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AUTOMOBILE NEWS

Nearing Solution on Motor Knock--Advance New Theory

(From New York Times)

Research work by a group of chemists, headed by William Hale Chubb of the General Motors research laboratories, has revealed some interesting facts toward the solution of the motor "knock" problem.

Developing the studies carried on by Thomas Midgley, Jr., a young Cornell investigator, and Thomas A. Boyd, of the research department of General Motors, which resulted in the suppression of knock through the use of ethyl fluid, now under State regulation in accordance with regulations of the United States Public Health Service, they have advanced a new theory of detonation.

In the explosion which takes place in the gas engine, tetraethyl lead decomposes suddenly into infinitesimal particles of metallic lead, and these act as centers for partial burning, according to the new theory, which was reached after thirty-four compounds proved worthless in suppressing knock.

These particles burn as the flame front approaches them, and thus they make the flame travel faster than if they were not present. This condition is described as somewhat like that of millions of minute spark plugs that ignite the gas just ahead of the flame front.

"Thus by virtue of the multiple centers of high temperature created by the burning of these little particles of lead," says Mr. Chubb, "there is initiated evenly ahead of the main flame front a partial oxidation of an auxiliary burning tendency to maintain a combustion in a region of fuel which otherwise would be subject to detonation."

"The decomposition temperature of anti-knock materials, taken in conjunction with the temperature of the cylinder gases, thus determines at what stage in the cycle they shall begin to function."

"If the decomposition tempera-

ture is low, partial oxidation, still begin earlier in the cycle and extend throughout a larger volume of yet unburned fuel than it is high. In the extreme of the latter case, it would cause a lowering in the efficiency of the compound, while in the former it might cause slight pre-ignition.

"The ideal anti-knock compound should possess a decomposition temperature which will cause it to begin to function just with or just after ignition of the charge by the spark plug."

One of the properties essential to the ideal anti-knock is volatility, with the boiling point under 400 degrees centigrade. Another is that the amount of free metal liberated when the compound is heated in the air should be complete.

The decomposition temperature, it is stated, should be between 200 and 300 degrees centigrade. Temperature developed by oxidation of the metal should be high compared to ignition temperature of the fuel. The particles should be of colloidal size to favor rapid oxidation.

The knock in an automobile engine is supposed to be due to the fact that the burning of part of the gas mixture so compresses the unburned portion that this unburned portion becomes hot enough to ignite spontaneously.

The burning of the gas is analogous to the burning of a firecracker, which takes a finite time to happen, while the spontaneous ignition of the remaining gas is analogous to the explosion of the firecracker itself, which happens at almost infinite velocity.

The little particles of lead distributed throughout the gas mixture greatly increase the swiftness of the flame to reach every part of the gas before it has had a chance to ignite spontaneously.

Important to chemical science, it was said, was the finding by the

Once a Cub



Ralph Van Vechten quit his job as cub reporter on a Cedar Rapids (Ia.) paper 47 years ago and became a bank clerk—somewhat against his will, as he wanted to be a writer. Now he is president of the State Bank of Chicago—and glad he made the change. He is a brother of Cael Van Vechten, novelist.

Sister Mary Says:

BREAKFAST—Shredded fresh pineapple cereal, thin cream, wafer, sirup, crisp whole wheat toast, milk, coffee.

LUNcheon—Consomme, rice and vegetable salad, brown bread and butter sandwiches, nut cookies, milk, tea.

DINNER—Broiled lamb chops, creamed potatoes, buttered new peas, head lettuce with French dressing, graham bread, creamed tapioca with fresh fruit, milk, coffee.

While it's perfectly true that we need less food in hot weather than in cold, what food we do require must be carefully and correctly chosen. Foods that nourish and are easily digested any time of year, but during the summer months dishes that keep us cool are in great demand. To this end salads and vegetable soups in abundance are suggested. The rice and vegetable salad is rather unusual, but one of those substantial salads that takes the place of meat on a hot day.

One cup well cooked boiled rice, 1 sweet green pepper, 1 pimiento, 1 teaspoon grated onion, 4 tomatoes, 2 tablespoons Roquefort cheese, ½ cup French dressing, lettuce.

Soak tomatoes and peel. Chill for several hours. Seed pepper and strip off the thin tissue covering the flesh. Remove seeds and white pith and mince flesh. Mince pimiento. Combine rice, pepper, pimiento and onion with enough French dressing to make moist. Pack into four small cups or molds. Chill. Unmold on a bed of lettuce and surround with quarter sections of tomatoes. Mash cheese slightly with a fork and beat into remaining French dressing. Pour over molds of rice and tomatoes and serve.

