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# Anti-Freeze Problem

## SOLVED BY FIRE AND BLAST

By Martin Bunn

**A** BRISK wind whistled an icy tune as Frank Gordon closed the radiator shutters on his car and started on his morning drive to his office.

"Must be below freezing," he thought as he pulled his overcoat higher around his neck. "It's a lucky thing I put some alcohol in the radiator last night."

As his car hummed along the road, Gordon chuckled with self-satisfaction each time he passed stalled cars with steaming radiators. For once in his life he had outwitted the cold weather and put his alcohol ahead of time.

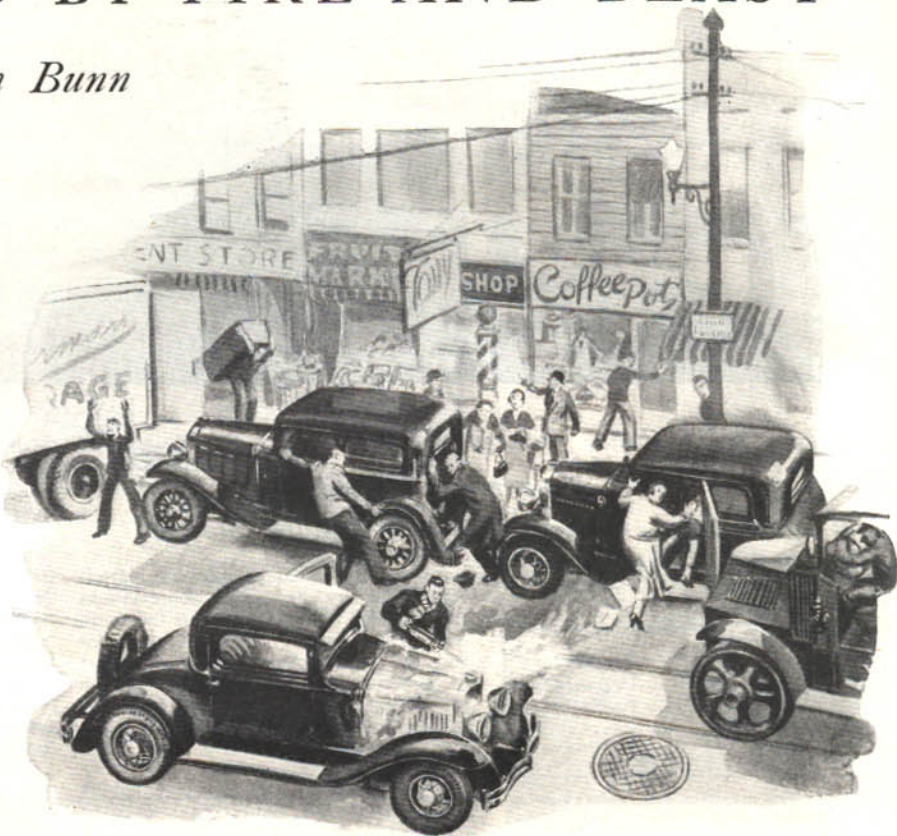
Suddenly, as he neared the center of town, there was a blinding flash and a loud report. For an instant, the front of Gordon's car was a mass of flames. Dazed and frightened, he shut off the ignition and brought the car to a squealing stop.

Advice came from all quarters. Passing traffic hastened to get out of his way and shoppers excitedly tried to move their parked cars to safety.

Grabbing the fire extinguisher mounted under the seat, Gordon jumped to the ground and cautiously lifted the blackened hood. To his surprise, not a trace of the flames could be seen. Instead, water trickled from a long gash in the top radiator connection. The tongues of blue flame that had enveloped the hood but a moment before had died out as mysteriously as they had appeared.

Completely puzzled, Gordon chanced driving the car the short distance to the Model Garage where he related his unanny experience to Gus Wilson and his partner Joe Clark.

"And you say for an instant the front of the car was a mass of blue flames?" inquired Gus when Gordon had told as



For an instant, the front of Gordon's car was a mass of flames. Grabbing a fire extinguisher, he jumped to the ground and cautiously lifted the blackened hood

best he could just what had happened. "What've you been using in the radiator—dynamite?"

"Nope," Gordon replied, "just the old stand-by mixture of alcohol and water. But what's that got to do with it?"

"Plenty," barked Gus. "From the looks of this hose connection, pressure built up in your radiator. Something had to bust, and this was it," he declared.

Scratching his head, Gordon watched Gus pour water into the radiator. "But how can pressure build up in a radiator when there's an overflow pipe to let steam escape?" he asked, pointing to the tube in the radiator.

Gus said nothing, but continued to fill the radiator. He grinned when the water reached the top and spilled over the edges. Beckoning to Gordon to look down into the radiator he said, "The water's way above the top of that overflow now but it doesn't run off. In some way, that pipe's got clogged. Your motor heated up because you forgot to open the shutters and the alcohol boiled off and couldn't es-

cape. After a while, the pressure got strong enough to blow right through the rubber hose and your hot motor—all soaked, too, with gas and oil—was sprayed with hot alcohol vapor. You're just plain lucky you didn't burn your car up."

"But how did the pipe get clogged in the first place?" inquired Gordon. "Dirt would have to be jammed in there pretty tight to stand more pressure than a rubber hose."

"It was ice that caused your trouble," Gus pointed out. "Some dirt probably got caught in there—rust or sediment from your cooling system. Then, when you filled your radiator, water collected over the dirt and froze solid. Have you ever tried to pry ice loose from metal by pushing it when it's frozen solidly?"

With a long piece of stiff wire Gus prodded the overflow pipe. "You see," he said, "now that the ice has melted it's easy to push through the dirt. Speaking of dirt," Gus added, "judging from the stuff that's come from your radiator I'd say it's pretty dirty. Ever clean it out?"

