on by the hand operated switch on the instrument panel.) Press the button and the powerful beams of light will raise or lower. It is not necessary to hold your foot on the button because the switch locks in position each time the button is pressed. Never use the high beam of light, which shines far down the road, when driving in the city or meeting another car. When the high beams of light are being used a small light inside the hand switch illuminates a red window in the switch control button. This light is "out" when the low beams are in use.

Clutch Pedal

The clutch pedal is slightly toward the right from the light beam control button. This pedal, when pressed down to the floor board, disengages the clutch so that the gears may be shifted into engagement ready to drive the car. You will notice the soft, smooth, easy action of this pedal, but do not drive with your foot resting on it. This would cause unnecessary wear on the clutch release bearing and also clutch slippage.

Service Brake

The service brake pedal is next toward the right from the clutch pedal. You will find that comparatively light pressure on this pedal is all that is necessary to bring the car to a quick easy stop.

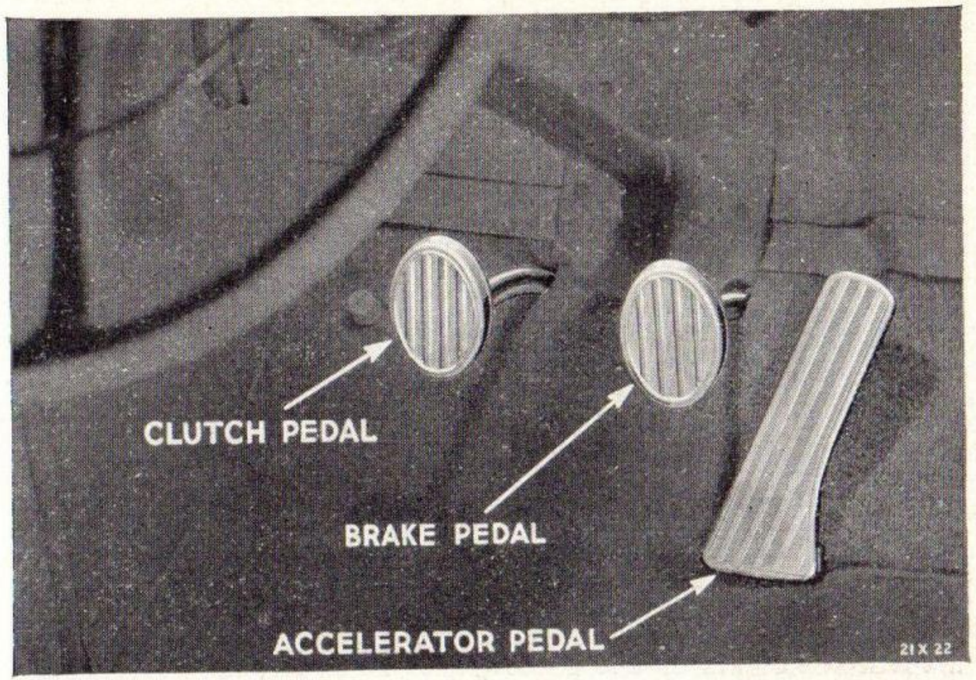
Accelerator

The long flat pedal at the right of the brake pedal is the accelerator. It is used to control the engine speed. You will notice

that due to the size and action of the accelerator, your foot does not tire, even on long drives.

Cruise and Climb Transmission (Special Equipment)

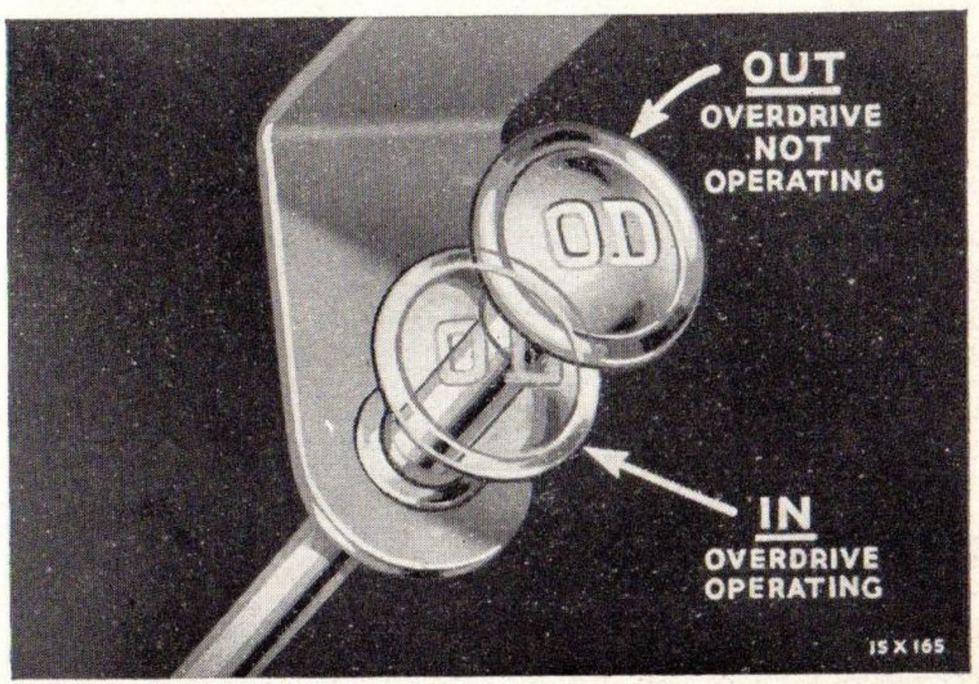
Operation of the "cruise and climb" transmission is controlled by pulling or pushing the "cruise and climb" overdrive control button located under the instrument panel at the left. Pulling this button "out" to the limit of its travel, while the clutch is disengaged, causes the overdrive unit to be inoperative. *Do not pull this button "out" while the car is in motion.* However, it may be pushed "in" at any speed while holding the clutch disengaged.

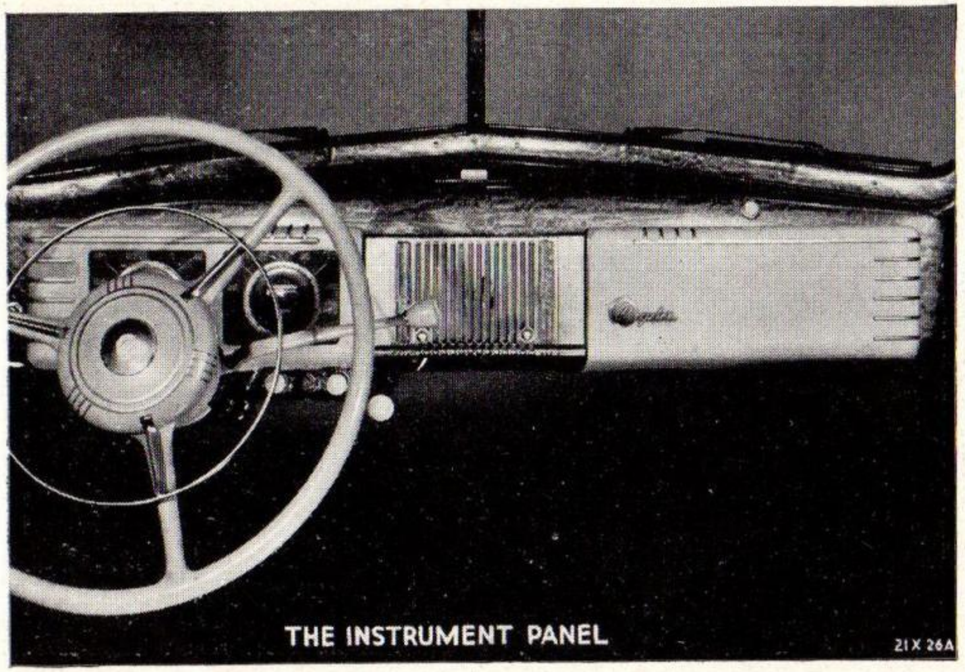


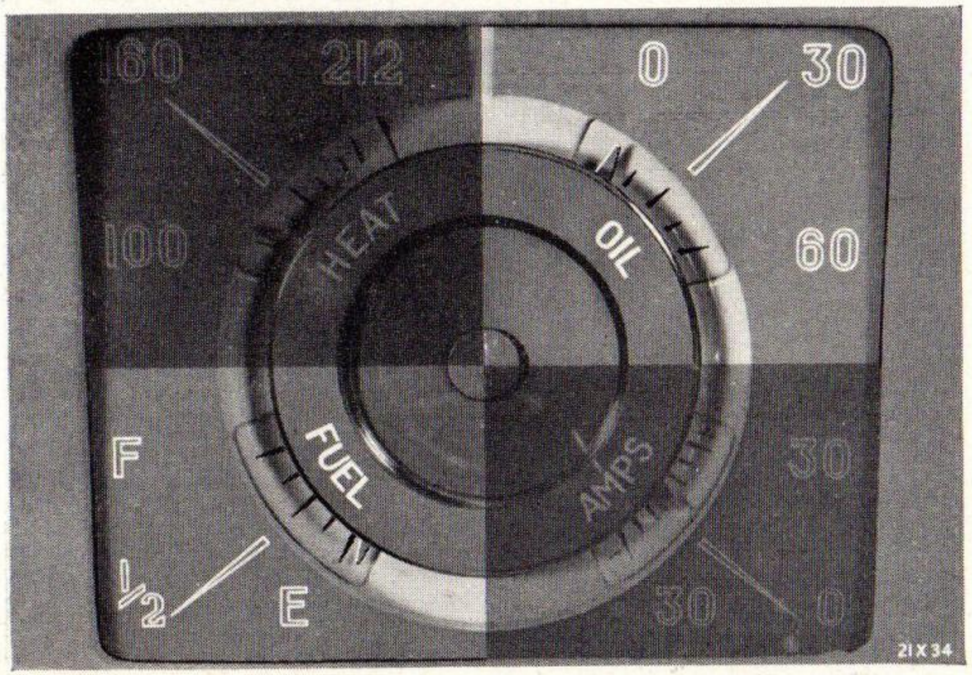
The Instrument Panel

The instrument panel has a definite relationship to your comfort and safety while driving. The gauges and instruments, which you glance at frequently, are directly in front of you, but just a little lower than your line of vision while driving.

The instruments are indirectly illuminated so as to reduce light reflection in your eyes, but the intensity of the light may be controlled by pulling or pushing the panel light switch to one of its three stops—off, medium, or full. You will notice how convenient it is to turn the panel light on or off while driving. Many drivers prefer using the panel light only for short intervals. The panel light also illuminates the ignition switch so you can find it in the dark.







The new safety styling of the instrument panel has eliminated long protruding lights and controls. Everything is flush on the outside or recessed.

At each corner of the panel are gauges which show you the most important items in the operating condition of your engine.

The oil pressure gauge may register a low pressure when the engine is running at slow idle speed, but at speeds above 20 miles per hour, the gauge should show from 35 to 45 pounds pressure. You should watch this gauge frequently and if you notice that the pointer fluctuates a lot between zero and about 45 pounds (except slow engine speed) be sure to find out why and have it corrected quickly. Usually, fluctuation of the pointer is caused by insufficient oil in the engine.

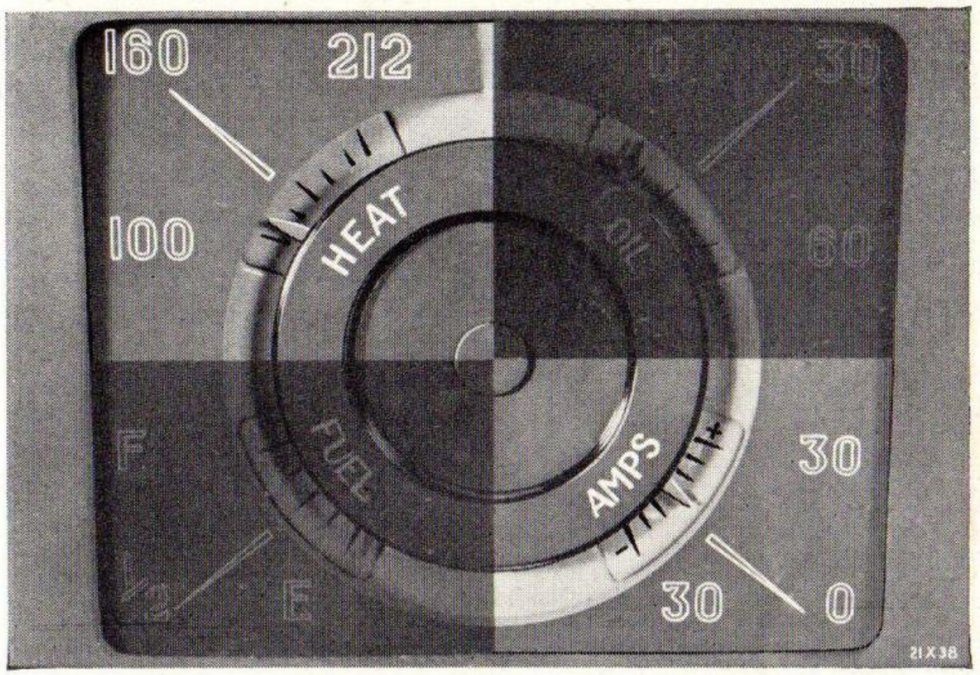
The fuel gauge operates when the ignition switch key is turned to the right or left. It is electrically operated and indicates the level of the fuel in the tank. The letter "E" means empty, the letter "F" means full and "½" sign means half full. Do not try to squeeze out a few extra miles when the pointer is close to the empty side. It is best to "fill-up" when below "½." However, when touring in parts of the country where filling stations are widely separated, it is best to fill the tank whenever you have a chance.

The heat gauge (thermometer) shows the temperature of the water in the engine if higher than 100 degrees. You will notice that the pointer raises to normal operating temperature in a very few minutes after starting cold. That is because of a thermostat which prevents the cooling water circulating through the radiator until the water in the engine reaches its

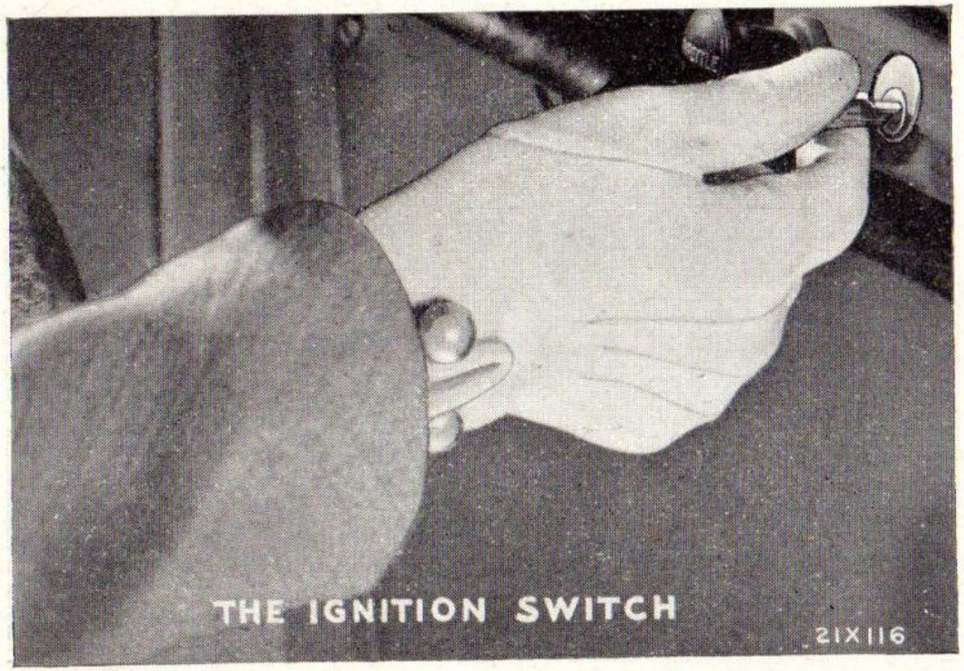
normal operating temperature. Never warm the engine quickly by running it fast just after starting. While driving, glance at the heat indicator occasionally to see that it does not register too hot. If it registers 200 degrees or more, the engine is too hot and should be stopped. Usually this is caused by ice or insufficient water in the radiator, broken or loose fan belt.

The ammeter registers the amount of electricity flowing into or out of the battery. The generator makes the electricity and sends it to the battery and other electrical units such as the lights, ignition coil, radio, etc. When the electrical units are drawing more electricity than the generator is charging, the pointer on the ammeter will be on the negative (—) side of zero and when charging more than is being consumed, the pointer will be on the positive (+) side of zero. Electricity consumed by the starting motor is not registered by the ammeter. If, when all electrical units are switched off, the ammeter pointer registers on the negative (—) side of zero there is a leakage of electricity somewhere in the system. Unless you are able to locate and correct this condition, be sure to see your Chrysler dealer about it quickly, because it will soon cause your battery to become exhausted of electrical energy, making it impossible to start the engine. The ammeter keeps you posted on the charging condition of the generator and the consumption of electricity in the system.

The ignition switch is conveniently located below the instrument panel at the bottom edge. Merely give the key a quarter turn to the right to turn on the ignition switch—to the left (vertical) shuts it off and stops the engine. When leaving the car take the key with you as a theft protection. The key which fits this switch also fits the right hand door lock.









Starting the Engine (Cold)

Just before starting the engine make sure that the gear shifting lever is in the neutral position. Then proceed as follows:

1. Disengage the clutch.
2. Turn on ignition.
3. Press down the accelerator pedal, or pull out the throttle hand control button, so as to give the throttle about one-third opening.
4. Press starter switch button until the engine starts. Then release the starter button.

Note: In case the engine becomes over choked or flooded at any time, pull out the throttle control button to the limit of its travel or press the accelerator fully down and operate the starter continuously until the engine starts. This will eliminate further choking. If it becomes desirable to again choke the carburetor for starting, reset the throttle back to the starting position.

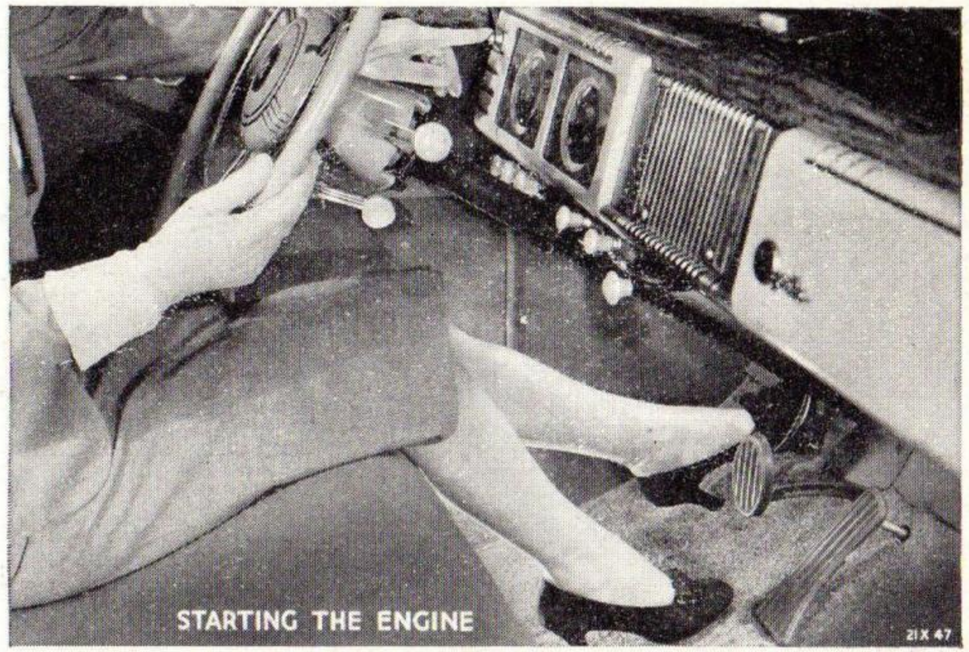
Caution: Do not pump the accelerator before or during starting because this will cause difficult starting.

Instructions for Starting Warm Engines

1. Disengage the clutch.
2. Turn on ignition.
3. Push down accelerator pedal or open hand throttle to give approximately one-third throttle opening.
4. Push starter button control.

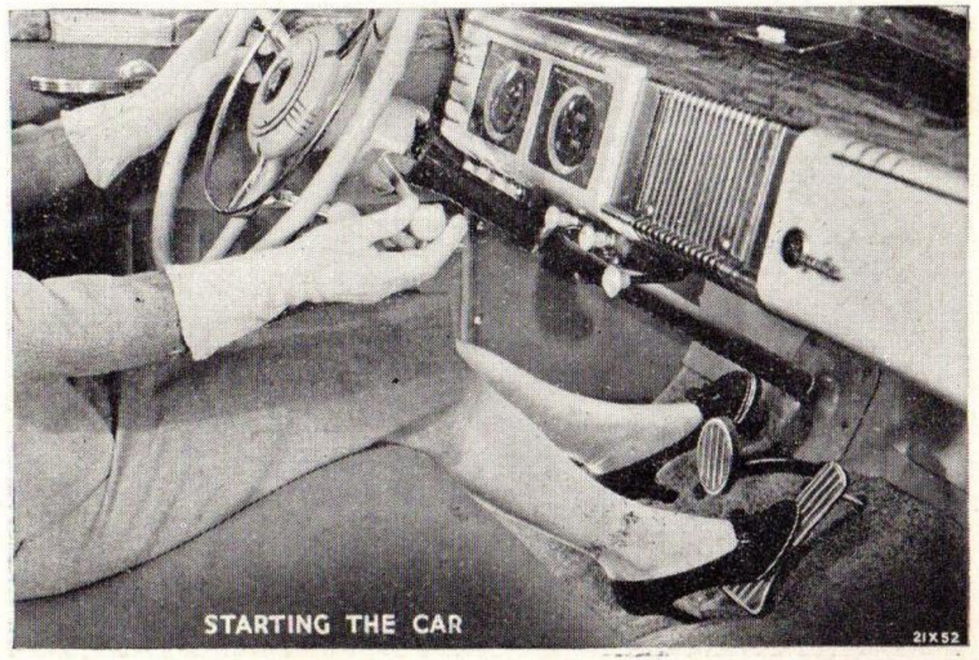
Caution: Do not pump the foot accelerator before or during starting as this will cause difficult starting.

Never run the engine in a garage with the garage doors closed. The exhaust gas contains carbon monoxide which is a deadly poison. It is tasteless, odorless and colorless, therefore, very difficult to detect. Be sure to fasten the garage doors open before starting the engine.



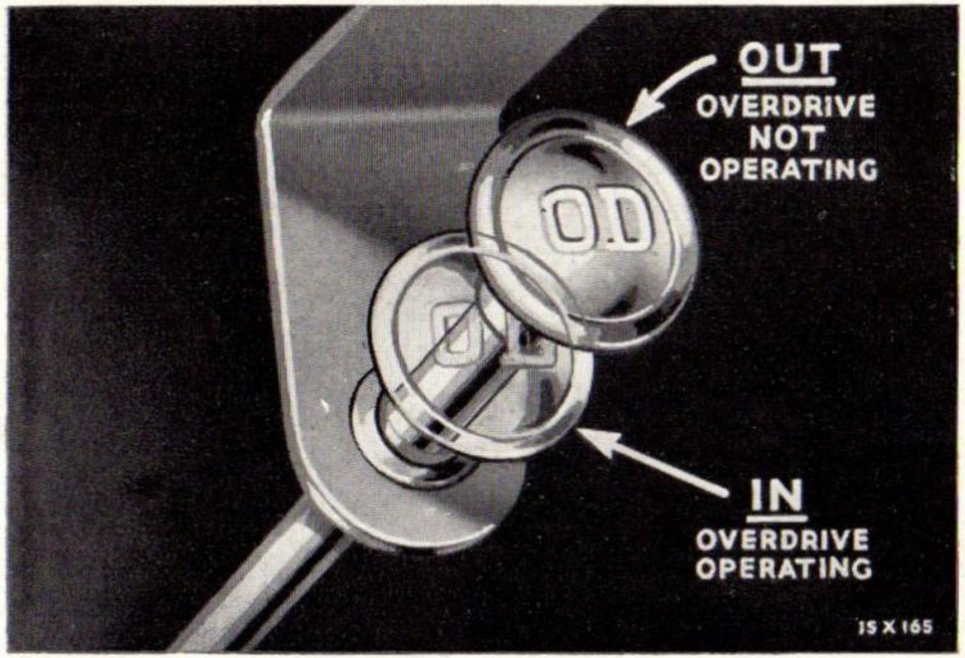
Starting the Car

Press the clutch pedal down to the floor, then move the gear shifting lever to first speed forward (or reverse if required). Next press the accelerator, to speed up the engine a little and at the same time gradually relieve pressure on the clutch pedal. This engages the clutch and starts the car moving and, when the clutch is fully engaged (no foot pressure on the pedal), press the accelerator slowly to pick up a speed (if going forward) of about 10 miles per hour. Then press the clutch pedal to the floor, and release the accelerator at the same time. When the clutch pedal is down to the floor, move the gear shifting lever to the second speed position. Next engage the clutch and press the accelerator until you attain a speed of about 20-25 miles per hour. Then press the clutch pedal and release the accelerator, as before, and pull the gear shifting lever straight back (to the limit of its travel) to the high speed position. Then engage the clutch and press the accelerator. The speed of the car should then be controlled by the accelerator.



Cruise and Climb Transmission (Special Equipment)

The "Cruise and Climb" (overdrive) feature of the transmission permits free wheeling below about 25 miles per hour





and lower engine speed with relation to the car speed above about 25 miles per hour. If you desire to use these features, while driving, the "Cruise and Climb" (overdrive) control button should be pushed "in" to the limit of its travel while the clutch is disengaged. Then, when the car attains a speed of about 25 miles per hour or more, release pressure on the accelerator for a few moments and then press it again. The overdrive gears will then automatically be in operation and you will cruise along with the engine running slower with relation to the car speed. If you wish to accelerate quickly, or for some reason need more power at the wheels such as in climbing a steep hill, the overdrive feature may be automatically disengaged by pressing the accelerator beyond the full open throttle position to the limit of its travel. More power will then be applied at the wheels and the car will climb more easily. Re-engagement for cruising speed may be made by merely releasing and then pressing the accelerator. This automatic disengagement can only be accomplished when the "Cruise and Climb" control button is pushed "in" to the limit of its travel. Automatic disengagement of the overdrive at speeds above 70 M.P.H. only increases the engine speed without any advantageous increase in power at the wheels. *Never move this button from "in" to "out" while the car is in motion.*

If driving in hilly territory, where you use "second speed" as a brake while going downhill, stop the car and pull the overdrive control button "out" to the limit of its travel.

It is possible and sometimes desirable, in an emergency, for extremely quick acceleration to drive in second gear overdrive.

Stopping the Car

You stop your car by pressing on the brake pedal. Do not press very hard because the operation of these genuine hydraulic brakes is so easy and the braking effort so equalized at all four wheels, that quick smooth stops are made with comparatively light pedal pressure.

Before the car comes to a stop press the clutch pedal down and move the gear shifting lever to "neutral." Then release the clutch pedal. If you want to stop the engine turn the ignition switch key to the "off" position (vertical). If you are going to leave the car, be sure to apply the hand brake so the car will not roll or be pushed away.



