

**426 PLYMOUTH STREET HEMI TESTS! 421 PONTIAC 2+2 TIGER**

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**273 MoPAR**  
**427 FORD**



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in this issue

# 427 FORD WEDGE HEADS

Are they in or out?

# WRINGING OUT THE

426 PLYMOUTH STREET HEMI

# RODDING THE 421 PONTIAC

How to sharpen the Tiger's claws

# BAKERSFIELD FUEL FEST

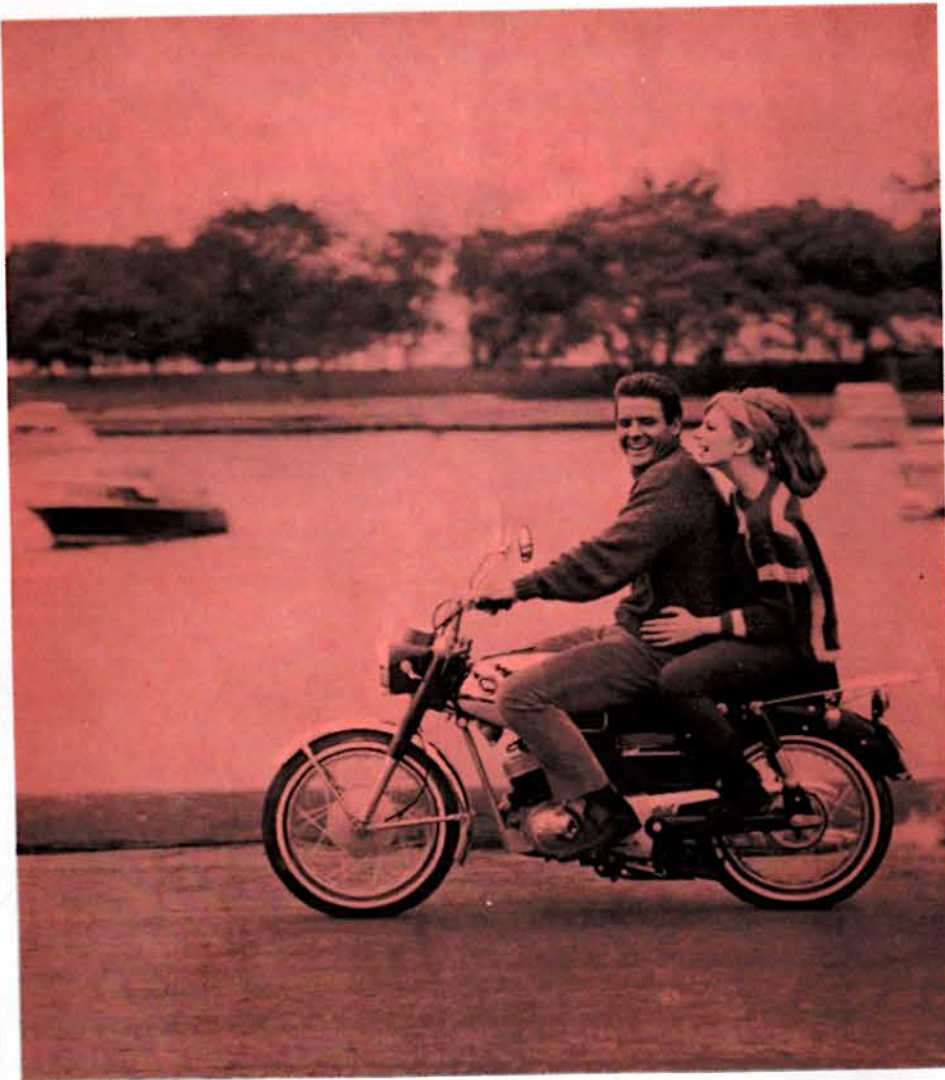
Surfers strike again!

# BLUEPRINT FOR PERFORMANCE

drag prepping the 273 MoPar

# TRACKSIDE COVERAGE

Atlanta 500 stocker blast



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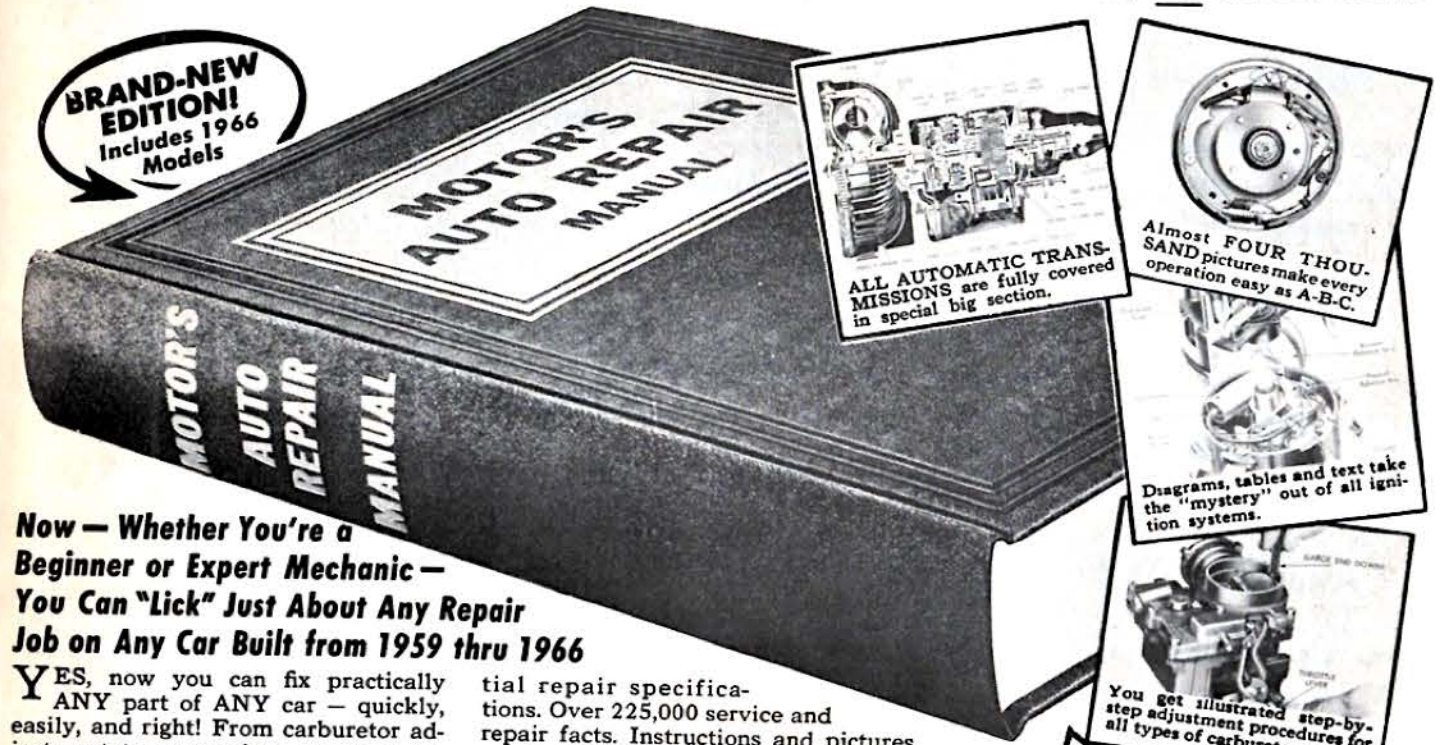
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VOLUME 15, NUMBER 1  
AUGUST, 1966

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COVER PHOTO: Frantic Four Double A Fuel Dragster powered by new 426 Chrysler hemi.

Typography by CROWN TYPOGRAPHERS, INC.

SPEED AND CUSTOM is published bi-monthly and copyright 1966 by Magnum Publications, Inc. Editorial and Executive Offices: 185 Madison Ave., New York, N. Y. 10016. Second class postage paid at New York, N. Y., and at office of additional entry. Publisher can accept no responsibility for unsolicited letters, manuscripts or artwork, although every effort will be made to return such matter when self-addressed stamped envelope is included. Single copy price, 50 cents. Subscription (12 issues) in the United States, its possessions, and Canada, \$6.00. Elsewhere, \$7.00. Printed in the United States. This is Volume 15, Number 1, Whole Number 84.

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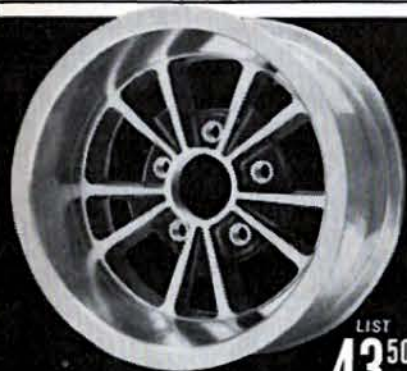
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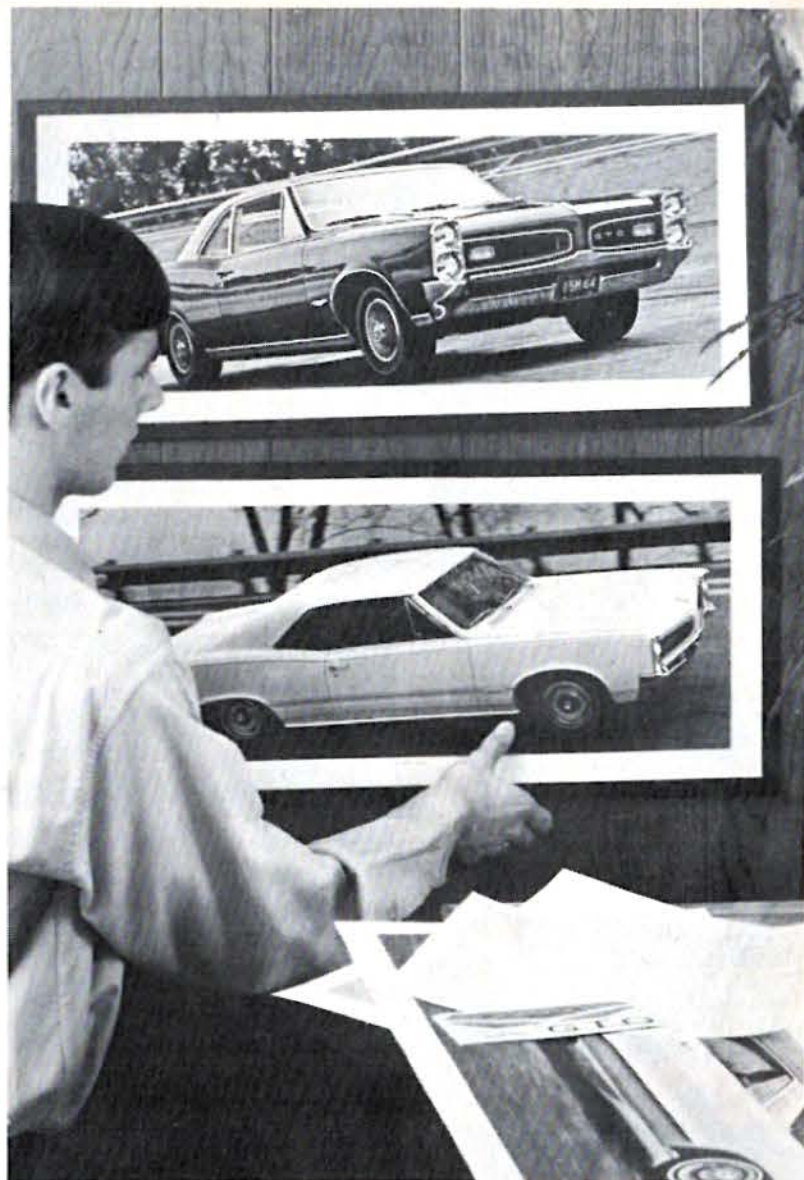
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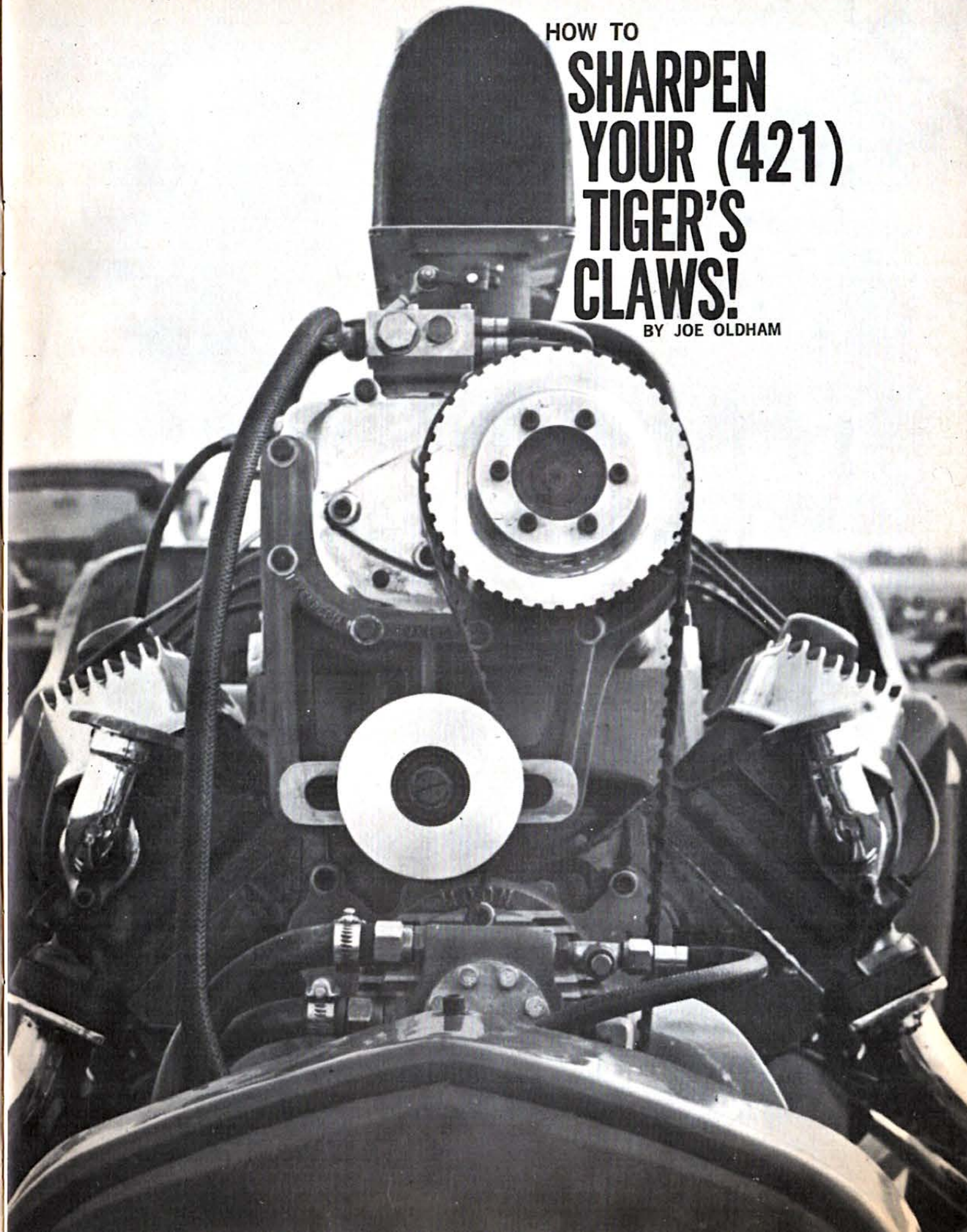
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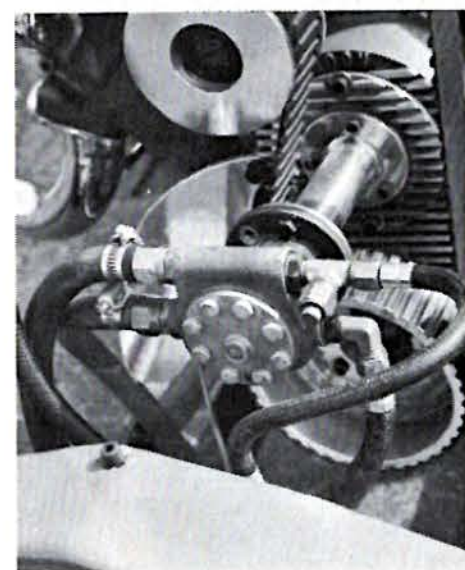
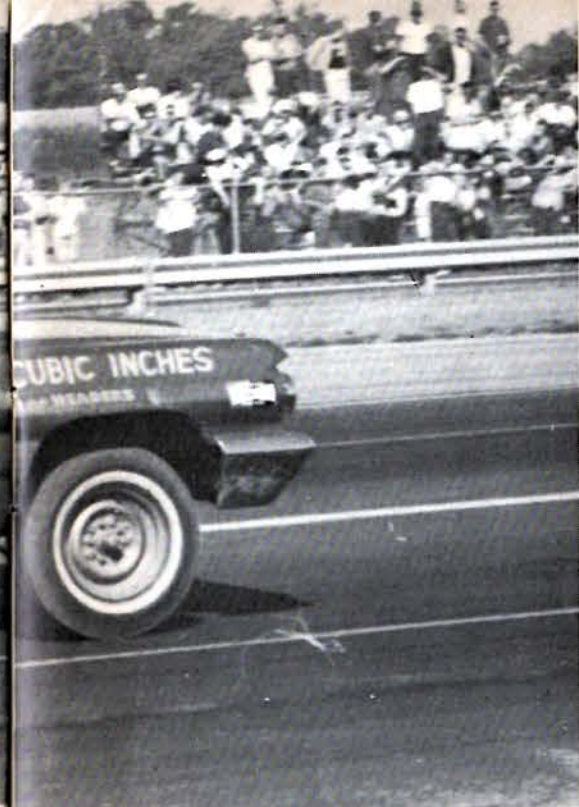
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### HOW TO SHARPEN YOUR (421) TIGER'S CLAWS!

BY JOE OLDHAM







Far left, Don Gay on his way to another A/Stock victory with his old faithful 421-inch Catalina. Left, extension nose mounts Hilborn fuel pump out of the way of the Goodyear timing belt on this blown Poncho.

### super cool tips on the "hot setup" for Ponchos

**T**HE BIG, white S/FX "stocker" sat in the staging lane, idling with that high-whining, thumpity-thumpity-thumpity sound that makes fiberglass front-end panels flap and hips you to the fact that an all-out slick-twister is presently in the vicinity.

The driver of the car peered over the injection scoop protruding through the hood. The staging official waved him forward. He blipped the throttle a few times, clearing out the engine, then nudged the shift lever into gear.

With a screeching spin of the huge, ten-inch slicks, the machine lurched up to the line. The flame-suited pilot glanced quickly at the Dodge Coronet Hemi in the other lane, then concentrated on the lights and brought the revs up.

Both drivers tensed as the lights ticked off. Yellow . . . yellow . . . yellow . . . yellow . . . GREEN! . . . Almost by reflex, two right feet mash to the floor. Billows of smoke pour out of four slicks. Superchargers screech and axles strain to their limit.

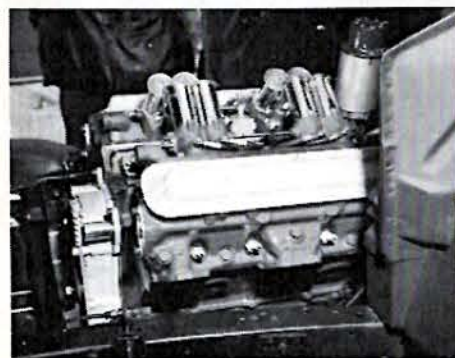
The white machine pulls slightly ahead and then opens the gap wider, as its automatic transmission shifts flawlessly. The Hemi valiantly tries to haul its opponent down, but it's no use. In an incredibly short time, the white stormer is in high gear in a tearing gallup toward the finish line. The exhaust headers and high-winding engine reach a climactic whining,

piercing shriek just as the car bursts across the light beams. Elapsed time for the run: 8.69 seconds. Speed: 160.7 mph!

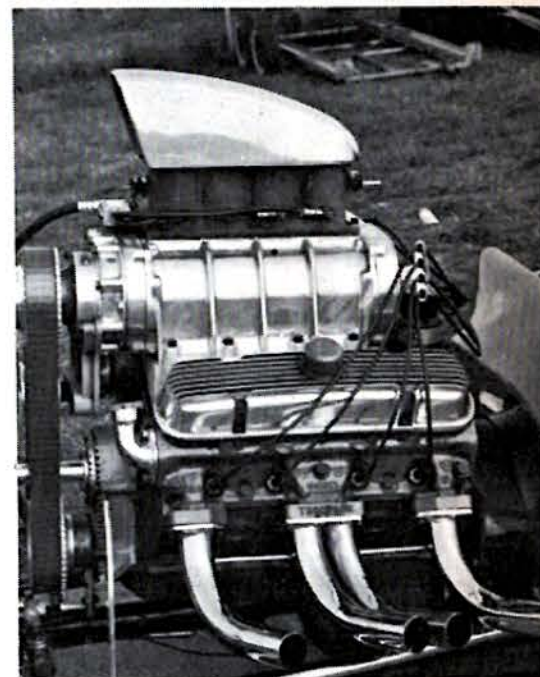
What kind of car was this white wonder-machine? Another Ram-Hemi? Guess again. It was Arnie Beswick's GTO running an "old-style" 1963 Pontiac 421. Impossible? Ask anybody who was at the 12th Annual World Series of Drag Racing in Cordova, Ill. last year. The Dodge was Gary Dyer's Grand-Spaulling Hemi from Chicago, one of the strongest runners among the "match-bashers." Don't any of you rodders count out that "old" 421 Pontiac. It's one heck of a hauling engine. Farmer Beswick has been pulling the potential power out of Ponchos for years.

At the start of the '65 drag season, Mercury gifted Arnie with a spanking new SOHC 427 Hemi fiberglass Comet. After running both the Comet and the 421 GTO for a few months, Beswick decided to concentrate on the Pontiac only. He felt it had more potential as an all-out match racer.

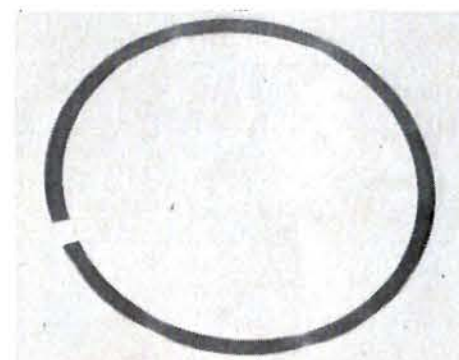
Arnie Beswick isn't the only "nut" bucking the hemi tidal wave with a 421 GTO. Don Gay successfully campaigns his altered-wheelbase, fuel-burning, blown 421 powered "Infinity" GTO. And Dick Jesse is another Indian lover. His altered-wheelbase, injected 421 GTO is called "Mr. Unswitchable" for good reason.



Hilborn direct port injection is popular setup for unblown big-inch gassers.



Above, older Pontiac engine is stroked 1/2-inch, bored .060 over for a total of 436 cubs. Left, Don Gay's hottest drag car is this blown injected GTO.



Left, Mickey Thompson goodies for Ponchos. Scott super-slot injection is for use on 6-71 blowers. Dykes-type rings are the ultimate for high rpm dragging.



## many a hemi has felt the sting of Beswick's 421 Tempest fuel "exhibitionist."

The success of these machines should clue you rodders that the 421 Pontiac has certainly not gasped its last breath. Anyone looking for an engine to build up for an all-out match race or exhibition dragging machine shouldn't short-change the big Poncho. One of the high points of this mill is that you don't have to go really hog-wild with modifications to make it turn on. Even in stock form, it hauls tail.

When the 421 first appeared in 1962, one road-tester calculated, from accelerometer readings in the car, that the stock-from-the-factory engine was putting out an actual 465 horsepower *at the clutch*, with an incredible 510 foot pounds of torque! And this was with old small-valve 389 heads on the engine. The factory didn't have any new Super Duty 421 heads available at the time of the test. What we want to know now, then, is how Beswick, Gay and Jesse boost that stock 465 horsepower up

to around 800 or 900 horsepower.

