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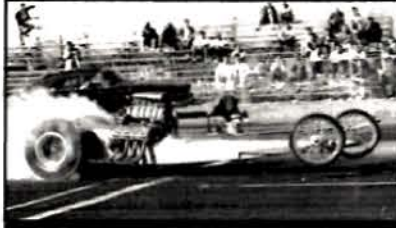
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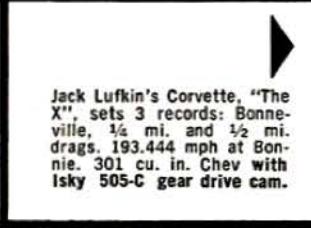
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THE ISKENDERIAN GALLERY OF CHAMPIONS



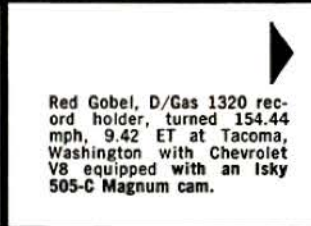
Bob Walters of Capitol Speed Shop, Lansing, Mich. AHRA—A/FD, Fresno, Calif. Speed: 195.22 and 7.79 low ET—in Chrysler 392 hemi with Isky 9000-MM40 cam.



Jack Lufkin's Corvette, "The X", sets 3 records: Bonneville, 1/4 mi. and 1/2 mi. drags, 193.444 mph at Bonneville. 301 cu. in. Chev with Isky 505-C gear drive cam.



Dick Landy placed No. 4 in Drag News Top Ten with SS/A 127.79 mph, low ET 11.30 at Lodi, Calif. '64 Dodge 426 with an Isky Ultra-super Magnum cam.



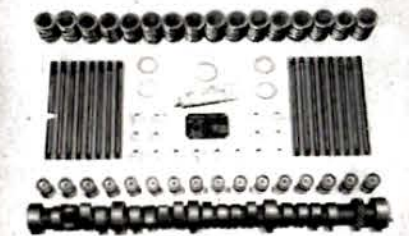
Red Gobel, D/Gas 1320 record holder, turned 154.44 mph, 9.42 ET at Tacoma, Washington with Chevrolet V8 equipped with an Isky 505-C Magnum cam.

NOTE: If you would like to have your Isky equipped competition car appear on this page in future "Iskenderian Gallery of Champions," just send photo and brief details of engine and records to Ed Iskenderian.



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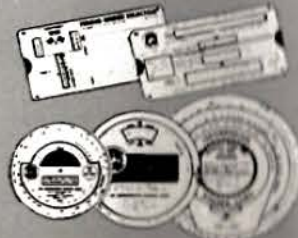
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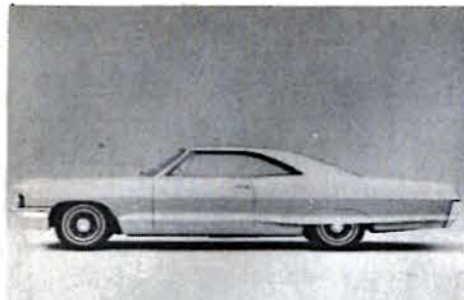
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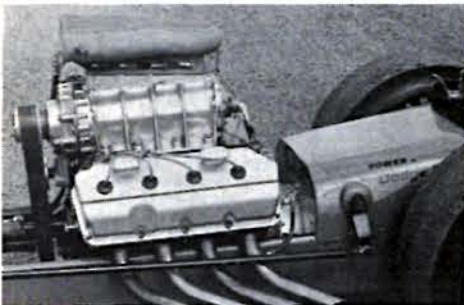
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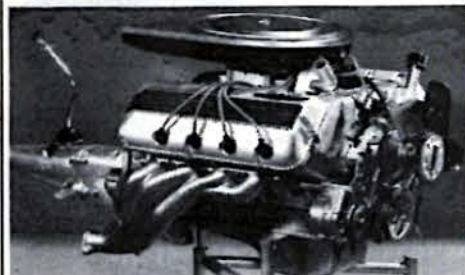
If you are about to buy a Motorcycle... do two things first



Editorial comments

AFTER reading the new car features, starting on Page 8, I'm sure you'll agree with me when I say, "'65 will go down in history as the year of indecision." There are so many models, series, engine, transmission and suspension options available, that you really have to study each and every sales brochure before you can decide which steering wheel to buy! It looks like handling packages, disc brakes and high performance engine options are here to stay.

Jack Chrisman, long time rodding enthusiast and recent Comet booster, has completed his answer to the Dodge Chargers. Based on a two-door hardtop body, Chrisman's S/FX machine is powered by a full-house, blown-injected 427 FoMoCo mill. GMC6-71 blower, Hilborn Owl-Eye injectors and lots of chrome fill the small engine compartment. This car differs quite a bit from the Dodge Chargers, as the Comet runs sans transmission and on fuel. A direct drive setup uses a Schiefer dual disc clutch assembly to boot the power to the rear. First time out, Jack stopped the clocks at 148.27 mph in 10.38 seconds, running small doses of pop. He has already signed up for the NHRA Indy Nationals and will run as a B/Fuel Dragster. Knowing Jack's capabilities, I wouldn't be at all surprised if he cops a win from the rail honchos!

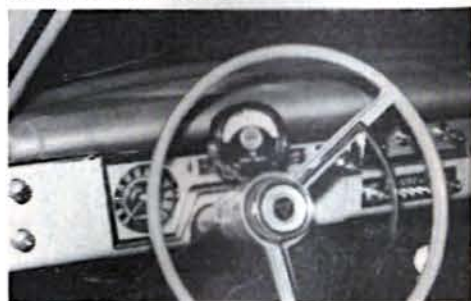


While on the subject of Ford combatting the Chrysler threat, here's some new engine news. Ford has gone Chrysler one better with an Overhead Cam 427 engine with hemispherical-shaped combustion chambers. As far as Ford is concerned, this engine is

strictly a one-off experiment. However, I feel that this engine is the key to Ford's future in both NASCAR and drag competition.

Our hats are off to NHRA for bringing Super/Stock racing back where it belongs. New rules will prohibit the butchered-up, factory-sponsored pro cars from competing against dealer or self-sponsored local boys. Those wild hemi Mopars with relocated front and rear suspensions, 427-Falcons, Comets and Mustangs, Z-11 Chevilles and other assorted hybrids will compete as FX machines.

A visit to Pacers Auto Co. in Oceanside, N. Y., netted us with a wealth of information on New York's fabulous dragging fire wagons. Charlie and George, two of the nicest guys in drag racing, are well known as the owners of the Tasmanian Devil Double A altered. Their specialty is competition machinery with an emphasis placed on dragging fire trucks and ski boats. Their latest project is a rig that belongs to the Great Neck department. It is basically a '40 Ford with aluminum body panels, diamond-plate interior and a single bucket seat. The powertrain consists of a blown-injected hemi Chrysler with nitro pistons, Milodon support, wild cam, B&M Hydro trans and a late-model Olds rear. All four wheels are graced with Cragar-Airheart disc brakes. Full throttle starts produce wheelies every time! A full feature on the wild drag trucks and the Pacer's unique operation is planned for the near future.



Almquist Engineering of Milford, Pa., just added a new goodie to their line of rod and custom gauges. Known as the Twin-Tach, this big, chrome-cased electric tachometer has a built-in torque indicator. The torque indicator is adjustable, so that optimum shift points can be determined and set for any car. We mounted one on a new Dodge and checked it for accuracy against a calibrated clock. Operation and accuracy, was on par with any other quality tach. Mounting brackets and full installation data comes with each unit. Retail price of the Twin Tach is approximately \$38.

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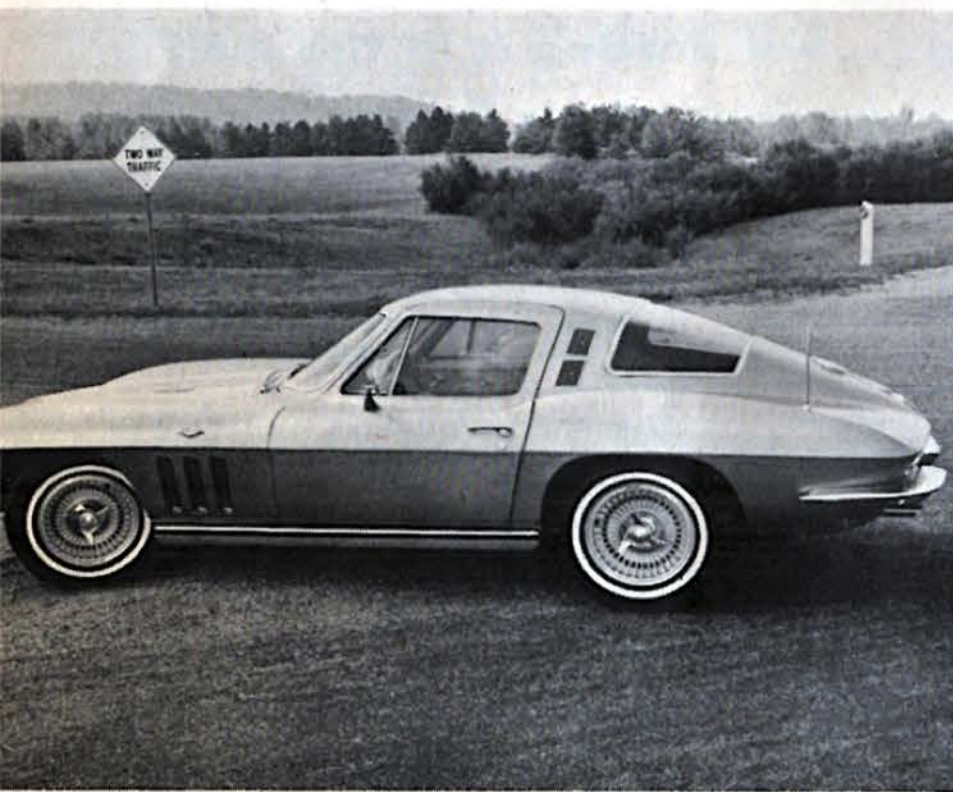
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SUDDENLY IT'S '65 GENERAL MOTORS

BY THE CR STAFF



Wild roofline, chromed steel wheels and hot 425 dual quad mill are some of the fine points of the Buick Wildcat. Road hugging Buick is a top performing machine.



The removal of non-functional garbage and the addition of functional scoops are the big styling changes for '65. Delco disc binders are standard on this screamer.

TRUE to tradition, GM never runs short of goodies at new model time; for '65 they really out did themselves. A new engine, a new transmission, a new frame for a series of cars, a different concept in disc brakes, and just to keep things hopping, a brand new Corvair with an equally new suspension are some of the *goodies!*

We'll begin with the new 425 cubic inch Olds powerplant which replaces the 394 that is known on every drag strip in the country. It is a good fifty pounds lighter than its predecessor, has bigger valves, and puts out more horsepower. Equally important is the improved breathing potential, a sturdier lower end, and attractive exterior dimensions.

The improved breathing is the brainchild of an Olds engineer, Gill Burrell, who found that the usual pushrod arrangement is very limiting, (a pair of intake ports must be sandwiched between adjacent pushrods). You can add to the room by making offset rocker arms, but this, in turn, adds to the cost.

A further improvement in breathing resulted from the use of a saucer-shaped combustion chamber which offers improved gas flow around the valves. This type of chamber allows improved spark plug location, a more direct flame travel and a higher rate of burn. Since the rate of burn and the pressure rise are higher, the lower end was beefed up accordingly with larger, wider mains.

An engine is a practical gadget and a customer must live with it for many years. Because of this, things like corrosion and oil leaks are of prime importance. To cut down on oil leaks, Olds engineers moved the end thrust bearing location from the rear to the center of the engine. This enabled them to produce an efficient slinger system, so that the rope seal at the rear has little work to do and can easily control whatever oil reaches it. Valve covers were treated just like an oil pan and given ten bolts around the perimeter of each one. Positive location is provided for the gaskets under the intake manifold so they will not slip during installation. The manifold itself, rather than a separate cover and manifold combination, is used to seal off the valve valley. You gain greater silence, better oil sealing, but loose a bit on weight control. However, with this engine design the intake ports are at the ends of each head, so that the manifold must be longer than usual. In exchange, the exhaust header on one side is exceptionally short.

The Turbo-hydramatic has been

adopted, in several variations, by all of the divisions except Chevrolet. It is a transmission worthy of note, because you'll find more and more of them on the drag strip as time goes along. It is about as perfect as anything designed for the job so far. Look at it from the driver's point of view. You place the stick in drive and three smooth shifts take place thanks to three clutches that engage in succession. No waiting time for release of bands or clutches before the next gear can be engaged. As each clutch is engaged, the gear train takes up the next speed.

A pair of over-running sprags, together with three clutches, make it possible to get three forward speeds and reverse from a dual planetary gear set. This is rather exceptional, since the sun gear is common for both sets and all planets are of the same

size. In direct drive you get the full benefits of a governor and assorted valves, modulated by engine vacuum. An aneroid, which is sensitive to barometric pressure, modulates shift points so that they occur at the same rpm on top of Pikes Peak or at sea level in Miami Beach! So far it works the same as an exceptionally smooth three-speed automatic of any make.

However, for the performance minded, there is more. If you want to go through the gears as in a stick shift, flick the lever into Low. It will stay there till you shift the lever to Intermediate. Here, there is an automatic upshift to Second. Next, you move into Drive, and here again, there is an upshift. If you want to stay in Second for a series of turns, you can, regardless of speed. If you are going down a grade and want

engine braking, shift to Second and the retard feeling is immediate; ditto in Low range. In both lower ranges, and Reverse, the action is achieved through the use of bands.

On Olds, Caddy and Buick, the torque converter is fitted with a set of variable vanes controlled by throttle position. This makes possible a finer tailoring of the torque converter, and also eliminates creep while waiting for a light. Pontiac dispenses with the variable stator, but feels you should hold your brake at a light regardless of creep, and that the performance benefits are not great enough to warrant the cost. That's what makes horse racing!

There used to be a time when ride versus handling was not just a compromise, it was an outright choice. You either had boulevard ride and wallowed (Continued on page 65)



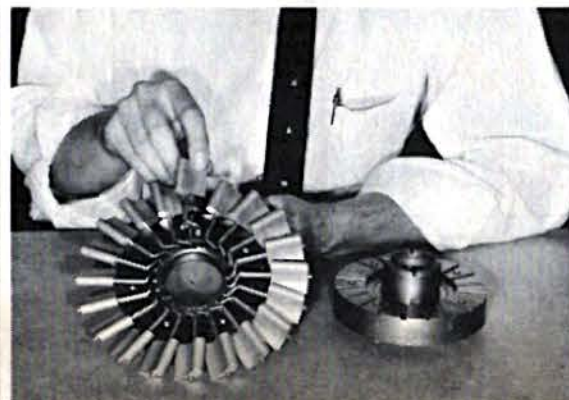
Streamlined Catalina 2+2 with buckets, aluminum wheels and 421 mill is Pontiac's top performer for '65. New Olds Hydro has a variable vane stator. Controlled shifts make it ideal for competition use. Buick 425 dual quad mill is available on all Riviera, Electra and Wildcat models. Aluminum components are used to keep the weight down to a minimum. It's a hot one!



