

POPULAR SCIENCE

MONTHLY

MECHANICS AND HANDICRAFT

25¢ September



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for Boys—PAGE 136



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Gus Pulls a Trick Play

To Jefferson High, marooned in the Model Garage with a busted bus, that opening game meant more than the Rose Bowl . . . It was no time for Gus to fumble the ball.

By Martin Bunn

IT WAS not a morning for working, not that morning on the bright, crisp edge of September. Perhaps it was the pungent trace of wood smoke and burning leaves spicing the air. Gus Wilson breathed deep as he lowered the lube rack. Whatever that intangible ingredient was, it had no effect on the Model Garage. Saturday morning was rushed as ever.

Gus backed the old Essex off the rack

and rolled it out to the side of the garage to make room. It was then that he noticed a big school bus being pushed past his gas pumps by a bunch of husky teen-age boys.

"That's far enough, fellows." An older man, who seemed to be in charge, wiped his forehead with a hand that left a greasy smear, and grimaced at Gus.

"I'd be glad to let you have this heap for a thin two-bits!"

"I'll take it," Gus grinned. "But what seems to be the trouble?"



"Trouble isn't the word for it! It's ten now, and in three hours Jefferson High is supposed to play the first football game of the year. I'm the coach. We're scheduled to meet Greeley Prep at Millrace Corners, and that's 50 miles from here. Now I get half-way there and this bus starts acting up again!"

"Again?" asked Gus.

"Yes, it's the fourth time she's gone dead, and don't tell me I need a new fuel pump! Joe Barnes, the regular driver who ferries the kids during the week, says it's happened three times during the last week and they put in three new fuel pumps and one carburetor. Now it's done it again!"

"Well, what seems to be wrong with it?"

"Only one thing is definite. Fuel isn't reaching the carburetor. Yeah, I know! It sounds like the fuel pump!"

Gus shrugged his shoulders and opened up the hood. "You're right. It does."

Gus was aware of the tense, impatient interchange of worried glances among the little group of football players who crowded around him as he checked the carburetor. He worked slowly and surely, thinking about the boys, and how disappointed they'd be if their opening game had to be canceled.

"You guys are mighty anxious to get to that game, aren't you? What positions do you play?"

The boy at Gus's left shoulder, a wiry keen-looking youngster, spoke up.

