WHAT HAPPENS TO THE OIL IN YOUR CAR?

Two Things Are Continually Occurring When It is in Use.

BY V. C. PARKER.

Lubricating oil is the life blood of your engine. Stop the oil circulation but a moment and your motor is gone. An autopsy at the nearest garage may disclose complications such as scored cylinders, burned bearings and the like, but the lack of oil will be self evident.

So well recognized is this danger that most cars are now provided with a visible oil gauge as a sort of mechanical pulse for the engine, by means of which you can assure yourself, from time to time, that oil circulation is normal. Few engines fail, these days, from a lack of oil.

But suppose the blood stream becomes poisoned and instead of circulating a life-giving, wear-saving flow of clean oil, it carries a thin dirty stream laden with particles of abrasive grit. The oil gauge will continue to show normal circulation and there will probably be no sudden and spectacular breakdown of the engine but, little by little, the working parts become infected and an insidious disintigration, heralded by sundry knocks and rattles creeps upon it, until at the end of a few thousand miles a major operation, known in automobile circles as a "complete overhauling" is necessary to make it again deliver quiet and satisfactory service.

If you would avoid such a situation as I have described, you must see that your engine has not only plenty of oil but that it is clean oil that is being circulated when your motor runs.

Two things are continually happening to the oil in your engine when you use your car. It is constantly thinning out or losing its lubricating body, and it is constantly accumulating abrasive particles of dirt. Engineers apply the terms "Dilution" and "Contamination" to these conditions.

Dilution is due to the presence in the lubricating oil of considerable qualities of gasoline. It accumulates faster in winter than in summer; more rapidly in cold weather than in warm. It is at its worst in cars driven by physicians or salesmen, who make frequent stops and starts, allowing the engine to cool down in between. It frequently becomes so pronounced that the engine apparently uses no oil at all and the crankcase seems to be full even after several hundred miles, but an examination will show that the oil is thin and black and has entirely lost its slippery feeling. It has no lubricating "body." The fact that an engine is apparently using less than a normal amount of lubricating oil is generally an indication of severe dilution.

CAUSE IS A MYSTERY.

How does the gasoline get into the oil to thin it out? To many people who are familiar with the results of dilution, the cause is still a mystery.

When you started your car this morning, particularly if it had stood all night in a cold garage, you pulled out the "choker" before you started to crank it, and very likely you drove several blocks before you considered the engine warm enough to run without using the choker to some extent.

The "choker" simply gives your engine an additional amount of gasoline, probably from three to ten times as much as is necessary to form an explosive mixture. You use a "rich" mixture on a cold day because the air does not contain heat enough to readily vaporize the gasoline and you must have a vapor to get started.

But what happens to the remaining gasoline that enters the engine cylinders in liquid form? It condenses on the cold cylinder walls and dissolves the lubricating oil off of the piston rings. On the down stroke of the piston, some of it is carried down into the crank case to mix with the oil there.

Now we depend on the oil around the piston rings to form a seal and make our cylinders gas tight, as well as to lubricate the moving parts, and if this oil seal is dissolved by gasoline, we no longer have a tight cylinder. More gasoline and even the products of combustion can then work their way past the piston rings and into the crank case.

Gasoline and oil are chemically very similar, both being products of crude petroleum, and is very easily dissolved in gasoline in any proportion. That is why we use it as a cleaner to take grease spots out of our clothes.

Any gasoline reaching the crank case is immediately absorbed by the oil and makes it just that much thinner. As the oil gets thinner it loses its "body" and becomes a poorer and poorer lubricant. This thin oil does not give as good lubrication as thicker oil, and more wear takes place between the moving parts of the engine. Further, this thin oil does not make as good a piston seal as thicker oil and therefore allows more gasoline to work past the piston rings the next time the car is started.

In other words, the effects of dilution are cumulative. The more gasoline getting past the piston rings the greater the dilution. The greater the dilution, the more gasoline will get past, until the process becomes a vicious circle and tends to continue indefinitely as long as you stop and start your car.

Contamination works in the same way. The thinner oil, containing gritty particles causes greater wear and greater wear produces more gritty particles of metal to be picked out by the oil. Contamination is frequently aggravated by quantities of road dust and fine particles of carbon which also work past the piston rings and get into the oil.

Some engineers claim that the thinning out of the oil by dilution would have but little effect on the engine if contamination could be prevented and the oil kept clean. Other engineers are just as positive that the fine particles of dirt which constitute contamination would be harmless if the working parts were separated by a film of thick undiluted oil.

