

### IGNITION BIG FACTOR TO INSURE SAFETY

Efficiency of Car Depends Largely Upon "Spark."

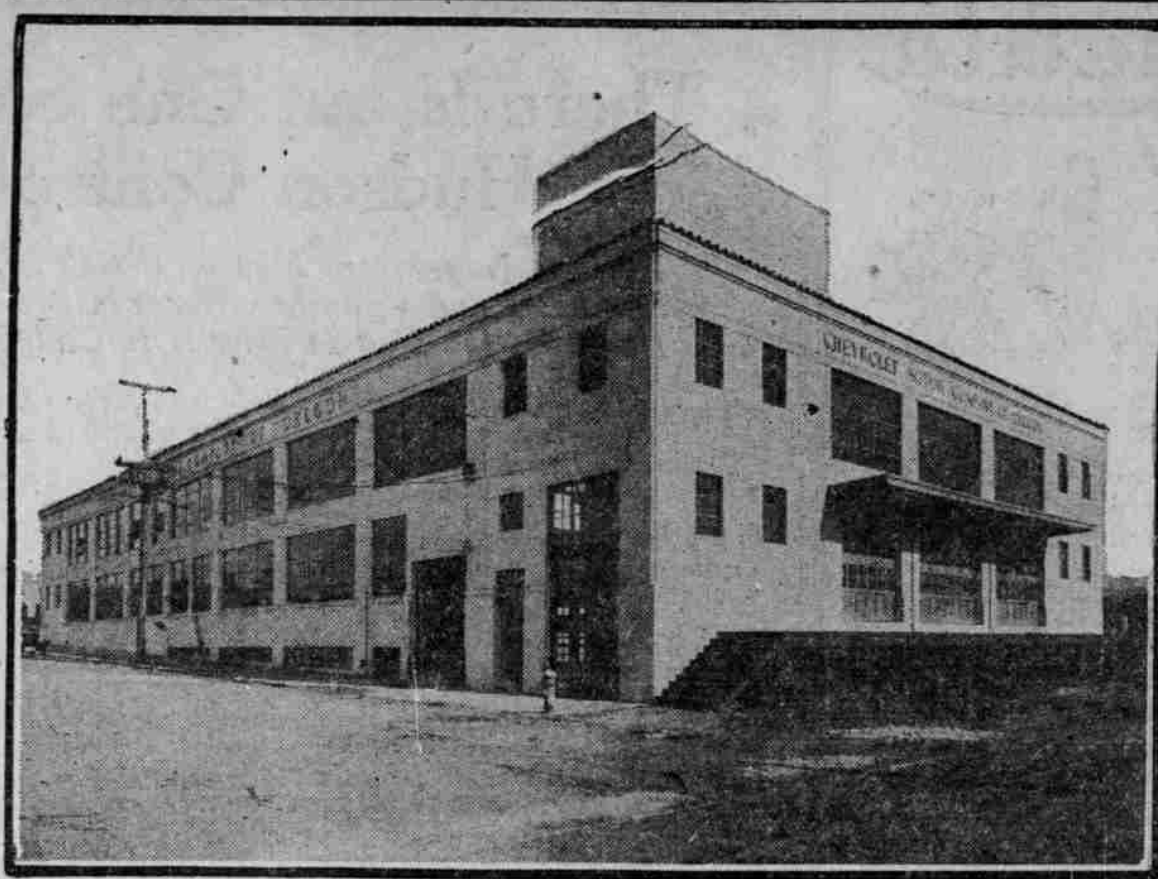
### BATTERY CONTROL VITAL

Accidents at Railroad Crossings Largely Result From Trying to Run Ahead of Trains.

(Note—This is the sixth of a series of 12 lessons in automobile driving and mechanics prepared by the National Safety Council and being published as a weekly series in the automobile section of The Sunday Oregonian through the courtesy of the Oregon and Columbia basin division of the national safety council. Complete sets of the 12 safety lessons for automobile drivers, which are copyrighted by the national safety council, 161 North Michigan avenue, Chicago, may be obtained from the council at prices ranging from 12 cents for single sets to 3 cents per set in large quantities. Each lesson is divided into two parts, as may be noted below, the first half being given over to some phase of the mechanics of gas engines and the second half to traffic regulations and driving rules. Lesson No. 6, which follows deals with the subjects of "The Ignition System," and "Automobiles and Railroads."