'Vette discs have built-in drums for parking brakes. Action is positive.



New 425 Olds should be popular with the go-fast boys. Vertical quads plus a non-functional scoop set off the GTO. Tri-power 389 is hottest engine.



SUDDENLY IT'S '65 FORD MOTOR COMPANY

BY THE CR STAFF

STYLING and suspension changes highlight the '65 FoMoCo line. The full-size Ford-Mercury sport radical sheet metal changes with all new headlight, tail blinker and side trim treatments. A multitude of roof line options and interior appointments bolster the appearance of the big cars. Replacing the old leaf spring rear suspension is a GM-type coil spring rear with a stabilizer bar. Engine options run from a new 240 cubic inch Six with a seven-main lower end to the dual quad 427 High Performance powerplant. The new Ford drag project car will either be the Falcon or the Mustang with the high riser 427 incher.

Disc brakes are now standard equipment on the

Thunderbird and Lincoln Continental for '65. However, they are available as an extra cost option on the potent Mustang. Except for small grille, headlight and trim changes, the Thunderbird and Lincoln Continental remain the same for '65.

Falcon Futuras for '65 pack 289 cube-barrel engines under their bonnets. The 289-two-barrel is the standard V-8 Falcon option. The 260 V-8 is no longer available on Fairlane, Falcon or Mustang models. New three speed Cruise-O-Matic transmissions for the high-performance Eight cylinder engines make it possible to enjoy high performance clutchless driving.

The Mustang line has been expanded by the addition of a new Two plus Two fastback coupe. This sleek sportster can be had with an economy Six cylinder en-

gine or the mighty 289 271 hp Cobra-type powerplant. Other new goodies for '65 include across the board alternators, low-profile tires, transverse-mounted mufflers, sequential turn signals, keyless locking and reversible keys, suspended accelerator pedals, plus many more goodies that improve comfort, ride, handling and overall performance. Sound interesting? Well read on for the complete, unabridged poop!

Ford offers no less than eight series of cars, ranging from the low-end Ford Custom two-door sedan to the 10-passenger Country Squire station wagon. New for '65 models are the Galaxie 500 LTD four-door hardtop and the four-door Ranch Wagon. The Galaxie 500 two-door sedan and 500 XL four-door hardtop have been discontinued. There are five separate roof lines that set off the classic-styled Fords. Sharp, straight thru lines highlight the slightly sculptured body side panels. The front end is accentuated by a simple bar-type grille flanked by vertical quads. Parking lights are intelli-

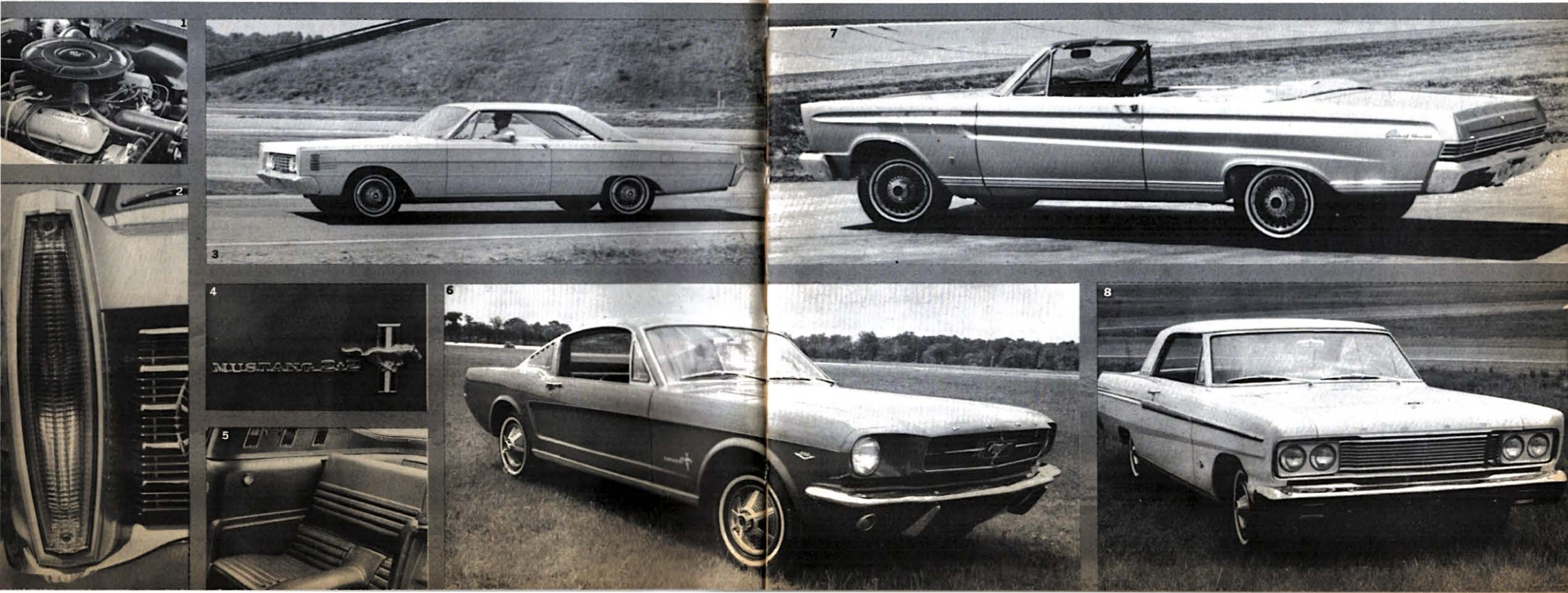
gently hidden behind the grille, and are visible only when illuminated. The stacked quad theme is carried to the rear where rectangular-shaped tail blinkers flank the squared-off deck lid.

The top line Galaxie 500 XL two-door hardtop and 500 LTD four-door hardtops make use of the same classic lines that are so prominent on the lower-priced models, but sport unique ornamentation and trim. The two-door model, most popular with the go-fast-set, retains its popular fastback roof line. Thin side moldings and tasteful brightwork around the tail blinkers and windows convert the XL into an elegant automobile. Special wheel covers with a raised Ford center hub and four colored spokes are standard on the XL models and optional at extra cost on the other full-size cars.

The ultra top-line 500 LTD is the most luxurious low-price car ever to be offered by a domestic manufacturer! From its plush pinseal bodycloth, vinyl and wood grained interior to its vinyl-covered classic roof,

1. Big 390 cube four-barrel engine, rated at 300 hp, is available at extra cost in all full-size '65 Fords and Meres. A special 330 hp Police version is also available. 2. Slim, vertical parking lights are set into the fenders of the big Meres. 3. Crisp, clean, rakish lines highlight the '65 Merc line. Note the lack of chrome *gook* and *garbage*, and the introduction of razor sharp lines. 4. Distinctive nameplate adorns the fenders of the all-new Mustang fastback coupe. 5. Rear seat back

6. Racy fastback is decked out with functional air vents on each side of the big rear window. 7. Neat-as-a-pin Comet Caliente sports all-new styling. Stylish blinkers are incorporated into the rear grille. Compact can be ordered with hot 289 engine. 8. Restyled Fairlane boasts a multitude of engine-transmission options. Top engine option is the 271 hp 289 with mufflerless duals and four-speed or auto transmis-



FORD MOTOR COMPANY

the 500 LTD is nothing but class. A circular LTD emblem mounted on the C-pillar adds that air of elegance. Facelifted for '65, the full size Fords, from the lowest priced Custom two-door sedan to the lavish LTD, proudly display sanitary, classic, chrome-free lines. It looks like the customizers have finally gotten their way!

Besides being facelifted for '65, Ford also boasts a new torque box frame and link coil rear suspension. The body now sits in the frame, rather than on top of it as in previous models. U-channel sections at the rocker panels act as secondary frame supports for the body. The entire interior is bridged for more complete isolation of road shock transmission. Thanks to tuned body mounts and the bridge-type mounting system, the frame is flexible at the torque boxes and the rigid body is completely insulated.

The real big change, however, is the replacement of the old-fashioned Hotchkiss-type leaf springs with new three-link coil springs. This type of suspension insures a soft, more comfortable ride over all types of road surfaces. However, most rodders feel that the leaf rear suspension is a more ideal drag strip suspension. Traction is more of a problem with coil springs than it is with leaves. To maintain the axle centerline position and control sideway (two problems with coil spring rear suspensions), a track bar was installed between the axle center and a lateral point on the left rear rail. Specially calibrated (to the new coil spring suspension) shocks have been redesigned for '65 to provide a softer, more luxurious ride. Silent block rubber bushings at the upper and lower suspension arm attachments reduce road noises.

Other technical features for '65 include a 17-1 power steering gear ratio with no increase in steering effort over the '64 20-1 system, low-profile tires and 15-inch wheels, a keyless locking system, parallel 16-inch windshield wipers and glass rear windows on the ragtops.

Built on a 119-inch wheelbase with a curb weight of 3,461 pounds for the two-door sedan to 3,913 pounds for the 10 passenger wagon, the Ford lineup is an impressive one. The standard engine for all '65 Ford cars, except the lavish XL and LTD models, is the new seven-main 240 cubic-inch Six. This all new engine is lighter than the old standby 223 Six and carries a horsepower rating of 150. The all-synchro three-speed manual shifter is this engine's standard running mate.

Both the XL and LTD hardtops offer the 289 cube 195

hp V-8 as standard equipment along with the three-speed transmission. Optional engines across the board include the 250 hp 352 cube four-barrel V-8, 300 HP 390 cube four-barrel V-8, 330 hp 390 cube four-barrel solid lifter Police Interceptor and the 425 hp 427 dual quad V-8.

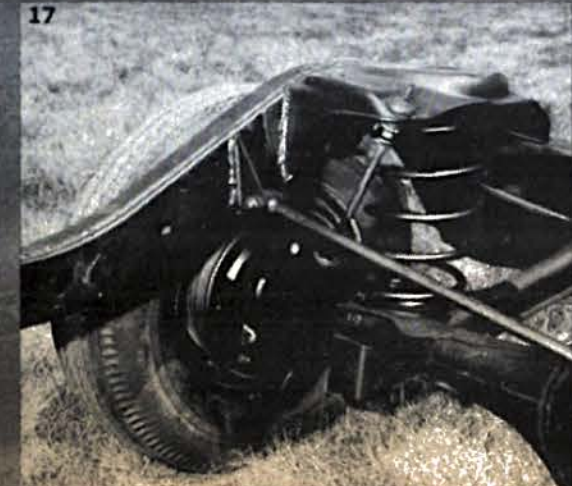
Optional transmissions range from the Six and Eight cylinder Cruise-O-Matic transmissions to the three-speed Overdrive and four-speed manual shifters. The four-speed manual transmission is available only with 390 and 427 engines. The three-speed Overdrive transmission is available with the 240 Six, 289 V-8 and the 390 V-8.

We tested models powered by both the 390 and 427 engines and found performance to be on par with the '64 models. Ride, handling and overall appearance and quality control are definitely up a notch for '65.

(Continued on page 62)

sion. **9.** Neat Futura trim sets off the top-line '65 Falcon models. The Sprint line was dropped for '65. **10.** Lower, wider appearing Falcon is available with a 289 two-barrel V-8 and four speed trans. **11.** Kelsey-Hayes disc brakes (front) are standard on all T-Bird and Lincoln models. They are optional at extra cost on Mustangs. T-Bird unit is shown in the photo. **12.** CR Editor Marty Schorr tries to fade the new T-Bird discs on the Ford test truck. Big rolling stone stops on a dime with new Kelsey Hayes binders. **13.** T-Bird sports minor trim changes for '65. **14.** Big Galaxie gets a workout on

the tortuous dip and dive course. **15.** Bold Galaxie features stacked quads and a neat grille this year. Top-line models are the 500 XL and LTD hardtops. **16.** New plaque denotes cubic inches on all full-size Fords. **17.** All-new coil spring rear suspension on Fords and Meres insures a smoother and more stable ride. Shocks are filled with constant viscosity fluid and are specially calibrated for coil springs. A track bar runs from the axle center to a lateral point on the left rear rail. **18.** CR test team puts the new 500 XL through its paces on the handling course. Note the massive tail blinkers.



