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By Roger Huntington

SOUPING THE STREET HEMI

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■ According to the new NASCAR-USAC stock car racing rules, engines must carry a published list price of not over 1,000 dollars. Earlier 426 hemi racing engines with aluminum heads and magnesium manifolds cost upwards of 2,000 dollars in the crate . . . if you could get them. Now the 1966 street hemi has a list price of \$907.60 above the price of the standard 318 V8 when ordered in a new car. (This includes heavy duty suspension and brakes and Goodyear Blue Streak high speed tires, but not the transmission, which *must* be either

Torqueflite or four-speed.)

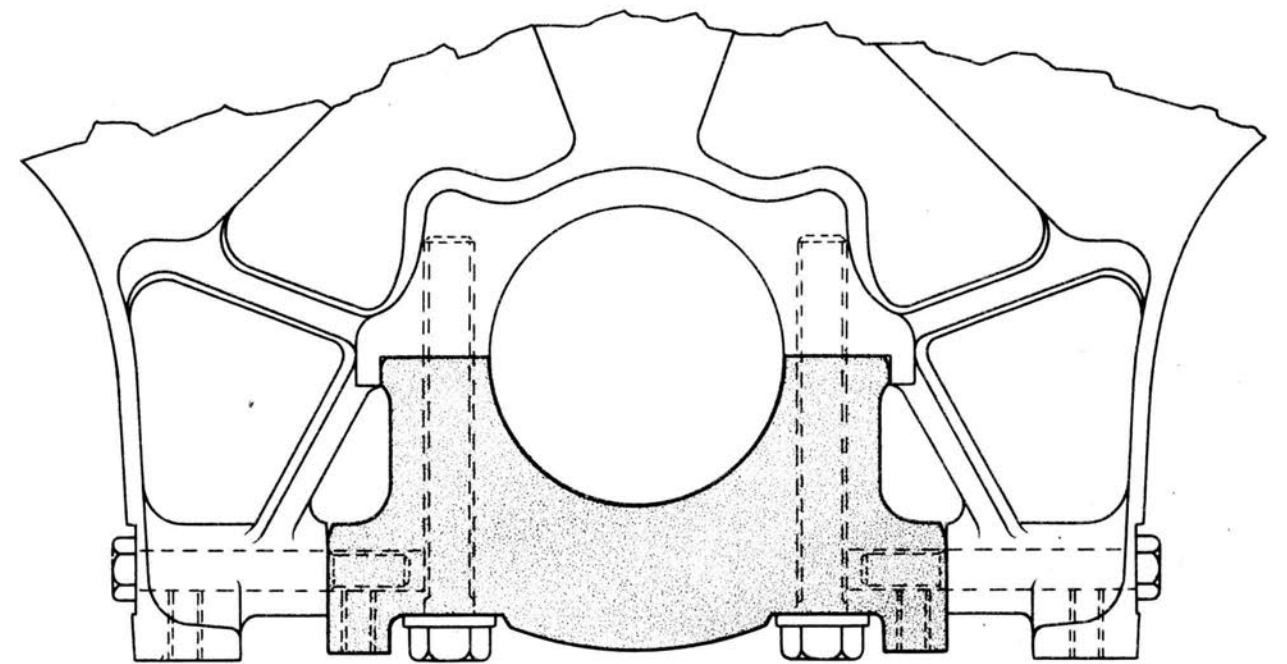
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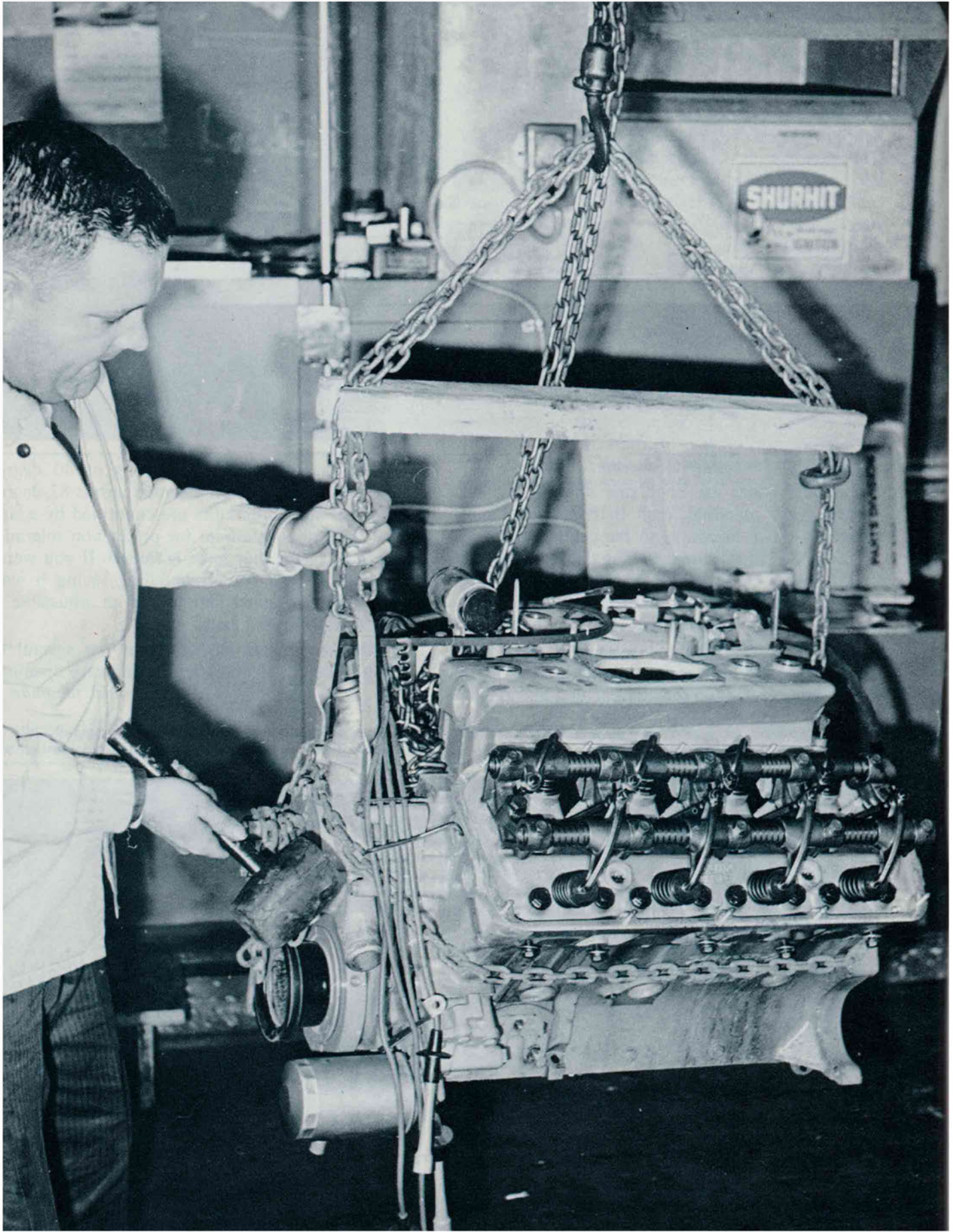
■ Anyway, the price of this basic 426 hemi engine is finally getting down where the young hot rodder can begin to think about its possibilities for street use in various types of cars, or in modified form for hot street use or all-out competition. The engine has now become real "raw material" for this demand instead of something you just dream about. Let's have a closer look at the engine and some of its possibilities. . . .

