

The Automobile

STUDY OF ENGINE HELPS IN DRIVING CAR.

There is no factor in motoring more important than that piece of mechanism directly under the hood and known as the engine. If the engine does not go the car is quite useless. Consequently, it is important to select, in buying a car, a vehicle that is equipped with an efficient motor.

While it is no deep secret that there are various types of engines used to create power, it is safe to guess that just what these different types are is usually a rather hazy idea in the minds of most motorists. Yet it is well for automobilists to have some definite information which will lead to an understanding of this matter.

To begin with, it should be known that engine types divide themselves along the following lines, arrangement and number of cylinders, arrangement of valves and method of cooling. Most owners of cars will recognize where their own automobile engines come in for classification.

FUEL TYPES DESCRIBED.

Considerably over 90 per cent. of automobiles are propelled by the gasoline engine. There are a few that carry storage batteries and use electric motors for motive powers. There is a still smaller number that use a steam engine, the steam being generated in a boiler which is heated by burning gasoline or kerosene.

The gasoline engine is made in a number of forms, ranging from the engine with four cylinders in a line to the twelve-cylinder, which is the V-shaped arrangement with six cylinders on each side of the "V." Between these two extremes there is the engine with six cylinders in a line, the eight-cylinder with blocks of four placed in the V-shaped and eight cylinders in a straight line.

As to the arrangement of the valves of an engine, some types have both valves arranged on one side of the

cylinder, some have one in the top of the cylinder and one in the side, some have both valves in the top and a few have the inlet valve on one side and the exhaust on the other. The arrangement of the valves has considerable to do with the efficiency of the engine, that is, the amount of power which is extracted from the gasoline used.

HOW HEAT IS ABSORBED.

Much of the heat generated by burning the gasoline is necessarily absorbed through the water jacket which surrounds the cylinders. The engines with the valves in the head have a regular shaped combustion chamber which reduces the water jacketed surface to a minimum. Engines with valves on the side of the cylinders have pockets that are offset from the cylinder proper, which must be water jacketed.

The great majority of the engines use valves of the "poppet" type, that is, valves that are shaped like mushrooms, are pushed open by a cam and are returned to their seat by a spring. A large percentage of automobile motors are cooled by water, the cylinders being surrounded by a jacket of water which absorbs the excess heat. The hot water is pumped to a radiator placed on the front of a car, which provides for the heat being carried off by the air.

In the air-cooled motor provision is made for bringing sufficient quantities of air directly into contact with the outside of the cylinders. In this way the excess heat is carried off directly by the air. Every year finds a tendency toward standardization in automobile design. Still there is enough of a variety of types to select from to suit the individual's needs and tastes. The prospective automobile owner will find all types of engines well developed and effective in operation.

Dangerous Carbon Monoxide.

The gasoline engine is a useful invention, which has, through its serviceableness to the automobile, gone far to revolutionize our habits and modes of life. But it has one drawback. In the course of combustion—especially when the combustion is not complete—the exploding gasoline produces a gas which, under certain conditions, is dangerous to health and even to life. That gas is carbon monoxide; it is one of the most deadly of gases, and it is discharged from the exhaust of every car whose engine is running, whether the car is moving or not. We have several times spoken of the danger of starting an automobile engine in a closed garage, and, though the warning against this practice has been widely spread by newspapers and health lecturers there are a great many deaths caused by it every winter.

Carbon monoxide is the poisonous constituent of illuminating gas, especially water gas, and it is also produced in large quantities by burning coal. The air of stove-heated and furnace-heated houses is often contaminated to a dangerous extent with this gas, which escapes when the draft is poor. It may even pass through the wall of the stove if the iron gets red hot, and poison the air of the room sufficiently to give the occupants headache, nausea, loss of appetite, vertigo and a constantly irritable condition of the mucous membranes of the air passages. When the gas escapes continuously, it seriously affects the general health, for it lowers the powers of resistance and causes susceptibility to colds, grip, and pneumonia.

The gases from automobiles contain from four to eight per cent. of carbon monoxide; but as little as one per cent. is enough to produce serious, if not fatal, consequences. Of course this is still further diluted by the atmosphere in the street, but if there are thirty or forty cars crowded into a small area the dilution is not enough to make it harmless. Those who must continually breathe the air in the midst of automobile traffic that is much concentrated are likely to find themselves vulnerable to the attacks of common disease germs which they could easily resist if the air they took into their lungs were pure.