SUDDENLY IT'S '65

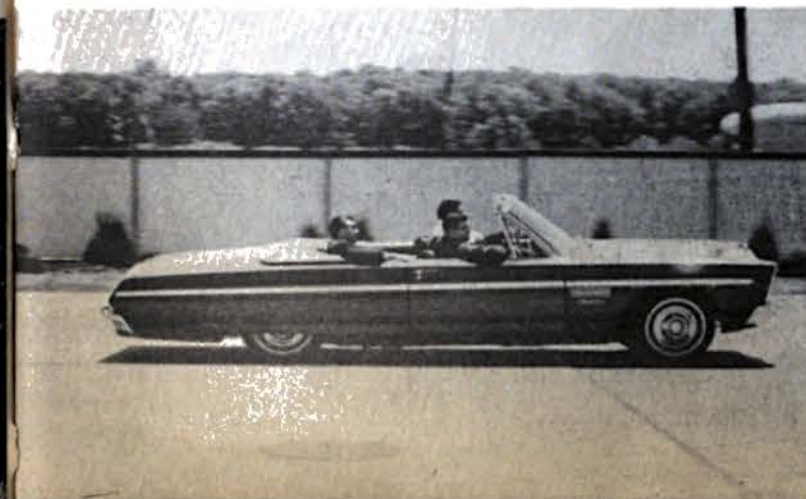
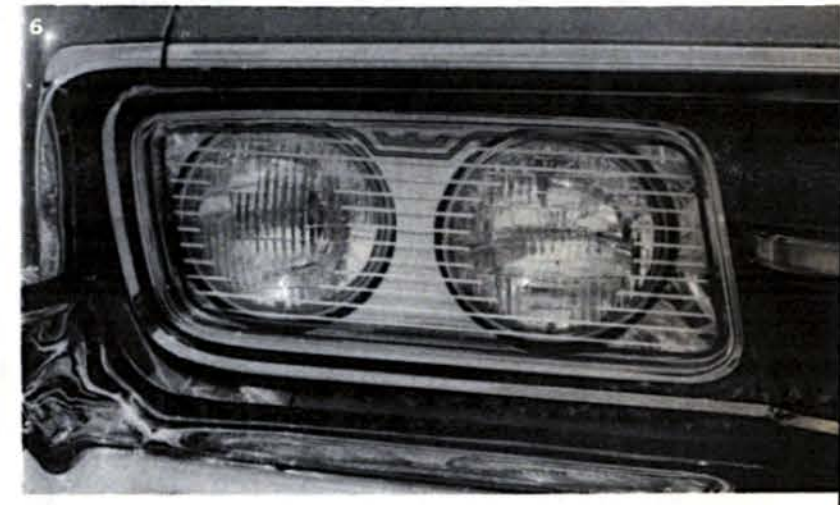
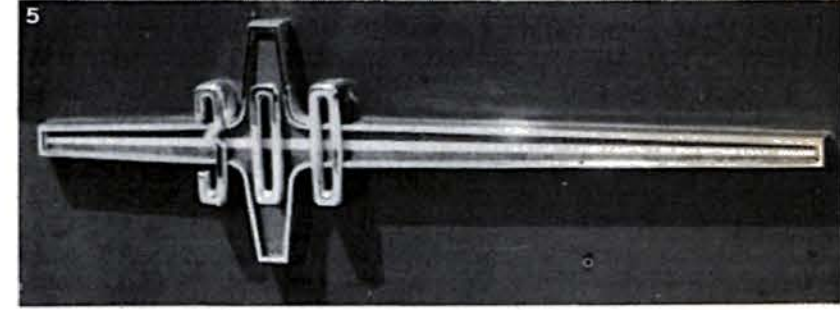
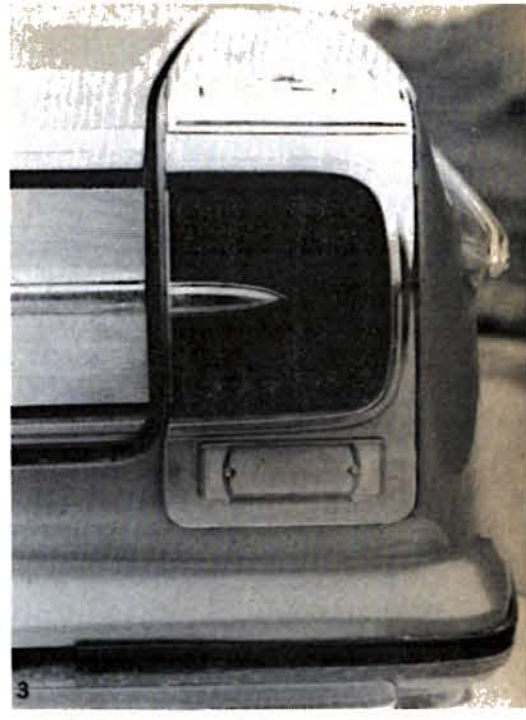
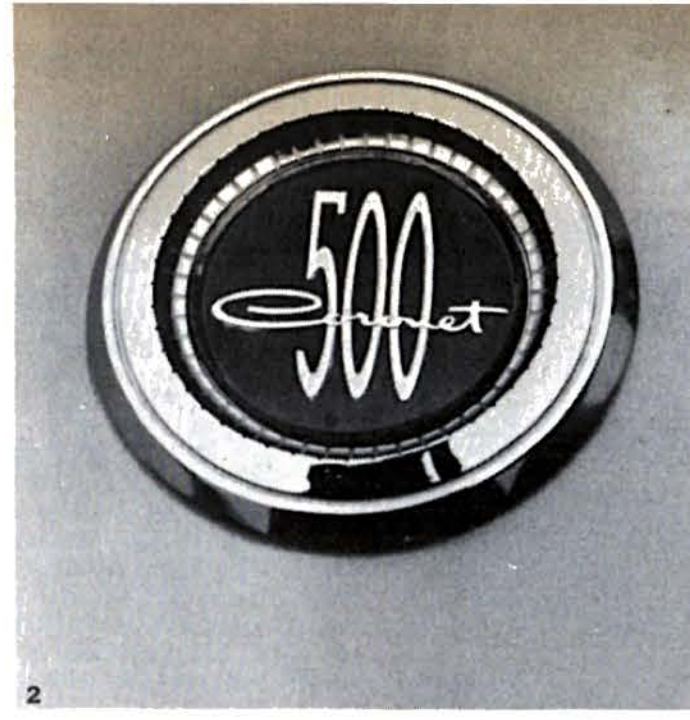
CHRYSLER CORPORATION

BY THE CR STAFF

MODELS, models, models, and more models! That's the '65 Chrysler Corporation story. There are hardtops, sedans, sport coupes, compacts with special engine and handling packages, station wagons, ready-to-drag hemi-powered "honkers" and even a super luxurious Black Plum-coated LeBaron Imperial with a completely coordinated leather interior. They are available in a variety of wheelbases ranging from the 106-inch Valiant-Barracuda to the 129-inch Imperial. In between are the 111-inch Dart, 116-inch Plymouth Belvedere, 117-inch Dodge Coronet, 119-inch Plymouth Fury, 121-inch Dodge Polara-Monaco and the 124-inch Chrysler Newport, 300 and New Yorker series.

The long list of standard and optional power-

1. New Dodge Coronet is built on the 117-inch chassis. 2. Custom ornamentation sets off the top Coronet 500 model. 3. Neat blinkers fit in with the attractive full-width rear grille. 4. With engine options up to the 426 Hemi Charger available in the Coronet, Dodge should have another drag strip winner on their hands. 5. Side trim identifies the luxurious Chrysler 300 series. 6. Headlights on the 300, New Yorker and Imperial series are covered with special glass panels. 7. Except for engine, suspension and trim changes, the Barracuda remains the same for '65. 8. Optional four-barrel 273-engined Dart is a real goer. 9. Long, low Sport Fury is the top-line Plymouth for '65. 10. Stacked quads and a new mesh grille are responsible for the car's bold appearance.



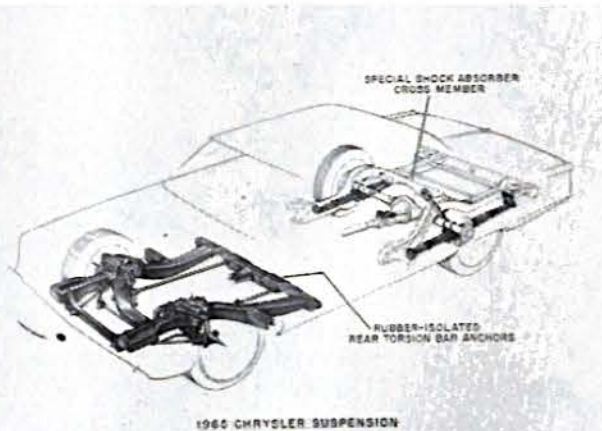
CHRYSLER CORPORATION

plants is just as impressive as the model lineup. Total engines available: two Sixes, nine V-8's. Engine displacement varies from the 170 and 225 Sixes to the full lineup of V-8's which consists of the following: 273 two-barrel, 273 four-barrel, 318 two-barrel, 361 two-barrel, 383 two-barrel, 383 four barrel, 413 four-barrel, 426 four-barrel and the ultimate 426 dual four barrel hemi-head drag engine. Major exterior styling changes plus engineering-mechanical improvements are featured throughout the complete Chrysler line.

DODGE

For '65, Dodge will again offer three separate lines of cars. To be fully competitive in the hottest markets, Dodge changes the size of two of the models. The Dodge lineup for '65 encompasses the 111-inch Dart 270 and GT, 117-inch Coronet 440 and 550 and the 121-inch Polara Custom 880 and Monaco. The premium line Monaco, based on the Polara-size chassis, will compete with (Continued on page 55)

11. Dodge Monaco sports four buckets, a big mill and vinyl room trim. 12. Dash is completely different from panel used on the Coronet. 13. Potent 426 single four-barrel engine is one of many performance options available on the Monaco. 14. All full-size Plymouth, Dodge and Chrysler models feature suspension improvements. 15. Ultra-luxurious New Yorker is all new for '65.



14

15

COVER CAR

1,500 HP HEMI HUMMER

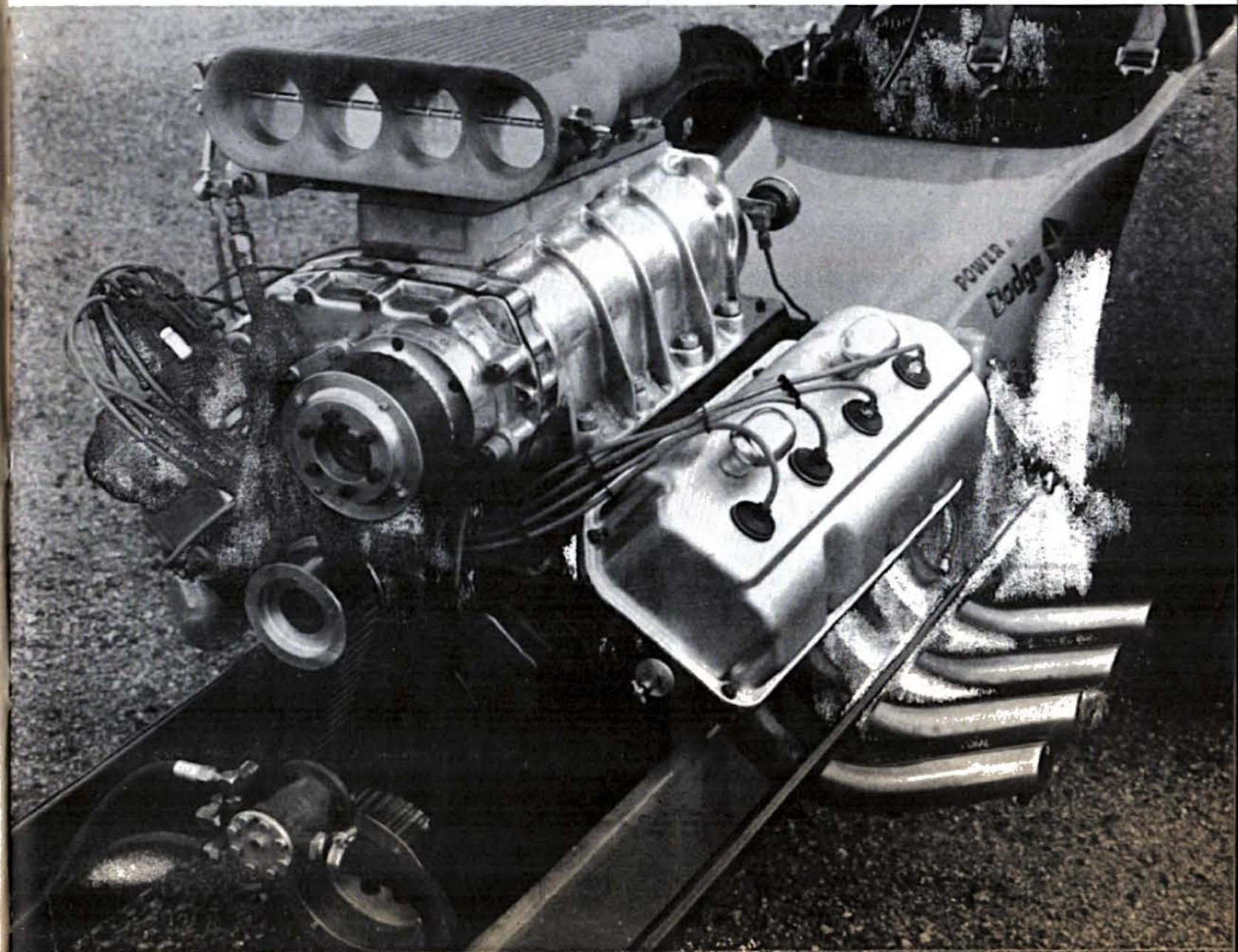
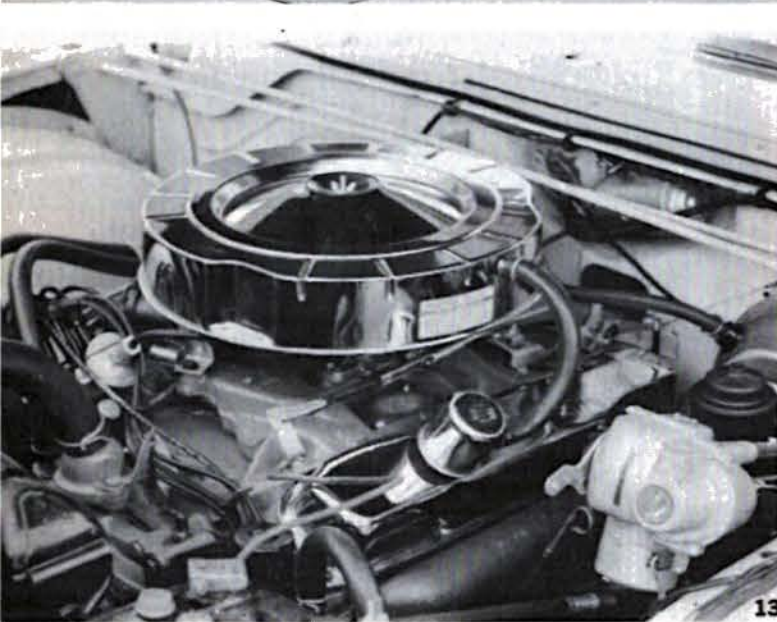
BY PHIL ENGELDRUM

EVERYONE has been talking about what will happen when the new Dodge Hemi-Charger mill finds its way into a rail. Well, you can stop wondering!

Don Knapp, a Chrysler Corporation technician, picked up enough bits and pieces to build a complete ready-to-race engine.

The engine is stock except for the stock piston forging blanks which were reworked to give 8-1 compression. The only other modification was to remove an exhaust deflector from the exhaust ports. The deflectors are built in by the factory to make the engine run best with the factory-type exhaust system. As this rail has individual, down swept pipes, this deflector was of no value. The valves, bearings, rings and valve gear are all stock factory goodies.

Dan claims that the lower end is amazingly strong, and that he turns the monster over 8,000 rpm and



1500 HP HEMI HUMMER

hasn't found any rods sticking out of the block!