STREET HEMI

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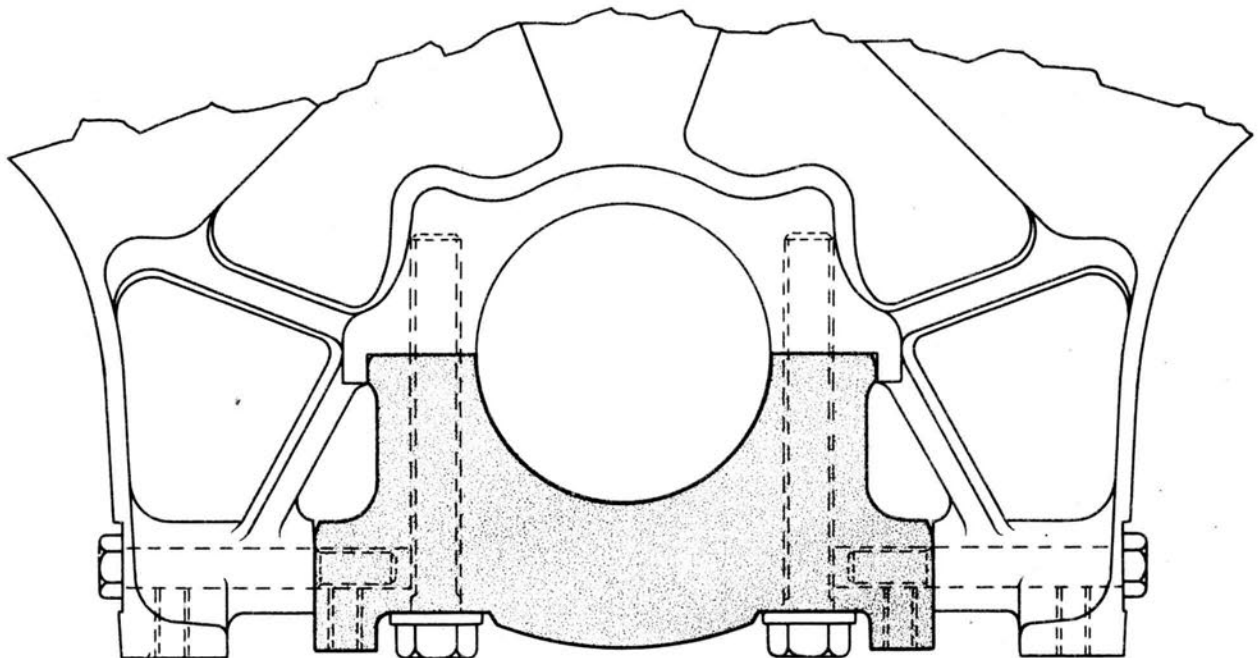
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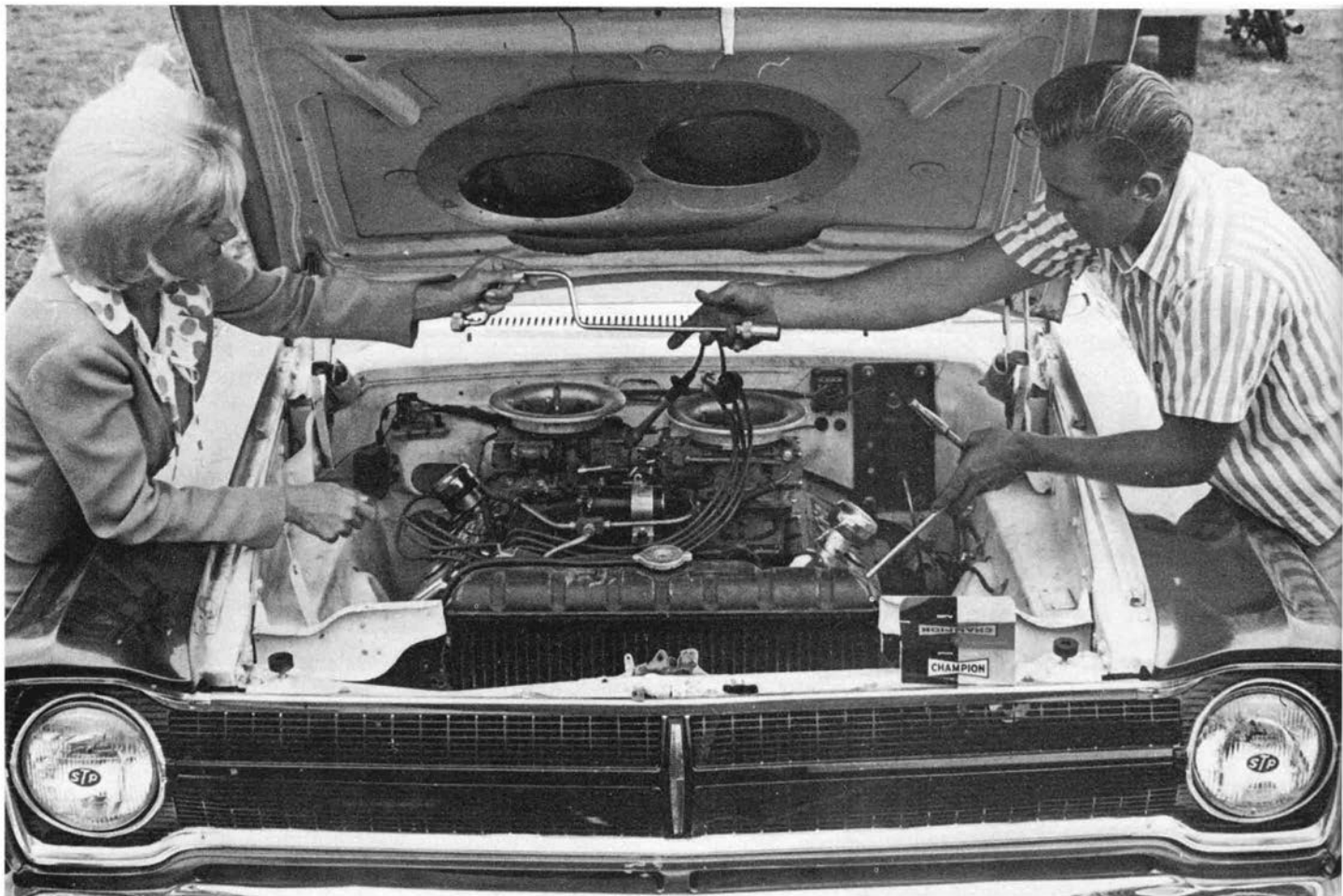
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use premium pump gas on the street. (Octane requirement is a lot different on a street engine than on a racing job.)

- Cylinder heads are cast iron instead of aluminum, again to save cost for this basically production engine (though aluminum heads are still available). Another cost-saving move was to cast the exhaust headers from iron rather than fabricate them more or less by hand from steel tubing. The new cast iron headers are much heavier than tubing headers; but they're real clean and streamlined and should cause no undue restriction.