Engineers may take their choice of these theories, but the repair man requires no higher mathematics to demonstrate the results of operating an engine on thin, dirty oil. He sees too many motors which show evidence of excessive wear after a few thousand or, in some cases, only hundreds of miles.

Now that we know the dangers of running our engines on diluted and contaminated oil, what can we do about it?

WHAT IS THE REMEDY?

This question has been the subject of extensive scientific investigations on the part of experts for the past three or four years, and these learned gentlemen, after much experimenting, are now able to draw some definite conclusions which can be used by the average car owner to prevent these troubles to some extent.

Briefly, these engineers have found that the causes of dilution, in the order of their importance are as follows:

1. Operating engine at too low a temperature.
2. Excessive use of the choker.
3. Use of an over-rich mixture.
4. Use of poor gasoline which does not vaporize readily.

To make practical application of this information and avoid additional repair bills as far as we can, let us resolve for the good of our engines to:

First: Keep the engine warm by covering the radiator in cold weather, or even by throwing a robe over the radiator until the water gets hot after starting up on a cold morning.

Second: Use the choker only when necessary and never drive with it on. A motor in good mechanical condition should not require excessive choking to start.

Third: Use the cleanest mixture at all times and if possible overcome the temptation to "give her more gas" every time the motor spits on a cold morning.

Fourth: Buy gasoline from a dependable refining organization which maintains a uniform product.

Finally, we must recognize the fact that we will always have a certain amount of dilution and contamination of our lubricating oil under even the best operating conditions, and that eventually the oil in the crank case will become too thin and dirty to provide proper lubrication and prevent wear. When this time arrives there is nothing to do but drain out the dirty oil, throw it away, and refill the crank case with clean, fresh oil of the proper grade. In winter, this should be done every five hundred miles to be safe, and even more often for cars which are started and stopped a great deal in cold weather.

Oil is cheaper than bearings and in this case it certainly pays to follow the manufacturer's instructions.

When Manure Starves a Crop.

Manure applied fresh from the stable usually works a temporary injury to a new-planted summer crop. Manure, like cheese, reaches perfection through a ripening process. The ripening of manure is brought about through the work of countless bacteria.

When manure is applied to land when in a green or new state bacteria sets to work ripening it right in the soil. In the main these bacteria are working at the job of breaking down the straw or other cellulose material in the manure. Such material is not a very well-balanced ration for bacteria. They need extra nitrogen in the diet, so they proceed to take this nitrogen from the soil.

When fresh manure is applied to the land in the summer, when the temperature is at a height to encourage bacterial growth, these tiny denizens of the soil will take up in their bodies practically all the available nitrates. A plant can't get nitrogen which is tied up in the carcass of a bacteria.

A young seedling put out at the same time as fresh manure is therefore forced to go on a low nitrogen diet for the first month or six weeks. Finally the bacteria finish ripening the manure and themselves die and become available as plant food. But while the manure-ripening process is going on there is really far less nitrogen available in the land than if no manure had been put out.

The moral is that fresh manure should never be applied to land just as a crop is planted. The manure should either be composted before application or else go out several months before the crop.

Clean hens in clean quarters make for poultry profits.

The Swoose, an oddity at Boston Zoo. It is a cross between a Canadian goose and an Australian swan. It is the only known specimen in the world.

SPORTS FOR AUTUMN DAYS

FOX AND GEESE.

The players choose one of their number to be the fox and one to be the gander. The rest are all geese and stand in a long single file behind the gander, each with hands on the shoulders of the player in front, the first one's hands on the shoulder of the gander. The object of the game is for the fox to tag the last goose in the line, who then becomes fox.

But this is not an easy thing, for the gander and the long line of geese all try to protect the last goose. The gander will dodge around in front of the fox with his arms outspread sideways to bar the fox from dashing back toward the line of geese; and of course whenever the gander moves, the line has to move with him, being a continuous chain. If the chain is broken the fox wins.

If the fox gets past the gander, then the end goose will try to make the line double back to get out of his way, or the geese in front will loop the line to bar his progress.

WHEEL FISHING.

Did you ever fish with a water wheel? You probably exclaim, "How in the world can I fish with a water wheel?" This is how you do it:

A small shaft is set up across the stream with a paddle wheel on one end. If the stream is rather wide, the shaft is cut in two and a wheel put at each end. Fish lines, with floats, hooks and sinkers, are attached to the shaft. Then as the wheels turn the lines are slowly drawn upstream until they are completely wound up.