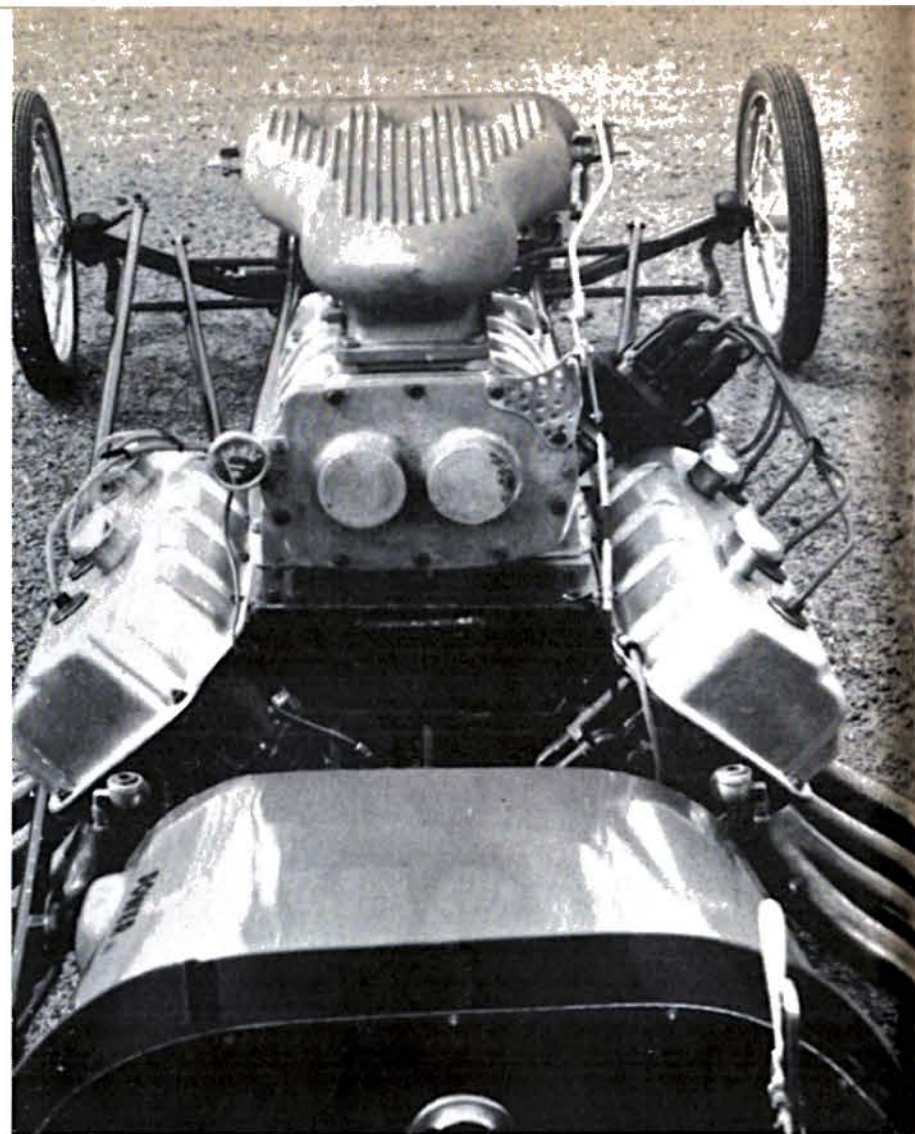
The chassis is 128 inches long and has a shock-spring front suspension. Dan used to own the famous Double Trouble twin-Chevy rail and feels that a good sprung front suspension is vital for running on those bouncy Mid-Western strips.

The blower drive was made by Dan and his crew. They started with an Isky blower drive kit and worked from there. The blower has been reworked to give a maximum of .002-inch clearance. Dan had to fabricate his own intake manifold to mate the GMC 6-71 blower to the new 426. Hilborn Owl-Eye injectors feed straight alky fuel to the engine. Dan has dyno tested the engine on straight alky and on nitro mixtures. He claims over 1,000 hp on alky and more than 1,500 on nitro!

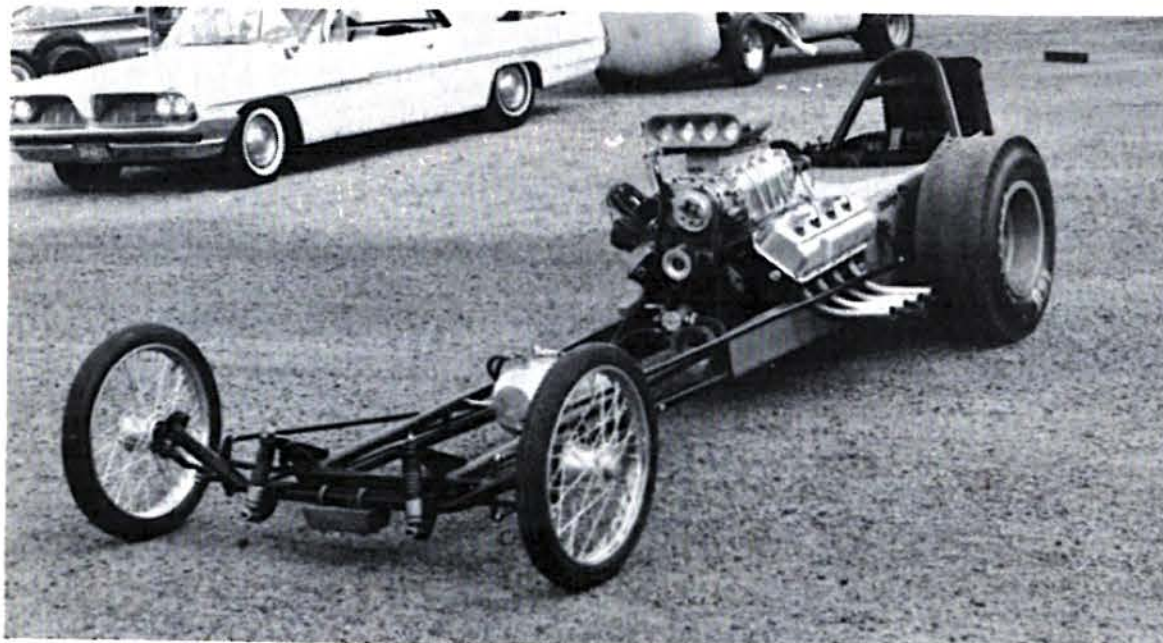
If you don't think that this new engine has broken the power barrier in drag racing, you're really out of it!

After an initial run of 183, the next run netted a 189 with a best e.t. of 8.3. After Dan works out the bugs, we expect to see him legally shatter the 200-mph barrier. In fact, we don't see how he can miss!

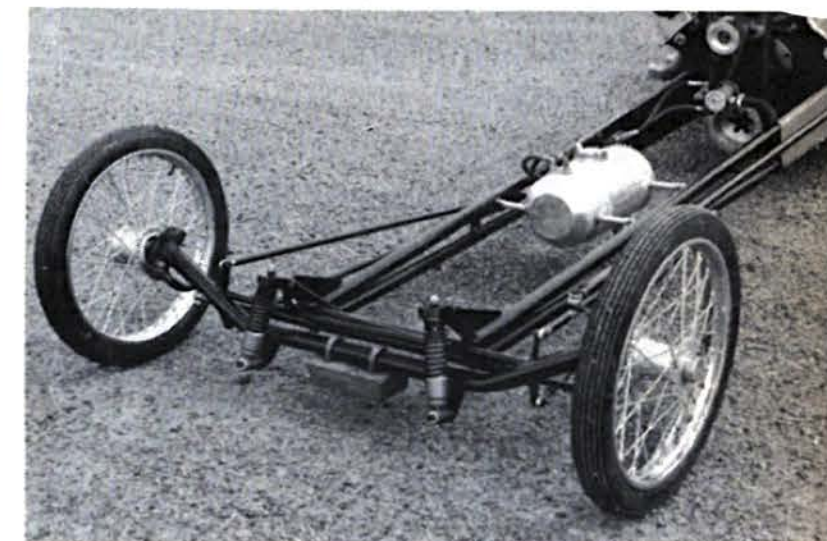
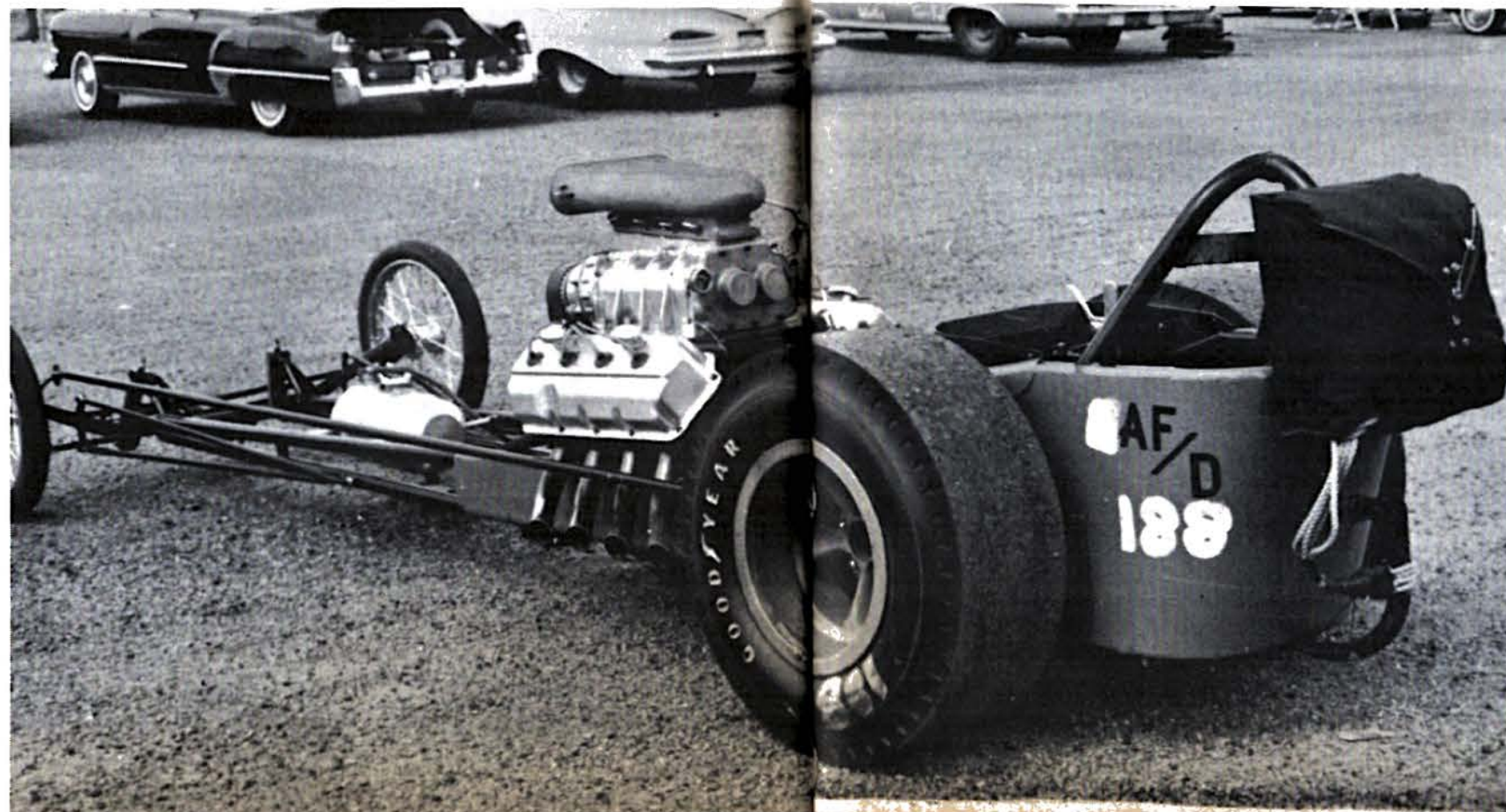
Latest model Hilborn Owl Eye injection mounts atop the Knapp-reworked GMC 6-71 puffer. Bearing plate is homemade.



Blower drive consists of Isky and home-made components. Timing belt is used with balanced pulleys. Aircraft lines shoot the fuel to the Hilborn pump. Chassis is 128 inches long and decked out with a minimal amount of chrome.



Don Knapp (far right), a Chrysler technician, poses with his crew after copping a big win at a local strip. Red-lacquered aluminum body surrounds the driver and extends to the front of the hemi. American mags twist on chopped axles.



Shock-spring front end works just fine on those rough Mid-Western strips. Ballast is attached to the center of the dropped tube axle. Wire wheels brighten up the chrome-free front end.



**GRAMPS
IS AT IT
AGAIN!**



Norm points out the huge ports in the new Super Commando hemi heads. Note the special pistons used in all hemi engines. Manual gas shutoff valve handle mounts to the right of the shift lever. Big fire extinguisher rests in place of the passenger's bucket. To comply with Bonneville safety regulations, Norm installed a three-inch wide seat belt and a two-inch wide harness.

BY HAL KEMPER

GIVE Norm Thatcher credit. At an age when most 67-year-old grandfathers are busy doing not much more than collecting social security and/or assorted pensions, the Flying Grandfather is still very much in the thick of things in his tough profession—getting every last mph out of a stock-bodied car. Norm's about the oldest professional racing driver in the country, and his cars have always done well at Bonneville Speed Trials. He set the current Bonneville two-way flying mile record, 189.826 mph, in 1962 and drove a blown Plymouth to the fastest speed ever recorded for a production, stock-bodied car, 195.97 mph, last year.

But the "Grand Daddy of Speed" has had a goal for years which, up until now, had just kept out of his reach. The realization of a 200-mph flying mile at the Salt Flats in a stock-bodied car. So this year he set out again to achieve his goal, one that no other individual has ever realized, and was at Bonneville in August to find out if a year of intensive preparation would at last bring that 200 mph barrier to its knees.

Norm chose a pair of '64 Plymouth Sport Furies for his latest B/Gas Supercharged Coupe class challenge and spent months preparing both Super Commando hemi's and 426 wedge engines for his new assault. (It was with the blown wedge engine that he had turned 195-plus mph last year. The hemi's are more or less protection. If he can't do it with a wedge, he'll swap to one of the blown hemi's and counter attack his unseen, but ever-present, enemy . . . the 200 mph barrier.)

The Southern California Timing Association, which sanctions the annual Bonneville event, specifically states that competitors in stock classes must drive completely stock-bodied cars (no streamlining). Although Norm makes many permissible changes insofar as engines are concerned, his cars are usually the closest to street-driven stockers seen at the Bonneville Salt Flats. This year, his cars will be running 100 per cent stock Plymouth drivelines; flywheels, clutches, transmissions, driveshafts, axleshafts, valves and springs, torsion bar suspensions and body sheetmetal.

Norm has used, and was using this year, GMC 6-71 blowers with Hilborn fuel injection in conjunction with his bored engines (bored to displace 465 *mean* cubes). Undercarriage changes consisted only of swaps to a pair of Ted Halibrand's famous quick change rear ends. Shocks, springs and torsion bars were heavy duty and police options offered by Plymouth. The only non-stock item on the springing was a pair of bolt-type clasps, one on each rear spring, to prevent contact with the ground should a spring break. Supplementing his factory option heavy duty brakes was a drag chute mounted above the rear bumper, in the center of the rear pan, and actuated via a dash-mounted pull.

Wise to the wiles of racing at this point in his long and distinguished career, Norm never shortchanges himself when it comes to safety, even going beyond the safety features mandatory for running at Bonneville. These include head-high rollbars, three-inch diameter lap belt and two-inch diameter shoulder harness, heavy duty shocks and the drag chute (making it possible for Norm to go from full speed to a dead stop within ¼-mile).

