

By MARTIN BUNN



Frank Hubbard

"Now we'll just see about that piston," Gus grunted, as he applied the crank and turned the motor over. The compression seemed uniform

How's Your Air Cleaner?

HHEY, Gus!" Joe Clark poked his head out of his little office in the Model Garage to shout to his partner. "Doc Wisner is on the phone. He's burned out a bearing or something up on the bend in the road nearest to Mulberry River. He's up there fishing. Wants you to tow him in."

Gus Wilson, who took care of the mechanical work in the establishment, turned away from the car on which he was working and tossed a wrench into his tool kit.

"Up on Mulberry River, eh? All right, Joe, tell him I'll be up there right away."

Gus waited until Joe had stepped back into his office. Then, with a sly grin wrinkling the corners of his mouth, he reached into the bottom of his own car and quickly snaked out a fishing rod and tackle box, which he slipped under the seat of the tow car.

"Good old Doc!" he murmured, as the tow car rolled out of the garage. "The fish must be biting today. It's about time I had a go at them!"

But the smile disappeared from Gus's face as he rounded the last bend in the road. "Guess Doc really is in trouble," he muttered, as he pulled up behind a new sedan that had been driven a little way up a wagon track leading toward the river. A short, plump man in hip wading boots was bending over the raised hood and gazing disgustedly at the motor.

"Howdy, Doc," Gus called. "I was hoping you were fixing things so I could sneak an hour's fishing."

"That's just what I was going to do, Gus," Wisner grinned, "and then danged if the motor didn't go haywire! She's burned out a bearing or blown a piston or something. There's a terrible clank when you start the engine."

"Did it happen suddenly?" Gus asked.

"Sure did," Wisner replied. "I found the fish were biting fine, so I came back to the car, intending to drive to that house down the road and phone you. When I stepped on the starter, the motor roared like a mad bull and I had to stop it by turning off the ignition. Nearly scared me stiff. But the throttle didn't seem to be jammed, so I tried it again, and that time the motor started normally. As soon as I got it going, though, I heard a loud clanking noise. I shut it off right away and walked down to the house. Suppose we get in a bit of fishing, and then you can tow me in."

"That's a queer one," Gus grunted. "Motor raced, and now there's a clanking noise. It might be a burned bearing or a blown piston, all right, but then what made it race? Let me look at it a minute before we go down to the river. I'm kind of interested to see what caused that combination."

Gus reached into the car's tool compartment and pulled out the hand crank.

"Now we'll just see about that piston," he grunted, as he applied the crank and slowly turned the motor over. The compression seemed uniform on all cylinders. Then he bounced the crank against compression at several different points, but there was no trace of a thump.

"No telling whether you've cracked a skirt off one of the pistons," Gus observed, "but it's a cinch you haven't busted any piston heads. A little click or clank when you rock it against compression might come from the valve mechanism, but the fact that there isn't any noise at all is a pretty good sign that there's no burned-out bearing."

"Maybe it won't clank now," Wisner suggested, hopefully.

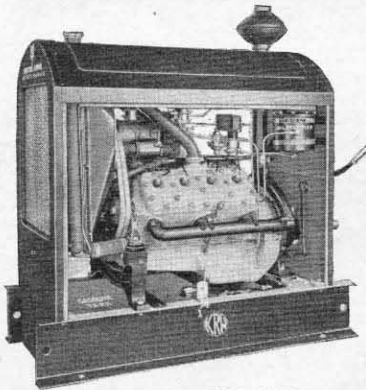
"I wouldn't take a chance," Gus decided. "It doesn't pay to run a motor if it is making any queer noises. Anyhow, I wouldn't want to start it without taking a look at that throttle. Perhaps the butterfly valve has come loose from the shaft."

Gus lifted off the air cleaner, and peered down into the carburetor opening. "What the Sam Hill is that?" he growled, as he cautiously inserted a huge finger in the opening and fished out a thin, rough-edged piece of metal.