**The Ignition System.**  
1. After the mixture of gasoline and air is drawn into the engine cylinders and compressed, it must be ignited (exploded or fired) to force down the pistons and give power to the engine. This is accomplished electrically by the ignition system. The electric current is supplied by the generator or batteries, passes by means of electrically-insulated wire to the timer and from there to the spark plugs where it jumps in the form of a spark from one spark point to the other.  
2. The principal parts of the ignition system are:  
(a) Magneto or generator; (b) batteries; (c) timer; (d) spark plugs; (e) timer; (f) wires.  
3. Electric current is supplied to the ignition system either by the generator or batteries. The generator operates and delivers current only when the engine is running; the batteries can deliver current either when the engine is running or not. In ordinary running, the generator supplies enough current both to operate the car and keep the batteries well charged with energy.  
**Batteries Require Care.**  
4. The batteries need careful and regular attention.  
a. In cold weather water should be added about every 14 days; in summer about every 7 to 10 days.  
b. Only distilled water should be used; ordinary water may contain impurities that are harmful to the battery.  
c. If a funnel is used, it should be one made of glass or rubber. Metal funnels are conductors of electricity and are liable to spoil the batteries.  
d. In cold weather special care should be taken to keep the battery well charged and full of distilled water. If this is not done, the danger of the battery freezing is increased. A completely charged battery whose specific gravity is about 1.275 freezes at 50 degrees below zero; if specific gravity is 1.150, the battery will freeze at 20 degrees above zero.  
e. The batteries should be well covered and protected from falling on and short-circuiting the battery terminals.  
5. The starter is an electric motor which takes current from the batteries and turns over the engine for starting. When the engine starts, the starter is disengaged from the engine automatically. Releasing the starter button brings the starting motor to a stop.  
**Spark Plugs Big Problem.**  
6. Spark plugs should not be screwed into the cylinder head too tight; they expand when heated and have been known to crack the cylinder.  
a. Spark plugs should be kept clean, otherwise the engine may start hard, miss or lack power.  
b. Handle spark plugs carefully. A crack in the porcelain weakens the compression, permits leakage of the electric current, and completely spoils a spark plug.  
c. The gap between the point in a spark plug should be about the thickness of a thin dime.  
7. The timer is a cam arrangement which automatically opens and closes the electric circuit at different points so that electric sparks are produced at the spark plugs at the exact instant they are wanted. The timer requires careful adjustment and should not be tinkered with except by an experienced person.  
8. Inspect all wiring terminals and connections at least once each month. The majority of automobile fires are caused by improper or defective wires and connections. All electric wires and cable should be kept dry and clean. Dirt, oil and moisture are liable to cause a short circuit. It is especially advisable to clean off all corrosion which might form at the battery terminals. When cleaning commutators, distributing discs, and contacts, use fine sandpaper (not emery cloth).  
**Automobiles and Railroads.**  
9. The report of the Interstate Commerce commission shows the following concerning automobile accidents at railroad crossings:  
1919. 1920.  
Accidents.....2806 2270  
Persons killed.....1082 1131  
Persons injured.....3009 3169  
10. One railroad reported that 85 out of 199 (47 per cent) automobile accidents at railroad crossings in 6 months resulted from automobiles trying to cross directly in front of an approaching train. Of the remainder, 74 (37 per cent) resulted from automobiles running into trains (not trains running into automobiles).  
11. It was reported by one large railroad company that in one year over 500 crossing gates lowered to protect the public were run into and broken down by automobiles.  
12. Another railroad company reports on actual observations of 3552 automobile drivers at railroad crossings:  
2907 (81 per cent) looked neither way before crossing.  
602 (17 per cent) looked in only one direction.  
80 (2 per cent) looked both ways.  
13. The railroads are doing their part to prevent accidents at railroad crossings. They have spent and will continue to spend immense sums of money for track elevation, watchmen, crossing gates, and alarms. Already the railroads have spent more than \$100,000,000 for track elevations in the state of Illinois alone; but with 17,100 crossings still in existence, and because the average cost of eliminating crossings is at least \$20,000 each, railroad crossing accidents will continue to occur unless the public too does its share toward preventing them.  
14. It is advisable never to cross a