Investigators of a method of comparing one anti-knock with another. On the basis of this disclosure a table of values, with tetraethyl lead as the most powerful of the anti-knock compounds, was constructed.

Medic Says Short Hair Undisguised Blessing

LONDON, July 17. (AP)—Bobbed and shingled hair is an undisguised blessing, says Dr. J. Francis Taylor, medical officer of health for Walthamstow, in the section of his annual report referring to girls' schools.

"May the fashion long continue," adds the doctor.

"Cleanliness and freedom of the brain case from the weight and heat of great masses of hair more than compensate for the loss of the abundant locks to which an old-fashioned woman's glory," says the report.

Major Pearson, water-diviner at Bombay, India, sank fifty-three wells on sites in the districts of Ahmednagar, Sholapur and Bijapur where a shortage of water is most severe. In forty-seven cases water was struck; in four the depth at which it was predicted water would be found has not yet been reached; and in two cases, though the depth required has been reached no water has been found.

An Asphalt Swimmin' Hole



Downtown streets of Newport, Ky., became old-time swimming holes for the kids when a cloudburst turned them into streams of water. This picture shows a stalled auto, half submerged, with youngsters in bathing suits paddling around it.

Arctic Trout Survive In Frozen Streams

TANANA, Alaska, July 17. (AP)—Arctic brook trout are found in all mountain streams throughout Alaska, being quite abundant in the extreme headwaters where they spawn. The Arctic divide is no barrier as all creeks flowing north into the Arctic ocean team with speckled trout.

In Alaska, stories are told around camp fires of the extreme hardness of the Arctic trout, which may be just fish stories or an exception to the rule that all frozen fish are dead fish.

After freezing solid to bottom the creeks in the high altitudes begin a series of overflows, the oncoming waters backing up and oozing to the surface along the banks and then spreading out and freezing, layer upon layer, forming new ice. In the deeper channels and eddies the backing up water uplifts the ice and forms great hummocks and ridges that sit in crevasses to the waters underneath.

In the deepest pools and eddies, far down from the heads of the small streams, the Arctic trout is supposed to live during the long

winter, returning with the high waters in the spring.

Air Cradle Express Is Running Out of Berlin

BERLIN, July 17. (AP)—"The air cradle express," has been put in operation on the night air route between Berlin and Moscow by the German air service.

It is a 10-passenger biplane propelled by two comparatively silent motors, whose humming, combined with the swaying of the plane, gives it the name of "cradle."

Porters make the berths as in an ordinary railway Pullman. The "cradle express" means its way to Moscow in 8½ hours, normally a 56-hour trip by express train.

In ancient days a persons managing to erect a dwelling in one on common land in Wales was held to be its owner and nobody could disturb his tenure. These abodes were generally raised of peat, or turf and known in Welsh as "Tal Um-nos" (one-night's house.)

Mexico has supplied one-fourth of the world's oil for several years.

LOOK OVER OUR WANT ADS FOR BARGAINS

Now—for America a revolutionary European-type high-speed Light Car

YOU CAN'T BEAT These Prices ON TIRES

30 x 3½ Regular Size Clincher Cord

\$9.00

30 x 3½ Oversize Clincher Cord

\$10.90

30 x 3½ Oversize S. S. Cord

\$12.95

Snyder & McKennon Harness Co.

This New Car Offers:

- 30 miles on a gallon of gasoline
- 55 miles an hour—5 to 30 miles in 13 seconds
- 4-wheel brakes—stops in 51 feet from 40 miles an hour
- Turns in 34-foot circle—easiest car in America to park
- 5 feet 8 inches high—lower gravity center—greater safety
- European-type body—more inside room than any other light car

A three-minute study of these remarkable facts may save you from buying an obsolete automobile

THIS is the announcement of a revolutionary new-type car, different from anything you have ever known before.

A car that combines the advanced engineering practice of Europe with new and improved standards of American performance.

This new car has a low, European-type body. With height and length in true symmetrical proportion.

It is 5 feet 8 inches high . . . not as tall as the average man. Yet it provides more room and comfort than you've ever found in any automobile of this class before.

It has a high-torque, 31 horsepower motor of small bore and long stroke—the same engineering principle used in the fastest racing cars of America and Europe.

