The Automobile

GRINDING GIVES NEW LIFE TO OLD CYLINDERS.

Automobile owners often wonder why their machines do not run better after they have been used two or three years. Good care has been given them, but something doesn't work just right. In many such cases the cylinders need to be reground.

When the automobile engine is built the inside of the cylinder is turned to a perfect circle. The piston which slides up and down in the cylinder is also turned in a perfect circle. The piston cannot be fitted to form an air-tight joint because the temperature of the engine varies in accordance with the outside atmosphere and the amount of heat generated in the engine itself. That is to say the temperature of the engine varies as the weather changes and also as more or less heat is generated in the engine to meet the demand for greater or lesser power.

Both the piston and the cylinder expand and contract with the variations in temperature, but not to the same degree. Therefore a piston that fitted the cylinder perfectly at a certain temperature would expand enough to stick fast in the cylinder at another temperature. Perhaps at still another degree it would fit the cylinder so loosely as to permit the gas to leak by making compression of the gas impossible.

To secure a gas-tight contact with the cylinder wall the piston is provided with several flexible rings which expand outward and form a perfect contact with the cylinder wall. They have sufficient elasticity to keep this contact as the cylinder expands and contracts due to the changes in temperature. When the engine is being operated the piston slides back and forth in the cylinder and because of the construction of the engine the piston is forced with considerable pressure against the side of the cylinder.

RESULT OF THRUST ON PISTON.

The pressure of the expanding gas which produces the power for operating the engine tends to force the piston straight out of the cylinder. But the resistance of the crankshaft which is connected to the piston by means of the connecting rod causes the piston to be forced with considerable pressure against the side of the cylinder because, during the power stroke, the crank pin is traveling through an arc at one side of the centre of the piston instead of directly under it.

As a result of this side thrust on the piston there is a tendency to wear away one side of the cylinder wall. The rapidity with which wear takes place is affected by a number of factors, perhaps the most important being the perfection of the lubrication of the parts.

As wear takes places the cylinder loses its true circular shape and becomes oval. As the piston rings are not sufficiently flexible to fill in the worn space, leaking is the natural result. This leaking causes several ills. First, the gas which is being compressed passes by the piston, thus reducing the power generated by the engine, and as the gas condenses in the crank case the oil is diluted and its lubricating quality somewhat impaired. Second, on the suction stroke, an excessive quantity of oil may be drawn past the piston into the combustion chamber, where it burns, causing smoke and forming carbon which causes knocking of the engine. This carbon gets under the valves and causes loss of compression and short-circuits the spark plugs, which in turn causes the engine to miss fire.

There has been much thought put upon methods of overcoming these troubles and some temporary relief may be obtained through the employment of some of the devices developed. But permanent recovery can be obtained through restoring the cylinder to its original form of a perfect circle and fitting new pistons and rings to it.

The most satisfactory way of restoring the cylinder is to regrind it. This is done by the use of emery or carborundum wheels on a machine designed especially for this work. This is a rather delicate operation and requires the service of a high grade mechanic skilled in this line of work. When the proper grade of work is done the results are even superior to those attained in the new car at the factory.

WHEN REGRINDING IS NECESSARY.

If the design of the engine is good and lubrication has been effective, regrinding becomes necessary probably around 35,000 miles of use. Because of the fact that many users of pleasure cars find their machine of obsolete type during the months or years that pass while 35,000 miles is being accumulated, regrinding has not been as universally done with this type of car as has been the case with the automobile truck where efficiency and economy rather than style are the important considerations.

As the manufacturers of passenger cars continue to develop the one model idea rather than bringing out yearly models the styles will not change so rapidly. Then greater economy can be obtained by the owner by restoring his engine to good mechanical condition instead of purchasing a new car.

Many of the cars that are now traded in for new models are repurchased at a low figure and the new owner does not consider them of sufficient value to spend much money on putting them in first class mechanical condition. However, although the model may not be of the latest much trouble could be avoided and greater satisfaction obtained in the use of a car of this type by attacking the source of practically all of the petty annoyances, namely, the worn cylinder. This means regrinding.

