



Science News-Letter

The Weekly Summary of Current Science

A Science Service Publication



Edited by **Watson Davis**
Vol. XI No. 303



10¢ a copy \$5 a year
January 29, 1927

ENGINEERING

Engineers Report Progress Toward Better Autos

On this page are reported some of the important papers presented at the meeting of the Society of Automotive Engineers at Detroit, January 25 to 28.

Chromium

Chromium, once a chemical curiosity, is now being used in the automotive industry on account of its hardness and resistance to corrosion. W. N. Phillips of the General Motors Corporation reported that chromium plated upon steel and other metals is being used for coating gages, tools, dies and files, finishing radiators and surfacing bearing surfaces. Chromium has been found to be harder than the hardest steels used in automobile manufacture.

Gasoline

The burning question as to what fuel gives the most miles per gallon most satisfactorily when used in American automobiles has been studied by the society and the results were announced by Dr. H. C. Dickinson of the U. S. Bureau of Standards and the Massachusetts Institute of Technology.

One of the conclusions startling to the average driver is that the ton miles per gallon obtained is independent of the ease with which the gasoline evaporates. The experts therefore conclude that the heaviest fuel is the most economical.

Other conclusions arrived at after four years of tests on the part of the U. S. Bureau of Standards, the research department of the Society of Automotive Engineers, ten automobile companies and the petroleum industry, are:

"Gasoline consumption is somewhat greater in winter than in summer.

"Dilution of crankcase oil is consistently greater the heavier or less volatile the fuel.

"Dilution of crankcase oil is much greater in cold weather than in warm.

"Small differences in the initial volatility of the fuel have a large effect on engine starting.

"Starting performance of the fuel

is the quality most readily noted by the driver."

Economy dictates the use of as heavy a fuel as possible, Dr. Dickinson explained, but a practical limit in this direction is set by the dilution of crankcase oil and the difficulty in starting.

On account of the limiting factor of the thinning of the crankcase oil, an extensive survey was undertaken to determine the methods of reducing dilution. The following recommendations were made: Operate with high cylinder wall temperature; reduce the time required to reach normal operating temperature; always use as lean mixtures as practicable; operate with high oil temperature; ventilate the crankcase.

Inexpensive Cars

A two-passenger automobile, weight only 750 pounds, 13 horsepower motor, 50 miles per hour, 50 to 54 miles per gallon of gasoline, 76 inch wheel-base and 46-inch tread, and selling price that would put the Ford almost in the Rolls Royce class.

Such is the motor car that has actually been built experimentally but not yet put into production by one of America's large automotive concerns, Fabio Sergardi, now with the Reo Motor Car Co., told the society in analyzing the future of the small car in America. Mr. Sergardi designed this car when with another company over a year ago.

Low price, under \$400, rather than low operating cost and small size must be the attractive feature of a small car in this country, Mr. Sergardi told the engineers. Whereas high taxes, high cost of fuel, cost of upkeep, lack of space in Europe operate to keep all but the wealthiest classes from owning cars, such is not the case in this country, he explained, and the small, high-class car loses its attractiveness on this side of the water. A two-passenger car of small power, short wheel-base, and very low price,

produced in quantity by a large company might have success, he declared.

Four-cylinder cars are doomed to disappear from the American market if one of the larger companies making four-cylinder cars changes over to six cylinders, Mr. Sergardi predicted.

X-Rays

X-rays can play their part in the manufacture of an automobile, George L. Clark of the department of chemical engineering of the Massachusetts Institute of Technology, told the Society of Automotive Engineers here this afternoon. The short, penetrating rays give the scientist clues to the ultimate structure of materials, aid the metallurgist in making new combinations of metals and understanding those already perfected, allow the engineer to detect defects in the fabrication of metals used in the cars, and give information aiding the utilization of rubber, asbestos, fibers, lubricants, paints and other materials.

"Pivoting"

How to prevent automobiles from whirling or pivoting when brakes are suddenly applied was discussed by Johannes Plum of the Royal Danish Legation. The adoption of four-wheel brakes has complicated the problem since distribution of braking pressure between front and rear wheels that is effective on dry roads becomes dangerous when roads are wet and skiddy. One interesting conclusion from Mr. Plum's investigations is that from the standpoint of pivoting front wheel brakes only are not in the least dangerous while brakes both front and rear are dangerous if pressures are not combined in correct proportion.

