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Popular Science

MONTHLY

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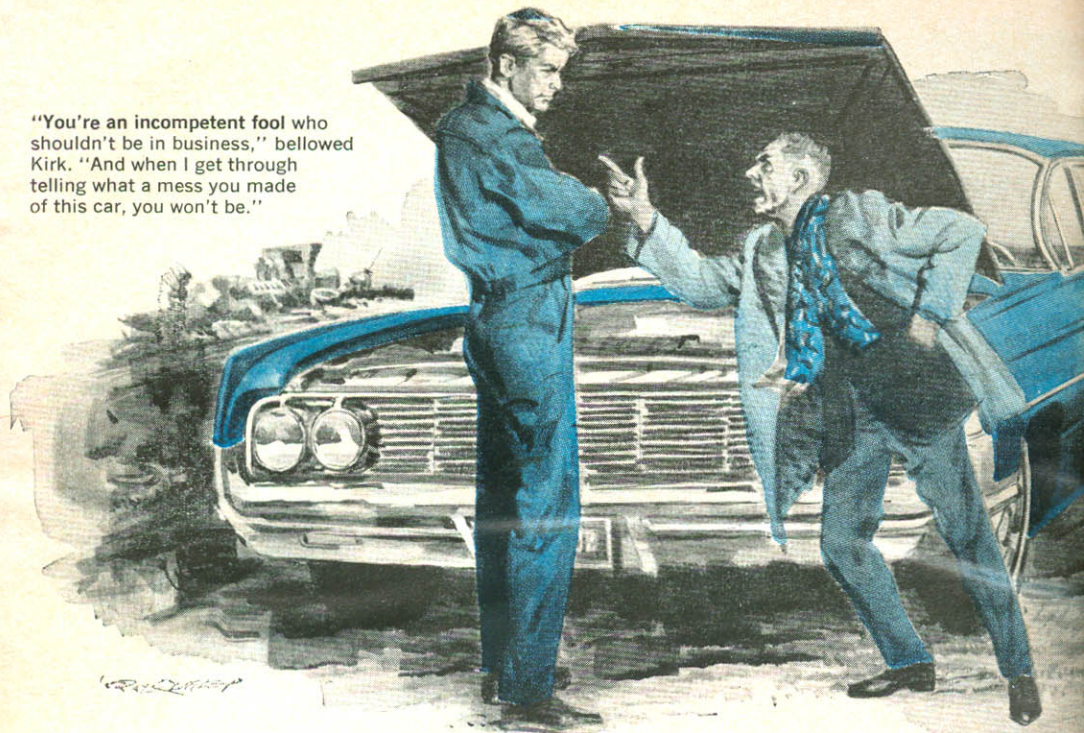
NEW! TINY STEAM AUTO ENGINE

SMOTHERS BROTHERS—Crazy for Wheels!

HOW TO



"You're an incompetent fool who shouldn't be in business," bellowed Kirk. "And when I get through telling what a mess you made of this car, you won't be."



Gus Saves a Friend from a Snow Job

By MARTIN BUNN

New snow—the third this year—lay thick on the ground as Gus Wilson walked to the door of the Model Garage that morning. He was glad to see that Stan Hicks had cleared it off around the pumps and the shop door.

"Better put a recharged booster on the truck," Gus told his helper. "Temperature dipped last night. There'll be calls."

The first came before Gus got his coat off. He let Stan take it, and was busy installing a rebuilt generator when a '62 Olds drove up. Gus raised the door.

He had never seen the car before, but the young man driving it was Steve Polcheck. Gus had known Steve as a motor-hungry teen-ager, watched him go through a series of love affairs with hot rods and jalopies to become a competent mechanic.

Gus was pleased when, following his Army service, Steve opened a little garage of his own in a nearby town.

But the young man's blue eyes were troubled as he got out of the car.

"Hi," called Gus. "How's business?"

"Not bad. The shoestring I started on breaks once in a while," said Polcheck, brushing a hand through sandy hair, "but till now I've managed."

Gus got out his pipe and packed it. "With that new Computer Industries branch near you, you'll soon have all the work you can handle."

"Yeah," returned Polcheck glumly. "The big question is, can I handle it?"

"Sure you can. If it's money . . ."

"It's not money. It's me," blurted Polcheck. "And this blasted car. And Mr. Everett Kirk, blast him."

Gus lit his pipe. "Better tell it."

Polcheck leaned against a wall as Gus

The terrible-tempered Mr. Kirk threatened to run Steve Polcheck out of business if Steve didn't fix that mysterious oil leak. Paging Gus Wilson!



hitched himself up on a workbench.