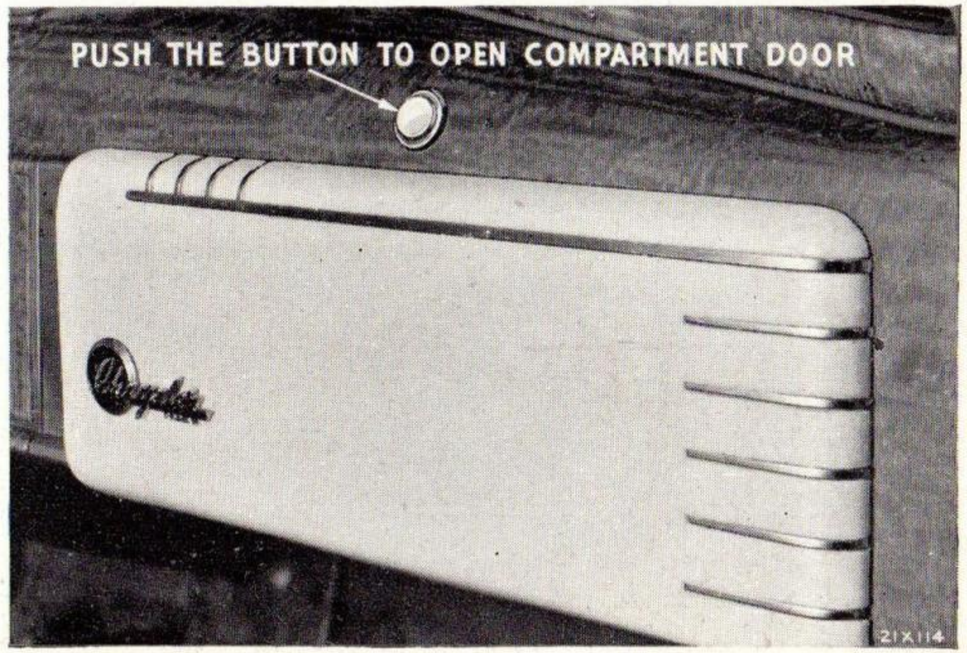
Parking the Car

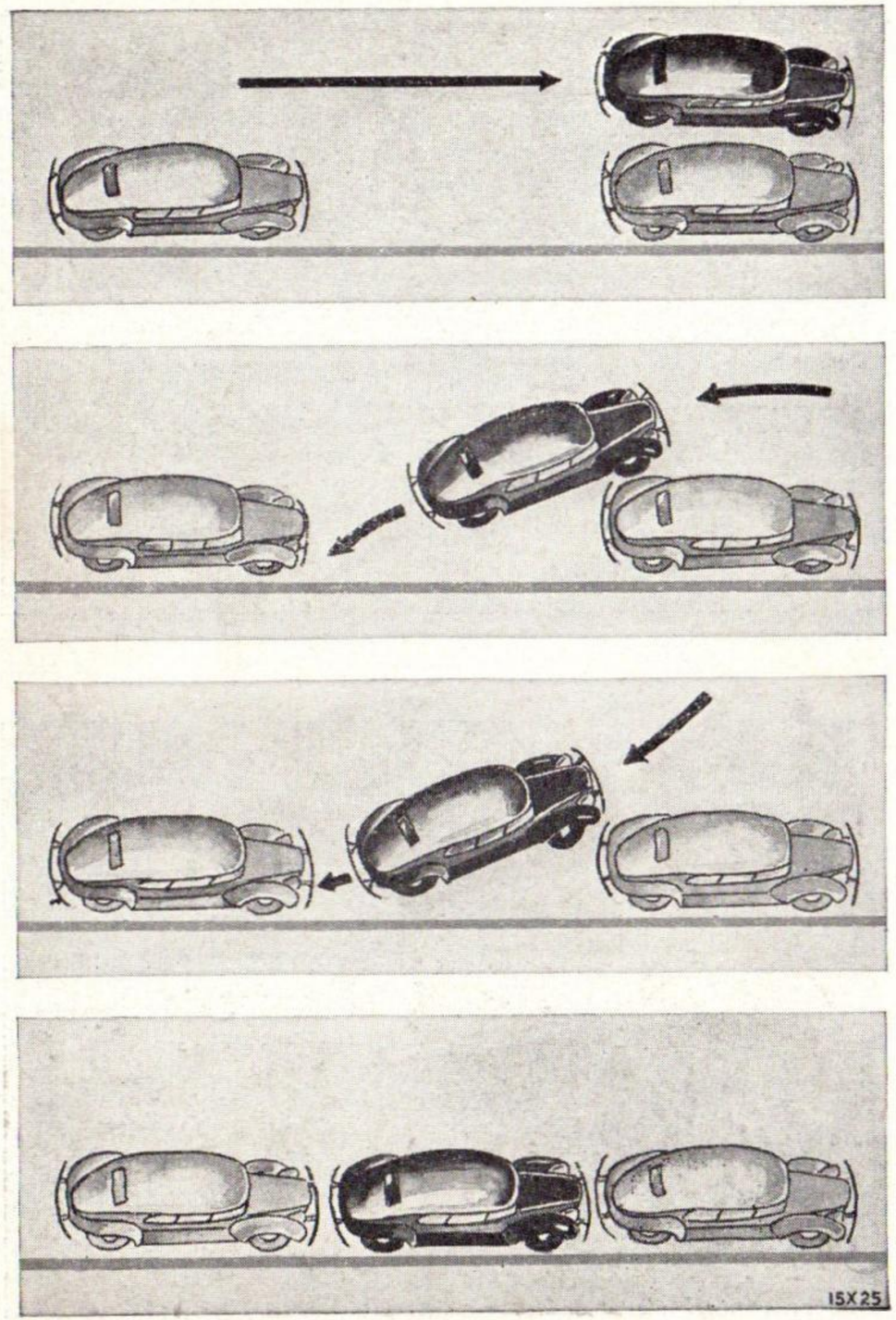
It is very easy to park right if you begin right. The minimum parking space should be about three feet longer than your car.

First—Stop your car beside the car which is in front of the parking space. Allow about one and one-half or two feet of space between your car and the one beside you and have the rear bumpers of both cars just about even.

Second—Turn your steering wheel to the extreme right and at the same time, slowly back your car into the parking space.

Third—When the rear bumper of the car ahead of you is just about even with your front door, turn the steering wheel to the left while you are still backing slowly into place. By the





time your front wheel is even with the bumper on the other car, your car should be backing straight instead of on a curve. Continue backing and turning the wheel to the left, but just as soon as your front bumper passes the bumper on the other car, turn the steering wheel all the way to the left until your rear bumper nearly touches the front bumper of the car behind you. Then stop and move the gear shifting lever to the first speed forward position.

Fourth—Turn the steering wheel to the extreme right and at the same time move your car forward (straighten the wheels as the right front wheel approaches the curb) so that the spaces between the cars ahead and behind are about equal. Leave the wheels straight unless you are on a hill. It is a good safety measure to leave the wheels pointing toward the side of the road if you park on a hill. Be sure to set the hand brake and lock your car when leaving it.

Here's What Happens When—

Starting the Engine

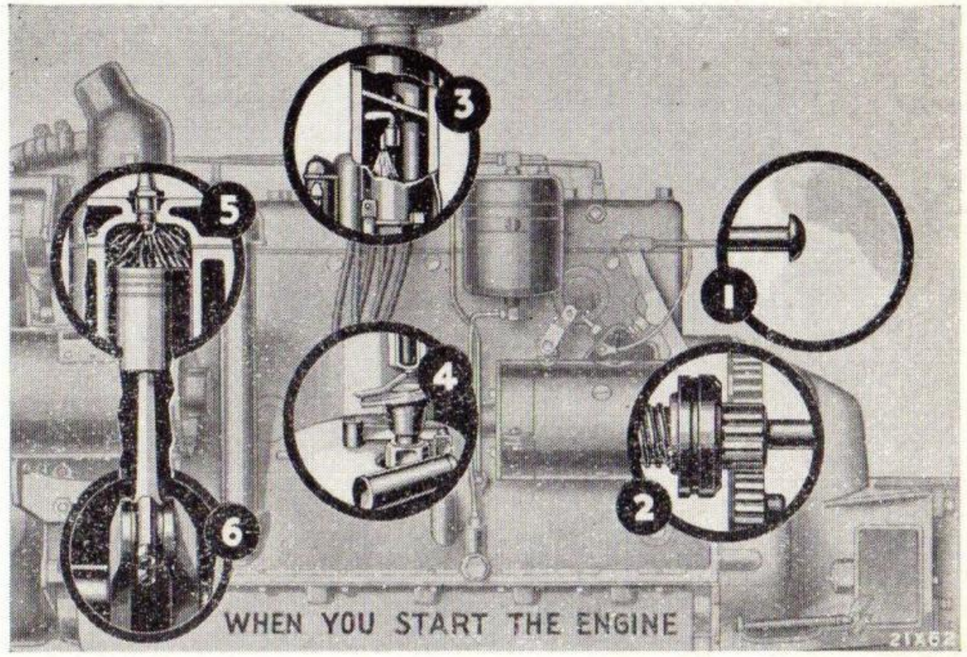
After turning the ignition switch key to the right, pressing the starter motor button (1), causes the starting motor (2) to turn the engine. The carburetor (3) supplies fuel to one of the engine cylinders where it is compressed, by the piston, into a highly explosive gas, then the distributor (4) directs high tension electricity to that cylinder; the electricity ignites the gas (5). The force of the explosion pushes the piston and connecting rod downward which, in turn rotates the crankshaft (6) thereby supplying power to drive the car.

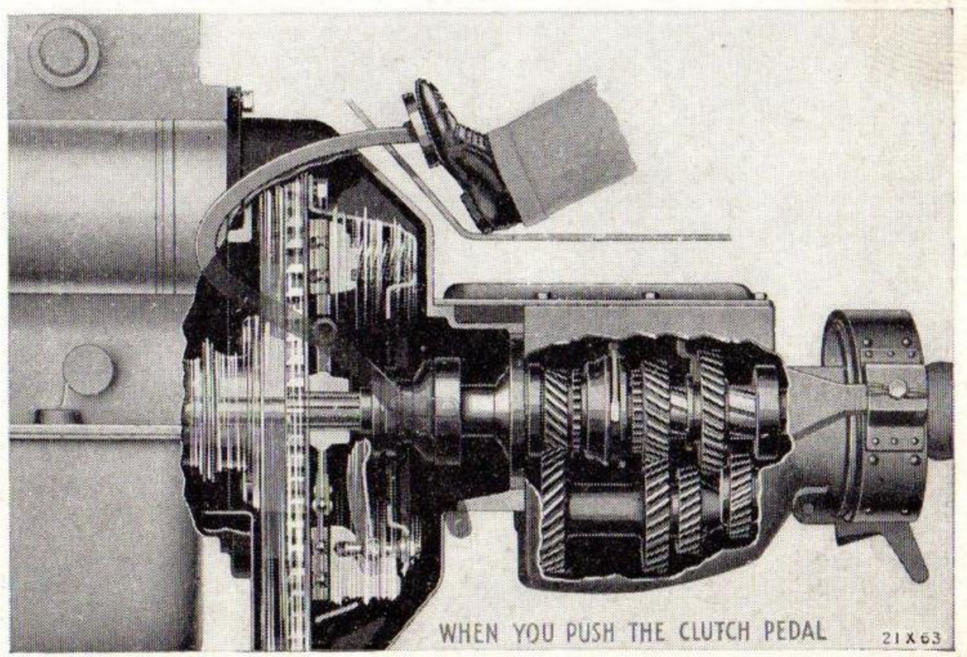
Pressing the Clutch Pedal

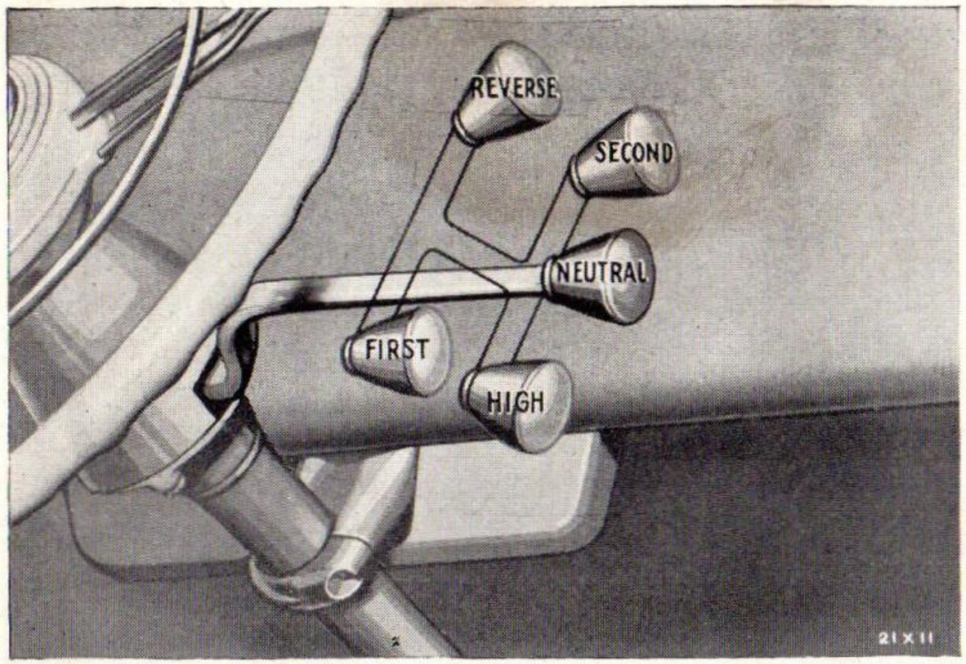
The clutch is a device which connects or disconnects the power from the engine to the transmission, rear axle and wheels. Pressing the clutch pedal down to the floor disconnects the power from the engine and transmission so that the engine will run without turning the transmission gears. When the engine is running and you relieve pressure on this pedal, the clutch engages and friction, caused by clutch engagement, turns the transmission gears.

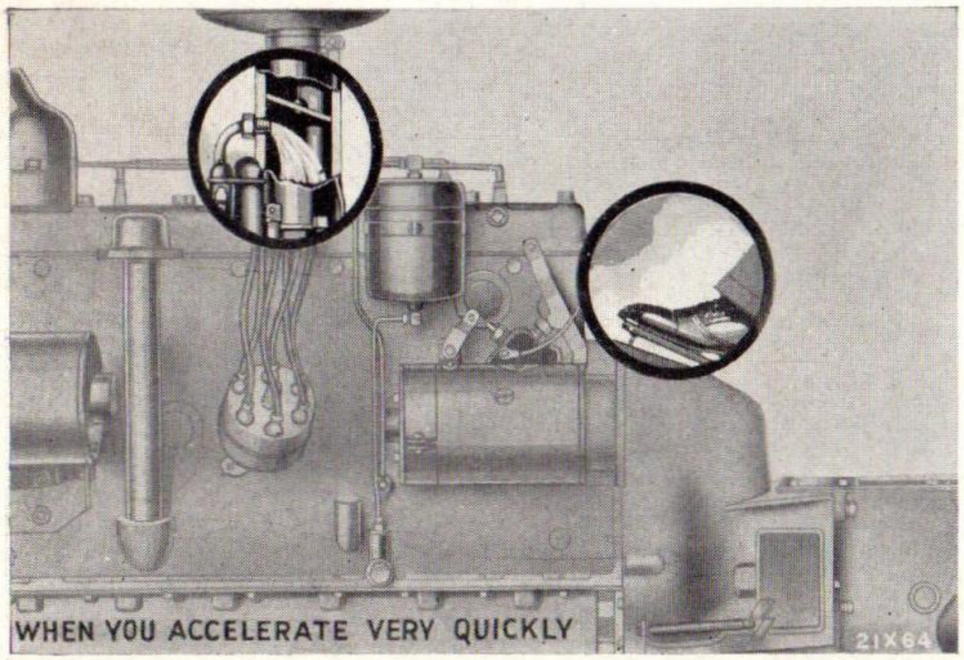
Shifting the Gears

Even though the clutch pedal requires light pressure to keep it down to the floor board, it is desirable to be able to have the engine running while the clutch is engaged, but still not move the car. It is also necessary to be able to run the car forward or backward and to graduate the power at the wheels in addition to accelerating the engine. All of this is accomplished by moving different gears, in the transmission, into different positions. The gear shifting lever, when in the neutral position has moved all gears to the disengaged position so the engine will run with the clutch engaged without moving the car. When you raise the gear shifting lever and then move it forward, you slide a gear along a shaft until its teeth fit together with teeth of another gear. If the engine is running, be sure to always disengage the clutch (press the pedal to the floor) *before* moving the shifting lever from the neutral position, so as to avoid clashing the gears. Clashing gears makes a disagreeable deep toned grating sound and is harmful to the gear teeth if done with force.









When running in first speed position, you can apply maximum power to the wheels, but the engine runs quite fast with relation to the speed of the car. When in second speed, the power at the wheels is a little less, but you have more car speed. When in high speed position the power is less than when in second speed, but the car speed is still greater with relation to the engine speed.

Pressing the Accelerator

When you press the accelerator you open a valve (in the carburetor) which permits more fuel gas to enter the engine. The further you press the accelerator, the more fuel gas enters until the throttle is wide open. The carburetor is a device for mixing air and fuel into an explosive mixture and the mixture must have just the right proportion of air and fuel for different engine speed and power requirements. To accelerate very quickly the natural tendency is to press the accelerator pedal quickly. Such acceleration requires a rich mixture of air and fuel. Connected with the accelerator linkage is a piston inside a cylinder on the carburetor and, due to an ingenious valve design, this piston pumps a predetermined amount of fuel into the intake manifold when the accelerator pedal is pressed quickly. Pressing this pedal slowly does not pump as much additional fuel, because it is not required for slower acceleration.

Applying the Brakes

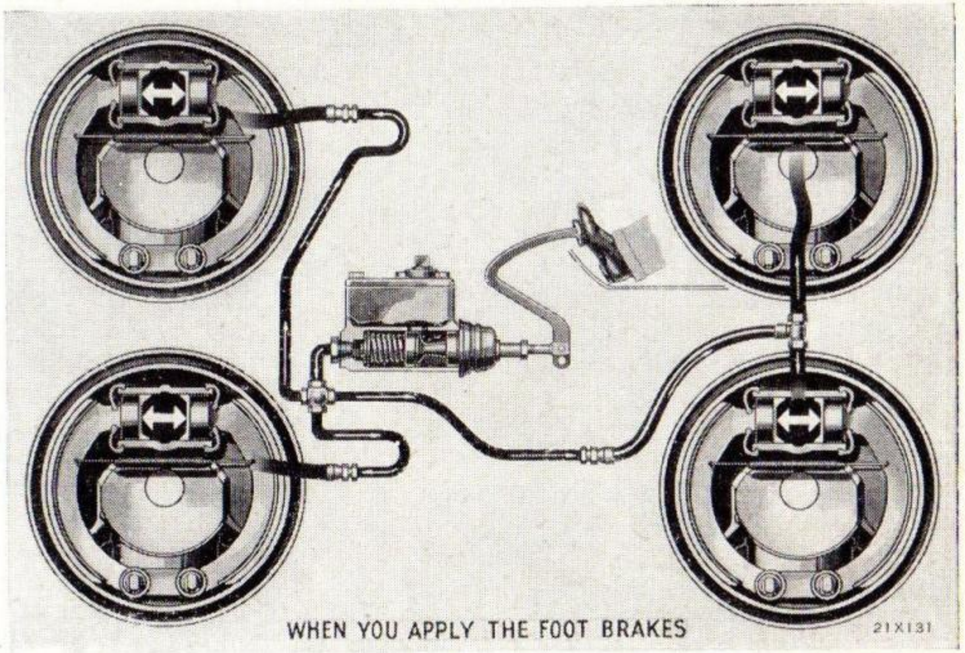
Connected to the brake pedal is a piston which operates within a cylinder known as the master brake cylinder. When you press the brake pedal the master cylinder piston, in turn, pushes liquid through tubes which lead to cylinders at each of

the four wheels. The liquid is forced, by the pedal pressure, between the inner ends of two pistons in each of the four (wheel) cylinders. The force of the liquid moves these pistons in opposite directions. The pistons, in turn, push against the upper ends of all brake shoes which in turn press against the brake drums. The brake shoes are anchored to the axles so they will not rotate, but the brake drums do rotate with the wheels. The friction caused by the brake drums rubbing on the shoes causes the car to stop.

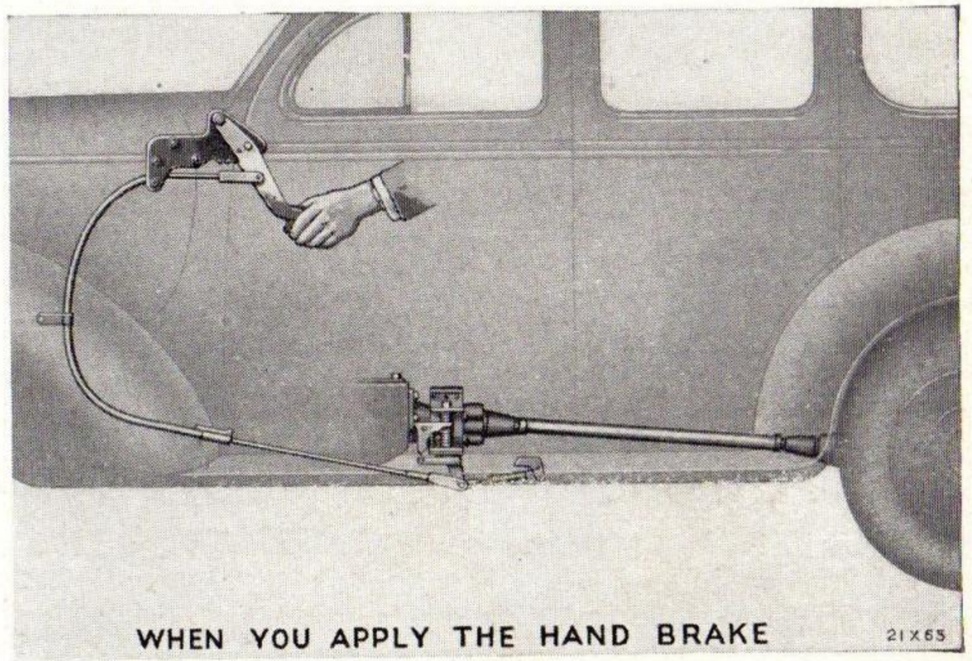
You will notice that the car stops without swerving to the right or left when the pedal is pressed. This is because of the equal pressure applied by all of the brake shoes and is made possible by the hydraulic principle of operation employed in your Chrysler Royal. The engineers who designed your Chrysler Royal have developed these brakes over a period of many years experience in building, testing and refining hydraulic brakes. That is why your genuine hydraulic brakes, developed by pioneers in this type of brake, give you unexcelled performance.

New brakes, like other moving surfaces, require "breaking in" as is common with new engines. Brakes on a new car or after relining brake shoes or replacing brake drums should be applied only at moderate car speeds and with light pressure, whenever possible, increasing speeds and pressure as surfaces become worn in. Failure to observe this precaution may result in scored brake drums and thereafter rapid wear of linings.

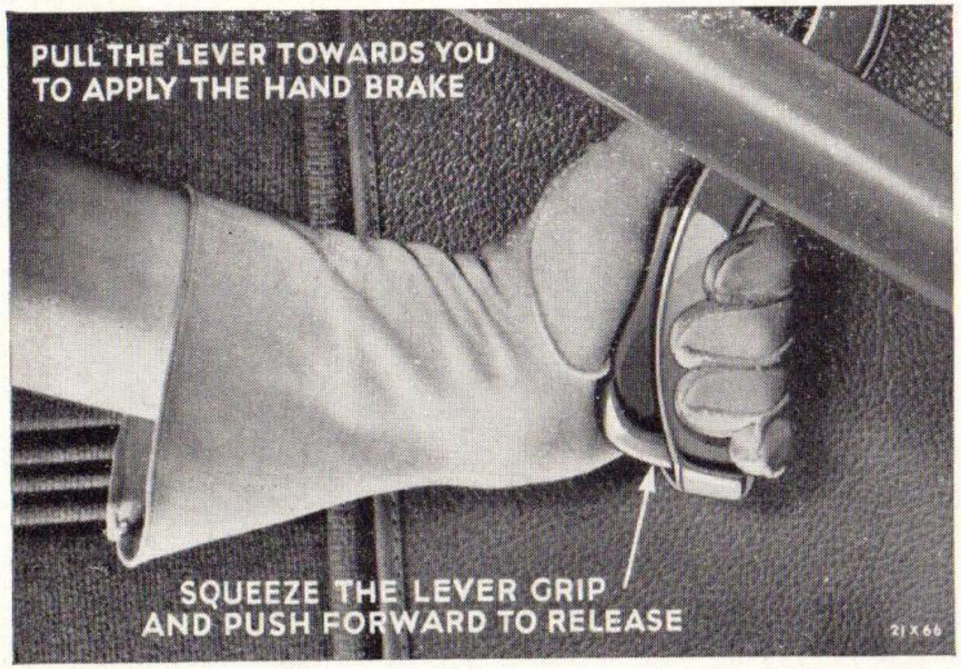
The hand brake is used principally for holding your car while parked. When you pull the lever back toward you, a band is contracted around a drum on the transmission mainshaft. It applies equal braking effort to both rear wheels.



WHEN YOU APPLY THE FOOT BRAKES 21X131



WHEN YOU APPLY THE HAND BRAKE 21X65





The Comfort of Your Chrysler Royal

The Chrysler designing engineers are constantly developing improvements in the qualities of their cars which make for more comfortable and enjoyable motoring. You are assured that in your Chrysler Royal you have the very latest developments in cushion design, steering wheel position, accessibility of controls, shock absorbers, ventilation and many other details which are unnoticed by most of us, but studied and developed scientifically by the engineers.

The width of the seats and the height of the backs add to your comfort. Even the location of the front seat is adjustable. Simply raise the locking lever and move the seat forward or backward, while sitting in it. A slight hunching forward movement of your body or lightly pushing backward puts the seat where you want it. Then, when you release the locking lever, the seat is locked in position.

Scientific Ventilation

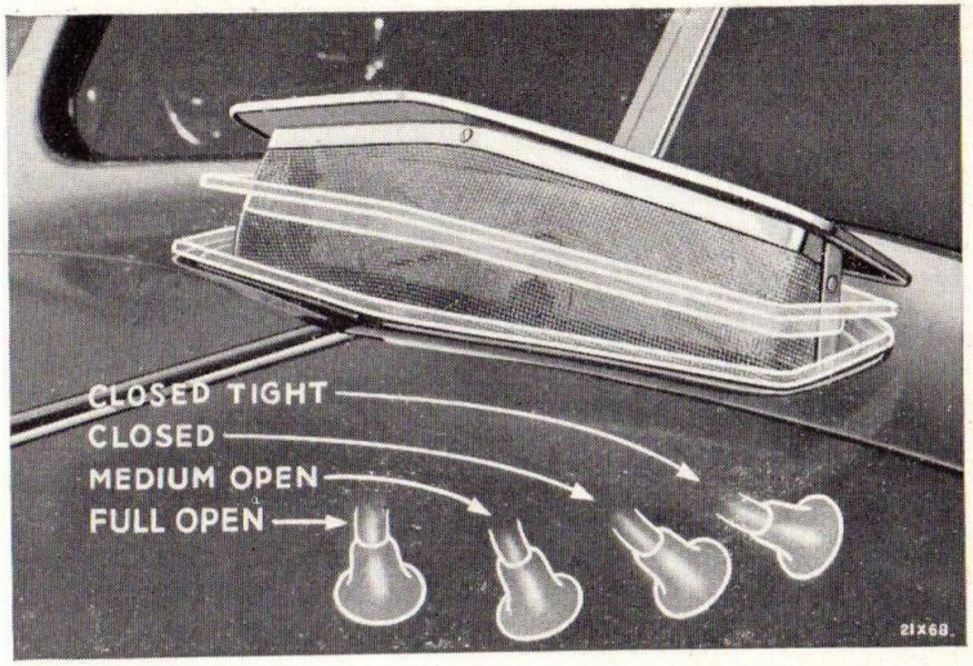
Further contributions to your comfort are the modern scientifically developed ventilation features of your Chrysler Royal. A screened wind scoop is in the cowl. The wind scoop or cowl ventilator has a rain trap which allows it to be opened during rain or snow storms so that fresh air will enter the car after the water has been separated and drained off. The rain trap is designed for use with heaters also, since the use of fresh air in the car heater (if so equipped) reduces the relative humidity and partially eliminates steaming of the windows. The glass in the front door is divided, the forward section swings;

the rear side windows swing; the door windows raise and lower. Figuratively—the body opens for ventilation.

Air currents may be directed so as to avoid drafts or the wind may be scooped into the car depending entirely upon weather conditions or the wishes of each person riding with you.

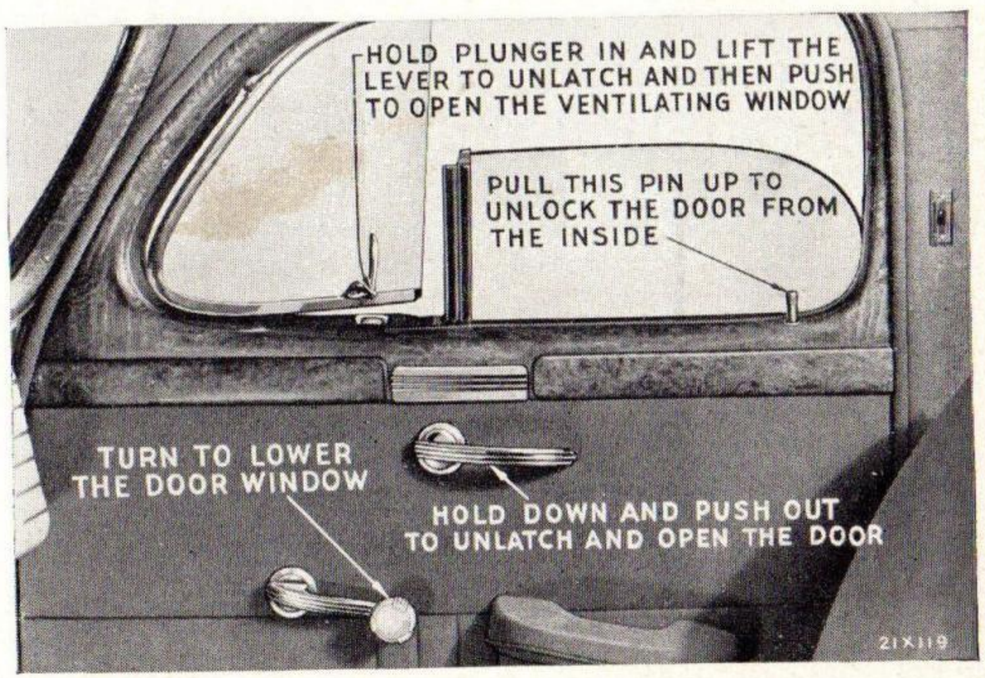
The ventilator in the cowl is opened by pressing downward on its control lever located under the instrument panel. The lever stops in medium and full open positions but, when closed, the lever should be pulled up to its stop so as to squeeze the cover tightly against its seat. The screen on the ventilator scoop prevents insects entering the body at that point. The swinging ventilator windows, when opened a few inches, will deflect insects and, with the cowl ventilator open, make possible a rapid circulation of fresh air in the body. Full strength breeze can be directed inside the body by swinging the ventilator windows more than half open, but this is not good practice if there are insects in the air.