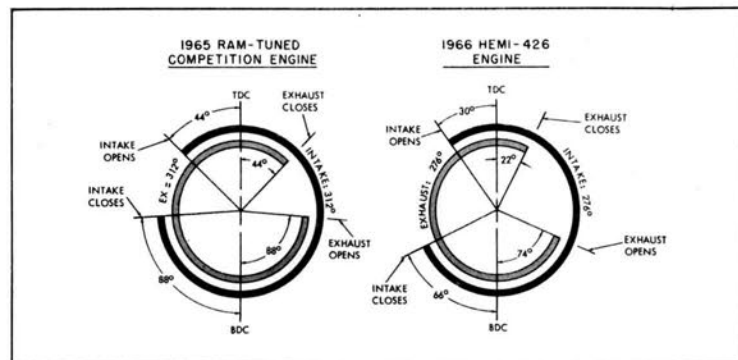
- There are major changes in the carburetion system. Last year's racing hemi used a wild magnesium ram-type intake manifold (with the long ram passages running across the engine from the carb over the opposite bank) and carburetion was by two huge Holley R.3116 four-barrels. This system had very long passages and no exhaust heat to vaporize the fuel, and was entirely unsuitable for street driving. The new street hemi has two smaller Carter AFB four-barrels in line on a more conventional "180-degree" manifold that's cast in aluminum for lightness.