Automobile "Shimmy"

Why does an automobile shimmy? This is the question that was seriously discussed by Karl L. Hermann of the Studebaker Corporation of America.

(Just turn the page)

INDEX TO THIS ISSUE

Allen, W. E.	71	Earthquake Danger in East.....	79	Nature Ramblings	75	Settlement, Science of	77
Anniversaries of Science.....	79	Ehrenfeld, Frederick.....	79	Newton, Isaac	79	Shimmy, Auto	66
Anti-evolution Law, Tennessee...	69	Einstein in Everyday Life.....	77	Overholser, Earle Long	77	Static, Radio	69
Art, Indian	67	Elements of Physics.....	77	Park, William H.	71	Teachers' Training	71
Autos, Better	65	Entomomirod	70	Pechstein, L. A.	71	Tennessee Anti-evolution Law	69
Bacteria, Drugs Poison	79	Everest Expedition, Mount.....	79	Persimmons, Mellow	77	Thermodynamics	77
Barnes, D. F.	79	Family Likenesses	75	Phillips, W. N.	65	Tuberculosis Treatment	71
Blathwayt Comet	71	Fewkes, Dr. J. Walter	67	Plants and Vitamins	75	Vitamins and Plants	75
Bones for Fertilizers	77	Fish, Sun Bad for	73	Player Piano Rolls	75	Weber, C. O.	77
Bowman, Isaiah	77	Gasoline	65	Plum, Johannes	66	Whipple, Guy M.	75
Chromium	65	Groundhog	75	Pivoting, Auto	66	Willoughby, Raymond R.	75
Clark, Norman	75	Gypsy Moth	79	Plant Missing Links	73	X-rays	65
Colloid Chemistry	77	Hadley, Philip	73	Priestley, Joseph	79		
Comet of 1927, First.....	71	Herman, Karl L.	66	Principles of Plant Growth	77		
Corn Borer Control	73	Hoskins, J. Hobart	73	Purposive Evolution	77		
Curie, Mme.	79	Howard, L. O.	69	Quantum Theory	77		
Dickinson, H. C.	65	Hurricane Warnings, Static.....	69	Rabies, Science Curbs	71, 72		
Disease Germs Variable.....	73	Indian Art	67	Rats, Destroy Memory in	73		
Drugs Poison Bacteria	79	Kellogg, Vernon	69	Scopes Case Decision	69		
Earth Systole and Diastole.....	75	Lashley, K. S.	73	Sears, Paul B.	77		
		Lambert, Walter D.	75	Sea, Study of	71		
		Man and Beast	77	Sergardi, Fabio	65		
		Miles, Charlotte K.	70				

Automotive Engineers

(Continued from page 65)

As drivers often discover, a motor car under certain conditions shakes and dances, mostly with its front end. Mr. Hermann classified the auto antics as: Kick back or wheel fight, that begins at about 25 miles an hour and makes the steering wheel hard to hold. Tramp and gallop that begins at about 45 miles an hour and is a slow vertical or swinging movement. Incipient shimmy that begins at about 45 miles an hour and appears as a side movement of the radiator cap combined with wheel fight. Violent shimmy that comes at 60 miles an hour, causes doors to shake open, and can not be driven through. In violent shimmy, Mr. Hermann explained, "three radiator caps seem to exist where only one should be."

Tires are most to blame for automobile shimmy. While improper alignment and balance of wheels, springs, lubrication, and wavy roads all have some influence on shimmy, the fundamental causes are in the tires. Tires are not often well balanced due to the valve and the overlaps of layers inside the casing. Moreover, use of balloon tires has caused inflation pressures to become as important today as the motor itself, yet causes, such as temperature, leakage, etc., over which the driver has little control can vary the pressure as much as 10 pounds. And low or uneven tire inflation will often cause shimmy.

When various forces so combine with recurring regularity as to tend to lift the car from the road, some sort of shimmy will occur, Mr. Hermann explained. Since complex factors unite to cause shimmy, a cure in one case will not always be effective in another. But Mr. Hermann declared that the problem could be solved by tire and wheel manufacturers experimenting and producing more uniform and better products.

