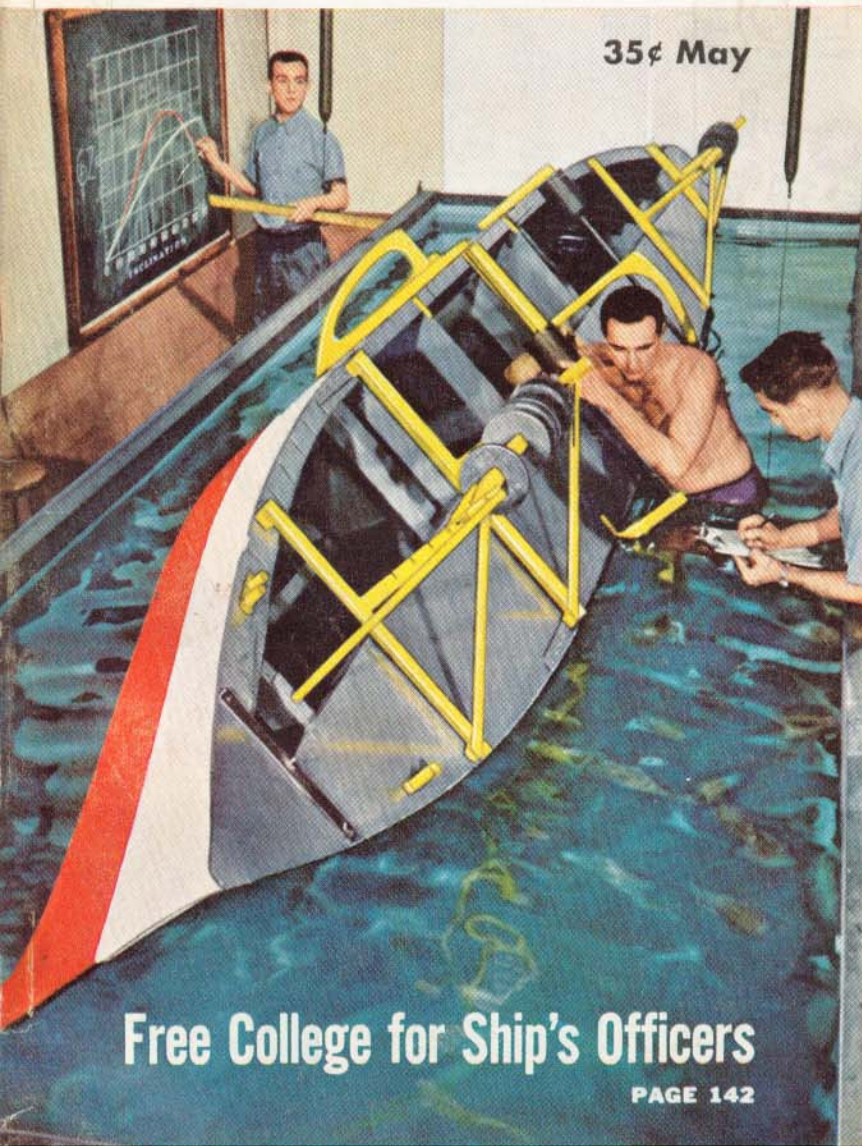


POPULAR SCIENCE

MONTHLY

MECHANICS - AUTOS - HOMEBUILDING

35¢ May



Free College for Ship's Officers

PAGE 142

**New Navy Planes
Leap Straight Up**

— PAGE 113



New Sports Cars PAGE 98



Outdoor Lighting PAGE 224



Crank-Up Trailer PAGE 100



Tractor Testers PAGE 152

Gus Clears a Traffic Jam

Working to the tune of a hundred angry horns, Gus finds a cure for the bus that wouldn't go to school.

By Martin Bunn

GUS WILSON hung the telephone receiver back on the hook and made a dive for his emergency tool kit. He tossed the kit into the back of his tow truck, jumped in and stepped on the starter button. He was rolling out of the Model Garage even as he yelled to his young helper, Stan Hicks, to take over. Stan ran from the grease rack to gaze after the departing tow truck.

"Golly!" he said. "The town must be afire."