The site of the Mansion House, London's official residence for its Lord Mayor, was formerly a fruit and vegetable garden.

Peculiar Facts and Figures.

The amount of pressure applied by a pianist to the keys in one minute is often anything up to a ton and a half. In that same minute the eye has to read about one thousand five hundred signs and the fingers make about two thousand movements.

At the top of Shooter's Hill, Blackheath, England, there stands a milestone inside the church railings. On one side it marks "8 miles to London." On the other, "130 miles to Ypres."

Diamond is a corruption of the Greek word *adamas*, meaning untable or refractory. The Greeks called the diamond *adamas* because of its excessive hardness.

A crane is called a derrick from the name of Derrick, the Tyburn hangman, who made gibbets in the seventeenth century.

An artificial wool made from pine trees has been developed in Germany. Only one variety of bird is known to "shingle" its own feathers. This is a native of South America, which nibbles away each side of the tail-feather to produce a curious-looking racket effect.

Fifty oxen, 70 lambs, 200 sheep, and sometimes as much as 10,000 head of game, 70,000 eggs, 300 barrels of flour, and 15,000 lbs. of fish are some of the items in the stores of a Chinard liner.

It takes a healthy man four months to eat his own weight in food. Salmon, pike, and goldfish are said to be the only fish that never sleep.

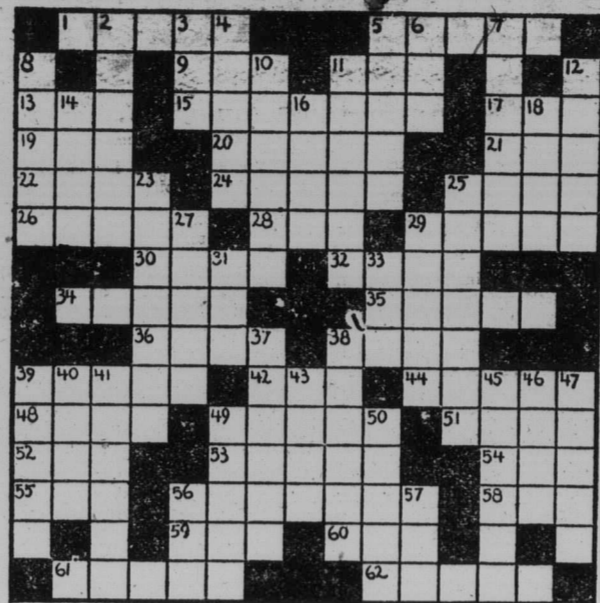
About twice as much power is required to stop an express train as to start one.

An explorer, travelling in the Malay Peninsula, has discovered some peculiar creatures. There are fish that climb trees, monkeys that brush their teeth after meals, and birds that sleep upside down.

Lions and tigers are too weak in lung power to run more than half a mile. The Bank of England was founded by a Scotsman who died in poverty.

Dover's historic building, Maison Dieu Hall, dates back over seven centuries. It was built in 1203 as a rest-house for pilgrims on their way to Canterbury from the Continent. Colors have different effects upon us. Red and orange are stimulating, yellow is cheering, green neutral, purple subduing, and violet depressing.

CROSS-WORD PUZZLE



SUGGESTIONS FOR SOLVING CROSS-WORD PUZZLES
Start out by filling in the words of which you feel reasonably sure. These will give you a clue to other words crossing them, and they in turn to still others. A letter belongs in each white space, words starting at the numbered squares and running either horizontally or vertically or both.