### HANDSOME NEW CHEVROLET PLANT ON EAST SIDE COMPLETED AND OCCUPIED.

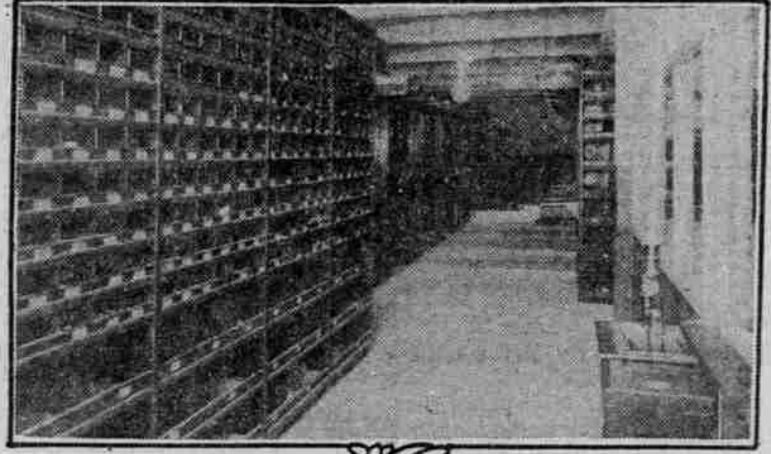
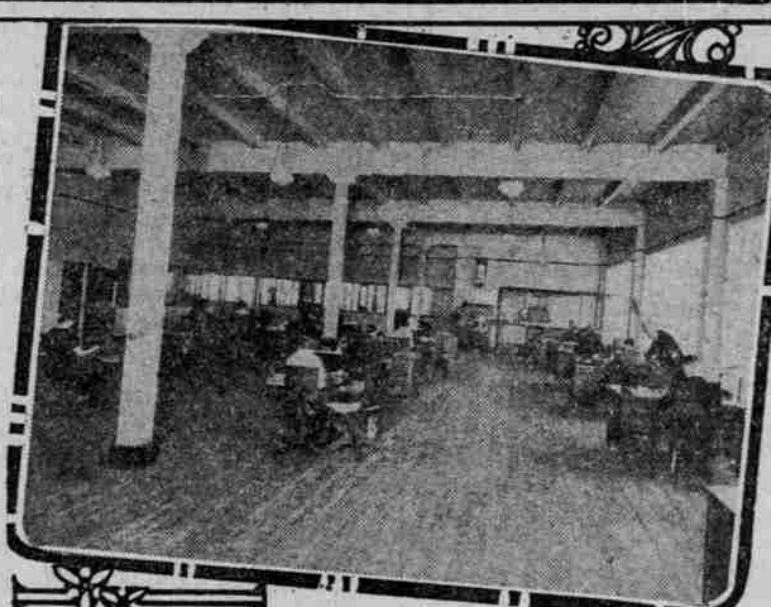


### CHEVROLET IN NEW HOME

FACTORY BRANCH MOVES INTO FINE NEW BUILDING.

Change of Location of Wholesale Quarters Coincided With Drop in Price.

Almost coincident with the unexpected drop in price of the car, the Chevrolet Motor company of Oregon, the factory branch and wholesale organization for this popular-priced car, moved into its new building at the corner of East Third and East Salmon streets last week. In moving into its new home the company has occupied one of the finest buildings for the wholesale automobile business in the entire northwest, the structure having been erected expressly for the Chevrolet, which is occupying it on a long-term lease.  
The new building, which is two stories in height with a full basement, provides 40,000 square feet of floor space and is reached by truckage on two sides. The structure has storage space for from 700 to 1,000 cars, in addition to ample office room, storage space for parts probably larger than any similar structure in this section, and quarters for unloading and loading cars and for shipping.  
Portland is headquarters for the Chevrolet for district No. 26, comprising Oregon, Washington, Idaho and western Montana, and it is estimated by M. D. Douglas, sales manager for the local organization, that the wholesale car business handled through the Portland plant will exceed \$12,000,000 annually. A feature of special interest in the new plant is the unloading device, whereby freight cars can be run right into the building. Three cars can be unloaded at one time in this way. Another feature is the parts room. Over \$10,000 worth of steel bins have been installed here and a complete supply of parts is kept on hand. A mechanic could, in fact, assemble an entire car by merely collecting his parts from one end to the other of the parts room. Special arrangements for shipping are provided, and orders for parts received as late as 2 o'clock in the afternoon are shipped out that same day.  
The recent reduction in price of the Chevrolet has brought business back to the normal basis, according to Mr. Douglas, and already there is considerable danger of a shortage of cars at the local plant. The new price puts the car at retail in the Pacific northwest practically back to the figure of 1917.