The whole matter of regrinding is something that every owner of an automobile should make somewhat of a study for there is a time in the life of practically all motor vehicles when regrinding can be done to advantage. This is especially true if a person is a careful driver and uses his machine well and wishes to get the maximum number of years service out of it. There are places where a specialty is made of regrinding cylinders and where expert advice can be secured concerning this problem.

A Heavy Cold.

Smith (on the scales)—"Can't tell why I should weigh more to-day than yesterday."

Jones—"Haven't you just caught that heavy cold?"

A Hope.

It is to be hoped that all those who throw rubbish by the wayside continue their vandalism by carrying home great bunches of poison-ivy.

Kew Gardens, London's famous horticultural park, covers 280 acres.

A La Silhouette.

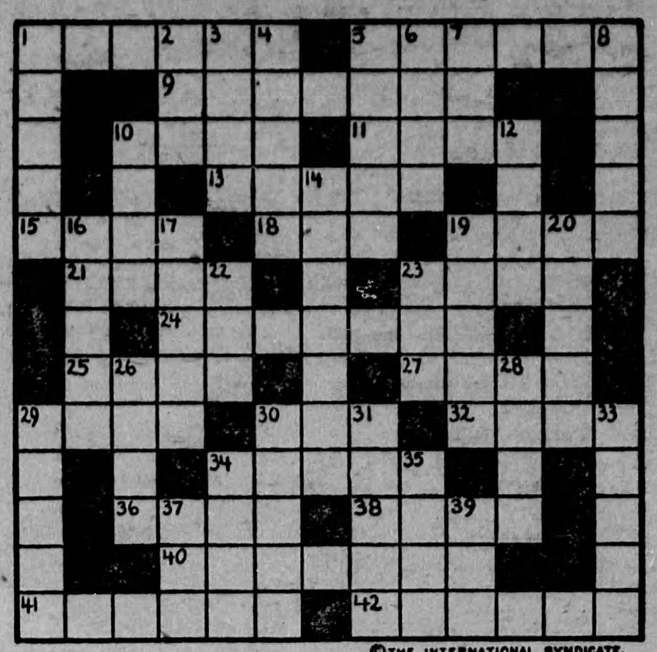
The oldest silhouettes that have been preserved date from Corinth in 700, but was known to be of much earlier origin. The name, however, was not applied to them until 1759, when one Etienne de Silhouette was French Minister of Finance. War had just left France in a state of great financial exhaustion and Silhouette insisted that the people remedy some of the financial evils of war by rigid economy.

During this period all Parisian fashions took the form of parsimony. Lace and ribbons were under the ban and coats without folds became the rage. In place of begemmed golden snuff boxes high and low used boxes made from the plainest of woods. Instead of having great artists paint their portraits they portrayed the features by drawing only the outlines in India ink. In that day all fashions were spoken of as "a la Silhouette," but the picture is the only thing that has since retained the name.

More Grapefruit Wanted.

British demand for American grapefruit is on the increase.

CROSS-WORD PUZZLE



©THE INTERNATIONAL SYNDICATE.

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 rock that splits into slabs
5—Shaped
9—Particular account
10—Stringed instrument
11—Future men
13—Small face or surface
15—Strong flavor
18—Viscous substance from pine
19—Excrescence
21—Put an end to
23—Source of mineral
24—Filled with bullet wounds
25—To administer nauseous substance
27—Existed
29—Nothing but
30—Pronoun
32—Flies
34—One who forfeits
36—Spill
38—Ditch
40—Stoutness
41—Agonies
42—Fright

VERTICAL

1—Brick
2—Clinging vine
3—Medieval slave
4—To discuss
5—Thread-like substance
6—Source
7—Indefinite quantity
8—Railway station
10—Granted for temporary use
12—To examine closely
14—Confections
16—Apart
17—The common furze
19—More broad
20—Restore
22—Pastry
23—Immune
26—Spheres
28—Defeat
29—Deserve
30—Desires
31—To send payment
33—Unmitigated
34—Part of the ear
35—Mechanical repetition
37—Game of cards
39—A city of Scotland

I. H. S.

Clear, poet soul of Galilee,
What truth could dim Thy radiancy?