If you plan to run an all-out job, try to base your engine on a '62-'63 Super Duty 421 block. You *can* use any later 421 block since they all sport four bolt main caps. But only the earlier Super Duty blocks have steel main caps in addition to the four bolts holding them together. These blocks also have a machined relief in the top of each bore adjacent to the intake valve for unrestricted breathing.

For gas class, unblown engines, the stock 421 crankshaft is adequate. It's a forged steel unit with full 3/4 inch main bearing journals. For a fire-breathing fuel burner and/or supercharged engine, Crankshaft Company can supply a forged steel crank with cross-drilled main bearings and ultra-duty radii in the fillets to increase the fatigue life of the crank. To make sure theirs is the swingiest crank on the market, the people at Crankshaft also counterbalance, shot-peen

and hard-chrome the thing before they mail it to you with one of their decals.

Beswick, Gay and Jesse all run stock strokes in their twisters. If you want to be different, Crankshaft can set you up with stroker kits up to and including a gigantic 482 incher.

Stock Super Duty connecting rods are plenty strong for any application. If you want to replace them anyway, Mickey Thompson makes forged rods of steel or aluminum for this engine. Mickey's "super" forged aluminum rods have 7/16 inch heat-treated Allen head cap screws, and the mating faces of the rod cap and rod are heavily serrated to keep the shear forces off the bolts and insure absolute bearing alignment. Great for an all-out blown engine.

Crankshaft Co. makes modified rods featuring steel-ribbing for extreme duty and Howard's forged aluminum rods are also available. Any of these connecting rods should be used with full floating pins. Beswick uses wire pin locks to hold the pin in the piston under high rev conditions.

Almost everyone and his granny makes pistons for Ponchos. You can take your choice of M/T, Jahns, Forgedtrue, Thompson Products, Ansen, etc. For the record, Beswick uses reverse deflector Forgedtrues with 8.5 to 1 compression ratio. Jesse prefers Mickey Thompson buckets while Gay also digs Forgedtrues.

Super Duty 421 cylinder heads came from the factory featuring fully-machined combustion chambers and ports and swirl-polished valves. Valve sizes were 2.02 inches for intakes and 1.76 inches for exhausts. There was no provision for heat cross-over passages so that dense fuel charges were assured. Rocker arm ratio with these heads is a nice 1.65 to 1 compared with the 389's 1.50 to 1 ratio.

Beswick runs his heads completely stock except for O-ringing (more on this later). Gay and Jesse take no chances so they run super setups by Joe Mondello.

Above, left, M/T aluminum valve covers add class, lower valve train noise. Left, scattershield is a must with high revving Pontiac. Note mag FI drive.

You can't go any bigger in valve sizes on Pontiac 421 heads because the center-to-center distance of the valve guides and valves themselves is so close together. To dampen the spirits a little more, the valves are pocketed by the combustion chamber walls. It's a fact that you can install larger valves in 283-327 Chevy heads than in 421 Pontiac heads.

What the Mondello touch does is improve the finish of the ports and combustion chambers and improve the air-fuel mixture flow around the valves. Joe opens the ports beneath each valve and hogs and polishes the already (Continued on page 58)



Right, advance curve being built into a Pontiac sparker by Pacers Auto ignition specialist. Below, fuel-burning mill in Gay Pontiac "funny car" sports Crane heads, Hilborn bug catcher.

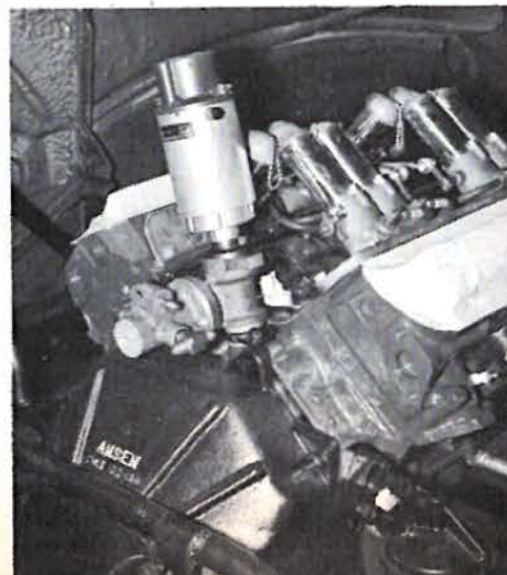
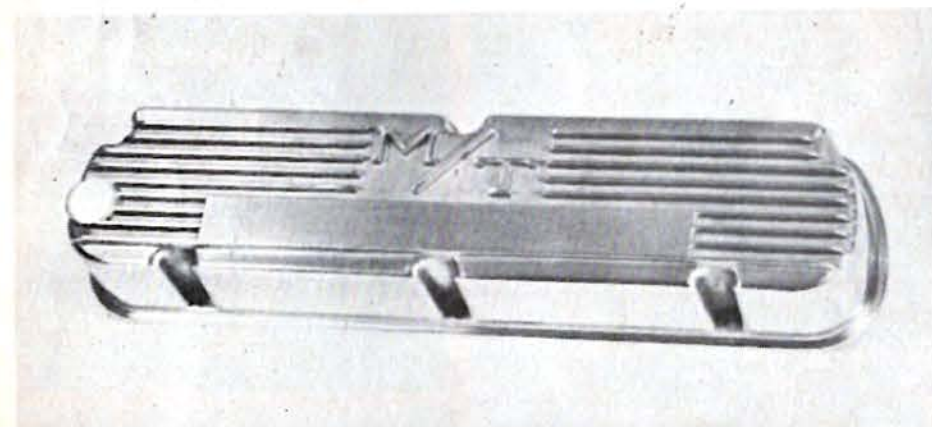
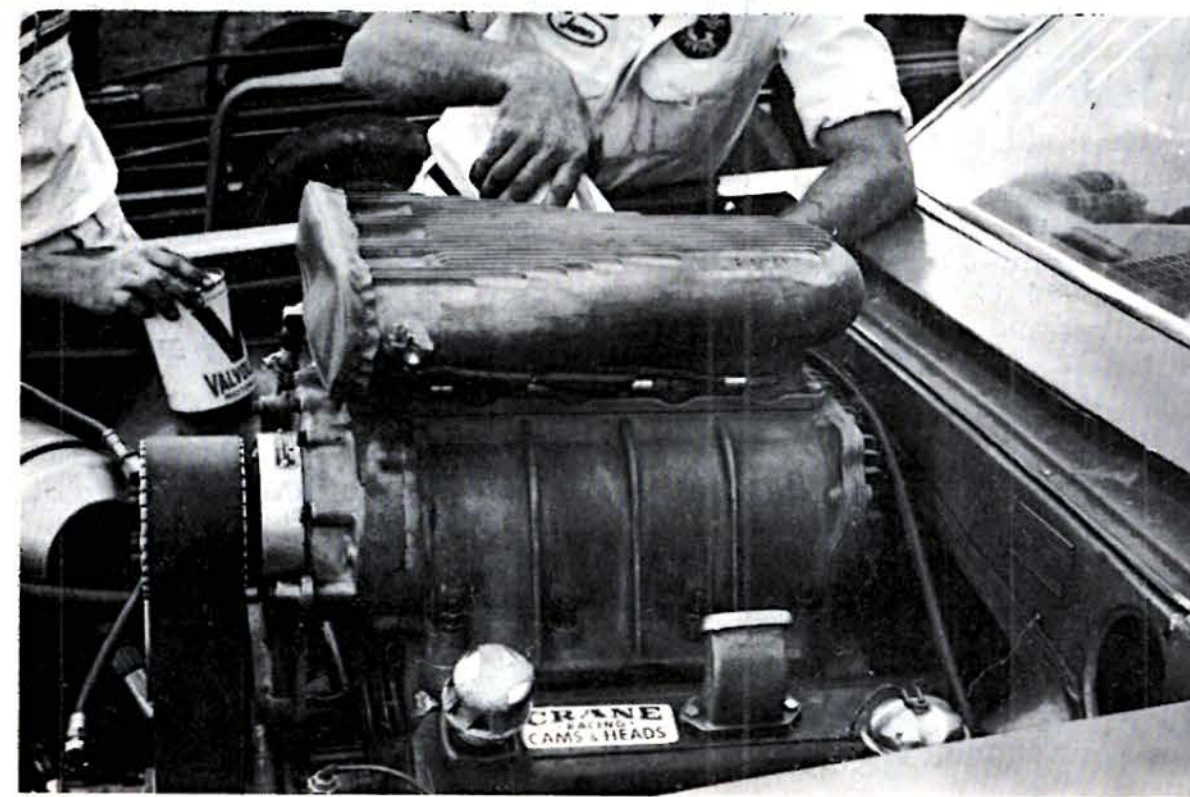






PHOTO HOW-TO

## WHERE THERE'S A WEDGE

*Overhead cams and hemi heads may be "in", but there's power aplenty packed in the old wedge. FX champ Les Ritchey shows how to make Ford's venerable veteran breathe like a champ.*

Top, '64 FX Fairlane Thunderbolt now being campaigned as a lower class machine. High riser, high rpm wedge is capable of putting out gobs and gobs of go-power. Right, improved heads also make quite a difference on a street machine. Medium riser 427 Galaxie really honks for a heavyweight.



## THERE'S A WAY! BY RALPH HANSON

**E**VEN THOUGH Ford Motor Company is banking on its overhead cam, hemi-chambered engine to bring home the bacon in open competition, they have not really dropped all interest in the 427 wedge. The wedge was in charge of carrying the load in 1963, 1964, 1965 and is still doing so as of this writing in many 1966 NASCAR-USAC stock cars and GT series sports cars. Early listings for 1966 FoMoCo machines indicated that the 427 wedge would be available in a limited number of Galaxies, Cobras and Fairlane-Comet middleweights. However, the street version of the OHC hemi alters this situation a bit.

Because of Ford Motor Company's success in all forms of competition, including drag and ski boating, the

wedge engine has earned a tremendous amount of respect from the hot rodder. The wedge has found a place for itself in Modified and Sportsman stock cars, drag and ski boats, gas-burning rods, street machines and sports cars. Ford specialists such as Les Ritchey at Performance Associates in Covina, California and Holman and Moody in Charlotte, North Carolina, have been burning the midnight oil supplying complete engines and reworked components for the "never say die" wedge wailers. Modified cylinder heads for this engine are probably the most popular component parts supplied by the exclusive Ford racing part vendors.

When the 427 drag engine was introduced in late '63 it was made available first in the fiberglass "Total

Performance" fastback Galaxies.

The latest 427 wedge is a far cry from the original '63, even though its design and block construction is exactly the same. As Ford got more and more into racing, they improved the components which control the actual power output of an engine. These components are cams, valve train, intake and exhaust systems, cranks, rods and, last but not least, cylinder heads. Before anyone attempts to work over a 427, which by the way can be built up to 504 cubic inches by adding .030-inch over pistons and a 1/8-inch stroker shaft, he should be familiar with the various types of heads used on 427 engines. The ultimate heads for this engine were never officially released by Ford, but a few sets found their way to





All out dual quad high riser makes use of fresh air "zip tubes" for max breathing.



Right: Above, PA head specialist Wally Cartwright runs a set of Ford racing valves through his grinding rig. Below, hot head collection includes many lightweight alloy racing prototypes allotted for special projects.



improve breathing and pick up 25 stompin' stallions

Ford-sponsored racers. Just for the record they were of aluminum alloy construction. Besides having big ports and clean chambers, they were far lighter than the lightest cast heads offered over the counter.

The first 427 engines, vintage '63 are most commonly called low riser or low boy engines and feature the least desirable heads. Valve size was 1.660 inches on the exhausts and 2.097 inches on the intakes. The chambers had rough burrs due to production casting and the shape of the chambers was not conducive to maximum combustion efficiency. Those heads worked quite well with the original low riser dual Holley 600 cfm aluminum manifolds, but were phased out in 1964 when Ford went the Fairlane Thunderbolt high riser drag car route.

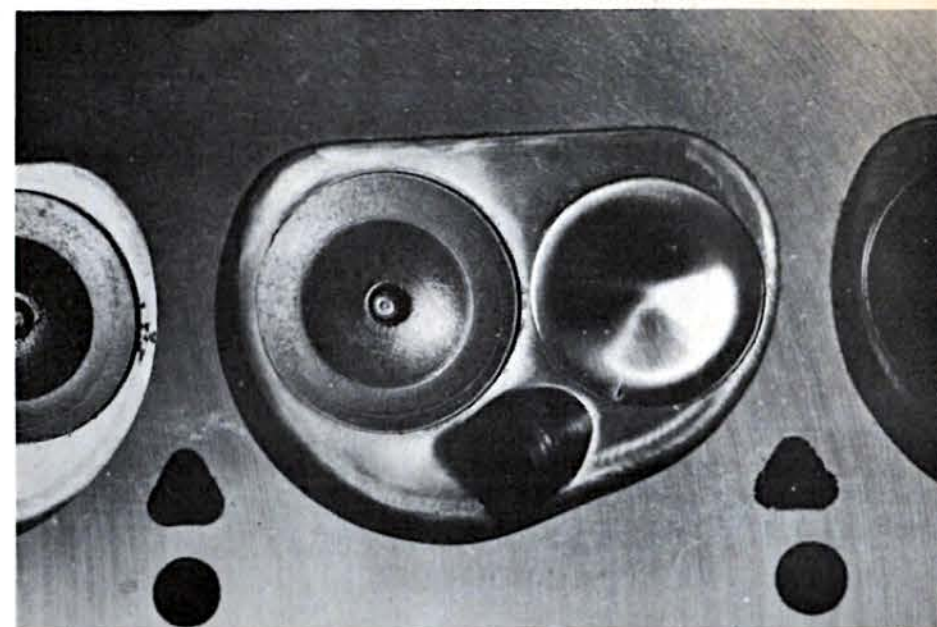
The '64 high riser engine is one of the more desirable engines if maximum modifications are planned. Besides the switch to a highboy type intake manifold with bigger quads, Ford Engineering reworked the heads and installed larger valves. They added a steel crank in place of the original nodular iron one. The '64 heads are desirable for reworked wedges as the stock valves are quite a bit larger, 2.197 inches for the intakes and 1.772 inches for the exhausts. The combustion chambers in these heads are better shaped to allow the larger valves to do a good job. The chambers were enlarged around the valves and the actual open area is almost identical in shape to the shape of the cylinder barrels. There is almost no quench area in these heads, which means that the cylinder head surface does not overlap the cylinder itself. The intake and exhaust ports were enlarged in direct proportion to the increase in valve size, and the heads are actually a little taller than the '63 models. There is no way of using the low manifold with these heads, so don't try it. The high riser engine was first brought out for NASCAR-USAC racing and was then dropped into the legal Fairlane drag cars at the 1964 NHRA Nationals.

Just about the time when Ford was really running away and hiding from the competition with high riser 427's, Chrysler Corporation brought its hemi engine back from its grave in 426 cube trim and sent the Ford engineers back to their drawing boards. Ford's answer to the hemi

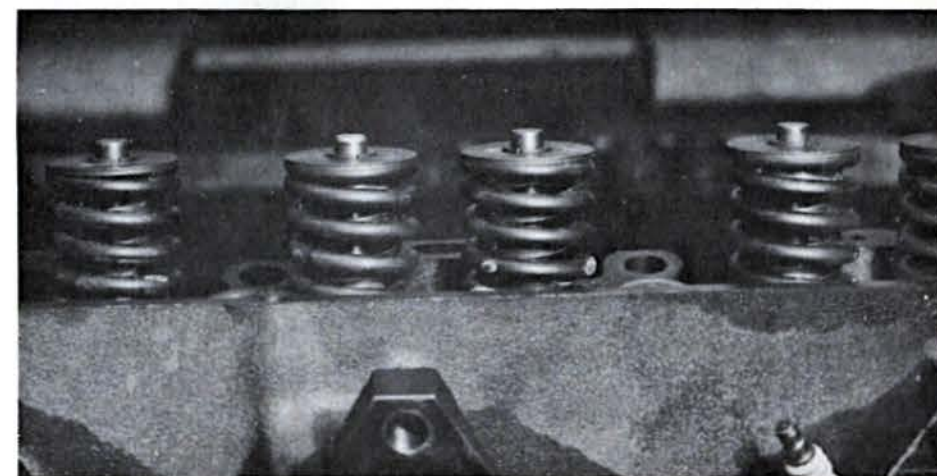
came in the form of a high riser, high rev 7000 rpm package built around the basic 427 cross-bolted main block. This engine was introduced to the racing world at the Atlanta 500 NASCAR race, where Ford-sponsored cars swept the field.

The high riser high rpm heads are currently being used by most of the big engine builders and are stock in the Galaxie Cobra 427 and Shelby 427 Cobra packages. Medium riser manifolds with tall ports and dual Holleys come as standard with these packages.

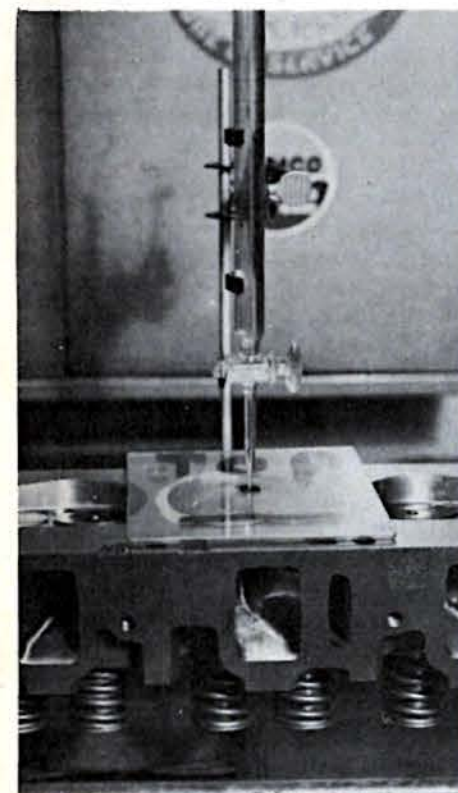
The 7000 high rpm high riser heads are extremely desirable as they come with beautifully machined combustion chambers (just like the hemi heads) special valves (same size as the standard high riser) of three piece construction, lightweight push-rods, lightweight valve spring washers. All this means is that the engine can breathe freely at 7400 rpm, whereas a stocker just can't get the job done much above 6200 rpm. Valve construction is most interesting as there are three distinct parts to each valve—the head, hollow stem and a hardened tip. The stems are filled with sodium to allow the heads



Swirl-polished valves and polished and machined chambers are Wally's specialties.



Above, all valve springs are matched for maximum efficiency at 7000-plus rpm. Left, Wally checks every spring for tension at specific seating and opening heights. HP Ford springs are used.



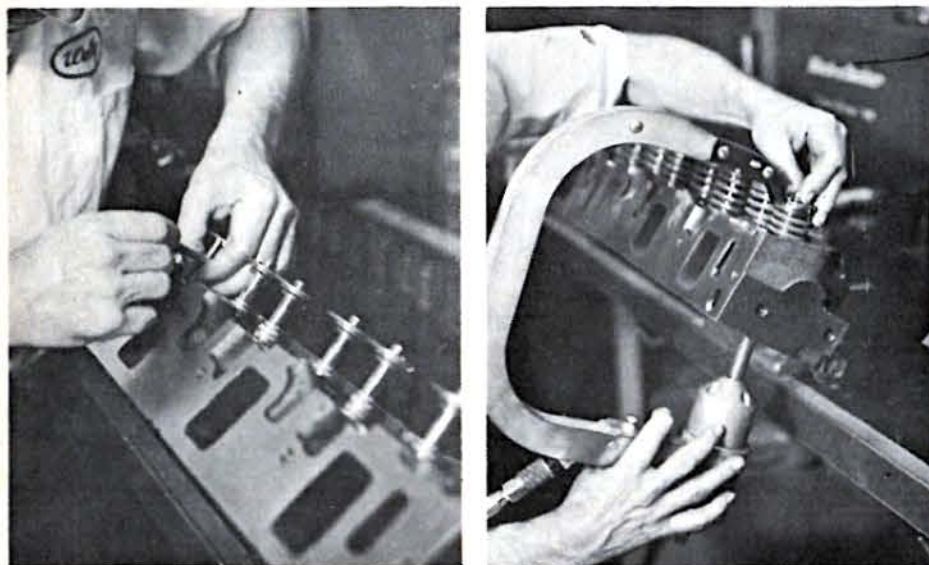
Burette and plexi plate are used to check combustion chamber volume.



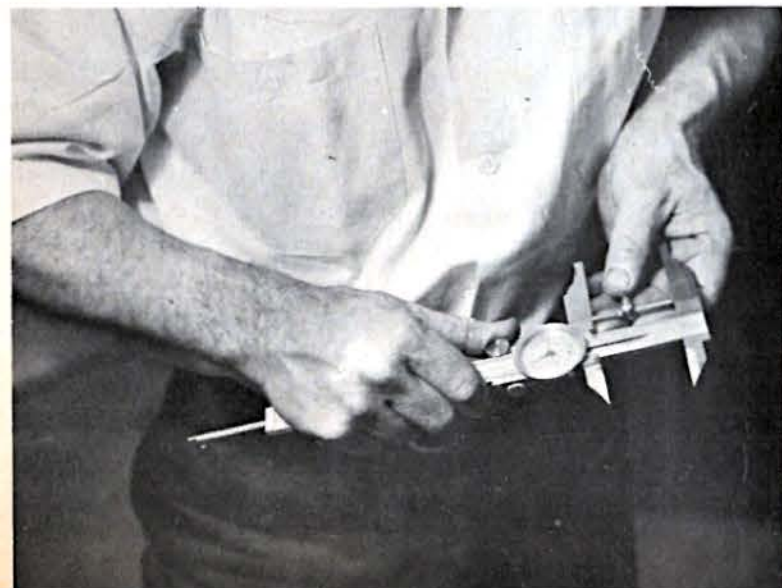




Valves are hand fitted, lapped in for a perfect seat. Nothing is left to chance.



Above: Left, retainers are set in place and spring height requirements are checked with a micrometer. Right, air-powered tool facilitates spring installation.

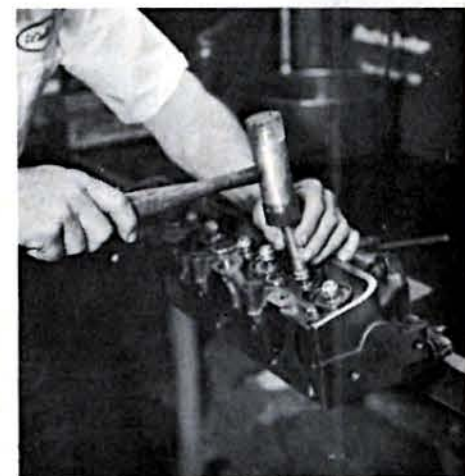


## wedge heads aren't dead yet!

to run at cooler temperatures. The sodium transmits heat from the head to the stem. The heat then travels from the stem to the guide and then to the water which circulates through the head passages.

Ford offered a variety of heads for this engine and their choice depends upon the type of racing that the engine will be subjected to. Combustion chamber capacities were varied to pin point compression ratio anywhere from 11.9-to-1 to 14.0-to-1. Special 15-to-1 heads were released for cars that participated in the high altitude Pike's Peak climb to the sky. The lowest compression heads can of course be reworked to produce a higher more desirable ratio by chamber filling or the use of special pistons.

There are two different approaches to reworking Ford 427 or for that matter any cylinder heads. If the engine is a fairly mild blueprinted one and is slated for use on gas your best bet is to clean up the chambers, open up the ports slightly to match them with the gaskets, lap the valves in, check tension on the springs, seat the valves properly and install teflon seals. The heads should be cc'd using a burette to make sure that the compression ratio is on the button and that all cylinders have the same combustion chamber volume. On the 427 heads combustion chamber capacity can run between a minimum of 66 cc's and a maximum of 74 cc's. If the engine is (Continued on page 60)



Above, Wally uses a plastic-tipped hammer to gently seat the Teflon seals. Left, micrometers are used for checking spring height at specific pressures.