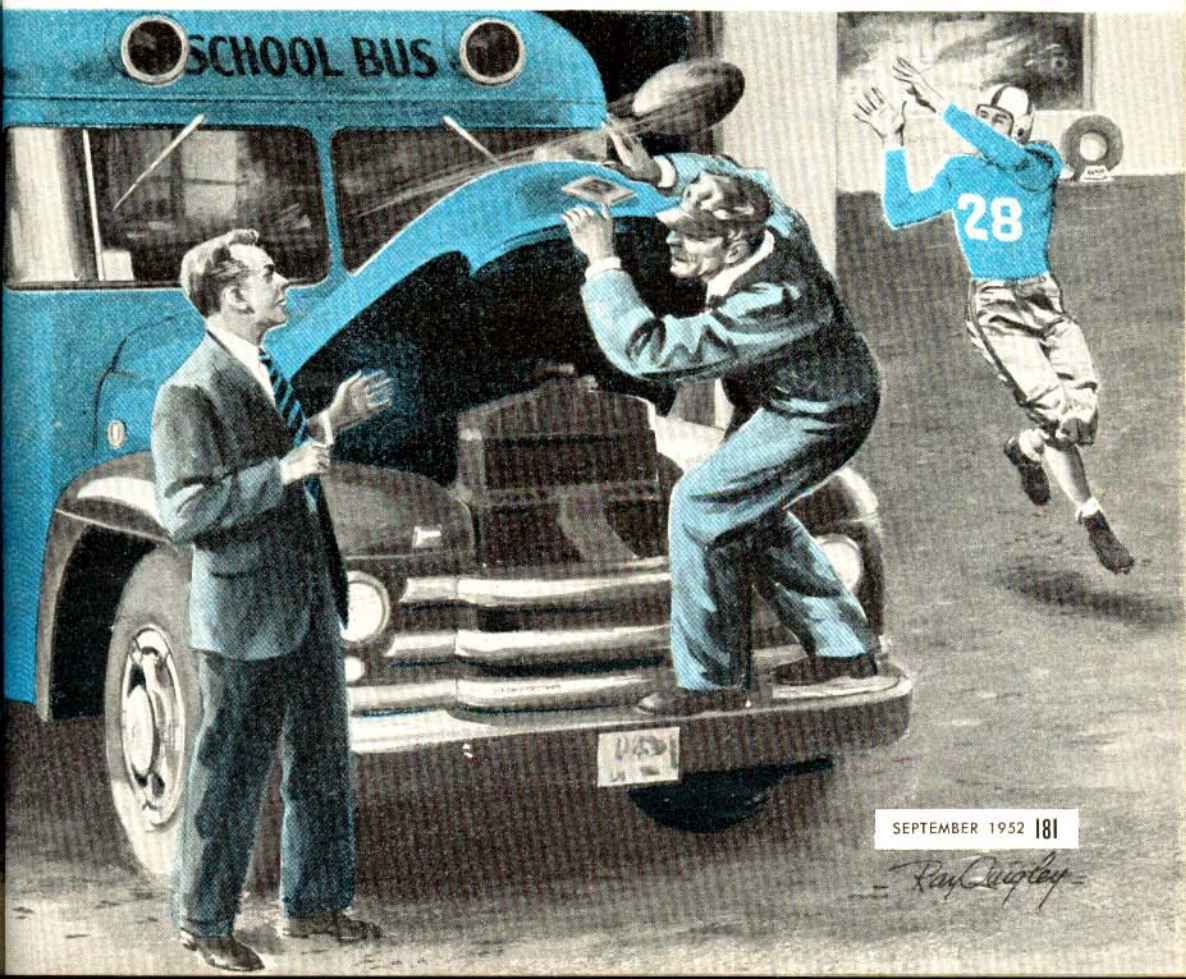
"Well, I'm Tom Kendall, sir. Fullback. And this is Willy Horton, halfback, Herby Ashton, center, and old B-B-I mean Bud

Black. He makes the extra points with his educated toe."

"A lot of good that toe'll be if we don't even get there," the coach groaned. "I can see it now. Paul Thompson. Stenciled on a cot at the poorhouse!" He said it facetiously,



Gus raised his head and almost got conked by a football.



but Gus detected a serious note beneath the attempt at humor.

"Why do you say that?"

"Jefferson takes football seriously. There's a great deal of school pride involved. And we won one game last year! The school board, the alumni, all of them are after my hide. If I don't pull something out of the bag this year, well . . ." He let it go at that.

Players Don Uniforms to Save Time

Gus finished with the carburetor. There was nothing wrong with it. As the coach had said, gasoline wasn't getting that far.

He pulled a wrench out of his dungarees and disconnected the line from the carburetor to the fuel pump. But it, too, was perfectly okay.

"Let's try the rear section of fuel line leading from the tank."

"Can't you hurry? It's 10:15 already!"

"If I go any faster, I might overlook something. Just take it easy."

"Easy! It'll take an hour and a half in this traffic to get there. Fifteen minutes for the boys to change and ten minutes to talk 'em into the right mood!"

"Why not let them change right now in the garage while they're waiting?" Gus suggested.

"Swell idea!" Coach Thompson looked more cheerful as he rounded up his players and shooed them inside. "Hop to it, men!"

While the team tramped noisily into the Model Garage, Gus finished dismantling the fuel line running from tank to pump and tested it for obstructions and leaks. There were none.

The outlet on the gas tank, where the fuel line connected, was not blocked. And the tank was almost half full.

He reconnected the line and scratched his head. Then he remembered.

"Forgot about your filter. Sometimes they get overloaded with silt."

"If it was that, why would it run perfectly for a couple of days at a clip after those other mechanics put new pumps in?"

"Well, might as well check it anyway. Never can tell."

