

SPEED, PERFORMANCE SHOWN BY FORMULAE

Car Owner Able to Determine Horsepower.

SPEED INQUIRIES MANY

Simple Computation Enables Driver to Ascertain Facts—Gear Ratios and Wheel Sizes Explained.

Every really enthusiastic car owner likes to know the various formulae that are commonly used in connection with car speed and performance.

Another valuable formula is that for calculating piston displacement. It is expressed: Piston displacement equals D x .7854 x N x S, in which D is the bore in inches, N the number of cylinders, and S the stroke in inches.

Table with 4 columns: Bore (inches), Number of Cylinders, Stroke (inches), and Horsepower. Rows range from 2 1/2 inch bore to 4 1/2 inch bore.

Another valuable formula is that for calculating piston displacement. It is expressed: Piston displacement equals D x .7854 x N x S, in which D is the bore in inches, N the number of cylinders, and S the stroke in inches.

The following table gives the speed in miles per hour for one mile:

Table with 4 columns: Time for One Mile (min), Time for One Mile (sec), Equal to Miles per Hour, and Equal to Miles per Hour (approx). Rows range from 24 to 50 minutes.

Another valuable table for car owners is that relating to the car speed with different gear ratios and wheel sizes. The formula is: Speed in miles per hour equals: D x 1.414 x R.

Table with 4 columns: Gears, 1:1, 1:1.1, 1:1.2, 1:1.3. Rows range from 20-inch wheel to 42-inch wheel.

Here is another useful table for electrolyte freezing points for electrolyte freezing points:

Table with 4 columns: Freezing Point (F), Freezing Point (C), Density, and Specific Gravity. Rows range from 1000 to 1075.

WEATHER STOPS PAVING Lane County Work Between Wolf and Grave Creek Finished.

EUGENE, Or., Dec. 19.—(Special.)—Paving operations on the Pacific highway between Wolf creek and Grave creek continued up to the time the snow began to fall last Wednesday, according to Linn W. NeSmith, who is inspecting for the state highway commission on that contract, which is held by the Warren Construction company. Work has stopped for the winter.

and the California line will have been paved or rooked so that travel will be easy, predicts Mr. NeSmith.

MANY PLANES STILL IN USE

However, Large Proportion Are Declared Obsolete. The air service reports 9586 planes and 32,033 engines of all types on hand.

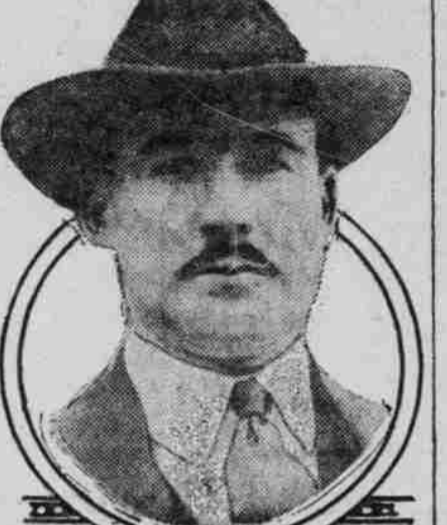
CYCLES HAVE GOOD YEAR

GENE WALKER CHAMPION IN SPEED CONTESTS. Demon Raver Crosses Line First in 16 Races, With "Red" Parkhurst Close Second.

Despite the effect of war-time activities, motorcycle racing last year had one of the best seasons from the point of performance of any since obsolete types were used until the supply is exhausted, but no extensive repairs are to be made or additional spare parts manufactured.

Obsolete types are those no longer used. They will be held until final disposal has been authorized.

NEW MEMBER OF PORTLAND MOTOR CAR COMPANY.



Mr. Peters has come to Portland as vice-president and general manager of the Portland Motor Car company, from Seattle, where he was with the Northwest Motor Car company. He will personally supervise sales of Packard cars here.

to occupy an assured position in the world of sport. Gene Walker proved as consistent a winner as any of the speed demons that faced the starter during the season. He crossed the tape first in 15 contests, making almost a clean sweep at the two Atlantic meets, as well as in the races at Greeley, Colo. At Sheepshead Bay he also showed well in a field of the best riders in the country.