SPEED  
AND CUSTOM  
ROAD  
TEST

# two weeks with two hemis

What it's like to 'own' a Plymouth street hemi... what it costs... what it does... how it feels to be king

BY FRED MACKERODT







## GTO? GTA? GT? 4-4-2? SS396? No Competition

**W**E THOUGHT we knew the hemi. After all, we've been watching the race hemi roar down the strips and scream around the ovals since its introduction in January 1964. At one time we were writing so much about the successful new engine that the word "hemi" was coming out of our ears. (The nick-name, however, does beat "hemispherical-combustion-chambered internal-combustion reciprocating engine." If we had to write this a million times, we'd be on the Funny Farm by now.)

During new car introduction time last year we finally got to drive a hemi—the new street version. And, a little later, we had a very brief interlude with the Summers Brothers land-speed-record Plymouth Satellite 426 hemi which went 160 mph at Bonneville and then loafed its way across country to New York for our pleasure.

So with all of this experience behind us we thought we knew the hemi. But driving a car on a test track or buzzing around with one for a limited period of time is quite different from "owning" the car—having it all to yourself on the street.

Well we finally got the opportunity to let a hemi grow on us when a Plymouth Satellite press car arrived in New York a short time ago. It was a blood-red two-door hardtop equipped with a four-speed stick shift.

And then, wonder of wonders, when we returned the stick shift car after two very full weeks of bashing around, we were given the opportunity to "own" another hemi—this one a dark-blue Satellite hardtop with the special Torqueflite automatic. After two weeks with each car we now know what it is to live with a hemi—to "own" a street-bred racing car. It's quite an experience.

The first test car, the stick, had been driven in from Detroit and around town for a while, so by the time we put our hands on it it had 2500 miles on the odometer.

The thing we noticed immediately about the hemi when we first twisted the key was its sound. Even though the mufflers succeed in effectively stifling the roar of the engine, a deep, throaty growl comes through that lets you know you're driving something special. And it is something special—very special. The hemi engine is the most powerful powerplant ever offered in a production sedan. Let's face it, it's really a veiled attempt at manufacturing an all-out racing car for the street. But aren't all supercars attempts at putting competition cars on the highway? What counts is that Plymouth has succeeded in its attempt, which cannot be said for the rest of the so-called supercars.

We approached the test car cautiously at first, handling it with kid gloves. We treated it as we would a slightly-detuned refugee from a stock car oval. And with good reason. Rush hour traffic in New York City isn't exactly the right type of environment for wringing out a 160-mph racing car, and that's where we found ourselves.

But by the time we had spent 15 minutes with the car our anxiety was thrown to the wind. We were

amazed! The racing car behaved like a kitten! It was just as tractable as the 383-equipped Satellite we had driven just a few nights before. Sure, it idled at 1000 rpm, but after the first few minutes this became almost unnoticeable. We were already learning to live with the hemi.

Something else about the handling of the car astounded us immediately. The floor shift was much smoother and surer than the one on the 383 Satellite. We had always lamented the passing of the Hurst shifter which was standard equipment on Chrysler four-speeds up until the beginning of the 1966 season. But the home-brewed shifter on the test car was really something else—butter-smooth and sure. The throws were a little on the long side, but when you're tooling up First Avenue in bumper-to-bumper traffic you don't much care about such trivialities.

We finally cleared the city traffic knot and took a break for supper. But an itchy throttle foot wouldn't let us eat in peace. Without even looking at the dessert, we were back in the car and headed for the open road. You just can't let a hemi sit.

Driving at the legal speed of 50 mph we were barely tickling the gas pedal. The shifter was in fourth and the engine was feeding off only the two small rear primaries out of the four primaries and eight big secondaries available from the dual-four-barrel engine. We wondered at the flexibility of the hemi. Here it was loafing along at 50 mph in fourth gear with the top end up around 160 mph! The range in top gear is something like 30 to 160 mph, a tremendous spread.

But a car should have qualities other than brute power and engine flexibility. And the Satellite does. Its highway manners were just as good as its stop-and-go performance earlier in the day. There was a sense of balance—no nose-heaviness and a firm but very comfortable seat-of-the-pants ride. Here's where Chrysler shines. We always liked the heavy-duty suspension packages Chrysler puts on its car, but we did have some doubt as to whether the "extra-heavy-duty" suspension package on the hemi would be as good as the ones on the "stock" cars we had driven in the past. Doubts dispelled! The hemi package came through. And the power steering helped, albeit a bit too much at cruising speeds. (We're nit picking again.)

After tooling around for a while at Mother Fletcher speeds, we just couldn't resist the temptation of using more of the power the engine was flaunting under our itching foot. We decided to activate the primaries of the front carburetor which had up to this time been closed tight. Only the rear primaries are open under normal driving conditions. The front primaries are operated by a mechanical linkage which brings them in after the rear primaries are 40-percent open. Both pairs of secondaries are velocity controlled.

We dropped the speed back to 40 mph and then pushed the pedal a little extra-hard until the front primaries opened.

Extra-heavy-duty suspension included in hemi package gives a firm but very comfortable seat-of-the-pants ride.



Swoosh! 50, 60, 70 mph! When the needle began bouncing off 80, we dumped the pedal and let the car settle back to 50 so as not to awaken any of the local constabulary who may have been dozing in the immediate area.

After trying out all of the primaries, we just had to have a go at the four huge secondaries. So with sweat on our palms we checked the rear view mirror, dropped back to 40 mph, pushed the shifter from fourth to third and braced ourselves for action.

Punch! Screech! Zap! 60, 80, 100 mph! Quick! Off the gas! On the brakes! We forgot about the "inadequate" brakes. What with all the excitement of picking up the car, we forgot all the rumors we had heard about the binders. "They're just plain unsafe. Drums on a car like that? Never stop."

But when we unprofessionally pounced on the pedal at over 100 mph, the Satellite came down to a straight, smooth and quick stop. The special metallic-shoed drums did the job. We weren't prepared that night to see how many times we could decelerate from the century mark before the brakes began to fade, but later experience showed that the drum binders on both of our test Satellites were adequate—very adequate. Disc brakes would be better, of course, and most hemis in the future will be equipped with them. But the drum brakes on our test car were far from "just plain unsafe." This, we're sorry to say, isn't true of the brakes on most of the other so-called supercars we've driven.

After having a go at some of the hemi's power potential, we drove home, tired but exhilarated. The rest of the night was spent looking over the papers that came with the car. Since we were the proud, though temporary, "owners" of a hemi, we decided to find out exactly what we had "bought" in the optional street hemi package.

To tell the truth, when the news was first released that the street hemi package would come in at \$900.74 on the sticker, we were shocked. Almost a thousand bucks for an engine! Absurd!

But we found out during our research session that

## how it feels to be king



Styling is subjective, personal—you like it or you don't. We, personally, think Satellite looks sharp.

there's much more to the hemi option than just an engine. In addition to the dual-four-barrel 426 hemi, there are many "extras" included in the tariff. According to the bulletin, there is a 26-inch-wide radiator with a 16-psi radiator cap, special body air seals, an oil pan stone shield, high-rate engine mounts, big fuel lines, special fan and shroud, heavy-duty starter, beefed driveshaft and rear axle, beefed front suspension and big sway bar, extra-heavy-duty rear springs, heavy-duty shocks, special body reinforcements at the rear spring mounts, big drum brakes with metallic linings, 7.75X14 Goodyear Blue Streak tires, oversize dual exhausts and a 70-ampere-hour battery.

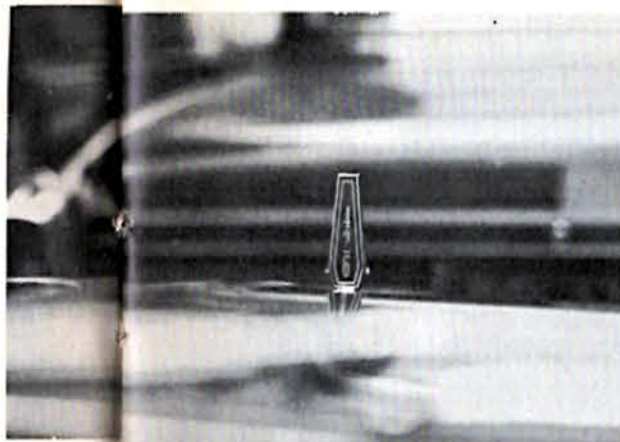
This is what you get for \$900.74. But you also get something not found on any option list—a premium-built engine. The street hemi is put together on the same assembly line as the Chrysler drag and circuit-racing engines. This line is located at Chrysler's Marine and Industrial Division plant located in Marysville, Michigan.

The bulk of the plant's production, however, is marine engines. The workers and technicians who build the big boat mills are used to working with closer tolerances and sharper quality control than their automotive brethren. They have to be. A marine engine, unlike its automotive cousin, operates under constant load and must be able to stand the strain. Some of the special operations that go into the building of the marine mills, and also the hemis, include magnafluxing of critical parts, flushing and cleaning of the block at 90 to 100 pounds pressure, and select-fit of bearings and other critical parts.

One of the most expensive and interesting of the extra operations performed on the marine and hemi engines is balancing. The boat mills have to be almost vibration free. An automobile engine dropped into a boat will turn the yacht into a floating Relax-A-Cizer since boat engines are almost rigidly mounted. Running at a constant 3000-rpm cruising speed, the marine engine has to be well balanced. The street hemi also benefits from this special operation.

To start with, the complete built-up block is suspended in mid-air from two lifting lugs. Then fuel and exhaust lines with special flexible fittings are attached. These permit the engine to move freely during balancing. Two electronic pickups are attached, one near the front vibration damper and the other near the flywheel housing, and the engine is fired up in mid-air. The pickups sense any imbalance and this is corrected by adding or removing weight from the crankshaft damper or the flywheel. (On hemis scheduled for use in cars equipped with the Torqueflite automatic, tabs are welded on the torque converter to correct any imbalance.)

These blueprinting and balancing operations cost money. The least expensive Chrysler marine engine, a six-cylinder mill, has a price tag of over \$1400, while its car-type (Continued on page 54)



## S&C TEST SPECS

### PLYMOUTH SATELLITE STREET HEMI

#### PRICE

BASE (with hemi package) .....	\$3796
AS TESTED .....	\$4147

#### ENGINE

TYPE .....	V-8
DISPLACEMENT, cu. in. ....	426
COMPRESSION RATIO .....	10.25-TO-1
BHP @ RPM .....	425 @ 5000
TORQUE @ RPM .....	490 @ 4000
CARBURETION .....	DUAL FOUR-BARREL
FUEL RECOMMENDED .....	PREMIUM

#### POWER TRAIN

TRANSMISSION .....	FOUR-SPEED MANUAL
DIFFERENTIAL TYPE .....	LIMITED-SLIP
GEAR RATIO .....	3.54-TO-1

#### PERFORMANCE

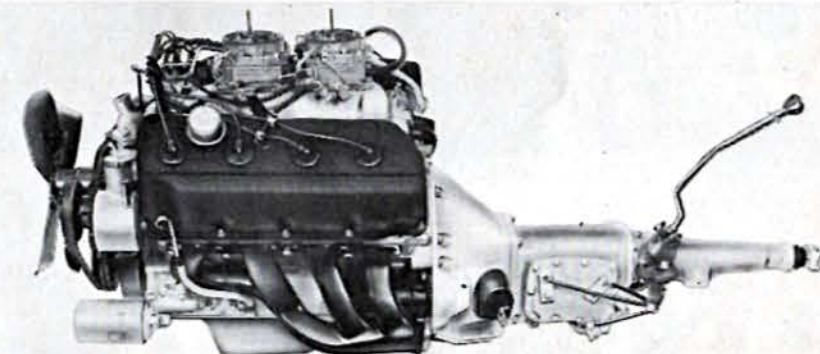
ACCELERATION, 0-60 mph, sec. ....	5.0
QUARTER-MILE, mph .....	106
ELAPSED TIME, sec. ....	13.9
TOP SPEED, mph .....	145
FUEL CONSUMPTION, mpg .....	7/10

#### SPECIFICATIONS

TEST WEIGHT, lb. ....	3954
WHEELBASE, in. ....	116
OVERALL LENGTH, in. ....	200.5
FUEL TANK CAPACITY, gal. ....	19

#### CHASSIS

FRAME .....	UNITIZED
BRAKES .....	11 INCH DRUM, POWER
SWEPT AREA, sq. in. ....	380.1
TIRES .....	7.75-14

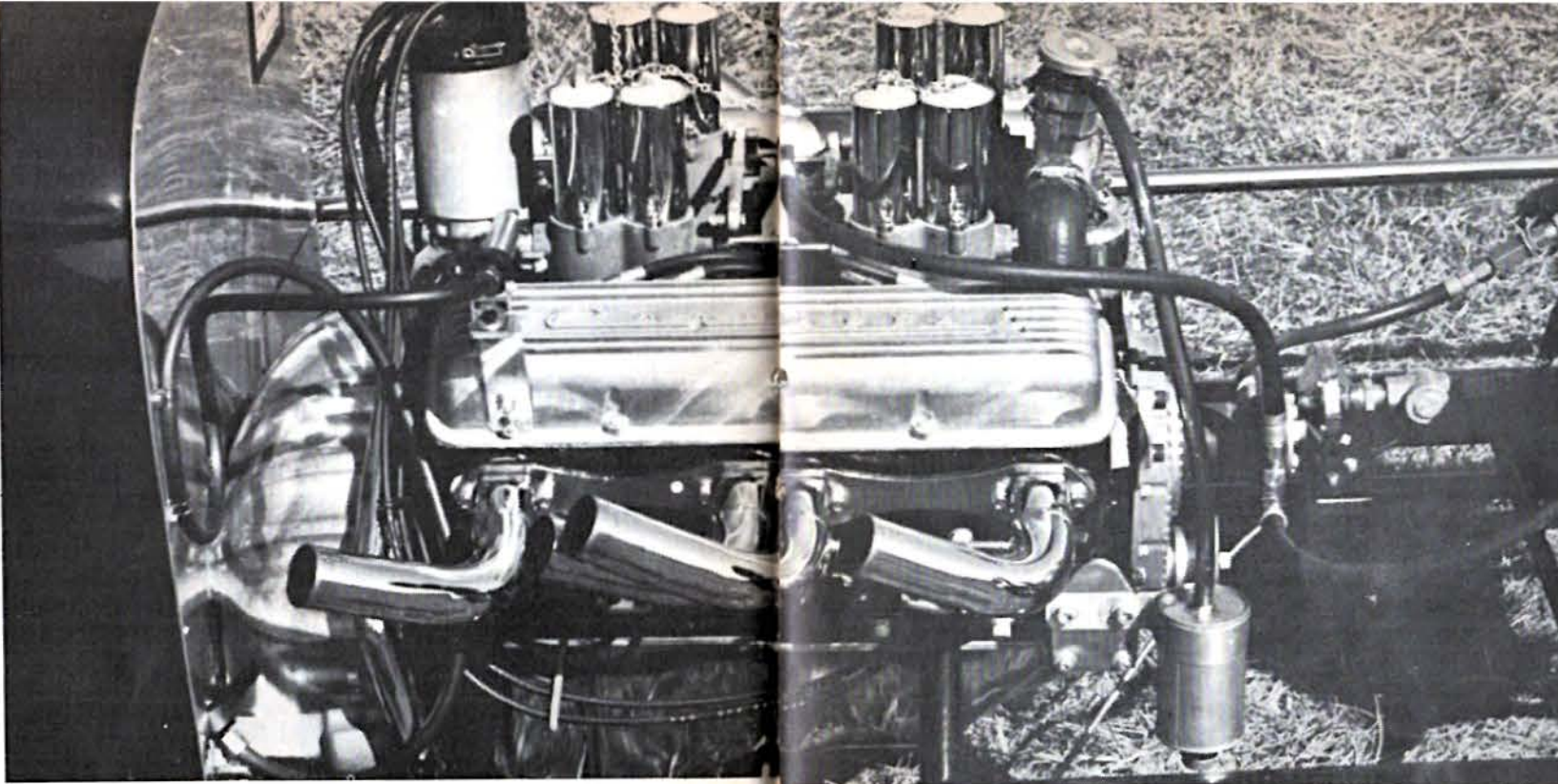




Phil Schondelmyer's 305-cube  
Chevy-fired B/Comp roadster is

# SHORT ON CUBES, LONG ON POWER

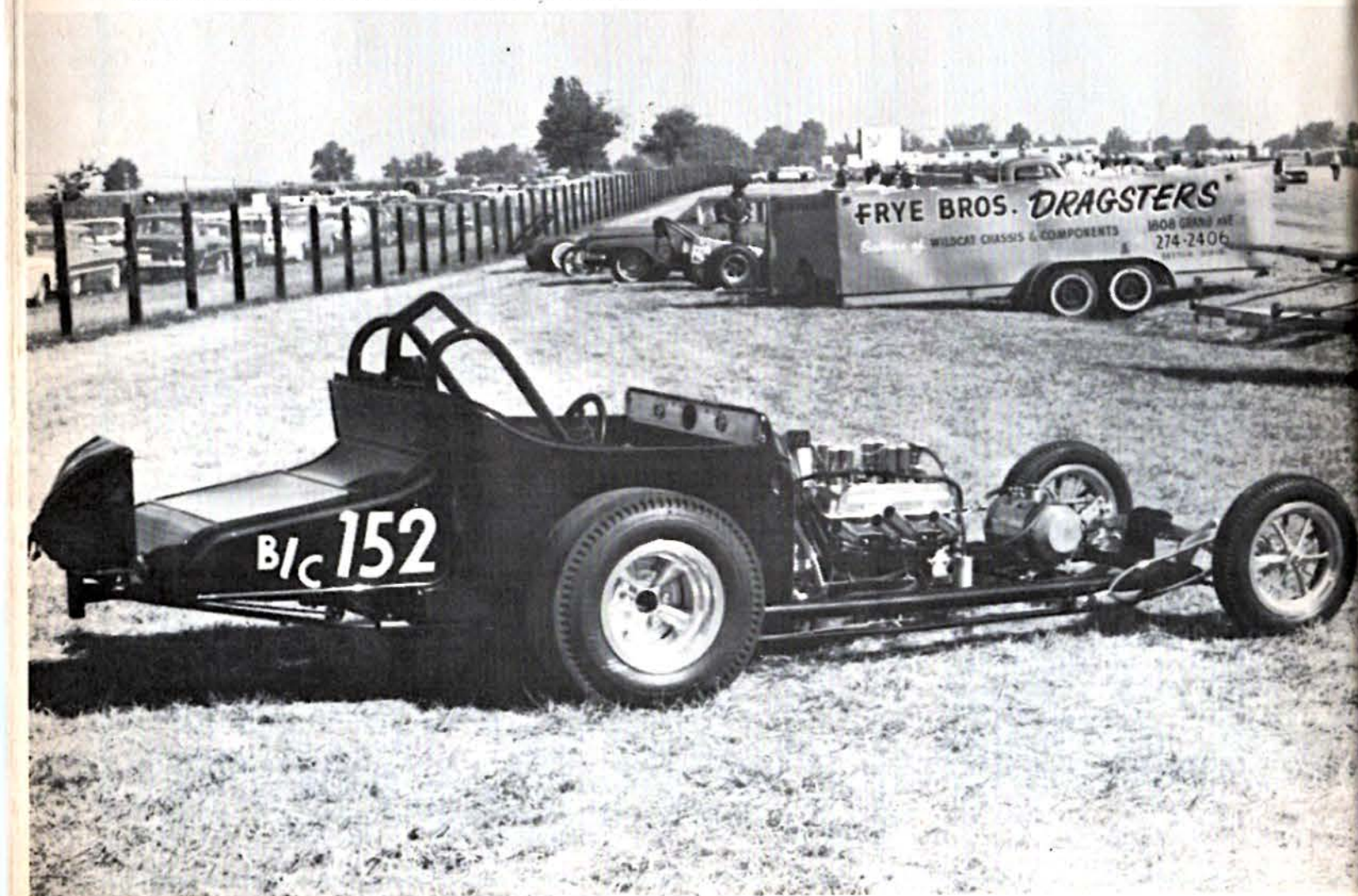
BY ROBERT LANE



Left, Herbert roller-cammed is destroyed and bored .030 inches over for a total displacement of 305 cubes. Vertex "sparker" towers over Hillborn direct port "sprinklers". Below, all-chrome front end sports aluminum friction shocks, plated transverse spring.



Daytona Blue lacquered bucket body makes railster legal in B/Comp. Immaculate homebuilt rod is ready for show or go.



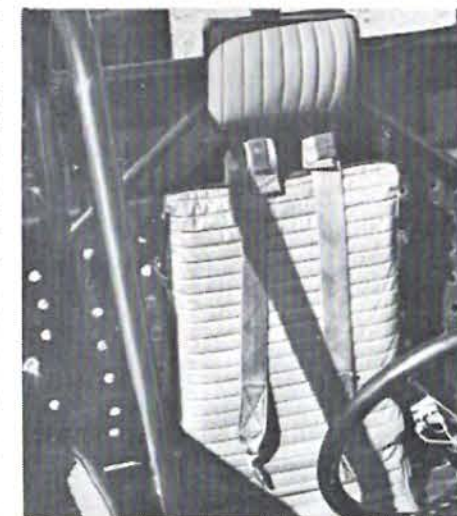
SIX YEARS ago Phil Schondelmyer of Dayton, Ohio, visited a local drag strip and was bitten by the good old rodding bug. Quarter-mile racing really appealed to him, so he went back to his garage and started work on what he considered a real hot machine, a G/Gas '37 Chevy coupe powered by a GMC Six. Today Phil drives one of the hottest B/Competition Roadsters in Ohio. He looks back to the good old days and chuckles when he thinks of his first attempt at dragging. The B/Comp's body, chassis and engine are far crys from the component parts of his first-time-out gasser.

Powering his immaculate blue-lacquered, T-bodied railster is a de-stroked and .030-inch over '63 Chevy, displacing 305 cubic inches. The engine may not be impressive cubic-inchwise, but it was built up to competition standards using the finest speed equipment available. Free breathing at high revs is guaranteed by a Chet Herbert roller cam which controls 2-inch intakes and 1½-inch exhausts via dual springs, Chevy pushrods and Herbert rollers. The heads, which started out as standard equipment on a fuel injected Corvette, boast enlarged and polished ports and combustion chambers. Some of the other hidden goodies are 13.5-to-1 Forgedtrue aluminum pistons, Grant racing rings, and special competition bearings.

Some of the more obvious modi-



CAE chrome front end supports highly polished magnesium spoke wheels. Bucket seat and integral headrest are padded for maximum comfort.



fications are Hilborn direct "tube" injection, a Ronco-modified Vertex magneto and tuned stacks by Jim's Welding shop in Dayton. Between the 305 incher and the '63 Chevy transmission (2nd and 3rd gears only) are an 18-pound steel flywheel by Delphos Machine Shop in Dayton, a Weber pressure plate and an 11-inch BID disc. An RC aluminum scattershield keeps the pieces together in case the clutch assembly lets go.

Although it's hard to tell from the photos, much work went into the chassis, body and suspension gear. Phil labored to the tune of 40 hours per week for six months to finish this masterpiece for a major race in 1964. Besides all the labor invested Phil poured in over \$3500 in cold cash to get this project on the strip.