He removed the small bowl with its fine-mesh copper screen and found a minimum of silt in the bottom. That was that . . . and he was right back where he started. It was such a simple thing, there being nothing complicated between gas tank and carburetor. The pump was the only item he hadn't checked, and the reason he hadn't torn it apart was that it was brand-new. The third new pump installed in a week, and he had been sure there was an outside cause, something else rather than pump failure. If not, then Thompson had been handed a mighty unlikely coincidence.

That situation and the previous bunglings of other mechanics left him confronted with a delicate problem. . . .

In twos and threes the football players were trotting out now, looking bigger and more impressive in their uniforms, yelling cheerful insults to each other. They seemed to take it for granted that Gus would spot the trouble and get them started in time. Their confidence made Gus all the more anxious to see that they had their chance to play this opening game that meant so much to them. . . . And then there was Coach Thompson—he seemed like a pretty good egg after all, and his future might depend on whether his team played—and won—today. Gus held a

lot of responsibility in his two grease-stained hands. He went back to work.

Flying Football Just Misses Gus

When he stuck his head out from under the hood a couple of minutes later, Gus almost got conked by a flying football—two of the players were demonstrating their passing prowess—but he didn't care. He felt he was getting close to a solution to the mystery—at least he knew what *wasn't* wrong.

"Mr. Thompson, as you said, you aren't getting gas to the carburetor, and yet your fuel lines are clear. You know what that leaves?"

Paul Thompson's face darkened. "The fuel pump! You're going to suggest a new one?"

"I'm only telling you I've checked everything else that could keep fuel from reach-

[Continued on page 230]

-
- **Dizzy Definitions** •
- **Main Springs**—Source of •
- water for your radiator. •
- **Gearbox**—Handy place •
- for your fishing tackle. •
- **Brake Arm**—Happened •
- pretty often in the old •
- days when they had to •
- start 'em with a crank. •
- **Muffler**—Indispensable •
- for back-seat drivers. •
- **Tie Rods**—Swell to hang •
- your ties on and avoid •
- wrinkles when traveling. •
- **Radiator Grille**—Good •
- gadget for cooking your •
- own hamburgers on a •
- trip. •
- **Crankcase**—Imagine the •
- guy suing you for put- •
- ting one little dent in his •
- fender! •
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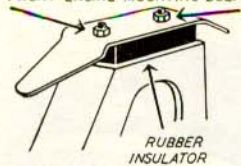
Care and Feeding of Engines

BY S. P. CORP

ALIGN THAT ENGINE

When the engine is installed in a passenger car, rubber insulators are used at each engine mounting support. Support bolts are drawn down just enough to fasten the engine securely to the frame. The rubber insulators deaden engine noises and prevent them from being transmitted up into the car.

FRONT ENGINE MOUNTING BOLTS



When engines are replaced, it is important that they be properly aligned, otherwise severe engine vibration will be felt in the car.

To correct such a condition, loosen the exhaust support brackets and all engine mounting bolts. Do not remove the bolts. Start the engine and accelerate

it a few times so that the engine will align itself. Then tighten engine mounting bolts and exhaust support brackets.

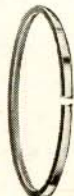
IT WON'T BE LONG

Before we talk to you again, there will be frost in the northern states. Between now and then, make these six checks to insure easy starting on the first cold morning:

1. Hydrometer-test your battery. If specific gravity is below 1.250, have it recharged. Be sure to see that battery cables are tight and not corroded. Clean cables are important to easy starting.
2. Check distributor cap for cracks. Clean cap and all wires; replace worn wires. Good ignition is vital to quick starting. Remove one wire from spark plug and hold $\frac{3}{16}$ " from engine block. Start engine. If spark jumps gap evenly, ignition is O.K. If erratic, check distributor points for correct spacing and replace any that are burned or pitted. See that all connections are tight.
3. Remove and clean all spark plugs, replacing any with cracked porcelain. Regap to car manufacturer's specifications. Install new gaskets, tighten plugs finger-tight, then use socket wrench just enough to squeeze the gasket.
4. If starter is sluggish, check brushes and commutator. A dirty starter can make the engine start hard.
5. Use a light oil for winter driving.
6. Depress clutch pedal for cold-weather starting.