One of his own safety devices is a manual gas—you must run standard brand premium gas in this event—shutoff valve for use in case of emergency. The valve handle in each car sits comfortably close to the Hurst shift handle of the Plymouth four-speed box.

Another safety device Norm utilizes is an Eelco five-gallon gas tank mounted in the trunk. With less than five gallons of gas being consumed on a flying mile run, there's no need to invite disaster should a fire occur by running a larger tank with more gas than you need says Norm. Norm also runs 50-pound, all-steel bellhousings over the four-speed box. He thus eliminates the need for scattershields.

By now you've undoubtedly realized that Norm Thatcher's anything but a stranger to racing. He first drove racing cars in 1913, at the age of 16, at the Pulaski Fairgrounds in his home state of Pennsylvania. In 1922 Norm went West, settling in Van Nuys, California,

◀ Each car is equipped with a fifty-pound steel bellhousing-scattershield and a Hurst-shifted Chrysler four-speed transmission.

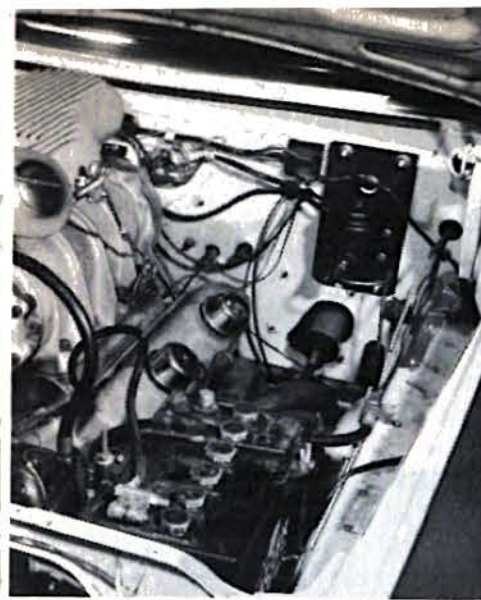
**GRAMPS
IS AT IT
AGAIN!**

and opening the garage he still runs in which all preparation of his competition cars takes place.

To prove that he hasn't lost any of his ability or knowhow in the ensuing years, Norm copped an even dozen Bonneville trophies in 1962, the first time in the history of the Bonneville Trials that any individual had won that many trophies at one meet! Last year he tapered off a bit, managing to take home *only* six pieces of hardware, including the top prizes in the Class/A and Class/B Production Coupe and Sedan, Non-Supercharged categories. His Class/A Plymouth set an official two-way record of 177.859 mph. His Class/B record, in another Plymouth, was 172.610 mph.

What will Norm do in the event he tops the 200 mph barrier? Will he finally retire to clipping coupons and playing with his five grandchildren? We wouldn't bet on it . . . knowing Norm Thatcher!

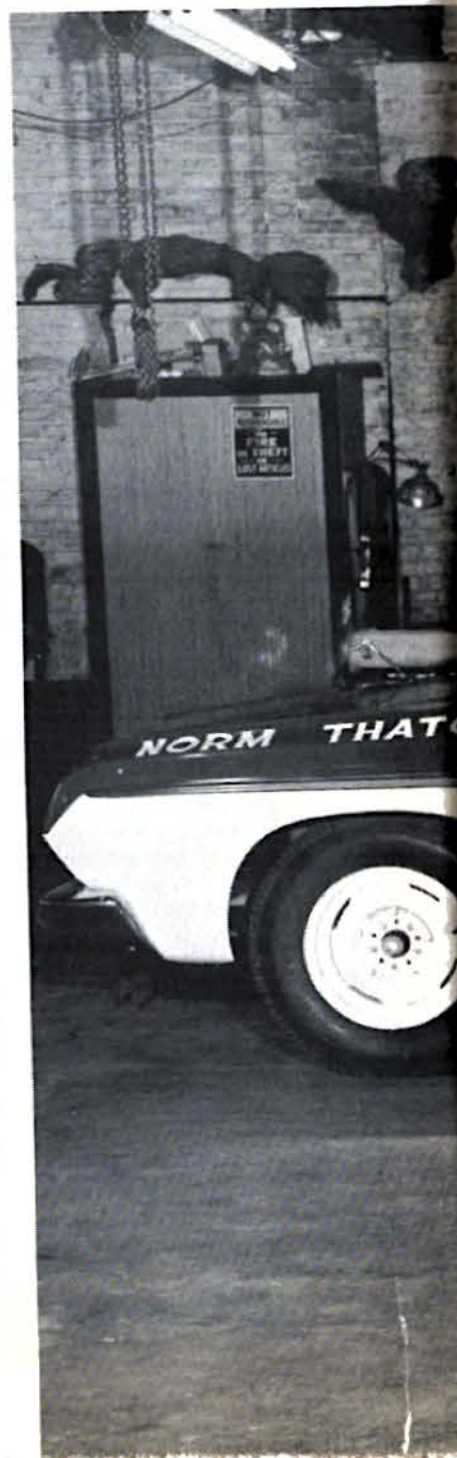
One car is powered by a bored and stroked 564 cubic inch wedge engine with a 6-71 puffer and Owl-Eye injectors.



Halibrand quick change center section and Police springs and shocks bring up the rear. Front suspension is stock. Norm is shown with the car that will run in B/SC. Norm tuned 195.97 mph with a wedge last year.



Another safety feature is the special five-gallon gas tank bolted to the trunk floor. Note the chute release cable and beefy fuel lines. Both cars are equipped with drag chutes and legal California street registrations!



BY MARTYN L. SCHORR

SOUPING THE DART V-8

NOT ONE to be left out in the cold without a V-8 for their compact, Dodge made the big move in mid-'64 and introduced the 273 Charger V-8 for the Dart. Both Ford and General Motors offered sprightly V-8's in the popular priced Falcons, Comets, Fairlanes, Chevelles, etc. late in '63 and with the start of the '64 model year, so Dodge didn't exactly have a choice.

Most manufacturers that offer compact V-8 engines have had tremendous success with them. The Chevy V-8 introduced in 1955 as a 265 incher, modified in '57 to displace 283 inches and further modified in '62 to 327 inches, needs no introduction. It has enjoyed the reputation of being *the* engine as far as sports car, drag boat and drag racing and purely enjoyable high performance road driving go. In semi-stock form they have been known to *destroy* fully modified, bigger inch engines, and when bored and stroked to close to 400 inches, they powered rails that have showed the big blown-injected hemi Chryslers the short way home!

Ford interrupted Chevy's domination of the small cube field with an indestructible 289 cube Fairlane engine that has power to spare. Between Carroll Shelby, Ford engineers and independent speed merchants, the 289 has really made a name for itself in the competition field. Outstanding performers such as Shelys Cobras and hybrid racing machines, Pete Robinson's new Fairlane fueller and assorted 289-powered dragsters and roadsters have proved to the brainwashed rodders that there is a substitute for cubic inches. And we're not talking about rectangular dollars!

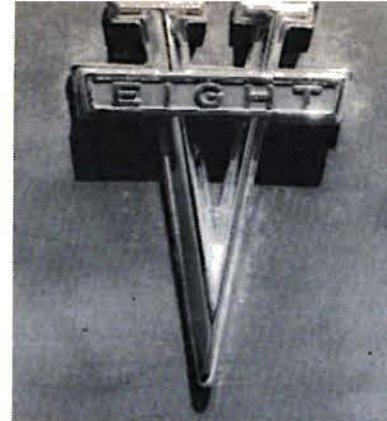
Chrysler's 273 Charger, as offered in the extremely attractive Dart, was not designed for competition. The option is offered for the buyer who wants slightly more acceleration, top speed and prestige than a 225 Six offers. V-8 engine emblems are considered by many to be status symbols! The engine features a sensible 8.8-1 compression ratio and is rated at 180 horsepower at 4,200 rpm. The torque rating is 260 foot pounds at 1,600 rpm.

Basically a scaled down 318 cube Chrysler with lightened block and heads and built-in clearances for the steering components, the 273 weighs 67 pounds more than a 225 Slant Six and 56 pounds less than a 318 V-8. The 67-pound difference between the Six and the V-8 is compensated for by the setback center of gravity in all V-8 models. Handling is in no way affected by the addition of the heavier engine.

Before we go into engine details and souping procedures, it must be made clear that at this time the engine is not suited for all-out competition. There are few speed goodies on the market for this relatively new engine, and as of this writing the factory has not decided to follow through with the development of speed equipment. The '65 Darts will be available with a single four barrel carb,



Dodge News Bureau's hot GT sports Hands wheels, duals, 3.91 gears, quads, beefy clutch and a Racer Brown bump stick.



Optional 10.5-1 four barrel 273 engine is available on all '65 Darts. Goodies include a hot cam, special pistons, quad and a chrome dress-up kit.

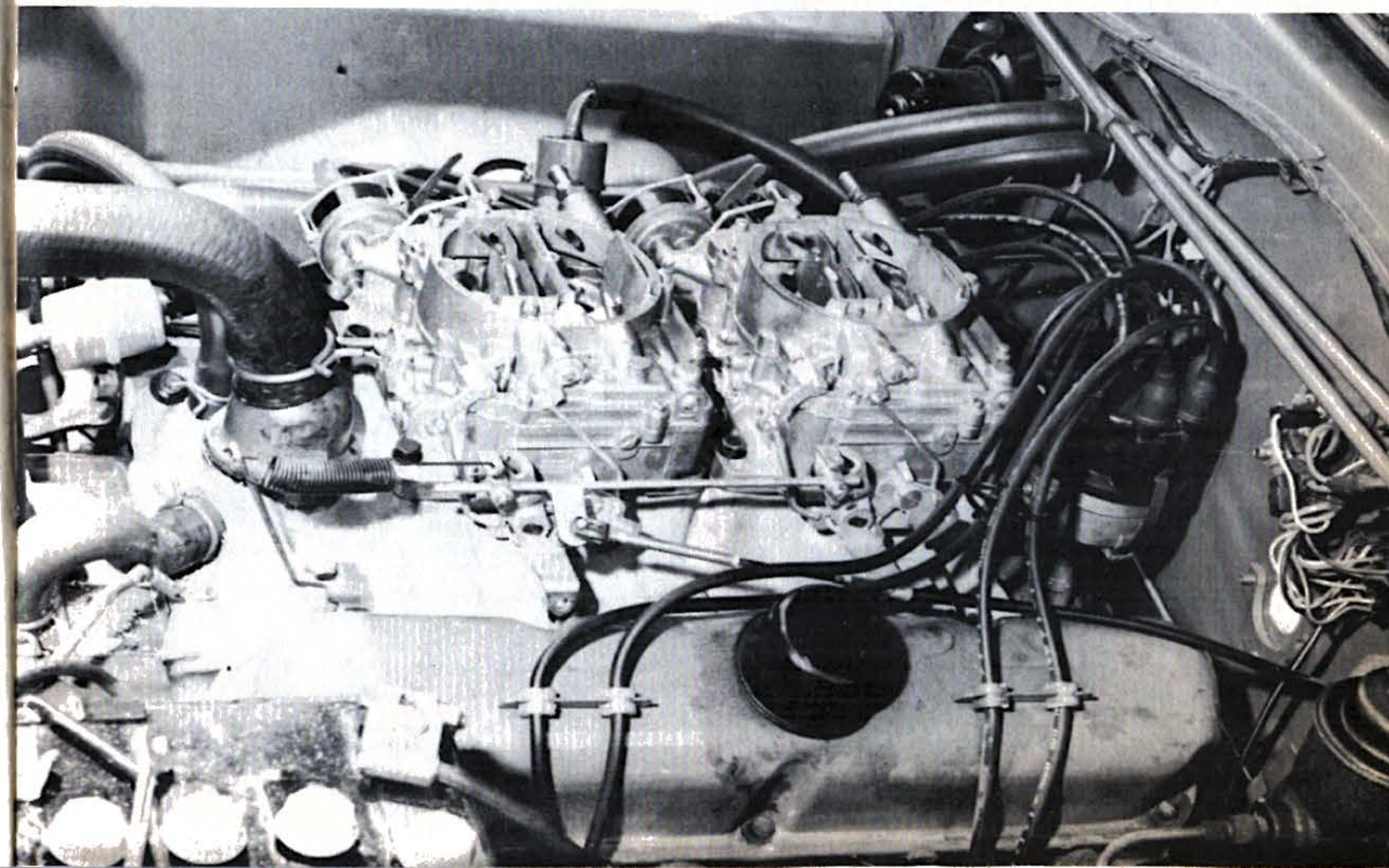


'65 Dart with vinyl roof, HP engine and four-speed is a hot performer. Dual quad engine, below, powers the special '64 Dart set up by S&P Automotive.

high compression pistons, long duration cam, and a high performance single muffler-pipe exhaust system. But that's it! If Dart sales in '65 continue at the '64 pace, it won't be long before the *greed merchants* hop on the bandwagon and turn the 273 into a popular powerplant. Time will tell!

The 273 Charger outshines many a more potent engine when it comes to flexible, all around performance. It's a natural for bolt-on street and strip-type goodies; just a few small changes can convert it into a two-faced monster. Unlike its big Ramcharger brother, the mildly modified Charger boasts more than adequate get up and go plus go-to-the-market reliability. Just add a cam, solids, quads, duals, a sturdy clutch and a sensible Sure-Grip rear end ratio and the 3,000 pound Dart behaves exactly like a Duntov-cammed, dual quad 270 hp '57 Chevy! The Dart comes off the line like a shot and really comes alive upstairs!

Inasmuch as our good friend Mike Sforza of S&P Automotive in Jamaica was awarded the job of setting up a Modified/Production Dart GT for Dodge Public Relations, we were able to follow the modifications and report on the conversion. Before the sleek red four-speed GT was turned over to Mike, the stock wheels were removed to make room for a set of polished aluminum Hands wheels with knock-off spinners. Replacing the standard whitewall tires are super-duper blackwall shoes. Everyone knows that whitewalls are out!



SOUPING THE DART V-8

CARBURETION

The stock single two-barrel carb works just fine for around town and highway performance and economy. However, you cannot realize maximum engine performance with this setup. The two-barrel carb mounts on a light manifold that sports a set of four passages leading to the intake ports. It is simpler and lighter by 12 pounds than the conventional two-plane 180 degree manifold. Optional on the '65 Darts is a single four-barrel carb on a special manifold.

At present there are both single and dual quad aluminum manifolds available for the 273 engine. The manifolds shown in the photos are manufactured by Offenhauser Sales Corporation in Los Angeles, California. The single quad manifold (#5489) retails for \$89.50; the dual quad model (#5488) retails for \$92.50. Both are available as dealer-installed options. Except for minor bolt substitutions and a few small drill and tap modifications, both carburetion setups are bolt-ons. Both manifolds are drilled out to accept small venturi Plymouth Fury quads or the largest Carter AFB models. Stock displacement 273's cannot handle the ultra-large AFB's, so it doesn't pay to drown out this little mill with monstrous quads.