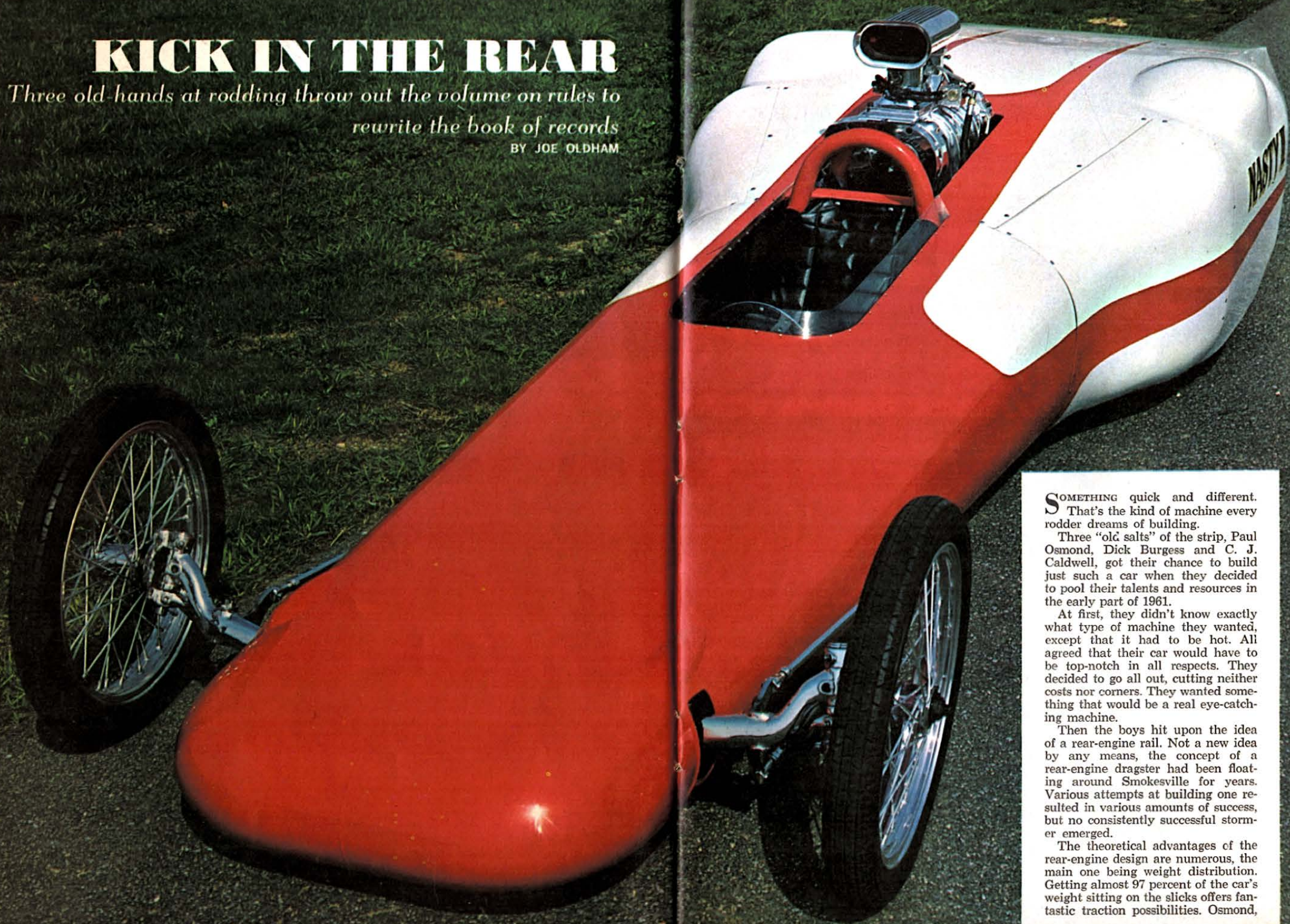
The chassis was built to Phil's design by a small welding shop in Dayton by the name of Labes Radiator and Welding. It's a lightweight tube affair which checks out at 97 inches from wheel to wheel, 55 inches across the front and 43 inches across the rear. The leaf spring (Ford transverse) front works with a CAE chrome tube axle, Chassis Research aluminum friction shocks and Ross steering. Hidden from view by the outstanding '23 T body is a '50 Mercury rear with 4.56-to-1 gears and an open driveline. It's solidly-mounted, of course, and beefed using the latest parts available. ■ ■ ■



# KICK IN THE REAR

*Three old-hands at rodding throw out the volume on rules to rewrite the book of records*

BY JOE OLDHAM



**S**OMETHING quick and different. That's the kind of machine every rodder dreams of building.

Three "old salts" of the strip, Paul Osmond, Dick Burgess and C. J. Caldwell, got their chance to build just such a car when they decided to pool their talents and resources in the early part of 1961.

At first, they didn't know exactly what type of machine they wanted, except that it had to be hot. All agreed that their car would have to be top-notch in all respects. They decided to go all out, cutting neither costs nor corners. They wanted something that would be a real eye-catching machine.

Then the boys hit upon the idea of a rear-engine rail. Not a new idea by any means, the concept of a rear-engine dragster had been floating around Smokesville for years. Various attempts at building one resulted in various amounts of success, but no consistently successful stormer emerged.

The theoretical advantages of the rear-engine design are numerous, the main one being weight distribution. Getting almost 97 percent of the car's weight sitting on the slicks offers fantastic traction possibilities. Osmond,



## maximum traction is the biggest benefit

Burgess and Caldwell decided to take advantage of these possibilities. The result of their efforts rolled out of Osmond's Modifications Unlimited speed shop in Kensington, Maryland one day in 1961.

Running in the A/Fuel Dragster class, *Nasty I* promptly became the first rear-engine bomb to bust 185 mph. Thoroughly sold on the rear-engine setup, and with the sweet smell of success and nitro in their nostrils, the team began building a similar, but faster and quicker, car in 1962.

After three year's hard work they completed the beautiful orange and white lacquered *Nasty II* in 1965. With Paul Osmond driving, the 1680-pound tire-fryer set strip records all over the Northeast and currently holds the NASCAR A/Fuel Dragster record for top speed in its class.

Powering *Nasty II* is a chromed and polished '52 Chrysler hemi. The 331 stock cubes weren't exactly what you might call competitive, so with an eye to the future plus large doses of happy juice and blower pressures, engine-builders Osmond and Burgess decided to retain the stock 3-13/16 bore and to stroke the crank.

A Delta 4 1/4 stroker provides an undersquare configuration and 393 cubes. The crank itself is hard-chromed, fully counterweighted and has large-radii fillets. It was shotpeened to reduce fatigue, heat-treated, and then magnafluxed.

The connecting rods are also by Delta. They're boxed for extra strength and feature full-floating pins. A set of Forgedtrue aluminum slugs give a modest 6-to-1 compression ratio. The low compression checks detonation when the can is tipped and the pedal is put to the wood.

The valve train accounts for much of the success of *Nasty II*. Harvey Crane ground the cast-billet, fully-rollerized cam and supplied the valve springs and tubular pushrods. The rocker arms are stock.

Paul Osmond, no mean artist with a grinding stone, did the cylinder head modifications. Paul first hogged the holes to get maximum port area without breaking into the water jacket. Then he polished the ports and surfaced the heads to make sure they were absolutely true. Grooves and copper O-rings assure a tight gasket seal.

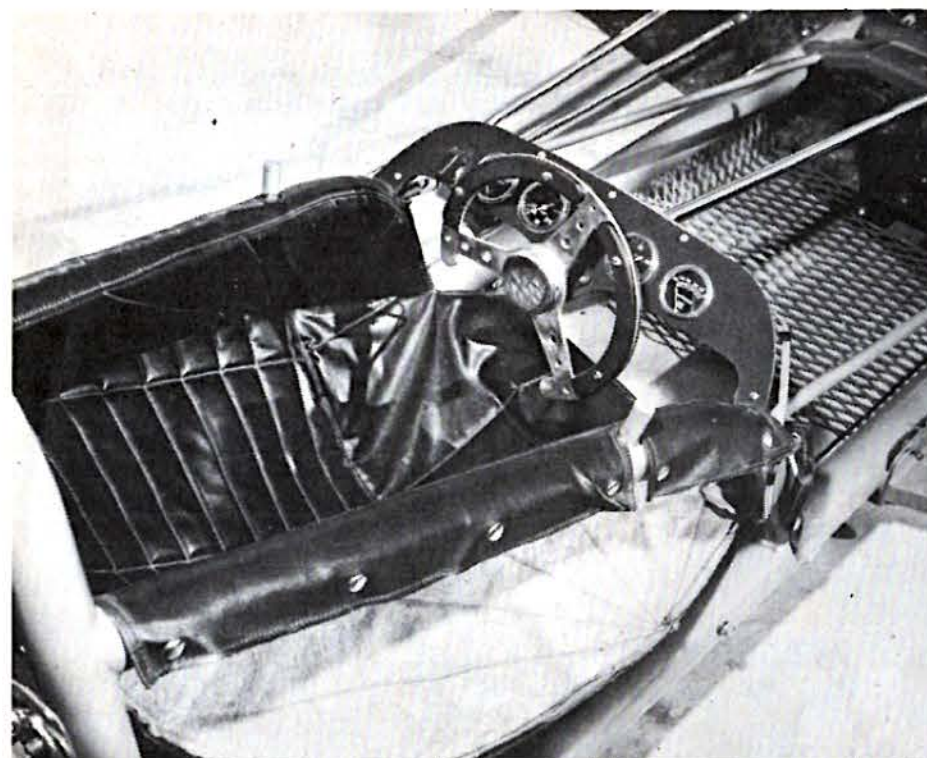
The lightened intake valves are two inches in diameter and highly polished. The exhausts are also two inches across and tuliped in the center only.

Supplying the huff is a puffer by GMC, a 6-71 featuring Milodon end plates. The blower is slightly overdriven at 1.09-to-1 through a double-row, 40-link chain drive. The intake manifold is by Weiland. Stu Hilborn's two-port injectors and fuel pumps feed the hauling hemi. The injectors are fitted with various-size nozzles, depending on the "dose" being run. Spark is supplied by a Vertex Mag with locked-in advance.

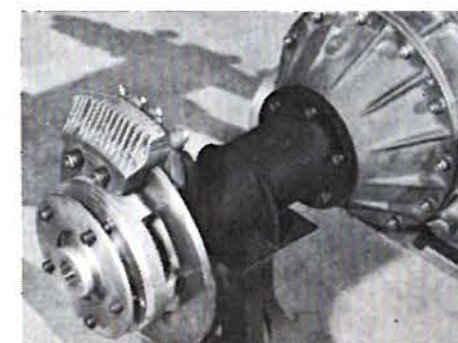
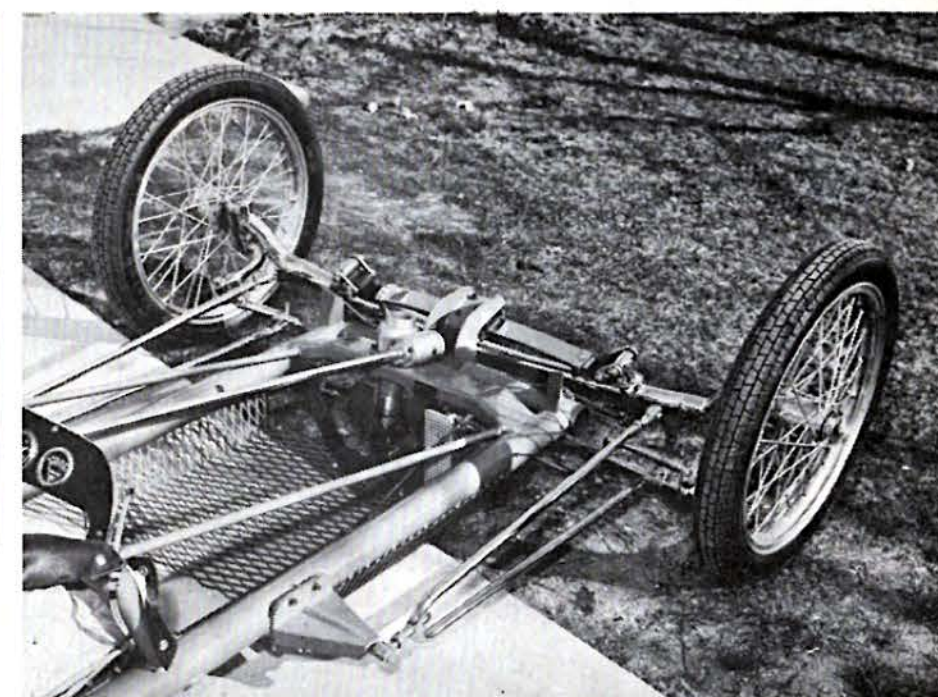
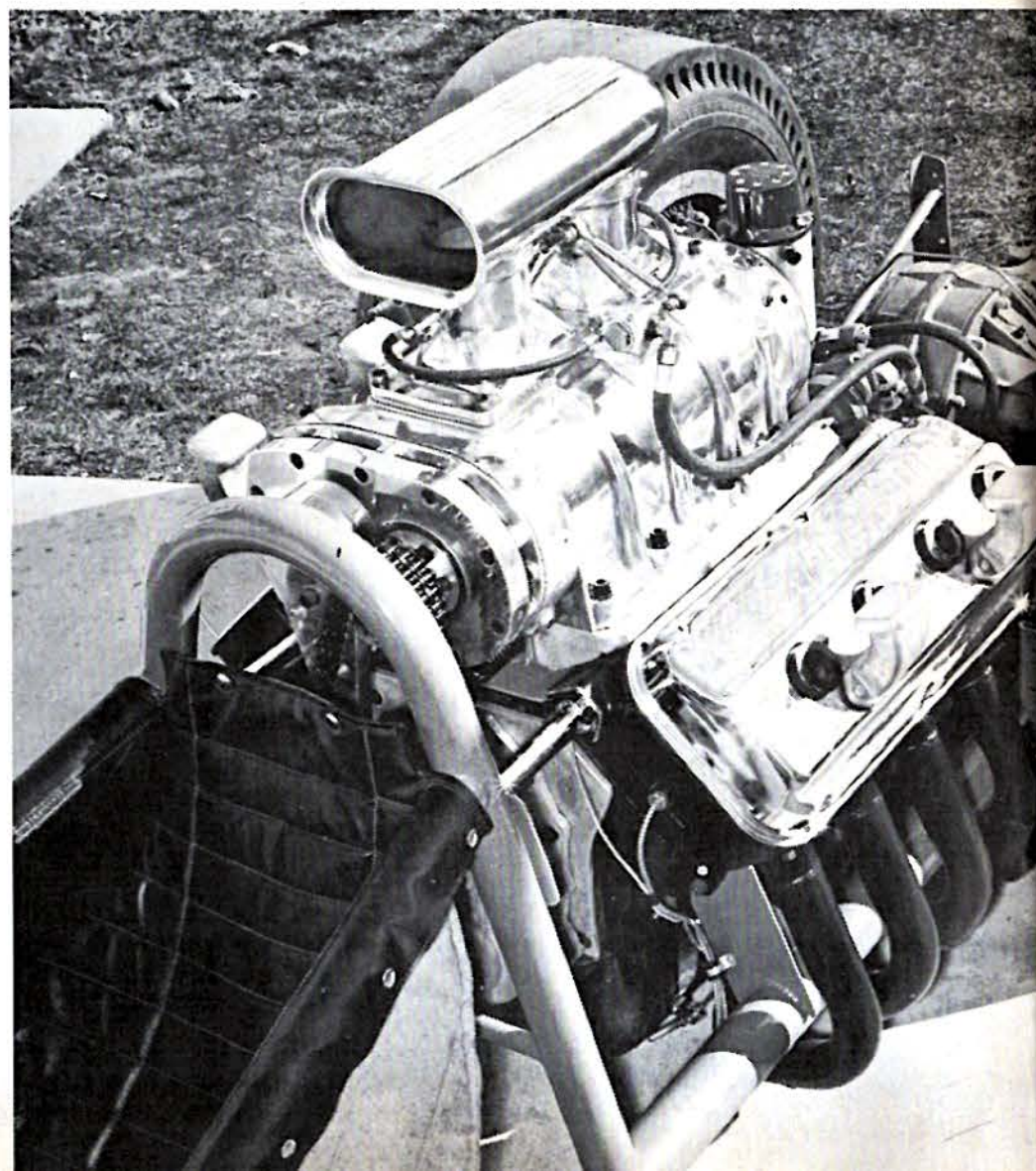
The exhaust headers are custom units made by Champion Automotive in Maryland. They were designed

Rail went 196 mph on 50-percent nitro to set record. Driver Paul Osmond feels plus-200 mark isn't far off. Relatively small 393 Chrysler pushes.

and tuned especially for this rear-engine installation. The system consists of individual stacks made from 2-inch steel tubing. You will note from the photos that they curve down

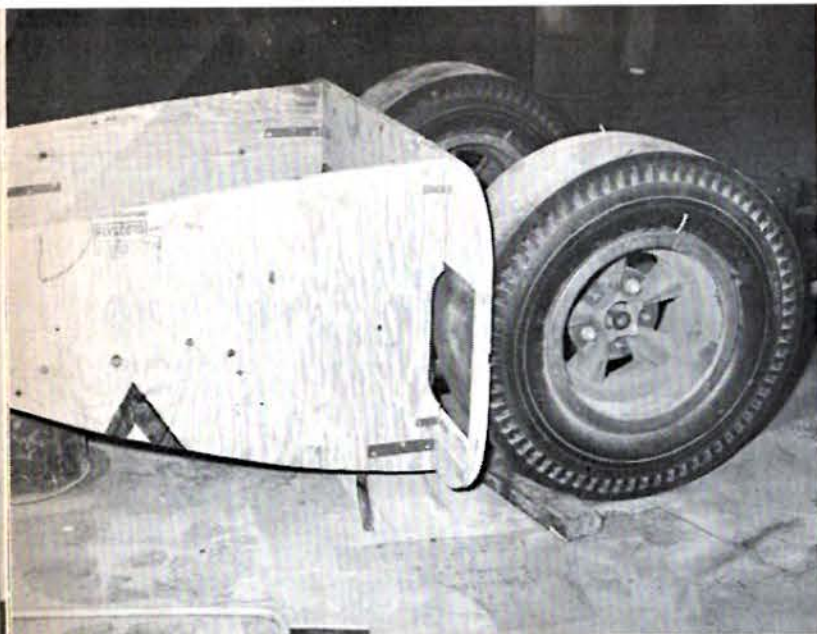


Cockpit features set of S&W gauges. Tiller was handmade by Paul Osmond.



Front suspension is by a suicide setup. Airheart caliper spots in back do the braking, are backed up by twin chutes.





Body was fashioned over complete plywood dummy.

under the frame and bring the exhaust to the rear of the car.

When it came to building the frame, the trio called on all the accumulated knowledge gained from campaigning *Nasty I*. The chassis took shape from 2-inch chromemoly tubing. The roll cage is also formed from 2-inch tubing but with a greater wall thickness. Unique braces between the roll cage and cylinder heads of the powerplant help locate the engine within the chassis and also make the engine part of the "working" chassis. This helps high-speed handling and weight transfer.

The wheelbase of *Nasty II* is a compact 120 inches. The front tread is 56 inches while the rear measures 40 inches across.

The chromed front axle is 2-inch chromemoly tubing with a 2-inch drop. The spoke wheels in front are modified Harley units with alloy rims. A pair of tubed 3.00X19 Pirelli motorcycle racing tires carry the load.

Radius rods connect to the frame inside the front body panel, and suspension at the front of the car is by a suicide setup. A two-leaf buggy spring is mounted on stock early-Ford shackles. The steering gear box is a Norden unit pirated from a sprint car. Caster is set at 21 degrees for the front end.

There is no suspension at the rear of the rail. The rear axle is bolted solidly to the frame for maximum power transfer to the strip. The axle housing itself is shortened and holds modified Scotty Fen safety hubs, floating rear hubs attached to 1 1/2 splined axles, and a Halibrand Championship quick-change centersection. The Halibrand unit was selected instead of the more conventional Olds rear because Osmond, Burgess and Caldwell planned to do a lot of experimenting with ratios and logically wanted the most convenient setup for changing gears. Ratios can be easily changed in a matter of minutes on a Halibrand simply by switching spur gears. With an Olds rear, the entire differential carrier assembly must be pulled to switch ratios. And, contrary to popular opinion, the Halibrand Championship unit has adequate strength to do the job. (The Pacers of Oceanside, N.Y. have been using one on their record-holding AA/A for years.)

Transmitting the power to a set of 9.00X15 M&H slicks is a B&M Tork-



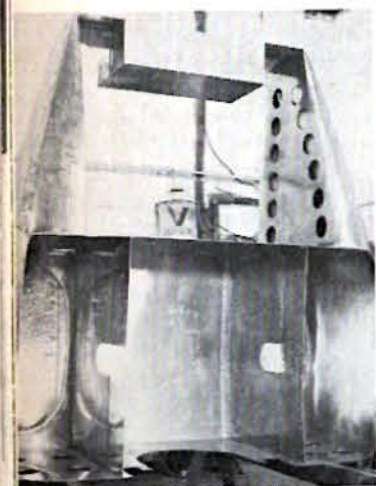
(Continued on page 60)

• TRACKSIDE COVERAGE •

## SURFERS 'HANG FIVE' AT SMOKERSFIELD

BY LELAND NORENE

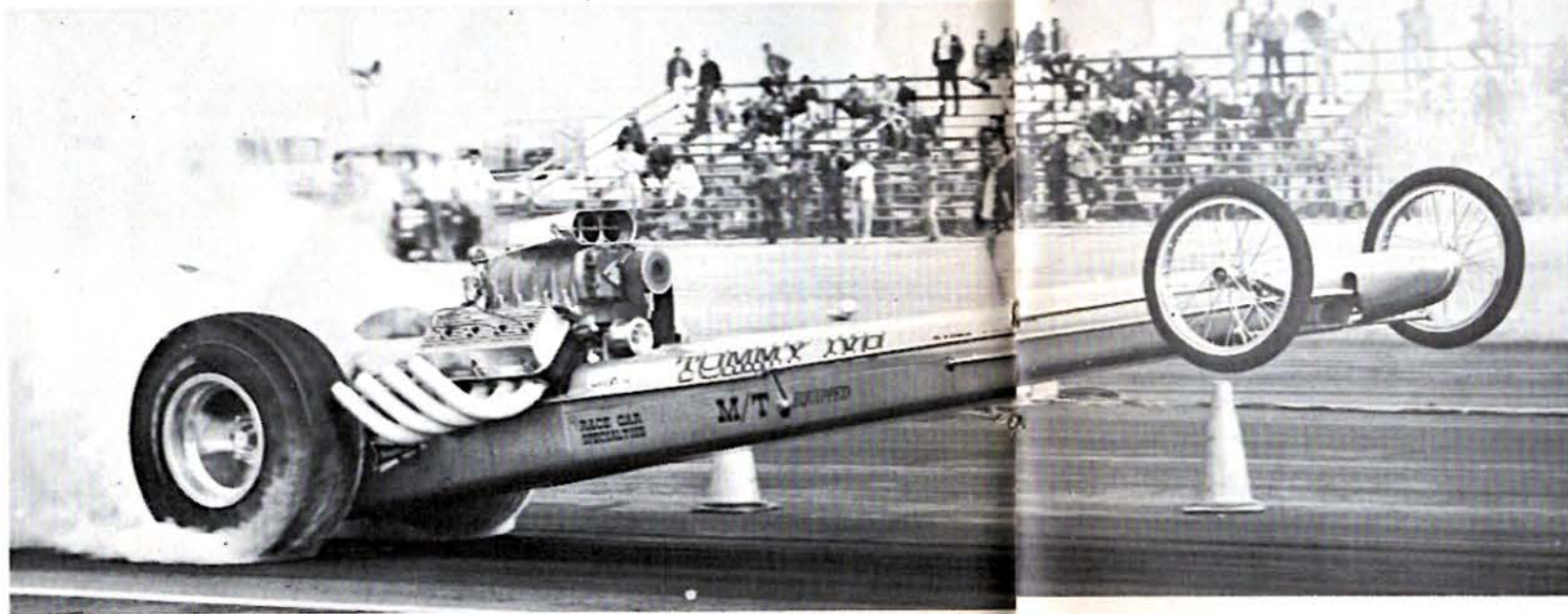
AHRA Champ Paul Sutherland  
dismounts after 206-mph run.