Why must we hedge and screen and bind
To separate Thee from Mankind?

Thou, whom sad sinners made their own,
How could they reach Thee on a throne?

On Calvary Thy tortured brow
No halo wore, nor needs one now.

O simple-hearted, weary-eyed,
We love Thee more undeified!

—Mildred W. Stillman.

Conscientious.

The plumber worked and the helper stood looking on. This was his first day.

"Say, he inquired, "do you charge for my time?"

"Certainly, you idiot," came the reply.

"But I haven't done anything."

The plumber, to fill in the hour, had been looking long at the finished job with a lighted candle. Handing the two inches of it that were still unburned to the helper, he said witheringly: "Here, if you've got to be so dared conscientious, blow that out!"

Did He Need a Sea Voyage?

A doctor was examining a man who had come to him for the first time. Satisfied at last, the doctor looked at him gravely.

"You are in bad shape," he said. "What you need is a sea voyage. Can you manage it?"

"Oh, yes," replied the patient. "I'm second mate on the Anna Marie, just in from Hong-kong.

Flea and its Food.

A young flea can go without food for a week or two.

From the Sea Bottom.

Some surprising things come out of the sea, for it is rich not only in fishes, but in works of art.

Remarkable treasures have been dredged from the bed of the Bay of Naples, and only a few months ago a diver sighted a drowned city off the North African coast. Now some poor Greek fishermen at Marathon have raised a beautiful bronze statue which was lying twenty fathoms under the sea.

Experts say it is a charming figure of a boy, and belongs to the best period of Greek art 2,300 years ago. It resembles the work of the school of the great Praxiteles, and is practically perfect. Probably it is a relic of a shipwreck, or was flung overboard in a storm.

Sea-Gull.

Bird of no other life than skies and sea,
As I now watch you soaring overhead,
I know that of wild waters you were bred,
And yet I, too, am kindred of all these;
I mark your wings that are so lightly spread
Upward and onward in a fluent ease—
Are you the sport of winds that fret and tease,
And are you by their veering impulse led?

Or else upon unswerving purpose bent,
Beating the winds back even as you fly,
Like one on some aerial mission sent
First east and west, then north and south on high,
Unheeding voices blown about the sky,
Losing uncertainty in divine content?

—Sally Bruce Kinsolving.

To Detect Fraud in Oxide.

Artificial oxide on imitation antiques is now detected by means of an electro-chemical process developed at the Columbia University school of mines.

SECRETS OF THE HUMAN SKIN

Most persons bathe from habit or for the comfort or pleasure they get from it, and comparatively few know the relationship that exists between bathing and personal health, said Dr. Matthias Nicoll in a recent address.

The skin, in relation to being a protective covering, is the great heat-regulating organ of the body. When in health the temperature of the human body remains practically the same in heat or cold, in summer or in winter, whether a person wears no clothes or sews himself into many garments. The skin through its pores and the many little vessels and nerves with which it is supplied automatically takes care of the body temperature.

A Network of Nerves.

A person runs, or is out in the hot sun. Heat of the body follows. The network of little nerves reports the fact to the skin. Its mesh of capillary blood vessels dilates. water oozes out; evaporation of the water cools the blood at the surface, and it returns to the interior to stabilize the general body temperature.

At another time the same person sits still in a cold room. His body radiates some of its heat into the surrounding atmosphere, and were it not for the heat-regulating power of the skin his temperature would drop. But the nerves report the fact to the skin, and the small blood-vessels there begin to contract so that less blood is at the surface to be cooled. The nerves also report to the muscles, and they begin to tremble and shiver. This causes the production of more heat.

