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Gus Has a Trick Up

When the big fire truck quit, it took all of Gus's mechanical savvy—plus a strange fact of science—to find the answer

By MARTIN BUNN

A low-pitched growl of the siren rose to a shattering scream. "Fire!" exclaimed Stan Hicks. He hurried through the open door of the Model Garage and looked down the street toward the firehouse. Gus Wilson snapped a look at the clock on the wall. He waited 30 seconds. The usual roar of exhaust from the big pumper truck rolling into the street was missing.

"Trouble, Stan," barked Gus to his helper as he vaulted into the seat of the wrecker. "Let's go!"

As Gus pulled up, a crew of coated and helmeted firemen was trying to push the massive truck into the street. The spare truck, parked behind the stalled pumper because of station remodeling, was running but couldn't get out until the pumper moved.

"Get a hook on it, Stan," ordered Gus. With a quick cut and backward sweep Gus racked the wrecker into position. In seconds, the pumper was dragged to the street and the spare truck roared out.

"Thanks, Gus." Chief Mal Maloney, a big man with a jaw like a bulldog, jumped heavily from the seat of the stricken vehicle. "She wouldn't turn over. Sounded like it was locked up solid."

Gus nodded and surveyed the traffic jam the truck was causing and the stiff incline of the station ramp. "I can't push it back in. We'd better try to start it."

Before Gus could get his tools, a high-pitched voice emerged from the gathering crowd. "Gus Wilson, you're responsible for this!" A black felt hat of the Harding era bobbed toward Gus and Maloney. Bouncing along under it, arms waving and eyes snapping through steel-rimmed spectacles, was Silas Barnstable. "Wilson, you're the one who recommended that the city buy this—this lemon truck," shouted Silas. "I'm on the Fire Commission. We'll sue you." Silas gestured in the direction the spare truck had taken. "My shed's burning down. I'll sue you for that, too."

"It isn't, by any chance," said Chief Maloney, "the shed the City Engineer condemned last year, is it, Mr. Barnstable?"

"Makes no difference what it is, Mr. Smart-Aleck Fire Chief. You fellows

ILLUSTRATION BY RAY QUIGLEY

His Sleeve

have neglected this equipment and we'll just see who's so smart when the commission investigates this truck breakdown." Silas scurried toward his car.

Swallowing his irritation at Silas, Gus turned his thoughts to the pumper. The multitude of brilliantly flashing and rotating warning lights testified to the good condition of the battery. A bad starter was a possibility, but the nature of the heavy-duty equipment and the check-out at each crew change suggested against it.

"Open the hood, Mal," said Gus. "I'll get some tools from the truck."

Gus spun out one spark plug from each dual-ignition cylinder. He examined each plug. With six plugs on the fender beside him he looked up at a fireman who had climbed into the driver's seat. "Bump the switch," Gus told him. "Just turn it over easy."

The starter grunted briefly. Gus ducked as a gush of water spurted from one of the plug holes. The driver cranked it again. A few more drops spattered out and the engine spun freely. Gus ran the plugs back in and signaled the fireman. "Start it up and get it back in the firehouse as easy as you can."

"Water lock above a piston, eh?" said the Chief. "Could be a head gasket."

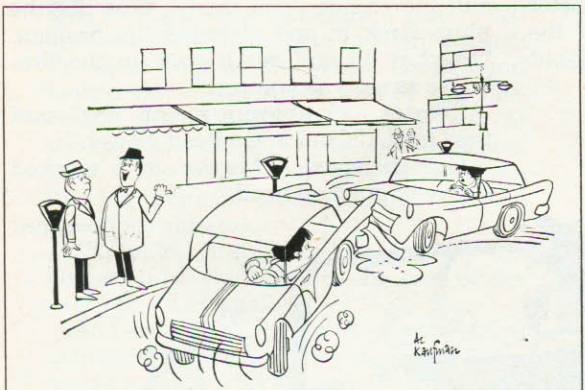
Gus shrugged. "Maybe—or a cracked sleeve or cracked head."

Continued

The pumper's starter grunted briefly. Gus ducked as a gush of water spurted from one of the plug holes.

The Chief glanced back at the station mechanics already at work on the engine. "We'll get her apart by tomorrow morning. "I'd appreciate it if you took a look at what we find."

The next morning Gus stood with the Chief and his mechanics, inspecting the parts of the disassembled pumper engine. The engine was over 800 cubic inches and, typical of such engines, had wet-type cylinder sleeves, removable from the block. The six sleeves were now lined up on the workbench.



"Someone left a half-hour on the meter."

"Here's where the water got in," said Chief Maloney, pointing to a tiny pinhole in one of the sleeves. "But I can't understand the corrosion on these sleeves. The Water Department checks out radiator water every couple of weeks."

Gus peered thoughtfully at the peculiar metal damage on the outer walls of the cylinders. The metal appeared to be eaten away in honeycomb patterns in irregular blotches. On the sleeve that had leaked, there was a pin-size hole to the inside running surface.

"Another thing," said the Chief, "one sleeve isn't corroded at all."

