

# GRAVITY NO FACTOR IN FUEL EFFICIENCY

Impressions of Many Persons Are All Wrong.

## HERE IS RIGHT ADVICE

The Lower the Boiling Point the Quicker Gasoline Will Vaporize for Use as Fuel.

A great deal is being said regarding the gravity of gasoline. So much stress has been laid on this feature that many persons interested in gasoline and its use have come to believe that the quality of the gasoline and its efficiency as a motor fuel are entirely dependent upon its gravity.

This is a wrong idea, and for the benefit of those interested in the use of gasoline, especially in automobiles and with a view of helping them secure the best results at a minimum cost, here is submitted some inside information on gasoline, explaining why its gravity does not determine its efficiency as a motor fuel.

Not many years ago most people who owned cars thought they had to have 74-75 per cent gasoline and asked for that grade. They wanted the best they could get and thought the higher gravity gasoline would give them better results, more power and more miles per gallon than gasoline of lower gravity. This is a mistaken idea. We have been comparing it steadily and have succeeded in convincing a large per cent of the car owners that the efficiency of gasoline for use in autos is determined by its volatility—it is not a question of gravity.

### Two Gravity Scales.

Now as to gravity, which, by the way, simply means weight. There are two scales in common use, Specific and Beaume. They are used to indicate the relative weight of a liquid compared with water. In the specific gravity scale, water is taken as a standard at 1. Any liquid which is heavier than water is expressed by 1, plus additional decimals, depending on how much heavier the liquid is than water. All liquid products of petroleum are lighter than water, hence their weight will be indicated as less than 1. Thus .8764 means that the liquid is .8764 ten-thousandths of the weight of water. Therefore, the heavier the liquid, the more nearly they approach 1, the heavier the liquid, and vice versa.

That is the specific gravity scale and it is not used in the petroleum industry. The specific gravity of weight of gasoline or other petroleum liquid products by oil refiners, although a good many people think it is and is in other words, who are only slightly familiar with the specific gravity scale ask for high gravity gasoline, thinking they are getting a heavier grade of gasoline, which would, of course contain a greater number of heat units. This is all wrong, because the specific gravity scale, as above stated, is not used by oil refiners in connection with gasoline.

**Gravity of Quality.**  
The Beaume scale of gravity is used in this country by all chemists in oil refinery laboratories to express the gravity of petroleum liquids, because it is more convenient.

In the Beaume scale of gravity water is taken at an arbitrary point on the scale, being 10. A liquid weighing less than water is expressed by figures higher than 10; which you will see is just the reverse from the specific gravity scale—with the latter, the higher the number, the heavier the product approaches the weight of water, hence the heavier, as water is heavier than oil or gasoline, while with the Beaume scale, the higher the numeral the lighter the product, as the higher the gravity as indicated by the numerals, the farther away it gets from the weight of water.

Another reason why some people ask for high gravity gasoline, and quite a common reason, is just because they have the idea that high gravity means high quality, and they do not know that they are sacrificing the most essential features, more power, because more heat units, and more miles per gallon, by passing up the lower gravity gasoline; not only that, but they pay more money for the high gravity goods. In other words, they have been stung.

**Same Test as for Coal.**  
Now, just a few more words regarding heat units. Take, for instance, coal.

If coal were sold by the space occupied instead of by the ton, and the price of hard and soft coal were the same for the same number of cubic feet, you would take the hard coal, because you would know you were getting more weight, hence more heat units for your money.

The same thing applies to gasoline—the heavier the gasoline, the more heat units you get, and the more power—and it is cheaper. So much for gravity and heat units. As previously stated, the right way and the only way to determine the efficiency of gasoline as a motor fuel is by a process of distillation, by means of which the refiner determines its boiling points.

The rapidity with which a liquid will evaporate or vaporize is determined by its boiling points. A liquid that has a low boiling point will evaporate quicker than one with a high boiling point—it takes less heat to boil it, that is, to cause it to go off in a vapor; consequently it requires less heat and air to vaporize it.