"Red" Parkhurst ran a close second in the number of starts, looming up strong at Denver, Portland, Or., Marlan, Ind., and Columbus. Ralph Heppner starred at Escanaba, Grand

Table with 4 columns: Equal to Miles per Hour, Equal to Miles per Hour (approx), Equal to Miles per Hour, and Equal to Miles per Hour (approx). Rows range from 24 to 50 minutes.

Island, Bridgeport, Conn., and Columbus, while "Shrimp" Burns showed his class by leading the field at Baltimore, Columbus and Escanaba.

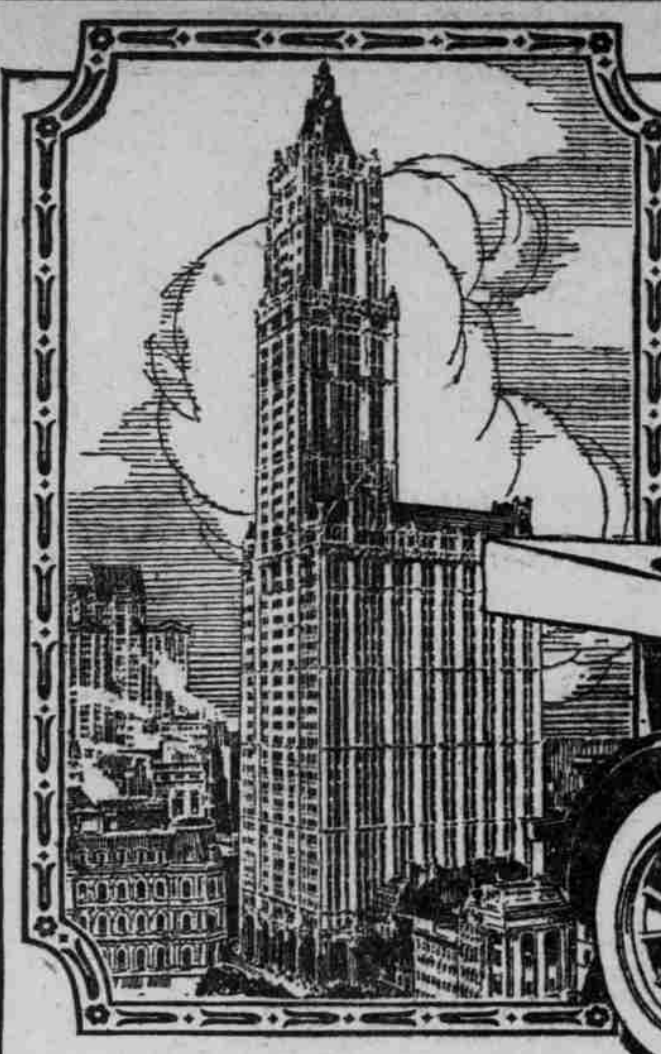
"Dave" Kinnle placed himself in the calcium glare by sensational performances at Bakerfield and Fresno, being placed a winner the same number of times during the season as "Jim" Dax. He won first at Hamilton, Alliance and Dayton. Don Marks

drove consistent races at Lima and Mansfield.