Gus turned the air cleaner over and examined it closely. "Well," he chuckled, "guess we might as well get in a little fishing, and then I'll tow you in. Here's the trouble. This inside flange on the air cleaner has broken—the metal must have had a flaw—and two pieces went down into the carburetor. Here's one of them. The other jammed the throttle open when it dropped loose, and then it got through into one of the cylinders. That's what is causing the clanking noise. I'll have to take the head off to get it out."

"I never could (Continued on page 129)

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YOUR AIR CLEANER

(Continued from page 76)

see much sense in that air-cleaner business," Wisner complained, as the two men headed for the river bank. "When you get it fixed up, why not leave off the air cleaner? What's the need for such a gadget, anyway, when most of the roads are concrete and there isn't any dust to speak of? People don't have to breathe through an air cleaner, so why should a motor?"

"I'm ashamed of you, Doc," Gus smiled, as he pulled his fishing rod out of the case and started to put it together. "Have you forgotten all the little hairs inside your nose? They do exactly the same job for the air you breathe that the oiled metal filaments in the air cleaner do for your car's air supply."

THE doctor grunted. "Score one for you, Gus. Of course, that's true. Still, I shouldn't think that the little dust there is in the air these days would do the motor any harm."

"No dust in the air, eh?" Gus countered. "Then what is all that stuff that settles on your car when you get it spick-and-span and leave it standing outdoors—even on a concrete road—for a couple of hours? And if you rub your finger over the hood or the top of a mudguard, you pick up a lot of fine grit that would make a pretty good grinding compound if you mixed it with a little oil."

"Another thing," Gus continued, warming up to his subject, "every time somebody analyzes the carbon that forms in a motor, he always finds that a large percentage of it is road dust. Aside from that, the air cleaner acts as a silencer. Take it off, and the air rushing into the carburetor makes a whishing, sucking, gurgling sound so loud it'll drown out all the other noises in a car."

At this point in Gus's little talk on air cleaners, he hooked a big fish. In the ensuing excitement, the subject was forgotten. It was a lively battle, but Gus finally worked the fish close to the bank where Wisner was standing.

"Net him quick!" Gus shouted. "Feels like the hook may let go any second!"

The doctor was just in time, for the hook snapped loose as the net scooped up the prize.

"Guess we'd better get going now," Wisner suggested, "I want to get in touch with my office pretty soon."

When they got back to the Model Garage, Wisner phoned his office and, as there were no calls, he decided to stay and watch Gus fix his car.

As he had predicted, Gus found the piece of metal in one of the cylinders. Fortunately, it had not scored the wall, so he started to reassemble the head.

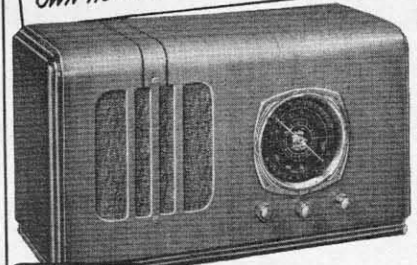
"The trouble with this air-cleaner business," he grumbled, as he brought out a new cleaner and tested to see if it fitted properly, "is that more than half the air cleaners on the road today aren't doing what they should. Just because the air cleaner ordinarily doesn't give any trouble, most owners neglect them. The oil gets all dried out, and after that most of the dust goes right through.

"AND what's even worse," Gus went on, "is that some car owners just go on spilling heavy oil into their cleaners without ever giving them a real cleaning out. After a while, the metal filaments get so coated with a caked-on mixture of heavy oil and road dust that they actually cut down the air flow. Then the owner goes around complaining about what rotten gas mileage he's getting, when the only trouble is that his air cleaner is so clogged it's giving the same effect you'd get by running with the choke partly closed all the time. A badly clogged air filter will cut your gas mileage sometimes as much as three or four miles (Continued on page 130)