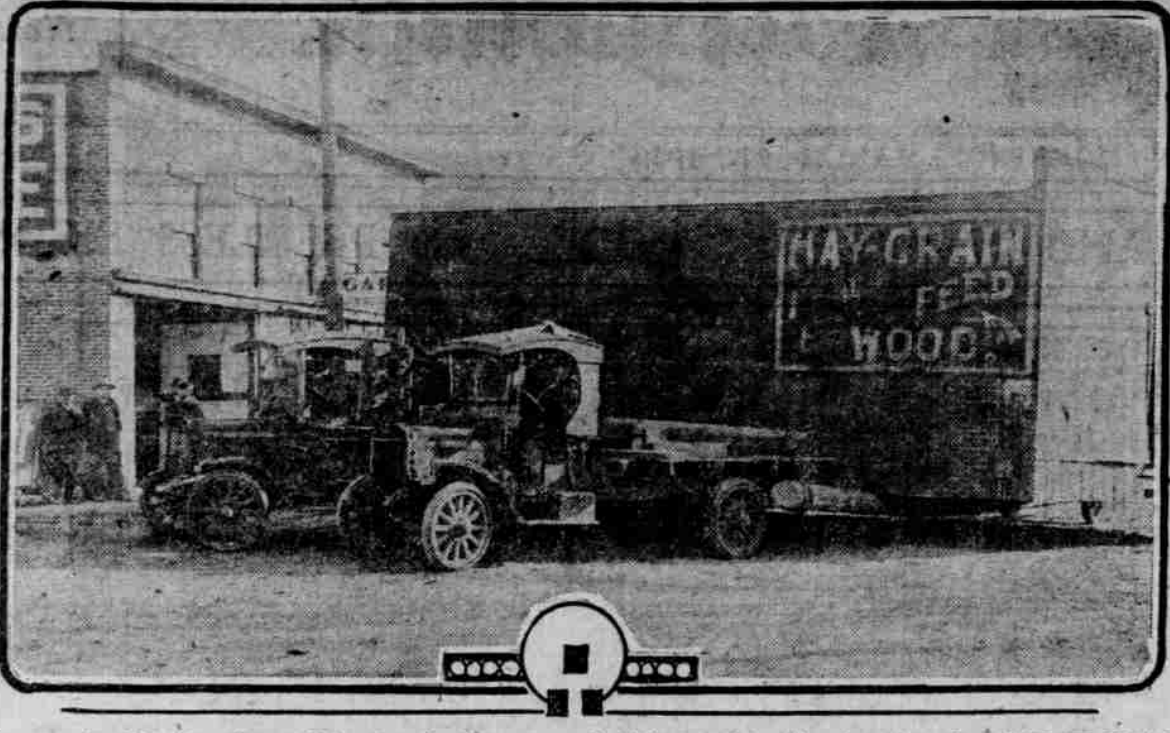
**Gasoline Boiling Points.**  
The lower the boiling point the quicker the gasoline will vaporize or atomize under ordinary temperature. Therefore, in making gasoline for use in autos we keep the initial boiling point, that is, the point at which it commences to vaporize, as low as possible, and at the same time, produce a product suitable for use in an internal combustion engine.

The starting of the engine is of course dependent on this initial boiling point. If the initial boiling point is too high, you are bound to have trouble starting. Now, while we have seen that low boiling points are requisite, proper maximum points are equally essential; but this rise should be gradual.

This is why the intermediate boiling points are taken. The low initial boiling points start the explosion quickly. The gradual rising boiling points form the connecting links between the lower and higher boiling points, just like a fuse, giving ever increasing power and force to the explosion.

The ideal gasoline for use in autos is the product with the low initial boiling point, which means easy starting—and low gravity, which carries with it more pounds per gallon, meaning more heat units and more power—and gradual rising points.

THIS EVIDENTLY WAS MOVING DAY FOR THE HAY, GRAIN AND FEED DEALER AT WHITE SALMON, WASHINGTON.



However, it might have been a lot worse, for he was saved all the usual trouble of moving when these two Master trucks with trailers hitched onto the building and hauled the whole thing to a new location.