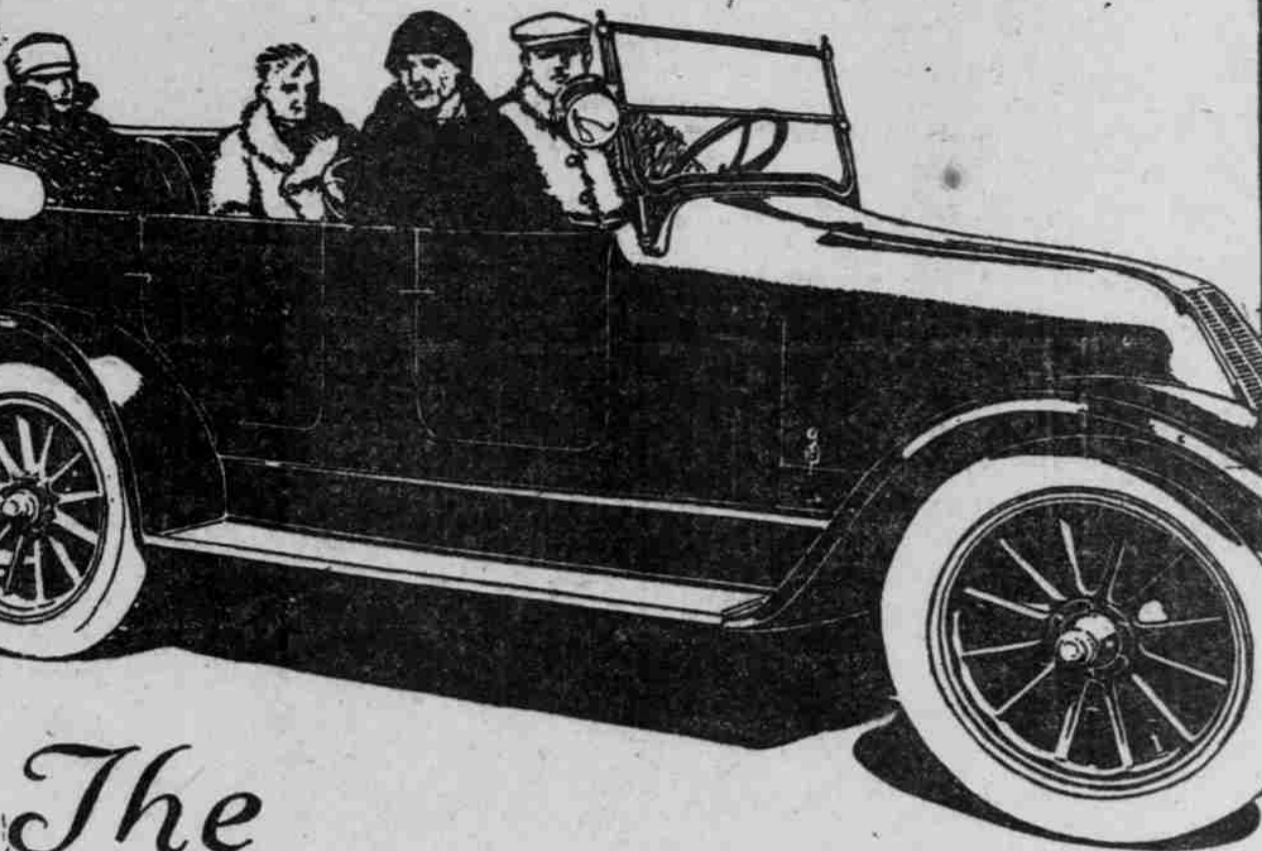
While he did not start in many races, Ray Artley shattered several road records in solo and side car races in 1919. He set a new mark from Los Angeles to San Diego, and with James Urouhart as passenger hung up new marks for the San Francisco to Los Angeles distance. Ray Weishaar set a new world's record for 50 miles at Sheepshead Bay, cutting a minute off the old mark.

In the most important endurance runs at Reading and in Wisconsin tires had a big share in these successes, as all these drivers used them in making 1919 racing history.

Yakima Buys Automobile Pump. YAKIMA, Wash., Jan. 3.—(Special.)—The Yakima city commission has contracted for delivery four months hence of a \$12,000 automobile pump for the city department.



Franklin Established as America's Greatest Road Car by Succession of Cross Country Runs.