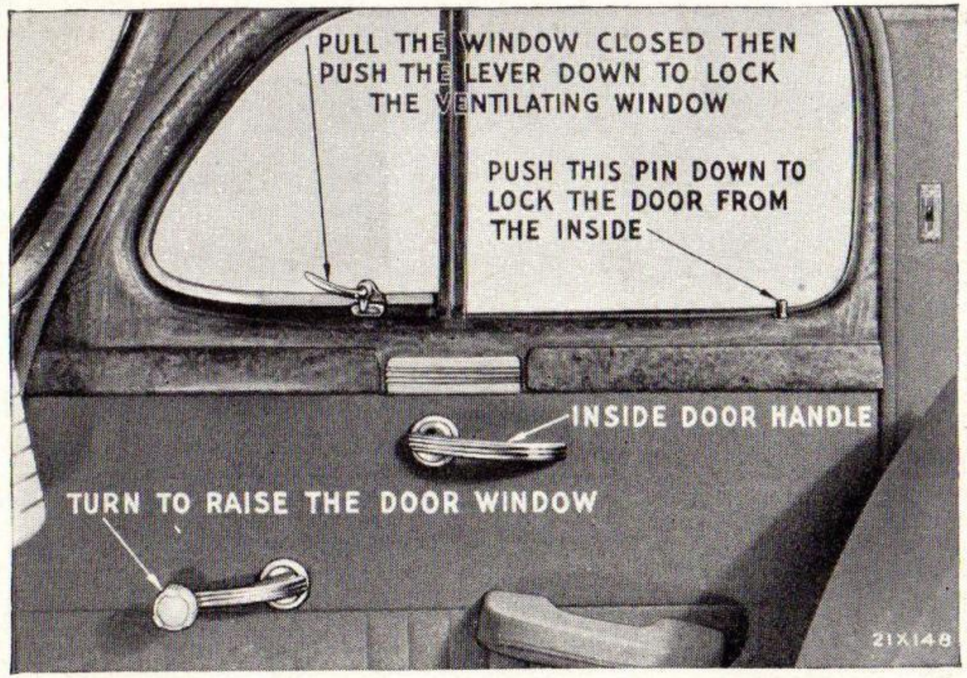
When driving against a strong wind or at a high speed, wind noises may be controlled by adjustment of the ventilating windows. The ventilators are tightly closed by downward pressure on the locking lever. The lever locks in a horizontal position with the end of the lever pointing forward. It is released by pressing on the little plunger in the pivot end of the lever and then lifting the lever.

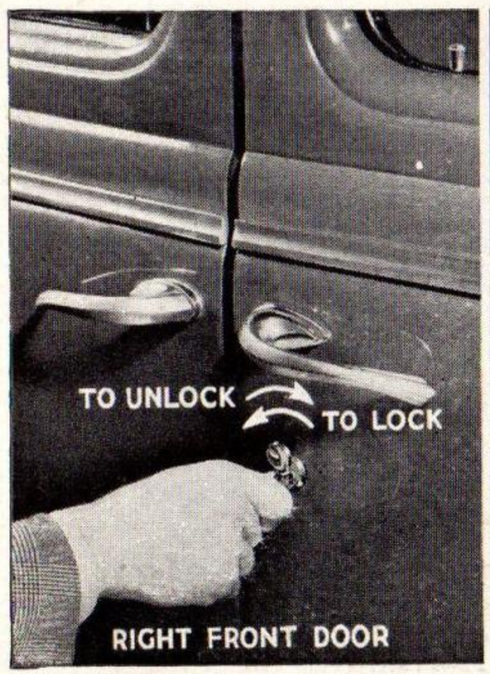


Locking Your Chrysler Royal

Each door in your car has a lock. The right front door is locked from the outside with the ignition switch key. The other doors can be locked only from the *inside*. This is done by pressing down the buttons at the window mouldings on the inside of









the doors *after the doors have been latched shut.* Raising the lock button, in each door unlocks its respective latch. The right front door may also be locked from the inside in the same manner. This method of locking the doors makes it impossible to lock your car and leave the keys inside. Be sure the windows are fully closed and that the ventilators are latched so they cannot be pushed open from the outside.

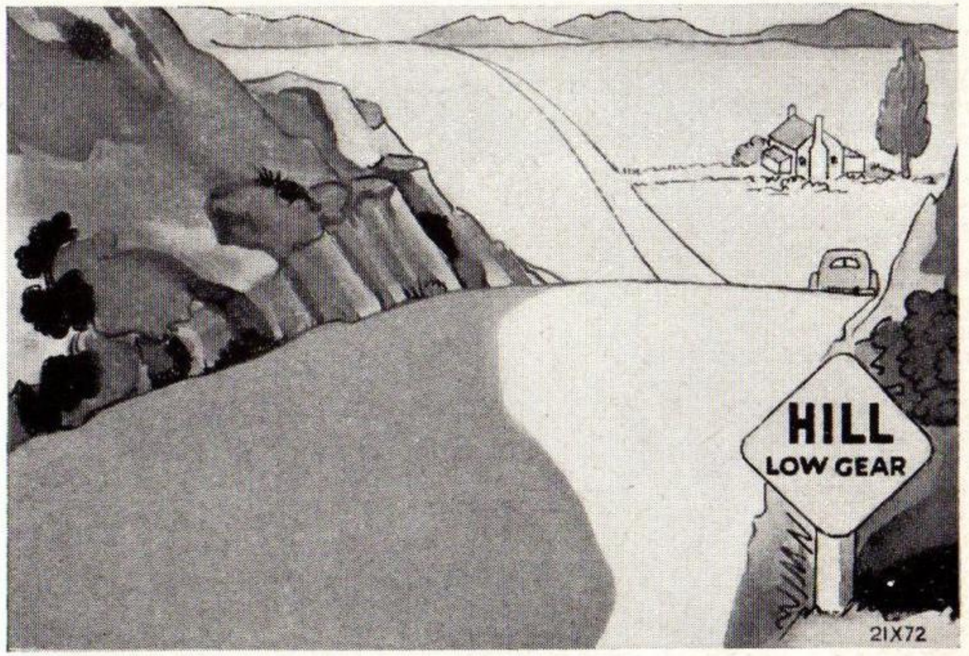
A different key is used for the trunk or deck lid so that if you want to park your car in a public place where it may require moving, you may leave the ignition key and lock any valuables in the trunk. Then the car is not locked, but the trunk is locked.

Even though you are supplied with two pairs of keys, it is advisable to remove the metal tag on which your key numbers are stamped and mark down the key numbers so that if they are lost you will be able to order new keys readily. The key or lock number is stamped only on the little tags attached to the rings on each pair of keys. This is another precaution taken for theft protection which makes it impossible for the thief to copy your key numbers and make duplicates. Many dealers record the key numbers for the cars and it might be well to see if your dealer has this record.

The Road Ahead

Being a good driver is easy. It just requires a little common sense, a little forethought, and a reasonable amount of judgment. Your new Chrysler Royal glides along the road with such ease and quietness that it is easy for anyone to misjudge the

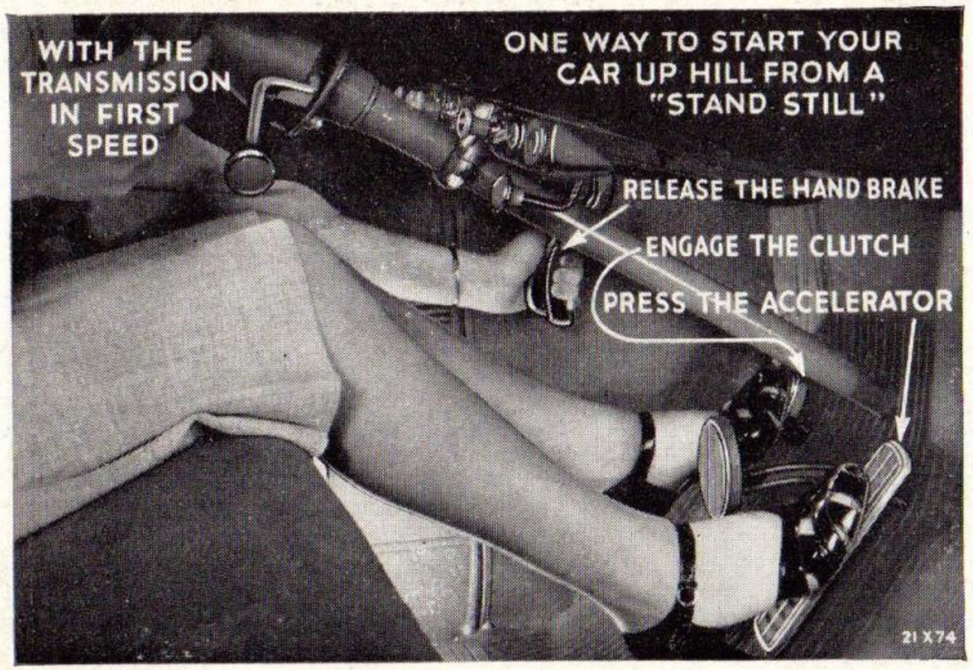
speed. It is very easy when "rolling off the miles" on a level country road to keep going faster and faster without realizing the speed you are traveling when you approach a cross-road, a bridge, or a turn. You may have to stop in a short distance, so watch your speedometer and do not travel at too fast a pace. *Be sure you can stop* in the distance you can see around the turn. *Be sure you can stop* in the distance you can see around the corners at the intersection. *Be sure you can drive* onto the bridge at the legal rate of speed or maybe stop. Some bridges are only wide enough for one way traffic. *Be sure—be safe—* it pays.

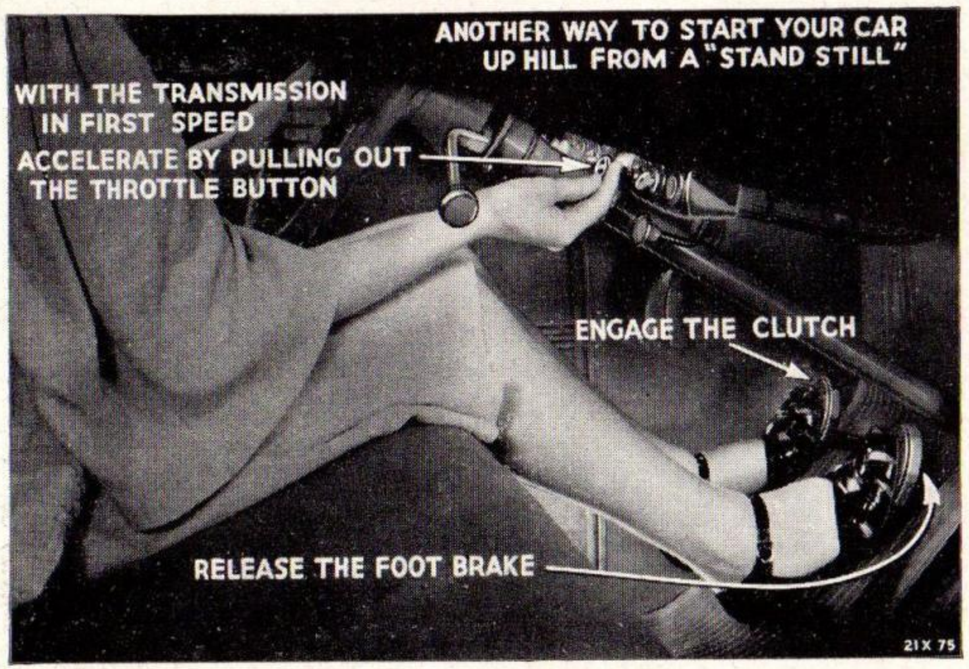


Downhill

When driving in hilly country your natural tendency is to drive slower, at times than when on a straight level road, but that is not all. When going down a steep grade, move the gear shifting lever into the second speed position (press the clutch pedal down first). This causes the car to drive the engine instead of the engine driving the car and will reduce the amount of brake application. Pull out the overdrive hand control button (if your car is so equipped) only while the car is standing still. You may find it necessary to shift the gears to first speed in order to have the engine hold your speed low enough for safety. This, of course, is only necessary on very steep and long down grades. Continuous or long time application of the brakes is not good practice, because it causes excessive wear of the brake linings. A better way to use the brakes on long down grades is by alternately applying and releasing the brakes. It may be







necessary to apply the brakes more severely than under ordinary conditions, but it gives the brakes a chance to cool a little.

Uphill

When driving up grade some drivers have an inclination to try and reach the top without shifting gears from high into second. Of course it is not necessary to do this unless the grade is so steep that the engine will not drive the car more than about 20 or 25 miles per hour. Shifting into second from high with such heavy pulling is more economical on fuel and it also saves a lot of unnecessary strain on the driving mechanism of the car.

Starting on a Hill

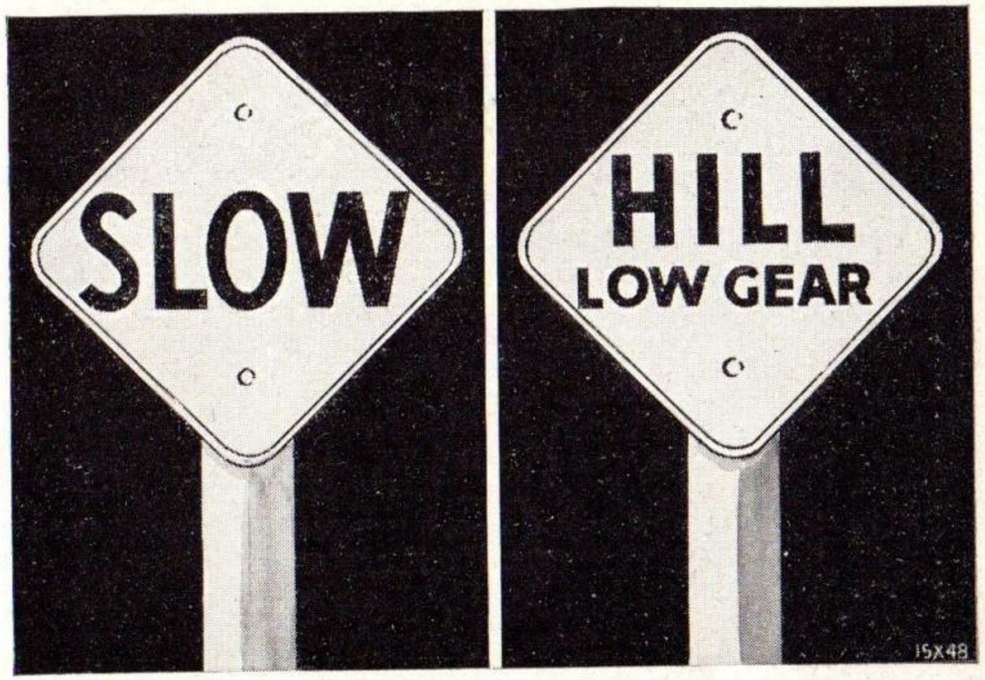
Starting your car up hill from a "stand still" requires just a little more thought than starting on a level road. The brakes should be released at the same time the clutch is being engaged and the accelerator pressed. The easy way to do this is to use the hand brake for holding the car from backing down hill, then it is easy to release the clutch, press the accelerator and release the hand brake all at the same time. Of course, be sure to have the gear shifting lever in the first speed position before attempting to start. Do not release the brake until you notice that the engine is starting to drive the car or to "labor" a little, because there may be another car close behind you and, if your car rolls back it may bump the other car.

Another way to start on a hill is to hold the car, from backing, by the foot brake and speed up the engine a little by pulling the hand control of the throttle instead of using the accelerator.

Then, slowly relieve pressure on the clutch pedal. When the engine starts to "labor" slip your foot off the brake pedal and press the accelerator. Either method of starting on a hill is practical, try both.

Road Signs

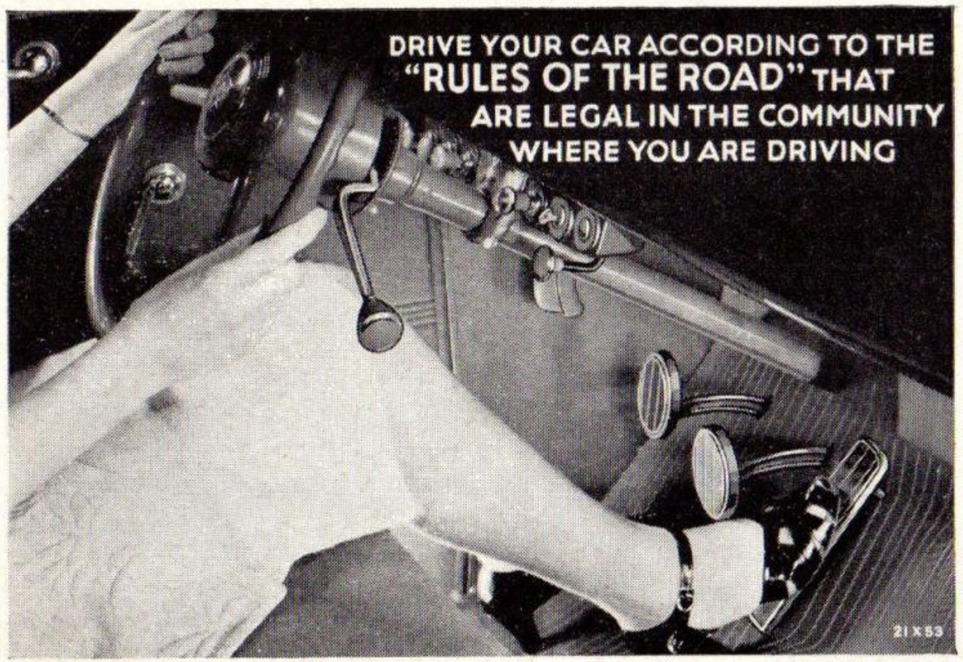
All along the highways in the country and in large cities as well as in small villages you will see "Road Signs" for the guidance of motorists. Be on the alert all the time and be guided by their messages. If a sign indicates "slow"—go slow, if a sign says—"Use Second Gear"—use it. Such signs are placed on the highway by men who have made a study of the conditions and know what should be done. The signs are for your protection as well as others and their messages should be heeded. Watch for traffic and road signs at all intersections.

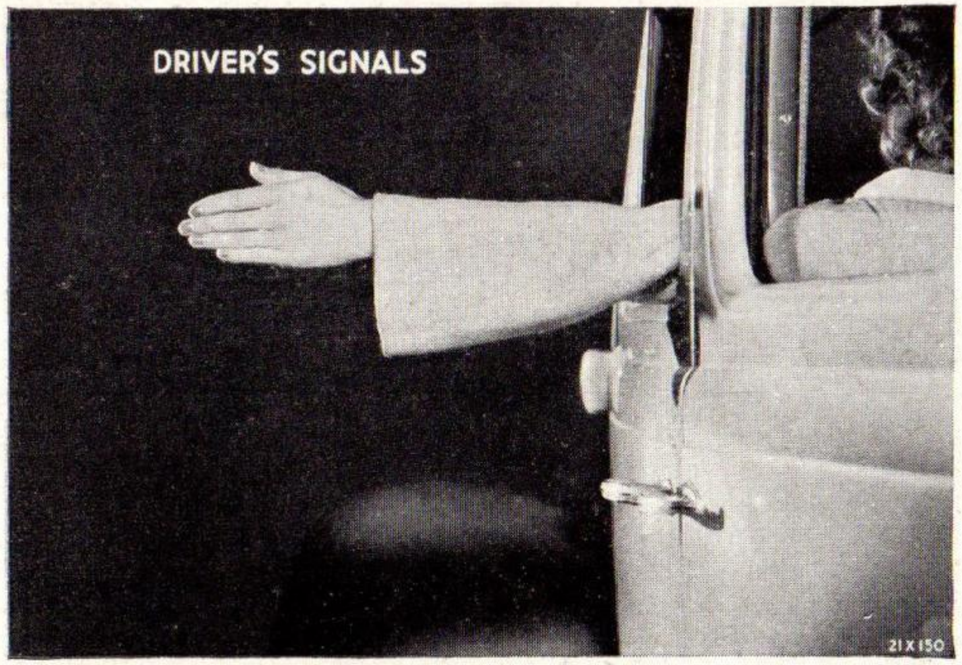


Stop and Go Lights

Different cities have different locations for "Stop and Go" traffic lights so be alert at all times and see these signals. In all cases a red light means "Stop" and green means "Go." Some cities have an amber or yellow light to indicate that the signal is going to change. Do not try to beat the signal—you and the "other fellow" may have the same idea and arrive at the same place at the same time. Approach traffic lights slowly so you can stop if the light changes to "Stop."







Driver's Signals

The stop light on your car is turned on when you apply your foot brakes, thereby signalling those approaching from behind that you are stopping or at least checking your speed. Usually you know, before you apply the brakes, that you are going to stop. Give the driver behind you the hand signal showing him that you are going to stop, so he has some time to slow down or turn and pass you before you apply your brakes. If you are going to turn to the right or left be sure to give the proper signal—it is easy and safe.

The illustration shows a hand signal which is generally understood by all drivers, but by all means follow the instructions in this regard which are legal in the community where you are driving.

The In-Built Safety of Your Chrysler Royal

In your new Chrysler Royal, you and your family or friends ride completely surrounded by a safety steel body—steel floor, steel pillars, and steel panels. They are all reinforced by more safety steel. Nothing but steel is used in the body except, of course the upholstery, sound insulation and windows. Even the windows are of safety glass.

Your Chrysler Royal also has genuine hydraulic brakes—the safest, surest braking system ever devised. The brakes are

always equalized, always dependable and you always have safer control. The hand brake is entirely independent of the foot-brakes—added brake safety.

The foot controls are covered with rubber pads—clutch and brake pedals, and even the accelerator. The rubber prevents your feet slipping.

The headlights are built for safety, too. The powerful beam of light, which penetrates far down the road, may be deflected downward and to the right so as to give even brighter illumination at the curb or ditch next to you and avoid the dazzling glare in the eyes of approaching motorists. This is for the safety of both you and the other fellow. He can better see where he is going and so can you. The direction of the beam of light is controlled by a foot operated switch. Merely press the switch with your foot to change from high or low light beam. The low beam should always be used when meeting and passing an approaching car.

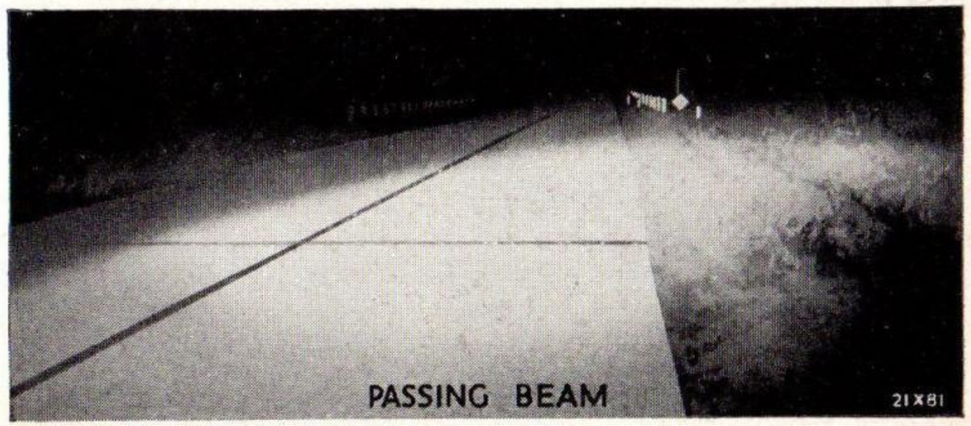


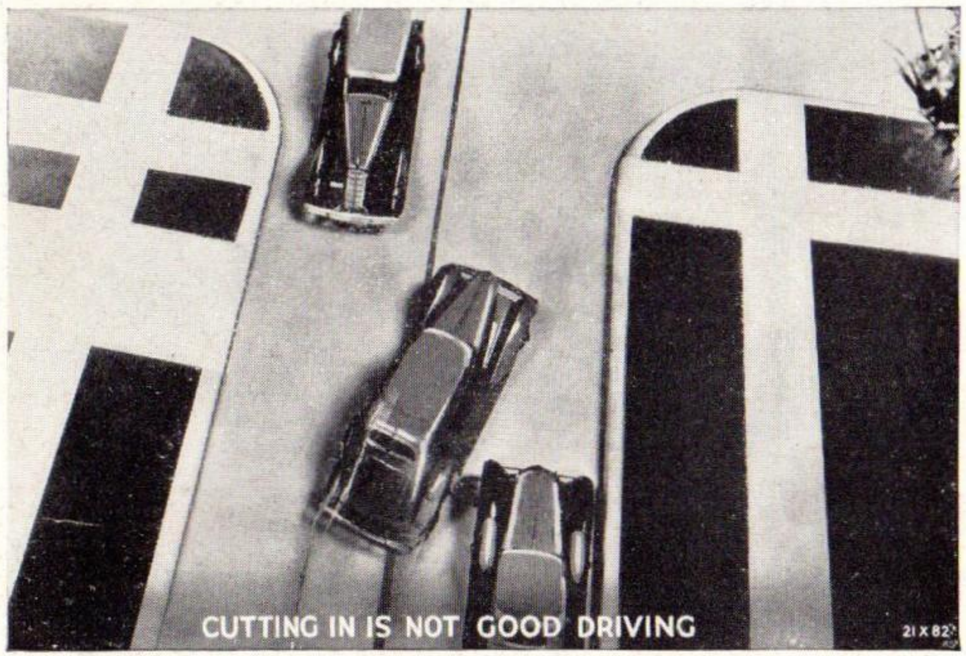


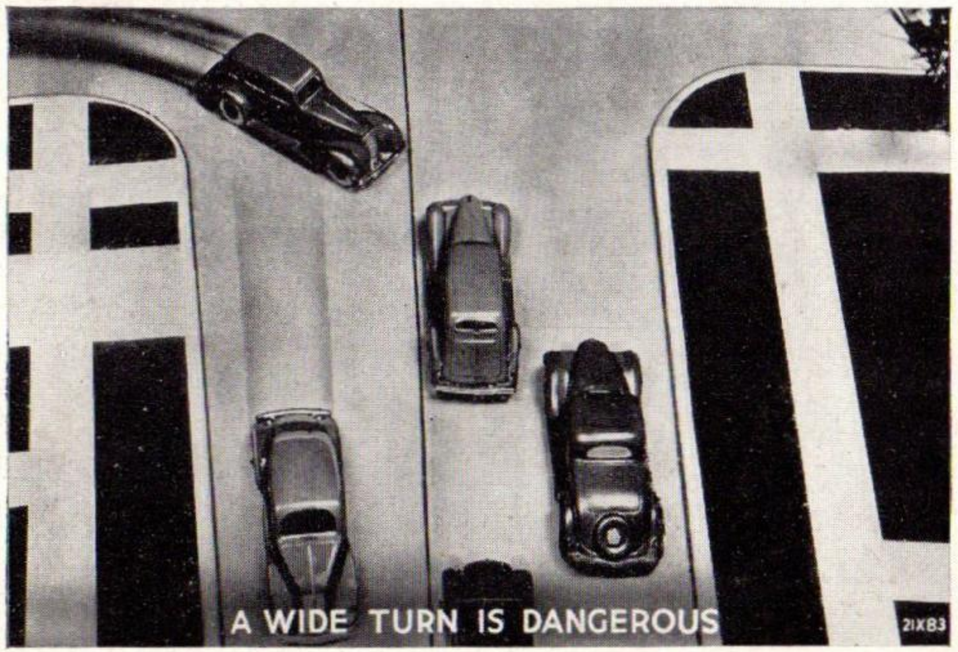
Safety on the Highway

Good driving is only one of the essentials for safety on the highway. Safety is built into your car at the factory by use of Genuine Hydraulic Brakes, Safety Steel Body, Safety Glass, Safety Steering Control, Clear Driving Vision, Headlamp Beam Control, and many other features, but through use on the road, service attention is essential for assurance of maximum safety.

Brakes—May need adjustment or relining.







Steering—May need adjustment, lubrication, wheel alignment, or wheel balance.