WHITE SALMON, Wash., March 20.—(Special.)—Elimination of heavy grades and great improvement in county roads has wrought a revolution in transportation throughout the White Salmon valley. Nine years ago a two-ton Speedwell truck was brought here by a resident of the valley for general trucking, but after a few months on the rough mountain roads and grades was found impracticable. Its tires were chewed up in almost no time. Today nearly every commercial bearing orchard section has its trucks, of one to five tons, operating virtually the year round. Likewise, there are passenger automobiles all through the district and it is rare to meet a car on the road. Without trucks, this valley would have lost fully 50 per cent of its apple crop last fall. Where the output of the lumber mills in the valley was formerly hauled by four-horse teams, today trucks and trailers are doubling and tripling deliveries to points of shipment, at substantial savings in cost. Recently the building shown in the picture, 24x27 feet, was underlaid on two logs which rested on two Master trucks and trailers, and hauled several blocks, part of the way over an 8 per cent grade, with ease, all in one hour and with only one man to each truck. Is this district sold to motor trucks? It is.

## GAS SITUATION BAD ONE

STILL, THERE'S HOPE IN IMPROVED METHODS.

While Shortage Is Acute, Chicago Refiner Says More Gas Will Be Taken From Crude.

CHICAGO, March 20.—Joseph M. Cudaly, new head of the Sinclair Refining company, has issued a statement that will do much to relieve the anxiety concerning gasoline-driven machines. He does not believe a gasoline famine is in sight, but admits the situation is acute. Owners of automobiles had begun to fear that gasoline would soon be so scarce its use would be practically prohibitive. Among other things he said, "The gasoline situation in the United States is acute. The public, however, need have no fear of a gasoline famine, because the methods and processes for the extraction of greater percentages of gasoline from crude oil are already being used. Today many of the refineries are selling oil to be consumed as fuel, which by the use of more scientific methods can be further refined so as to be converted into gasoline, fancy lubricating oils, paraffine and medicinal products."

"In 1910 the United States produced 299,000,000 barrels of crude oil and consumed 295,000,000 barrels. In that year the United States consumed 14,000,000 barrels of gasoline. In 1919 the United States produced 355,000,000 barrels of crude oil and consumed 295,000,000 barrels, the deficiency being made up principally by imports from Mexico. Manufacturers of motor vehicles estimate that in 1925 250,000,000 barrels of gasoline will be required to meet the demands for automobiles, trucks, tractors and airplanes, not to mention gasoline required for motorboats, stationary engines, etc. This will call for 800,000,000 barrels of crude oil and will require much higher processes of refining than are in use at present."

**MORE GOOD ROADS NEEDED**  
H. J. McIntosh Would Develop the Entire State.

"The creation of more good roads, restoration of those highways that have received more than their share of travel, maintenance of all improved byways will do more to put business on a stable foundation and keep it there than any other one thing," says H. J. McIntosh, of the McIntosh Motor Car company, local Kiesel distributor.

"Twenty of good roads in proportion to the nation's transportation requirements is the solid foundation of national prosperity, because it keeps the great arteries of motor transportation free from congestion and is conducive to maintaining schedules. A network of good roads in this country would open up hitherto inaccessible sections of the country, the small towns, the agricultural communities, the industrial and mining centers, that can only be reached by horse team or horseback."

"Therefore let us tackle the good roads problem with the same American push and pep that have characterized our activities in other lines of national progress. The result will more than compensate for the money and time spent."



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Atterbury Trucks, equipped with dump bodies, are daily establishing records for efficiency.

Any size to meet your requirements. We carry large stock of parts and are particular to give good service.

## Atterbury Truck Sales Co.

TRUCK SPECIALISTS  
343 OAK, Near Broadway Phone Broadway 354

Distributors for Oregon, Southern Washington, Western Idaho and Northern California



MOTOR TRUCKS OF MAXIMUM SERVICE

## RED FIRE WAGON BOUGHT

MARSHFIELD BUSINESS MEN SUBSCRIBE \$3000.

City Council Couldn't Raise Funds, So Merchants Put Up the Money for Equipment.

Business men of Marshfield, Or., are setting an example that might be followed by many other towns. They wanted fire-fighting equipment, but the city council had no funds for its purchase, so the business men by voluntary subscription have raised about \$3000. With this they will buy a Red 3-ton Speedwagon chassis and equip it with chemical apparatus, hose, ladders and the like.

