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Popular Science

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and Headaches**

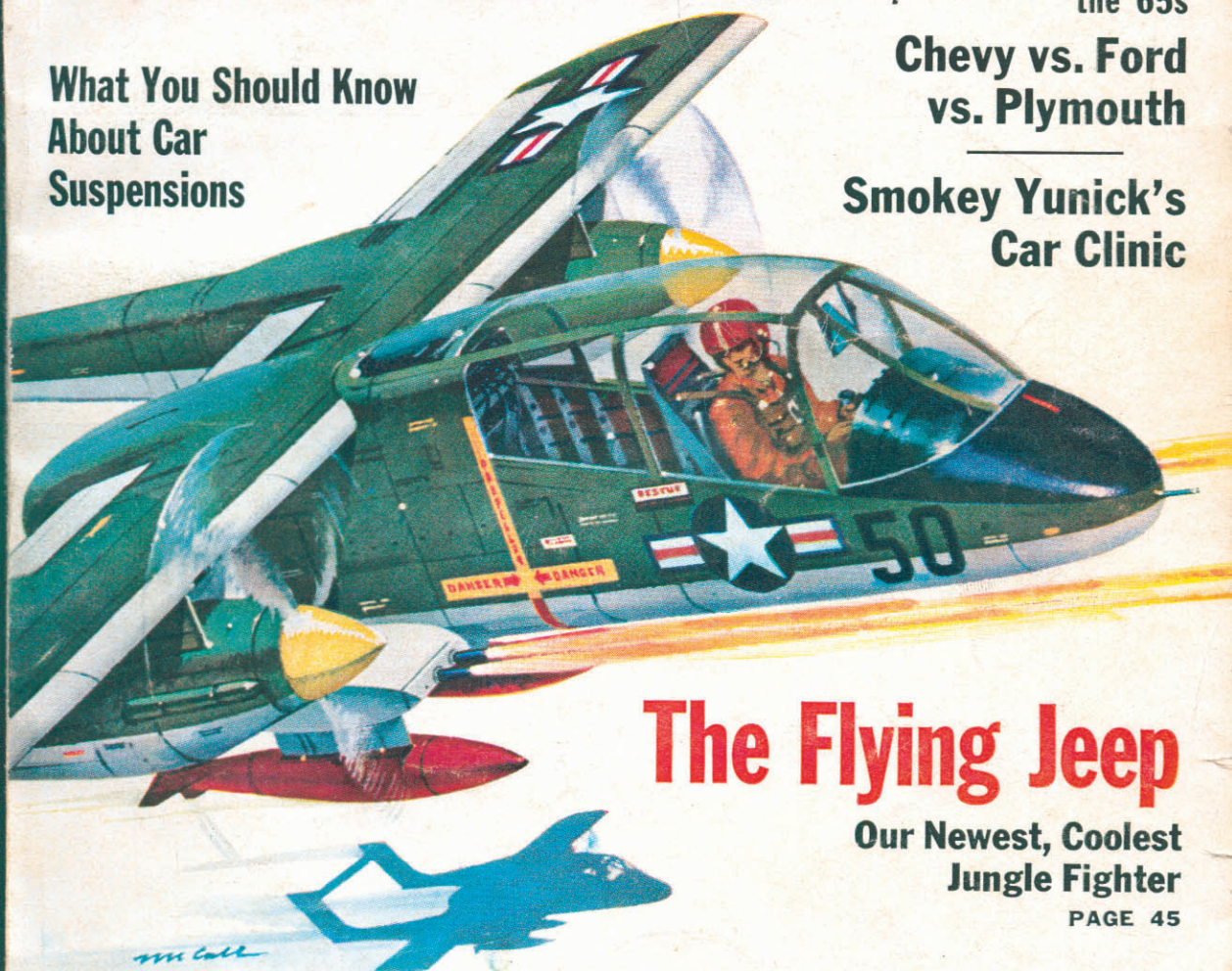
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Gus Picks Up a New

By Martin Bunn

STAN HICKS had just opened the Model Garage when the phone rang. With a look toward the pumps for early customers, he picked up the phone.

"This is William Halloran," said a voice. "You did a brake job for me a month ago—a blue 1962 Buick. Remember?"

"Sure do. How are the brakes?"

"Fine, but the engine seems to miss a bit at high speeds. I drive 20 miles to commute from your railroad station, so could you pick the car up there today? I'll come to your shop for it about five tonight."

"Can do. Where'll I find it?"

"How about the supermarket lot a block from the station? I can walk to the train."



Customer

"It's a pretty big lot," demurred Stan.

"That early it'll be almost empty, so I'll pick a spot at the west end and leave the keys under the seat."

"Okay," agreed Stan hastily as a horn beeped at the gas pumps.

Early calls kept Stan and his boss, Gus Wilson, busy until nearly noon. Then Stan got a ride from a customer driving toward the station. He had no trouble spotting the blue Buick in the parking lot. To his disgust the keys were in the lock.

"Sure is asking to have it swiped," Stan muttered as he started the engine.