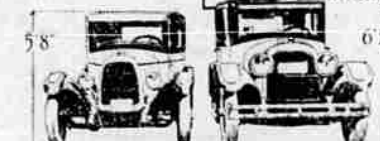
It turns in a 34-foot circle . . . that's less than the width of an average city street. You can park in 14 feet . . . which is much less than the space required for the ordinary car.

4-wheel brakes are an integral part of this new car's chassis design . . . a necessity which light car owners have not heretofore enjoyed. Measured tests show that it will stop in 51 feet from a speed of 40 miles an hour.

Its center of gravity is extremely low, with ample road clearance . . . thus giving a sense of security you have never found in any light car. Something you actually feel when you drive this car.

Two engineering ideals combined

The Overland Whippet represents a combination of the most advanced European and American engineering thought.



Compared with old-fashioned, bulky cars the Whippet appears smaller and much more graceful

It is a complete new car . . . designed and built as a unit . . . not an old-fashioned reconstructed chassis. For over three years, Willys-Overland engineers in Europe and America have been developing it. Over 160,000 miles of road tests proved the practical advantages of this car before it was released for production.

The distinctive body lines of the Overland Whippet frankly resemble the smartest automobiles of America and Continental Europe. Stand in front of this car and you can imagine yourself on the boulevards of France.

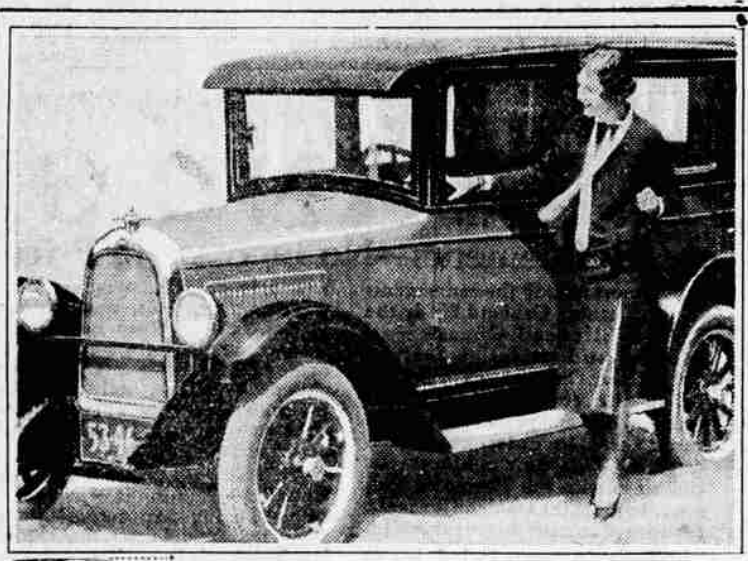
Low-slung . . . rakish . . . graceful as a whippet . . . that's the only way to describe it.

Complete symmetry of design has been achieved with compact external dimensions.

Compared with contemporary big, bulky cars the Overland Whippet ap-



12-inch 4-wheel brakes enable this car to stop in 51 feet from a speed of 40 miles per hour



One of the first Whippets being inspected by Miss Lois Wilson at her New York motion picture studio

pears smarter and much more graceful. That's because height and length are in true artistic proportion.

In the Overland Whippet you have the feeling of riding closer to the ground . . . with the resultant sense of solidity and absence of that sideway so noticeable in the conventional type of car. That high-up-in-the-air feeling is gone . . . here is a new kind of riding comfort. Step into this car and you will be surprised to find so much spacious room.

You can compare the Overland Whippet with all other American light cars on the basis of price alone. But from the standpoint of engineering, performance, comfort and quality, it has established an entirely new criterion by which all other light cars must be judged.

The Overland Whippet is furnished in three body styles . . . Sedan, Touring and Coupe.

See this new-type car

You have never seen a car like this before. With the introduction of the Overland Whippet, it is not sound judgment today to consider the purchase of a less modern car.

A new trend of automobile design is dawning in America. Other light cars of this design will follow this one.

But today Overland . . . and Overland alone . . . offers you these unique engineering attainments. In fairness to yourself, see this wonderful new-type car.

Willys-Overland, Inc., Toledo, Ohio.

To Clean Up Our Used Car Stock We Offer At Bargain Prices

THESE TWO CARS. SEE THEM!

1920 Oakland Six Roadster, overhauled—a real buy at

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