Lights—Aim of headlights may need adjustment; replacement of bulbs in head, tail or stop lights, or a lens may be necessary.

Windshield Wiper—Replace blade if not wiping clean, check operation of wiper motor.

Tires

Check tire pressures, remove small pieces of glass, stones or nails which may work into the casings and cause a puncture or blowout.

All of these points should be given a periodical check-up by your Chrysler dealer so that you know your car is safe for the highway.

Changing Wheels and Tires

Even though changing wheels or tires is an unpleasant job, sometimes it is necessary under congested conditions of traffic and sometimes unpleasant weather conditions. Nevertheless this must be done and the engineers, in designing the car have done an outstanding job of making it comparatively easy. Here is all you do—

1. Securely apply and lock the hand brake and, as an added precaution, place blocks in front and behind the wheel on the side of the car opposite the tire to be changed.

2. Place jack under the bumper bracket (not the long cross-bar) as close to the frame of the car as possible.

3. Jack up the car high enough so you can install the fully inflated tire.

4. Remove the hub cap by prying it off with a screwdriver.

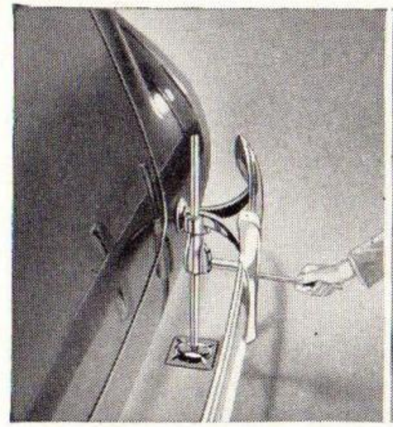
5. Remove the bolts, which hold the wheel to the hub, with the socket wrench supplied with the tool kit.

6. Lift off wheel by pulling the bottom out first.

When installing a wheel, tighten the hub bolts while the wheel is clear of the ground, then remove the jack and check each bolt again, with the socket wrench to make sure they are all tight.

7. Install hub cap by a sharp blow from the fist.

Many car owners reverse the direction of front tire rotation, for maximum front tire life, even wear and quietness, by interchanging the front wheel assemblies including tires, tubes and wheels (not hubs) from right to left and left to right every 2,000 to 3,000 miles. This has always been good practice and is recommended.



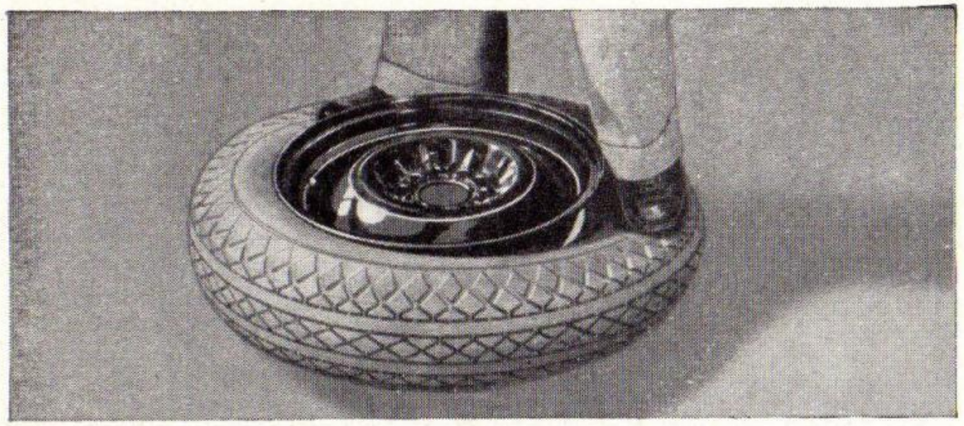






Changing a Tire

1. Make sure all air is removed from the inner tube. Loosen the casing from the rim if necessary, by stepping on the sides as shown in the illustration.







2. Insert the tire tool between the bead of the tire and the wheel rim. The beads of both sides of the tire opposite where you insert the tire tool should be squeezed together and worked into the channel between the sides of the wheel. This makes it very easy to lift one side of the casing off the wheel. Then lift the other side off the wheel.

3. When installing a tire on the wheel have the inner tube inflated with just enough air to barely shape it. Place the tire and tube on the ground and insert the wheel into the tire as shown in the illustration. When the wheel is about half way into the tire it may be more convenient to turn the wheel and tire over and work the tire onto the wheel. Be careful not to pinch the inner tube between the casing or rim with the tire tool.

4. Inflate to exactly the correct pressure, see page 62.

The front and rear tires have differently styled treads. Spare tires usually have the same style tread as used on the rear wheels and if it is necessary to use such a spare tire on the front it is recommended that it be changed as soon as convenient.

Economical Driving

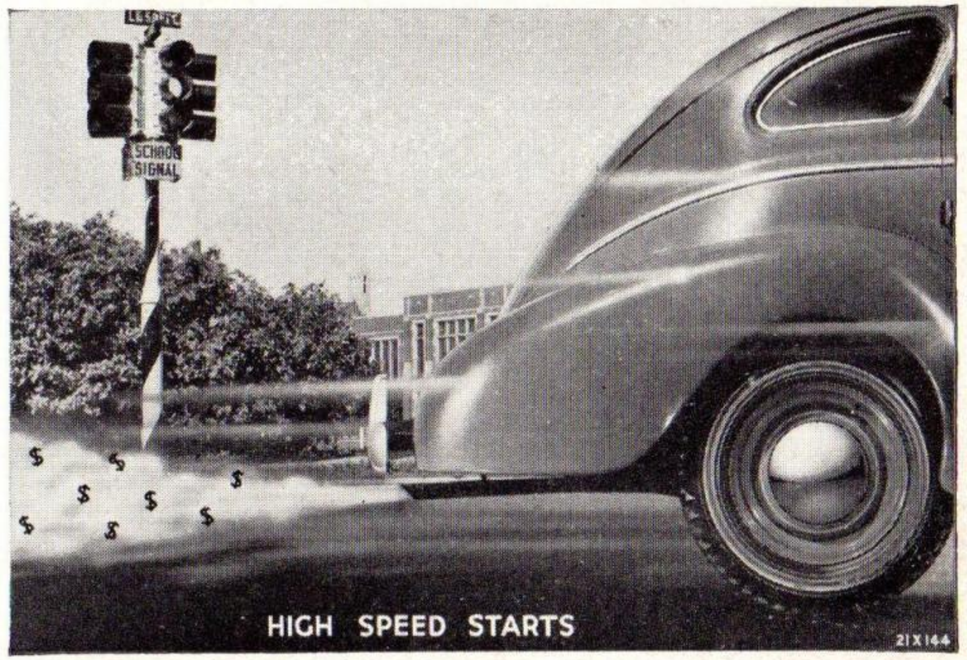
We are constantly receiving interesting reports of unusual economy experienced by owners of other Chrysler cars of the same model as yours. Our engineers have accomplished their aim in developing details of design which have made this car outstanding in economy and performance. It is easy for you to

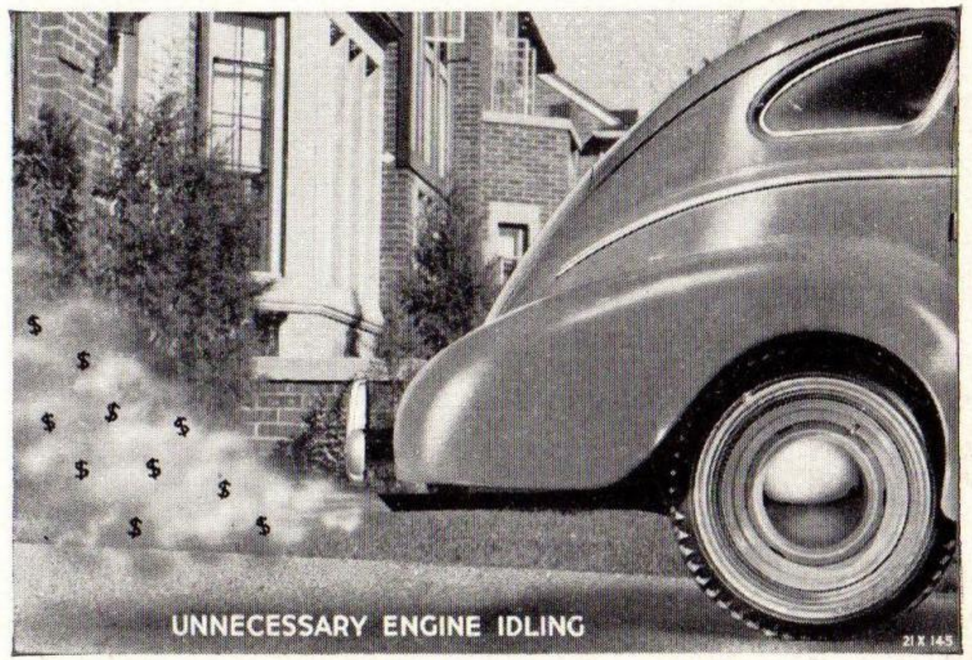
get the most miles per gallon of fuel from your car by following a few simple rules of good driving.

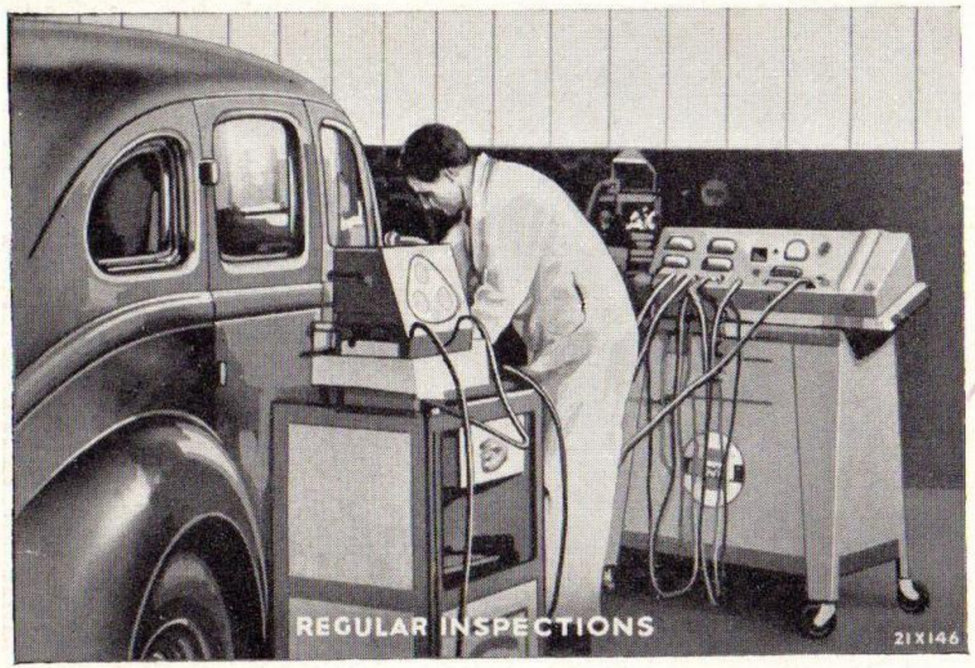
When accelerating, do it slowly. Hold a moderate speed as steadily as possible. Frequent accelerations and high speed starts, such as one feels inclined to do at traffic lights, cause excessive fuel consumption. High speed in low gear, then high speed in second for quite a distance and then snapping the accelerator down to make a fast pick-up in high gear certainly require an excessive amount of fuel. It takes lots of power to make those quick "get-aways" and in order to generate maximum power you must use more fuel. More speed requires more power and more power requires more fuel.

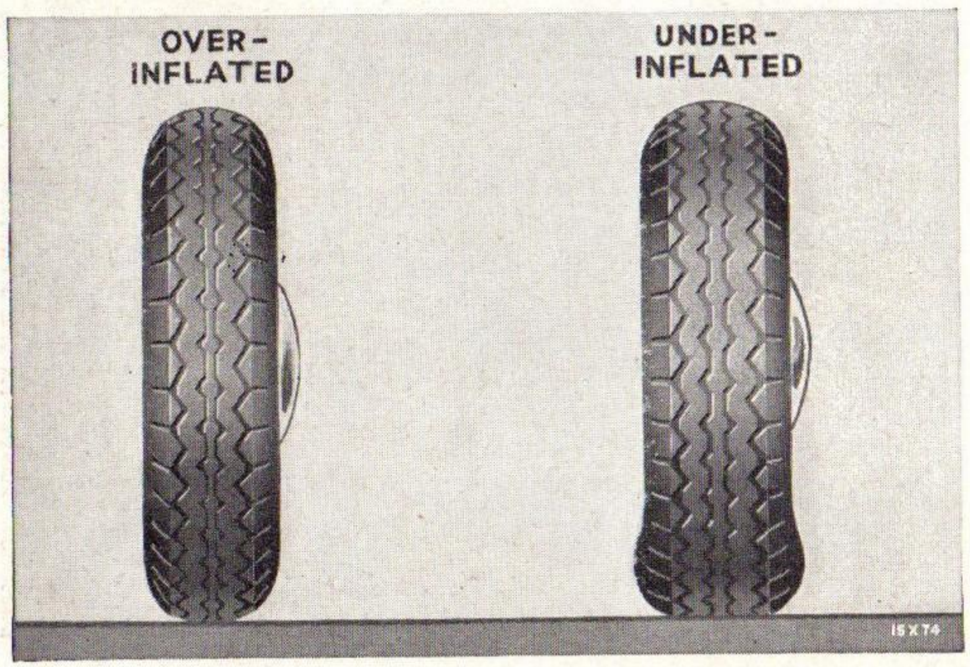
Letting the engine run for long periods as when waiting for a traffic blockade to clear, a long slow train to pass, or someone to come from the store, house or office, wastes lots of gas. Maybe not so much just once, but add all of these stops together for the month and it is quite a noticeable item. We mention this point because it is very easy for anyone to overlook it.

Regular inspection of your car, by your Chrysler dealer, will reveal any mechancial adjustments which should be made to keep the engine performing at its maximum efficiency. Many dealers have fuel mileage testers which will show you just the rate of fuel consumption in your car under various driving conditions. It will even show you the effect on fuel consumption caused by a strong head wind, high speed, slow speed, rapid and slow acceleration. These fuel mileage testers are made along the same principles of design as those used by the engineers when testing engines in the laboratory and on the road. We suggest that you call at your Chrysler dealer's for a fuel mile-









age test. Even though you may be an experienced driver, it may help you in further improving your driving economy.

Proper tire inflation helps to improve fuel mileage. When the tires are over-inflated there is more slippage of them on the road. This causes not only greater fuel consumption, but also unnecessary extra tire wear. Tires that are under-inflated do not roll as easily as tires inflated to the proper pressures.

An overheated engine will use more fuel than one running at normal temperature.

Lubricant friction is more noticeable in cold weather than in warm weather. The heavier the lubricant (higher viscosity) the greater the fluid friction. That is one reason why you should be certain that the lubricants throughout the entire car are of the viscosity specified for the approximate temperatures in which you are driving.

Maintaining the Fine Performance of Your Chrysler Royal

Perhaps you are inclined to attend to ordinary maintenance service yourself as do many other drivers, but whether or not, we recommend that you arrange and follow a regular schedule of inspections by your Chrysler dealer's approved service station. There, you will see many of the highest grade instruments, gauges and other equipment used for inspecting your car to determine the true condition of the entire mechanism. Often these instruments detect a condition slowly developing which may result in serious damage or expensive repairs

if not corrected ahead of time. Do not wait for the ailment to grow—check it at the outset.

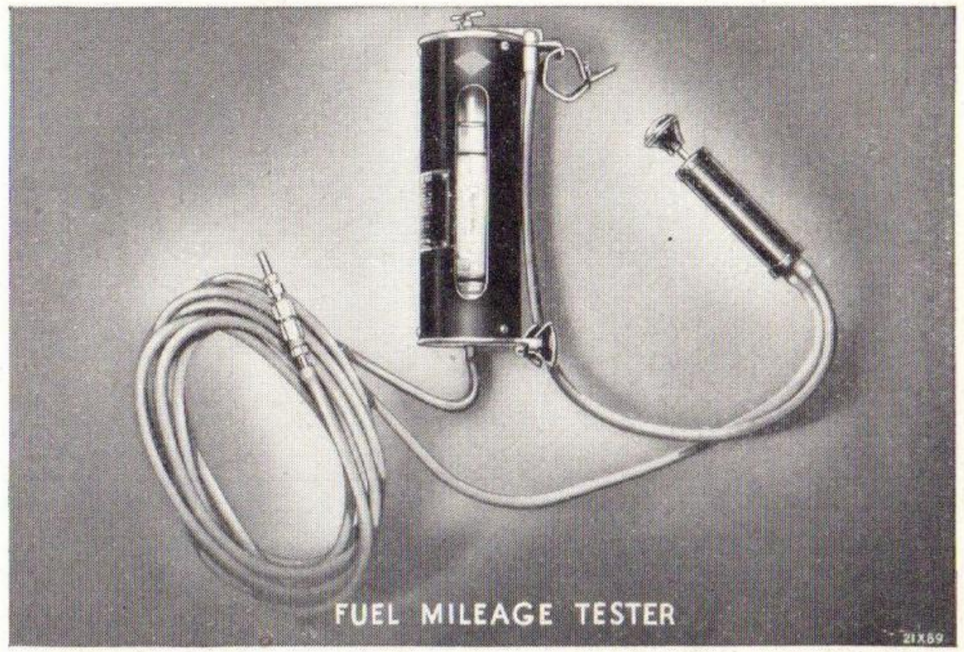
Safety Through Service

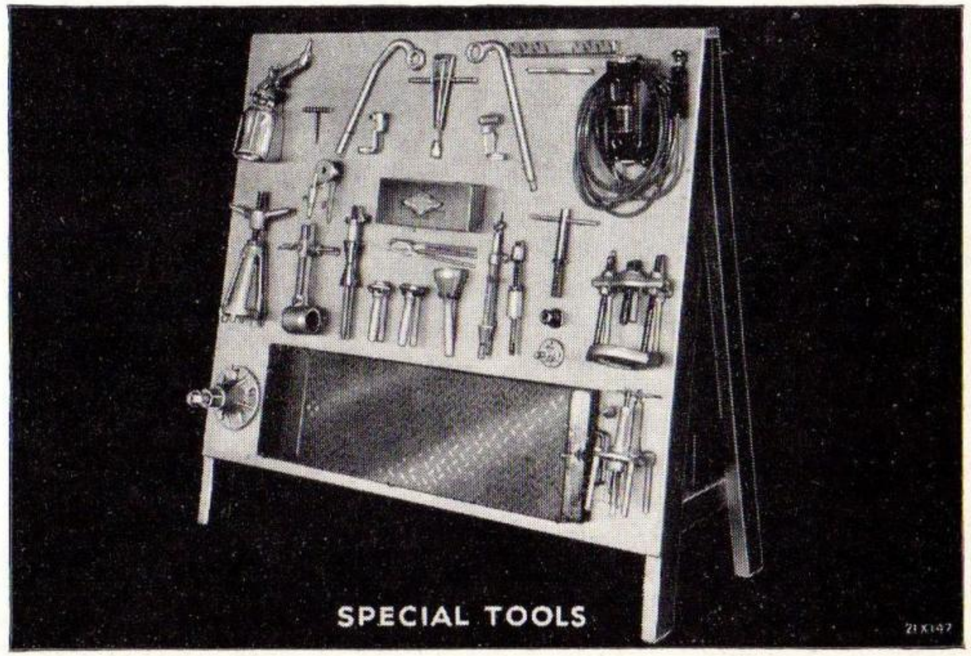
Have your Chrysler dealer check your car about the same time every month and have the little adjustments, if any, made while they do not amount to much. Your dealer has tool equipment designed especially for accurately performing maintenance service on your car and he has mechanics who are trained specialists in the servicing of Chrysler cars. Who could be more interested in seeing that your car is kept in first class condition than your Chrysler dealer? Have your car inspected regularly by him.

A good time to have the inspection or check-up made is when the car is being lubricated. It saves you one stop. The lubrication agreement which your dealer has available for you requires lubrication of your car by his approved service station. Unless you already have this approved lubrication agreement with your dealer, we urge you to at least investigate it immediately.

It Guarantees Dependable Workmanship—your lubrication is performed by the organization which sold you your car —the group of men most interested in its long life and your complete satisfaction with it.

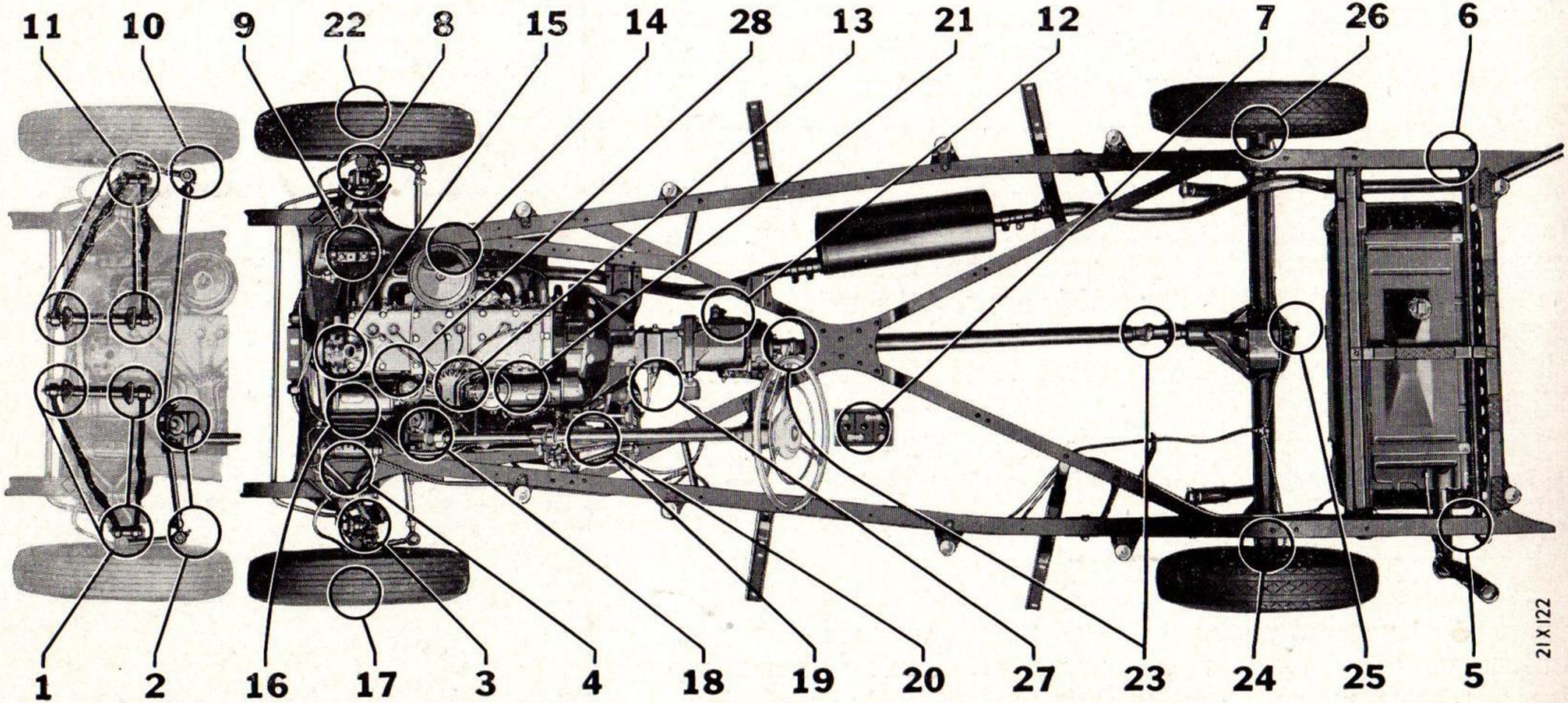
It Provides Additional Services—With every lubrication, experts check your radiator, battery, lamps, windshield wipers —inflate your tires—and clean your windshield and headlamp lenses. It assures you of factory approved methods of lubricating your Chrysler Royal with the proper lubricants.





CHRYSLER ROYAL CODE C-

NOTE: Cars operated principally on gravel or dusty roads may need lubrication attention more frequently and should be serviced as required. In dusty territories the air cleaners should be cleaned often. Under extreme conditions, once a day may be necessary. The clutch release bearing is packed with lubricant at the time of assembly and requires no further lubrication. The propeller shaft center bearing on 7-passenger sedans should be lubricated every 6000 miles, one lubricant fitting, short fibre wheel bearing grease—medium. The oil filter should be replaced every 8000 miles. Rub a very thin film of short fibre wheel bearing grease (medium) onto the gear shifting lever fulcrum slide, at the steering wheel, and water pump grease onto the clover leaf plate under the shifter tube lower lever.



22—*Approved* LUBRICATION

1000 MILES

In addition to maintaining proper level and changing the engine oil as recommended on page 56, the car should be lubricated every 1000 miles of operation as follows:

1 Upper and lower spindle bushings—Lower control arm bushings.
5 lubricant fittings.
Semi-fluid chassis lubricant.

2 Tie rod ball joints.
3 lubricant fittings.
Semi-fluid chassis lubricant.

3 Steering knuckle king pin bushings.
2 lubricant fittings.
Semi-fluid chassis lubricant.

4 Upper control arm pivot.
2 lubricant fittings.
Semi-fluid chassis lubricant.

5 Spring shackle.
2 lubricant fittings.
Semi-fluid chassis lubricant.

6 Spring shackle.
2 lubricant fittings.
Semi-fluid chassis lubricant.

7 Battery.
Bring water level to ⅜" above plates.

8 Steering knuckle king pin bushings.
2 lubricant fittings.
Semi-fluid chassis lubricant.

9 Upper control arm pivot.
2 lubricant fittings.
Semi-fluid chassis lubricant.

10 Tie-rod ball joint.
1 lubricant fitting.
Semi-fluid chassis lubricant.

11 Upper and lower spindle support bushings—Lower control arm bushings.
5 lubricant fittings.
Semi-fluid chassis lubricant.

2000 MILES

Lubricate and service as specified for 1000 miles, then lubricate and service as follows:

12 Hand brake linkage—Gear shifter.
Linkage.
Engine oil.

13 Distributor.
1 grease cup—1 turn.
Short fibre grease — medium.
Every 6000 miles refill grease cup and add 2 or 3 drops of engine oil to wick beneath rotor.
Caution: See that no grease or oil is on or near the breaker points.

14 Air cleaners.
Remove filter element from body of cleaner.
Wash filter element in kerosene and dry thoroughly, then oil the filter element with S.A.E. 50 fresh engine oil. (See special instructions for heavy duty air cleaners.)

15 Water pump.
1 lubricant fitting.
Water pump grease only.

6000 MILES

Lubricate and service as specified for 1000 and 2000 miles, then lubricate and service as follows:

16 Generator.
2 oil cups.
10 drops of light engine oil.

17 Front wheel bearings.
Short fibre wheel bearing grease —medium.
Remove hub cap and hub; clean and repack bearings.

18 Steering gear.
Remove filler plug.
S.A.E. 90 fluid gear lubricant—low cold test. Replenish when necessary—do not overfill.

19 Pedals and linkage.
3 lubricant fittings.
Semi-fluid chassis lubricant.

20 Pedal linkage.
No lubricant fittings.
Engine oil.

21 Starting motor.
1 oil cup.
Engine oil.

22 Front wheel bearings.
Short fibre wheel bearing grease —medium.
Remove hub cap and hub; clean and repack bearings.

15,000 MILES

Lubricate and service as specified for 1000, 2000 and 6000 miles, then lubricate as follows:

23 Universal joints.
Disassemble, clean and repack with 1¼ ounces heavy fibre grease. See page 47.

24 Rear wheel bearing.
Remove plug—insert lubricant fitting—lubricate and reinstall plug.
Short fibre wheel bearing grease —medium.

25 Rear axle.
Drain, flush and refill.
Powerful extreme pressure hypoid gear lubricant.
Summer and normal winter—S.A.E. 90; extreme winter with average temperature below 0° F.—S.A.E. 80. See page 47.

26 Rear wheel bearing.
Remove plug—insert lubricant fitting—lubricate and reinstall plug.
Short fibre wheel bearing grease —medium.

SEASONAL CHANGE

27 Transmission.
Drain, flush and refill.
Fluid gear lubricant. Summer S.A.E. 140 or 160.
Winter S.A.E. 90 low cold test.
See page 59 for further information and lubrication of transmission with overdrive.

