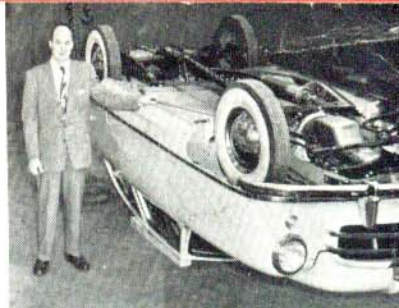


POPULAR SCIENCE

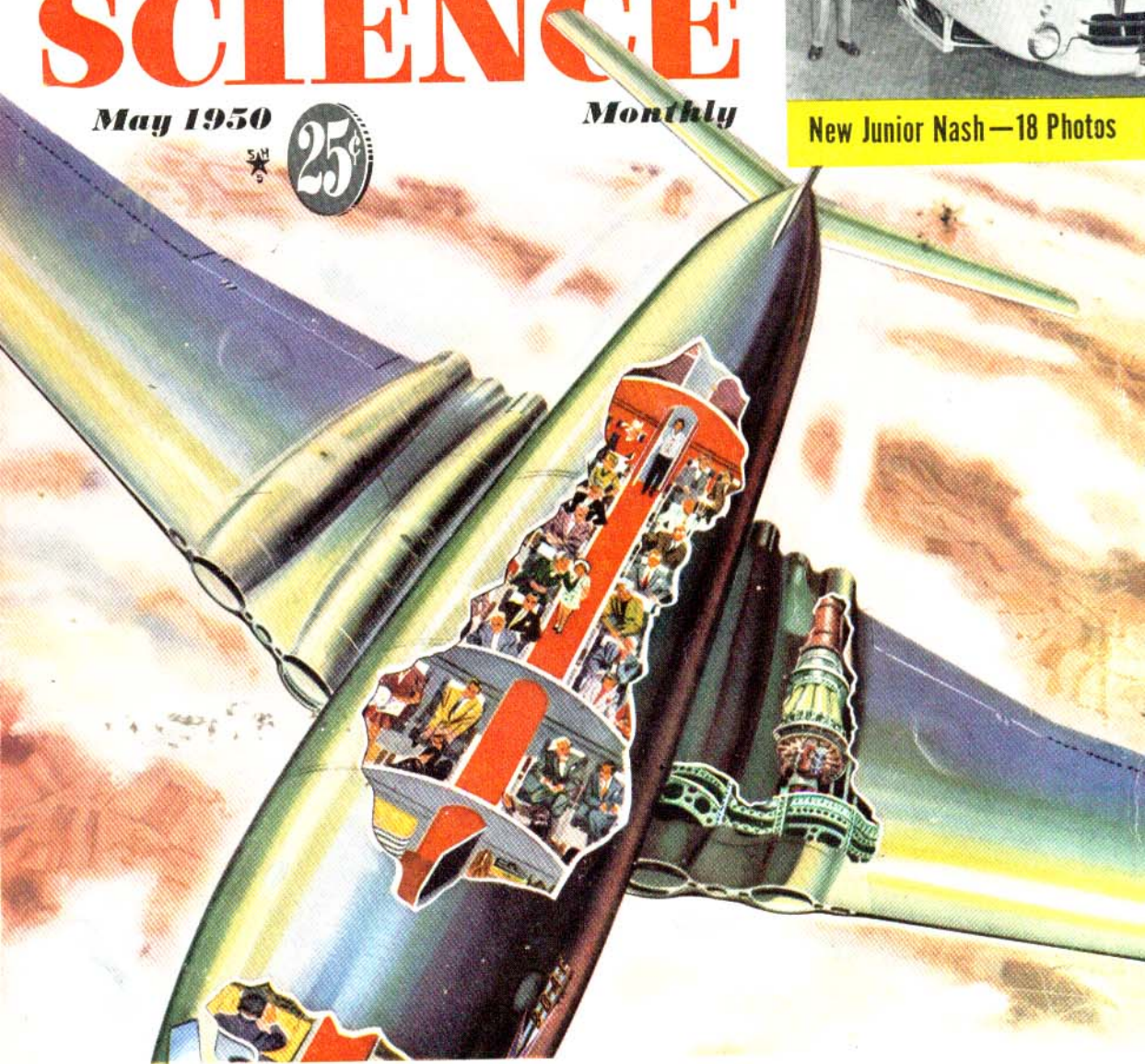
May 1950

25¢

Monthly



New Junior Nash—18 Photos



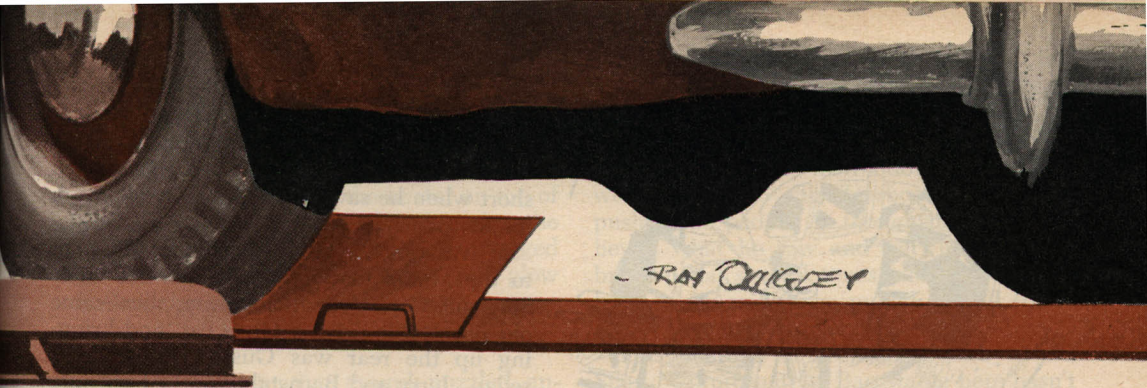
**“I Saw This Jet-Liner
Fly 500 M.P.H.”**

*Devon Francis reports from
England, “The Comet roars
like a dozen trains, but
lands easy as a DC 3—”*

(TURN TO PAGE 98)



A warm red glow from the heater bathed the underside of the car up near the master brake cylinder



Gus and the

A heat treatment teaches
Mr. Pennypincher that you can't be
tight when it comes to brakes.

Bewitched Brakes

By Martin Bunn

SERGEANT Jerry Corcoran sat on his motorcycle parked just off the hilly main highway from the north where it crosses what we townspeople call "the outer road." He had just about decided it was time to go to a call box up the hill and make his afternoon report to the state police barracks.

An old-model sedan flashed by at a brisk clip, sped through the intersection, and rolled on down the hill. Jerry wheeled out after it. When he caught up with it at the bottom of the hill, he pushed the siren button, motioned to the driver to pull over, and then did a double-take. The driver was old pinchpenny Silas Barnstable, our town's champion tightwad.

Old Silas never so much as turned his head. He just gripped the wheel grimly and sped on. Jerry sounded his siren again. Gradually the car slowed to a stop.

"In a hurry to get some place?" Jerry asked as he strolled back to the car after parking his motorcycle.

Silas was practically half out of the driver's door, frantically explaining. "Honest, Officer, it really wasn't my fault. My brakes failed. Tried to stop, but couldn't. Couldn't slow down 'til I could coast to a stop."

"How come your brakes suddenly went bad?" questioned Jerry. "Had any trouble before this?"

"Not before today," Silas replied. "Been up visitin' folks on the Ridge. When I

started the trek home, I began to notice everytime I came down one of those hills my brakes got a little soft. Finally, on this hill here I pushed the pedal smackdab down to the floor and still nothing happened."

"No brakes, eh," Jerry remarked as he motioned to Barnstable to move over and then slid in behind the wheel himself. "We'll soon see."

The sergeant tried the brake pedal. There seemed to be plenty of cushion and resistance to the push of his foot. Then he stepped on the starter button, shifted, and pulled out onto the highway. When the car was hitting 30, he stepped on the brake. The old sedan eased to a perfect stop.