On single quad installations you should install either a Carter 2791-S or 2653-S small venturi quads. Drill out the idle jets (.028-inch) to .035-inch and retain the stock primary jets. Drill out the secondary jets (.049-inch) to .067-inch for best all around performance. You can purchase an aluminum adapter plate from Offy to mate the stock two-barrel air filter to the single quad. We feel it's best, however, that a small efficient chrome air cleaner be installed to insure maximum performance.

On dual quad installations you should install either a Carter 2791-S or 2653-S quad up front and a Carter 2790-S or 2652-S quad at the rear. Single quad jet modifications, as outlined in the above paragraph, should be used on the dual quad setup. Mike used two Carter rear carbs, blocked off the chokes and installed fully synchronized carb linkage. With both quads working in unison and without chokes, the little 273 mill turned over and started quicker than it did when equipped with a stock two-barrel carb! Stock cable throttle linkage works just fine with both single and dual quad setups.

The Carter 2653-S carbs, as used on this test engine, were originally used on the Plymouth 2P2-S Fury, Dodge LD3-S D-500 and the '58 DeSoto LS3-S Adventurer High Performance models. They are small venturi carbs (1 1/16-inch primary, 1 1/4-inch secondary) and work just fine on the small cube Charger engine.

Installation kits are available from the manifold manufacturers, along with fuel blocks, high-quality gaskets, lines and other small components. On cars equipped with a smog device, it will be necessary to drill a 1/8-inch pipe hole in the rear carb (boss is provided) to connect the line from the right side valve cover. Mike felt that the smog device might hamper performance, so he did not hook up the line from the valve cover. If the law requires a functional smog control, then you must drill the hole and hook up the line. Progressive and synchronized throttle linkage is also available.

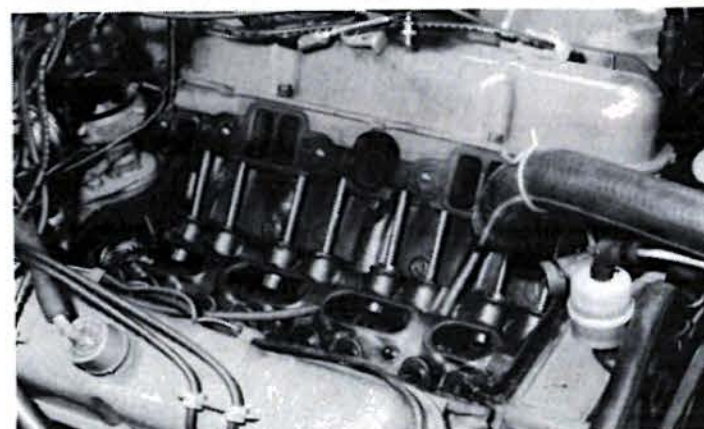
Both the single and dual quad setups boosted performance appreciably, but full potential cannot be realized unless cam, exhaust and rear end gear modifications are also made.

CAM AND VALVE TRAIN

The stock Charger engine makes use of a mechanical lifter cam with 1.50-1 rocker arms, 1.780-inch intake valves and 1.500 exhaust valves. Lift is rated at .395-.405. Inasmuch as the engine was designed for economy and mild performance, the cam is of little use in a modified engine. However, the stock cam is quite adequate for the single quad installation. The optional '65 cam is also recommended for single quad engines.

Racer Brown of Racer Brown Cams in Inglewood, California, just finalized a full line of three solid lifter cams for the 273 Charger engine. First on the list is the SS-12 cam which provides smooth idling characteristics, and adds torque through the low, mid and top end ranges. It is rated at 266 degrees duration and .428-inch lift. Complete with lifters and full timing specifications, the SS-12 Street cam retails for \$85. Next in line is the ST-14 model which is rated at 266 degrees duration and .485-inch lift. The ST-15 cam with a 280-degree, .418-inch rating is for maximum performance. The ST-14-15 cams should only be used in engines equipped with multiple carbs and other speed equipment.

The stock heads should be modified if serious competition is in the planning. The porting system is quite elaborate and shows good potential for future modifica-



Racer Brown solid lifter cam makes quite a difference in all-around performance. Three hot grinds are available.



Offy single quad AFB setup is ideal for the guy who wants more punch, but doesn't want to go the cam route.

tions. Exhaust ports provide a very straight shot at the valves, and the intake ports have fairing ribs to streamline the valve guides. To provide a better mixture flow, the ports should be hogged out, polished and matched to a good set of headers. The stock headers are far too restrictive for maximum engine efficiency. They were designed for engine compartment clearance, with engine breathing as a second thought!

To match the superior breathing qualities of good headers and dual quads, you need a good set of *poppers*. You can use valves from the bigger MoPar V-8's by turning them down on a lathe. Mixture flow and rpm potential can be improved by polishing and lightening the new valves before installing them. The combustion chamber volumes should be checked and evened out before buttoning up the engine.

EXHAUST SYSTEM

If you intend to engage in serious competition with your Dart, then the only exhaust route to take is tube headers. Any of the popular header manufacturers such as Stereo, Horsepower Engineering, Jardine, Davis, etc. can make up a set of tuned pipes with takeoffs for a street system. Inasmuch as Dodge was interested in keeping their test Dart looking as stock as possible, Mike was instructed to design and fabricate a dual exhaust system utilizing the stock restrictive headers. Tuned headers require inside fender apron modifications, and Dodge was not about to carve up a car that was to be used on the street.

The compromise exhaust system consists of an extra two-inch head pipe, fiberglass-packed semi-noisy muffler with two-inch inlets and outlets and a two-inch tail pipe. The stock side exhaust system consists of a two-inch head pipe, a quiet muffler and a 1.88-inch tail pipe. Believe it or not, the dual exhaust system alone added quite a bit to the performance of the stock two-barrel engine. When combined with quads, the engine really came to life!

The '65 four-barrel Darts come with a High Performance single muffler exhaust system.

IGNITION

As of this writing, there are no ignition goodies on the market for this engine. Mike felt that the universal-type transistorized ignition systems are pretty much of a waste as far as most modified engines go, so he retained the stocker. Mike believes in either switching to a good dual point-dual coil distributor, a magneto ignition or else leave the stock system alone.

Most stock ignition systems are more than adequate for street and limited strip use, so why waste your money and time. After the dual quad manifold was installed, Mike advanced the timing to 10 degrees BTC and filled the tank with 260 Sunoco. Detonation is rarely ever a problem with a 8.8-1 engine, so you most likely could get away with a lower octane fuel.

POWERTRAIN

When Chrysler engineers finalized the powertrain components for the Charger 273-engined cars, they must of confused the Dart with a motor scooter! The transmission, driveline and SureGrip rears are fine, but did they goof on that clutch. The one component assembly that takes all the abuse is the one they goofed on! The Charger V-8 cars with four-speed transmissions make use of an Auburn clutch (old time rodders will remember this beaut from the days of the flathead) which has



Duals must be fabricated for this engine, as the factory only offers a single setup. Stock headers are restrictive.



Offy makes finned aluminum valve covers for the 273 Charger mill. Note the neat chrome air filters on the quads. Clutch disc, below, is available with a pressure plate from Hayes.





Racer Brown displays his latest (ST-14-street-strip) .485-inch lift, 266-degree duration, solid lifter 273 Charger cam.



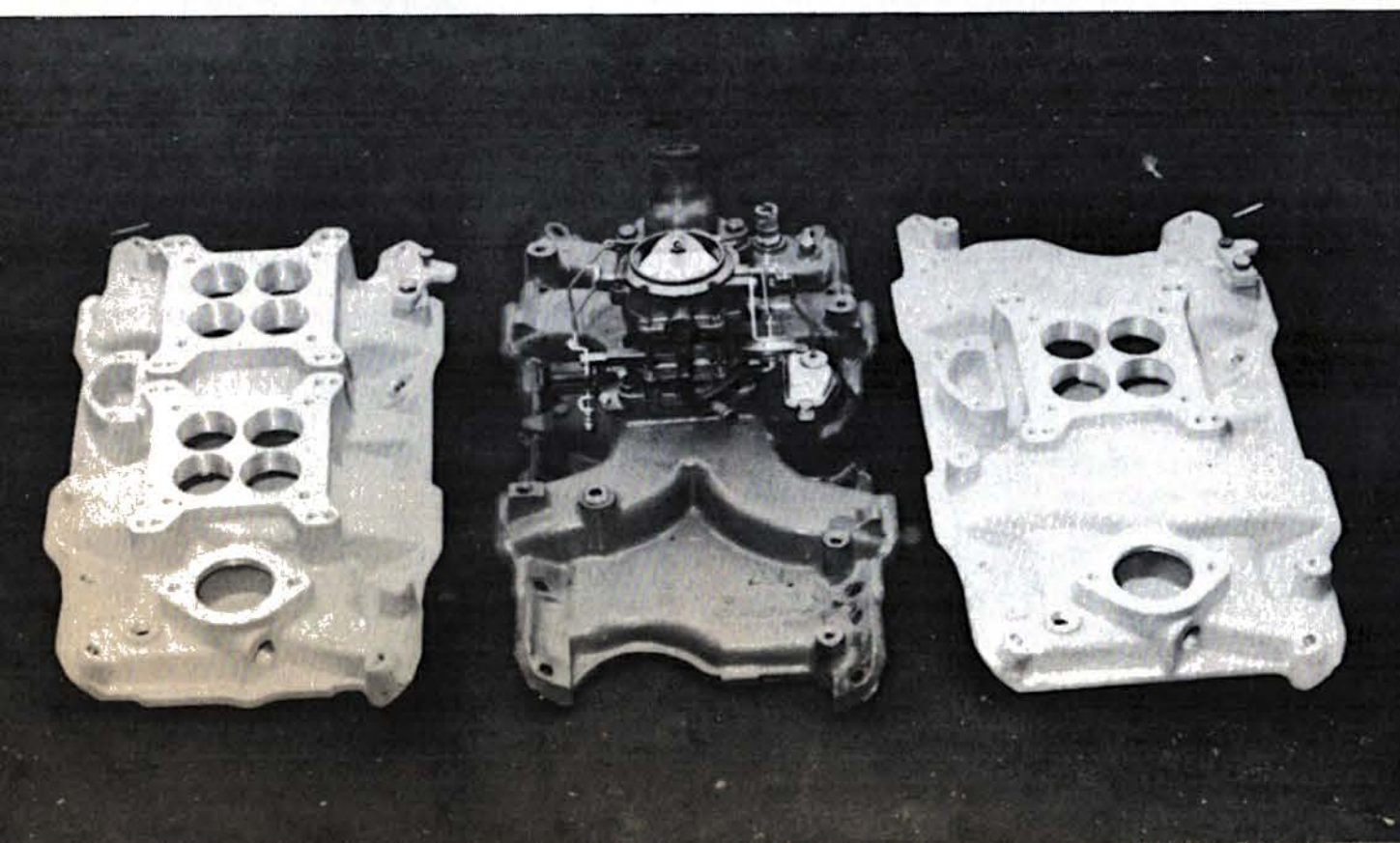
three *valve-type* springs and a rating of 1,425 psi. I'm sure that Chrysler installs stronger valve springs in the new Hemi's than they do in the V-8 Dart clutch pressure plates. The disc is a 9.50-inch unit which seems to hold up till the pressure plate lets go. If you lean too hard on the skeleton-like Auburn pressure plate, you will depress those *gigantic springs!*

Mike immediately disposed of the clutch and pressure plate and designed a more sensible unit. He purchased a pressure plate from an old '51-'53 Gyromatic Dodge, then sent it out to the guy who sets up his racing clutch assemblies. The pressure plate now sports 12 springs and a special facing. The disc is a reworked stock Dodge Dart unit. Pedal pressure is light, engagement is positive and the clutch can handle all the abuse of full throttle power shifts.

The four-speed transmission needs no introduction to rodding enthusiasts. It's the same box that is used in the big Corporation drag cars, except for the 3.09 First, 1.92 Second and 1.40 Third gears. These shifters come ready to drag with Hurst linkage. Stock gearing for the V-8 Darts is 2.93. Either the optional 3.55 or 3.91 Sure Grip gears should be installed to take advantage of quads, cam or any other goodies. Dodge decided on 3.91 gears for the test Dart.

As far as Dodge is concerned, the souping program was a huge success. Even with all the modifications, the car still behaved like a stocker in traffic and around town driving. A slightly rougher and higher idle and a loss of gas economy are some of the minus features. The addition of Hands aluminum wheels, blackwall tires and a tach, plus all the engine goodies transformed the Dart into a honking GT machine. It's a real pleasure driving a compact Dart that can do the job on a 383 four-barrel Dodge. Don't laugh next time you come across a rough idling Dart. Watch out, it may be loaded for bear!

S&P technician, left, installs the single quad manifold on the test Dart. Comparison shot, below, shows the factory two-barrel setup flanked by Offy single and dual quad manifolds.



SUPER/STOCK

EXHAUST TUNING TIPS

BY ALEX WALORDY

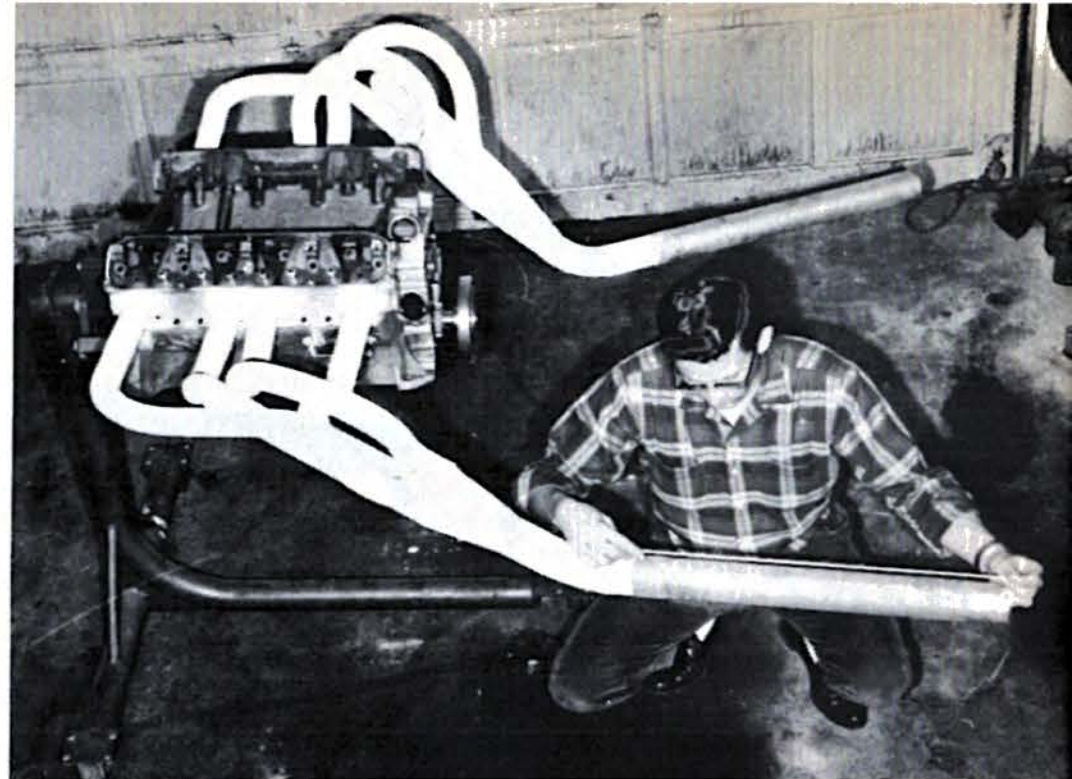
EXHAUST TUNING TIPS

HEDERS can easily spell the difference between win and lose in any race. They can add torque almost where you want it, but they can also cost part of the performance where you least expect it! You can buy or build headers which will give you a moderate all-around increase in power, or you can go to a set of highly-tuned 180 degree headers. These pipes have a fairly narrow operating range which is good for an Indy machine, but bad for drag strip machine. After seeing Dave Strickler's and Bud Faubel's Ramchargers, and many other machines that sport signs about Stahl headers, we couldn't resist the temptation to pay Jere Stahl a visit at his shop (516 Lincoln Way in Berwyn, Pa.). Upon arriving we promptly got into an all-night session on the whys and wherefores of headers and exhaust tuning.

