A spurt of bubbles danced to the
surface of the pail of water.
"Stop your engine," Gus called.

GUS FINDS TROUBLE IN BUBBLES

By MARTIN BUNN

"Mawnin', Mistuh Wilson."
Gus Wilson looked up from his
workbench and saw Peter Jack-
son, the likeable colored truck driver, stand-
ing just inside the doorway of the Model
Garage shop.
"Hello, Peter," said Gus. "What's the
matter now? Is that old rattletrap of yours
acting up again?"

Peter shook his head. "I ain't drivin' that
ol' truck no mo'," he said. "Mistuh Dill, he
promoted me to a two-ton."

"That's fine," Gus told him. "Well, what's
the matter with your two-ton?"

"There ain't no one know," Peter said
gloomily. "That's why Mistuh Dill tole me
to bring her over here to you-all. He's
a-comin' hisself, sho'tly . . . Here he is now."

John Dill, who has charge of the Johnson
and Fredericks trucks, came into the shop.
"How're you doing, Mr. Dill?" Gus greeted
him cheerfully.

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"Apparently not very well," Dill said grouchily. "We've been having a little difficulty locating some cooling-system trouble in the truck that Peter here drives. I hadn't given up on it by any means, but last night Mr. Fredericks heard about it somehow, and told me I'd better bring the truck over here and ask you to take a look at it... Mr. Fredericks is the boss—and it seems like you're the champion trouble shooter of these parts!"

Gus saw why Dill was miffed, and sympathized with him. "Oh, Mr. Fredericks was just acting out of old habit," he said lightly. "You know we used to take care of the Johnson and Fredericks fleet back in the days when it consisted of one truck, and when Fredericks thinks of trouble now, he still thinks of me. I'll check over the job with you, just to satisfy him."

Dill grunted, somewhat mollified. "Well," he said, "two heads are better than one."

Gus nodded diplomatic agreement. "Cooling-system trouble, you said?" he suggested.

"Yes," Dill told him. "Tell Mr. Wilson what happens every morning, Peter."

"It's thisaway, Mistuh Wilson," Peter said. "When I starts mah motor in th' garage in th' mawnin', she runs fine. First job I do ev'ry day is take a load up to th' freight depot. That's only half a mile, but befo' I gets there mah motor's all het up, an' when I stop, a lot of water runs outa th' radiator overflow pipe. After that mah motor gets hotter'n hot, an' befo' long I gotta put a lil' mo' water in th' radiator. An' then I gotta keep on puttin' a lil' mo' water in it ev'ry couple of hours all day long."

"That darned truck," Dill said, "is wastin' two gallons of antifreeze a week. Drive it in, Peter."

As Peter drove the truck into the shop, Gus's educated ears told him that its engine wasn't running quite perfectly. He took off the radiator cap. "No sign of overheating now," he remarked.

"No, suh, Mistuh Wilson," Peter said. "I ain't been up to th' freight depot yet—that's why!"

"Nonsense!" Dill snapped. "What could going to the freight depot have to do with your engine overheating?"

"Mebbe," Peter said fearfully, "dat freight depot's got a hoodoo on me!"

"Nonsense!" Dill said again. "Well, Mr. Wilson—any bright ideas?"

"Not a one, so far," Gus confessed cheerily. "In a case of overheating, the first things I always check for are late ig-

nition timing and too lean a fuel mixture, but I suppose—"

"You suppose dead right," Dill assured him, rather unpleasantly. "The first thing I checked was the ignition timing, and the second thing was the carburetor adjustment. They're both O.K."

Gus nodded. "Then there's the radiator core," he suggested. "When the coolant runs out of the overflow pipe, it's often an indication that there's a stoppage of circulation somewhere between the upper tank of the radiator and the intake of the water pump. Usually it's caused by the radiator core being stopped up."

Dill sneered. "That radiator's as clean as it was the day this truck left the factory. I had it checked as soon as this overheating showed up, and I had the core thoroughly flushed out. The radiator's O.K., I tell you—I'll bet you anything you like!"

Gus grinned. "I'm a poor gambler—I never bet unless I'm certain," he said. "Well, let's see, now... How about the thermostat? Sometimes that little bleeder hole—the one that lets the air out when you're filling the cooling system while the valve is closed—gets clogged up. When that happens, pressure from the heated water builds up behind the thermostat until all of a sudden the hot water acts on it, the valve pops wide open, and the coolant rushes up through the radiator and out of the overflow pipe."

Dill let Gus finish. Then he said: "That's real interesting, Mr. Wilson. It might happen, of course—but it didn't happen with this truck, because we put in a new thermostat when we first had trouble, and it didn't do a bit of good."

"Peter," said Gus, "switch on your engine again, will you?"