It ticked over smoothly enough. Nor was Stan surprised to find that it ran normally in traffic. Just outside town he swung onto a high-speed turnpike. The car rapidly picked up until the needle hit 40. Stan's foot nudged the throttle down farther. The engine took no notice.

Deliberately he slowed down to 30, then



"Let's check the right-wheel brake cylinder," Gus said. "Step on the pedal, Stan—just a bit, real slow."

floorboarded the gas. The car accelerated like a flash—a flash that fizzled out at precisely 40 miles an hour.

Again Stan eased up on the gas. The car kept rolling at that speed. A station wagon roared by at 70. Stan reached for the right-hand lane and stayed there.

Once more he floored the throttle. He might as well have punched the cigarette lighter. He made for the nearest exit at a sedate 39 miles an hour, and soon afterwards drove into the shop.

Half an hour's checking brought no solution. The points were good—they appeared almost new—and the dwell meter showed them to be set exactly right. A timing-light check proved only that timing was on the nose. The spark advance worked.

Pulling the plugs, Stan found that two had a slightly oversize gap. He adjusted them, checked low- and high-voltage ignition wiring for loose connections and internal breaks, found none, and took the car out again.

It still refused to go any faster than 40 miles an hour.

Crestfallen, Stan drove back to the Model Garage. To check the gas flow, he disconnected the line at the carburetor and cranked the engine. Gas squirted abundantly into the can held under the line. As Stan reconnected it, Gus came over.

"Doesn't seem to be the ignition, and it sure isn't the fuel pump," concluded Stan after describing the car's odd behavior. "May be the carb, but there's no spitting or coughing. It's more like a governor cutting out."

"Let's see if it can happen here."

Hooking an ignition analyzer to ground, Gus held the probe to a high-tension lead. As Stan started the engine, the instrument's needle swung well over. Briefly Gus gunned the motor. The needle held, then suddenly dipped, only to pick up again as revs fell.

"The ignition cuts out at high speed," said Gus as Stan killed the engine. "I think it's either the cap or the rotor."

Taking off the distributor cap, Gus inspected it: no carbon deposits, no visible cracks. He lifted off the big, flat rotor and placed it upright on the cabinet of a spark-plug checker, then held the high-tension lead to the contact segment.

At once a spark snapped loudly. Gus picked up the rotor and examined it, then repeated the test. Again a spark snapped.

"Can't see any cracks, or carbon tracks either," he said. "But it's shorting all the same. Hey! Take a close look . . ."

He passed the rotor to Stan, who squinted hard at it. "What do you know—a pinhole. But how could that short out the ignition only over 40?"

"Because at that speed the centrifugal weights fly out just far enough to get under the hole. Then the spark shorts to them." Gus chuckled. "You couldn't ask for a better governor—if you wanted one."

Leaving Stan to put in a new rotor and button up the Buick, Gus was about to enter his office when a black Chevrolet with police insignia rolled in. Chief Eldon unfolded his gaunt frame from it.

"Hi, Chief. Got some hot coffee. How about a cup?" offered Gus.

"Nope. It's service I'm after, not that warmed-over brake fluid you dish up."

"Police garage given up on a tough one?" asked Stan with a grin.

"Guess I've given up on the police garage," admitted the lean chief of police. "There's a bad yank to the left every time I use the brakes. Could cause an accident, especially in the kind of driving I sometimes do."

"How old are the linings?" asked Gus.

"The shoes were relined and new cylinder cups installed 4,000 miles back. The trouble first showed after the car had been laid up a week, waiting for an engine part. Our mechanic tried loosening the adjustment on the left wheel and tightening it on the right. Made no difference at all. The left drum was scored a bit, so he had it turned down. Still no good. Then he put in new lining on that side. Now he thinks it needs a front-end lineup."

Gus frowned, took out his pipe and thoughtfully punched in tobacco.

"Jack up the front end, Stan."

With both wheels raised and Eldon applying the brakes, neither could be turned by hand.

"Take off the left wheel," ordered Gus, and while Stan did so he himself removed the right-hand wheel. Both linings were apparently good, with no trace of glazing or oil. The right-hand drum was smooth.

"How about if I sandpaper the linings and then road-test it?" asked Stan.

Gus shook his head. "Let's check that right-wheel brake cylinder."

"It held fine only a few minutes ago," Stan objected.

"All the same, get in and step on the pedal—just a bit, and real slow."

As Stan did so, Gus and Chief Eldon watched a brake shoe move out.

"Okay!" yelled Gus. "Ream out this cylinder and install new cups, Stan."

"But that was done just 4,000 miles back," protested Eldon, as Stan started to remove the shoes. "And anyway, why *this* one? It's the other wheel that grabs. We just saw these shoes move out."

"You know how unreliable witnesses are."

Eldon grunted. Stan slid out one of the metal pistons and its rubber cup. An exclamation escaped him as he went for the other piston.