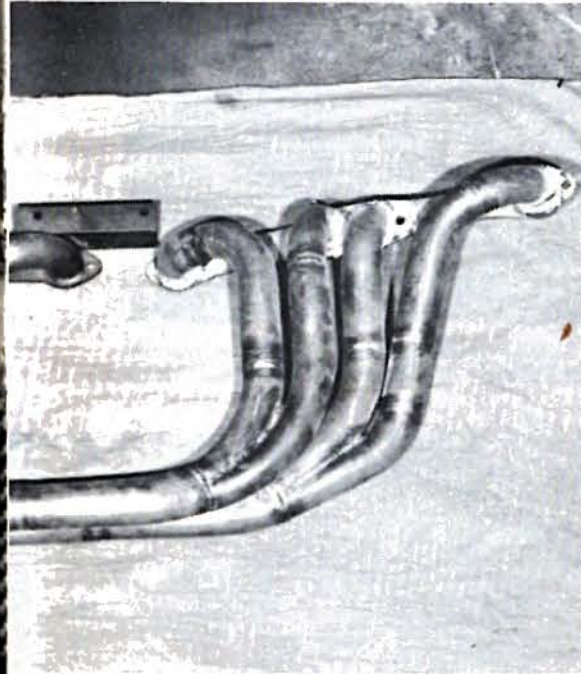
Most stock manifolding is kept close to the engine, to clear a number of components ranging from the steering gear to shock absorber towers. They must also fit all cars going down an assembly line, which can include cars equipped with a range of options from power steering to air conditioning. A race machine doesn't have any of these frills, so free flowing headers with wider sweeps can be installed.

Exhaust gases travel at high velocity, and any bends, especially sharp ones, can contribute to considerable backpressure. Thus wide sweeps are a prime prerequisite for headers. Exhaust gases that flow nearest to the wall move comparatively little. The next layer of gases flows a bit faster, and so on till the main stream velocity has been reached. Naturally, the smoother the inside of the manifold, the less skin friction will occur; the boundary layer of relatively slow moving gases clinging to the manifold walls will be thinner. Weld smoothness on the outside of a header will do little for flow, but sags and big globs of weld hanging inside the header hurt flow. Once flow along a wall is disturbed, it takes a fairly sizeable distance for it to rejoin the wall; the resulting turbulence acts as a very effective restriction. "Vee" sections used to form bends are nowhere near as good as smooth curves.

Headers can be designed so that exhaust pulses from adjacent cylinders on one bank will not interfere



Current hemi headers (above) use cast adapters to reduce cost. Interference headers (right) do not provide peak performance, but are fine for the street.

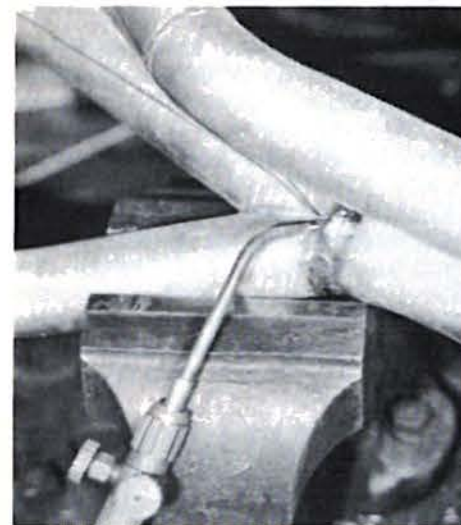


with each other. This is done by either separating the branches over a distance, or by grouping the branches so that no two cylinders of one bank, fired in sequence, will interfere with each other. Groupings of exhausts can also be arranged so that the exhaust pulses are separated by 180 degrees on each header, but this calls for piping from bank to bank. This type of exhaust was used on Ford's Indy engines, but it generally narrows the engine's effective

torque range and hasn't proved successful at the drag strip.

Main reason for using headers in addition to getting out the exhaust with a minimum of interference, is to provide an extractor effect, where the exhaust gas flowing out actually helps scavenge the cylinders. When the exhaust valve opens, pressures and temperatures inside the cylinders are at a fairly high level. With reasonably efficient *open door* exhaust such as stacks on a dragster engine,

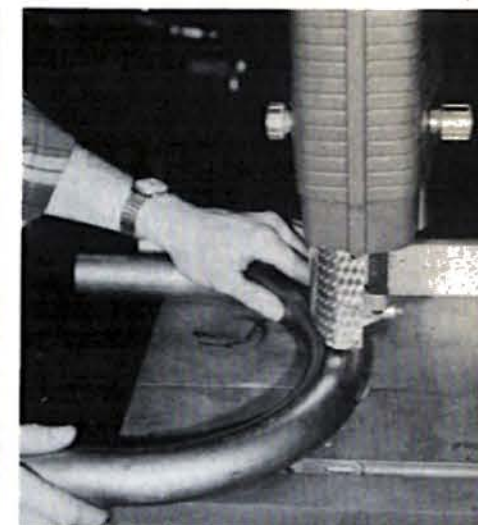
Collectors are used to smooth out the torque curve and do away with power loss areas. Engine in photo belongs to Strickler.



Welds should be made using low heat to prevent sections falling into the pipes.



Pre-fab bends should be used wherever possible. Douglass offers a full line.



Jere uses a band or radial cut-off saw when fabricating competition headers.



this pressure will blow down to near atmospheric by the time the intake valve opens. The intake manifold, however, has a below atmospheric pressure rating. The exhaust will, therefore, tend to flow back towards the intake, diluting the incoming air-fuel mixture. This action results in a power loss. On a dragster engine, running a set of Hilborn stacks at wide open throttle, the effect is minimized. On any other machines, up to and including big super stock-

You can either purchase formed ends or form the ends yourself using a torch (low heat) and a couple of hammers.

EXHAUST TUNING TIPS

ers, it is quite important!

The trick is, therefore, to design an exhaust system which will not only allow enough flow, but will also help extract the exhaust gases. Two separate and distinct effects are involved. One is due to the inertia of the moving gas column, and the other, even more important, is due to a system of reflected wave pulses which travel up and down the pipe at the speed of sound. Just to complicate things a bit, the speed of sound varies with temperature. Exhaust pipe temperatures change from run to run. Let's look into each of

these effects separately.

The inertia effect of a column of gases moving through a pipe, is to want to continue to move even though the piston has reached Top Dead Center and is no longer expelling gases from the cylinder. As a result, the column of gases now begins to act as a piston and helps extract exhaust gases from the cylinder. Valve overlap now becomes a direct benefit, since the exhaust not only scavenges the cylinder but helps pull through fresh mixture which cools the exhaust valve and insures complete dilution-free filling of the

cylinder.

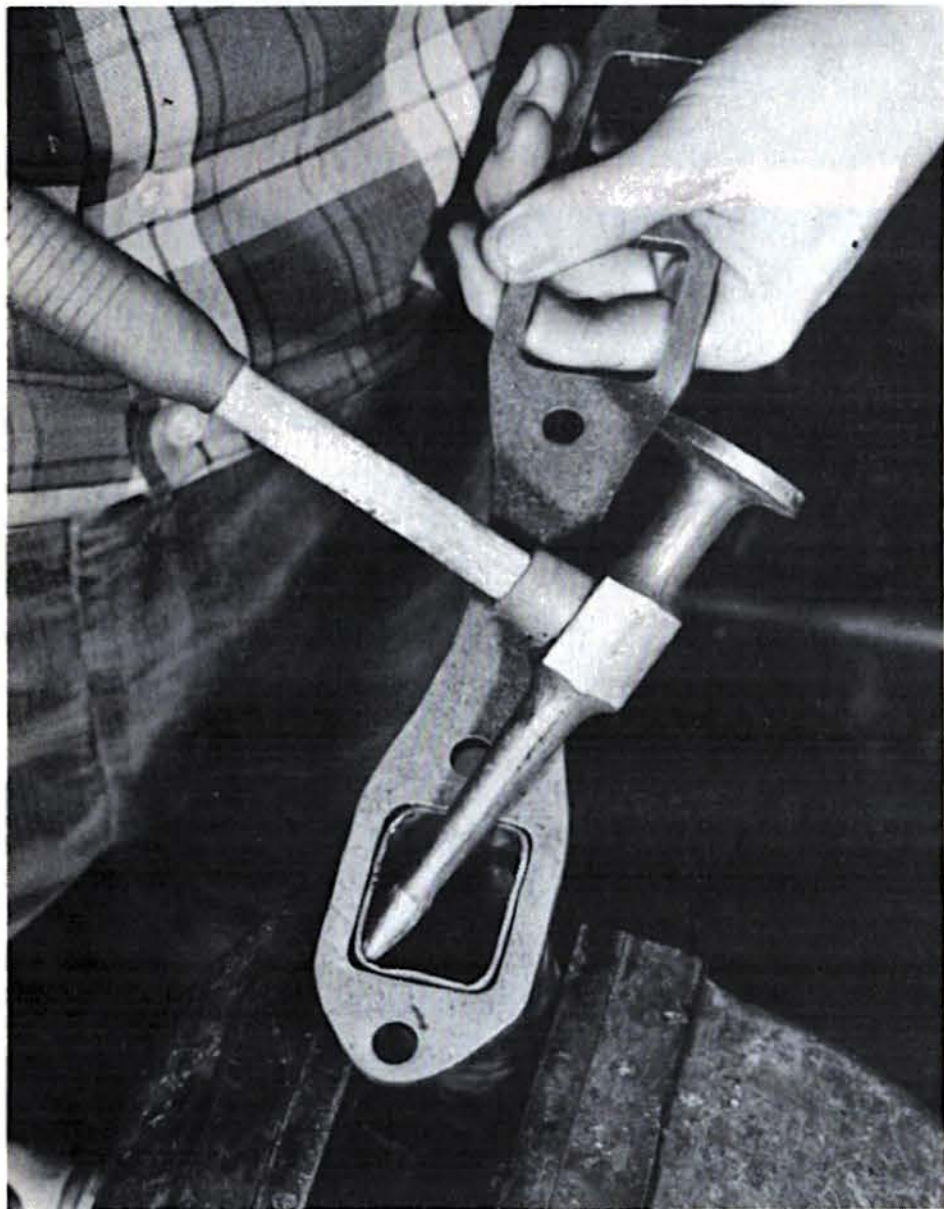
How do you increase the inertia effect and improve scavenging? A long enough pipe is needed, and since the energy of the gas increases, among other things with the square of the velocity, we'd like to have a fairly small pipe that keeps up velocity. This soon reaches a point of diminishing returns, for high velocity increases friction drag and a small pipe also limits the flow. On the other hand, too large a pipe, like too much of any good thing cuts down on velocity so much that extractor effect is lost.

Even more important than the inertia of the column of gases that move down a pipe, is a system of pressure pulses that travel up and down an exhaust stack. You can compare this with traffic flow along a highway. Cars travel in packs, or high pressure areas, leaving voids between them. If you stretch out a *slinky* spring and twang at one end you'll see how the coils close up and the ripple travels from one end of the spring down to the other and back. The same effect takes place as the exhaust valve opens and a pressure pulse travels down the pipe, fol-

lowed by other alternating pressure and vacuum pulses. Now, if we time a vacuum pulse to occur while the exhaust valve is closing, an added scavenging effect will be achieved.

However, there is a rub! This scavenging effect achieved at one speed range may be replaced by a detrimental pressure pulse at some other speed, causing a torque loss. Thus absolute pipe tuning for a given rpm can play havoc with the torque curve and punch it full of holes. There is only one guide to pipe tuning, and that is the time attained at the other end of the quarter with

your particular car, engine and transmission setup. When you change rear axle ratios or torque converters and alter the engine's rpm range, the optimum pipe length will be affected. When you change cams, the closing of the exhaust valve and its effective opening pattern is changed. This alters the time at which pressure waves need to occur. When a ram intake enters the picture, the story becomes even more complicated. It contributes its own system of pressure pulses. Dynamometer testing doesn't give the full answer, since it cannot duplicate (Continued on page 54)



The pick end of a body hammer should be used for forming small radius corners.

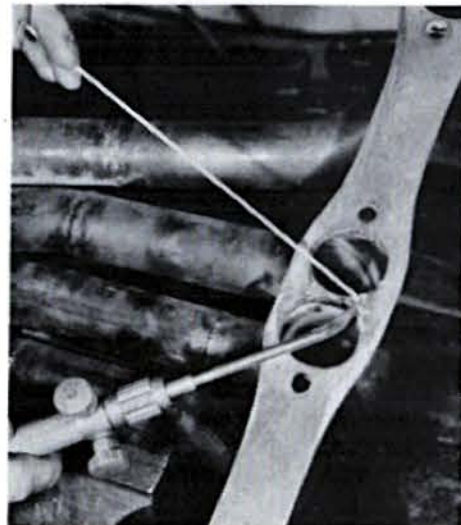
Snips are your best bet for trimming odd-shaped openings. You'll need left and right hand shears for close work. Much care must be exercised during operation.



Before welding, you should grind out the inside of pipes and all rough edges.



Here we see pipes being brazed to the flange plate. Headers are for 426 Dodge.



Distorted or low spots can be filled in by brazing. Straightening comes later.



A wide-tooth file can be used to show up high spots and straighten the flange.