- Exhaust heat is provided around the primary barrels of the rear carb by piping it up from the

heat valve in the right exhaust manifold (with a return pipe to take it back). This is a very clever idea to adapt this racing-type engine for the street, since it would have required expensive retooling to put conventional exhaust crossover passages in the cylinder head castings. They merely bring their

SOUPING THE STREET HEMI

Camshaft timing comparison between new street hemi (right) and '65 ram-tuned competition engine shows a 312 deg. duration and .520 lift for the '65 and 276 deg. duration and .460 lift for the '66 street mill.

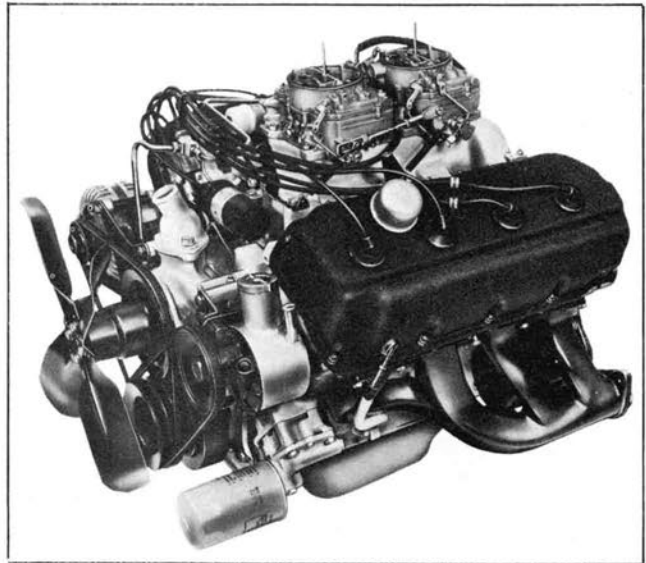


heat up from the exhaust manifold through small steel tubes.

■ It's only necessary on the rear carb because they use a progressive throttle linkage that lets the engine run most of the time on just the primary barrels of the rear carb. When the rear primary throttles are about 40 percent open the progressive linkage starts to open the front carb primaries, and all four reach full open at the same time. But note that we haven't mentioned the *secondary* barrels in either carb yet.

■ These are separately controlled by "velocity valves" that are on offset shafts and counterweighted in such a way that increasing air flow through the carbs tends to *tilt* them open by air pressure. These won't open fully until the engine speed and air flow are high enough for the engine to really

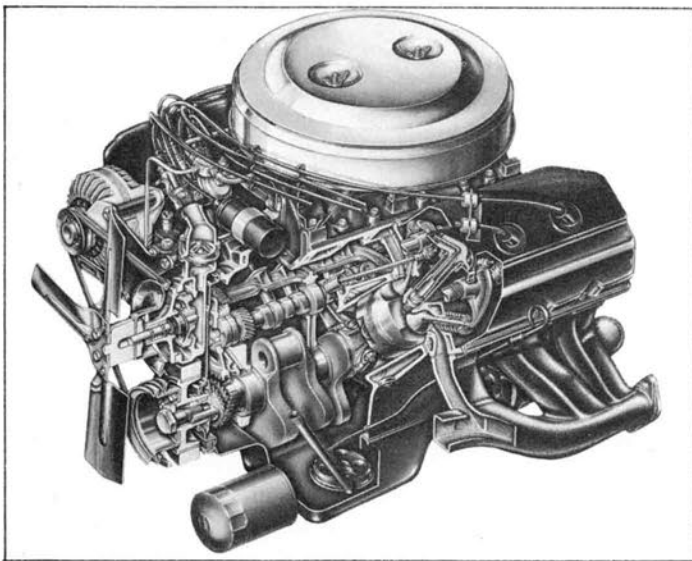
The strongest street engine in automotive history, the new MoPar street hemi rates 425 Hp @ 5,000 rpm and produces 490 lb/ft of torque @ 4,000 . . . and is really an offshoot of '65 competition mills such as that dragged to fame by Dragon-Lady Shirley Shahan and her husband and mechanic H. L. Shahan, opposite page.



idea that the engine doesn't have some important features going for it in the brute horsepower department. That's the beauty of this modification. You still have those huge 2.25-inch intake valves and 1.94-inch exhausts with huge ports to match. Valves and ports are just like those of the racing engine. And there's the basic hemispherical combustion chamber that gives the quick combustion and lack of shrouding around the valve edges that mean optimum breathing. You have all the breathing efficiency of the racing engines here.