Skin is .060 aluminum, bulkheads are .090. Body is mounted with speed nuts to permit quick removal for inspection, cleaning.

it's more than different





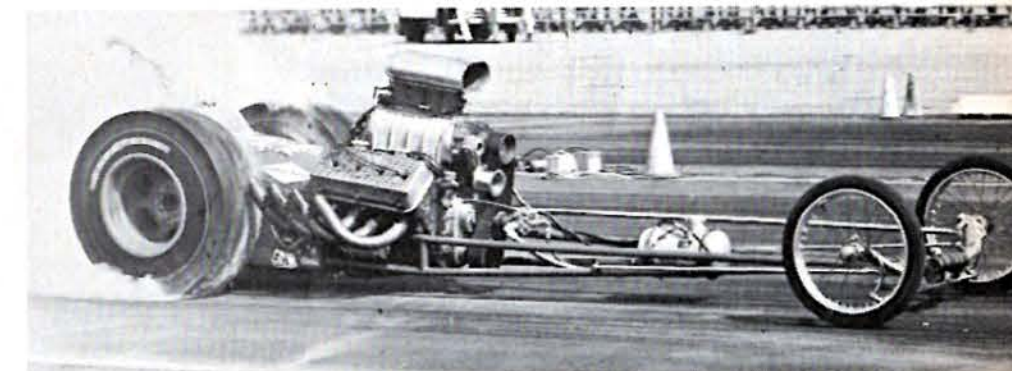
**Mike Sorokin smokes his way to a new 7.34-second ET record and cleans house at eight annual Bakersfield Fuel and Gas Championship**

FUEL		
Overall Eliminator—Surfers		
Top Speed—Marshall & Vermilya		213.38
Low ET—Surfers		7.34
GAS		
Top Speed—Beacon Auto		192.54
Low ET—Beacon Auto		7.99
Supercharged Gas Eliminator—Junior Thompson		
#1 Fuel—Jess Sturgeon	7.81	— 203.96
#2 Eliminator (under 9:00 seconds)		
Less Allen	8.36	— 177.98
#3 Eliminator (9.01-10.00)		
John Bradley	9.24	— 164.16
#4 Eliminator (10.01-11.00)		
Ed Weddle	10.27	— 137.15
#5 Eliminator (11.01-12.00)		
Gardner Hays	11.09	— 127.00
#6 Eliminator (12.01-13.00)		
Ralph (Pop) McKeehzn	12.02	— 116.80

Top, Warren-Crowe rail won the beauty prize of the meet but couldn't cut it in the eliminations. Far left, famous Gotelli Speed Shop Special braking after 7.57-second run. Above, crowd-pleaser "TV" Tommy Ivo finished out of money due to wheelstanding problem.



Left, "Surfers" rail collected \$5000 cash and Top Fuel crown before going on trailer. Below, Adams-Wayre-Mulligan was top fuel qualifier in 64-car field.



ONCE A YEAR drag racers from all over the country congregate at Bakersfield, California for the United States Fuel and Gas Championship.

The latest meet was the eighth annual bash put on by the Smokers. It was exceptional in that it enjoyed the best weather in the history of the race. All four days were sunny and warm, but not quite as hot as the action.

The meet led off, as usual, with the qualifying rounds which lasted for the first two days. Out of 64 big fuel entrants, 62 qualified at under 8 seconds, the fastest field in the history of Bakersfield.

When the eliminations finally began, the West Coast cars dominated the Eastern invaders in the fuel and gas ranks. Machines from the Sunny State set the low elapsed times in the big fuel and gas classes and finally took the Top Fuel title.

Mike Sorokin, driving the "Surfers" rail which hails from Santa Monica, California, managed to survive the five tough Top Fuel eliminator rounds. While beating off the competition, the top drag driver did a 7.34-second run and set a new world record elapsed time. In the last round Sorokin blew off the Dunn & Yates machine, another California car, and took the \$5000 purse.



# PONTIAC'S HOTTEST CAT YET!

Hot factory options turn  
Pontiac's 421-cube style  
leader into a supercar.

BY MARTYN L. SCHORR

PRIOR TO *tiger talk* and the *supercar sweepstakes* Pontiacs and Pontiac-powered products ruled the competition roost. Those were the days when factory engineers worked around the clock on cam configurations, modified heads and racing manifolds, and Pontiac products commanded respect on the drag strip, NASCAR oval and at the Drive-in.

What happened to Pontiac is ancient history now. General Motors took a stand on the performance *power play* and all its divisions slowly but surely crawled back into the woodwork to concentrate on boring projects like pleasing the consumer public! Before Pontiac went out (in a blaze of glory) the drag boys managed to leak out enough spare parts to keep the hot dogs running— and running fast—to keep PONCHO in the picture. Some of the last ditch attempts included lightweight chassis and aluminum bodied Catalinas with 421

dual quad engines that were on the ragged edge of even the factory Experimental classification. Most of these bombs are still running today, and a prime example is the record holder driven by Performance Associates' Don Von.

Things are quite a bit quieter at Pontiac these days. The emphasis is being placed on GTOs, Sprints, and assorted other consumer *supercars*. The GTO is still one of the Drive-in favorites and you can't hardly beat that OHC Six Sprint when it comes to chopping some of the big ones down to size. However, Pontiac is not packing all their goddies in just the GTO and Sprint packages. No, sir, not by a long shot. Those *cagey* image builders have managed to put some of that "tiger growl" into the sweetest middleweight performance package you have ever placed your peepers on. It goes under the name of 2 + 2 Catalina. And if ordered

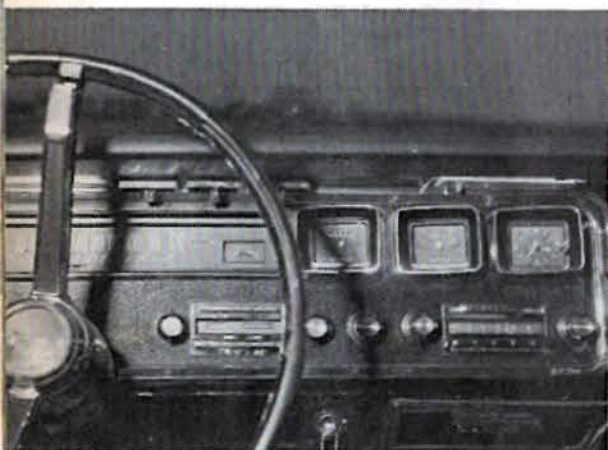
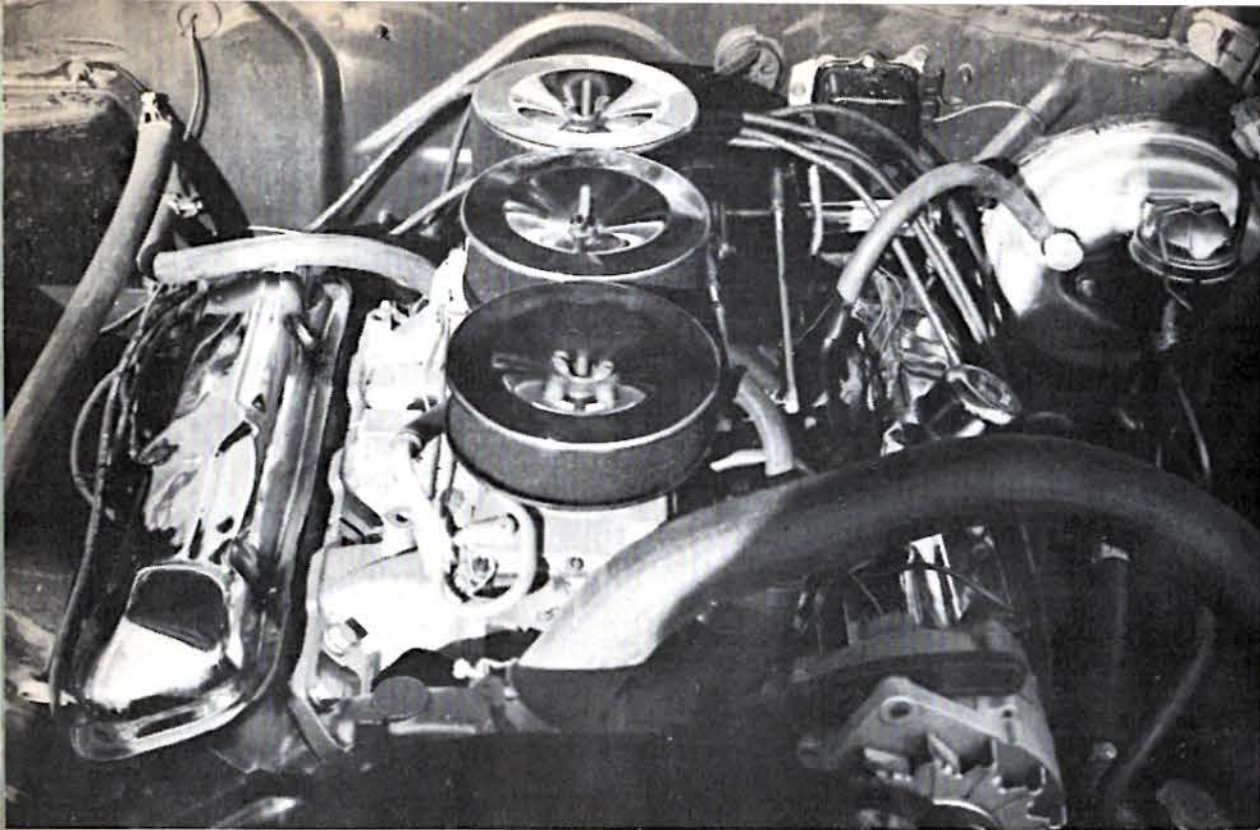
with the optional parts list in one hand and a checkbook and pen in the other, it can be truly be described as a middleweight with plenty of heavy-weight punch!

The 2 + 2 is a highly specialized automobile for the performance buff who demands plushness and luxurious appointments to balance off the minus features of a hairy bent-eight. The engine lineup available in this series (two-door hardtop and convertible models only) stems back to the original 389 and 421 engines and features tremendous improvements in the fields of engine quietness and power output. The 421's are less hairy than the originals thanks to hydraulic lifter cams yet still boast a respectable output because of improved HO heads.

Now in its third year, this personal performance Wide Track can be ordered to suit anyone's fancy. ➤







Top, top line 421 rated at 376 hp sports tri-pots, turned tubes and a street-strip grind hydraulic cam. Above, stacked quads flank the wide track front end. Left, optional gauge cluster keeps driver informed.

If you like 'em mild you can get your tiger with the stock 338 hp 421 engine, auto shifter, air conditioning and every power-luxury option listed in the *goodie guide*. If, on the other hand, you have a flair for the wild, the sky's the limit. By simply checking off the right boxes you can have the *tiger tamers* equip your beast with a four-speed close-ratio trans, up to 3.90 (4.11 and 4.33 gears are dealer installed) gears, special suspension and brake goodies, limited slip differential, extra stiff springs and shocks, finned drums with integral aluminum wheels, wood wheel, headrests, tach, full instrumentation, transistorized ignition and a 376 *tigerpower* tri-carb mill with tuned

cast iron dumpers and chrome accents for appearance.

What's it like to ride one of these tigers? Well, buckle up and come along with us as we wring out one of the hottest middleweights on the Detroit scene. The 2 + 2, even when loaded for bear, is in no way, shape or form a track car. It's a luxury performance model that tips the Fairbanks at over 4000 pounds and has a craving for the open road. Our test model, appropriately finished in Tiger Gold (extra cost) lacquer was loaded with all the typical hot rod accessories. Because of the weight and size of the 2 + 2 (121-inch wheelbase, 215 inches long, 4180 pounds) we topped off the option list

with power steering and brakes. All the previously mentioned performance options, except for the headrests, were packaged in our special test model.

There are many small features that set the 2 + 2 off from the basic Catalina, and quite a few more that set our top-engined test car off from the standard 2 + 2. The basic differences between the Cat and the plusher 2 + 2 lie in the upholstery, trim applique, suspension and the "tiger in its tank." The 2 + 2 starts off with a standard single four-barrel 338 hp 421 while the domesticated version starts off with a rather docile 389. Our car was factory packed with the top-line 421 rated at 376 hp. This tri-carbed High Output engine adds \$231 to the retail sticker on the 2 + 2.

In order to find out the answer to the typical rodder's question, "what'll she do, we had the boys at Pacers Auto tune our Tiger Gold "Tin Indian" and prep it for a full road evaluation test. Rated at 376 hp at 5000 rpm, Pontiac's top line charger is in reality a happy compromise between street and strip. Thanks to its hydraulic lifter camshaft, sensible timing specifications and a compression ratio that can be satisfied by high quality pump gas, the 376 hp 421 package is ideally suited for high speed touring, around town shopping and an occasional blast at the Chrondeks.

The only differences between this charger and the one-up 2 + 2 421 option lie in the camming and exhaust header design. Both tri-power 421's sport 10.75-to-1 compression ratios, same high performance heads, same tri-power intake packages (13.43 square inches of throttle area) and the same valves. The camshaft in the HO 376 hp version was designed for slightly higher rpm use and sports lobe configurations more in line with those usually associated with commercial hot sticks. The standard tri-power cam checks out 273-289 degrees duration, 406-408 inches lift, while the warmer HO version runs 288-302 degrees duration, 409 inches lift across the board. Overlap of the hotter stick is 6 degrees as compared to 54 degrees for the milder version.

The HO version picks up a few horsepower over the 356 hp version because of tuned-type cast iron headers which come as standard equipment. They are of a free-flow design and offer far less restrictions than do

## S&C TEST SPECS

LIST	PRICE	\$3298
AS TESTED		\$4300

ENGINE	
TYPE	OHV-V-8
DISPLACEMENT, cu. in.	421
COMPRESSION RATIO	10.75-TO-1
BHP @ RPM	376 @ 5000
TORQUE @ RPM	461 FT. LBS. @ 3600
CARBURETION	ROCHESTER TRI-POWER
FUEL RECOMMENDED	PREMIUM

POWER TRAIN	
TRANSMISSION	CLOSE RATIO 4-SPEED
CLUTCH	11-INCH SINGLE DISC
GEAR RATIOS	
4th	1:00:1
3rd	1.28
2nd	1.64
1st	2.20
SYNCHROMESH	ON ALL FORWARD SPEEDS
DIFFERENTIAL RATIO	3.90:1

PERFORMANCE	
ACCELERATION	
0-30 mph, sec.	3.1
0-60 mph	7.8
0-80 mph	15.2
0-100 mph	N/A
TOP SPEED, mph	112 EST
FUEL CONSUMPTION, mpg	10

SPECIFICATIONS	
TEST WEIGHT, lb.	4100
WHEELBASE, in.	121
TRACK, FRONT/REAR, in.	63/64
OVERALL LENGTH, in.	214.8
FUEL TANK CAPACITY, gal.	26

CHASSIS	
FRAME	PERIMETER TYPE
BRAKES	DRUMS: ALUMINUM FRONT
SWEPT AREA, sq. in.	329
TIRES	8.55 x 14 HIGH PERFORMANCE U.S. ROYAL



two-ton luxury liner hauls like a lightweight, handles like a sportster





Safe-T-Track 3.90 rear setup is ideal for street and strip.

Model	Engine	Shipping Weight, lbs.			
		Stick	lbs./hp	Auto.	lbs./hp
Coupe	338 bhp	4005	11.84	4027	11.91
	356 bhp	4017	11.28	4039	11.34
	376 bhp	4027	10.71	4049	10.76
Convertible	338 bhp	4030	11.92	4052	11.98
	356 bhp	4042	11.38	4064	11.41
	376 bhp	4052	10.77	4070	10.83

### WHAT THE 'HOT SETUP' COSTS

TRI-POWER 356 hp OPTION	\$130
TRI-POWER 376 hp HO OPTION	\$231
FOUR SPEED, CLOSE OR STD. RATIO	\$226
TURBO HYDRA-MATIC	\$226
#481 DUAL EXHAUSTS	\$ 30
#731 SAFE-T-TRACK REAR	\$ 42
#514 HD 7-BLADE CLUTCH FAN	\$ 16
#671 TRANSISTORIZED IGNITION	\$ 63
#678 HD BATTERY	\$ 5
#454 ALUMINUM WHEELS, HUBS	\$128
#651 ALUMINUM FRONT DRUMS	\$ 49
#591 SPEEDOMETER GEAR ADAPTER	\$ 11
#634 SUPER LIFT REAR SHOCKS	\$ 40
#471 WOOD STEERING WHEEL	\$ 28
#511 TACHOMETER	\$ 53
#448 GAUGE CLUSTER	\$ 37
#571 HEADRESTS	\$ 53
SPS SPECIAL PAINT	\$ 78

Aluminum front drum brakes and finned aluminum wheels add \$177 to the sticker price.

the boxed-in standard tri-power clunkers of the 356 hp model!

Since we had the opportunity to pick the equipment for our test car, we went through the "Tiger Goodie Guide" and carefully chose the go-power options that we would order on the car if we were purchasing it for our very own. Since the car of this type would be dragged only on special occasions we didn't go off the deep end and order 4.33 gears and manual steering. Since the HO engines peaks out at under 5400 rpm (376 hp at 5000 rpm) and the maximum torque range is in the vicinity of 3500 rpm, we chose the dealer-installed 3.90-to-1 Safe-T-Track rear setup and the Hurst-shifted optional close-ratio four-speed. The optional trans offers a 2.20, 1.64, 1.28 ratio setup as opposed to the standard 2.52, 1.88, 1.46 ratios. When combined with 3.90 rear gears, the close-ratio four-speed offers a 8.58-to-1 actual first (Continued on page 56)

more than just a gussied-up Catalina.



### • TRACKSIDE COVERAGE •

# HERK MAKES IT!

Plymouth pro Jim Hurtubise takes big Atlanta bash and writes the greatest stock-car comeback story ever told

BY DICK GERALD

MOST OF THE more than 70,000 fans attending the sixth running of the Atlanta 500 were betting on Richard Petty to win. Even some of the other drivers were laying odds that the current Daytona 500 champ would be victorious.

"This could be Richard's race," said Dick Hutcherson, front-running Ford pilot who had won the Southeastern 500 at Bristol, Tennessee the week before, and who had sat with Petty on the front row at the Daytona 500. "Just like at Daytona," said Dick. "But, anything can happen. If he has any trouble, then it's anybody's race."

Hutcherson was referring to Richard Petty, NASCAR Grand National champion in 1964, his last full season of stock car competition. Petty won the pole position for this "Atlanta 500" three days earlier by setting new one and four-lap qualifying records driving the 1966 Plymouth with which he won his second straight "Daytona 500," the month before. His quartet of qualifying laps earned him the pole position at Atlanta with a 147.742-mph average



Top, Hurtubise takes Yarborough on the inside. Left, Herk and sweated Nelson play back the race with newsmen.





Cars bunched-up in an early lap. Petty is in foreground, Yarbrough's Charger is at left next to Hutcherson's Ford.

speed. His fastest single round of the 1½-mile Atlanta International Raceway circuit was 148.148 mph, which snapped Ford-driver Fred Lorenzen's two-year-old mark of 146.467 mph.

Hutcherson was well qualified, to speak that is, but not necessarily to race. With his Ford on the front row beside Petty, Hutch was still some 2.7-mph slower at 145 mph. Lorenzen, winner of the last two "Atlanta 500's" was behind Petty on the second row, with Lee Roy Yarbrough's Dodge.

David Pearson was the hot qualifier on the second day, pushing his Dodge to 146.5 with a fastest single lap that, according to officials, equalled Petty's record of the day before for a single trip around. Friday was again a Plymouth day at Atlanta International Raceway as Jim Pashal of High Point, North Carolina, Petty's teammate in 1964, set the highest qualifying average in his 1966 Plymouth at 145.337 mph.

Defending co-winner (with Marvin Panch), A. J. Foyt was absent. Bobby Johns, winner of the first "At-

lanta 500" in 1960, was destined to finish his new Chevelle in 35th spot. Darel Dieringer and Earl Balmer, teammates last year in '64 Bud Moore Mercurys, went through a lot of heartbreak trying unsuccessfully to make the program in this year's race. Dieringer's 1966 Comet was



Dick Petty and Hurtubise pause after qualifying the two fastest cars.

deemed unraceworthy after a bit of practice, and Moore trucked it home. Smokey Yunick did the same thing with Balmer's Chevelle, but only after Earl practiced as fast as 144 mph with it. Jim Hurtubise, the hottest of three USAC drivers in the race, practiced for the event turning several laps faster than 147 mph.

Despite his qualifying performance, Petty understood what Hutcherson meant about him. "There are so many things that can happen," said Richard shortly before the race, "I had the fastest car at Daytona, and my car is probably the fastest one here. I just hope it's finally my day in Atlanta." It wasn't.

As predicted, it was Petty against the field; and the big Detroit manufacturers against each other. The guests in the Raceway celebrity box included not only NASCAR prexy Bill France, but also the president of Chrysler Corporation and two of his vice presidents. They were smiling as Petty streaked off from the field on the first lap and drew farther and farther away, stretching his margin with every lap.

Driving in competition for the first time in a full month, since his victory at Daytona, Petty almost ran off and hid from the rest of the field, but 100 miles into the race, a telltale trail of smoke whipped from the rear of his Plymouth as oil began to leak onto a hot manifold. Only Hurtubise had challenged Richard and not very

**Lorenzen: "I've never seen a USAC guy drive like that... there's no way to win."**

race as he rode high or low in the seriously. Seemingly, it was Petty's bending turns, and swept down the straights in complete command. But, the trail of smoke became plainer and finally the Blue Angel expired.

Petty led the first 31 laps, then pitted and came back to lead decisively four times before retiring. He developed an oil leak when the dipstick housing tube worked loose in the engine block. As a result, all his oil was blown out. A lap later, he lost the lead, slowed and finally coasted to a halt on lap 185. It was like Mickey Mantle limping back to the bench.

Fred Lorenzen was out in front during the race for 28 laps and Gordon Johncock, in a USAC Dodge, paced the group twice and although the lead changed a total of 23 times among nine drivers, it became clear after Petty's retirement that Jim Hurtubise would be home free if he could hold together—and he did.

There's more to Hurtubise's story than just a stock car victory. In reality, both a driver and a track came back together. Hurtubise logged his first major success, driving a Norm Nelson-prepared 1966 hemi-engined Plymouth, and Atlanta International Raceway, plagued by a 5-year history of rain, drew its largest crowd ever on a chilly, but finally sunny Sunday. The crowd of at least 71,000 broke a previous record of 65,000 established in 1963.

The fans who came expecting to see Petty run off from the field and win handily, cheered wildly as Hurtubise's hemi thundered through the last lap to take the checkers. He was a full lap and four seconds ahead of Lorenzen's Ford. Hurtubise, a native of North Tonawanda, New York, who first went racing in 1952 while in the Coast Guard, averaged a representative (though no record) 131.247 mph for the 500-mile distance.

"Fastback Freddie" had demonstrated he did not have the horsepower to out-hustle Hurtubise, who was armed with a 405 cubic inch hemi. Hutcherson finished third, followed by the Plymouths of Paul Goldsmith and Jim Paschal, Cale Yarborough's Ford, the Dodges of Sam McQuagg and Don White, and the Fords of Tiny Lund and Bobby Allison in that order. Of the 44 starters only 17 remained when the winner completed his 334th circuit to take (Continued on page 66)



Above, Paschal runs under Jarrett moments before his spin-out brings caution flag. Below, pit stops went smoothly for Hurtubise and crew.





273 MOPAR DRAG  
SECRETS REVEALED

# BLUEPRINT FOR PERFORMANCE

Here's the full-race poop on turning the hemi's baby brother into a top FX, MP or Gas class competitor.