If the pores of the skin are completely stopped up (as they were in a historical case of a child whose body was covered with gilt paint), the person will die within a short time, due to interference with the heat-regulation mechanism. Perspiration goes on continually, generally insensibly. One notes it particularly if he wears a rubber coat, or when heavy shoes or goloshes are worn, for he finds his clothing or his stockings wet or damp.

Keeping Clean and Fit.

So we bathe (1) to remove the residue of this insensible perspiration; (2) to keep the pores open; and (3) to produce a definite environment temperature for our comfort—a hot bath to add warmth to the body or a cold bath to lessen the bodily heat. A warm or hot bath will often soothe a person weary with effort. A cold bath or cold sponge often brings sleep to a feverish, nervous person.

The smaller the body the greater relatively is its radiating surface. So we protect the tiny infant from contact with a too low temperature or from draughts, which very readily evaporate the insensible perspiration; futhermore, we do not bathe him at a temperature much below that of his body.

Delicate persons who make little exertion often find cold baths upsetting unless they get a good muscular reaction by vigorous shivering or extra clothing immediately. The healthy athlete, however, takes his cold shower, hastens the needed cooling of his body, and thus strives to be clean and fit.

There is no general rule for bathing. Society, however, demands that its sense of smell shall not be offended by the dried residue of perspiration, otherwise the person dripping with perspiration might merely rub himself dry.

Answer to last week's puzzle:

Photographing the Stars.

The faintest stars visible to the naked eye are of the fifth magnitude, while with the largest telescope photographs may be made of stars as faint as the twenty-first magnitude.

Route of Lord Byng

The governor-general's trip northward from Peace River Crossing culminated with his arrival at Aklavik in the delta of the Mackenzie river near Beaufort Sea, a subdivision of the Arctic Ocean. In all, Lord Byng will have traveled about 2,000 miles over western Canada's great inland waterways. The above map shows his route along the Peace, Slave and Mackenzie rivers.

Natural Resources Bulletin.

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

One wonders as he travels along the railway, what becomes of all the old railway ties that the section gangs are constantly taking out and replacing with new ones. Occasionally a fire is seen, when these old ties are being burned, but the greater portion of them are used by the railway men for firewood. It is the enormous quantity of these ties, however, that are required to keep the railway lines in proper condition, because, with the heavy trains and the high speed with which they travel, it is essential that the roadbed be kept up to maximum efficiency.

The provision of the necessary supply of ties is one of the problems with which the railways have to deal, and it is a very serious one. Rigid specifications are provided, and a careful inspection is necessary. When the millions of ties used annually is considered, and that each tie has its proportion of the load to carry, the necessity for this inspection is apparent.

In 1923, the last year for which figures are available, there were 14,764,830 railway ties cut in Canada. These, converted into their equivalent of standing timber, represent 177,177,960 cubic feet, with a value of $13,228,547.

Railway ties vary in length from 8 to 9 feet, with a thickness of from 6 to 7 inches and a width on top of from 7 to 10 inches, while they vary in grade according to the purpose for which they are to be used. Some of the ties are sewed or hewed on top, bottom and sides, while others are sawed or hewed on top and bottom only.

During recent years the Canadian railways have undertaken preservative treatment of their ties, creosote being largely used. There are a number of plants situated throughout Canada for this purpose, many millions being thus treated annually. It is claimed that the life of the ties is doubled by this preservative treatment. This is a big factor in the cost of upkeep of the railway lines, as the prices now being paid for ties are a heavy charge against operation. The lengthening of the life of the ties, furthermore, reduces the cost of changing them in the roadbed, and will also reduce the supply of old ties available for firewood.

In Northern Florida there are some places where water, travelling underground from higher levels, spouts out with sufficient energy to drive turbo-generators.

MUTT AND JEFF—By Bud Fisher.

Jeff Confuses Mutt With a Bit of Roman English.