Gus himself wasn't at all sure what was wrong. Sid Price's voice over the telephone had been almost hysterical. Sid was a rather excitable character who ran several buses for charter to ball games, lodge picnics and so forth, and also had a contract to pick up the rural high-school children and bring them into school. Probably, Gus thought, Sid's



Neither the hydrometer nor voltmeter that Gus put on the battery revealed anything wrong.

school bus had stalled. But that shouldn't be enough to get a man into such a lather.

Gus drove through town and hit the road that led north through open fields, where Sid had converted a large hay barn into a bus shelter and office. Here he ran into the worst traffic jam he'd ever encountered.

Roadblock Stops Gus

Cars headed into town and those going out were stopped solid for a half mile on the narrow pavement, with a ditch on one side and a steep cut bank on the other. There seemed to be some sort of excitement going on in the middle of the traffic jam, before Sid Price's bus barn.

When Gus found that he could drive no farther, he got out, shouldered his tool kit and headed down the line of cars

for the bus yard. As he drew near, he could see that Price's big, yellow school bus was stalled across the road. The forward end almost nudged the bank; the rear end was still partly in the drive, which rose so steeply as to make it impossible to manhandle the vehicle out of the way of traffic. Sid Price was standing by the open front door of the bus, shaking his fist and yelling incoherently at a young man who sat behind the wheel.

Gus recognized Harry Creel, who worked for Price as a combination school-bus driver and all-around maintenance



It was up but could be breaking down under load—that motor had turned over awfully slow.

man. Creel looked hardly old enough to grow a beard, yet he was a married man and Gus had heard there was a baby on the way.

"You're fired!" Price yelled. "Get off the place and stay off."

Creel slid out from under the seat and leaped down, and for a moment it appeared that he was about to attack Price. Gus dropped his tool kit and moved forward to grasp Creel by the arm.

"Take it easy, Harry," he said. "What's the trouble here?"

"He called me a liar," Creel shouted. "Every time this crate won't start in the morning he blames me. It isn't my fault. He told me to put a charge in the battery last night and clean the plugs and points. I did—but he, says I didn't."

"Arguing about it won't help," Gus said soothingly. "Let's get to work."

"Every other morning or so," Price told Gus, "this bus won't start. We have to push it out of the yard in gear to start it. I told Creel to charge the battery and tune the motor last night. But no, he was too lazy. Now look at the mess. You're fired, Creel!"

"First thing," Gus interrupted him, "is to get this traffic moving. These folks are on their way to work."

Bus Cannot Be Towed or Cranked

Gus ran his eye over the jam. It would take an hour to make each car back up to a place where they could turn around, so that he could get the tow truck in to the bus. Price's other buses were out, so without wasting a lot of time, towing was out. The school bus would have to be started where it stood.

"Twist her tail, Gus," one of the on-lookers called, "and let's get moving."

Gus knew that there could be no tail-twisting, as this bus had no crank. He

climbed up behind the wheel, flicked the switch and stepped on the starter. The cold, stiff motor turned over slowly.

Gus's eyes went to the ammeter, seeing the make and break of the needle, which told him that the points were juiced and breaking. He got out and lifted the hood. But neither the hydrometer nor voltmeter that Gus put on the battery revealed anything wrong.

The battery was up, but it could be breaking down under load—that motor had turned over awfully slow.

"Get me that hot battery from my truck, Harry," he said, "while I pull this one."

It took but a few minutes to put in the new battery. This turned the motor over a bit livelier, but it still didn't start. Gus jumped out of the cab, jerked the distributor cap, pulled the high-tension wire

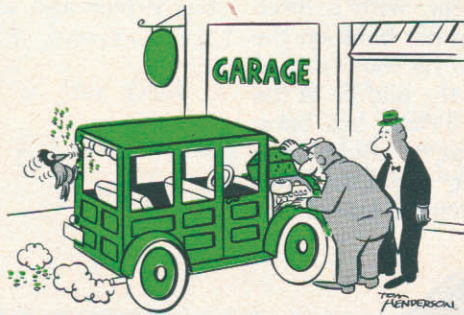
from the center socket, held it a quarter inch from the block and snapped the points with his thumb. A blue flame sprang from the wire to the block, with an audible snapping sound. Gus replaced the distributor cap, but not the wire. He again held it a quarter inch from the block, turned to Creel and said, "Step on the starter, Harry."

