Trouble-Hunting

WHEN YOUR CAR WON'T RUN

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By MARTIN BUNN

"SOME wagon, eh, Gus?" young Blarsden bragged, standing back to admire the sleek lines and shimmering gloss of his brand-new automobile.

"Sure is," agreed Gus Wilson, half owner of the Model Garage, as he screwed the cap back on the fuel tank of the car and hung the nozzle of the gasoline hose in its place on the pump. With his partner, Joe Clark, on the sick list, and the boy away on a long errand, the veteran auto mechanic was temporarily on duty "out front."

Blarsden opened the car door and climbed in behind the steering wheel. "Well, so long," he said, pocketing his change. "You won't be seeing me around the shop any more, now that I've scrapped that old kettle I used to drive. With this new bus, I'll just hesitate now and then to pick up some gas and oil."

Snapping on the ignition, Blarsden pressed his foot on the starter button. Nothing happened. He jabbed it down again, this time more vigorously, with the same result. "Now what the—" he muttered, looking helplessly toward Gus, who was just walking into the garage office. "Hey, Gus!"

A grin spread over the mechanic's grizzled face, as he turned and sauntered over to the car. "Well, well," he said, "if it ain't the young fellow with the troubleproof car. Back for oil and gas already? I know you don't need a mechanic for that fine new bus, but if I was you I'd 'just hesitate' long enough to find out why it won't go."

"Gosh!" exclaimed Blarsden, with a sheepish grin. "How do I begin? I'm no automobile expert."

"You don't have to be, to figure out why a car doesn't start, or what makes it stop suddenly," Gus replied. "It's just a matter of eliminating the things it couldn't be, then the things it's not likely to be, and the trouble will be among the things that are left."

"All right," said Blarsden. "I'm game. Let's see, now. It's a cinch that neither the carburetor nor the ignition system can have anything to do with it. The starter didn't turn over the motor, so the carburetor and ignition didn't have a chance to work. If the starter won't work it must be either because it isn't getting any juice or else because it's busted somehow."

"That's the way to go at *it!*" Gus applauded and waited for more eliminations.

Blarsden chuckled. "Regular Sherlock Holmes, Jr., I am. Now, if the starter isn't getting any juice, it must be that there is no juice in the battery, or something is preventing it from flowing to the starter when I press the pedal. The lights go on and the horn blows," he went on, testing them. "That means the battery isn't dead—and it isn't likely that it could be, seeing that the car is brand new. As far as I can see, that narrows it down to finding out whether the starter has gone west, or what's keeping the current from flowing through it."

"There you are!" Gus grinned, leaning up against the pump. "Not very hard, is it? Now, just remember that whenever you get it down to deciding whether to blame the trouble on a defective electrical instrument or on the wires that feed it, always investigate the wiring first."

"Here goes," said Blarsden, scrambling out of the car and pulling up the floor mat, "I'll start with the battery connections."

A few minutes later he exclaimed: "Here it is! The bolt holding the ground cable to the frame is so loose it's just hanging on by its eyebrows. No wonder the current wouldn't flow fast enough to work the starter!

"You know, Gus," he continued, as he applied a wrench, "I like that idea of figuring out the trouble by first deciding what it can't be. Seems more logical, and saves time."

"It'll save you money, too," Gus commented. "Especially if you learn easy ways to fix the things that are most likely to stop a car on the road. Then you won't have to call a service car.

"I should think that might be kind of hard sometimes," Blarsden suggested. "If the car just stops suddenly without any warning, how would you go about figuring what was the matter?"

"That depends on how it stops," Gus said. "Of course, if the motor kept on running and the car just coasted to a standstill, it would have to be something broken in the drive to the rear wheels; either the drive shaft or one of the axles. There wouldn't be any quick way to fix a break like that. All you could do would be to phone for a tow car. If the car was equipped with an automatic clutch, it might be that something had gone wrong with the mechanism that made it pull out the clutch, and kept it that way.

"But I suppose," Gus continued, "you mean cases where the motor lays down on the job. Let's see," he pondered, counting on his huge fingers, "a gasoline motor has to have gas, oil, water, air, and electric sparks to make it run. If there was gas in the tank and in the carburetor, then it couldn't be lack of gas unless the carburetor jets were clogged with dirt or blocked with water.

"If the crankcase gauge showed oil, then it couldn't be lack of oil and, besides, when the oil gives out, a bearing usually burns out and there's a gosh-awful clanking before the motor stops. Lack of cooling water will stop an engine, but then the radiator would be steaming. It's a cinch to check on the air supply. If the carburetor air *(Continued on page 114)*

WHEN YOUR CAR WON'T RUN

(Continued from page 54)

intake isn't clogged with a stray piece of rag or paper or leaves, then it couldn't be lack of air."

"So that leaves nothing but the ignition," Blarsden interrupted.

"Plus the possibility of clogged carburetor jets," cautioned Gus.

Blarsden shook his head hopelessly. "But it certainly isn't a quick job to take a carburetor all apart and clean it on the road," he protested.