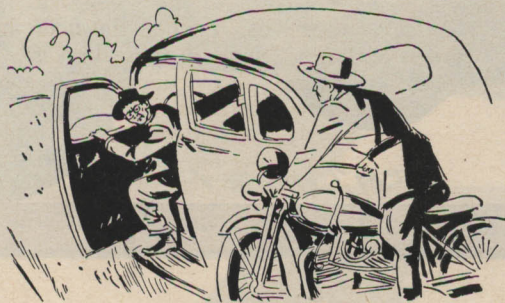
"So, no brakes is it?" he mused as he turned the car around and headed back to where his motorcycle was parked.

Jerry got out of the car and started to reach for the leather case where he kept his summons tags. "Don't give me a ticket, Officer," Silas bleated. "Those brakes must be bewitched. They wouldn't work for me."

At this point, a third voice broke into the conversation.

"Having trouble with this ornery citizen?" It was Gus Wilson, and, as Corcoran looked up, he noticed that Gus's car was parked a short distance behind Silas's.

"Happened to be driving down the road, on my way to the lake to work on my boat. When I saw you here, I wondered if you needed any help running this renegade in," Gus added with a grin.



"Mr. Wilson, you'll vouch for me, won't you?" Silas pleaded. "Tell Sergeant Corcoran I'm no law breaker. Never had a ticket in my life."

"What seems to be the trouble, Jerry?" Gus asked when the whining Barnstable had subsided.

"Well, I can hang at least three counts on this bird without even trying," Jerry replied as he began counting them off on his fingers. "Exceeding the speed limit, disregarding a caution signal, and failing to stop when ordered."

"But it wasn't my fault, Mr. Wilson," broke in Barnstable. "My brakes went bad, and I couldn't even slow down, much less stop."

"His brakes are as good as anyone's," Jerry countered, as he started to write out the ticket. "Gave me the same cock-and-bull story, but I tried his brakes and they worked all right for me." Then, turning to Silas, he said, "Let me see your license, Mr. Barnstable."

"But it *was* my brakes," Silas repeated as he dug into his battered wallet.

"Maybe you *are* being a little hard on Silas, Jerry," Gus put in. "Could be that there is something wrong with his brakes. After all, a man's innocent until proven guilty." For some reason or other, there was something about the old skinflint that had always softened Gus.

Jerry Makes a Proposition

For a moment, Jerry just looked at Silas. Then, tucking his pencil into the top of his black boot, he said, "Okay, you don't deserve it, but I'll tell you what I'll do. I'll let Gus check your brakes back at his garage. If he can't find anything wrong with them, I finish writing out this ticket. If he does find something wrong with them, you're going to pay him to fix them and I'll tear up the ticket. But there'll be no haggling over Gus's price, mind you."

"Humph, it's a hold-up," Silas grunted. "Blackmail. Downright collusion and coercion, that's what it is. I'll . . ." He stopped short when he saw the trooper's hand reach for his pencil. Then he added, "I'll do it."

It was quite a procession that pulled up to the Model Garage a few minutes later. Sergeant Corcoran led the way, then came old Barnstable driving Gus's car, and bringing up the rear was Gus in Barnstable's sedan. Jerry and Barnstable parked outside, while Gus drove Barnstable's old car into the repair shop. Stan Hicks looked up from a valve job he was working on just in time to see Jerry Corcoran and Barnstable come in through the open door. "Don't tell me the old money-grubber's in trouble with the law, I hope," he said to Jerry in half a whisper.

They'd Just Been Checked

As Gus pulled his gray coveralls on over his street clothes, he asked Silas to outline his troubles. When Silas had finished, Gus asked, "Have you had your brakes checked lately? From what you say, it sounds like you may either be low on brake fluid or your brake system has a little air in it and needs bleeding."

"Well you're wrong there," Barnstable grinned cockily. "Just had 'em checked not four days ago down in the city. The man put in fluid too. And he didn't soak me, either," he added, wagging his finger at Gus.

Ignoring Barnstable, Gus set about making a thorough step-by-step check of the car's brakes. He started with the master brake cylinder and a check of the brake-fluid level, and ended, the car on the grease rack, by inspecting the hydraulic lines and bleeding the system at each wheel.