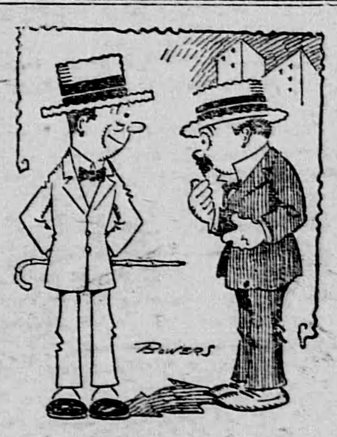
Use a double set for wide streams. For creeks, only one shaft need be used. The shaft should be a light rod of hardwood. Cut out a block of wood two inches thick and about four inches square for the paddle wheel hub. Bore a hole through it for the shaft. The shaft should fit tightly so it will turn when the wheel does.

Each wheel has four paddles of tin. The spokes are of either light rod iron —stiff wire will do—or straight-grained wood about half an inch in diameter and twelve or fourteen inches long. Set these in holes bored in the wheel hub.

Now drive stakes across the stream and either bore holes through them near the tops or notch them for the shaft.

It will take only a few minutes to let out the lines again after they have been wound up. Set them about four feet apart on the shaft, and if several hundred feet of line are to be used, it will be well to place tin disks on the shaft four inches apart on each side of the line so that it will wind up in one place and prevent fouling.

When the wheels stop turning or actually revolve in the opposite direction you may rest assured that you have a fish on a line.—D. R. V. H.



Would Save Money at That.

"Sorry your salary's been temporarily cut—great loss, no doubt."

"Not at all. I won't be able now to take the family on that expensive trip north this summer."

A Pond for the Farm.

There are many farms that have no dependable running ditches or other available watering places for the live stock. Then, too, a good pond serves as a bath for the hogs, as a means where the horses and cows may stand and keep the flies off of their feet and legs. This is a service that cannot be estimated in dollars and cents. The significance of it may be partly realized by watching the farm animals on a hot day as they enjoy such an experience as a pond offers, in apparent happiness and contentment.

A great deal of time should be spent in deciding upon the site, as this is the most important element in building a pond. Drainage is another factor that should be looked out for before constructing the pond. A pond to be sanitary may have to be drained and cleaned. With the above factors in mind choose a place that is low and one that will not receive too much surface drainage, as there is a possibility that the mud and soil from the adjacent hillsides will be carried to the pond and fill it up.

The time to make the pond is this fall when the ground is dry. If there is a flowing spring that may be made over into a pond it will be much more serviceable.

In digging the pond be sure that it is deep enough but that there are no "jump-offs" or sudden deep places where the animals might get into deep water and drown.

Efficiency crept into shops after sensible book-keeping found its place in the offices of manufacturing concerns. Farming will have to pass the same stages of evolution. It is coming, for the subject of farm accounts is now being promoted in the country schools. The plan is to teach this subject in the habit-forming seventh and eighth grades.

The muscles of a bird's wings are, proportionately, twenty times more powerful than those of a man's arm.

A NEW ERA FOR FARM WOMEN

Economic, Social and Cultural Conditions on the Farm Are Improving.

BY J. T. HORNER.

The discussion was about the ills and welfare of agriculture. Women were there who had spent years of toil in rearing a family and doing a woman's work on a farm. They showed stains of weary toil and self-sacrifice undergone, that their children might have a better lot in this world. Their hands gave signs of doing tasks which are thought of as belonging to men. Their faces showed cuts of sharp winds, the bites of cold and the blisters of heat.

These women were the kind that made the conquering of the wilderness possible, for without woman the farmer is helpless. These women were the kind who underwent hardships and suffering of the hour in hope of better things in later life. They faced privation, loneliness, and hard toil, to the end that a civilization be founded and the frontier be beaten farther and farther back.

At this meeting these women were looking forward with hope of a better agriculture in the future, as their mothers looked forward with hope in the pioneer days. They had faith in agriculture and their desires were to remain on the farm.

Regret was expressed that the farm boy and girl were being educated away from the farm. It was thought that some effort should be made to educate these growing children in such a way that they would prefer farm to city life.

CHANGES IN FARM WORK.

The lures of the city and attractiveness of city employment have two influences on rural life and rural people. In the first place, it takes the strong, virile young manhood and womanhood of the rural community and it causes a shortage of labor on many farms.

In pioneer days much more labor was needed on the farm than at present. The land needed clearing. There were fences to build, land to plow and drain, houses and barns to build, and many operations to perform which are now done in the town.