Before Gus could answer, the firehouse door opened and Silas Barnstable came bustling in, tailed by several other members of the Fire Commission. Mayor Barnes, a pink-cheeked, balding man, nodded at Gus. Doc Wilder shook hands with both Gus and Chief Maloney. Mac Billings, a local attorney with a florid face and flowing hair, smiled amiably. Dawson Blake, head of the Technical School science department, came at the end of the parade.

"Caught you at it, didn't we?" croaked Silas. "Cooking up some cock-and-bull excuse for this truck falling apart." His eyes fell on the cylinder sleeves. "Just as I thought. Rusted to pieces from neglect. Plain foolishness."

The cords bulged in Chief Maloney's neck.

"Now, Silas," admonished the Mayor.

Silas was bent over, squinting at the honeycombed holes in the metal. "The material is defective, too, Gus Wilson. Let's see you get out of that."

Doc Wilder examined the sleeves curiously. "Almost seems to stem from an organic problem. Can you have termites in a fire truck?"

"I think we should investigate the warranty aspects," advised Attorney Billings.

"And I think you should investigate the gasoline you're using in this truck," said Gus firmly

"Now see here." Silas straightened up and bristled. "I own the company that sells the city gas, and it's good gas. Perfectly good enough for trucks, anyway. I use it in my own car."

"But your car isn't a fire pumper, Silas," said Gus.

"What's the gasoline got to do with corrosion in the water jacket?" asked Mayor Barnes.

"It's not really corrosion, Mayor," Gus explained. "When the pumper is working hard at a fire it's pulling almost full throttle, sometimes for several hours."

Mal nodded. "That's true."

"It's like using cheap gas in your car," Gus went on. "There, you just get a pinging when you step down hard. Here, the pinging is continuous and it sets up vibrations in the cylinder walls. In some spots this causes millions of tiny bubbles that form on the water side of the sleeves and they eat away the metal—it's called cavitation erosion."

"Poppycock!" cackled Silas.

"I don't know, Gus," said Mal. "What about the one sleeve that wasn't corroded—or eroded?"

"It's cracked," said Gus, turning to a fireman. "Got a piece of heavy twine?"

Maloney and the commissioners looked at Gus questioningly but said nothing as one of the men tossed him a ball of twine. Gus looped the twine through the apparently unharmed sleeve, held it suspended, and rapped it with a hammer. The sleeve emitted a dull clunk. He tried the same test on several of the other sleeves. Each rang out with a clear bell-like tone.

"How did you know that one was cracked?" asked Doc Wilder.

"It cracked from the pinging early in the game," Gus pointed out. "Because it was cracked, it couldn't vibrate at high frequencies and consequently didn't develop any pinholes."

The commissioners looked at one another. Mac Billings finally spoke up. "Mr. Wilson, your presentation is excellent and tends to be convincing, but actually, you have no real proof to present in evidence."

"I'll say he hasn't," said Silas. "Trying to blame my gasoline."

"Gentlemen . . ." The group turned as Dawson Blake spoke. "If Mr. Wilson requires support, I can, and will, be happy to supply it. The actions of cavitation erosion in exactly this pattern are well noted in numerous engineering papers that I have seen."

Silas was furious. "All right, all right! You all came in my car. We might as well leave."

With the commissioners loaded into his battered car, Silas twisted viciously at the ignition key. The engine sputtered but didn't start. "Must be the gas," said Wilder dryly.

"Let Gus Wilson look at it," said Billings. One eyelid flicked in a conspiratorial wink toward Gus.

Silas squirmed. "Go ahead, Wilson, try to get us going."

Gus lifted an eyebrow at Billings and untwisted a wire Silas had installed to replace a broken hood latch.

Jamming down his hat, the testy old man commented to the others, "Just watch, he'll blame me for what's wrong."

Gus probed the engine. He could smell raw gas, and the automatic choke was open as it should be on a warm engine. The commissioners watched as Gus reached in and picked up something from far back on the engine. He secured the hood wire and extended his closed hand to Silas.

Barnstable drew back.

"It won't bite, Silas," laughed Gus. "It's only your spare key in a magnetic box." Silas stared at the small box. "You had it stuck under the hood and when you hit the station ramp the loose hood must have shaken it free. It fell and stuck across the coil terminals."

Silas turned to the other men, "You see . . ." but his voice had lost its conviction.

"It's been a bad day for Silas Barnstable," chuckled Mal Maloney as the car pulled away.

"By the way," said Gus, "did you save his shed?"

"Sure," answered Mal. "Now he's mad at me about that, too."

"Oh? Why?" said Gus, walking toward his truck.

"It's condemned," Mal laughed, "and it just dawned on him that he's got to pay to have it torn down." PS

Clever traffic engineers cut down the overhead

Designers of a planned mile-long tunnel in Washington, D.C., came up with a novel idea to cut costs on tunnel height: Put the traffic signs on the ceiling, stretched out like signs painted on pavement. A test run in Washington's 12th St. tunnel (right) brought favorable reaction.