No Leaks and No Air

When he finally emerged from under the raised car he was shaking his head. "That's odd," he thought as he wiped his hands on a scrap of waste. "Plenty of fluid, no visible leaks, and no evidence of air in the lines. Yet, Silas claims his brakes went bad, and, I must admit, they did get kind of soft on the drive over here."

Things weren't looking too good for Barnstable as Gus finally spoke: "It's just a hunch, but there's just one more test I'd like to try." With that he disappeared into the garage office.

When he came back, he was carrying the old reliable reflecting electric heater that

Joe often used during the winter to help keep the office warm. Gathering up a long extension cord from his repair bench as he passed, Gus then rigged the heater on top of a short ladder that he placed under the raised chassis of the car. When he plugged in the extension cord, a warm red glow bathed the underside of the car.

Freezing Isn't the Answer

Gus had an attentive, though puzzled, audience. Jerry sat watching from a perch on one corner of the workshop bench. Silas Barnstable, standing to one side, looked for all the world like a bantam rooster as he stretched his neck and cocked his head to peer up under his car. Stan just stood there, fiddling with a thickness gauge. He was used to Gus's one-man shows.

"What in blazes you doin' that for?" piped Barnstable, breaking the silence. "Nothin' can be froze up this time of the year."

"Nope, nothin' froze up," agreed Gus. "But unless I miss my guess, the heat from that heater is going to help us find what's back of your on-again, off-again brakes. I got a hunch that it's been heat, and your blamed penny-pinching, that got you in trouble."

Gus let the underside of the car bake for a few more minutes. Then he removed the heater and ladder and told Stan to lower

the rack. As the car touched the floor, he turned to Jerry. "Now try those brakes."

Jerry followed instructions. His foot went almost to the floorboards when he pushed the pedal. As though he hadn't believed what he saw and felt, he tried the brake pedal several times more. "Well, I'll be . . ." he said as he pulled his tall frame out of the car. "How can that be?"

Gus pointed an accusing thumb at old Silas. "Unfortunately, Barnstable here hasn't learned that you seldom get more than you pay for. Sure, he got a bargain from those sharpies down in the city—some cheap low-grade brake fluid. But there's no great harm done. We'll flush it out and fill her up again with some good fluid."

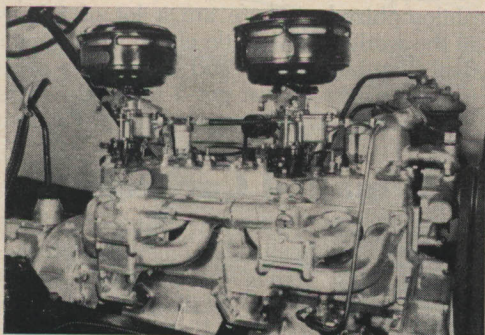
"Now you look here, Gus Wilson," exploded Barnstable. "If you think you're going to hoodwink me by selling me some fancy brake juice, you're . . ."

Brake Fluid on the Hot Plate

"Easy, Silas. Remember you're dealing with Mr. Corcoran here—and a ticket."

As Gus talked, he picked up the Mason jar that contained the small amount of fluid he had bled from the brakes in checking them and poured it into a can he had carefully cleaned. He then placed the can on a small electric hot plate at the rear of his bench. It was the hot plate that he,

New Engine for Dodge Trucks



TWIN advantages of high-power output and low-operating cost are claimed as a result of several twin features in the engine above, designed for Dodge's new Y and YA model four-ton trucks. The engine, developing 330 pound-feet torque, has twin carburetors, twin manifolds, and a twin exhaust system. The new six-cylinder power plant delivers 154 hp., has a 6.5 to 1 compression ratio, and a displacement of 377 cubic inches.

Homemade Jet Propels Auto



JOHN MITCHELL, an employe of Chance Vought Aircraft, Dallas, Texas, takes his job home. But instead of building fast jet fighters, he has converted a 1934 Packard sedan into a jetmobile, shown above. It has two jet exhaust pipes because Mitchell is experimenting with different versions of the homemade turbojet engines that have sped the novel car at 115 m.p.h. Using kerosene or fuel oil, he has gotten 31 miles to a gallon.