The changes which have come about in industry during the past one hundred years, have caused many of the operations once performed on the farm to be done in the city factory. Machinery is made in the city. Flour is made at the mill and in many instances is baked into the loaf before it gets to the farm. Wool is washed, spun, woven, and made into cloth. Feed for live stock comes from distant sections of the country. The farmer's meat is no longer a product of "butchering day," but comes from one of the large packing centres.

There are not so many people needed on the farms to-day, because there are fewer things done in the country. Also, the general use of improved machinery makes it possible to get along with less help.

This trend of population from the country to the city is just a natural consequence of our national development. It is not due to the use of city text books in our country schools or the farm boys and girls being educated away from the farm. Economic conditions and economic changes are the reasons for the trend away from the farm.

There are many attractions about city life which appeal. The vigorous, rapid life in the city appeals to youth more forcibly than the quiet hard toil of the farm. The vim and vigor of youth seeks the activity of city life, longs for the new sights and is lured by the recreational side of life within the town. Youth is ever eager to see new things and learn. The city, with its many phases of industry, commerce, and pleasure offers wide fields for new experiences. Industry in the city also offers a greater immediate reward for the services of the young man or woman, so naturally the trend of population is cityward.

Farm folks who have toiled a lifetime to clear up and improve a farm, dislike to see their children leave and go to town. Every man really wants to establish an estate and family which will continue down through the generations. This, in his mind, should be on the old farm where he has spent his life of toil. The family home for years to come should be on the old farm where the pioneer has given his life labor. These old pioneer farms have really a part of the character of the men and women who have wrung them from the wilderness. The children like the dear old farm, but it is not a part of their lives as it is of their parents. It does not mean the same years of labor and hardships. Youth looks to the future. Age looks backward. Where the brightest prospects are there goes youth, while sentiment perishes.

FARM VS. CITY REWARDS.

In the march of econmoic progress, family ties, ambitions, ideals, go by the wayside. Youth forges ahead into those activities which seemingly offer the most. Mothers and fathers back on the farm may regret the movement from the country to the city, but it will continue just as long as the city offers more comforts and a fuller life.

Youth should be taught the real conditions in the city and be able to compare the rewards of city and farm occupations followed for a lifetime rather than compare the weekly wages.

The past generation experienced the change from a hand to a machine agriculture, and from a self-sufficing to a commercial agriculture. The generation prior to that forged its way into the wilderness and made the development of a civilization possible. During both these periods the tasks of the farmer were hard. He lived a strenuous life and underwent many hardships. The signs of the times seem to indicate that the agricultural accomplishments of this nation during the next generation will be a popularization of science among rural people and a marked improvement in living conditions, social life, and culture on the farm.

The day of the farm woman is about to dawn. Not much longer will she be expected to toil like a slave, live in undesirable quarters, deprive herself of wholesome social life, and forego those dainties and cultural things dear to every woman's heart.

The fruit of the vision of the farm women of days gone by is on the tree. The harvest is about to be gathered and with it will come the rural life which has, heretofore, existed mainly in vision.

What He Was Doing.

"What were you doing all these six months you were away from home?"

"Six months."

When knitting or crocheting, put your ball of yarn in a small paper sack, tie it loosely so the ball will have room to turn as you work, and the thread runs smoothly.

THE TEST OF SPORTSMANSHIP

There are few things in this world that go as far in developing good sportsmen as do our county fairs. It is here that our young live stock men get their first lessons in showing live stock, and naturally they have much to learn.

It takes a great deal of grit and determination and nerve and cleverness and hard work to take live stock to the fairs and prepare them to win the "blue" in competition. There is but one "blue" in each class and after fighting hard for it, it is not easy to let the other fellow take it. Here is the test of a good sportsman:—to work and strive and fight for the prize, and then, if he must accept the red or the white or the green in the same spirit as the blue.

It takes courage and patience, a strong spirit of fairness to be a good loser. The act of doing one's best at these fairs is where the benefit comes in, and then to take defeat gracefully for ourselves and our choice animals is the test of the real sportsman.

First vs. Second Year Queens.

An experiment conducted for two years by the Dominion Apiarist at Ottawa shows that the average crop of honey obtained from ten colonies headed by a queen less than one year old was larger than that obtained from the same number of colonies headed by a queen in her second year. In 1923 the crop obtained from the yearling queens was 243 pounds, 2 ounces greater than that obtained from the queens in their second year. In 1924 the difference was 379 pounds, 12 ounces in favor of the young queens.

Although it has a huge tongue, the whale has very little sense of taste.

Rumanian dancers at the Exhibition. Their quaint costumes attracted widespread attention.