"Why do that? Nine times out of ten, you can clear dirt or water out of a carburetor by pulling the choke all the way out and turning the motor over several times with the starter. The higher vacuum forces the dirt through the jets. In fact, that's the first thing to do when a car stops suddenly on the road. And it's also the first thing to do if a motor starts to buck and jump, and acts as though it were going to quit. When the motor is running, you get the same effect by pulling the choke all the way out and at the same time opening the throttle all the way. Clogged jets often show up first in stalling when the motor is idling."

"I'LL remember that one," Blarsden remarked. "But I don't quite see how you tell whether the gas is getting to the carburetor or not, even when you know the tank has gas in it. What if the fuel pump isn't working?"

"Look here," Gus replied, lifting the hood and pointing at the carburetor. "This car, and all the rest of the new models, are fitted with fuel pumps and down-draft carburetors. The quickest way to check whether the gas is feeding to the carburetor or not is to disconnect the gas pipe at the carburetor, step on the starter with the ignition turned off, and then see if gasoline comes out of the pipe."

"But, suppose you can't see the end of the pipe from the driver's seat?" Blarsden asked. "You'd be stumped in that case if you were driving alone, wouldn't you?"

"Why not slip over into the front passenger's seat and work the starter with your left foot? Or if you still couldn't see the end of the pipe, then why not work the starter with your hand from under the hood?"

"I should have thought of that," the car owner grinned.

"You probably would have, if you'd been up against it on the road. Now, after you've decided that it can't be anywhere except in the ignition system, you can eliminate a lot of possible ignition troubles just by turning on the ignition switch and watching the ammeter. If it shows the same amount of current flowing that you usually get under the same conditions, then it can't be a broken primary wire, a dead battery, or a short circuit. If the meter shows no current when you turn it on, give it a slight turn by a touch on the starter so as to be sure you are not being fooled by the timer contacts being open.

"FROM there on," Gus continued, "it's just a matter of checking each part of the ignition system. If there is any clearance at all under the breaker cam shoe when the points are in contact, and you can see the points separate at the break, then it can't be anything wrong with the timer."

"But I thought the timer points had to open just the right amount," Blarsden objected.

"That's true enough, if you want the best efficiency," Gus replied, "but the motor will still run so long as the points actually close and open, even if the gap is away off from where it ought to be.

"When you're sure it can't be the timer that's stopped the car, the next step is to check the spark by holding the distributor head so that the center contact is about a quarter of an inch from any convenient metal part, while you open and close the timer contacts by hand. If there is a clean-cut, sharp spark from the distributor terminal, and hardly any sign of a spark at the timer contacts, then you can be sure it isn't either a broken-down spark coil or a shorted condenser."

"Golly!" exclaimed Blarsden. "You've got down to the point where it can't be anything but the spark plugs. And I know that bum plugs can't stop a motor suddenly; they just couldn't all go bad at exactly the same time!"

GUS laughed. "That's right enough," he agreed. "If you got that far without locating the trouble, there'd be only two possibilities left. One is a loose connection in the ignition wiring that had jarred loose and then made contact again after the motor stopped, and the other is that the carburetor jets are clogged with dirt so solidly that the extra vacuum won't force it through.

"Chances are, though, that a sudden stop means something wrong with the ignition system. And if there is, you can generally bank on either being able to fix it easily, or not at all. A broken wire is a cinch to fix. And there's nothing to resetting the timer contacts, at least well enough to get you to the next service station. If either the coil or condenser has gone completely dead, you're sunk, but if they're only partly shot, you often can get the car going after a fashion, merely by closing all the spark-plug gaps to a tiny opening about equal to the thickness of a piece of paper."

"So there aren't any other things that can stop a car," Blarsden observed, starting his motor—this time without any difficulty. "It's a relief to know that, anyhow."

"Don't fool yourself," Gus grunted. "There's plenty, and some of 'em are sudden enough, but they don't usually leave you with any doubt that something is radically wrong before the car actually stops. That goes for a broken connecting rod, for example."

"How about a broken valve?" Blarsden offered.

"A broken exhaust valve won't even stop the motor unless it happens to get in the cylinder and cause a jam that wrecks the whole show. A broken intake valve raises hob with the gas mixture, and may cause a smash like a broken exhaust valve."

"WELL," Blarsden said, as he threw the car into gear, "thanks a lot, Gus, for all the help. I'm going to keep all that dope tucked away in the old bean where I can use it the next time the motor dies mysteriously. Got to drift along now."

"So long," Gus grunted. "By the way—there's just one thing I forgot to tell you about, that'll certainly make you stop mighty quick."

"What's that?"

"A blow-out!" chuckled Gus.

SAYS FACIAL FEATURES GROW LARGER WITH AGE

As a person grows older, his features alter in pattern. His nose becomes wider and longer in proportion to the size of his face. His ears lengthen. His mouth spreads wider. These facts, revealed in thousands of measurements by Dr. Ales Hrdlicka, Smithsonian Institution anthropologist, explain the vaguely felt change in the appearance of an old friend encountered after a lapse of years.