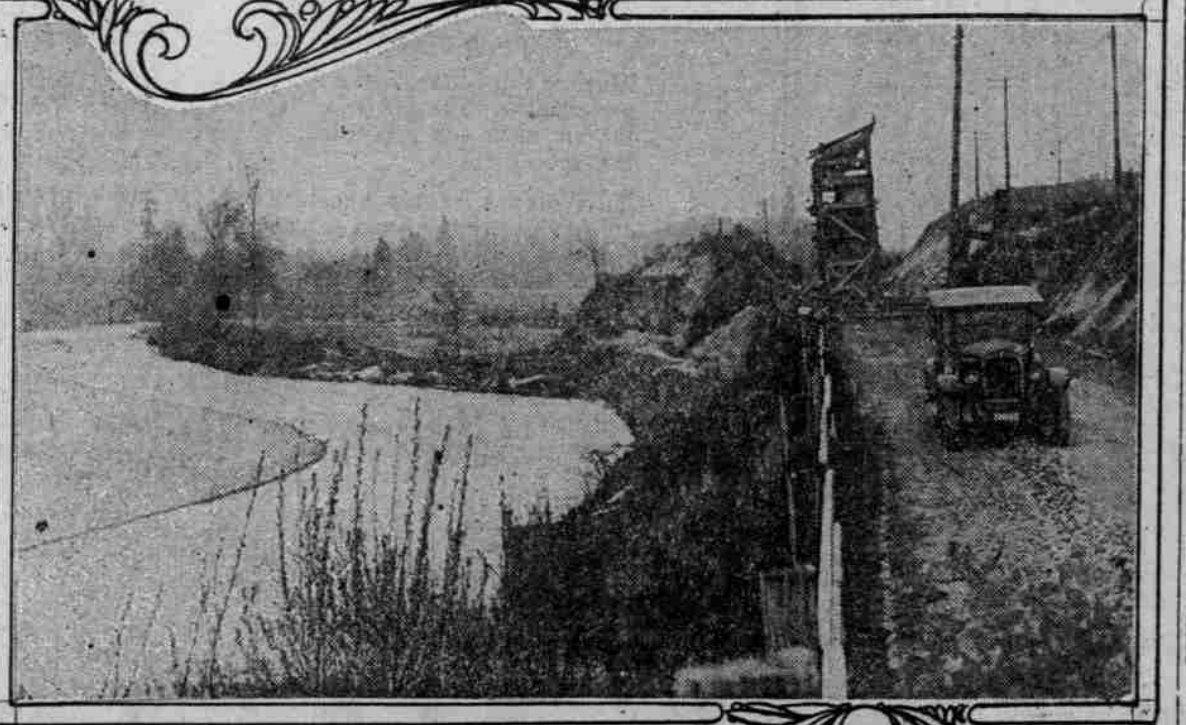
Views showing the exterior and interior of a new wholesale home of Chevrolet for the Pacific northwest. The interior views show the office rooms and a portion of the extensive stock room.

### PAIGE FIRM IS CHANGED

F. A. COOK AND CHAS. B. HARRIS NOW SOLE OWNERS.  
Interest of W. A. Gill and H. W. Lyon in Cook & Gill Co. Are Purchased.  
Reorganization of the Cook & Gill company, Paige distributors throughout this territory, was completed last week, Fred A. Cook and Charles B. Harris, two members of the firm, purchasing the interest of the two other firm members, W. A. Gill and H. W. Lyon. Mr. Cook and Mr. Harris will continue the business under the same name and with the same general policies as in the past. The home of the firm will continue to be at Eleventh and Burnside streets, where the Paige has one of the finest automobile establishments in the Pacific northwest.  
Mr. Cook, one of the remaining members of the firm, was the originator of Cook & Gill company and has been active in the development of the business since the first. Mr. Harris, the other member of the new firm, has been interested in Cook & Gill company for the past year and a half, and prior to that time was district manager in the northwest for the Paige-Detroit factory. This experience naturally has given Mr. Harris a wide acquaintance and an excellent