Peter climbed into the cab, switched on the ignition, stepped on the starter, and allowed the engine to idle. Gus listened intently for a few seconds, shook his head in a disappointed way, and signaled Peter to stop the engine.

"It doesn't sound the way it did when he
drew the truck into the shop," he said, 
more to himself than to Dill. He scratched
his left ear as he did a half minute of hard
thinking. Then he said to Peter: "How does
your truck act when you've got a full load
on it, or when you're pulling up a hill? Has
your truck got plenty of power?"

Peter shook his head. "No, suh, Mistuh
Wilson, she ain't got th' pep what a fine
hang-up truck like this here one ought to
have. I done told Mistuh Dill that, but he
says there ain't nothun' at all th' matter
with the way she pulls."

"Just imagination!" Dill said angrily. He
turned to Gus. "You were listening to the
engine a minute ago. Did you ever hear a
truck engine run any smoother?"

"I never heard one idle any smoother,"
Gus said. He raised his voice and called:
"Hey, Stan!"

Stan Hicks, the grease monkey, emerged
from the stockroom.

"Jack up the rear wheels of this truck,
will you?" Gus said. Then he went over to
his workbench and reached down a short
length of rubber tubing from the shelf above it.

"She's jacked up, boss," Stan reported.

"O.K.," Gus said. "Now get me a pail
of water."

Stan brought him a pail of water. Gus
set it on the floor near the front end of
the truck. Then he carefully worked one end
of the tubing over the lower end of the
radiator overflow pipe on the truck and
submerged the other end of the tubing in
the pail.

"Start your engine," Peter, he directed.
Peter climbed back into the cab and re-
started the engine. Gus was staring at the
water in the pail. "Let her idle," he said.
"Now put her into gear."

The truck's rear wheels began to revolve.
Dill stepped over beside Gus and also stared
at the water in the pail. "What's all this?"
he demanded. "Nothing's happening."

"Something is going to happen in a
moment," Gus told him. "Keep your eyes on
the end of that tube and you'll see it . . .
Now, Peter, give her a little more gas.
That's it. Now, when I tell you to, put on
your brakes—not hard enough to kill your
engine, but hard enough to make it work the
way it has to when you've got a full load
and you're pulling up that hill to the freight
depot. Understand? O.K.—put 'em on!"

Peter applied the brakes, lightly at first,
then harder. The engine labored against their
drag. A spurt of bubbles danced to the sur-
face of the water in the pail. Gus could
not conceal his satisfaction as he waved to
the truck driver.

"Stop your engine!" Gus called. Then he
turned to Dill. "Get it?" he asked.

"I saw some air bubbles," Dill growled.
"What do you make of it?"

"When air gets into a cooling system,"
Gus explained, "it displaces some of the
cooling fluid, which runs out through the
overflow pipe. Those bubbles in the pail
prove that it is air in the cooling system
that has been causing the loss of coolant,
and making the engine overheat."

Dill stared at him. "Maybe you're right,"
he said grudgingly. "But if you are right,
how is the air getting into the cooling sys-
tem?"

Gus motioned toward the pail. "Our little
test answers that question," he said. "Those
bubbles coming in a spurt show that the air
is coming from one of the cylinders—a com-
pression leak. If the bubbles had come to
the surface slowly and in a steady stream,
they would have shown that the air was
going into the cooling system by way of the
water-pump shaft or around a hose. When
they come in a spurt, it's certain proof
of a compression leak. The chances are a
hundred to one that you'll find a leaky head
gasket causing the trouble."

Dill did some more thinking. Finally he
said: "I still don't get it. Why didn't the
bubbles appear until Peter put on his
brakes?"

"It often happens," Gus told him, "that a
head gasket doesn't leak until the engine is
under load or pulling up a grade. When
Peter drove the truck into the shop, my ears
told me that one of the cylinders wasn't
acting just right, and he gave me another
clue when he said that the trouble didn't
show up until he'd taken a load up to the
freight depot. Applying the brakes against
the engine, with the rear wheels jacked up,
had the same effect on the head gasket that
a full load on the road or pulling up a hill
would have."

"Well," Dill said ungraciously, "we'll see.
I'll get in touch with you later."

THAT afternoon Joe Clark called Gus to
the office telephone. "This is Dill," the
voice at the other end of the line said. "You
were right—it was a leaky head gasket.
You're a champ trouble shooter—I'll give
you that!"

"Oh, I was just lucky—stumbled over it,"
Gus said modestly. "Dinner some night? . . .
I'd be glad to . . . O.K. So long."

He replaced the receiver and turned to his
partner. "Dill's stopped being sore at me,"
he said. "A soft answer turneth away
wrath"—who said that, Shakespeare or the
Bible?"

"I wouldn't know," Joe said. "But don't
you let an invite to dinner turn you away
from making out a time slip for every min-
ute on that job!"