Science News-Letter, January 29, 1927

News-Letter Features

Born over four years ago of the demand and interest of those individuals who had caught a glimpse of *Science Service's* news reports to newspapers, the SCIENCE NEWS-LETTER has since proved interesting to laymen, scientists, students, teachers and children.

Into the pages of the NEWS-LETTER are fed the cream of *Science Service's* output directed at the newspapers of the world. To this is added material especially prepared.

Turn the pages and note:

It is a *separable* magazine. You can clip or tear out any article without losing or damaging another article on the other side.

Each article is automatically *indexed* by the key word printed above its heading. Articles can thus be filed easily into any system of classification.

Each article is automatically *dated* by its last line.

The current *news* of science, reported for Science Service by its own staff and correspondents throughout the world is presented and commented upon in each issue.

Books are *reviewed in brief* as they are received from the publishers.

The classics of science and striking passages from current books, addresses and periodicals are carefully selected and published.

Important *anniversaries* of science are appropriately noted week by week in a special department.

Regular articles tell of the happenings in the *skies* and in the great *outdoors*.

Photographs aid in the telling of the week's science.

Great care is taken to keep its editorial content not only *interesting* but *accurate* as to fact and implication.

The Science News-Letter is copyrighted and is sold with the understanding that it is for personal, school, club or library use only. Publication of any portion is strictly prohibited.



SCIENCE NEWS-LETTER, The Weekly Summary of Current Science. Published by Science Service, Inc., the Institution for the Popularization of Science organized under the auspices of the National Academy of Sciences, the National Research Council and the American Association for the Advancement of Science.

Publication Office, 1918 Harford Ave., Baltimore, Md. Editorial and Executive Office, 21st and B Sts., N. W., Washington, D. C. Address all communications to Washington, D. C.

Entered as second class matter October 1, 1926, at the postoffice at Baltimore, Md., under the act of March 3, 1879. Established in mimeograph form March 13, 1922.

Subscription rate—\$5.00 a year postpaid. 10 cents a copy. Ten or more copies to same address, 6 cents a copy. Special reduced subscription rates are available to members of the American Association for the Advancement of Science.

Advertising rates furnished on application.

Copyright, 1927, by Science Service, Inc. Reproduction of any portion of the SCIENCE NEWS-LETTER is strictly prohibited since it is distributed for personal, school, club or library use only. Newspapers, magazines and other publications are invited to avail themselves of the numerous syndicate services issued by Science Service, details and samples of which will be gladly sent on request.

Staff of Science Service—Director, Edwin E. Slosson; Managing Editor, Watson Davis; Staff Writers, Frank Thone, James Stokley, Emily C. Davis, Marjorie MacDill, Sales and Advertising Manager, Hallie Jenkins.

Board of Trustees of Science Service—Representing the American Association for the Advancement of Science, J. McKeen Cattell, *Vice-President and Chairman of the Executive Committee*, Editor, Science, Garrison, N. Y.; D. T. MacDougal, Director, Desert Laboratory, Tucson, Ariz.; M. I. Pupin, Professor of Electromechanics, Columbia University, New York City. Representing the National Academy of Sciences, John C. Merriam, President, Carnegie Institution of Washington; R. A. Millikan, Director, Norman Bridge Laboratory of Physics, California Institute of Technology, Pasadena, Calif.; A. A. Noyes, Director, Gates Chemical Laboratory, California Institute of Technology, Pasadena, Calif. Representing National Research Council, Vernon Kellogg, *Treasurer*, Permanent Secretary, National Research Council, Washington, D. C.; C. G. Abbot, Director, Astro-Physical Observatory, Smithsonian Institution, Washington, D. C.; Victor C. Vaughan, Professor Emeritus of Hygiene, University of Michigan. Representing Journalistic Profession, John H. Finley, Associate Editor, New York Times; Frank R. Kent, Baltimore Sun; Mark Sullivan, Writer, Washington, D. C. Representing E. W. Scripps Estate, W. E. Ritter, *President*, University of California; Robert P. Scripps, Scripps-Howard Newspapers, West Chester, Ohio, Thomas L. Sidlo, Cleveland, Ohio.