It was after the Marshfield city council had several times debated the question of adequate fire protection and was finally compelled to pass it up that the movement to raise funds by voluntary subscription was started. Gorst & King, Marshfield dealers for the Red Speedwagon, originated the idea, and besides offering to supply the truck at actual cost, subscribed \$100 to the fund. Further than that, they agreed to take it back any time within two years at a discount of not to exceed \$200 if the city should in the meantime decide to purchase equipment from the city's funds.

The chassis was ordered through the Northwest Auto company, distributors of the Red, and will be equipped with body and apparatus at Marshfield. Don't advance the spark lever when cranking.

**TRADE FUTURE BRIGHT**  
FIRESTONE MAN EXPECTS EXPORT TO BE BRISK.  
Europe Soon Will Regain Its Old-Time Aggressiveness, He Asserts.

Trade with Europe will soon assume many pre-war characteristics, with the added feature of being many times more brisk, in the opinion of A. C. Frank, export manager of the Firestone Tire & Rubber company. Mr. Frank recently returned to New York city after three months in England and continental Europe. "Although they are still suffering from the industrial difficulties which were the inevitable result of the war, the European nations will soon regain their old-time commercial aggressiveness, I believe," Mr. Frank said. "The resourcefulness they showed in the war will reassert itself in peace and they will again demonstrate their stamina by reclaiming a share of the world's trade."

"The industrial activity of Belgium is particularly noteworthy. This plucky country, undaunted by its tremendous hardships, is now rapidly placing its factories on a quantity production basis and is doing much toward the rehabilitation of the devastated districts."

"International trade, after the resumption of European industries, should develop, I believe, to a degree heretofore considered impossible. I look for an unparalleled era of trade among all nations."

Frank believes over-seas business holds untold possibilities for American industry. If the road is the only place to walk to school, walk on the left side facing the traffic. If you walk on the right you will be in the path of cars coming from behind.

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# OVERLAND 4 MAKES ENDURANCE RECORD

Car Driven 5452 Miles in 168 Hours' Continuous Driving.

20.24 MILES GAS AVERAGE

Speed of 32 1/2 Miles Per Hour Is Maintained for Seven Days on Triplex Springs.

Driven continuously for seven days and seven nights, over ordinary suburban roadways, an Overland 4 stock car has established an Overland 4 record. The car finished the grind on the same Flak tires with which it started. To make this new record, the drivers of the Overland 4 maintained an average speed of 32 1/2 miles an hour, 24 hours a day. Gasoline mileage was 20.24 miles a gallon.

The consistency of the Overland's performance is shown in this tabulation of each day's run. The first day and night the speedometer registered 749 miles. On the second day the mark was 778 miles on the third 747 miles, on the fourth 792, fifth 809, sixth 823, and on the last lap of the new unofficial world's record 753 miles.

The test, the first of its kind to be tried and actually accomplished by a light car, started at 9 A. M. February 25 and ended at 9 A. M. March 4. The run was conducted by the Gibson company of Indianapolis, distributors for Overland cars. The mileage and gasoline records are certified by the following observers:

Howard F. ("Howdy") Wilcox, winner of the 1919 Indianapolis speedway 500-mile racing classic; Munroe E. Bobbet, secretary of the Hoosier Motor club of Indianapolis, and R. H. Scripps, editor of the Hoosier Motorist.

Although the new Overland 4 with triplex springs had been tested 250,000 miles under all possible weather and road conditions before it was placed on the market by the Willys-Overland company, officials of the company declare that the Indianapolis endurance run is one of the most convincing demonstrations yet made of the reliable, economical performance of the car and the road-comfort qualities of the now famous triplex spring suspension.

Officials of the company witnessed the start and the finish of the seven-continuous-day run. Careful examination of the car and its power plant after the run convinced the Gibson company that it was ready to repeat the endurance test of the 168 hours of furious driving, and largely because the car had been protected by the new triplex springs. The run is considered the highest possible verification of the ability of this new spring suspension to protect the car from road wear and provide big car riding comfort in a motor car of short wheelbase. A new inner tube was placed in the tire shoe.

It is conservatively estimated that 5452 miles of driving over the ordinary run of suburban roads is equal to the usage and punishment to which the average motor car owner would subject the car he drives in a year's operation. That makes the Overland 4's achievement all the more noteworthy in indicating to what high standards the manufacture of light-weight, economical, easy-riding motor cars has been raised by an American automobile manufacturer.