Creel turned the motor over with the starter. Gus rammed the high-tension wire back in its socket in the center of the distributor cap, pulled paper and pencil from his pocket and scribbled rapidly. He handed the paper to Price.

"Phone Stan Hicks," he told the bus owner, "and tell him to get out here fast with this part."

Gus quickly selected tools from his kit, dived headfirst under the hood. Within a matter of minutes he emerged, greasy-faced but triumphant, with the starter in his hands. Sid Price rushed up.

"Stan says he'll be right out," he said breathlessly. "Hey, what are you doing



"That's it—that's the knocking sound I mean."

Gus Clears a Traffic Jam

[Continued from page 160]

with that starter? There's nothing wrong with the starter, Gus. It turned the motor over, didn't it? Trouble's in the motor—I told Creel to—"

"We'll see," Gus said grimly.

Taking a rubber mat from the floor of the bus, he placed it on the road, squatted beside it. Rapidly he unscrewed the long studs that held the body of the starter together. He gripped the front plate and body of the starter so that these wouldn't come apart, and tapped with a light hammer on the rear casting that held the Bendix drive. This came free. He reversed the bell-shaped casting and fitted the end of the armature shaft into the bushing of the casting, feeling it. Then he laid the casting down, small end up, and with a sharp, narrow chisel and a few blows of the hammer neatly cut the bushing out. He came to his feet, seeing Stan Hicks working his way toward him.

"Good boy!" Gus exclaimed as he took a new bushing and small reamer from his hands. "Better get back to the shop, Stan."

A Quick, Simple Job

Swiftly Gus drove the new rear bushing into the casting with a hammer and piece of bronze, ran the reamer through to remove rough edges, and reassembled the starter. Soon it was in place again.

"Try her now, Harry," Gus called.

Creel stepped on the starter. The motor whirled, took hold evenly.

"Back her into the yard until this traffic clears," Gus told Creel. "Then you're on your way."

Sid Price stepped forward to raise a protesting hand. Then he halted uncertainly, looking at Gus.

"Come on into the office," he said. "A cup of hot coffee won't do us any harm about now."

Seated in the office, Gus looked at Price over his steaming cup. Thinking about Creel being fired, and that baby on the way, brought a look of concern to Gus's weathered features.

"The way I get it," he said slowly, "is that you have your major work done here and there. You hire Creel to drive, grease, wash and do a bit of tuning. The kid never claimed to be a top mechanic, did he?"

"What of it?" Sid Price demanded.

"Takes a good mechanic," Gus said, "with a lot of experience, to know when it's a back bushing of a starter, letting the armature rub the field coils to rob the ignition of juice, that prevents cold starting—and not a weak battery or motor tune."

"I don't know what you're talking about, Gus," Price said wearily, "but maybe I was a bit hasty in firing Creel."

"Maybe you were," Gus told him, and his eyes twinkled. "After all, the battery had been charged apparently, and I noticed the points were newly cleaned and set. Seems like Creel did just what you told him to do. Well, I'll be shoving. Thanks for the coffee."

Gus was halfway across the yard when Price shoved his head out the office door and called to him.

"You got me curious," he said. "How did you know it was the worn starter bushing that was causing the trouble?"

"Easy," Gus told him, smiling. "You had a spark as blue and strong as a pretty girl's eyes when I snapped the points with my thumb. When the starter turned the motor it was yellow, and too weak to jump over the back of a narrow flea. It could have been some other load drag in the starter system, I admit. Let's say I just made a good guess, Sid."

Gus Has Some Afterthoughts

Walking toward the road, where traffic was now moving freely, Gus decided that maybe it hadn't been too much of a guess, at that. Not after he'd fitted the bushing of that rear casting on the end of the armature shaft and felt its wear.

I'll bet, Gus told himself, that the starter armature was scraping the field coils when under cold load, with every turn . . . I wish I'd had time to look. **END**