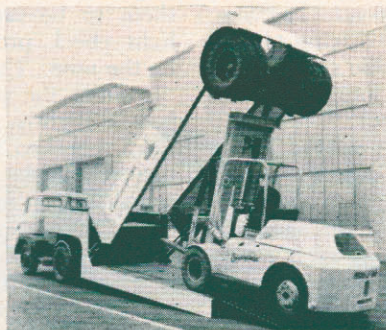
"It's jammed solid," he muttered.

Getting a punch and hammer, he tapped out the recalcitrant piston. Gus took it from him, and passed it to Eldon.

"You saw *one* brake shoe move," he said. "The other didn't. Either this piston wasn't cleaned when they put it back, or the brake fluid's contaminated. Anyway, that week-long shop layup gave corrosion time to freeze it in the cylinder. The other shoe braked the wheel, but with much less power than the two shoes working on the left-hand one. So you got a hard pull to the left."

Inside the car, the police radio squawked. Eldon grabbed the mike and acknowledged. As a voice spoke with measured urgency, the chief made a few notes.

"Great! Here I am with my wheels



Tail lifter loads from ground

This semitrailer vehicle carrier drops its bed and raises its chassis for loading fork lifts. The platform is lowered by hydraulic rams, and a hinged drive-on ramp drops to the road. Cylinders at the hinges then jack the frame into the air for up to 11 feet of drive-on clearance.

The carrier was built for a British company to transport its fork trucks to demonstration sites.

down," he said to Gus, "and we've just got a report of a car stolen from the supermarket lot—a blue 1962 Buick."

"Stan won't take long," promised Gus. "Want to check blue Buicks? You can start on that one over there. Whose is it, Stan?"

"Fellow named Halloran. He commutes."

"Too danged many cars look alike these days," grumbled Eldon, with a brief glance at the car Stan had driven in. "Report says this one belongs to a store-fixture salesman named Holt. He was doing an estimate job, left the keys in the lock, the registration in the glove compartment, and doesn't know his license number!"

"Want that cup of coffee now?"

"Might's well. Here's Holt's idea of a hot clue—and maybe it is," remarked Eldon, sauntering after Gus. "Car's got something wrong—it can't be driven at any speed over 40 miles per hour."

A wrench clattered to the floor.

"That was the trouble with this car until we fixed it," Stan said. "Let's look at that registration."

"*Plain enough how it happened,*" said Eldon after a radio report from a police car. "The car you want is at the east end. Your customer is one of those people who can't tell east from west except at sunrise."

A police car braked hard outside, and from it emerged a rotund little man. The worried look on his face deepened into a satisfied scowl when he saw the Buick.

"I'm Lemuel Holt," he announced.

"Driver's license, please," said Eldon.

Holt handed it over. "Why check up on me? I'm the one whose car was stolen."

"Just wanted to see if a man who leaves his keys in the lock really did pass a driving test," said Eldon scathingly.

"I was in a hurry," mumbled Holt. "Did you get the thief?"

"There wasn't any," Eldon explained.

To the amazement of all, a smile overspread the little man's face.

"That's the best news I've heard in a month. The grief that car's given me! Maybe I left the keys because I hoped somebody would swipe it."

He turned to Gus. "Three different mechanics worked on it. They replaced the points, plugs, and distributor casing, rebuilt the carburetor then installed a brand-new one. They soaked me for a new battery, coil, wiring—even a new starter. If you licked it, I'll pay any reasonable bill and be darned grateful, to boot."

Shortly after the happy owner of the Buick had driven it off, Stan finished bleeding the brake system on the police car and went with Eldon to road-test it. The brakes held well, with no side pull.

Instead of returning to the shop, the chief drove downtown and stopped at the east end of the supermarket lot.

"Might as well get the car you came for," he said gruffly.

"Er—thanks." Stan got out and headed for the blue Buick so hastily he never saw the grin on the Chief's face.

The key was under the seat.

"*Halloran's car* was missing at high speed, all right," Stan told Gus after the owner had picked it up. "Six of the plugs had gaps you could drive a Volkswagen through. Besides, they were the wrong heat range for his kind of driving. I put in new ones and tried it out."

"Been pretty busy today, haven't you?"

"Yeah. Wonder what I'd have done if that guy Holt had run out and caught me taking his car. What a spot to be in!"

"Shucks," said Gus. "He had a car problem, didn't he? You'd have quick-sold him a diagnosis and repair job, of course—at the Model Garage." ■ ■

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Where it comes from . . .

KAPOK grows wild in the tropical forests of Thailand, where the world gets 70 percent of its supply. The rest comes from Indonesia, Saigon, and Ecuador, which is the only source in the Americas.

Kapok grows on trees up to 125 feet high. Each year after the trees flower, banana-shaped pods, 4 to 14 inches long, are formed. Inside there is a flossy down surrounding black seeds.

The pods are knocked off the trees by long bamboo poles; machines get the seeds out and

clean the kapok. It needs no further treatment; the raw material and the finished product are identical. About 11,000 tons of it were imported by the U.S. last year. Its principal uses are in pillows, life jackets, and boat cushions. Kapok's buoyancy is five to six times that of cork, and it supports 30 times its own weight when submerged.

Other uses are in sleeping bags, dolls, washable plush toys, and, compressed, as the cores of softballs.