experience with the Paige and with the automobile business in general. Mr. Gill has announced that he will retire from the automobile business to devote his time to private affairs, while Mr. Lyon, the other retiring partner, has consented to remain with the firm as wholesale manager. In connection with the reorganization it was announced that Roy O. Burnett, who has been a salesman with the Paige force here, has been advanced to the position of sales manager for the company. Mr. Burnett has been selling Paige cars for Cook & Gill company for the past four years and is well known in automobile circles. Also to joining the Paige distributors here he was engaged in the piano business in this city with Sherman, Clay & Co. and with the Wiley B. Allen company.  
**To Straighten Front Axles.**  
A method of straightening a front axle that has been bent in a vertical plane is to take two lengths of 1x4-inch joist, long enough to reach from the upper side of the axle, just outside of each spring plate, to a cross timber of the ceiling or roof of the garage. Then if the jack is placed beneath the axle at the bend, enough pressure may be applied by means of it to force the axle back into shape.  
**Pipeclay for Mats.**  
Pipeclay acts as a preservative of rubber and makes one of the best mediums for treating the rubber mats used in automobiles. Oil and grease are rubber solvents and ruin the floor mats if they are allowed to remain on them. The mats should be wiped quite dry and then be pipeclayed. The pipeclay dries and sucks the oil out of the rubber.

### WHERE THE COWLITZ RIVER BORDERS THE PACIFIC HIGHWAY IN WASHINGTON.



Scene north of Castle Rock, on the road to Seattle, where the highway makes its way up the east side of the Cowlitz River canyon. Construction work is going on at several places in this vicinity, as is shown by the road machinery in position here, but arrangements are made for detouring when necessary and the roads are kept in good shape. The car in the photograph is a Mitchell recently driven down from Seattle by Mitchell, Lewis & Staver, Mitchell distributors for the northwest.

### TACOMA RACE CARS WILL COST \$500,000

Machines to Be Entered From All Over World.

### FOREIGNERS ARE COMING

Two or Three Speeders Under Construction by Louis Chevrolet to Participate in July 4 Event.

TACOMA, Wash., May 14.—A fortune will be invested in new racing cars to be seen on the nation's speedways this year, according to advance information received at the offices of the Tacoma speedway. It is reported that 20 cars are ready or under construction with a total valuation of \$500,000.

Among the new cars to be seen at Tacoma will be two or three under construction by Louis Chevrolet, dean of all American race drivers, who has quit the racing game. Three cars are building in Kansas City in addition to several new Monroes, Frontenacs and Duesenbergs special racing creations.

**Foreign Cars Coming.**  
Report has it that Cliff Durant, who has always been at the wheel of a Chevrolet special, is trying to induce his father, former head of the General Motors company, to build two racing cars to bear the family name. Several foreign cars will soon be in the United States and it is expected that at least two of these cars, either French or Italian may come to Tacoma for the events of July 4.  
Early reports from Indianapolis say that the best drivers of the world already entered and that more cars are expected with the next two weeks. W. C. Baldwin, president of the Tacoma Speedway, which is in Indianapolis for the Memorial day race of May 20, and will have the pick of the cars at the Indiana track.  
The Tacoma track's purse of \$25,000 with first money of \$10,000 in addition to 400 points for the national championship of 1921, is creating greater interest in the track than ever before and the race of 250 miles is another feature that is appealing to the speed kings.

**Biggest Crowd Expected.**  
"Interest in the July 4 race this year exceeds all past years," says President Baldwin. "The demand for grandstand seats and parking spaces in front of the pits from racing fans in the four states is taken to indicate that the crowd this year will exceed all previous records at the track. We will be prepared to handle 50,000 people in a short space of time."  
Motor car racing has come back since the year stronger than ever before, cars are faster, drivers are devoting every hour to practice work and automobile builders are watching this year's events with keener interest than they have in past years. Tacoma and northwest racing fans are going to see the most wonderful cars ever presented and the race this year should bring countless thrills and shatter old records for speed and endurance.

Speedway tickets are already on sale at all branch offices of the Automobile Association of Washington. In addition the Hotel Grayport in Hoquiam and the Hotel Washington in Aberdeen are speedway ticket offices this year. Bureaus are also to be opened in Spokane and Portland.

### FRANKLIN CARS TRIUMPH

FIRST PRIZE CAPTURED IN 100-MILE ROAD RACE.

Portland Distributor Reports Increased Sales During Past Few Months—Popularity Grows.

News of Franklin triumphs in far-off South America reached J. C. Braly, president of the Braly Auto company, Oregon distributors for the Franklin, last week.

According to these advices a Franklin car in the hands of a pilot who had previously driven in but one race won the first prize of \$1000 in a 100-mile road race staged in the southern continent recently. Twenty-seven cars were entered, among them several well-known American and European makes. Most of the cars were in the hands of professional drivers of considerable reputation.

The run took place in Uruguay, between Montevideo and Punta del Este, the latter place being a fashionable seaside resort. The Franklin completed the 100-mile jaunt in 2 hours 22 minutes 35 seconds.