INSTALL KROMEX RING SETS

To get all the winter power you need, install Sealed Power KromeX Ring Sets, specially engineered for late-model cars and trucks. Top compression rings and steel rails of oil rings have chrome faces to fight heat, friction, corrosion, and abrasion. Write Dept. H-9, Sealed Power Corp., Muskegon, Mich., for new free booklet, "MORE POWER, Less Oil, Less Gas."



Gus Pulls a Trick Play

[Continued from page 182]

ing the carburetor. I'm going to take a look at the pump, in spite of its being new."

"Okay, go ahead. I only hope you have better results than those other birds!"

"It never hurts to try. I'll make it as quick as I can."

Gus disconnected the fuel pump, carried it inside and began dismantling it. Thompson followed him into the garage. Gus emptied the gas and began looking.

"At least the fuel got this far!"

The diaphragm wasn't worn. He hadn't expected it to be, but on second glance, he noticed he could scrape some sort of residue off the diaphragm surface.

Trouble Must Be in Fuel Pump

"Funny thing, but it is your fuel pump!"

"Oh, no!"

"Sure. See this gummy stuff on the diaphragm? And look at these springs and valves. The gum locked the valves so that the gas wouldn't pass on to the carburetor. The springs that actuate the valves haven't got the freedom they should have, and off-hand I'd say it was coming from the diaphragm there. These diaphragms are coated to make them last longer, and that outer surfacing is flaking off."

"I might expect one lemon, but not three in a row!"

"Oh, it isn't that. This is a perfectly satisfactory brand."

Nothing New Has Been Added

"Well, what now?"

"We've got to find a cause. It's something the other mechanics didn't bother checking, evidently. First, we're going to look at your gas tank. Do you know if the regular driver has been using any gas-tank additives—you know, canned tune-ups, valve oils, anything like that?"

"No, I'm sure of it. Nothing but high octane."

"I see. Some of these additives are okay, and some are inclined to gum up the engines. All right, that's one possibility eliminated."

They went out and Gus opened the drain cock on the tank, letting the gas run into a couple of five-gallon cans. He watched the color down to the last drop. There was no sign of anything foreign.

"See anything? It's quarter to eleven. . ."

[Continued on page 234]

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Gus Pulls a Trick Play

[Continued from page 230]

Gus didn't answer. He merely stared at the tank bottom.

It had come from the tank, that gummy business. But what? The gas showed nice and clean. Then he noticed that the gas tank had been patched. He stared at the soldered seams. And suddenly he had it.

"What happened to this tank?"

"Scraped something in the road a couple of weeks ago and picked up a gash in the bottom. The driver had the boys in the metal shop patch it up. Why?"

"Mr. Thompson, whoever did that patching job used an awful lot of solder on the seams. The soldering flux has been seeping out of the seams and mixing with the gas, getting as far as the fuel pump, then softening the coating on the diaphragm and creating that gummy stuff I showed you."

"Can it be fixed?"

"Sure. Let me put the pump to soak, and I'll tell you what to do."

He dropped the fuel pump into a pan of solvent, then took two cans off the shelf, made a mixture of the two liquids and poured it and the gas into the tank.

A Little Medicine for the Gas Tank

"This is wood alcohol and acetone. It'll neutralize that flux. Just tell the driver to add a pint of each to every five gallons of gas. In a week or so, I think the flux will have worked out."

Gus finished up the job and looked at his watch. "Well, if you hurry, you can make the game on time. I hope you boys win."

Thompson paid up, shook Gus's hand and hopped into the driver's seat.

The rest of the day fell into its normal pattern, and Gus was closing up when the phone rang.

"This is Coach Thompson."

"What happened? You miss the game?"

"Heck no! Take a look at your evening paper, and see what one of your local news photographers found. You got a paper?"

"I think it just came. Hold the line."

Gus found the paper and turned to the sports page. In a four-column photo he saw the scoreboard: seven-six for Jefferson.

Gus picked up the receiver again. "Well, congratulations on your . . ." The photo caught his eye a second time. The rooting section—a card stunt—spelling out "GUS" in big, if somewhat ragged, letters. END

Next Month: Gus and the dope runners.