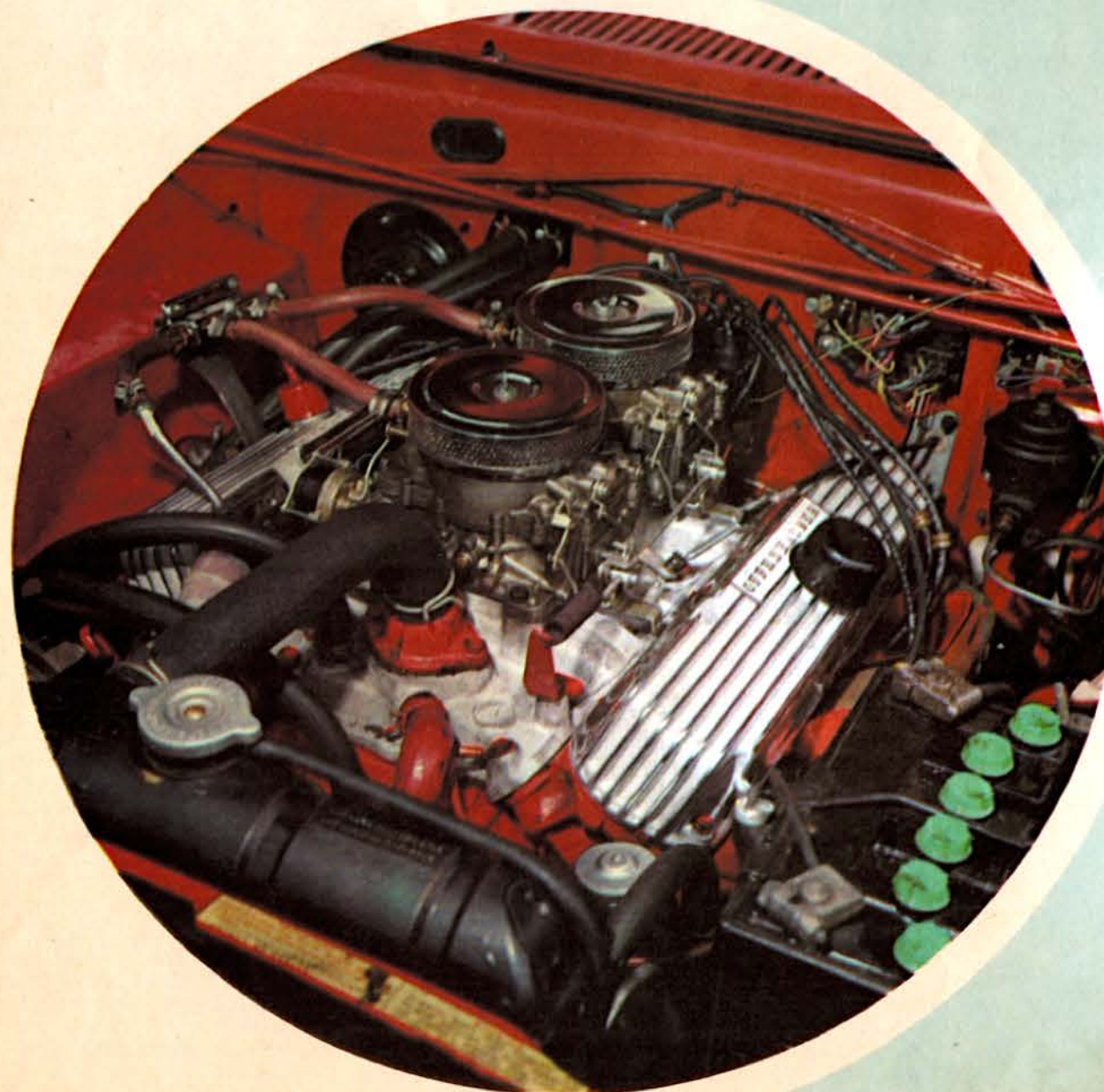
BY MARTYN L. SCHORR

INTRODUCED in 1954 as a compact, beefy V-8 for consumer use in Darts, Valiants and Barracudas, the 273 has grown into a full-bore honker in a very short time. Chrysler Corporation started the rodders off by making available a Formula S high performance package consisting of a hotter camshaft, four-barrel carburetor, free flow exhaust system, a reworked distributor and dress-up items. And in typical MoPar fashion, engineered a suspension to match the extra output of the engine.

In 1965 the Golden Commandos, Chrysler-Plymouth factory drag representatives, unveiled their Goldfish Barracuda S and promptly captured the National F/S record. After they broke the ice others joined in the fun. By swapping engine goodies the Commandos were able to run single four-barrel legal NHRA at one meet and run Modified Production or match bash the next week.

The basic 273 is far more adaptable to competition than most Ford and Chevy lovers care to admit. The lower end of the engine is a 318 casting and is sturdy enough for any type of racing. The engine may not breathe as well as a 289 Ford or 327 Chevy, but it's only a matter of time before the factory improves the porting layout.

There are many routes to go with a 273 engine, as different drag sanctioning bodies allow different degrees of engine modification for stock classifications. There are Modified Production, Factory Experimental and Gas classes that are just the ticket for 273-powered machines. To give you an idea of what type of performance you can expect from a modified 273, here's a rundown on the results of modifications made to the original Golden Commandos' Goldfish Barracuda. In completely stock trim with muffled exhaust, stock tires and





3.23-to-1 gears the Goldfish registered a top time of 88 mph in 15.5 seconds. After going through the engine (blueprinting), overboring .020 inches, adding good forged pistons, a compression ratio of 11-to-1, custom tuned headers, 7-inch "cheaters," stock carburetor and 4.56-to-1 gears the same car clocked a best run of 101 mph in 13.91 seconds.

After reworking the Carter AFB quad, modifying the vacuum advance, slipping in an Isky cam (retaining 4.56-to-1 gears and 7-inch tires) the car turned 106 mph in 13.10 seconds. The final phase included a switch to an Edelbrock dual quad manifold, a more radical Isky cam and the retention of same tires and gears. The best run clocked at Detroit Dragway was an impressive 107 mph in 12.89 seconds. Now that's really honking considering that the engine still displaced 273 inches, the heads were pretty much stock and the fuel was pump gas.

So as not to confuse our readers regarding modifications that are legal for one drag association and not legal

## block is sturdy enough for any type of drag or boat racing

for another, we'll go into basic blueprinting procedure for the 273 and then mention special modifications that are allowed by some of the more lenient drag sanctioning organizations.

### BLOCK

On the basic four-barrel Formula S engine the maximum deck height of the pistons should be set 0.129 inches above the block. This is the figure determined after many hours of experimentation by Golden Commando engine building experts. In order to reduce friction in the cylinders, the right bank pistons should be installed in the left bank and visa versa. This switch reverses the piston pin offset built in to reduce piston slap. Piston bore clearance on the factory race engines run from .003 to .0035 inches

### LOWER END

If maximum rpm is expected from any engine much care must be put into the choice and assembly of the lower end components. Upper main

bearings with oil grooves should be used for both uppers and lowers to allow greater oil flow through the mains and to the rod bearings. If a stock crank is used, main and rod bearing clearances should be set at .001 to .003 inches for maximum efficiency at top rpm.

If the engine is being set up as an all out professional drag racing engine or for use in a racing boat, it would be advisable to replace the stock crank with a 318 or 383 cube "B" block crank. When using a crank of this type special F-77 hemi-type Clevite (hard) bearings should be used on the mains and rods. Under no circumstances should these bearings be used with the stock 273 shaft.

### HEADS

Stock 273 head combustion chamber volume ranges from 57.3 to 63.3 cc's. In order to remove 1 cc of chamber volume it's necessary to mill .0065 inches off the surface of the head. Heads should be set up to run legal minimum cc's per the NHRA tech inspection book. The stock power package cam and spring kit is good for 6000 rpm without any traces of float and should be used in a legal NHRA stock engine. The minimum installed height of the springs is 1.62 inches. There's, however, an optional valve package (not NHRA legal) #1944554 which raises the peak rpm to 6400.

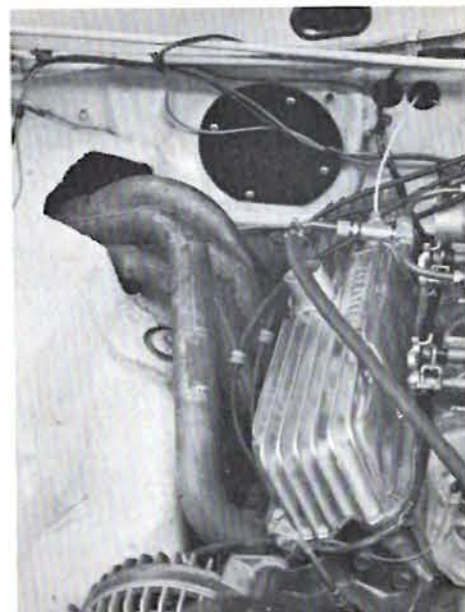
Under no circumstances should you attempt to grind valves deeper in the heads, as horsepower will drop off due to the radical air flow change. Composition gaskets with steel mesh should be used for extra strength and the heads should be retorqued after breaking-in, while still hot, at 85 foot/pounds.

### WATER PUMP & COOLING SYSTEM

A small diameter water pump impeller from an air conditioned Valiant, Dart or Barracuda should be used in place of the stocker because of the lower horsepower pull required for operation. Deep groove pulleys should also be installed for maximum belt retention at redline rpm. A standard 180 degree thermostat will allow the engine to run at optimum operational temperatures.

### LUBRICATION

The oil sump pan should be lowered as much as possible for extra lube capacity and the stock pickup and



Dart fender panels had to be opened up for Bellanger header clearance.

baffle should be modified to prevent oil slosh during acceleration and deceleration. Only high detergent and additive engine oil (30 weight MS-DG grade oil) should be used in modified stock engines.

### EXHAUST SYSTEM

Headers should be of the separate branch, equal length type with 42-inch long individual tubes. The four tubes on each side should come together to form a four-leaf clover end. Tubing should be 1 1/4 inches OD throughout. For maximum efficiency the collector should be 12 inches long and of 2 1/2-inch diameter stock.

### IGNITION

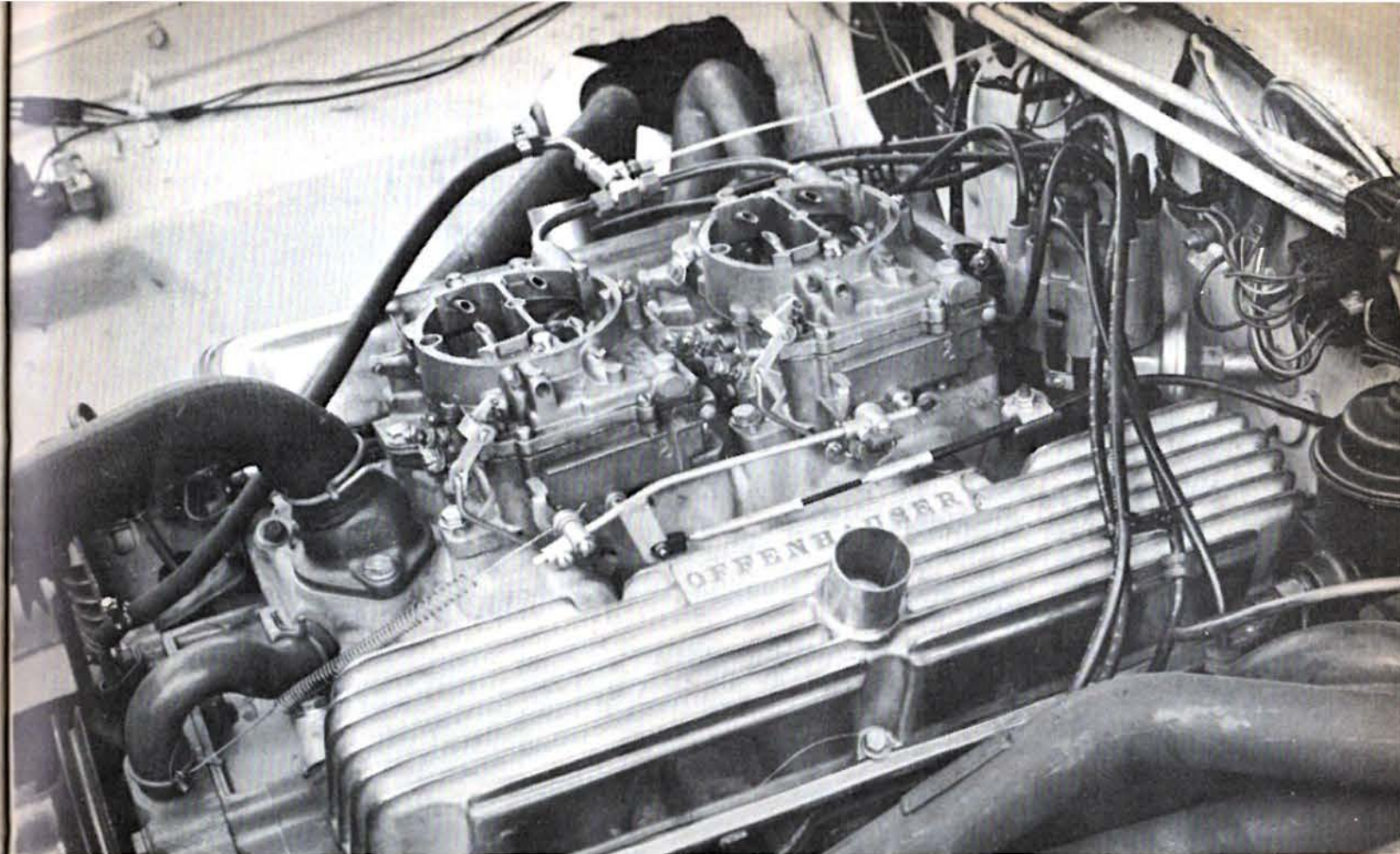
The distributor mechanical advance curve should be modified to provide full advance at 1000 rpm. Maximum total spark advance should be 35 degrees with the vacuum mechanism blocked.

### CARBURETION

The stock high performance 273 engine makes use of a Carter AFB model quad. Carter metering rods #16-216 and secondary jets #120-165 should be used in place of the stock components. The stock primaries can be retained. All manual shift models should be equipped with the primary clusters from the Carter 3854-S quad used high performance automatic transmission models.

### CLUTCH

It would be wise to remove the stock clutch assembly when building



Dual Carter AFB quads and Bellanger tubes handle the breathing chores on Ron Root's 273 Dart Modified Production mill.

a hotter than production stock 273. The original is of the old Auburn design and is not suited for competition. Weber Speed Equipment, 310 South Center Street, Santa Ana, California, offers a matched assembly which has been used with great success by the factory drag teams.

So much for routine blueprinting and basic super tuning modifications. There are a couple of goodies which may be added to this engine if the car will be used in AHRA competition. AHRA is a little more lenient when it comes to modifications in stock classes, so there's no reason not to take full advantage of them.

### CARBURETION

Most of the hot AHRA runners have been using Carter 3447-S quads which came as stock on the old Stage I 426 wedge Ramcharger engines. However, the factory boys have come up with a new "hot setup" which really improves performance. For maximum single quad intake efficiency install a hemi Super Stock Holley 4160 on the stock single four barrel manifold. In order to use this pot you will have to bore the primary



Above, Ted Spehar and Ralph Costa check out the potent mill in Costa's F/SA Politician drag Barracuda. Above right, Barracuda S is an ideal street-strip machine.



PA-prepared D/MP Gendarme III Dart runs completely blueprinted dual quad mill.



### 392 HEMI VALVE SPECIFICATIONS

Exhaust valve seat specifications:

- Valve seat angle—45°
- Valve seat width—.050"-.070"
- Valve seat bottom dress—70°
- Top dress with 0° stone to provide some clearance between top of seat and cast chamber.

Intake Valve Seat Specifications:

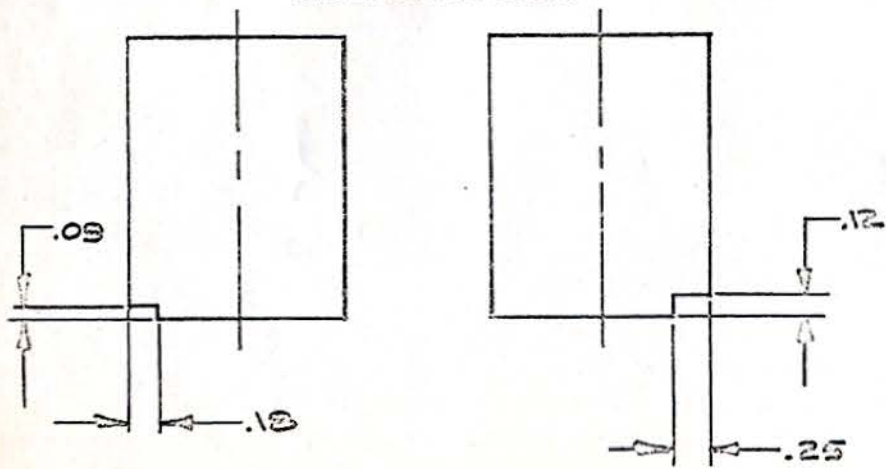
- Valve seat angle—30°
- Valve seat width—.050" to .070"
- Valve seat bottom dress angles are 40°, 50°, 60°, 70°. Each bottom dress step should be .070" to .090" wide.
- Top dress with 0° stone to provide some clearance between top of seat and cast chamber.

### VALVE GRIND SPECIFICATIONS

The following valve grind specifications should be used with the standard valves:

- |                             |             |
|-----------------------------|-------------|
| A. Intake valve face angle  | 45°         |
| B. Intake seat angle        | 45°         |
| C. Intake seat width        | .050"-.070" |
| D. Seat approach angle      | 70°         |
| E. Exhaust valve face angle | 45°         |
| F. Exhaust seat angle       | 45°         |
| G. Exhaust seat width       | .050"-.070" |
| H. Seat approach angle      | 70°         |

### HOLLEY QUAD SECONDARY BOOSTER MODIFICATIONS

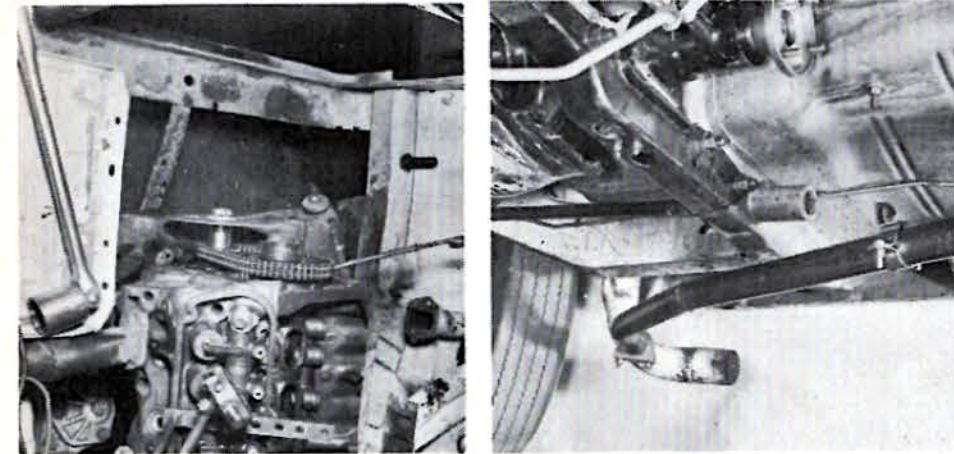


and secondary manifold throttle bores to 1-11/16 inches in diameter. An adapter will have to be made to mount this pot on the reworked production manifold. By using a Super Stock carb mounting flange (#2468-451) as a template, you can cut out an adapter from lightweight alloy stock. The carburetor itself will have to be modified for performance on the 273 engine. A .093-inch power valve restriction should be installed and the secondary main metering restriction on the throttle side should be drilled with a #45 bit. A #41 bit should be used for drilling the restriction on the diaphragm side. The outboard side of the secondary boosters should be notched as shown in the diagram.

### CAMSHAFT

A new 284-degree camshaft with a .480-inch lift is (#2806673) is now available for the 273 cube AHRA engine from Camcraft, Inc., 6120 Casmere St., Detroit, Michigan. This cam should be installed with the overlap split (center-line #1 intake lobe 108 degrees past TDC #1 exhaust). With automatic transmissions the cam should be advanced to 104 degrees centerline. Lash should be set (cold) at .017 inches intake and .030 inches exhaust. Piston-to-valve (Continued on page 62)

has the potential to outperform the 260-289 Ford and 283-327 Chevy



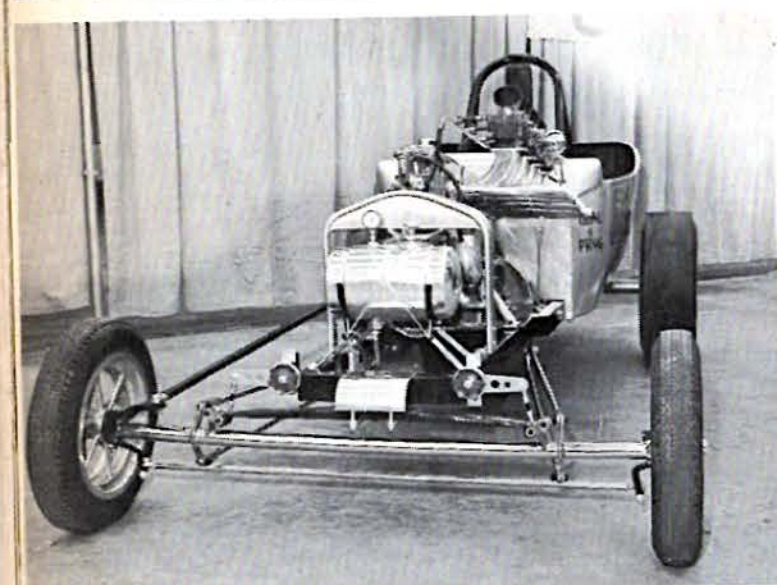
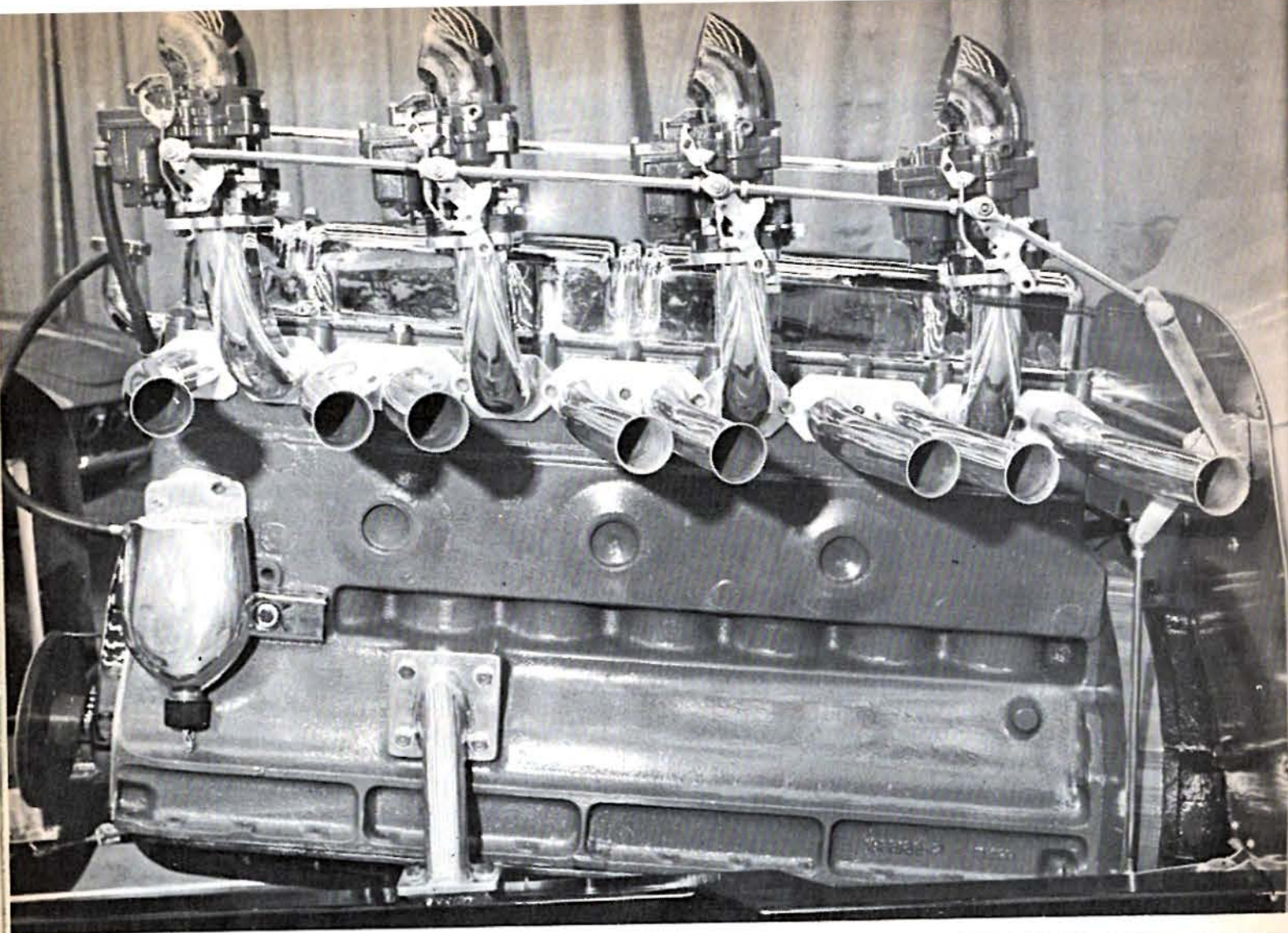
Far left, dial indicator being used to set up hot cam and valve train in the F/Stock Goldfish Barracuda. Left, NHRA legal street takeoff system on the Goldfish employs dual pipes and mufflers, yet is lighter than factory stock single setup. Below, John Dalifior on his way to another F/Stock victory at the NHRA Indy Summer Nationals.



