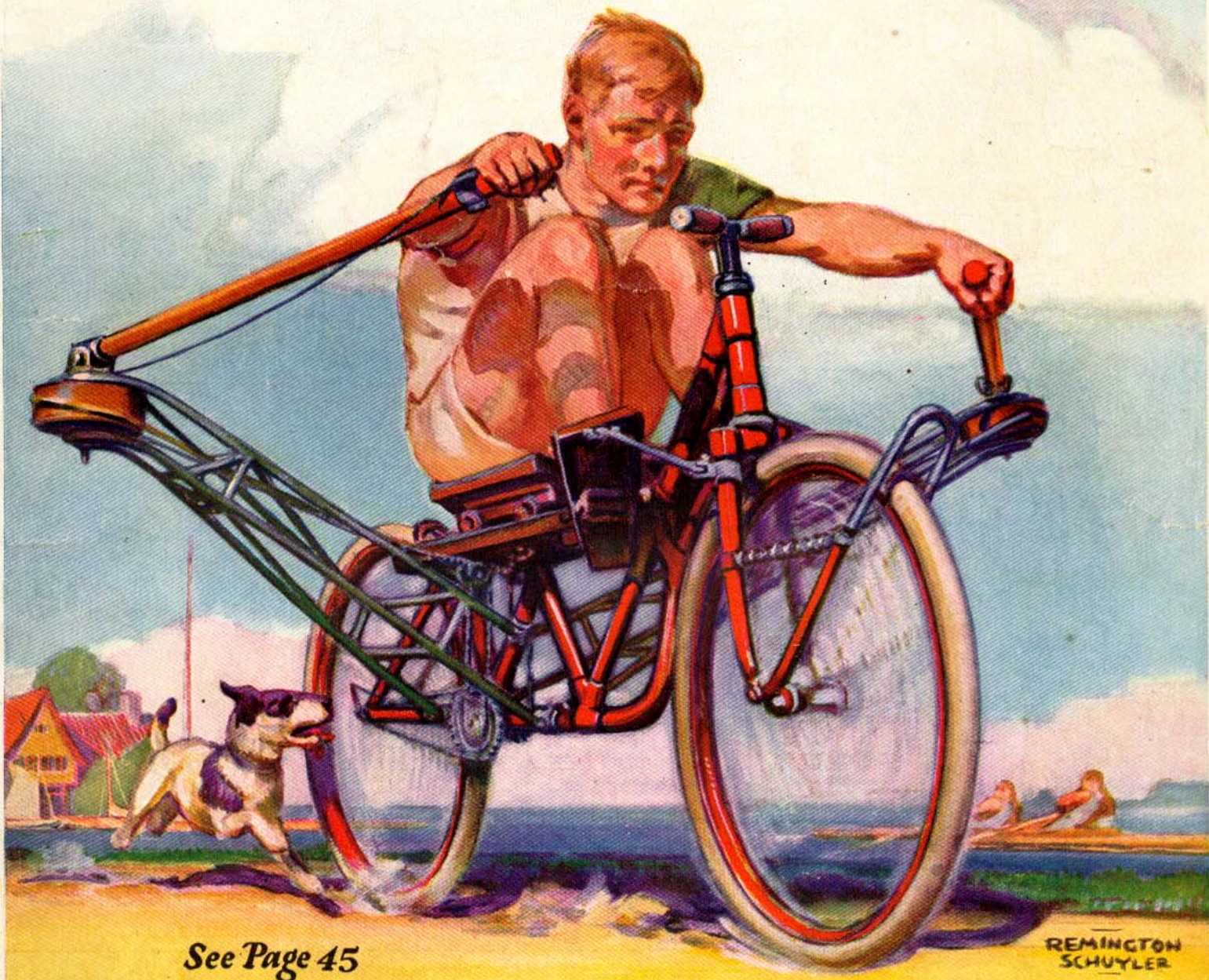


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What Poor Oil Does to a Car

How a Few Pennies Saved May Mean Dollars Wasted on Repairs

By MARTIN BUNN

PHEW! That fellow must be burning soft coal instead of gasoline!" whispered Joe Clark to his partner, Gus Wilson, as the latter walked out of the Model Garage in response to frantic blasts from a motor horn at the curb.

The car which had stopped there was emitting dense blue-black smoke in such tremendous volume that the two garage men were nearly suffocated as it drifted into the garage.