■ And you get a specially reinforced cylinder block casting with cross-bolted main bearing caps, forged

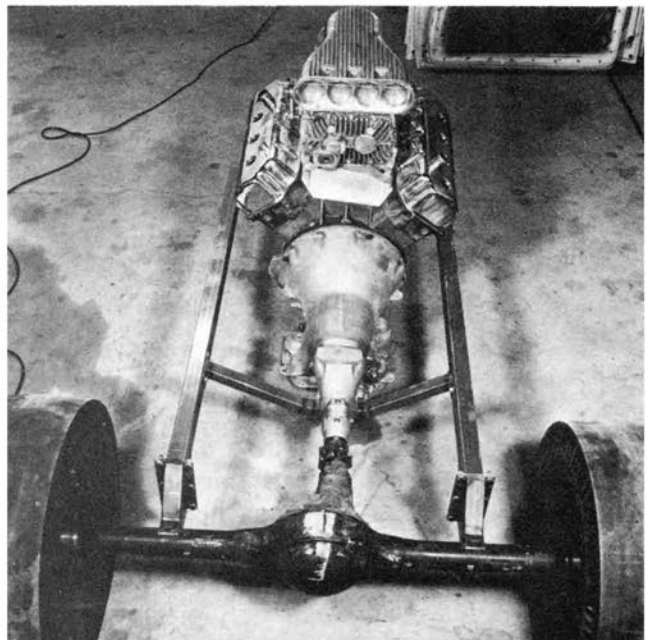
Below is the new mill's potent parent as it looks on the sub chassis of Dodge's Dart "Charger". An A-100 Dodge truck Torqueflite tail and output shaft replace street items. A single U-joint connects the trans directly to the rear axle, eliminating a driveshaft.

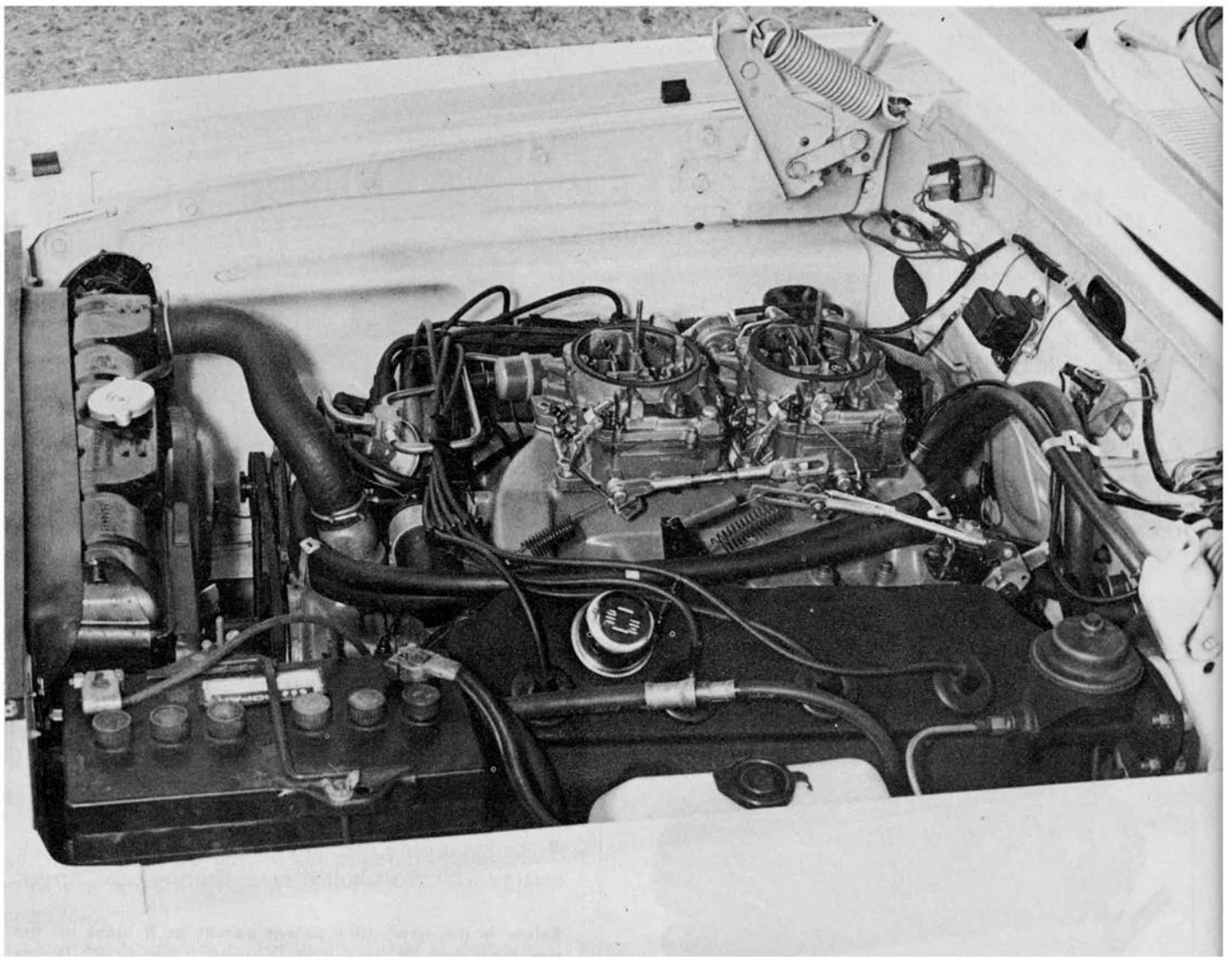


use the extra carburetion. I understand this is up over 3,000 rpm. This prevents the engine from stumbling and missing when the throttles are suddenly opened wide at low speeds.