Ralph Costa's Politician Barracuda is one of the cars to beat in F/SA. Ted Spehar twists the wrenches on this honker.







Big 354-cube eight is fed by four Rochester carbs on a wild custom manifold. Snub headers were also made by the owners. Powerplant is a '52, one of the last of the unbents. Front end consists of tube axle, Anglia spindles, Ford transverse.

### Going straight with an unbent Buick eight is the way to beat the class clocks

**I**T WAS GREAT! We still have vivid memories of the '48 Buick fastback we owned way back when. It was just about the sharpest chariot on the street! But performance-wise it had some major limitations. Its heavy straight-eight powerplant wouldn't wind, the gas mileage was lousy, and the gear ratios were ultra-low. But boy was that a car! It could tool along at 3 mph in high gear without the slightest bump or jump. Bags of torque coming from the eight big inline holes made the unbent-eight a smooth and shiftless giant. It wasn't fast, but boy was it smooth!

The Buick straight-eight is just about the least-likely candidate for the drag strip scene. That's why we were knocked off our pegs when we heard that two rodders, Frank Pryg and Ken Neal of Madison Heights, Michigan, had decided on the big eight to power their '23T. And to prove that their engine choice was a good one, they took the car to the 1965 Nationals and went through the traps at 117.24 mph!

The '52 mill has 354 cubes, big-port valves and a Racer Brown cam. A set of Jahns slugs fill the eight holes and furnish a whopping 12.5-to-1 compression ratio. Four Rochester carbs on a custom intake manifold feed the thirsty giant and a Mallory sparker ignites the mixture. Custom aluminum headers get the exhaust out, and the vintage power is translated by a hydramatic transmission.

Neal and Pryg are sure they can better the 11.87-second elapsed time they recorded at the Nationals last year. And they probably will. Long live the eight-in-a-row!



Above, custom ratchet shift handle controls reworked hydramatic. Below, cockpit is uncluttered. Neat airplane-type tiller controls Fiat steering gear setup.



BY ROBERT HEGGE

# EIGHT-IN-A-ROW CAN GO



# Willie ROCKETS From Street To Strip

BY TOM McMULLEN

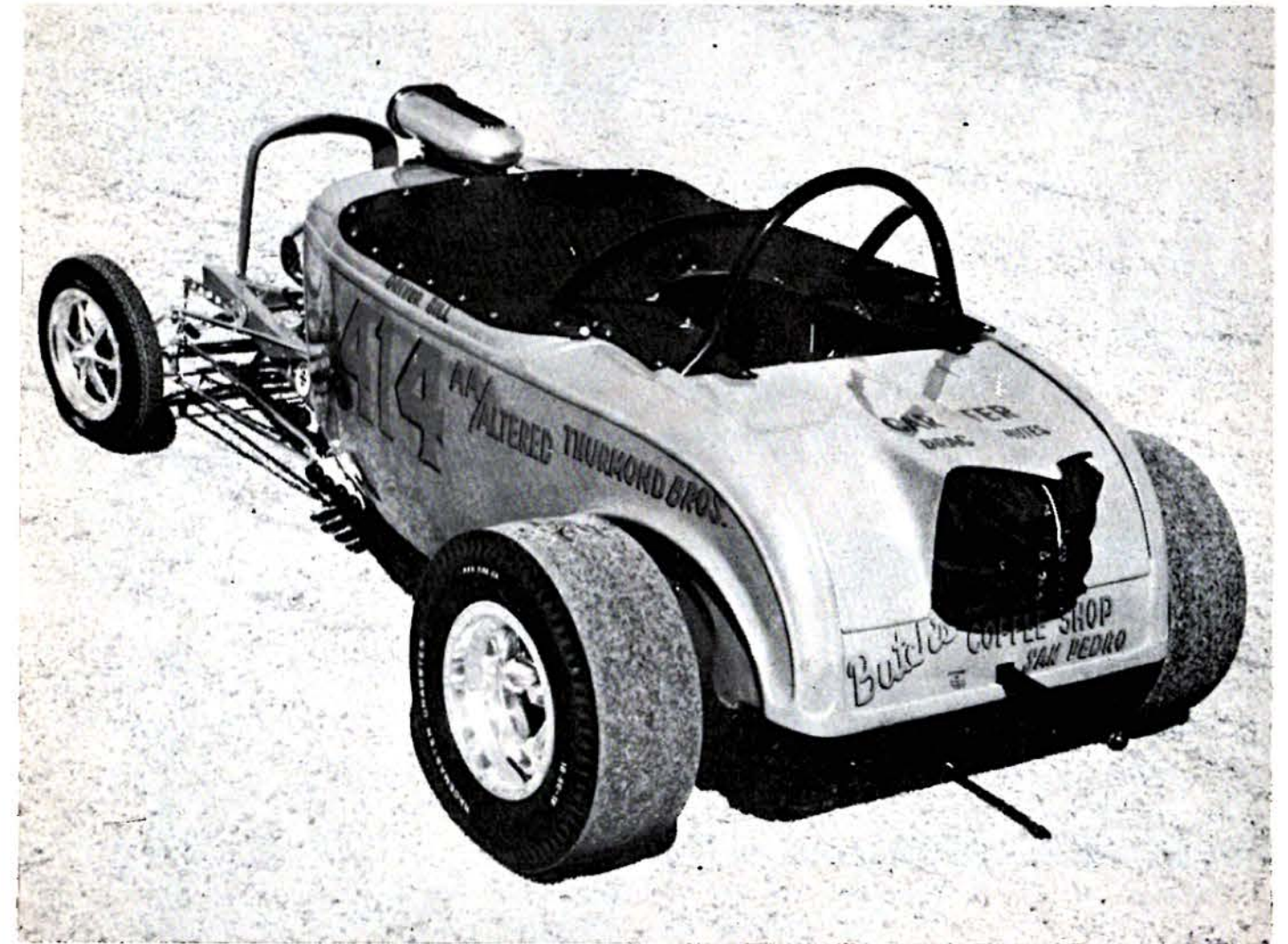
Hard-core rodder William Thurmond gave up racing for 'pink slips' in favor of running an Altered through the 'eyes.' Now he doesn't have to look over his shoulder for the fuzz everytime he lights up the slicks

EVERY NOW AND THEN a street rodder will make the big move and convert his car to a full-time strip machine. Generally, the lure of gold is the reason. Drag racing offers a big chance for fame, glory and plenty of bread.

Willie Thurmond of San Pedro,

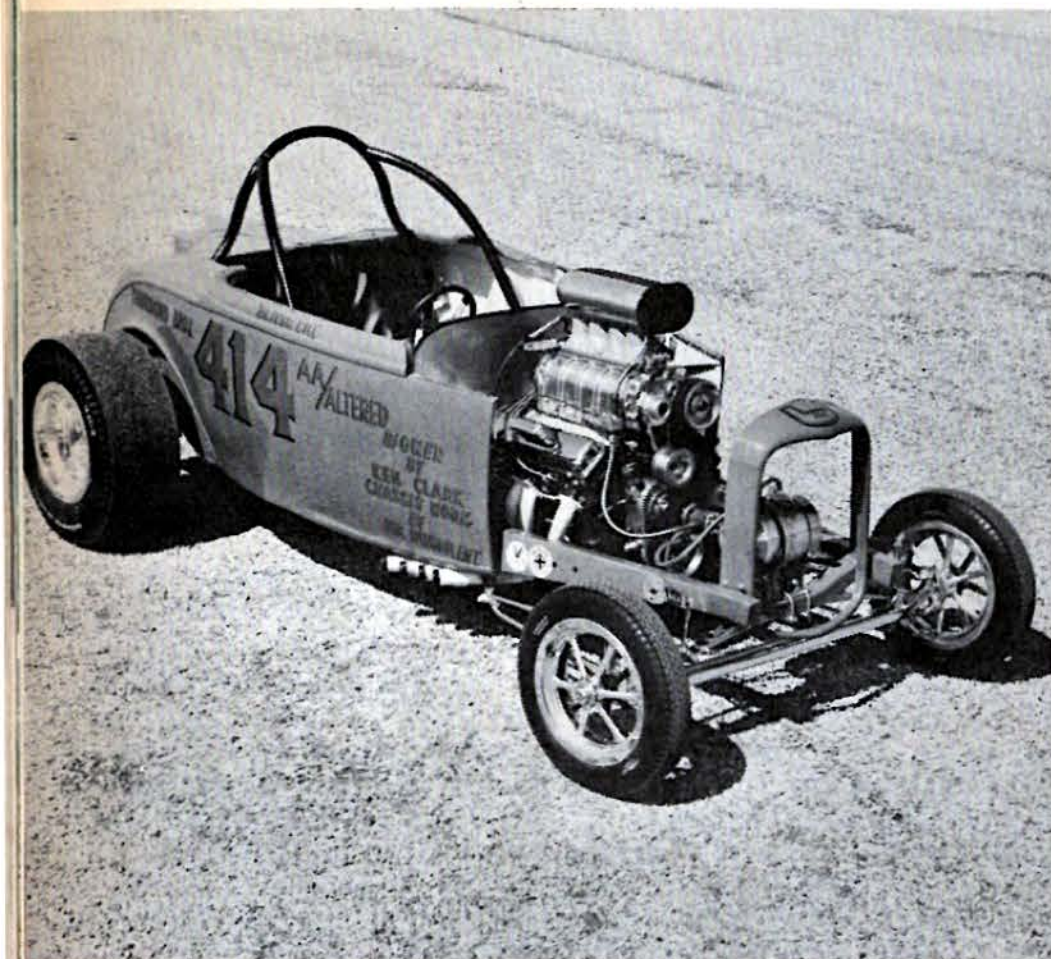
California concentrated on the street side of rodding for 12 years before he decided to go all out and convert his '32 Ford roadster into an AA/Altered gold seeker.

Using the stock frame with leaf spring suspension up front, Thurmond added a tube axle and installed



Sharp tangerine AA/Altered was once a streetster. Racemaster slicks take the torque from an Olds rear. Chute is by Carter.





an Olds rear and driveshaft. To get the power back to the rear, he decided on a CAE in-and-out box with an 11-inch Hayes clutch which slides on a Crower steel flywheel.

In front of the flywheel is a '57 Olds 371 with an Engle 151-grind cam. The lifters and pushrods are also by Engle, but the rockers were supplied by Gotha. Forgedtrue slugs on Delta boxed rods push up against modified '63 Olds heads and result in an 8.5-to-1 compression ratio. Adding to this squeeze is an 18-pound boost from a GMC 671 blower. This gets the juice from a set of custom four-port injectors and pounds it through a Weiland intake manifold.

A steering setup from a '60 Fiat supplies the direction. This mounts a Covico tiller and regulates '48 Ford spindles. There are no brakes up front, but the '57 Olds binders in the rear are backed up by a 16-foot Carter ring-slot chute.

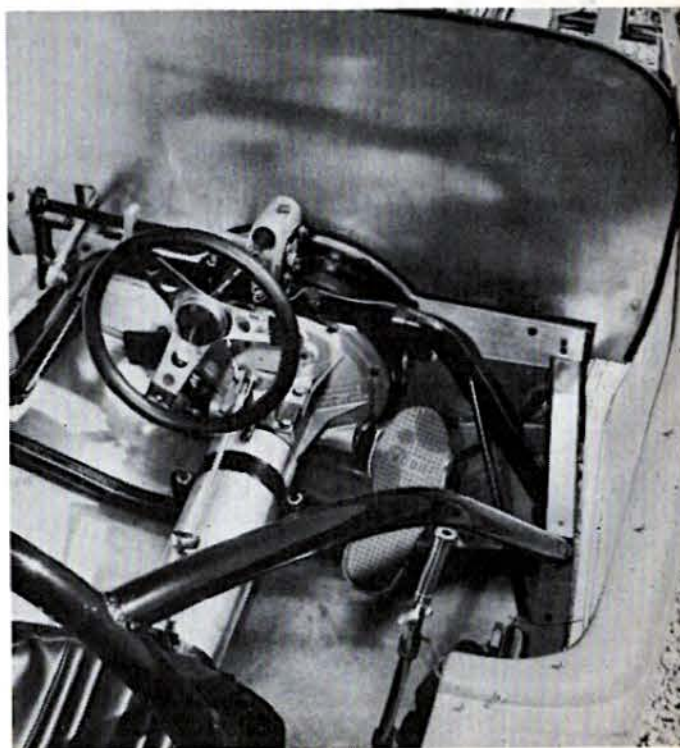
Ten coats of tangerine lacquer and the black naugahyde treatment in the cockpit round out this raring AA/Altered.

Torrid '57 Olds 371 punches through CAE in-and-out box. Blower is a GMC 671

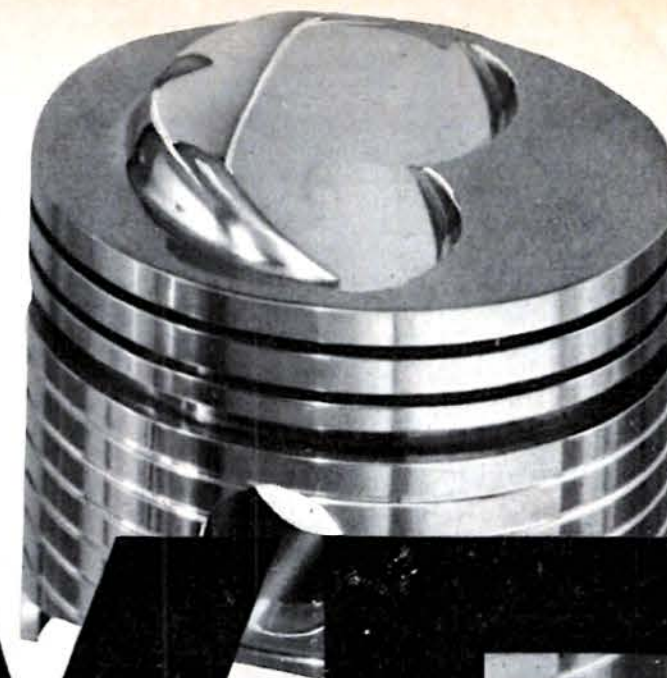
## Street To Strip



Above, body was channeled six inches. Right, tiller by Covico guides '60 Fiat steering which bolts to a pair of '48 Ford spindles.



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**SATELLITE** continued

automotive cousin goes for a paltry \$450 complete. The marine equivalent of the 426 street hemi—hold your hats—sells for just under \$5000!

And hereby hangs a tale. During our research into the prices of marine engines, we found out what is probably the real horsepower output of the street hemi. Plymouth pegs it at 425 hp, but this under-rated figure probably exists only to assuage the safety purgers in Washington. Since the auto safety sanctifiers have no interest in boats or boat engines, Chrysler need not feel inhibited about advertising the real horsepower of their boat engines. Thus, the waterborne version of the street hemi is pegged at 525 hp! This figure is probably the honest output of the street hemi.

So by now we were convinced that the \$900.74 we had "spent" on the hemi package wasn't wasted. But then we found a small hitch. Hemi-equipped cars don't have a standard transmission. The buyer is obliged to choose one of the two "optional" gear boxes—a four-speed or an automatic. Since some sort of linkage is necessary between the engine and the rear end, the price of the "optional" transmission must be added to the cost of the hemi package. Both of the available transmissions, by the way, are specially-beefed units, but their option price is the same as the stock optional transmissions.

Out with the pencil and paper again: The four-speed on the test car is priced at \$182.88 (the Torqueflite goes for \$203.42). This brought the price of the stick package up to \$1083.62.

Another hitch: Since the four-speed is only available with the "optional" limited-slip rear end, the price of our car was boosted another \$37.33 to \$1120.95. To this we added the \$2675 base price of our Satellite two-door hard-top and finally arrived at the cost of a stripped hemi: \$3795.95. When we had tacked on all of the "real" options, such as power steering, power brakes, radio, clock and other Mickey Mouse items, we found that the car had "cost" us \$4147.07. As far as options are concerned, almost anything on the regular Plymouth option list (except air conditioning) can be factory-installed on a hemi car.

We went to bed that night with figures dancing in our heads, but when we awoke in the morning we had nothing on our minds but driving the car. The balance of our first two-week test ride was conducted mostly on the street, except for a

few acceleration runs. But you can't really measure the performance of the hemi in terms of seconds and miles-per-hour. You have to feel it in terms of "G's" sensed by the seat of your pants. We had a ball driving the invincible car on the street. It's a great feeling to know that nobody (no stock car anyway) can beat you.

A few would-be stop-light champions spotted the small "426 Hemi" emblem on the side of the car and challenged us to a dual. But after wiping up the first three or four, we contented ourselves with driving around with a smug look on our collective pussies.

When we returned the first test car we were given the keys to a spanking-new dark-blue Plymouth Satellite hemi equipped with the Torqueflite automatic. This car had only six miles on the odometer and was a little tight at first, which is understandable. But it loosened up after the first 300 miles and we began hemi-storming around again—this time automatically.

The Torqueflite transmission is widely accepted as just about the best performing automatic on the market. The specially-beefed box on our second test car, however, was even better. It differed from the stock Torqueflite in the way it shifted. The transition from one gear to another was sharp—when it shifted, it shifted. This extra-firm shifting is designed into the beefed transmission to prevent over-run when the powerful hemi is turned on. Although it was a bit harsher than the ultra-smooth stock Torqueflite, its performance under normal driving conditions was far from annoying or uncomfortable. The shifting, like the plus-1000-rpm idling speed, is one of the things you get used to very fast when driving a hemi. It's just part of learning to live with a race car.

At the end of both test rides the cumulative mileage was about 1500 miles, and when we looked at our gasoline receipts we found that we had gone through 160 gallons of premium fuel. By our estimates the gas consumption ranges from 7 mpg at the low end, to about 10 mpg at the absolute best.

But enough talk of mileage. We hemi "owners" don't worry about such trivial things as gas bills. After all, when you're driving the fastest thing on the street you know you're king. And it costs money to be king. But, take it from us, it's great to be king, even though you have to turn in your crown after one very short month. Sigh . . .

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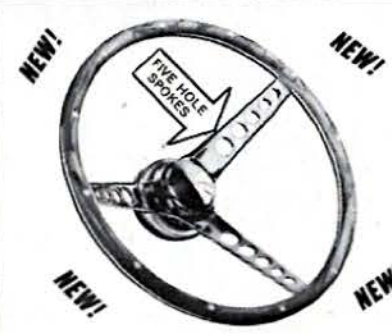
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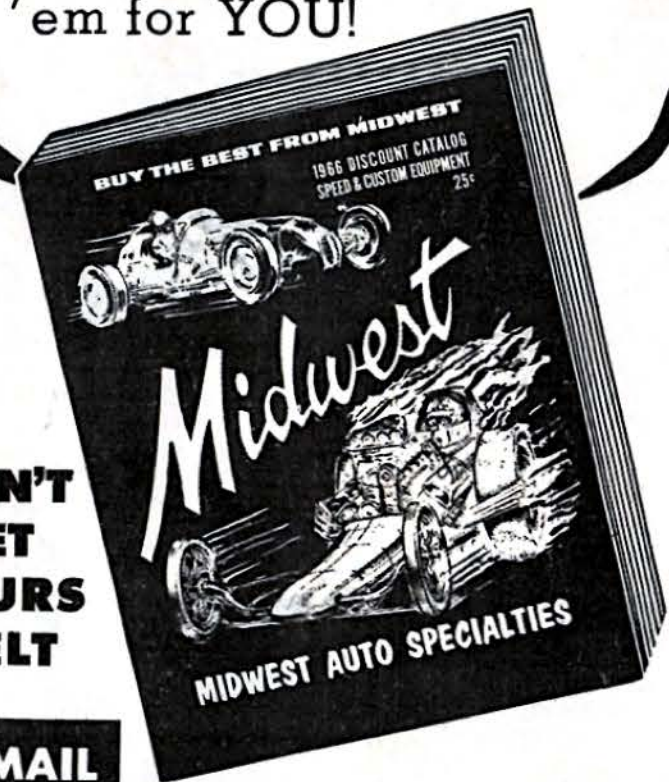


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gear and will allow a top speed of 20.2 mph per 1000 rpm in top gear. This makes for an ideal general purpose gear combo.

After a complete tune-up at Pacers, we hauled out to Gil Kohn's new New York National Speedway in Center Moriches, for some runs through the eyes. Shifting at 5600 rpm we made five passes through the clocks with the best slip indicating 82 mph, 15.7 seconds. The Hurst shift assembly accounted for the ultra smooth gear changes and the all-synchro Pontiac four-speed behaved as expected.

After spending a lot of time behind the wheels of "street hemis" and 427 Sting Rays, we sometimes lose sight of what high performance really is. Well, the 2 + 2 with 376 horses is a genuine high performance car, but it's not in the same league with the accepted "hot setups." Pontiac didn't design it for that purpose and it in no way, should be considered a candidate for "King of the Drive-In." However, it still deserves respect. Here is a two-tone plush cruiser with fullpower that'll run the quarter in the 80's with et's under 16 seconds. It'll cruise all day at over 100 mph and stick right with some of the so-called supercars right up to the end of the speedo.

Then if you really want performance it's a simple matter to lock up the hydraulic lifters so they hardly pump up at all, braze the holes in the rockers and drill them out for proper oil metering, reject the Rochester pots and set up an advance curve in the distributor. Now bolt in some tall gears and we're talking about a two-ton luxury liner that checks through the eyes in 15 seconds flat and will give some of those 360 hp street GTOs a run for the money!

On the street we didn't particularly appreciate the four-speed manual shifter. It may be the only way to go, but when you're tooling around with a 121-inch wheelbase cruiser there's nothing like the "dial-a-win" route. Pontiac offers the Turbo Hydramatic shifter as one of its shift options along with special order 3.73-to-1 rear gears. This would seem to be the ideal street package as the torque multiplication built into the heavy duty auto and the high torque characteristics of the HO 421 work well together. With the optional 3.73 rear the two-tone cruiser should come off the line like Gangbusters. There's also a three-speed Hurst equipped



## Wolf in sheep's clothing? You bet.

Professional driver Jack McClure's Sizzler smokes like a AA fuel dragster all the way from the Christmas tree to the traps. Looks like it might be a super-light funny car. But it's not.

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rear end, and applies its power, on demand, through the stock ring and pinion. You can run on combined piston-turbine power, on piston power alone (so your car is still available for street use), or on turbine power alone.

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standard transmission for those *non-status seekers* who are short of the greenies!