The FRANKLIN CAR

Every little while a Franklin Car in some section of the country sets a new road record or makes a clean sweep of an economy or reliability event. Recently Franklin drivers have made numerous 24-hour runs and long distance trips which prove that the Franklin Car is unsurpassed at piling up large mileage in a day's driving—over average highways or over all dirt roads. Here are the records—

- 865.4 miles in 24 hours—R. H. Cramer, Waterloo, Ia.
832.6 miles in 24 hours—Will Diddel, Indianapolis, Ind.
808.9 miles in 24 hours—P. A. Pfohl, Indianapolis, Ind.
746.1 miles in 24 hours—J. H. Manion, Indianapolis, Ind.
729.5 miles in 24 hours—J. T. Pesca, Duluth, Minn.
725.2 miles in 24 hours—L. W. Snotin, Indianapolis, Ind.
693 miles in 24 hours—Mrs. R. G. Reed, Boston, Mass.

Making time in a Franklin does not consist of spurts of 60 to 70 miles an hour over every straight stretch of good road, alternating with long stretches of annoying slowness over roads not so favorable.

The secret of the Franklin Car's ability to make faster average time over long distances than any other car is simply that the power of the Franklin Car is not handicapped by heavy weight or rigidity and their attendant dangers, driving strain and discomfort. The light weight and flexibly built Franklin holds the roads at all speeds, hugs the turns, smooths out the rough stretches and is practically never held up by tire accidents.

New York to Montreal, 398 Miles, in 9 Hrs. 59 Min. The quickest scheduled train journey now possible between New York City and Montreal, Canada, is 12 hours. A stock model Franklin Touring Car made the 398 miles in 9 hours 59 minutes running time on November 11th, setting a new touring record and equalling from New York to Albany the non-stop time of the Wolverine Express, 3 hours 20 minutes.

The return trip (401 miles) was made in 11 hours 28 minutes running time. The total elapsed time for the round trip was 24 hours 10 minutes, including time out for eating, replenishing fuel and oil and for customs inspections. No spare tires or tubes were carried. No tire chains were needed. No mechanical troubles developed.

The same driver, Mr. J. W. Banks, drove all the way. Mr. H. P. Merchant of the B. F. Goodrich Tire Company and Mr. J. R. Getty, of "Motor," were observers; Mr. L. A. Miller, passenger.



New York-Boston Round Trip, 458.8 Miles, in 12 Hrs. 5 Min.

On September 29th Mr. Banks drove a Franklin Touring Car from New York to Boston and back in 12 hours and 5 minutes, establishing what was then a road touring record of 458.8 miles at 38 miles an hour. He drove entirely at night without relief. No spare tires were carried, there were no tire accidents and the fuel average was 18 miles to the gallon of gasoline.



Yosemite

This year's Yosemite Run was won by Stanley S. Turner of Los Angeles in the Franklin Car. The Franklin took all three first prizes.

MT. WASHINGTON P. E. Frost, of Portland, Me., included the climbing of Mt. Washington without a stop as part of a non-stop low gear run of 98.2 miles. Climbing the mountain without a halt is alone a record.

Braly Auto Company

601 Washington Street Portland, Oregon



Indianapolis

Reels Off 832.6 Miles in a Day

W. H. Diddel, of Indianapolis, a non-professional driver, recently established a record for his section of the country for a 24-hour road run by covering 832.6 miles of road in 22 1/2 hours' actual running time. The trip was made in a stock model Franklin Touring Car, without ballast, shock absorbers, or any change from regular equipment. Mr. Diddel was accompanied by two official observers, but drove all the way himself.

AUTO CONCERN EXPANDING

PORTLAND MOTOR CAR CO. INC. CREASES CAPITALIZATION.

S. V. W. Peters Here From Seattle to Enter Firm and Handle Packard Car Sales.

To meet requirements of a large increase of business and provide for future needs, capitalization of the Portland Motor Car company, local distributors for Packard and Nash cars and trucks, has been substantially increased. This increase permits the advent into the firm of S. V. W. Peters as vice-president and general manager. He will take over this increase of stock. Mr. Peters is an old Packard and Nash man and comes to Portland from Seattle, where he has been connected with the Northwest Motor Car company, which handles the Packard and Nash there.