■ This is an extremely clever carburetion system that really tames down this wild engine for the street, yet at no great sacrifice in breathing efficiency above 3,000 rpm. The system will haul like crazy between 4,000 and 6,000. And yet it's reasonably docile and smooth and economical on the street. Far as I'm concerned this carburetion system and the 276-degree cam are the secrets of this street hemi.

■ Up to now we've been dwelling on how the 426 hemi was de-tuned for the street. But don't get the





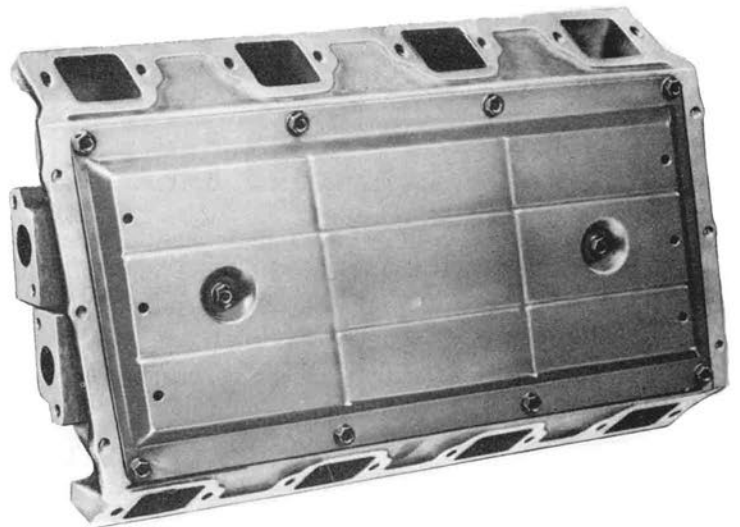
THE STREET HEMI

and shot-peened crankshaft, forged steel rods with oversize cap bolts and copper-lead bearings that are grooved on their lower halves for oil flow. Exhaust valves are chrome-manganese alloy with Stellite face for long life, and the cam is driven by a roller chain instead of the usual silent toothed chain — for added strength and resistance to stretching.

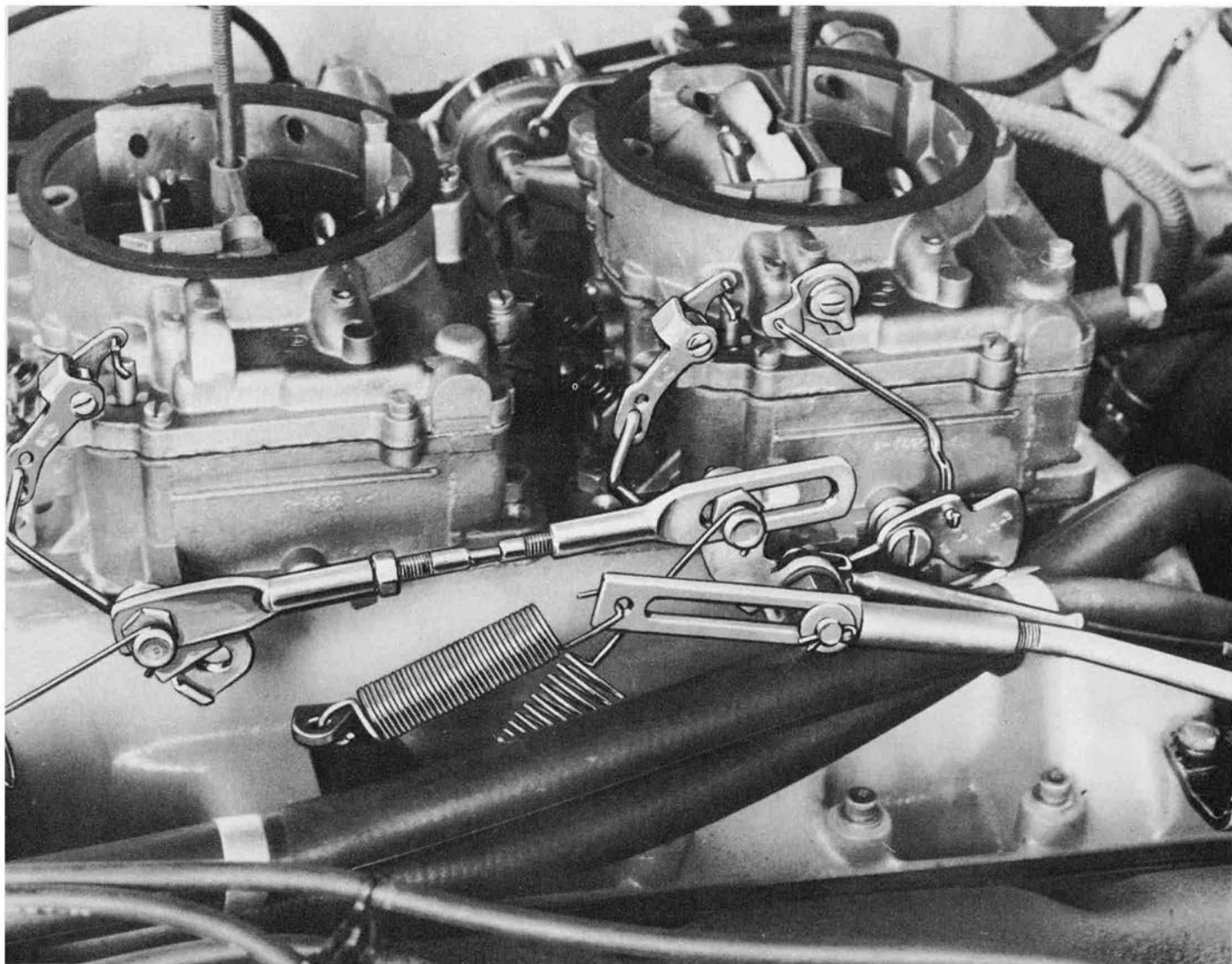
In other words you've got beef and strength here to match the wild performance potential.