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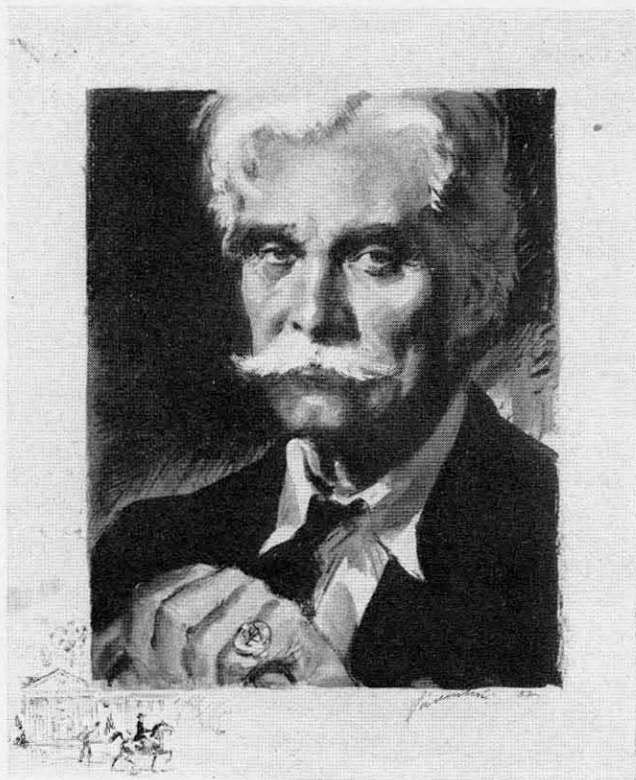
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YOUR AIR CLEANER

(Continued from page 129)

to the gallon—and that's a mighty big waste."

"I know the instruction book says to clean it out with gasoline and re-oil it," Wisner commented, "but that strikes me as a pretty messy job. Can't you blow the dirt out with air pressure some way?"

"You can't get it really clean with air pressure," Gus replied. "And the job of cleaning isn't so messy if you go about it the right way. Get yourself a couple of cans big enough to take the air cleaner, and have one of them about twice as deep as the air cleaner is high. Have covers for both of the cans. Put the air cleaner in the shorter can and pour in enough plain gasoline to cover it. If you want to play safe and have no worries about fire, use one of the standard nonburning dry-cleaning fluids instead of gasoline. Let the air cleaner stand in this fluid for five minutes or so and then swish it up and down a couple of times to dislodge all the dirt.

"IN THE deep can," Gus continued, "put enough light oil to cover the air filter. The lighter the oil is, the better. Winter engine oil—S. A. E. 20, or even a lower viscosity, is about right. Dunk the air cleaner in the oil and then, with a piece of string and a short stick, hang it in the upper part of the can overnight so as to let all the excess oil drain away. If you're in a hurry, you can cut the draining time to ten minutes or so, because what little oil runs out after that won't have any effect on the motor.

"It'll take quite a while before the cleaning fluid gets so dirty that it won't take all the dirt out of the air cleaner," Gus continued, "and you'll use so little of the light oil that you'll hardly notice it."

"Sounds like a cinch that way," Wisner agreed, "only I think I'll tie the string onto the air cleaner before I start. Then I won't have to get my hands in either the cleaning fluid or the oil. How often should you do the job?"

"The instruction books usually say every 1,000 miles or so," Gus replied, as he fastened the air cleaner in place and started to put his tools away, "but, of course, it really depends on how much dust you run into, and not on how far you drive. If you're driving in heavy traffic, on roads with dirt shoulders, you pick up dust fifteen or twenty times faster than you do if you drive over the same roads with no traffic."

"Suppose I give the air cleaner a treatment every 2,000 miles if the going is mostly on concrete without much traffic, and cut the intervals down to as little as 500 miles if the traffic is heavy and there is a lot of dust?"

"That's reasonable, Doc," said Gus, as his friend climbed in and started the motor.

JOE CLARK, who had stepped out of his office just before Wisner drove away, was sniffing the air suspiciously.

"I smell fish," he grinned, as he picked up the leaf-wrapped trophy and examined it admiringly. "You old fraud! Now I suppose you'll tell me you pulled this out of Doc Wisner's motor, too!"

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DURING a detailed study of pine trees, Dr. A. L. MacKinney, of the Appalachian Forest Experiment Station at Asheville, N.C., recently counted all the needles on a sixty-six-year-old tree which measured thirty-four feet from the tip to the lowest branch. He found the total number was 325,000. The surface area of the needles was nearly 4,000 square feet. Laid end to end, Dr. MacKinney computed, the needles from the one tree would have stretched fifteen miles.