"I've had jobs from people at CI since it opened. Business was so good I even had a part-timer washing parts, scraping off gaskets, cleaning up. A good kid.

"Then this guy Kirk drove in for a full overhaul, taking care to explain it's only his second car—as if he wouldn't trust me with a good one. He's an electronics engineer at CI, and pretty important. I'd have sworn I did a good job, even cleaned up the engine. Kirk seemed satisfied. But yesterday he drove in again, boiling mad. There was oil all over the top of the engine."

Gus tapped out his pipe. "You made sure the breather cap was clean, the road-draft tube underneath not kinked or plugged?"

"I sure did. Then I took off the valve covers to see if the oil-return holes were clear, though I'd checked them when I did the job. They were okay, too. I buttoned up everything, cleaned the engine again, put

in a free quart of oil—and apologized."

"Good public relations," remarked Gus. "But you hadn't found the trouble."

Polcheck's neck reddened. "I'll say not! This morning he was back, really teed off. The engine was all oily again. He swore if I didn't fix the trouble he'd tell everybody at CI what a lousy mechanic I am. He will, too. It could bust me."

Gus put his pipe away. "Let's look at that engine."

Polcheck opened the hood and grinned wryly. "I cleaned it again, hoping the leak would show on the way here. But look!"

The engine was as clean as a new skillet. If there were positive crankcase ventilation on this model, mused Gus, the metering valve would be suspect. But PCV had come a bit later. Steve had checked the road-draft tube, but it was still possible . . .

Continued

"I went over the exhaust system to make sure there's no back pressure," Polcheck put in. "It's clear. Got any of that fluorescent powder for tracing leaks?"

Gus nodded, went to the supply locker, and got a small can and a black fluorescent lamp. While Polcheck put a little powder in the oil-filler tube, Gus hooked up the lamp and doused nearby lights.

Polcheck started the engine. In the purplish glow of the ultraviolet lamp the two men watched it. A minute went by. Then a small luminous green spot appeared at the edge of a valve cover, slowly growing.

"That's got it!" exclaimed Polcheck.

"Hardly seems enough of a leak to spray the engine as you said," demurred Gus.

"It may be worse when the engine's cold," muttered Steve. "Expansion and con-

dena. It's got to take me back there come April, so I want it fixed."

The smell of the exhaust, reeking of oil, hung heavy in the air even though she had shut off the engine. Taking a cue from it, Gus removed the spark plugs. All eight were badly oil fouled.

"The engine's burning oil, Mrs. Murphy."

"Well, shouldn't it?" she demanded.

"No, ma'am, only gas. When oil burns in the cylinders, it dirties the spark plugs and makes the engine miss—limp, I mean. And start hard, too. I can clean the plugs, but they won't stay clean."

She pursed her lips. "Well! Go ahead."

The plugs were reasonably new and, when cleaned, fired satisfactorily under test. Gus put them back and started the engine. It ran without miss, but the blue smoke threatened to fill the shop.

"That smoke is a sign of oil burning," explained Gus, shutting it off. "Subject to some tests, it seems you need a ring job."

The lady waved a gloved hand. "Because it smokes? That's just from the stuff I put in for those noisy valves—the little cans you pour into the gas tank."

"Upper-cylinder oil? You're using that for noisy valve lifters?" asked Gus.

"Whatever they are, it seems to quiet them some. I used to buy a can for each tank of gas. I even put some cans in myself."

"How many cans, ma'am?"

"They were selling five for the price of two at the discount store," said Mrs. Murphy triumphantly. "I put them all in, of course. If one is good, five must be better; and I got them cheap."

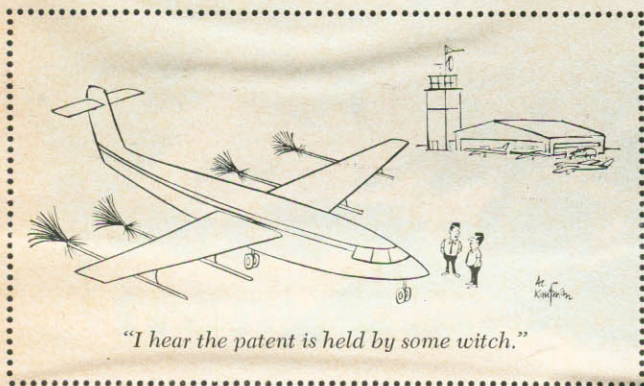
Gus bit his tongue to keep from chuckling. "Guess you don't need a ring job after all, Mrs. Murphy. Your car's burning that top oil, not engine oil. Five cans was too much, and it fouled the plugs."

"Oh my! I did goof, didn't I?"