Gordon shook his head. "Never thought I had to," he replied.

"That's why your motor overheats," said Gus. "Dirt and rust form a scale on the inside (Continued on page 110)

### GUS says:

Don't forget that your steering mechanism, brakes, tires, and headlights are just as important as your motor. It's nice to have a motor running smoothly, but if it suddenly fails, it won't put your life in danger. Check the major safety features on your car periodically and don't forget that the windshield wiper, horn, and stop light are important when you need them.





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BAND INSTRUMENTS

## ANTI-FREEZE PROBLEM IS SOLVED BY EXPLOSION AND FIRE

(Continued from page 64)

of the radiator and the heat in the water can't get through to be absorbed by the air. You ought to clean it out at least twice a year. Especially before you dope your cooling system for the winter.

"It's easy. All you have to do is buy a prepared radiator cleaner, dissolve it in the right amount of water, put it in the radiator, and then drive the car for about two hundred miles. When you drain it out all the dirt and sludge come with it."

"By the way, Gus," Gordon said, lifting the hood and pointing to the water pump. "My pump uses an awful lot of grease. Where does it all go?"

"**R**IGHT into your radiator," was the reply. "And it's the best little scale former there is. Half the dirt in your cooling system probably has come from the grease you've forced by the bearings on that pump. The answer is to use a waterproof grease and use it sparingly."

"But getting back to anti-freeze mixtures, why use alcohol?" Gus asked. "That went out of date with kerosene lamps."

"What's the matter with alcohol?" asked Gordon. "It does the job and it's cheaper than anything else."

"It's not so cheap when you stop to consider it," Gus insisted. "Alcohol boils at about one hundred and seventy degrees, so if you run your motor at the right temperature you have to keep strengthening the mixture."

With a solution of glycerin or ethylene glycol there's nothing to worry about as far as boiling is concerned. They may cost more for the first filling, but unless you've got a leaky radiator, the same solution is good for several years."

"Yes, and if your cooling system happens to have a small leak that you don't know

about, you sprinkle the road with dollar bills," Gordon objected.

"Well, that shouldn't be any drawback," grunted Gus. "It's no job at all to find leaks and fix 'em. One thing lots of people don't realize, though, is that solutions expand when they're heated. If you use an expensive anti-freeze, don't fill the radiator right up to the top of the overflow pipe but leave a little room for expansion."

"The advantage of glycerine or ethylene glycol," continued Gus, "is that you can run your motor just as hot in winter as you do in summer without fear of having your anti-freeze evaporate."

"How would I make up a glycerin solution?" Gordon asked. "Do I have to buy a special hydrometer as I did for the alcohol?"

"**N**OPE. Glycerine makes the water heavier so you can use your battery hydrometer. To make a solution that'll be safe down to zero, add enough glycerine to water to make the hydrometer float level with the eleven hundred mark," said Gus, indicating the mark on a hydrometer he picked up from the repair bench. "That'll be about a forty percent solution. A thirty percent solution will be safe down to about ten degrees, and the hydrometer reading for that proportion is one thousand and eighty."

"That sounds easy," Gordon commented. "Then if I want to test it at any time, all I've got to do is use the hydrometer."

"Right. But you want to make sure the solution is somewhere near room temperature," Gus reminded him. "Those readings only hold at sixty degrees."

"You win, Gus," Gordon finally agreed. "Fill her up with a solution of glycerin. I'll leave the car here for the rest of the day so you can clean out the cooling system and patch up any leaks you may find."

## DEAD RACE HORSE "LIVES" AGAIN IN MARVEL OF TAXIDERMISTRY

(Continued from page 19)

breakage. When the plaster was thoroughly dry, it was removed in sections, some weighing 270 pounds, to form the negative mold in which the permanent base would be built up.

The inside of each section of the mold was carefully coated with wax and strips of roofing paper, which had been soaked in paste, were pressed along the entire inside. Three other layers of paper followed, then two layers of burlap, soaked in a special composition plaster, and finally, an additional three layers of paper.

For a week, the paper and burlap remained in the mold to dry. At the end of that time, it was easily removed, forming a hard shell of unusual strength which reproduced every minute ridge and depression of the original clay model. In the meantime, the clay model had been taken down and the skeleton prepared for shipment to Australia, where it will be placed on permanent exhibition.

The sections of the hardened paper and burlap were then joined together by means of nails hammered into wooden supports that form part of the wood-and-steel framework which braces the interior of the shell. Coatings of shellac were painted on the exterior, sawdust was sprayed on, and other coats of shellac applied. The main base was complete. Only the fine touches remained to be put on.

One of these fine touches was reproducing

the veins, especially in the legs. To do this, pieces of rope were immersed in paste and then glued to the form in the exact positions where the veins of the original animal had been. Close-up photographs of Phar Lap's "million dollar legs," as well as extensive anatomical charts, aided in this phase of the work.

When it was finished, the final step began. This was placing the skin on the completed mounting. An important new discovery, made by the Jonas brothers, was employed at this stage to increase the remarkable fidelity of their reproduction.

It is a special flexible plaster. It contains nine secret ingredients and was spread over the entire completed mounting under the skin. As it retains its flexibility and elasticity for some time, the new plaster permits the taxidermist to sculpture over the hide after it has been attached. By skillful pressure of the fingers and by pushing and pulling the hair this way and that, he can produce lifelike lines and ripples.

Besides attaching the skin to the form, the new plaster also protects it from future attacks by insects or other parasites.

Putting on the ears and tail, and making a few minor touches here and there, completed the work, an achievement that is receiving recognition as one of the outstanding feats of modern taxidermy.