Plans of the Portland Motor Car company for 1920 include doubling of their present capacity through erection of a building to cover the whole quarter block at Tenth and Couch streets. This addition is to adjoin and be part of the company's present quarters at Tenth and Burnside streets.

ESSEX SMASHES RECORD

STOCK CAR SETS WORLD ENDURANCE MARK.

Speedy 50-Hour Run at Cincinnati Made on Goodyear Tires and Wire Wheels.

In a 50-hour time and endurance trial on the Cincinnati speedway on December 12 "Dave" Lewis, "Tommy" Milton and De Loyd Thompson hurled a 182-cubic-inch displacement stock model Essex around the board oval at a record-breaking average speed of 60.7 miles per hour for a total mileage of 3087 miles. So high was the average speed maintained for the 50 hours and so great the total mileage that the company has applied to the A. A. A. for the records for 1, 4, 12, 24, 26, 48 and 50 hours. The mileage for the above periods was respectively 89, 255, 419, 1589, 2325.5, 2912 and 3037. These sensational performances were no less a victory for Goodyear tires and rims on Houck wire wheels. The speedy racer was equipped with 22x1 straight-side tires and the set being taken from stock in the Cincinnati branch. The front-wheel pneumatics not only ran 3037 miles in the first trial, but were used



Waterloo

865.4 Miles in 24 hours

A new 24-hour dirt road record was set when Ralph H. Cramer, of Waterloo, Ia., recently drove a Franklin stock car 865.4 miles in the actual driving time of 23 hours and 4 minutes. He drove the entire distance himself over ordinary dirt roads without a second's relief, beating the former record of J. T. Pesca, of Duluth, who covered 729.5 miles in a Franklin.

Table with 2 columns: Total Running Time, Total Time for Fuel, Chains, Top up, etc., and 23 hours 4 min. Rows include Total Time Consumed, Total Mileage on Dry Roads, Total Mileage on Mud Roads, Total Miles Run, Miles Per Hour Average Dry Roads, Miles Per Hour Average Mud Roads, Grand Total Average Per Hour.

The engine was stopped but once. No mechanical adjustments were made. No tire trouble. Driver: Ralph H. Cramer. Observers: W. A. Ridder, D. J. O'Neill, Waterloo Times Tribune; M. V. Briggs; R. S. McComb.



Cincinnati to Cleveland and Back, Twice Across Ohio, in 15 Hrs. 45 Min.

A motoring sensation was created in the state of Ohio when Cliff Leuders, without stopping the engine of his Franklin Touring Car, reduced the touring time from Cincinnati to Cleveland and back. He covered the 553 miles in 15 hours and 45 minutes of actual running. The odds were 4 to 1 that the previously announced time of 17 hours could not be made.

Covering this route at any speed is thought by Ohio motorists to be a severe test of any motor vehicle, so bad are the roads. Yet the Franklin averaged over 35 miles an hour. Rain which froze on the tinders and turned into a blinding snowstorm added to the difficulties.

Observers, Mr. Robert Beiser, Automobile Editor, Cincinnati Enquirer; Mr. Richard Powell.

No mechanical adjustments of any nature were necessary during the trip. And the mileage of the last twelve hours was as big as that of the first twelve hours, indicating that the driver felt little or none of the fatigue ordinarily to be expected. Two other Indianapolis motorists, likewise driving Franklins, also exceeded the former distance record. That, too, had been established by a Franklin Car.

are Havre, Rouen, Dunkirk, La Pallice, Bordeaux, Balarus, Cette and Marseilles. Soldering Swab. An interesting suggestion for use in connection with soldering iron or steel is to make a swab from flexible electric light cord, which is used in

Do Not Confuse Isolation and Insulation

A STORAGE or self-starting Battery insulated will not operate. In the VESTA, illustrated below, you will find the plates "isolated," or held apart with insulators that are patented and not found in any other battery. It is recognized generally as THE GREAT-EST INVENTION YET FOUND for making a self-starting battery longer-lived and absolutely dependable. Let "Doctor Spark" show you at Gibson Storage Battery Co. Twelfth at Alder