ENGINE

28 Engine oil — See recommendations on page 54.

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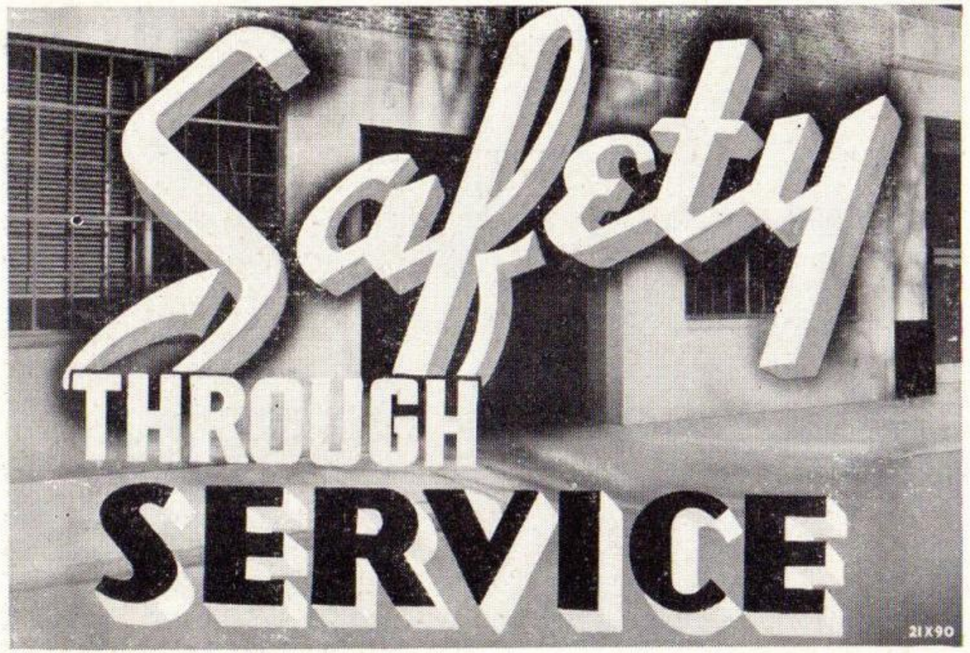
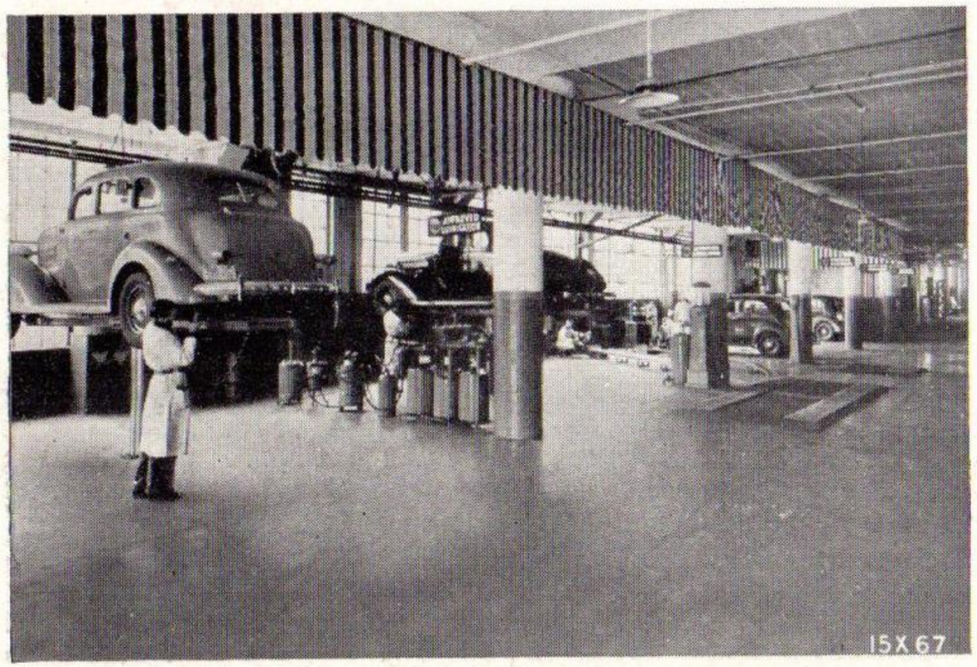
CAPACITIES
(U. S. Measure)

Cooling System	**17 quarts**
Engine Refill	**5 quarts**
Fuel Tank	**18 gallons**
Rear Axle	**3¼ pints**
Transmission (without overdrive)	**2¼ pints**
Transmission (with overdrive)	**3 pints**





Your Dealer's Service Is Approved

Experience and training promote efficiency. The mechanics employed by your Chrysler dealer specialize in servicing the same model of car as yours. They have been taught the methods of servicing as specified by the factory and are provided with special tools which promote accuracy as well as efficiency. Whatever service you may require, you are assured of the service work being performed quickly, easily and accurately.

No matter where you drive, you may be sure that excellent service is always available at dealers authorized to display the "Approved Service" Sign. Wherever you see the sign, you are assured of fast, efficient, dependable service at fair prices.

The sign also means that the dealer displaying it carries genuine replacement parts which measure up to the same high standards of quality as the original parts used in building your Chrysler Royal.

Your Chrysler dealer's Approved Service leads to lower service costs for you and most enjoyable motoring.

Keeping Smart Appearance

The smart appearance of your car is easy to keep up by following just a few simple directions because of the protective finish put on your car at the factory. The fenders, hood, splash guard and even the body are first coated by a process known as

Bonderizing, after that the priming and color coats. Dust and smoke collect on the surface of a car and are held there by the drying of water. This forms a scum of dirt which is easily washed off with clean water and a sponge. Lots of clean water is essential but sometimes if the scum is greasy it may be necessary to use a mild linseed oil soap to remove the grease. If soap is used, be sure to rinse the soapy water off quickly so it does not dry on the finish causing spots which may be difficult to remove.

Washing

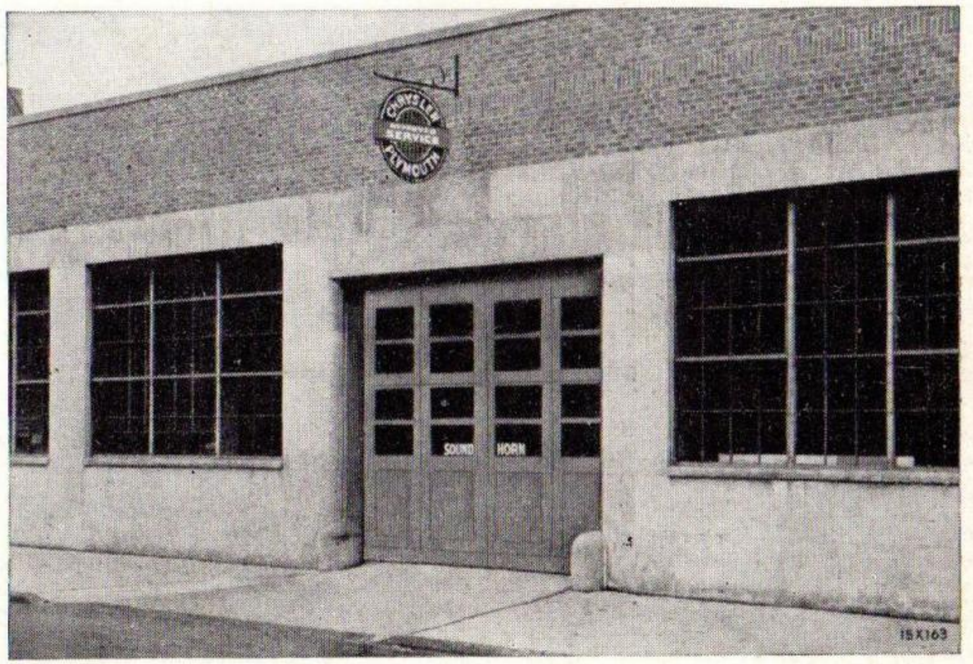
Frequent washing with clean water, rubbing lightly with a sponge and drying with a soft damp (not wet) chamois will keep the finish on your car in first class condition, but it is not always convenient to do this every day or two. However, if the surface is coated with liquid polish or wax, dust and light scum may be wiped off with a soft clean cloth and the high luster maintained for a long time. Hard rubbing of dust may soon take off the polish or wax; therefore it is better to wipe off the dust lightly.

Polishing

Body polishes of known quality should be used and the directions on the container followed carefully. Your Chrysler dealer can supply you polishes for protection of the finish on your car which have been proven to be satisfactory.

Plated metal parts of the car will retain their brilliancy, after polishing, if given a thin coating of body wax well rubbed onto the surface.









Calcium Chloride

In many cities calcium chloride and other chemicals are used on the streets for melting ice and snow. The slush resulting from the use of these chemicals is harmful, in many instances, to the metal parts of the car and should be washed off frequently to avoid rust formation where the protective finish has been scratched off to the metal.

Tar or Road Oil

Tar or road oil may be removed by use of a standard brand of tar remover without injury to the color finish, but in the process of removing the tar or oil it is quite probable that polish should be applied, after cleaning, to renew the lustre.

Windows

Window glass properly cleaned will add a great deal to the sleek sparkling appearance of your car. Washing with water and wiping dry with a linen cloth or chamois does very well, but a cloth slightly dampened with household ammonia removes the thin scum which is difficult to remove with water alone. Your dealer has a glass cleaner available in a convenient spray type of container which is unusually effective and easily applied. It is used by many house-keepers for windows as well as mirrors and other glassware at home.

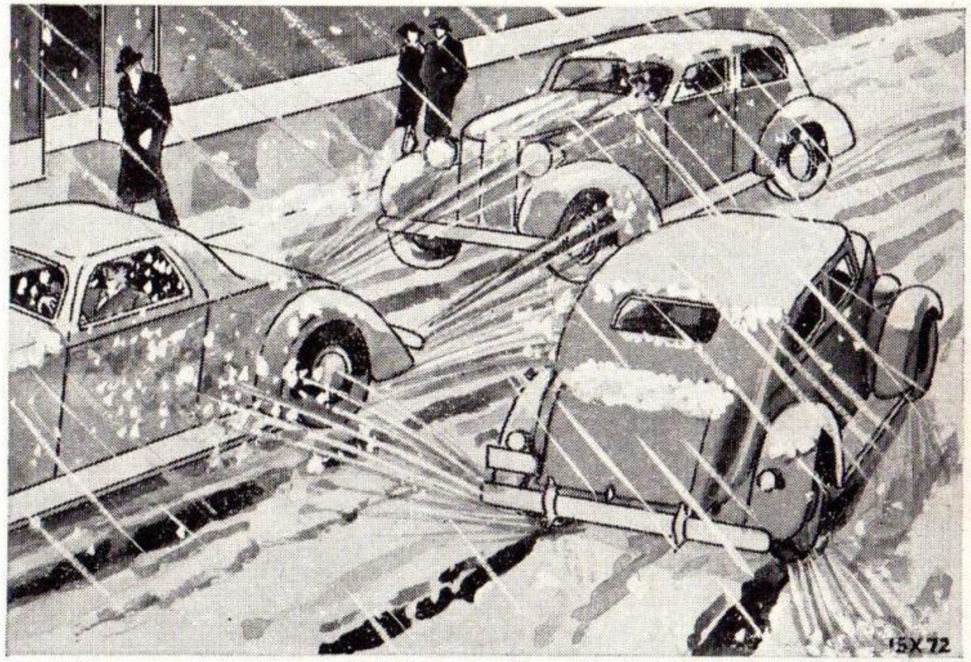
Bumpers

The severe service required of the bumpers naturally makes one think that it is difficult to keep them looking bright,

but in reality it is quite easy. Polish is not required for the chromium plating. Just a wet sponge. If rust forms where the plating has been scratched or rubbed off, remove the rust with a little mild kitchen scouring compound and then cover the spot with wax or clear lacquer to prevent more rust from forming.

Tires

Ordinarily water and a sponge are all that are needed for cleaning the tires, but to remove tar and road oil it may be necessary to use soap containing a mild abrasive such as mechanic's hand soap. A cloth dampened with kerosene is satisfactory for removing tar and oil also, be sure to wash all traces of the kerosene off the tires. A special cleaner is available for tires having white side walls.



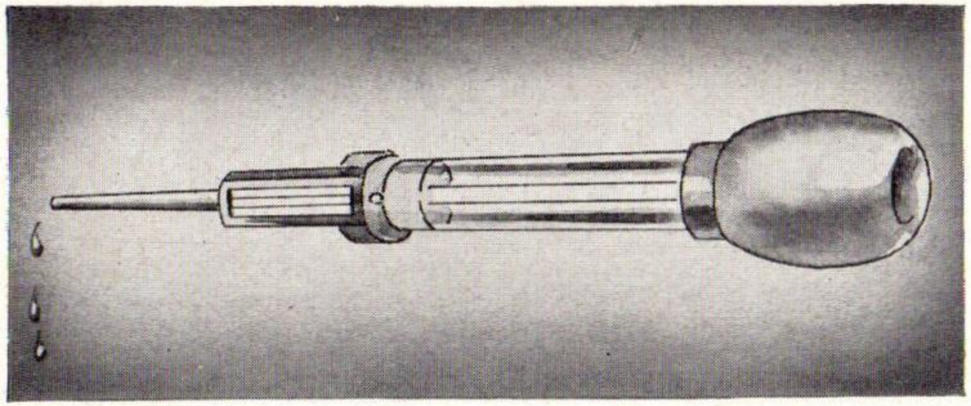
Care of the Upholstery

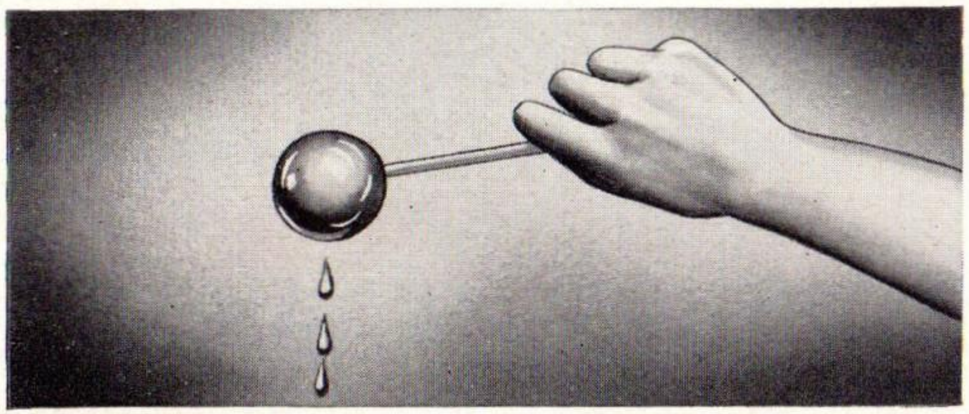
The upholstery should be brushed with a whisk broom, clothes brush or a vacuum cleaner at least once a month. However with the best of attention, spots will be made on the upholstery from many and varied causes regardless of how careful you and your guests may be. In paragraphs following we have prepared a few directions which may be helpful to you in keeping the new car appearance indefinitely.

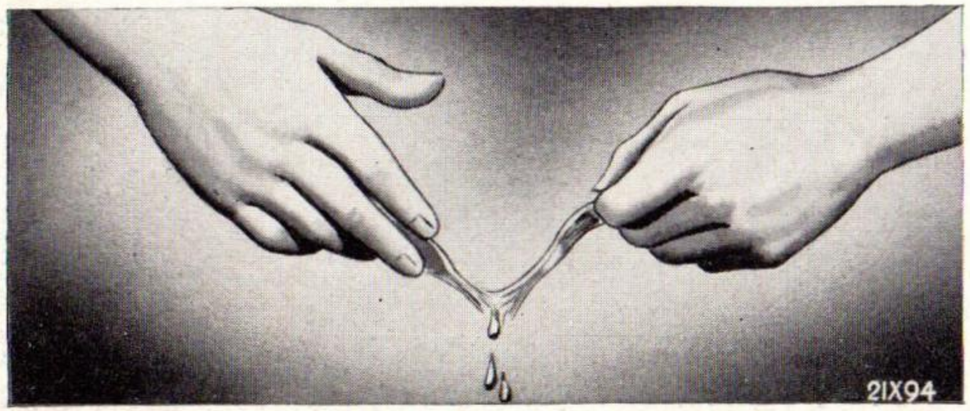
Battery Acids

Pour household ammonia on the spot, let it soak about a minute, then wash it off with a clean cloth wet with cold water.









Battery acid will eat a hole in the cloth in a very few hours and should be treated this way immediately.

Candy

Stains from candy containing chocolate can be removed by rubbing with a cloth and lukewarm water, then sponging with approved fabric cleaner or carbon tetrachloride or a cleaner of which carbon tetrachloride is the principal ingredient.

Candy stains which do not contain chocolate can be removed by rubbing briskly with a cloth soaked in very hot water.

Avoid the use of hot water for cleaning upholstery unless specified.

Dog and Cat Hair

Rub a slightly dampened stiff sponge over the upholstery. The sponge gathers the hair into a matted mass which may be picked off with the fingers.

Chewing Gum

Moisten the gum with approved fabric cleaner or carbon tetrachloride and, while it is still moist, scrape the gum off the fabric with a dull knife.

Fruit Stains

A little very hot water should be poured on the spots stained. Scrape off any excess pulp with a dull knife. Then rub briskly with a cloth wet with very hot water. This treatment is likely to cause some discoloration of the fabric because of direct application of hot water and should only be used in extreme cases. (Sponging with lukewarm water may suffice). If the

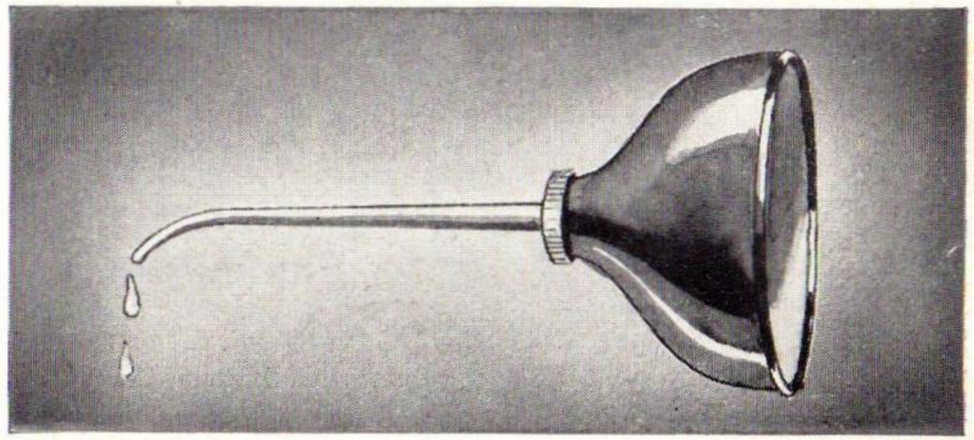
foregoing treatment does not remove sufficient of the stain, dry it by rubbing with a cloth and then sponge it with a clean cloth wet with approved fabric cleaner or carbon tetrachloride.

Soap and water are not recommended because they will probably set the stain permanently, and make even a worse appearance than the original stain. The same is true with drying: do not dry with heat such as from an iron.



Grease and Oil Stains

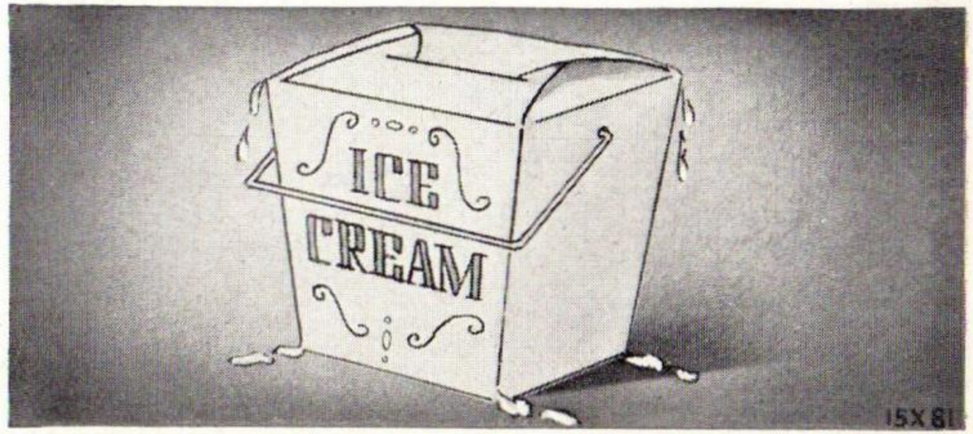
Remove loose grease or oil by scraping with a dull knife. Clean the spot by rubbing with a cloth wet with approved fabric cleaner or carbon tetrachloride. Rubbing should be done with a circular motion starting outside the spot to be cleaned and working toward the spot. The cloth should be clean and a clean portion of that cloth used after every few strokes. The cleaning process transfers the grease from the rubbed material to the material doing the rubbing. Therefore if much of the grease accumulates on the cleaning cloth it may be transferred back to the upholstery and in that process the grease or dirty spot will be made larger. It may be necessary to use more than one cleaning cloth, depending upon the amount of grease to be removed.

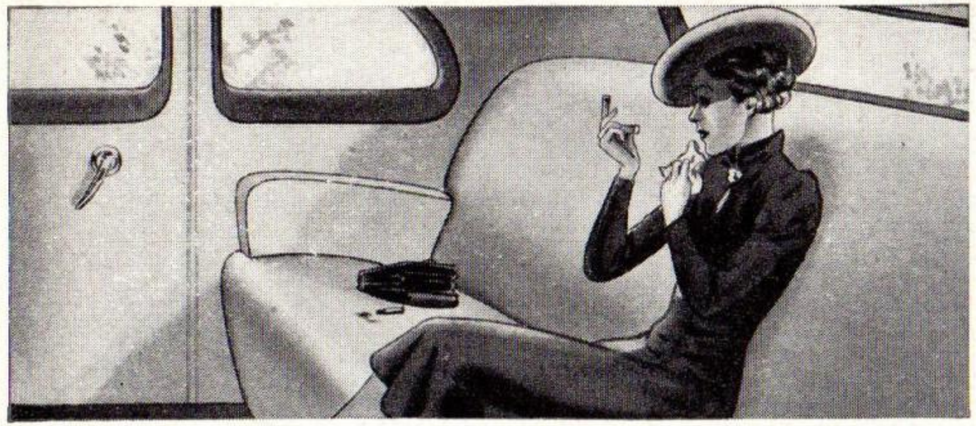


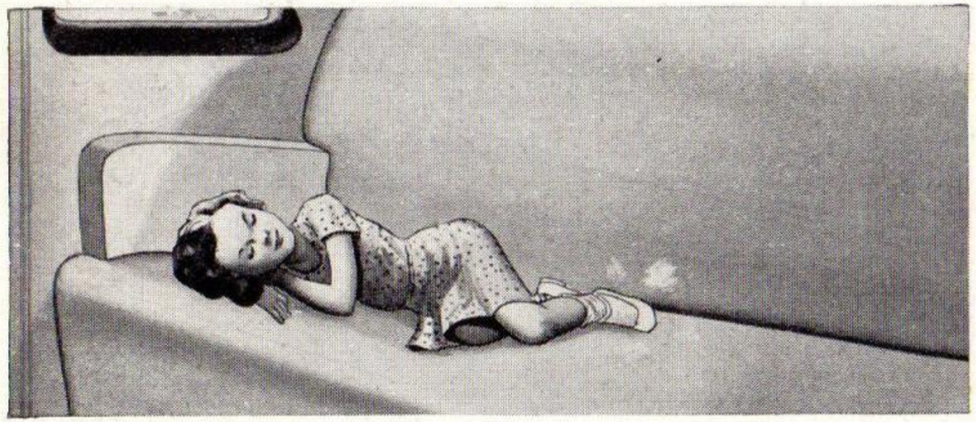
Particles of dirt in the grease which may remain on the upholstery, may be removed by rubbing with a clean cloth and lukewarm mild soap suds. Be sure to remove the soap by rubbing with a clean damp cloth.

Ice Cream

Use the same method as for removing fruit stains, but it may be necessary to do more sponging with lukewarm water.









Final cleaning with approved fabric cleaner or carbon tetrachloride should be done after drying.

Lipstick

Pour a little approved fabric cleaner or carbon tetrachloride directly on the spot to be cleaned—then soak it up with a clean blotting paper. Repeat this operation until the stain is removed.

Shoe Polish

White shoe polish can usually be removed by brushing, but it may be necessary to moisten with cold water, let it dry and then brush it.

Black or tan shoe polish can be removed by brisk rubbing with a clean cloth saturated with approved fabric cleaner or carbon tetrachloride.

Tar

Use the same method as for removing chewing gum.

Urine

First sponge the stain with a clean cloth wet with mild soap suds. After thoroughly rinsing off the soap by rubbing with a clean cloth wet with clean water, rub the spot with a clean cloth saturated with a solution of one part household ammonia and five parts of water. Allow that to remain on the fabric for about a minute and then rinse it off with a clean wet cloth.

Water Spots

When cleaning water spots it is advisable first to sponge the entire panel of the upholstery. The spot may then be cleaned by rubbing with a clean cloth moistened with approved fabric cleaner or carbon tetrachloride.

General

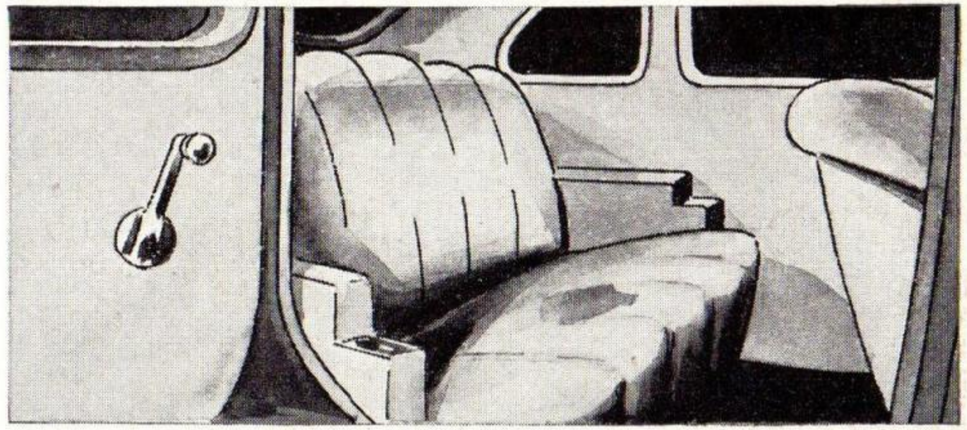
The nap on mohair upholstery may become matted down after a long period of use. This condition may be improved by placing a damp cloth over the matted area and running a hot flat iron over the damp cloth. This will steam the nap so that it can be brushed back and stand up as before matting.

The floor carpets can usually be cleaned by first brushing with a whisk broom or stiff brush to remove loose dirt. A slightly dampened cloth may be needed to rub clean any spots of mud.

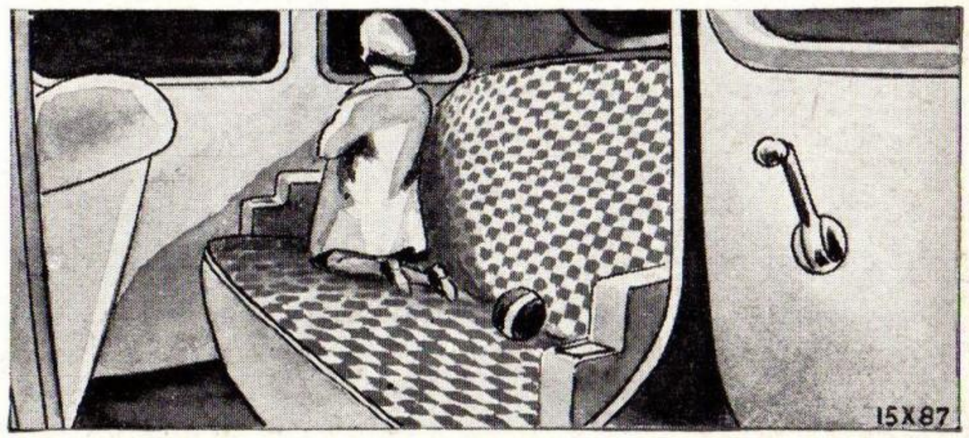
If gasoline is used as a cleaning agent for grease on floor mats be sure to use only "white" untreated gasoline. Avoid the use of gasoline containing tetraethyl lead or any coloring material. Gasoline is not recommended as a cleaning agent because of the fire hazard. Briskly rubbing gasoline on cloth or pile fabrics is likely to ignite.