HORIZONTAL

- 1—A necktie
- 5—To nip
- 8—An obstruction
- 11—To demand payment
- 13—To fortify
- 15—Obliterating implements
- 17—To be under obligation
- 19—A dandy
- 20—Penetrate
- 21—An oath
- 22—Informed
- 24—Measures
- 25—Simple
- 26—Horse
- 28—Female sheep
- 29—Underground worker
- 30—To make insipid
- 32—Midday
- 34—Minute organism
- 35—Twisted
- 36—To filter through
- 38—Bitter plum
- 39—Runs away
- 42—One length of a course
- 44—Long, narrow piece
- 48—To tear
- 49—To drive oakum into seams
- 51—Mentally sound
- 52—Finish
- 53—Big steamship
- 54—To refrigerate
- 55—Eroded
- 56—Like milk
- 58—To weaken
- 59—To imitate
- 60—Negative
- 61—Quarrels
- 62—Inclined

VERTICAL

- 2—Specimen
- 3—Poem
- 4—Allowance in weight (pl.)
- 6—Utters low murmuring sounds
- 6—Inspector (abbr.)
- 7—Divided
- 8—Floating structures
- 10—Shelf
- 11—To make more profound
- 12—A duct
- 14—Basis
- 16—To cook in liquid
- 18—Carried as bodily covering
- 23—Ousted
- 25—Old-time dance (pl.)
- 27—Ventures
- 29—Philippine natives
- 31—Protected side
- 33—Night bird
- 37—A fish
- 38—Ill temper
- 39—Something abnormal
- 40—Religious period
- 41—To make beloved
- 43—Relative
- 45—Dried grape
- 46—Ancient Peruvian ruler
- 47—Looks stily
- 49—Sudden, sharp noise (pl.)
- 50—African cattle-pen
- 56—To place
- 57—Alkaline solution

THIS PIECE OF PAPER!

It Was Once Part of a Tree.

It is a big jump from a piece of wood to a sheet of paper, but this page probably started its journey paperwards as the trunk of a tree in some northern forest.

You see, to-day, the forests of Norway, Sweden, Canada, and the United States furnish the bulk of the world's paper-making material.

A sheet of paper is a sheet of vegetable fibres matted together, dyed, and surfaced according to requirements. And it is from wood that the fibrous part of the paper is obtained.

The wood-pulp, as it is called, is made in this manner. The trees are cut into logs, about two feet long, split and the bark and knots carefully removed.

The logs are ground up by revolving stone wheels, water being supplied to keep them cool, and to mix with the wood to form the pulp.

This pulp contains all the impurities of the first grinding, so it is strained through a wire sieve, which allows the finer pulp to pass.

The good pulp, still containing impurities, is now subjected to a refining process in a machine resembling two huge grindstones placed one on top of the other.

The top stone revolves, and the pulp is fed through a hole in this, being finely ground between the two stones.

Our "tree" is now ready to take on its first appearance in the form of "sheet."

The refined pulp is passed over a wire gauze cylinder on to a felt conveyor which passes it to a pair of steel rollers, the top one taking up the end of the web of pulp and gradually winding it upon itself.

When the necessary thickness has been attained, the pulp is taken off the roller, opened out and dried. In this state it is termed "half stuff boards."

Business Changes.

Never has there been a time when it was so necessary for the industrial executive to exercise vision. We have come to a day when a business can be mad or ruined over night.

The announcement in the morning paper of the discovery of a new material or the unexpected development of an ingenious device may change the entire outlook not only for a few corporations, but for an entire industry.

In ten years from now our per capita consumption of certain articles will be double what it is to-day, while the consumption of other commodities will be no more than half of what it is at present.

In this present era, the foundation of success is chiefly judgment and vision. Labor does not create; nor does capital. It is mind that creates. The real wealth of our country does not lie in our laboring class, but in our thinking class.

The worth-while executive is the fellow who can ask brass-tack questions, each one of which leads to darkened corners where the unassembled facts are hidden.

It is not a question of brains, for the average person has more than he knows what to do with.

Not one person in a hundred uses the brains he has to as much as half capacity.

We need research. We also need to keep an eye to the future.

The airplane will be discarded as soon as a practical helicopter is developed; gas has supplanted coal in many industries because it is cleaner and does better work.

We must look to the future, or we are liable to find our business a "has been" a decade or so from now.

Answer to last week's puzzle:



Natural Resources Bulletin.

The Natural Resources Intelligence Service of the Dept. of the Interior at Ottawa says:

Canada has many admirers outside of her borders, largely due to the efficient work of her energetic trade commissioners. They are putting Canada in the forefront as a commercial world power. Even in far-off Straits Settlements, A. B. Muddiman is working in the interests of Canada, and no doubt as the result of his efforts the Singapore Free Press has the following to say of this country:

"At present Canada's industrial future has hardly begun. Great towns do exist and some big industries, but for the present and for many years to come her energies will be absorbed by the conquest of the land and the bringing of it into cultivation. Looking at the spirit of her people and the past history of the United States, there can be no hesitation in recognizing in Canada one of the greatest world powers of the future, an achievement in colonization of which the British people can be immeasurably proud."