**New Garage at Eugene.**  
EUGENE, Or., March 20.—(Special.) Lester G. Hulth of this city, who is cashier of the First National bank of Springfield, this week began the erection of a new building on Oak street, between Ninth and Tenth avenues, in this city to be occupied by an automobile-tire vulcanizing works and an automobile electrical supply house. The walls of the building will be of hollow tile and the dimensions will be 80 by 80 feet.

Don't attempt to run the car on the electric starter.

## A Genuine Removal Sale—Compare Prices

# USED CAR BARGAINS


We must dispose of practically all of our used cars before moving to our new building, now in course of construction at Broadway at Everett.

We want to go into this building with as few cars as possible and to move our present stock quickly we are disregarding the money we have in it and cutting prices to a point which is bound to attract those who know real used car bargains when they see them.

Our used car stock is in splendid shape. We have more than forty cars of various standard makes, Mitchells, Jordans, Velies, Overlands, Chevrolets and many others. These cars are exceptionally good, most of them overhauled, many of them repainted, all of them rare bargains as priced for this sale.

Look through the list in the Classified section of this paper, then take your first opportunity of viewing our stock.

Open Sundays from 10 A. M. to 4 P. M.



EAST MORRISON AND FIRST STS.  
New Cars, Broadway at Oak.

**It's Better to Buy a Good Used Car Than a Cheap New One**

## AUTO ACCESSORIES AND PARTS

### Stewart SPEEDOMETERS and "BIG TEN NECESSITIES"

They're More Than Accessories  
Official Service—Genuine Parts  
Product Service Station, 333 Ankeny Street

### Sayers Six Denis Motors Co.

SAYERS Auto Funeral Equipment  
Twenty-first and Washington  
State Distributors

### ARCHER & WIGGINS

Distributors of AUTOMOTIVE ACCESSORIES  
Sixth Street at Oak.

### JACKSON Denis Motors Co.

SIX TOURING FOUR WHEEL DRIVE TRUCK  
Twenty-first and Washington  
State Distributors

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105-107 North 11th St.  
AUTOMOBILE GEARS PARTS AND ACCESSORIES AT REDUCED PRICES  
ENGINES A SPECIALTY

### LANER AUTO SPRING CO.

10,000 Springs Carried in Stock. Let Us Repair Your Springs Where You Get Service. 15TH AND COUCH STREETS

### Miller Northwest Auto Co.

Distributors  
Miller Tires, Miller Ad-On-A Tires  
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Willard Threaded Rubber Insulation  
Service Station—Ninth and Everett

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MITCHELL, LEWIS & STAVEN CO.  
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SALES AND SERVICE SERVICE GARAGE  
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Electric Lights and Starter  
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### Franklin

offers more of "what you actually need and want in an automobile."  
BRALY AUTO CO.  
Main 4880, A 3881, 19th and Washington Sts.

# GRANT SIX



## Demand for the New Grant Six Grows Swiftly

Thousands of orders, orders from every territory in this country and abroad; countless telegrams; hundreds of dealers visiting the factory. All these attest the immediate and overwhelming popularity of the new Grant Six. And its splendid performance is bound to increase this popularity, for everybody writes that the Grant Six is a wonderful automobile—a truly fine car.

It is pleasing to record the experience of the Halifax, N. S., distributor who drove his demonstrator home from the factory. He gave it a gruelling test. "We covered 1409 miles—200 miles of it the worst roads in America—and that's going some," he writes, "and she went through without a squeak or a rattle. Never sat in an easier riding car in my life."

That's typical of the experience of all. Everybody is praising the new Grant—praising its looks and its performance, its speed and its easy riding qualities.

This is the logical result of a design fundamentally correct—a motor that's unusually fine—a chassis that's built for endurance and a body that's built for comfort.

By all means see the new Grant Six at your earliest opportunity.

Five-passenger Touring Car, \$1595; Three-passenger Roadster, \$1595; Five-passenger Sedan, \$2450; Four-passenger Coupe, \$2450.  
F. O. B. Factory

MANLEY AUTO CO., Distributors  
Eleventh and Oak at Burnside Phone Broadway 217  
A. B. Manley, Pres. E. C. Habel, Sales Manager

GRANT MOTOR CAR CORPORATION · CLEVELAND, OHIO