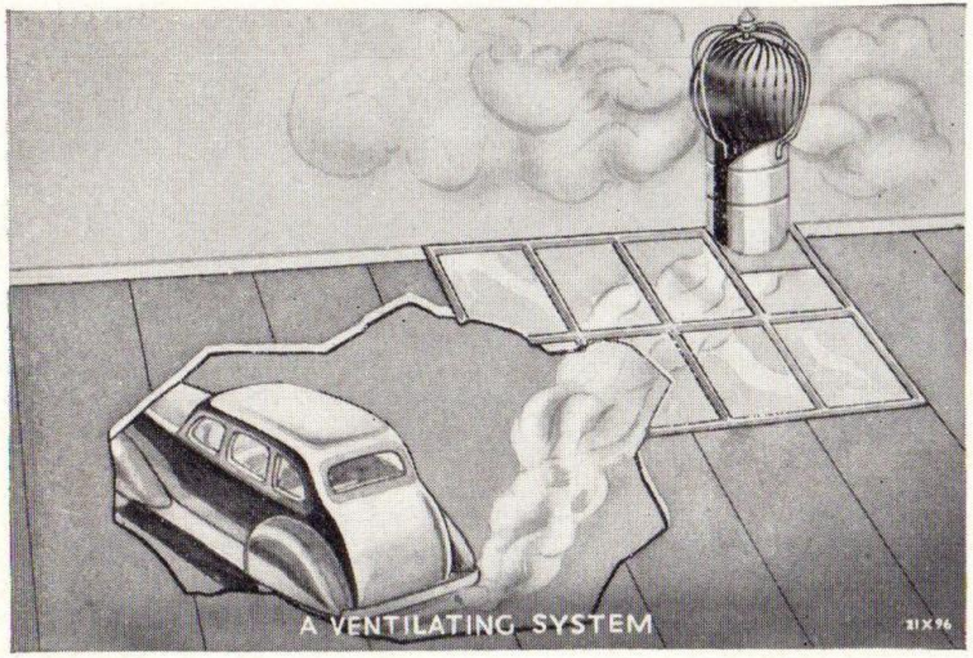
Seat Covers

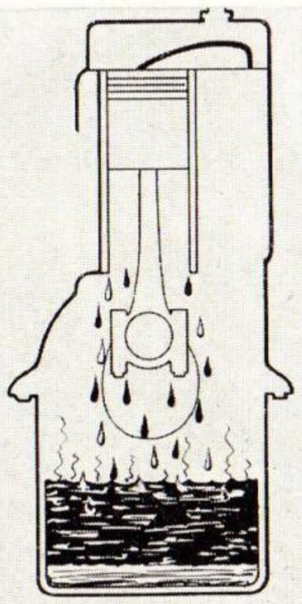
Attractive and durable seat covers may be procured from your dealer for protecting the upholstery. Often, while on long trips or picnics, mishaps may occur which will soil the upholstery, unless protected by covers. These covers are well fitted and easily removed for laundering or cleaning.










ENGINE OIL DILUTION 21X97

Draining the Crankcase and Crankcase Ventilation

(Prolongs Engine Life)

Due to natural conditions in all automotive engines, the engine oil, in use, is constantly being impregnated with fuel, water and acid, depreciating the value of the oil as a lubricant. However, a ventilation system has been built into the engine in your car which expels a very large percentage of these undesirable elements. With this ventilation the frequency of draining the crankcase oil is also reduced, but nevertheless it is necessary to drain at the intervals specified.

Fuel accumulates in the engine oil because of a certain excess of fuel in the combustion chambers not burning and working down the cylinder walls into the crankcase. Only certain percentages of vaporized fuel and air, when mixed, will ignite and explode in the combustion chamber. If the mixture contains too much fuel the excess will not burn, some of it will remain on the cylinder walls and work down into the crankcase by the action of the pistons.

Water vapor is a product of combustion. There is approximately as much water vapor formed by weight as fuel consumed. That is why you may notice white vapors and water coming out of the exhaust pipe, especially in cold weather. A certain amount of this vapor condenses on the cylinder walls and is also carried into the crankcase by action of the pistons. A very large percentage of this water and fuel is carried out of the crankcase by means of the crankcase ventilation system.

Fresh air enters at the oil filler pipe which is capped with an air cleaner for catching dust and preventing it entering the crankcase. Due to the rotation of the crankshaft, the air and vapor in the crankcase is kept whirling. The vacuum created by the car running draws the air and vapor out of the crankcase thorough the ventilation outlet pipe at the rear of the engine.

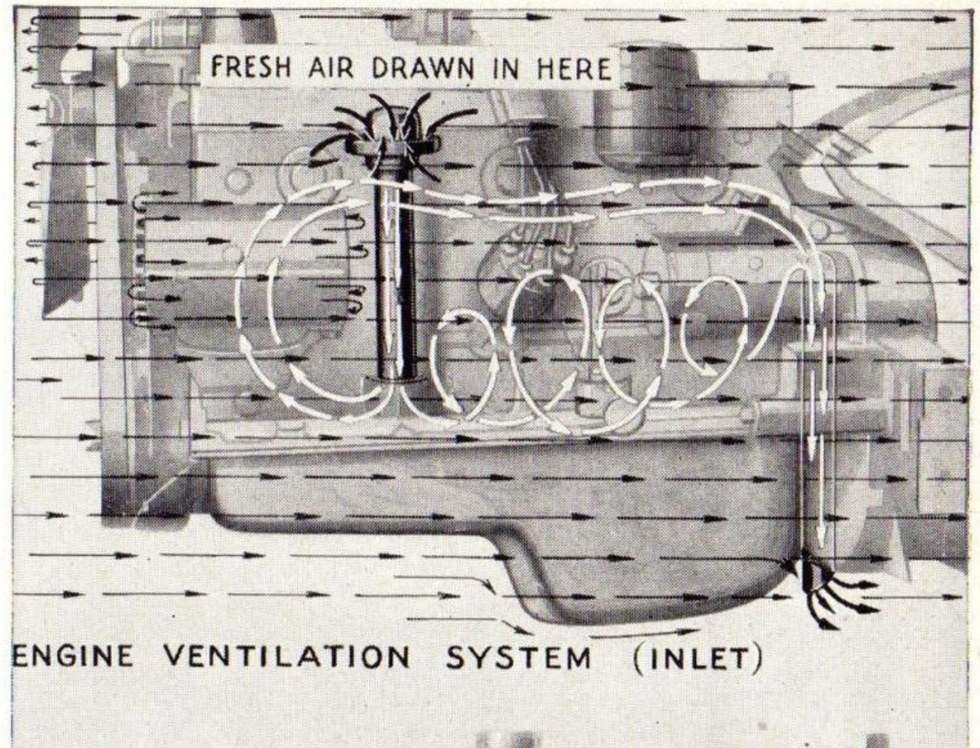
This system of crankcase ventilation, as you can no doubt readily understand, reduces to a great extent a natural formation of sludge in the bottom of the crankcase. An excess amount of this sludge will interfere with proper engine lubrication.

Acid forms in the combustion chamber also due to natural causes in all automotive engines. Fuel contains varying percentages of sulphur and, when burned, changes to sulphur dioxide. The sulphur dioxide unites with water in the combustion chamber, making sulphurous acid.

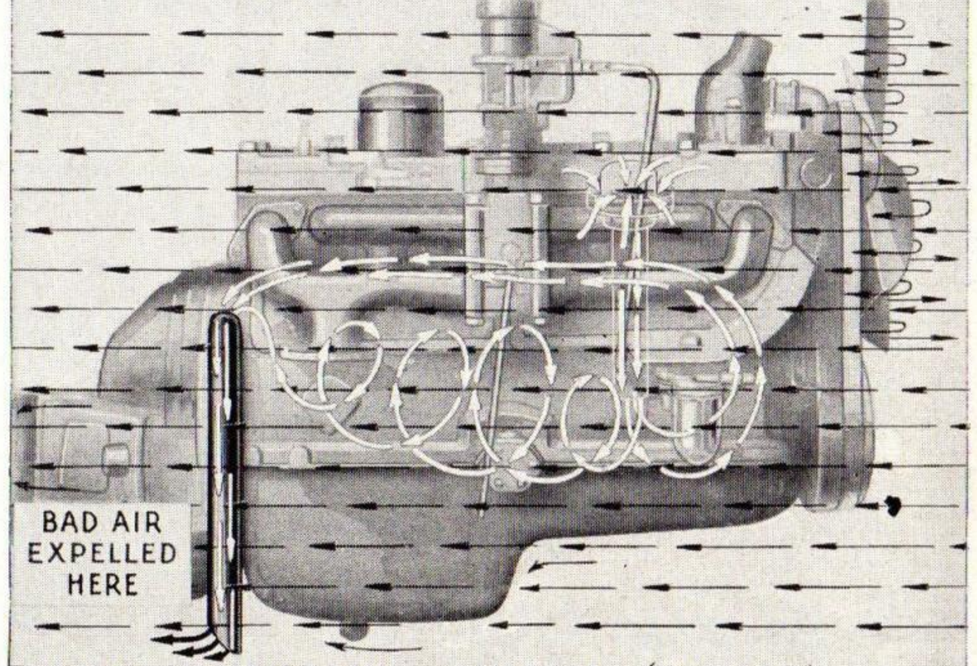
These accumulated non-lubricating elements in the engine oil, have damaging effects on the highly finished steel surfaces. Fuel thins the oil, reducing its lubricating ability. Water is a non-lubricant and is likely to freeze, causing stoppage of the oil circulation. The sulphurous acid attacks highly finished steel surfaces and causes excessive wear. The rapidity of accumulation of these elements increases as the temperature decreases. That is why it is recommended that the engine oil be drained more frequently in cold weather than in warm weather.

The best time to drain the crankcase is after a run and while the engine is still heated. The oil is thinner when it is hot and also thoroughly mixed. It will therefore carry off sediment more completely.

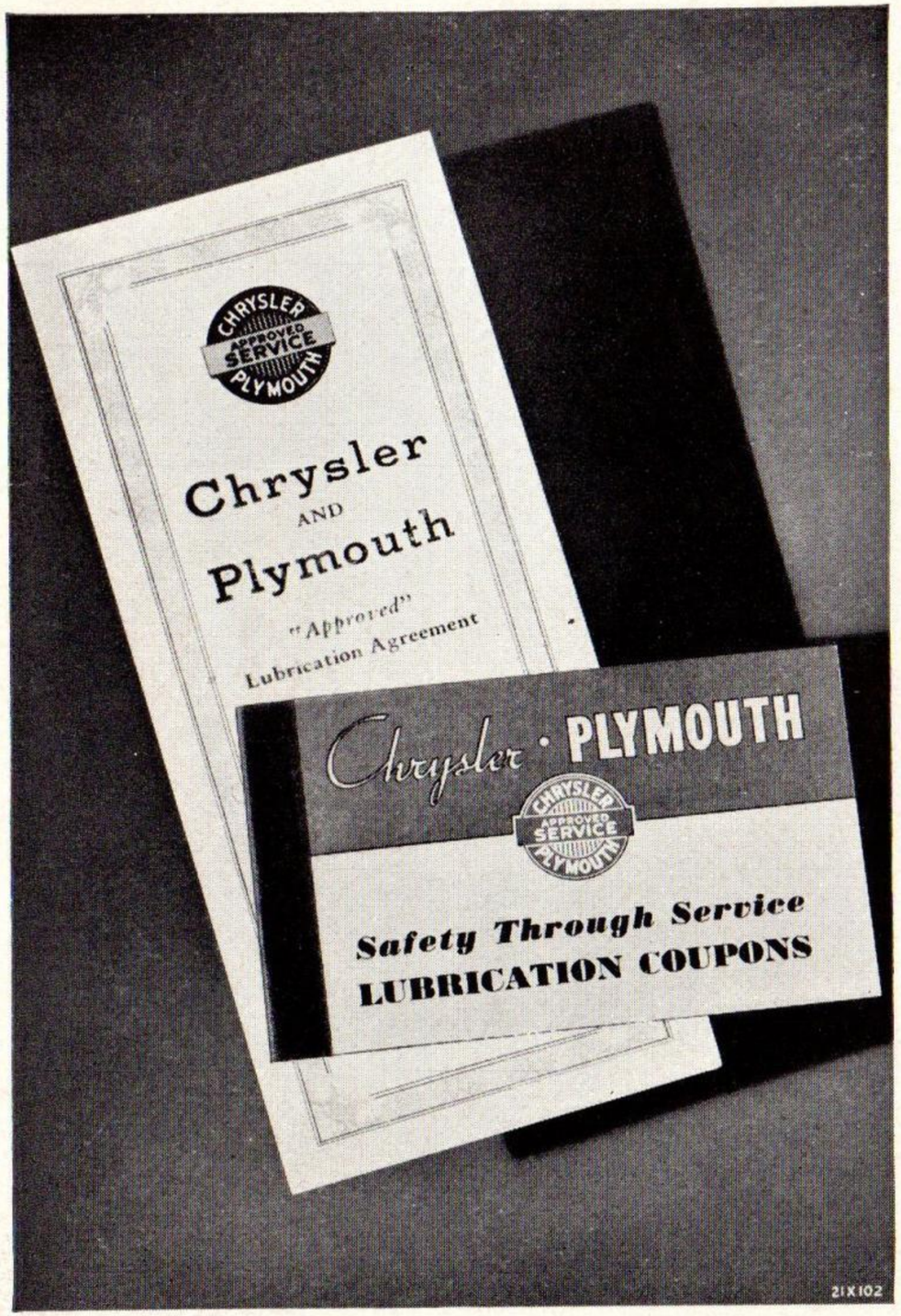
Kerosene should never be used for flushing out the oil pan and lubricating system. A certain amount will remain in the



ENGINE VENTILATION SYSTEM (INLET)



ENGINE VENTILATION SYSTEM (OUTLET) 21X98



system, collecting in pockets from which it cannot readily be drained and will dilute the oil. For flushing, always use a good flushing oil.

Approved Lubrication Agreement

Mechanical changes and higher road speeds have led to very exacting lubrication demands at all bearing points throughout your new Chrysler Royal as compared with the older designs of slower speed cars. This has brought about the introduction of a variety of lubricants to adequately take care of the job of lubricating the various bearing points.

Your Chrysler dealer's success is largely dependent upon the degree of satisfaction you enjoy from your Chrysler Royal. Who could be more concerned about the assurance of your Chrysler Royal being properly lubricated? Unless you have already received your Chrysler dealer's lubrication agreement, be sure to see him about it promptly. It assures you of proper lubricants being used at all of the proper points and at the proper time. You simply deliver the car to the dealer at regular mileage intervals and it will be lubricated and inspected thoroughly and by mechanics trained especially for this work on your Chrysler Royal.

Maintenance Schedule

Every 1000 Miles

Chassis—Lubricate all points indicated on the Lubrication Chart and use the recommended lubricants.

Every 2000 Miles

Air Cleaners—Remove filter element from the carburetor air cleaner body and wash in kerosene. Dry thoroughly and re-oil with fresh engine oil (S.A.E. No. 50) and assemble filter element to the air cleaner. NOTE: Cars operated in dusty territories will require more frequent attention to the air cleaner. In very extreme conditions it may be necessary to clean the air cleaner as often as once a day.

A heavy duty carburetor air cleaner is available, as special equipment, for use where existing conditions are extremely dusty. This unit should be cleaned as frequently as required depending upon the severity of the dusty conditions of the air. Dust collects in oil contained in the air cleaner, and settles into a sump. The sump should be wiped clean and filled to the indicated level with fresh engine oil. Use S.A.E. viscosity number 50 where air temperatures are higher than 32° above zero (Fahrenheit) or viscosity No. 20-W in temperatures below 32° above zero.

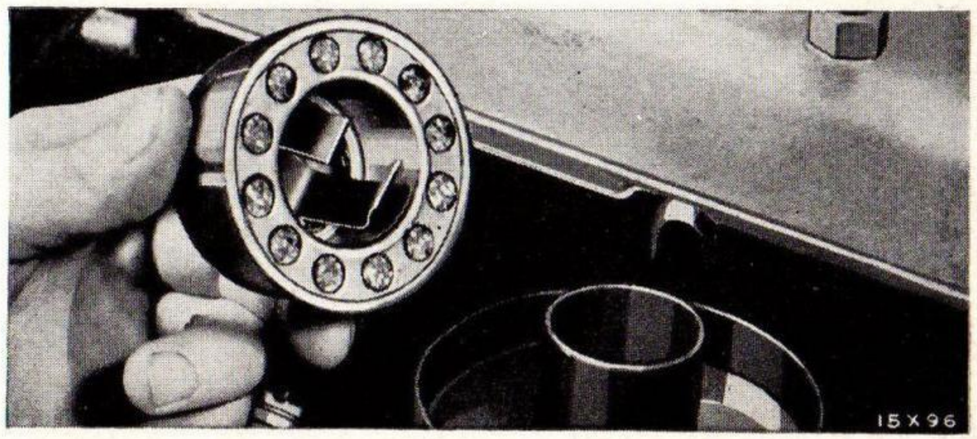
The oil filler pipe cap air cleaner should be cleaned with kerosene and oiled with fresh engine oil S.A.E. viscosity No. 50.

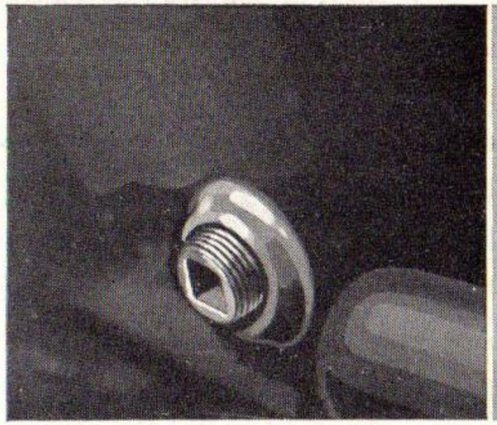
Transmission—The transmission lubricant level should be checked to see that it is up to the filler hole. The transmission should be drained and refilled twice each year with the lubricant specified on the lubrication chart, according to the approaching season. See page 59.

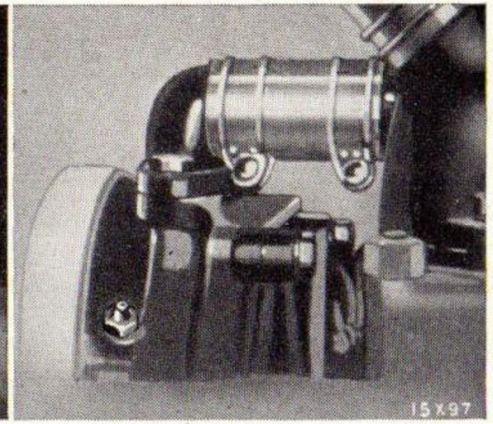
Water Pump—Lubricate with *water pump grease* only.

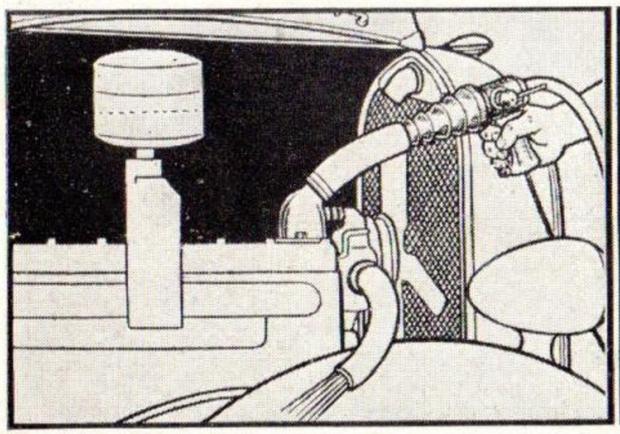


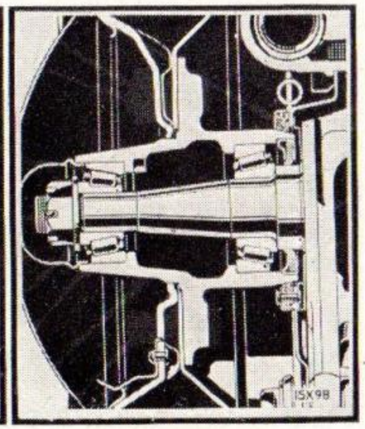


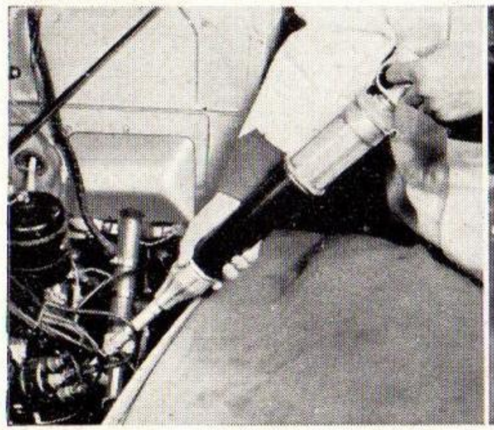














Every 6000 Miles

Engine Tune-up—The engine should receive a complete tune-up according to the factory recommended procedure and adjustments.

Cooling System—Twice each year flush and clean the cooling system. This should be done before adding anti-freezing solution and after draining it.

Front Wheel Bearings—The front wheel bearings should be cleaned and packed with short fibre wheel bearing grease—medium.

Steering Gear—Use the lubricant specified on the lubrication chart according to the season's requirements. If necessary, in extremely low temperatures, dilute with engine oil to avoid stiff steering.

Battery—Remove battery terminals, clean, coat with petrolatum and install. Keep battery case and top clean at all times by wiping with a piece of waste or cloth dampened with household ammonia.

Every 8,000 Miles

Oil Filter—Replace filter every 8,000 miles. In dusty territories oftener may be necessary.

Every 10,000 Miles

Spark Plugs—Replace all spark plugs every 10,000 miles with the same type as originally installed in the engine.

Every 15,000 Miles

Rear Axle—Drain, flush with flushing oil and then fill with the grade of lubricant specified on the lubrication chart. Because of different characteristics of different brands of hypoid gear lubricants *never mix one brand with another*. If necessary to add lubricants to maintain the high level it is best to drain, flush and fill.

Rear Wheel Bearings—Remove plugs and, temporarily install lubricant gun fittings. Lubricate with lubricant as specified on the lubrication chart. Then remove lubricant fittings and install plugs. NOTE: Do not inject more than ½ ounce of lubricant into each bearing. Using more might cause some to be forced through the oil seal onto the brake linings.

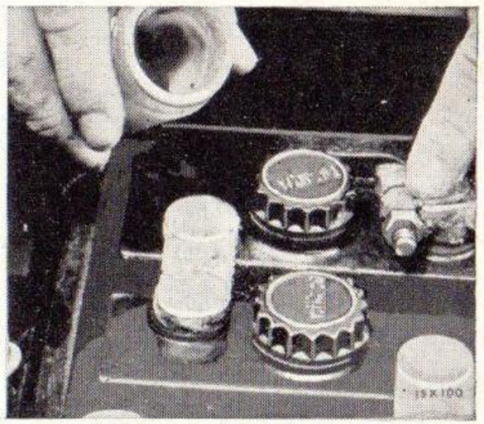
Springs (with steel covers)—The frequency for lubrication of springs with metal covers is largely dependent upon climatic and road conditions. The necessity of lubrication is indicated by spring squeaks and stiff riding. Use special fitting to inject spring leaf lubricant.

Lubricants containing inert materials such as asbestos fibre, graphite, silica, etc., are undesirable for spring lubrication. A lubricant containing a rust preventive (inhibitor) is recommended in order to avoid rust formation which leads to hard riding and spring squeaks.

Universal Joints—The universal joints should be disassembled and all parts lubricated. The universal joint body should be packed with 1¼ ounces of recommended lubricant.

A heavy fibre grease made from high viscosity mineral stock should be used. Soft greases such as chassis lubricant or calcium base greases must not be used. This inspection and lubrication should be performed by your Chrysler dealer.

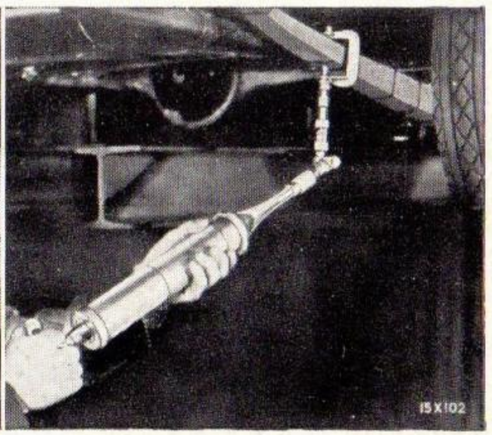














The Cooling System

The cooling system in your Chrysler Royal has been developed scientifically, over a period of several years, and is the most advanced and efficient system ever developed. It has been

The water jackets extend the full length of the cylinder walls and aid also in maintaining uniform temperature throughout the entire engine. This keeps the viscosity of the oil more uniform and in turn gives better lubrication and oil economy.

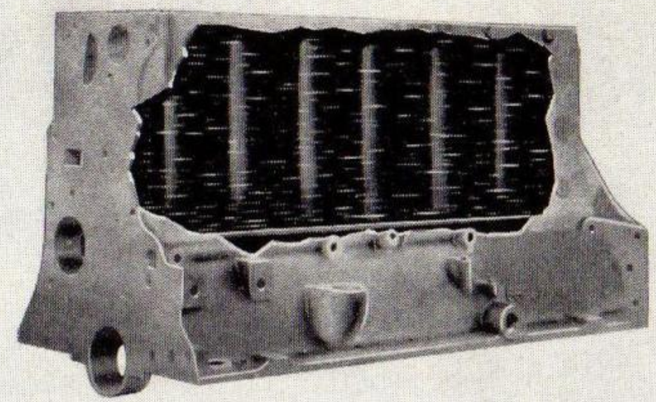
The valve ports would probably be the hottest parts of an engine, but the engineers have developed a control for this by directing the cooled water, entering the water jackets, straight at these ports. This ingenious method is perhaps one of the most advanced steps in automobile engine cooling ever made.

Now that you have an idea of how the cooling system cools, let's check up on some of the maintenance items. Everything about the system is automatic in operation, but you must protect it by having a free circulation in the system. Circulation may be stopped by a loose fan belt, dirt in the water, or ice.

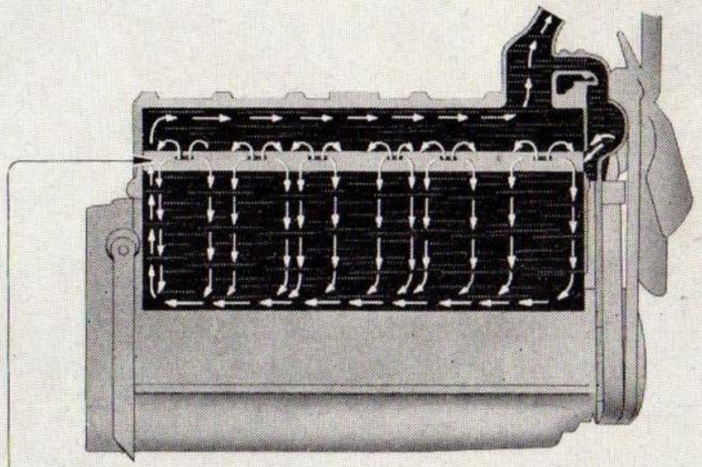
The fan belt seldom needs adjusting, but your dealer will check this when giving the car a general inspection. The tension on the belt is adjusted by rocking the generator on its bracket after first loosening the bracket clamping bolt.

Whenever adding water to the system be sure it is clean and does not contain any alkali which would form scale inside the metal parts of the system and eventually clog the passages causing poor or no circulation. A good way to keep the cooling system clear is to have your dealer flush it by the forced reversed flow method before filling the system with anti-freeze solution in the fall and after draining it out in the spring.