■ Now let's talk about the soup up potential just a little. First you have to remember that this has been essentially a *competition* engine ever since it was introduced in 1964, up until the new street version was brought out just a few months ago. This fact has actually served to *reduce* the choice of special "California" soup up equipment available for the engine. For one thing there weren't enough 426 hemis out in the field for it to pay the hot rod

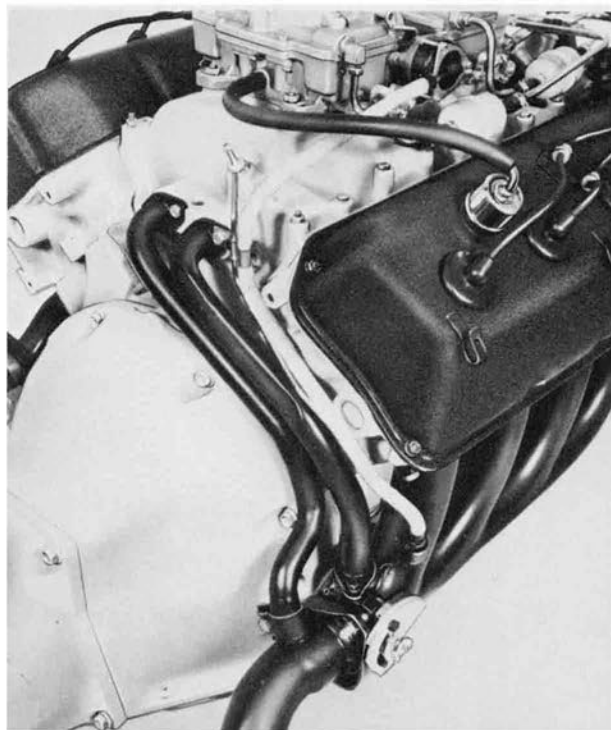
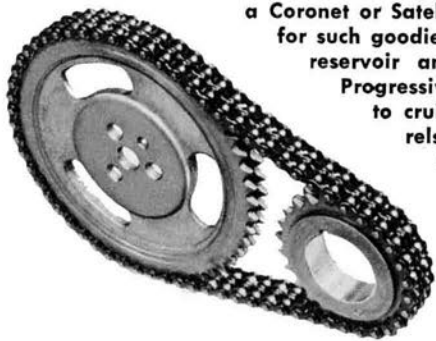
(continued on page 67)



The hemi 426 uses a duplex roller timing chain rather than the usual toothed, silent chain. The roller unit is stronger and won't stretch as easily. A heat shield on the bottom, inside the cam chamber, prevents hot oil from heating the manifold passages and reducing breathing efficiency. These streamlined cast iron exhaust manifolds are cheaper to make than tube headers and give quite low restriction. But they're heavy!



The new mill snuggles under the hood of a Coronet or Satellite with room to spare for such goodies as windshield washer reservoir and power assist items. Progressive linkage permits you to cruise on the rear carb. Exhaust heat for the rear carb comes from the right exhaust manifold heat valve.



TIMER'S TOWER

Comet FXer) and Phil Bonner (Ford Mustang FXer).

To illustrate the nature of their "go-go-go" racing pace, between them Sox-Martin, Landy, Nicholson and Bonner traveled nearly 400,000 miles on tour last year!

Word has it that Ford will build several other Mustang team cars like Bill Lawton's (Providence, Rhode Island) and Dick Brannan's (Detroit, Mich.) "funny" Mustangs and may even try the extra-light Falcon again.

The FoMoCo's will feature an improved OHC hemi engine (including new aluminum heads), injectors, fuel, and possibly super light tube chassis and fiberglass bodies! The MoPars will be similar, although modified standard chassis instead of tube chassis may be used.

Rumors have it that Ford and Chrysler may even condone use of giant cubic inch engines to combat

those way out independent GM cars!

Supercharged factory cars aren't expected, nor encouraged, although Comet veteran Jack Chrisman from Long Beach, Calif., will get another blown exhibition model. Chrysler reportedly is building 50 Plymouth and 50 Dodge all-steel super/stocks again for dealer sale in addition to the new '66 street hemi package.

And Ford once again has not indicated intention to build super/stocks (other than the A/S 427 wedge Fairlane and Comet GT models).

The "association legal" FX picture is not set for MoPar, but informed sources report that Ford will build two legal A/FX Mustangs for the NHRA World Points competition.

These factory match race FXers are expected to weigh "under 2,500 pounds" and some sources tell us that the real figure may be closer to 2,200 pounds!