"Don't worry. Each time you get gas, it dilutes the oil—but don't add any more. And better get your plugs cleaned again before you start back to Pasadena."

It snowed again that night. The next day, the phone was ringing as Gus got in.

"This is Mabel Murphy," said the caller.



traction of the metal. You think so, Gus?"

Gus grunted. "Your helper may have left a bit of the old gasket stuck on where it's oozing. But you should have spotted it."

"Guess I rushed too much, Gus. Thanks a million for saving my neck."

"I'm not so sure I did," returned Gus.

Late that afternoon a big sedan with California plates rolled in, trailing blue smoke. Gus detected a clatter of hydraulic valve lifters and a skip in the engine.

At the wheel was an elderly woman. She got out spryly, gave her tweed coat a tug, and looked up at Gus severely from a height a foot less than his own.

"Are you Gus Wilson? Like to be sure I've got the right party," she said.

"I am. What can I do for you, ma'am?"

"Mrs. Mabel Murphy. My car just limps along. Doesn't start right off as it used to, either. It ran fine all the way from Pasa-

"My son's car won't start. Would you please come out to Crescent Village?"

Gus drove out to a new home in a development housing many CI people. In the driveway was a '64 Comet.

"Good morning," said Mrs. Murphy. "My son's gone off in my car. He was already late because of shoveling the driveway."

"Guess that's a problem you don't have in California," remarked Gus.

"Hmph! If I lived here, I'd have me a sloping driveway like that one," she said, pointing across the street.

"Why?" asked Gus, getting his tools.

"Well, that man doesn't *shovel* snow. He just backs his car downhill through it. I saw him do it again this morning."

"That's one way," said Gus.

He checked the Comet's starting circuit, tightened a battery clamp, and with a booster got the engine running.

Driving out, Gus glanced at the house across the street. A new Olds stood in the big garage, but deep tracks showed another car had backed out. The name on the roadside mailbox was Everett J. Kirk. Gus headed for Polcheck's garage.

The young mechanic, frankly surprised to see Gus, raised both eyebrows.

"I'm still wondering about that oil-leak trouble," explained Gus.

"There *was* some of the old gasket left on," Polcheck said. "It must be okay, or Kirk would have been here by now."

Then a horn blared. As Steve opened the door, the '62 Olds swept in and a short, red-faced man with wire-brush gray hair stepped out.

"Look at it!" he roared.

Steve hurriedly raised the hood.

"I don't get it," he said at sight of the oil-spattered engine. "It checked out."

"I'll check you out!" bellowed Kirk. "You're an incompetent fool who shouldn't be in business. And when I get through telling what a mess you made of this car, you won't be—not around here."

Gus could keep quiet no longer.

"Steve hates to tell the customer he's wrong," he said. "But whether he likes it or not, I will. That leak is your own fault."

"Oh, it is! My car never spit oil before!"

"That's right—not until we had our first heavy snow, right after Steve finished that overhaul," returned Gus. "That was when you bulled your way out of your uncleared driveway, right through the drifts."

"Then, and twice later, snow packed into the breather tube under the car. The plugged tube made pressure build up in the crankcase until oil blew out the filler cap. By the time you'd spotted it and driven here to blame Steve, the snow melted out and there was nothing to find."

"My wife does it with our new car, and that has no oil leak," protested Kirk.

"Because it has positive crankcase ventilation. It has no road-draft tube to get clogged," explained Gus.

"You sure of this?" Kirk asked Steve.

"Absolutely," said Polcheck. "But I'll clean the engine one last time free."

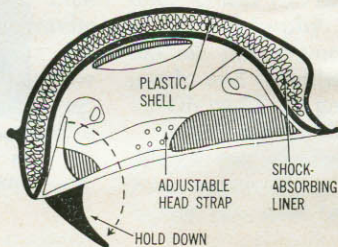
"I thought I was dead when I saw that oily engine again!" Steve said to Gus when Kirk had driven out.

"You caught on fast," chuckled Gus.

Polcheck shook his head in amazement. "How did *you* know all that, Gus? Who tipped you off?"

Gus hesitated. "You'll never believe it. It was a little old lady from Pasadena." ■

Style in safety helmet makes hard hat look like soft fedora



Cutaway drawing of new stylish Buco helmet shows energy-absorbing liner sandwiched between inner and outer shells of light, rigid plastic.

Now they're making hard hats to look like those worn for ordinary street wear. The man at left has on a safety helmet styled to look like a soft fedora. New styling follows extensive research and testing by Wayne State University, Detroit. Other styles from Joseph Buegeleisen, Southfield, Mich., maker of safety helmets, include chic safari hats for women and sport caps for men.