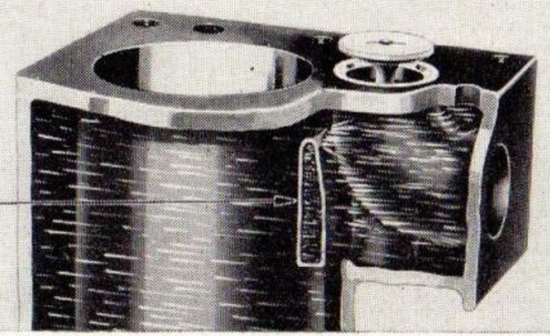
To drain the cooling system completely, open the drain cock in the lower corner of the radiator and also the drain cock in the cylinder block at the bottom of the water jacket near the center

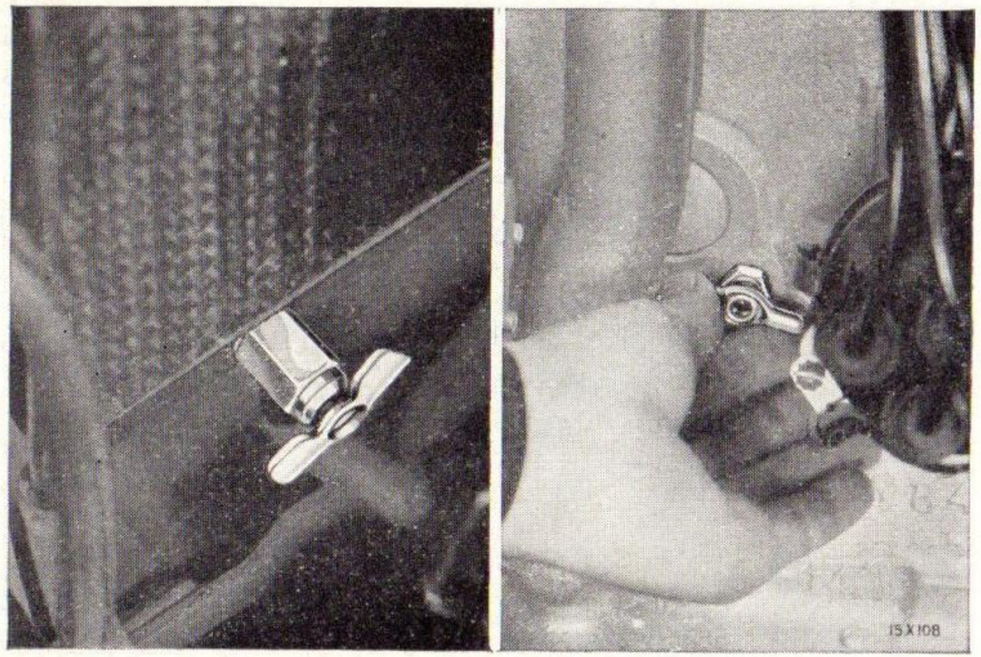


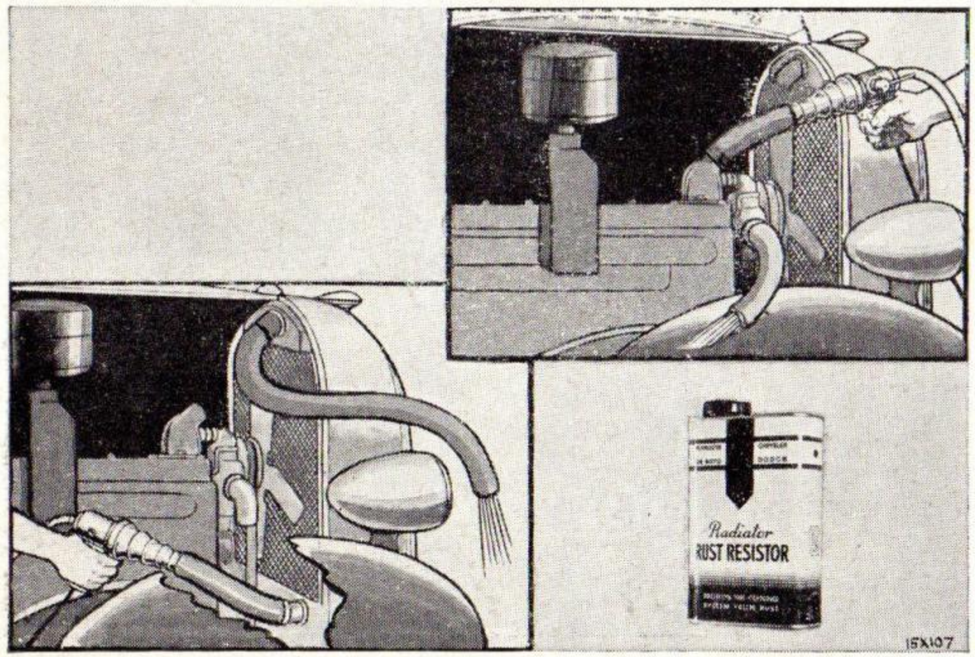
Full Length Water Jackets



Distributing tube carries water from the front to the rear of the engine and directs water to the exhaust valve seats







on the left side. If you are going to store your car or leave it idle for a long time, it is advisable to leave these drains open.

Whenever the cooling system is drained and flushed it should be treated with "Rust Resistor" when refilling. This will prevent the formation of rust in the cylinder block. In cases where the label on an anti-freeze solution package indicates that a rust inhibitive agent is already contained in the solution, it should not be necessary to add Rust Resistor until the cooling system is drained and filled.

If for any reason such as insufficient water or stoppage of circulation, the engine becomes overheated (212° or more) *never pour in cold water or cold anti-freeze* until the engine has been allowed to cool down below normal. The level of the liquid in the cooling system should be 1″ below the bottom of the filler neck. When the fluid becomes warm, it will expand and run out the overflow pipe if the cooling system is filled to a higher level. This is especially important when using anti-freeze solution, to prevent loss of any of the fluid which would result in raising its freezing point when water is added.

Use of Anti-Freeze Solution

At the approach of freezing weather an anti-freezing cooling solution should be used. Always flush the system clean when making the initial filling with anti-freeze each fall. Have the solution tested frequently during freezing weather, to make certain that you are protected against a "freeze-up." It is well to have some extra anti-freeze on hand so you can take care of the requirements in case of a sudden drop in temperature.

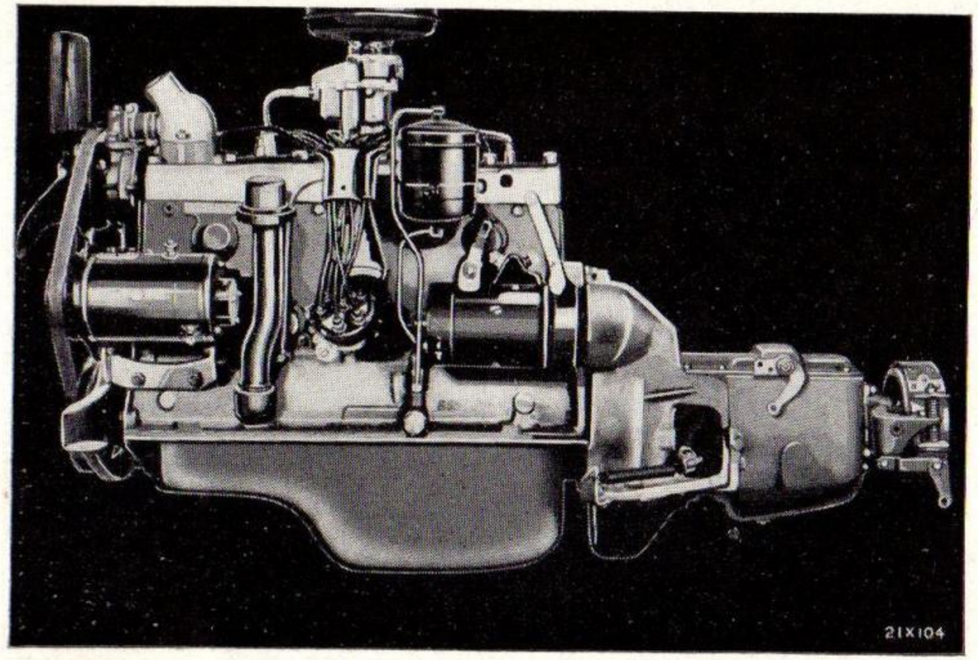
The Engine

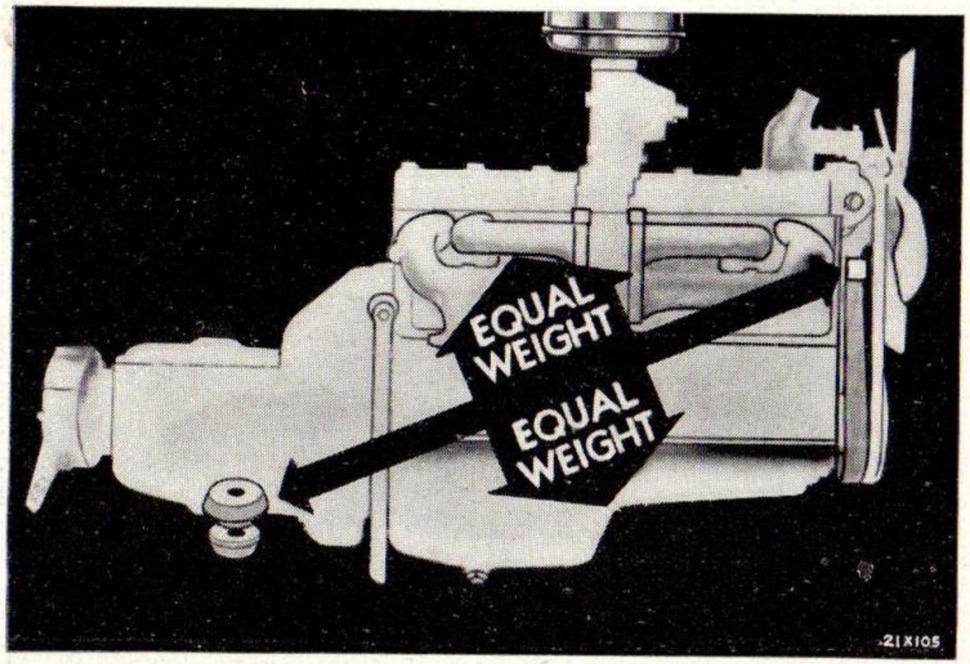
You have under the hood of your Chrysler Royal, an engine incorporating the most advanced engineering principles. The modern machinery used in its manufacture, the rigidity of its inspection of every detail and the sincere application of each workman to his job, all couple together giving you an engine which more than meets its traditional outstanding performance, economy and dependability. It is surpassed by none in its class.

Such outstanding features as inserted valve seats, drilled oil manifold, full pressure lubrication, aluminum alloy pistons, full length water jackets, cooled water flow directed to valve ports and also floating power engine mountings are all incorporated in the design of your Chrysler engine. The exhaust valve seats, being of a special ferrous alloy, withstand the severe temperature to such a high degree that valve seat grinding is much less frequent than with old fashioned methods of valve seat design. The oil manifold in the crankcase is sometimes called an oil distributing tube, but in your engine it is machined through the entire length of the crankcase in a manner similar to that used in the manufacture of a gun barrel. Oil is directed, under pressure, to all bearings in the engine except the pistons and piston pins. These are lubricated by sprays of oil forced from the bearings at the lower ends of the connecting rods and directed onto the pistons, piston pins, cylinder walls and valve tappets. The ordinary way of mounting an engine rigidly in the chassis frame accentuates vibration and shakes the entire car. Your engine is cradled in live rubber so that there is no









metal of the engine touching the chassis frame. The rubber mountings are located well above the crankshaft at the front of the engine and below the transmission at the rear end. Having the diagonal line of support through the "weight-center" of the power plant reduces the natural power vibration forces to such a low degree that they are unnoticed. This shows you just how well the floating power engine mountings absorb the engine power vibrations and further contribute to the smooth running of your Chrysler Royal.

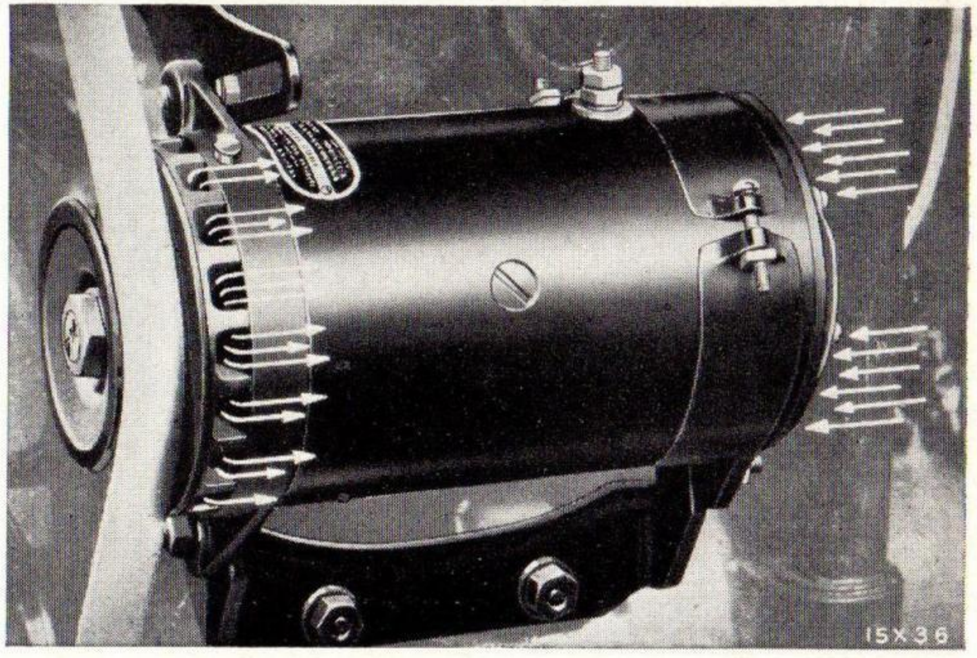
The Electrical System

The units comprising the single wire electrical system in your Chrysler Royal are the storage battery, starting motor, generator, current control relay, voltage control relay, ignition coil, ignition distributor, lights, horn and ammeter. Each unit has been carefully inspected and vigorously tested before leaving the factory to make certain it was in first class condition for you. However it is to be remembered that each has a very important function in the operation of your car and occasional inspections by your Chrysler dealer are recommended as precautionary measures.

Generator

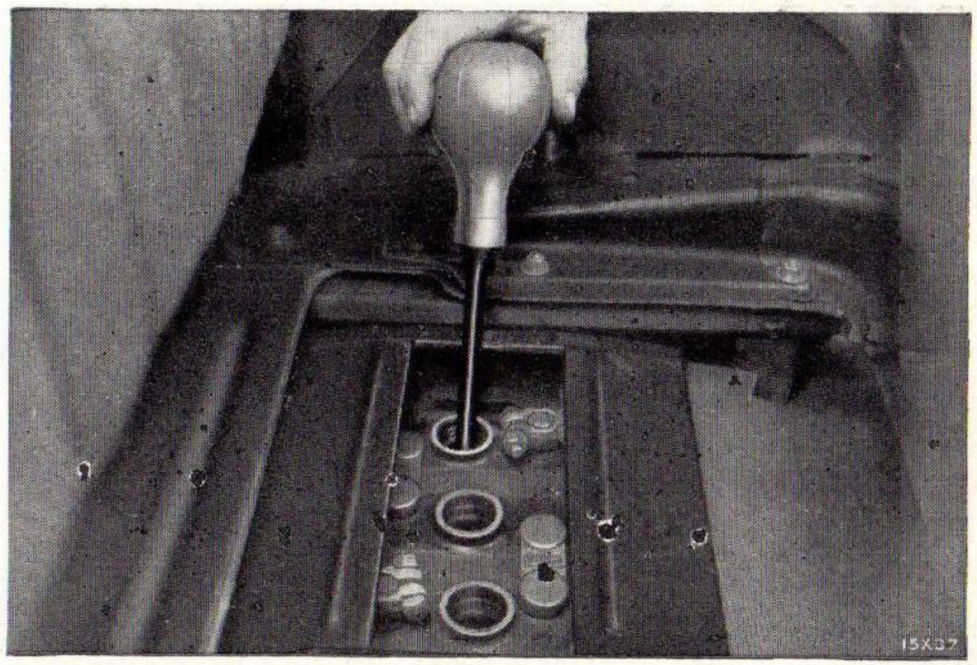
The generator is of the large capacity air-cooled type provided with voltage and current regulators. These regulators control the output of the generator with relation to the voltage and current required. This means that the battery will ordinar-

ily be fully charged, and the proper voltage maintained. While driving the car, the ammeter hand may gradually approach zero. This indicates that the battery requires no more current at that time and the voltage control unit is preventing overcharging of the battery. Because there is no excessive voltage, long life is assured for the electrical system. The generator becomes warm by the nature of its work and the harder the work the warmer it will become. However, to reduce this natural heat an inbuilt fan draws fresh air into the rear end of the generator and forces the hot air out the front end. This direction of air keeps fresh air passing over the brushes and commutator. The faster the generator runs—the faster the air moves through the generator.



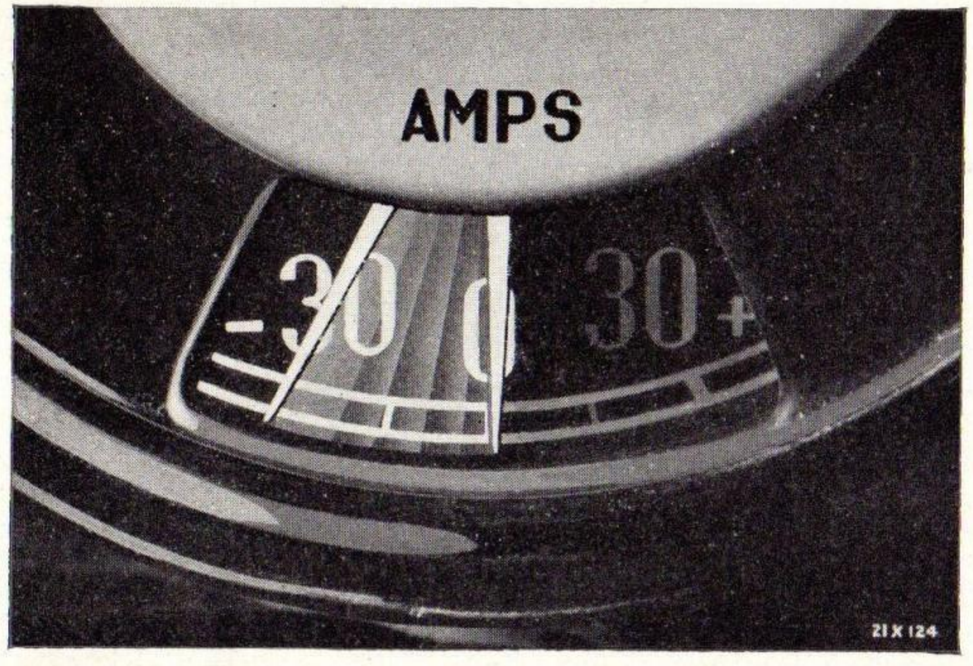
Battery

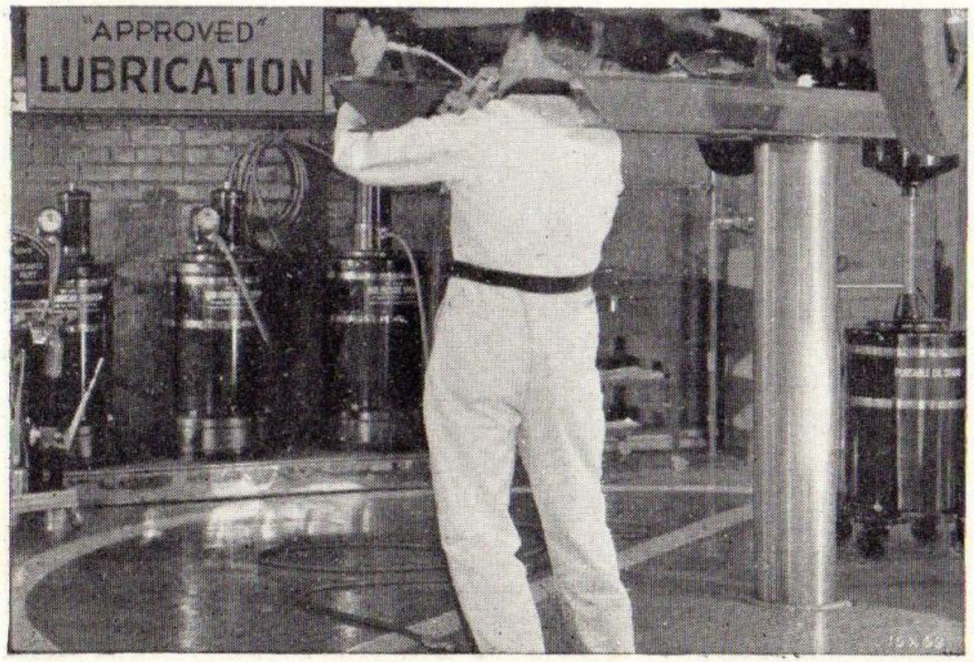
The battery is under the left side of the front seat and only requires distilled water for maintenance. The level of the electrolyte (liquid) should be $\frac{3}{8}$" above the plates and should be inspected about every two weeks in winter and every week in summer. If the car is to be stored for a month or more the battery should be delivered to a battery service station for attention during the storage period.



Circuit Breaker

A thermostatic circuit breaker is placed in the lighting circuit as protection against discharging the battery caused by a short circuit. A "short" in the lighting circuit may be detected by the needle of the ammeter moving back and forth from zero to maximum discharge. The lights may not burn at all or they





may (if the switch is "on") burn and go out alternately, depending upon the location of the "short." A short circuit should be located and corrected as quickly as possible, to avoid damage to the electrical system.

Lubrication

The present day automobiles perform an entirely different type of service to that of a short time past. Higher speeds are developed and longer distances are traveled in shorter time. This type of performance demands very exacting lubrication. The necessary mechanical changes have brought about the necessity for a variety of lubricants to adequately take care of the lubrication requirements.

Proper lubrication is of vital importance to you in the economical operation of your car. We urge you to read carefully the following paragraphs concerning this subject so you will know just what should be used as a lubricant in the various major units of your car.

Engine Oil Recommendations

Custom in the past, was to use heavier (thicker) oils than at present. The use of light engine oil is an aid in cold weather starting, fuel economy and the proper lubrication of parts.

To assist in the selection of oil having the proper viscosity, a series of thermometers is illustrated. The lightly shaded por-

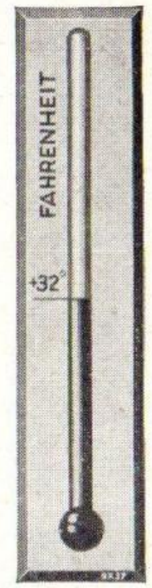
tions of each shows the anticipated temperature range during the operating period that the oil will be in the engine. Locate on the thermometers the next lower minimum temperature point than the anticipated lowest temperature. Use the viscosity of oil as recommended under this thermometer.

For Example:

During winter, if the car is being operated in a locality where the winter temperatures during December, January, February or March, may fall to 0° F., or -5° F., the lowest anticipated temperature is, therefore, -5° F. The thermometer to be located is the one having -10° F., as the minimum temperature point. The oil to use, in this case, is No. 10-W.



S. A. E. 40



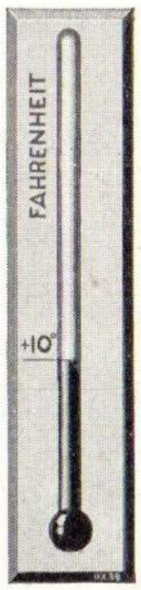
S. A. E. 30

Extreme Temperature Conditions:

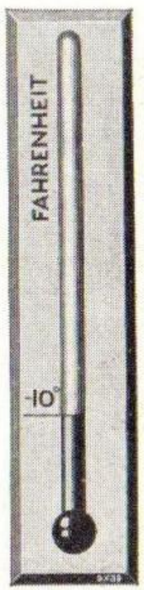
(a) During winter, in localities where temperatures may fall as low as -25° F., it is advisable to add about 10% kerosene to No. 10-W oil, and mix thoroughly before placing in the engine. If a temperature as low as -40° F., or -50° F., is anticipated it is advisable to consult your local dealer for special recommendations necessary under these conditions.

(b) During the summer, where the thermometer shows extreme temperatures exceeding 90° F., the oil recommendation is the one shown below this thermometer.

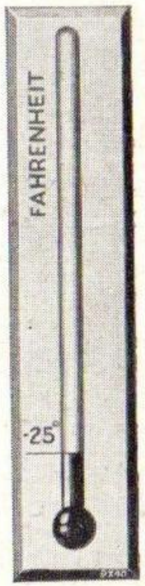
During winter, if in doubt as to the viscosity of oil to use, always select the grade with one lower viscosity number to insure ease of starting.



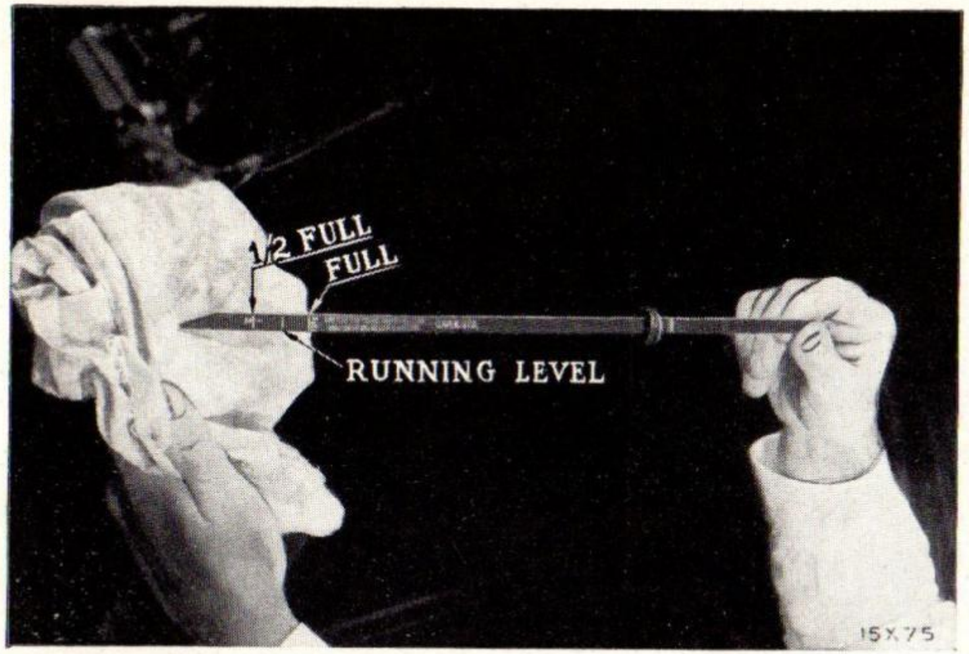
No. 20-W

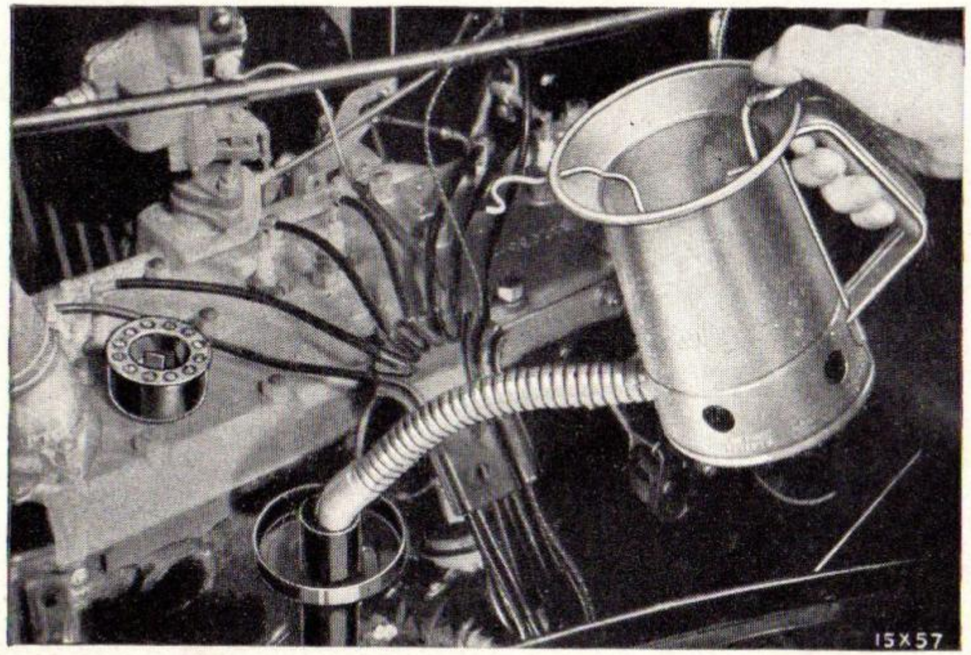


No. 10-W



No. 10-W Plus 10% Kerosene





During winter all oils used should have a pour point or cold test below the lowest anticipated temperatures that will be encountered during its use.

Checking Oil Level

Each time you stop for fuel the oil level should be checked. The oil level gauge rod is marked at "full" and "half-full." A third marking, between "full" and "half-full," indicates the "running level." The "full" mark shows the proper level of oil after the engine has not been run for a few hours. As soon as the engine is started running, the level will drop somewhat, due to the filling of oil passages and the filter.

Oil should not be added until the level is below the "running level" on the gauge rod, when one quart may be added. The levels should never be allowed to drop below the "half-full" mark.