Just how fast will these latest "unlimited factory super/stockers" (or factory gassers) be? We'll probably get a good indication at the upcoming AHRA, NHRA and NASCAR winter meets if the factory pros decide to exhibit their "illegal" FXers at these traditional events.

But as one factory drag racing official put it: "If my boys can't make these cars run under nine seconds flat I'll be disappointed!" How does that sound, S/S fans?

HEMI SOUPUP

suppliers to tool up for special parts. There wasn't a big enough market.

■ Also, of course, the factory was doing a pretty good job of designing and building its own speed equipment. The dual quad, ram-type drag racing manifold and the single four-barrel NASCAR designs were pretty hard to improve upon. So were the factory cam-

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shafts. The hot rod suppliers were hard put to find anything to hop!

■ So for these reasons you will find a rather weird situation on special speed equipment for the 426 hemi. For example there are not yet any special intake manifolds available. Just the factory stuff (which would include dual and single four-barrel racing types plus the new dual-quad street manifold). I know of no special manifolds to mount Weber racing carburetors.

■ Stuart Hilborn of Fuel Injection Eng. has recently developed a fuel injection system for the 426 hemi, and this is now available to the public. Of course this is strictly for all-out racing. Some of the Dodge-Plymouth "funny" match race cars used this new Hilborn injection system last summer with rather indifferent results on gasoline. But it has been a *terror* on fuel. So right now this Hilborn injection seems to be the most promising unblown fuel system (and of course it's a must if you want to run fuel unblown, as you can't flow sufficient alcohol and nitro through carburetors).

■ The factory lightweight racing manifolds (single and dual four-barrel) would rank next. And the new inline dual quad would be the *only* thing available that's suitable for street driving.

■ The situation is a little better in camshafts. Some of the big cam grinders have special cams and valve gear kits (pushrods, lifters, springs, etc.) available for the hemi. But these are all strictly competition cams. However now, with the street hemi out, I'm sure they'll have street grinds available within weeks.

■ The all-out racers, of course, want to use supercharging. Supercharging equipment was a long time coming for the 426 hemi because of the limited market. But it's here now. There's quite a choice of equipment for using the basic GMC 6-71 blower. Weiland and Cragar make special manifolds

to mount the 6-71 and several companies now offer complete conversion kits for three-inch cog drive belts based on these manifolds. This engine responds mightily to 20 pounds boost pressure or so, and 75 percent or more nitro fuel.

■ We have a big choice of equipment for the lower end because these parts are often made up from billets and blanks and readily can be adapted to a wide variety of engines. We have cast and forged pistons for any bore and stroke and any compression ratio, special steel and aluminum high strength rods and stroker crankshafts with up to 5/8-inch over stock stroke (4 3/8) to give up to 500 cubic inches! Most of this equipment was adapted from 426 wedge engine stuff. However keep in mind that the 426 hemi has longer connecting rods than the 426 wedge (6.86 inches vs 6.77 inches center-to-center), so they generally use the shorter 6.77-inch length rod when using a long stroker crank in either block.

■ There may be meat in the valve gear, even for the street. The factory 312-degree competition cam would be a possibility. Or you can go even more wild with one of the California racing grinds for flat lifters. Or one of the new roller kits. But here's a word of caution: *Don't* get too frisky with valve spring pressures with these flat lifter kits when using them on the street.

■ For instance the factory racing valve springs give 340 pounds of spring pressure with the valve open (at .520 lift). This is too much for long cam-lifter life. Better stick with the stock street springs and 275 pounds pressure. You'll live longer. These should give 6,500 rpm even with the relatively heavy valve gear on this hemi engine. You won't be able to get the 7,500 rpm they get with the competition springs; but you also shouldn't have to replace the cam or lifters every 2,000 miles.

■ Also remember that these hot-

ter, longer duration cams will hurt the idle and low end torque. You won't get the benefit of them until you're over 4,000 rpm, maybe more. So think seriously before you stick one in a basically street machine. In my opinion the factory has a terrific compromise in their 276-degree cam with .460 lift for the stock street hemi. It gives a decent idle at 800 to 1,000 rpm, nearly 500 lbs./ft. of torque at around 4,000 rpm and keeps right on hauling up to 6,000 revs in the gears. Try it before you jump for something more wild.

■ If you're going racing with the 426 hemi you have other problems. I should mention first that it's still a pretty heavy engine, with these complex head castings. The cast iron street version weighs around 780 pounds with exhaust headers (but no flywheel). I understand the light 1965 racing version, with aluminum heads, magnesium manifold, aluminum water pump and light tubing headers, was over 100 pounds lighter — around 660. (The street hemi has the aluminum water pump.)

■ I would have to suggest these lightweight parts if you're going racing with this engine. They're expensive, but cutting weight is just as good as adding horsepower in any kind of racing. Also remember the special tuned exhaust headers, not only to add power but to save weight.

TRI-POWER ROCKET

occur earlier. However those wily Olds engineers figured that when the pickup occurs too early you get into a hard spot in a frequently used throttle position. And that could be inconvenient when you are trying to feather the throttle during a turn. The 4-4-2 completely avoids this pitfall and allows you to trim power to perfection when trying to hang out the rear.

All of the 2 GC's in the Tri-carb setup have 1 11/16-inch throttle bores. The end carburetors are fitted with main jets only.