Joe, and Stan normally used for brewing up their midmorning and midafternoon coffee.

"Now watch," Gus said as he flicked the switch. In no time at all, the fluid was beginning to bubble to a boil. "Low boiling point," he explained as he turned off the hot plate. "And that's one thing any decent brake fluid shouldn't have. There's been a lot of low-grade brake fluids on the market lately, and most of 'em are just out-and-out frauds. They're a concoction of who-knows-what liquids that seem to work all right for ordinary driving. Sure they sell for a price, but when you need your brakes most, they don't work. That's just what you got for your bargain, Silas."

Silas Boils Easily

Judging from the crimson flush on old Barnstable's face it was quite evident that Silas, like his low-cost brake fluid, was about to reach his own low-boiling point. "Thieves, robbers," he all but howled. "They'll pay for this."

"Now don't go blowing a gasket," Gus put in. "Just be thankful you discovered it before you had an accident that might have killed someone. Then you'd have had no alibi. When Jerry or another officer got there and tested your brakes, they'd have found them okay."

"But why?" Jerry asked.

"It's mostly a matter of heat. It takes about 160 horsepower to stop the average car going 60 miles an hour and that develops a heap of heat in the brakes and brake fluid. When you ride those brakes a lot in hilly country, or in heavy city traffic, the hydraulic fluid gets plenty hot. With a good high-boiling-point brake fluid—like the kinds

okayed by the Society of Automotive Engineers—heat causes no trouble. But with a cheap fluid, made up of low-boiling liquids, it vaporizes and forms vapor pockets in the brake system. When that happens, the brakes just won't work, just as they wouldn't work when I heated up the master brake cylinder by putting that heater close to it. Instead of pushing fluid against the brake pistons to operate the shoes, your foot pedal pushes against vapor."

The Vapor Vanishes

"But how come they worked all right a few minutes later?" Jerry asked.

"When the vapor cools," Gus explained, "it condenses back to a liquid and you have a normal working braking system. That is, until you start tramping on the brake pedal again and generate more heat."

"Well, which is it," Jerry asked Barnstable. "A new fill of approved brake fluid, or that ticket I've got half filled out?"

"How much will that new fluid cost me?" asked Silas, his eye still peeled for a bargain.

"Only a few cents more than the stuff those cut-rate gyps sold you," Gus told him.

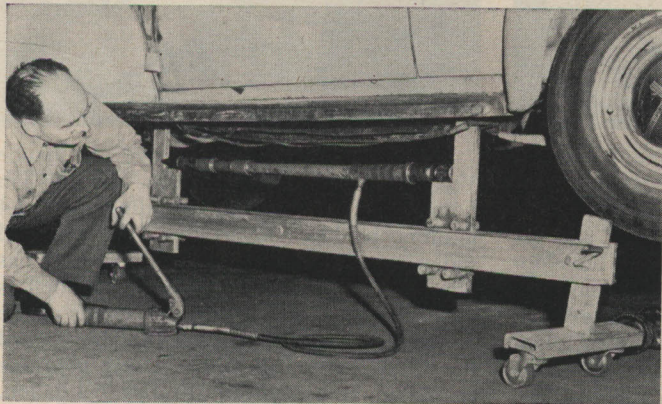
"It's a bargain. And mind you, no funny business on extras either."

"That chiseler," Stan muttered after Jerry Corcoran and Silas had left. "I'll bet he's already got a bargain set up for his own funeral—a nice used grave in some abandoned cemetery."

"Oh, don't be too hard on old Silas," Gus philosophized. "There are a lot of Silases in the world who'll settle cheap for a bigger deal than brake fluids and tires—if the price is right. They've just got a mixed-up sense of values, I guess."

END

Hydraulic Ram Straightens Damaged Car Frames



WITH two uprights braced against bent members of a car frame, the mechanic at left uses a small, portable pump to extend a hydraulic ram that will exert pressure to straighten them. The bent parts are then heated, and the Rogercraft Frame Press removed only after the metal has cooled. The press, made by the Hayward Implement and Engineering Co., Hayward, Calif., is eight feet long extended, and weighs 175 lb.