The trip-power Rochester setup on the HO engine was designed for maximum economy as well as maximum performance. Up to a certain point all engine feeding is handled by the center-mounted pot. When the pedal is depressed past a certain predetermined mechanical stop (you can feel it!) the mechanical linkage picks up the end two fuel feeders. This setup prevents fuel from being wasted when the engine can't handle it. By carefully featherfooting it around town and restricting our highway cruising to legal speeds, we chalked up an outstanding 10 mpg fuel consumption average. We thought the transition between two and six barrels could have been smoother, but after a while it grew on us.

The heavy duty suspension package with special coil springs rated at 90 and 127 pounds-per-inch, front and rear and the .875-inch stabilizer bar contribute to the firm and sure ride and handling qualities of this car. However, on less than high quality road surfaces, the stiffer suspension proved to be less than desirable. It didn't bother the test team, but it might have an adverse affect on the country squire who's looking for a high performance *boulevard-type* car. Our 2 + 2 handled well for a car its size and the optional front brake setup with 328 square inches of swept area and finned drums provided safe, sane stopping power. The integral hub drum assembly is still one of the best buys in the accessory business and the only way to go when ordering a high performance Pontiac.

Stylewise the 2 + 2 is "in" all the way. Inside and out the car reeks of style and class. Quality control on our test car was flawless, and the coke bottle lines and wide track styling really made the package. Whether you go for the standard 338 hp four-barrel hydro version or the 376 hp close-ratio four-speed setup, the 2 + 2 is the "super boss" way to travel!

#### TIGER HOP-UP continued

sewer-size intake and exhaust ports. In enlarging the opening beneath the valve, you create the effect of enlarging the valve diameter itself. The seats are closer to the outside edge of the valve. Just the thing for taking big gulps of nitro. Joe tops these modifications off with a set of valves with chrome-plated stems and swirl-polished faces and terms the finished

heads "Posi Flow" units.

Copper O-rings are a must for all 421s running fuel and/or blowers. They provide a tight seal and insure against blown head gaskets. The heads themselves receive the .040 wire rings if you are using the Super Duty block. Remember those chamfers that help breathing so much? Well, they hinder O-ringing. So the cylinder heads themselves receive the treatment rather than the block. Results are equally good. If wedge heads aren't exotic enough, Mickey Thompson will be glad to make you up a set of hemispherical heads for your Poncho. That's right. A hemi Pontiac!

These heads are cast entirely of aluminum, saving about 26 lbs. per head. With two inch valves, bronze locked-in valve seats and those nice, big, round combustion chambers, be ready for mucho top end. And be ready to back up your mouth with your wallet, since these heads will drop you about \$1000 per set.

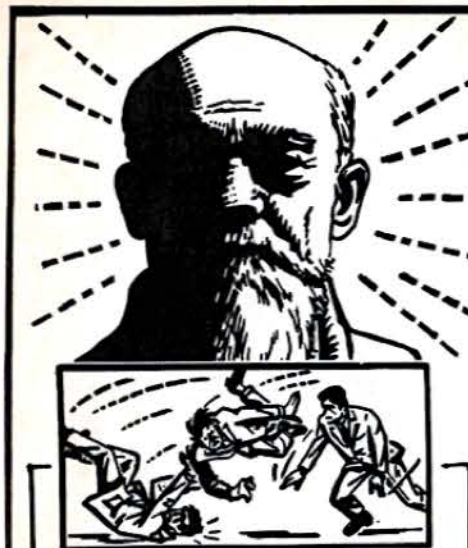
Cam and valve train components are so controversial and so plentiful that giving one brand the gig over another becomes impossible. The entire world makes cams for the 421. A quick rundown of the three "big guns" will suffice.

Jesse goes for an Isky flat-tappet cam and complete ultra-rev kit including valve springs, valve retainers and pushrods. Mickey Thompson Poly Loc nuts are used to hold the valve adjustment. Beswick also likes Ed Iskenderian and uses one of his 550-D "Super Le Gerra" sticks with flat tappets and complete kit. Texan Gay digs Harvey Crane's rollerized cam and rev kit. You figure it. We don't know which is best.

Strangely, none of the Pontiac boys use a dragster-type ignition system. Usually, the groovy thing is a Vertex Magneto. In this case, the "in" thing seems to be a Mallory distributor and coil with centrifugal advance only. About 36 degrees total advance is about average.

Your intake system depends on two questions. Are you running gas or fuel? Are you running blown or unblown? Since we're talking here about all-out "bomb"-type engines only, we'll assume you're running fuel. In that case, carbs are out. You must run injection. Even if you took the jets completely out of carbs, your engine would still run lean if you're packing "a dose" in the tank.

The latest hot setup is Stu Hilborn's "bug-catcher" trick job using eight nozzles, usually number 16A. Bypass jets are usually either .125 or .130. With this system, the Hil-



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born PG-150 fuel pump is driven off the end of the camshaft. Dick Jesse chose to run an injected-only car while Don Gay and Arnie Beswick went the huffed and puffed route. Don and Arnie both use a GMC 6-71 which has been clearanced for racing. Teflon rotor tips are added to reduce friction.

Crager, Isky, Weiland and M/T can supply intake manifolds, drive belts and blower drives to mount the 6-71 on a 421. Gay and Beswick both use Isky blower drive components throughout. Gay likes a three inch drive belt while Beswick uses a two inch setup successfully.

To get the burned-out happy juice out of the engine, we can call on Dick Jesse, Jere Stahl, Headers by Doug, M/T, Hedman, and so forth. All make hip snake pipes for Ponchos. To get the best possible tuning for your headers, it's best to tell these manufacturers what combination of components your car is running.

That's just about the story on building an unreal 421 Pontiac. Actually, the number of different combos of equipment is almost endless. You can go from mild to wild. One last comforting thought to remember: the "mildest" you can go with a Super Duty 421 is around 500 big ones... Stock!

You swing from there.

## WEDGE HEADS continued

to be used for legal NHRA or AHRA class competition, care must be taken to insure that a legal compression ratio is being run. Minimum combustion chamber capacities are listed by the sanctioning drag organizations for most popular engines and all Ford wedges.

If you are reworking a set of heads for an all out big incher you should add Mickey Thompson needle bearing magnesium rockers, special alloy oversize valves and have Mondello or any other reputable head porter hog out and polished the chambers and ports.

The photos used to illustrate this story were taken at Performance Associates in Covina, California, while head specialist Wally Cartwright was reworking a pair of 427 heads for a high riser drag boat engine.

Just about all the wedges being reworked for competition at Performance Associates start life as basic high riser, high winder 7000 rpm mills. The cost of a completely blue-printed version runs from \$1800 to \$2200 depending on availability of blocks and internal components.

In order to make a high performance wedge head mill breathe even better than they do in stock form, Wally goes over the heads with a fine-toothed comb. Before he even touches the heads with a grinder, he usually cuts approximately .025-inch off the head surface of the block. The ports and chambers are then cleaned up and the chambers are cc'd for 12 to 13-to-1 compression (carbureted, gas burning engine). The intakes are then port matched to the high riser manifold, and custom tube headers are ordered for the exhausts. Wally refaces the valves, grinds the seats and hand laps the stock Ford valves in position. Stock lifters, pushrods and other high winder valve train components are reinstalled. Spring heights and pressures are maintained for maximum efficiency at top rpm. And that's about it. Remember, the old wedge has a long way to go before it'll be ready for the boneyard!

## HEMI FUELER continued

master automatic modified for a 2600-rpm stall speed. Stainless steel spacers were used on the rear engine-mounting plate to take care of the extra length of the Torkmaster.

Braking is handled by Airheart caliper discs connected through a conventional master cylinder to twin Anglia brake pedals in the cockpit. Crossing the finish line after a banzai run, driver Osmond pops two 16-foot Carter cross-form drag chutes and mashes both feet on both pedals. That's stopping power!

The beautifully hand-formed aluminum body was constructed by John Terry of Bowie, Maryland. A plywood mock-up was made first. Then the body panels were rolled from .060- and .090-gauge Alcoa aluminum.

The sharp looking orange and white lacquer was applied by Osmond, while Don Prather upholstered the cockpit in contrasting black leather.

Unlike the usually Spartan dragster interior, *Nasty II's* compartment features a neat custom steering wheel with wood grips and a complete array of S&W gauges to keep Osmond informed of what's happening behind him. In addition, the car has a 2-inch-high plexiglass windshield surrounding the cockpit to make sure he doesn't get something in his eye while going 190 mph.

*Nasty II's* performance is certainly outstanding as it is. With 50-percent nitro in the tank and the 1.09-over-drive blower, the rail clocks consistently low eights with speeds in the 190's.

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273 MOPAR continued

clearance must be checked and set so as not to drop under .060 inches. This cam is good for street use as well as dragging and should be installed along with Racer Brown springs (1.62 inches minimum height).

The following modifications may be incorporated in 273 engines used for Modified Production, Factory Experimental and/or Gas class dragging.

### CARBURETION

The most popular treatment is the installation of the twin four-barrel two-level intake manifold available from Edelbrock Equipment Company, 4921 West Jefferson Blvd., Los Angeles, California. The exhaust crossover in the intake manifold should be blocked for racing. With this manifold dual Carter 3853 or 3854-S (stock 273 high performance manual and auto trans carburetors) should also be installed. The step-up springs from the primary metering rod step-up pistons in the front carburetor only should be deleted. Carter 12-0-176 (.0635-inch) secondary jets should be installed in the rear carburetor only. As the stock velocity valve weights are much too heavy for this application, it would be advisable to block the valves open. No other modifications are necessary for optimum performance.

### CAMSHAFT

The Racer Brown ST-12 camshaft with VR-18X outer springs and VR-56 inner springs has proven itself with the modified intake system. This camshaft should be installed with the overlap split centerline #1 intake lobe 108 degrees past TDC on the exhaust stroke. Lash should be set (cold) at .017 inches intake and .030 inches exhaust. Redline with this cam and spring setup is 7500.

Super Stock hemi lifters (#2402-288) work quite well with this cam without the need for honing the cylinder block tappet bores. The installed spring height of the Racer Brown springs should range between 1.968 and 1.70 inches. In most installations the outer valve spring surge dampers may not fit over the inner valve spring seat on the stock heads. Either the inner spring seat diameter can be reduced or one coil can be removed from each damper.

### HEADS

You can raise the compression ratio to 12.5-to-1 by milling the  
(Continued on page 64)



Q. What is the hottest performance option available from the factory in an Olds 442? I would like to buy one mainly because of its fine handling characteristics, but have not done so because of the lack of racing options. How do you think a 442 would stand up in NHRA C/Stock racing?

Harry Dunolor  
Dundee, Illinois

A. At present the NHRA C/Stock record (110 mph) is in the hands of an Olds 442 owner. I guess that answers your question! There is one horsepower option listed and that's a tri-carb Rochester package which increases the horsepower to 360. It makes a really hot car even hotter. In the very near future a fresh air package will be available for C/Stock from Olds.

Q. How do you think eight Weber single-barrel pots would work out on a 289 Ford Fairlane? I am looking for extra punch but still must retain some reliability and low end torque for street use. Are there any intake systems you would recommend for a mildly modified, solid lifter cammed 289?

Devon Franeman  
Downey, California

A. The 289 Ford engine responds quite well to intake tuning. There are quite a few systems that work well for street and strip but I would not classify the Weber system as an ideal setup for your Fairlane. The Webers are expensive to buy, expensive to install and expensive to maintain. Pick up either a Shelby high riser single four barrel or the not yet announced (very soon, however) high riser dual quad setup. Make sure the cam in your engine is capable of brewing up a storm, because multi-pots need those R's!

Q. Is it worthwhile installing a '54 Ford OHV V18 in my '39 Ford sedan? I was offered a '54 in good shape for \$75 and can get the adap-

tation components for a song. How much does a '54 engine weigh and what was the exact cubic inch displacement?

Tony Zelker  
Butte, Montana

A. Steer clear of that clunker or you'll be sorry! Stick with the original flathead or go for a late Chevy or Ford V-8. The '54 OHV "anchor" tips the Fairbanks at almost 600 pounds puts out very little in the line of horsepower and displaces just 239 inches. Go 283-327 Chevy or 260-289 Ford and live a little. You won't be sorry!

Q. Is Don Garlits giving up drag racing for '66? I've heard rumors to the effect that he will give up driving for an executive position at Dodge. Is there any truth to this story? What ever happened to the "funny car" he was supposed to campaign last year?

Ted Corsa  
Cherry Hill, N.J.

A. "Big Daddy" Don is still pilot-

ing his Dodge hemi-powered fueler, (longer than last year's model) and is very much in competition. He still gets better than \$1000 to run at tracks and he isn't about to give that kind of income up. Not even for a position with Dodge! He will also be campaigning a "funny" hemi-powered Dart this year, on fuel of course, against the funny FoMoCo set. He's still tops in the driver's bucket.

Q. How do they manage to run production Ford 427 Overhead Cam drag engines on nitrated fuels, and even on gas, to 9500-10,000 rpm? Are they equipped with legal rods and pistons? Are some of the go-fast Ford jockeys running experimental lightweight heads instead of the mucho heavy cast hemi models?

John Lindermere  
Eau Claire, Wisconsin

A. The Ford 427 Overhead camers running on the exhibition circuit are running lightweight  
(continued on page 66)

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heads to a minimum of 51.3 cc's. However, much care must be taken with the head gaskets as it is difficult to keep them from blowing at this high ratio. It might even pay to have the block and/or heads O-ringed and fitted with special steel-asbestos racing gaskets to prevent gasket failure. When running the Racer Brown cam and 12.5-to-1 heads it will be necessary to deepen the valve pockets in the pistons. A minimum of .060 inches of piston-to-valve clearance must be maintained with this setup.

It is possible to install larger valves in the 273 heads and increase the breathing potential of this engine by leaps and bounds. On the exhaust side you should use Chrysler 392 cubic inch hemi valves (#1634744) with the head diameters reduced to 1.65 inches and the face angle set at 45 degrees. On the intake side you should use 392 hemi intake valves (#1821241) with the face angle set at 30 degrees and the overall height shortened .060 inches.

The ports should be modified accordingly to reap the benefits of the larger valves. When installing the hemi valves it will be necessary to notch the edges of the cylinder bores for more valve clearance. The valve pockets in the pistons will also have to be enlarged. A minimum of .080 inches clearance must be maintained between the valves and the pistons and cylinder bores. Valve seats should be located as close to the outer edge of the valves as possible. Complete specifications on setting up hemi and stock valves can be found in the charts.

In this informative tech feature we have tried to cover every basic modification that can be made to a 273 cubic inch engine. These are the same modifications used by the record holders and the top class runners. We did not go into fuel, fuel injection and Weber carburetors as they are out of the realm of the average rodder.

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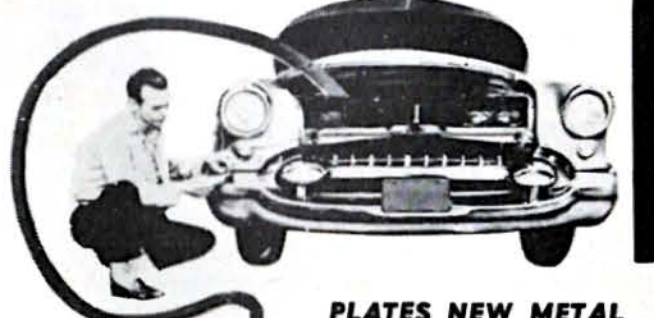
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aluminum heads in place of the heavy stockers. They are not NHRA legal as of this writing, however. Most of the OHC mills also use Mickey Thompson forged aluminum rods and special forged pistons which carry FoMoCo numbers. They are legal. Gas Ronda's mill has revved to 10,000 rpm on 50 percent fuel with no ill after-effects. The Ford folks are going to be hard to beat in '66.

Q. Where can I get a really beefy blower idler pulley that would work on a GMC-blown Lincoln engine? I have been experiencing trouble with flexing brackets and eventual belt and component destruction. Are there any really heavy duty units on the market?

Name Withheld

A. Write to Bruce or Dave Crower at Crower Cams, 3333 Main Street, Chula Vista, California. They recently announced the availability of a beefed idler pulley bracket setup constructed of 7075 T-6 aluminum bilet stock for Chevy and Chrysler engines. They may, however, be able to modify one for your particular Lincoln engine setup. Stock price runs under \$50 per assembly.

the checkered flag.

"I've always told 'em," declared Jim, "that I don't have to play second fiddle. Give me the fast car and I'll be right at the front. Now, maybe they'll believe me."

"Man," said Lorenzen after the race, "I've never seen a USAC guy drive like that." "When you get squirted down the straightaways like Herk did to us," Fred's mechanic, Jack Sullivan, told a newsman, "there's no way to win."

Lorenzen spoke up again saying he felt that the last caution flag, brought out by Ned Jarrett's spin on lap 295 cost him the race. "Hurtubise had to pit," said Freddie, "and that last caution provided him the perfect time to do it. I had pitted with 54 laps (81 miles) to go, and wouldn't have had to stop again since I was getting about 95 miles to a tank of gas."

But, when Hurtubise pitted on the yellow flag, Freddie did, too. Why?

"I thought I could beat Herk out of the pits. I went in for a right front tire so I could make a run for it." Lorenzen did get out of the pits first, but when Hurtubise returned and the caution period was over, his Plymouth caught Lorenzen's Ford,

passed it and maintained a one-lap lead to the finish, 58 laps ahead.

The victory was a popular one for Hurtubise. The Atlanta win was the second for him since his accident in June, 1964 at Milwaukee in which he suffered burns over much of his body. Last September he made a triumphant return to Milwaukee by winning the 250-mile stock car race.

"When Petty dropped out," said Herk, "I knew I was the fastest car on the track. I don't know if I could have raced with Petty. We were close to each other early in the race, but I saw he began to smoke, so I held back. I didn't want to force him to run hard and close which might have taken us both out."

The man who had said "I never gave any thought to quitting racing" explained that he never was in serious trouble during the race, but "you never know what's going to happen out there. It probably would have been quite a race if Petty would have stayed in. My car would run just as fast as his, but I don't know whether I would have beaten him."

The record crowd came to cheer Petty, but it was Hurtubise who drove a masterful race, his first 500-mile win and his initial NASCAR victory. They don't come any gamier than this latest Atlanta champion.

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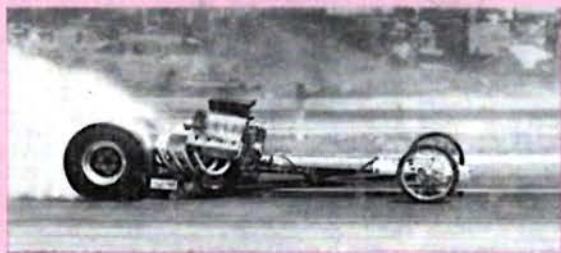
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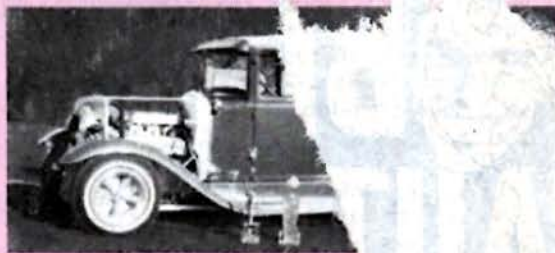
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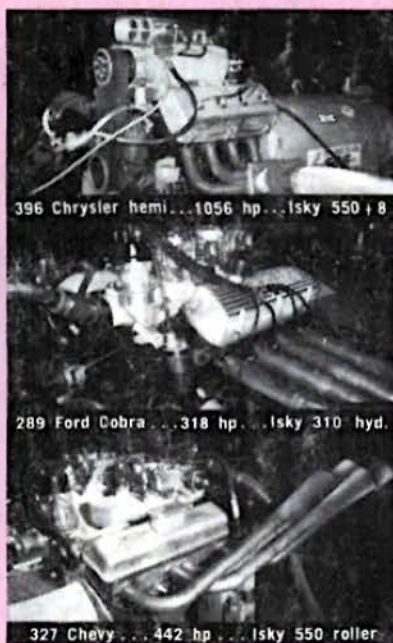
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## THE ISKY CAR-OF-THE-MONTH



Joe Carrisalez of San Antonio, Texas is this month's winner. He sent us photos of his car and wrote us: "Model 'A' Ford Sedan, I've installed a Chevy V8 with 3 two's, and named it 'Plum Loco'. When I was brought to Wilson's Automotive of San Antonio, Texas for advice for street and strip. He recommended the Isky RPM 400. His advice, and now own the best known and most respected cam, expensive, and the results are really 'tough'. The difference is great! Now my sedan really moves; with more power, and wild idle. For street and strip, Isky can't be beat!"



396 Chrysler hemi...1056 hp... Isky 550+8

289 Ford Cobra...318 hp... Isky 310 hyd.

327 Chevy...442 hp... Isky 550 roller

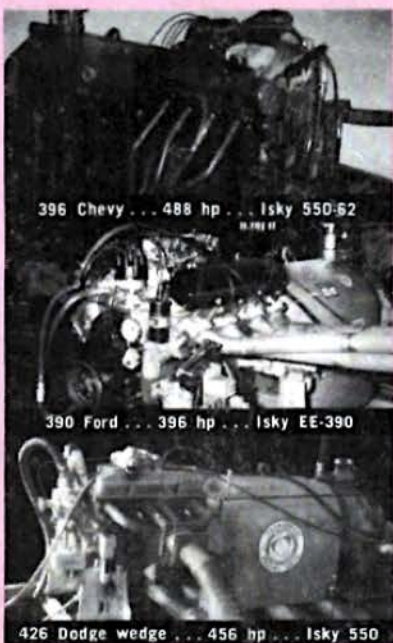
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To properly evaluate an engine's potential, and prove the efficiency of our racing cams and valve gear components, we maintain a daily schedule of engine testing. Nearly every new engine that is developed and released by the major auto manufacturers, is purchased and subjected to an intensive and planned program of testing and evaluation for valve gear improvements.

Another dynamometer is employed exclusively for the purpose of testing the endurance of racing valve gear components in today's OHV engines. An equally important phase in our testing program is the development of compatibility in component parts of the valve train such as tappets, pushrods, and rocker arms, to provide longer cam and lifter life. Visitors to Southern California are invited to tour our Dynamometer and production facilities and to witness these tests in actual operation. The valuable knowledge and information gained from these extensive Dynamometer programs is available to all hot rodders who are building similar engines.

Where it is mutually beneficial, we cooperate with engine manufacturers and developers, organized racing programs and supplementary speed equipment manufacturers in our testing programs. Send 10c for Dyno test results with hp charts of the popular Chevy V8 engines. (Charts on other engines will be available in the near future.)



396 Chevy...488 hp... Isky 550-62

390 Ford...396 hp... Isky EE-390

426 Dodge wedge...456 hp... Isky 550



## Isky's Top Tuner's Tips

### TTT No. 15... WHICH IS FASTER, A ROLLER OR FLAT TAPPET CAMSHAFT?

This perplexing question is repeatedly asked of us by racing mechanics. First, let us establish that most any motion obtained with a flat tappet arrangement can also be obtained with a roller tappet mechanism. Nearly all Isky experimental grinds see the light of day as flat tappet profiles. Then if proven successful by dynamometer testing, a roller tappet equivalent is then made. Therefore, most of our racing profiles are available either as a flat tappet, or its roller tappet counterpart. Although these two cam lobe profiles are quite different in appearance, they impart exactly the same lift curve to the poppet valves, relative to the degrees of crankshaft rotation. (The lift curve referred to above is known as "the area under the valve lift curve".) Frequently in our dyno testing, we make a routine cross-check of our flat tappet cams against their roller tappet counterparts. The result? No appreciable difference in horsepower between the roller or flat tappet cams. Then, what are the advantages of using roller tappets? See TTT next month for the answer.

## '66 ENGINE SPEC SHEETS

The latest up-to-date information on Isky cams for specific engines. Includes camshaft data for all cars including '66 engines. Plus tuning tips, etc. spec sheets for each: Chevy, Fomoco, Mopar, Pontiac, Olds, GM and Imported cars. From 4 to 12 pages each. STATE MAKE OF CAR. Only 10 cents each, postpaid... Isky decals included FREE!!

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