"My name's Potter," began the owner of the car, shutting off the motor as Gus approached. "I've just moved into town, and my neighbors tell me you're the man to see when an auto needs fixing. And this car sure needs something done to it. It's got no power or speed, and it runs rotten all the time. Besides that it starts hard. Look her over and see what's the matter."

Gus raised the hood and inspected the level of the oil in the crankcase. Then he asked for the hand crank and carefully tested the compression in each cylinder.

"Where did you get that oil, Mr. Potter?" he inquired.

"It's 'extra refined' oil and I got it at a great bargain," Potter answered. "Costs me only thirty cents a gallon in fifty-gallon drums shipped right from the refinery."

"Well, I don't like to discourage you," said Gus, "but using that particular grade of oil has put this engine on the blink for fair."

"What do you mean?" snorted Potter indignantly. "I've been using that oil right along, and I never had any trouble with it before."

THAT'S because it takes a while for the bad effect of poor oil to show up in the running of the engine," Gus explained. "You can use poor oil and get away with it for a time, just as you can neglect your storage battery without trouble until the battery quits cold and leaves you stranded on the road.

"Motor oil has to do only one job—keep the moving metal surfaces from rubbing against each other. And it takes mighty good oil to do the job right. The film of oil between the moving metal



"Look at your cylinder head and pistons," said Gus. "The carbon is crusted on nearly a quarter of an inch thick. The valves are pitted, too. That's what a poor brand of oil will do to a motor!"

parts in an engine is thinner than the thinnest sheet of tissue paper, and if the oil is of such poor quality that the film breaks at any point, the bare metal surfaces will rub against each other and some of the metal will be worn away.

"Plenty of poor oil is better than no oil at all because, if the oil film does break down, it is renewed by the fresh supply and the wear is slow. That's what has happened to this motor. The oil you are using is poor grade, but you have evidently kept the crankcase level up to the proper mark and so it's taken time for the wear to put the motor on the bum."

"How do you know the oil is no good?" questioned Potter skeptically. "You don't mean to tell me you can tell poor grade oil just by looking at it!"

OF COURSE not," admitted Gus. "Nobody—not even an oil expert—can be sure about the quality of oil just by looking at it. The color of an oil doesn't mean much. I can show you two different oils, one dark and one light, that show up exactly the same in the standard tests. Also, they are equally good for motor lubrication. Even the thickness or 'body' of a cold oil doesn't prove much. The important point is whether the oil will get too thin at the high temperature of a running motor.

"Your motor has all the earmarks of poor lubrication. Besides that, I know that high-grade oil can't be bought for the price you paid.

"Gas engine oil gets a lot of rough treatment inside the motor, you know. It has to be thin enough to run in between closely fitted bearings and yet stand terrific heat without getting so thin that it will be squeezed out by the pressure.

"Cheap oil is often a mixture of what the refiners call 'tops' and 'ends'—the lighter oils that come off first when crude oil is distilled with enough of the heavy parts that come over last to give it

about the right body. When you lubricate a motor with such stuff, the lighter oils evaporate into clouds of smoke and the heavy portions turn into carbon and gummy deposits.

"That's what's the matter with your motor. It's chuck full of carbon. The valves are all gummed up and probably burned and pitted. And because the oil is such a poor lubricant, the piston rings are worn so that the compression is no good. The bearings need taking up too."

"I can hardly believe it's as bad as all that," said Potter.

"All right," said Gus. "Come around tomorrow and I'll show you just what the inside of your motor looks like and you can judge for yourself."

Potter showed up promptly the next morning.

"I had it sized up about right," said Gus as Potter strolled in. "See—here are the piston rings. Every one has blackened surfaces where it ought to be bright. Those dark areas are where the gas is rushing past the piston into the crankcase. Look at that cylinder head and the tops of those pistons. The carbon is crusted on nearly a quarter of an inch thick. These valves are pitted to beat the band. And see how the carbon has baked on to the stems until they won't seat any longer."

YOU win!" admitted Potter. "It's a mess all right. Anything else wrong?"

"The bearings are pretty loose," Gus replied. "I'll have to take them up. And the cylinder walls are burned and slightly scored, but I think the cylinder hone will clean them up easily enough. That's about all, but if you have any lingering idea that the oil you were using is good just look at the gummy deposit sticking to the oil pan."

"Humph!" groaned Potter. "Counting in the cost of these repairs, that oil will cost me about two dollars a gallon."

"Pretty expensive oil," said Gus. "You can buy the best on the market for a whole lot less. And I'd do it hereafter if I were you."