The first half of the course was over a macadam highway, but the last half was over very rough and difficult unimproved road running through a range of hills.  
Braly also is in receipt of advices

### Is Your Automobile Engine Sick?

Are Your Spark Plugs Dirty? Has Your Engine Lost Its Power? Do the Cylinders Pump Oil? Do the Cylinders Need Re-boring?

**Here Is the Remedy:**  
The Zelnicker Ever-Tyte Piston Rings. Three-piece, entirely different. Not a step, not a miller. Ever-Tyte. Less wear on your cylinder wall than any other piston ring. Great oil and fuel savers in the world.

**Here Is the Proof:**  
We guarantee Zelnicker Ever-Tyte Piston Rings to produce higher compression, develop more power and use less fuel and lubricating oil, you to be sole judge.

We will refund the full purchase price of any purchaser upon the return of the rings, if they fail to give absolute satisfaction within a period of twelve months from date of installation.  
This is the strongest guarantee given by any piston ring manufacturer. If your rings are worn, very rough and sell you a piston ring, so-called just as good, order direct from

EVINRUDE MOTOR CO.  
211 Morrison street, Portland, Oregon, Phone Marshall 1765. Wholesale and retail distributors: Zelnicker and Ever-Tyte Piston Rings for Washington, Oregon and Idaho. Discussed at the trade show. Write for literature and representative wanted in your town.



## WINS AGAIN!

First Car This Season to Cross Summit of Sierras (elevation approximately 6800 feet), Winning Feather River Inn Trophy, again Demonstrating BUICK Power and Reliability.

- A Few of the 1921 Buick Records**
- January—Buick Coupe, San Francisco to Portland, 29 hrs. 16 minutes.
  - February—Buick Coupe, winter record, Portland to Pendleton.
  - April—Seven-Passenger Touring, Yosemite Valley, Perpetual Challenge Trophy.
  - April—Five-Passenger Touring. Climbs Mount Tamalpais over right-of-way of the crookedest railroad in the world.
  - May—Seven-Passenger Touring. First car over summit of Sierras to Feather River Inn and to Reno, winning Feather River Inn Trophy.

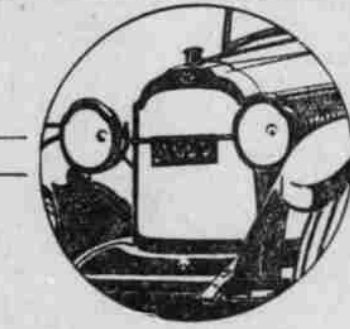
What These Buicks Did Any Buick Will Do—Duplicate Cars Ready for Immediate Delivery  
If additional proof of Buick power, dependability and popularity is desired, it will be found in the fact that over 65,000 Buick owners on the Pacific Coast are willing to testify to Buick superiority.

Peer of All Buicks Is the 1921 Model  
When Better Automobiles Are Built, Buick Will Build Them

## Howard Automobile Company

Largest Distributors of Automobiles in the World  
Salesrooms  
Twelfth at Alder Street  
Broadway 1130; 562-41

from the Franklin factory at Syracuse, New York, to the effect that business done by Franklin dealers throughout the nation during the last 20 days of April exceeded by 10 per cent the volume of business done during the corresponding period of March. Franklin sales records have shown a steady increase for a good many months and Braly declares the Franklin's popularity has shown a wonderful growth since the introduction of the new Franklin hood and the other improvements embodied in the latest models produced by the Syracuse factory.  
**The Best Water.**  
Not all car owners know that pure rain water is the best that can be used in the cooling system. This is because it is free from mineral substances, which are present in ordinary water and which are deposited on the metal walls of the radiator, piping, jackets, etc., to their detriment. When rain water is available, always use it. Watch the car in front.



## Used in the Costliest Cars

England, France, Belgium—each of these nations produce one automobile so distinguished from all others by its incomparable excellence that even as its name comes to the lips quality leaps into the mind.

They are three of the costliest automobiles in the world!  
And all are equipped with the quiet Sleeve-Valve Motor!

The triumph of the Willys-Knight engineers is that they have reduced the cost of this famous motor by the magic wand of quantity and coupled to a moderate price the most perfect and economical piece of motor mechanism in the world.

## WILLYS-KNIGHT

WILLYS-OVERLAND PACIFIC CO.  
Broadway at Davis—Phone Broadway 3535.