When to Change Engine Oil

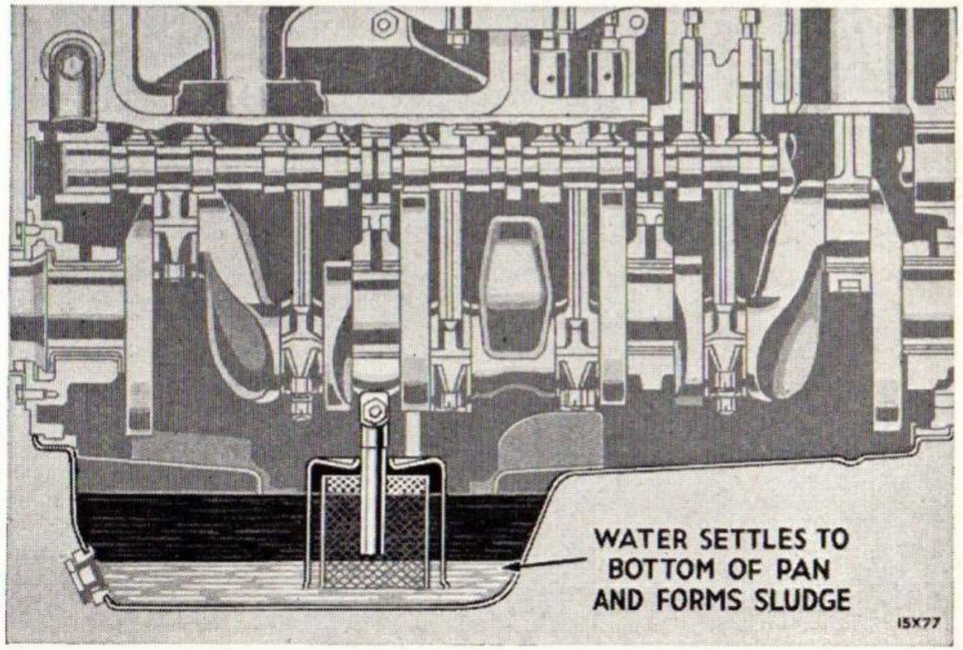
In new cars, the oil should be drained out at about the first 500 miles of operation and refilled with an oil not heavier than No. 10-W during winter, or not heavier than S.A.E. 20 or No. 20-W during summer. The next oil change should be 1000 miles later (or at 1500 miles speedometer reading) and refilled with the viscosity of oil as recommended on the thermometers illustrated. After these first two changes of oil, if the driving conditions are normal, changes should be made every 1500 to 2000 miles in winter and every 2500 to 3000 miles in summer.

It is always advisable to drain the crankcase while the engine is at normal operating temperature. Oil will drain more completely when hot, and will, therefore, carry more of the foreign material and dirt with it if drained while the engine is warm.



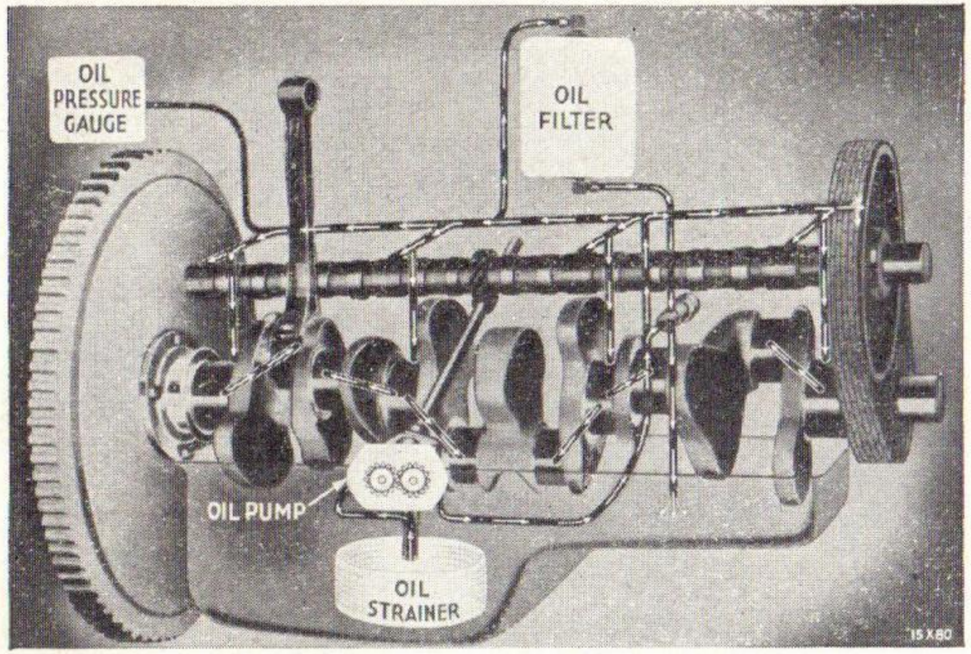
Dusty Roads and Dust Storms

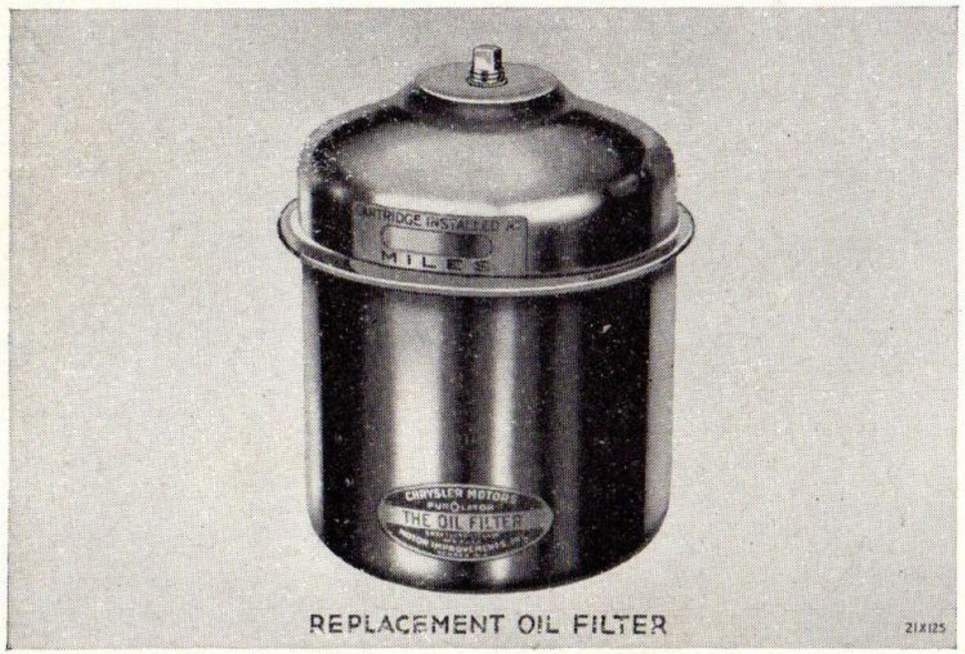
Driving over dusty roads or through dust storms introduces abrasive material into the engine. Air cleaners which are kept in good clean condition decrease the amount of dust that may enter the crankcase. However, if the oil becomes contaminated with dust or dirt, it should be drained promptly to prevent harmful engine wear. The frequency of draining depends upon the severity of the dust conditions and no definite draining periods can be recommended. It should be remembered that an oil change to eliminate abrasive dust may be considerably less expensive than to take a chance on worn engine parts.



Winter Driving

During winter, if the car is driven for short distances of only a few miles at a time, water will condense in the crankcase and form a sludge which may freeze and clog the oil inlet screen. This is especially true if winter temperatures are extremely low for an extended period of time. Under conditions of this kind the engine does not become sufficiently warm to expel the water through the crankcase ventilation system, and the oil should, therefore, be changed about every 500 miles and under





extreme conditions, less than 500 miles, to eliminate sludge. The engine should be thoroughly warm before it is drained.

As an alternative to this frequent change period during winter, an occasional drive of 30 miles or more at speeds of 50 miles per hour or higher, will do much to eliminate the water through the crankcase ventilation system and the change period may then be extended to 1000 miles, or the normally recommended 1500 mile winter change if these longer drives are indulged in frequently.

The Oil Filter

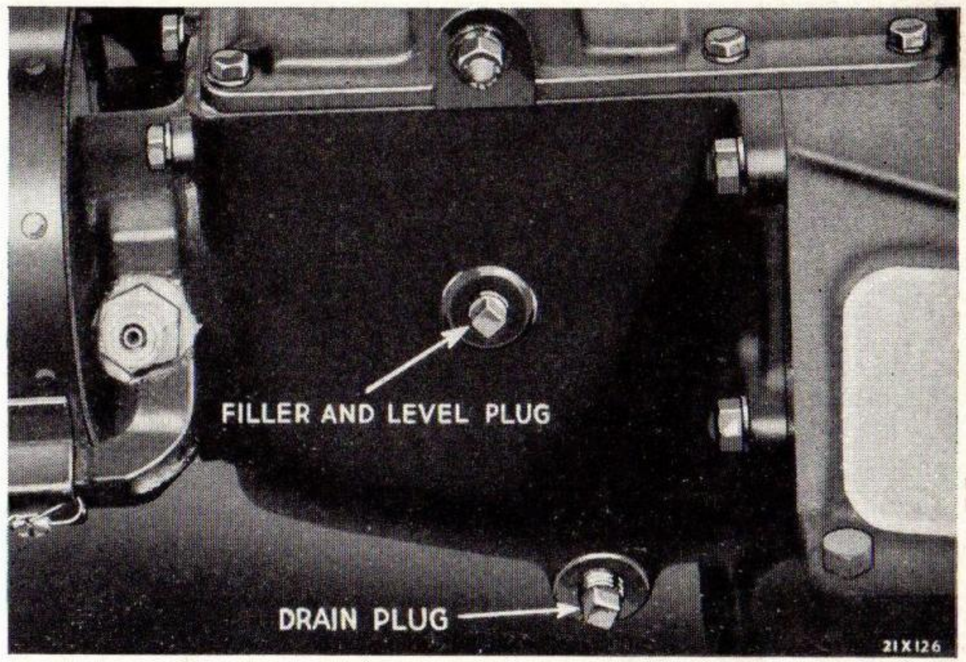
The function of the oil filter on the engine is to remove dirt and foreign material from the oil in order to assist in keeping the oil clean. This is a continuous process, and the filter cartridge will continue to trap dirt until it becomes clogged. Due to the manner of connecting the oil filter to the oiling system, clogging of the filter will not stop the circulation of oil to the bearings. However when the oil filter is clogged it ceases to filter the oil. It is, therefore, advisable to install a new oil filter every 8,000 miles. In dust areas it may be advisable to examine the oil and change filters more frequently, or at any time when the oil appears to be excessively dirty.

Transmission Lubrication

For the transmission, without the overdrive, a high grade *Fluid Gear Lubricant* should be used. In temperatures above +32°F., use S.A.E. No. 160 or S.A.E. No. 140. In temperatures

between +32°F., and 0° F., use S.A.E. No. 90. Where prevailing temperatures are unusually low for the particular season involved, it may be desirable to use S.A.E. No. 80 or add a small percentage of low pour or cold test No. 10-W engine oil to the S.A.E. No. 90.

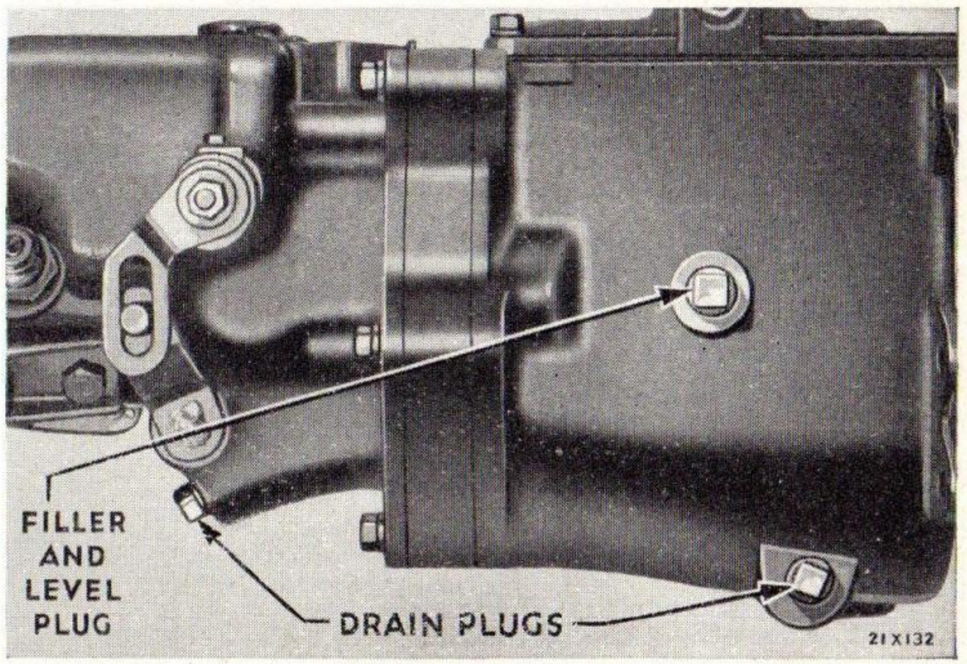
The transmission lubricant level should be checked to see that it is up to the filler hole in the side of the transmission case. The transmission should be drained and refilled every summer and winter with the proper viscosity of *Fluid Gear Lubricant.*



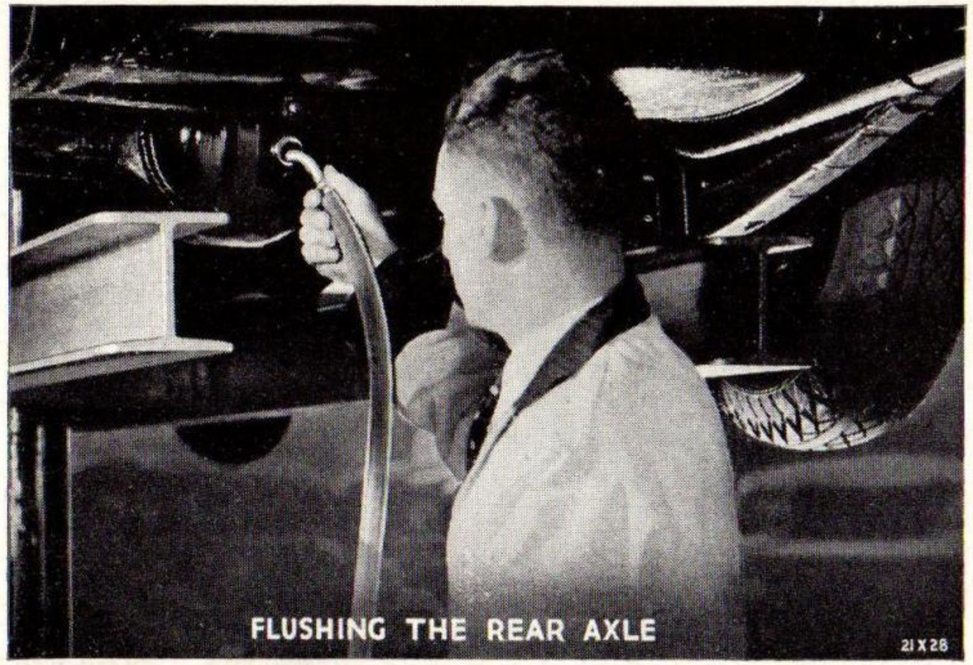
Transmission With Overdrive (Special Equipment)

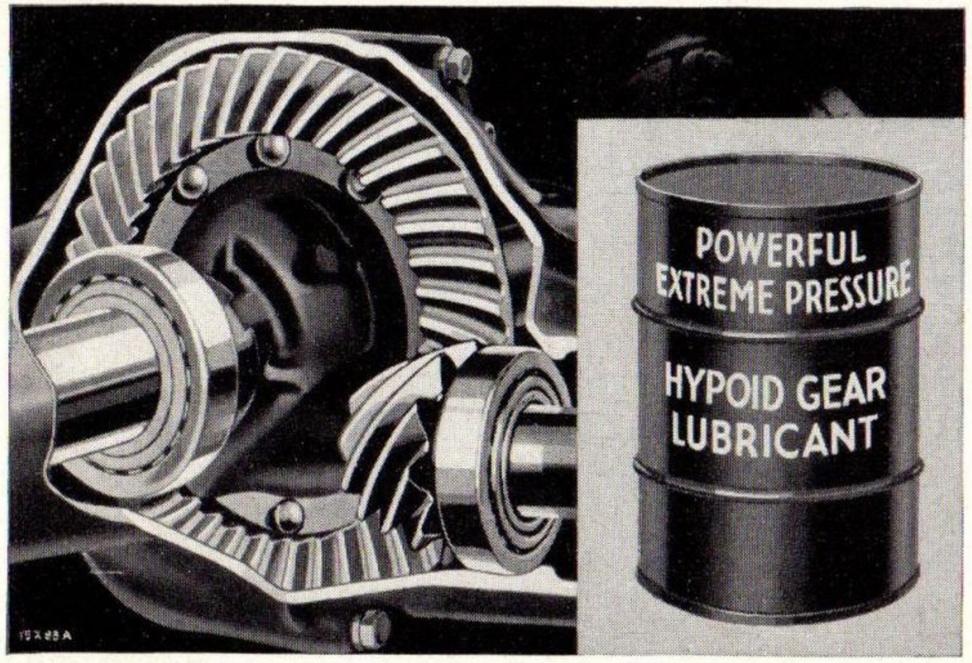
It is important that the correct type of lubricant be used in the transmission with overdrive. The following lubricant recommendations should be adhered to:

SUMMER	Recommended—S. A. E. No. 70 Aircraft Engine Oil—or; Optional Recommendations—S. A. E. No. 70 Engine Oil.
WINTER—Down to 0° F.	S. A. E. No. 50 Aircraft Engine Oil with low cold test maximum of 10° F.—or; S. A. E. No. 50 Engine Oil with low cold test maximum of 10° F.
EXTREME WINTER—Temperature consistently below zero	80% S. A. E. No. 50 Aircraft Engine Oil with low cold test maximum of 10° F. plus 20% Engine Oil No. 10W—or; 80% S. A. E. No. 50 Engine Oil with low cold test maximum of 10° F. plus 20% Engine Oil No. 10W.



The transmission case and overdrive case each have a drain plug. These cases should be drained, flushed and refilled every 6,000 miles. Care must be taken when filling these units inasmuch as there is only one hole (located in the transmission





case) for the purpose of filling. *CAUTION:* The oil will flow slowly from the transmission case into the overdrive case and sufficient time should be allowed to make sure that the lubricant level is the same in both cases.

Rear Axle Lubrication

The rear axle in your Chrysler Royal is made with Hypoid type teeth in the driving gears. This permits placing the propeller shaft very low so as not to interfere with the rear floor board. It also provides a greater area of tooth contact than with other types of gear teeth.

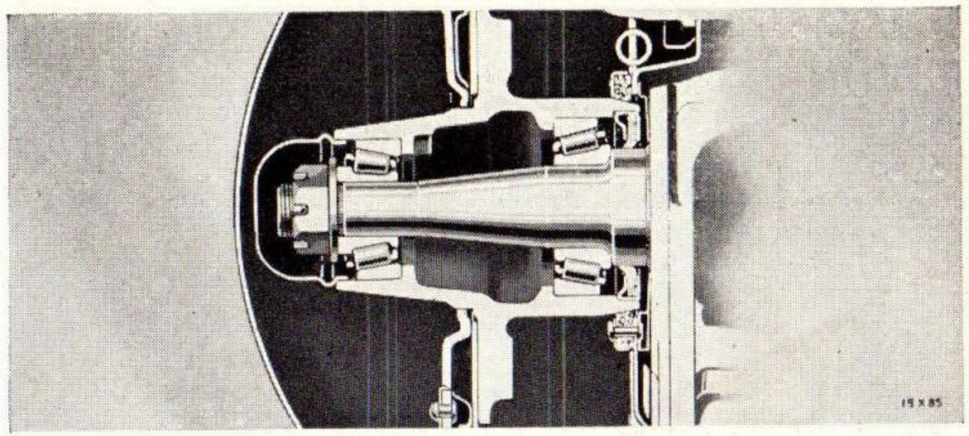
These gears require Powerful Extreme Pressure Gear Lubricants especially designed for Hypoid Gear Lubrication. In summer and normal winter use S.A.E. No. 90. Where temperatures average 0° F. or below for an extended period of time, use S.A.E. No. 80.

It is extremely important that every 15,000 miles the rear axle be drained and flushed out thoroughly with flushing oil (not kerosene). Then all flushing oil completely removed, and refilled with the proper viscosity of *Powerful Extreme Pressure Gear Lubricant.*

Should the level of the lubricant drop, due to leakage, the lubricant should be drained, the case flushed and new lubricant added. *IMPORTANT:* NEVER MIX ONE BRAND OF POWERFUL EXTREME PRESSURE HYPOID GEAR LUBRICANT WITH ANOTHER BRAND!

Front Wheel Bearing Lubrication

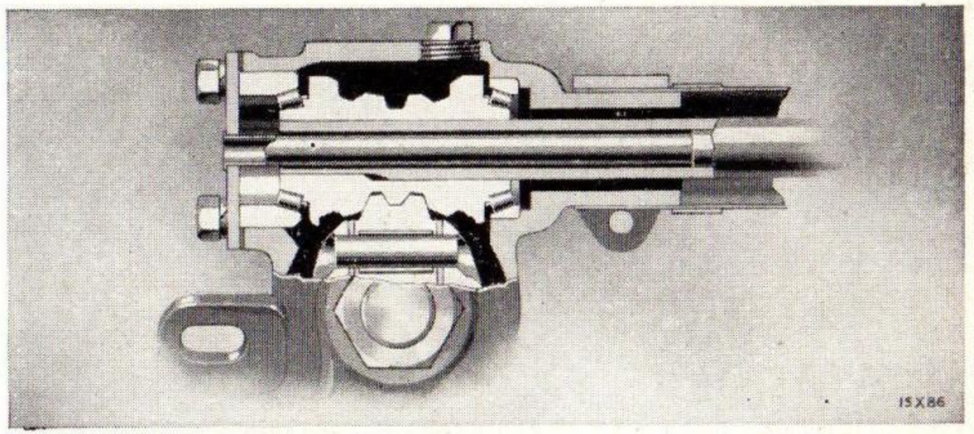
The front wheel hubs are mounted on roller bearings and therefore should be lubricated with *Short Fibre Wheel Bearing Grease*. Every 6000 miles the front wheel hubs should be removed, the old grease removed from the hubs and bearings, and then new grease packed into them.



Steering Gear Lubrication

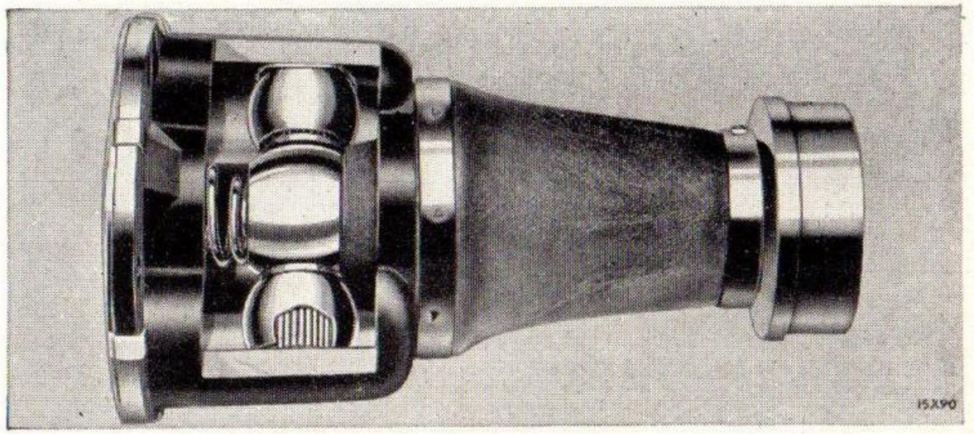
The steering gear should be lubricated with *Fluid Gear Lubricant* of S.A.E. viscosity No. 90 low cold test. Replenish when necessary. When lubricating the steering gear, care should be taken to avoid over-filling the steering gear body, as this may fill the steering column jacket to overflowing, causing damage to clothing and upholstery.

In extremely cold weather it may be necessary to dilute the steering gear oil with engine oil to avoid stiff steering.



Universal Joint Lubrication

The universal joints are lubricated when they are assembled at the factory and, due to the design and protection given them, will not require additional lubrication for 15,000 miles of ordinary driving. This inspection and lubrication should be performed by your Chrysler Dealer.



ADJUSTMENT REFERENCE

AXLE—FRONT

Toe-in (actual measurement) .....0″ to ⅛″—$\frac{1}{16}$″ preferred
Caster (not adjustable) .....plus ½° to plus 2½°
Camber.....minus ¼° to plus ¾°—plus ¼° preferred

AXLE—REAR

Axle shaft end play..... .003″ to .008″
Back-lash (ring gear and pinion)..... .006″ to .010″

BATTERY

Terminal grounded.....Positive
Voltage 6

BRAKES—SERVICE

Shoe facing to drum clearance.....Top—.012″
Bottom—.006″
Pedal free play.....¼″ to ⅜″

CAPACITIES

Engine refill .....5 quarts
Cooling system .....17 quarts
Transmission .....2¼ pints
Transmission with overdrive.....3 pints
Rear axle .....3¼ pints
Fuel tank .....18 gallons

CLUTCH

Pedal free play.....1″

IGNITION

Breaker point gap..... .020″
Spark plug gap..... .025″
Set points to open.....T.D.C.
Firing Order 1, 5, 3, 6, 2, 4

LIGHT BULBS

Location	C.P.	Mazda No.	Chrysler Part No.
Headlamps	32-32	2331	576312
Headlamp Auxiliary Bulbs....	1½	55	125588
Headlamp Upper Beam Indicator Light	1½	55	125588
Tail and Signal Lamp.....	21-3	1158	142449
Instrument Lights	1½	55	125588
Reading Lamp	15	87	142304
Rear License Plate Lamp.....	3	63	142303

LUBRICATION—ENGINE

Oil Pressure at 20 M.P.H.....30 to 45 lbs.

TIRES—PRESSURES—FRONT AND REAR

6.25″ x 16″ .....28 lbs.
6.50″ x 16″ (7-passenger) .....30 lbs.
6.00″ x 18″ (7-passenger).....34 lbs.
6.00″ x 18″ (all except 7-passenger) .....30 lbs.

VALVES

Tappet clearance (engine hot) :
Inlet ..... .008″
Exhaust ..... .010″
Inlet opens, before top center.....8° or .028″
Exhaust opens, before bottom center.....48°
Exhaust closes, past top center.....2° or .002″

Valve tappet clearance to check timing, engine cold:
Inlet ..... .014″
Exhaust ..... .014″

Automobile Manufacturers Association
Uniform Warranty

"The Manufacturer warrants each new motor vehicle manufactured by it to be free from defects in material and workmanship under normal use and service, its obligation under this warranty being limited to making good at its factory any part or parts thereof, including all equipment or trade accessories (except tires) supplied by the Motor Vehicle Manufacturer, which shall, within ninety (90) days after making delivery of such vehicle to the original purchaser or before such vehicle has been driven four thousand (4,000) miles, whichever event shall first occur, be returned to it with transportation charges prepaid, and which its examination shall disclose to its satisfaction to have been thus defective; this warranty being expressly in lieu of all other warranties expressed or implied and of all other obligations or liabilities on its part, and it neither assumes nor authorizes any other person to assume for it any liability in connection with the sale of its vehicles.

"This warranty shall not apply to any vehicle which shall have been repaired or altered outside of an authorized Chrysler service station in any way so as, in the judgment of the Manufacturer, to affect its stability or reliability, nor which has been subject to misuse, negligence or accident."

CHRYSLER CORPORATION

CHRYSLER SALES DIVISION • DETROIT, MICHIGAN, U. S. A.

The Chrysler Corporation reserves the right to make changes in design or to make additions to or improvements in its product without imposing any obligation upon itself to install them on its products previously manufactured.

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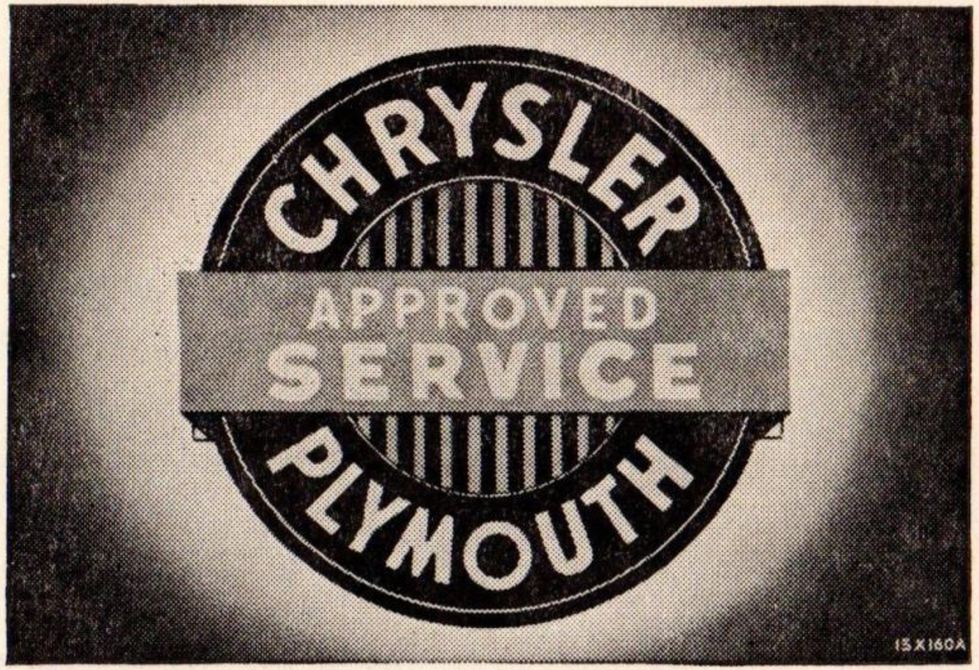
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