G. G. Van der Kop, editor of the "InterOcean," the only magazine published in the "Middle East," and who once visited this country, has had many times a good word to say for Canada.

Canada is a land of vast grain growing areas and a wide diversity of other vegetable resources. Canada is rich in minerals, her animal industries are a leading source of national wealth, her forests products provide

a large surplus for export, while the greater portion of the product of her factories find a market outside Canada. The quality of her products is interesting world consumers, and it is but natural that the thoughts of these foreign consumers should turn to a country that is capable of such production.

Do we as Canadians fully appreciate what we have, and are we doing our part in making them know?

Nasty, Nasty Man.

With tears on her baby cheeks little Winnie ran up to the policeman.

"Please, sir," she sobbed, "will you come and lock a nasty man up?"

"What's he been doing?" asked the man in blue kindly.

"Oh," wailed the child, "he's broken up my hoop with his nasty bicycle."

"Has he?" said the constable, preparing to go to the scene of the crime.

"Well, where is he?"

"Oh, you'll easily catch him!" explained Winnie triumphantly. They've just carried him into that drug store."

His Error.

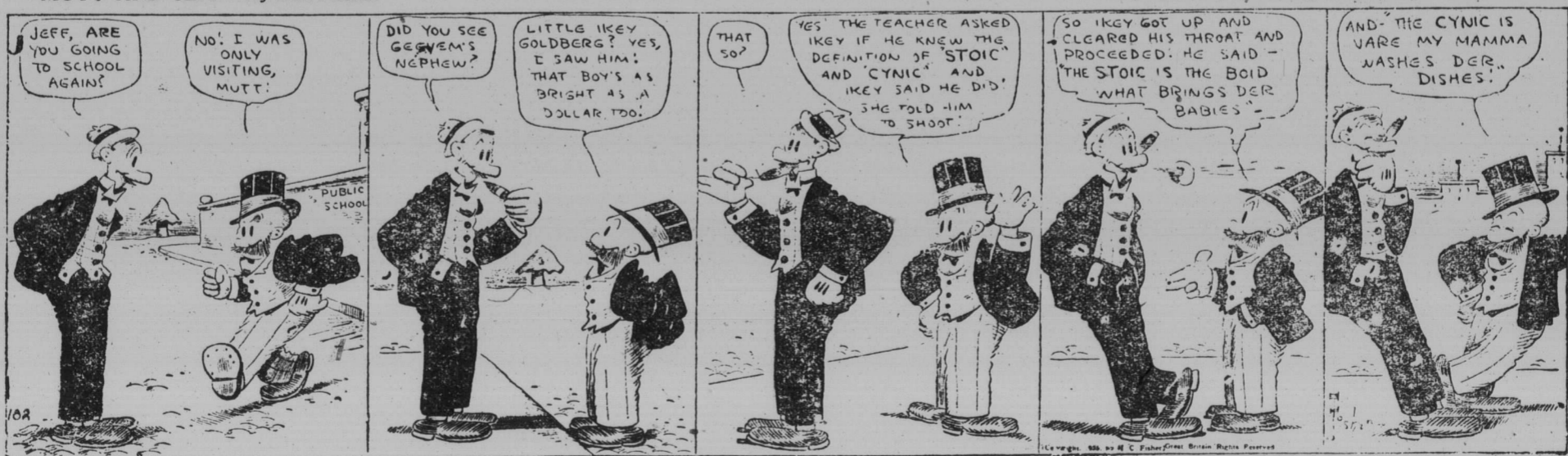
"Clarence," said his wife, "the maid has given notice because of the rude way you spoke to her over the phone yesterday."

"My dear, I'm so sorry. I thought I was speaking to you."

The water buffalo of the Orient can draw a load weighing more than a ton.

The prisons of England and Wales now number only about forty in all. More than twenty prisons have been closed since 1914.

MUTT AND JEFF—By Bud Fisher.



Little Ikey Goldberg Shows Off for Jeff's Benefit.