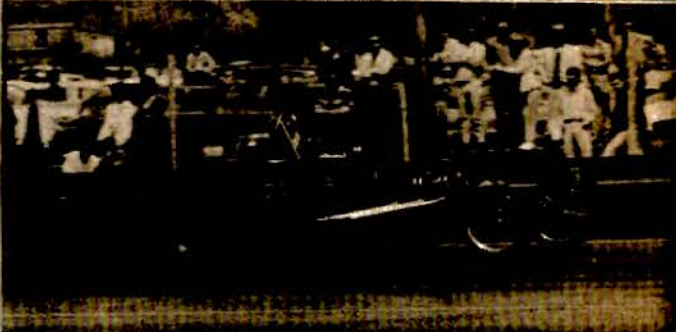
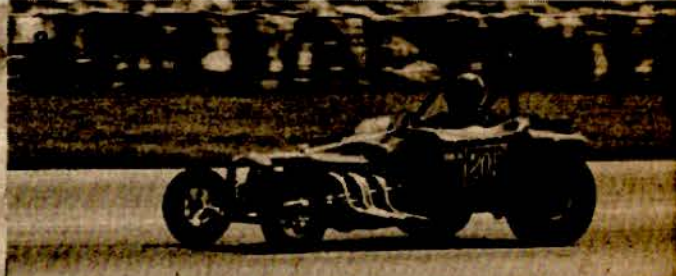
Soft Raybestos gasket material can be used to make up for minor plate distortion. Always use gaskets between pipes and ports!



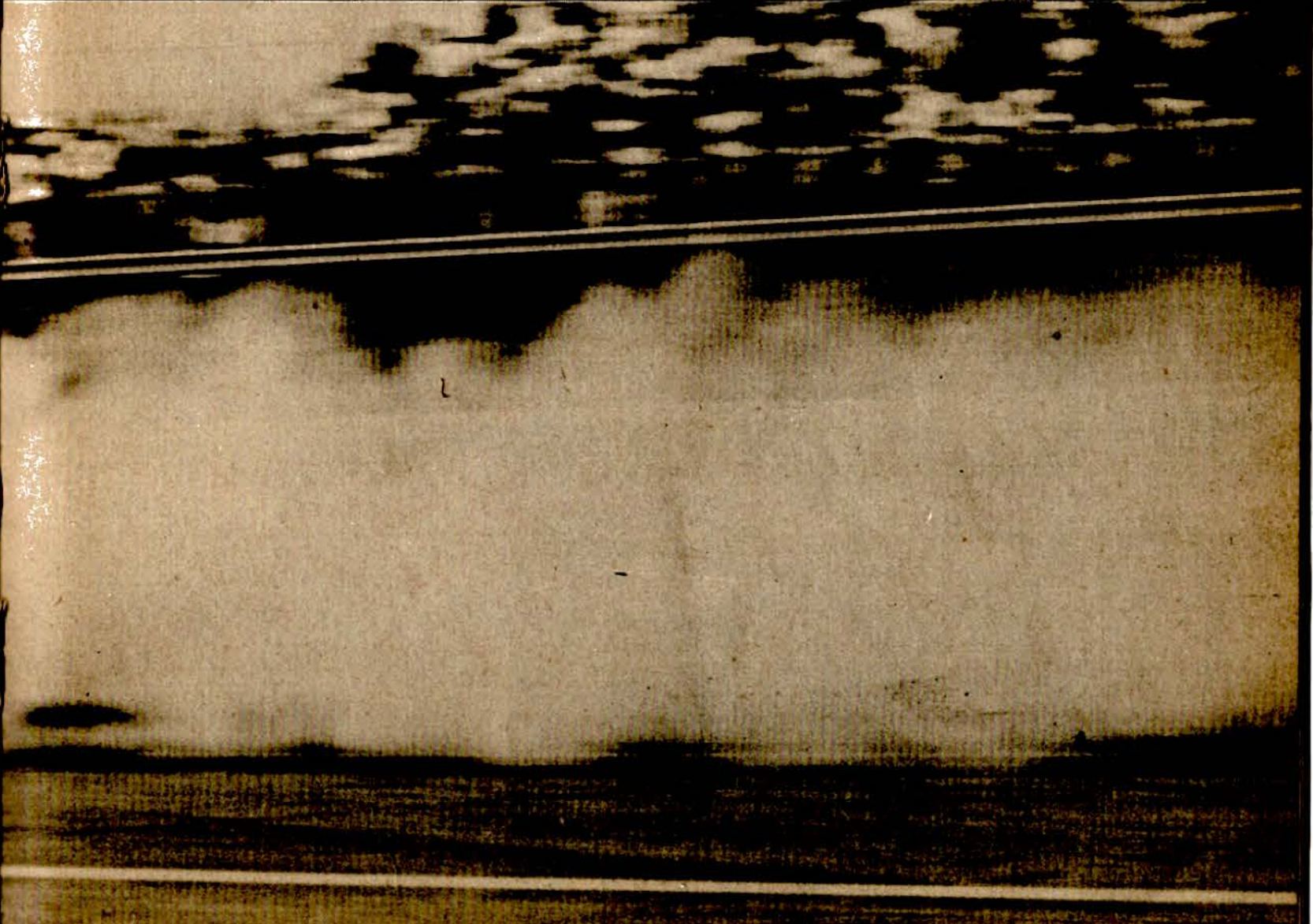
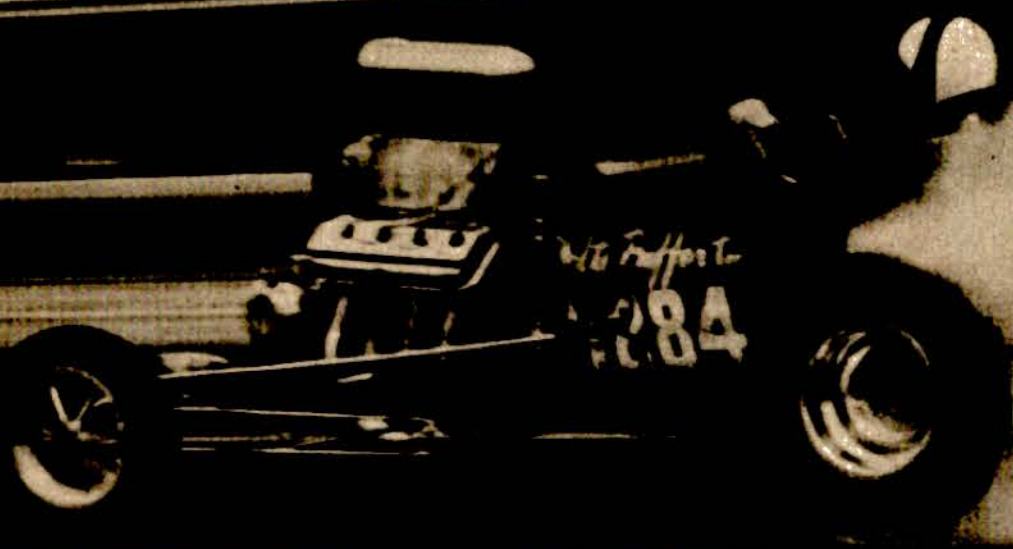
roadsters on the rampage

1. Wild Double A Altered roadster smokes 'em for the full quarter. Blown-injected mill powers this fiberglass-bodied machine. Note the aircraft strut-type chassis. 2. Roger Miller "cuts a fat one" with the Miller-Gregory "Pack Rat." Sleek Double B Altered, Chev-fired '25 T boasts a front-mounted GMC blower and an all-steel body. 3. Here's a T-bucket that runs as a B/Comp machine Wire spoke wheels, injected Chevy power and a fiberglass replica body are some of the outstanding features. 4. Highboy Street Roadster from DOWNTOWN DODGE in Norwalk, Ohio, walked off with A/SR honors at last year's NHRA Nationals. Power comes from a 426 cube Ramcharger mill. 5. Walt's Puffer Too, one of the hottest Double A's in the country, on its way to another big win. Blown-injected hemi Chrysler supplies the punch for Walter Knoch Jr's '23 T.

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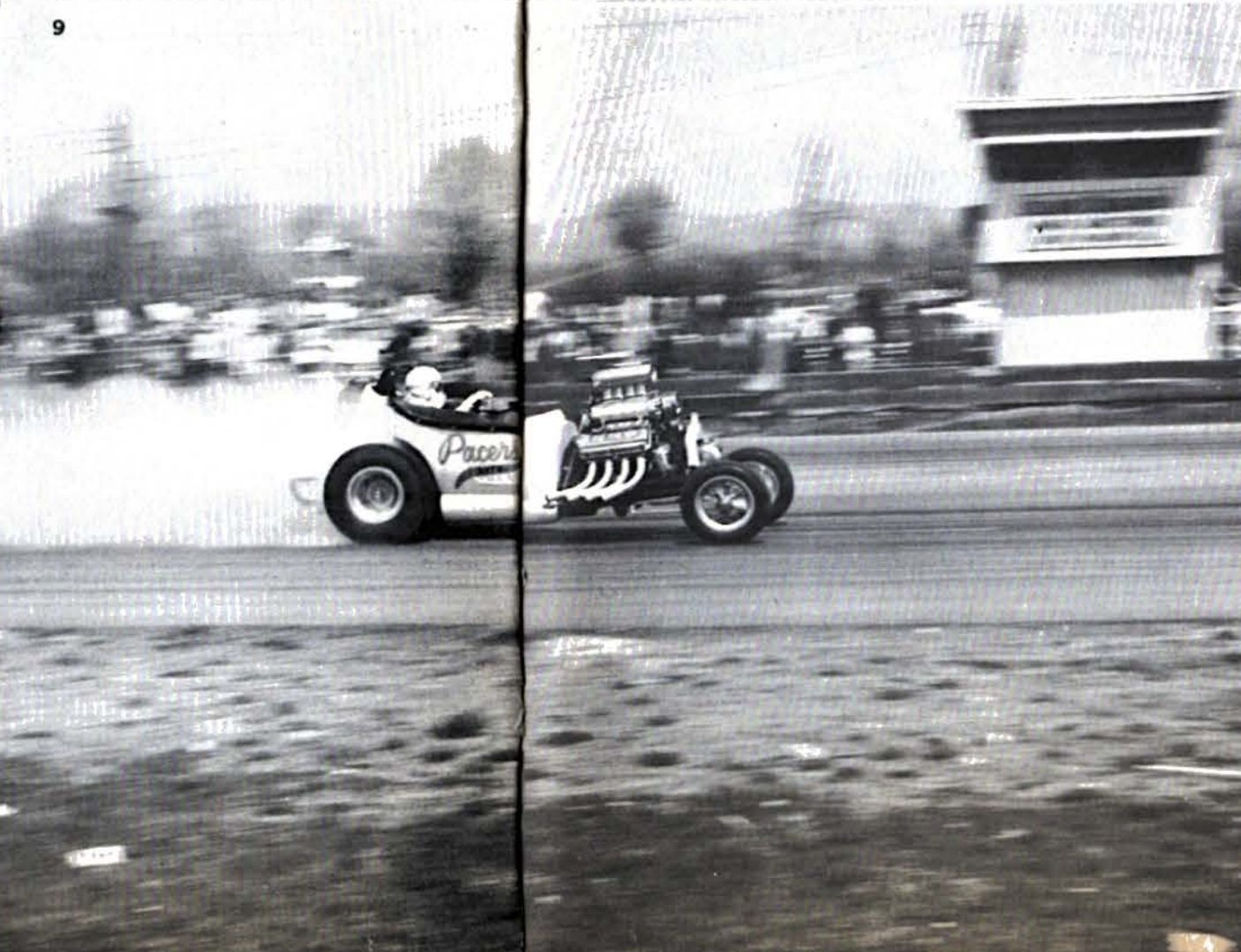
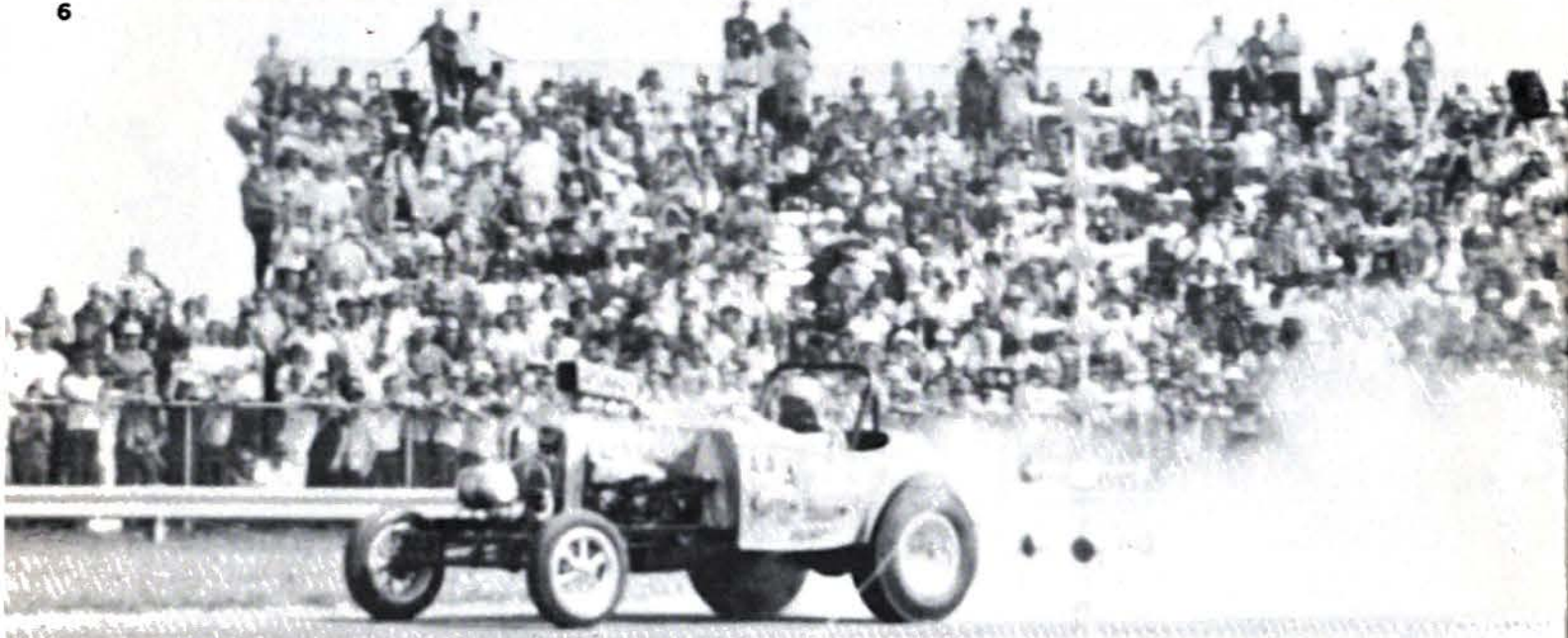
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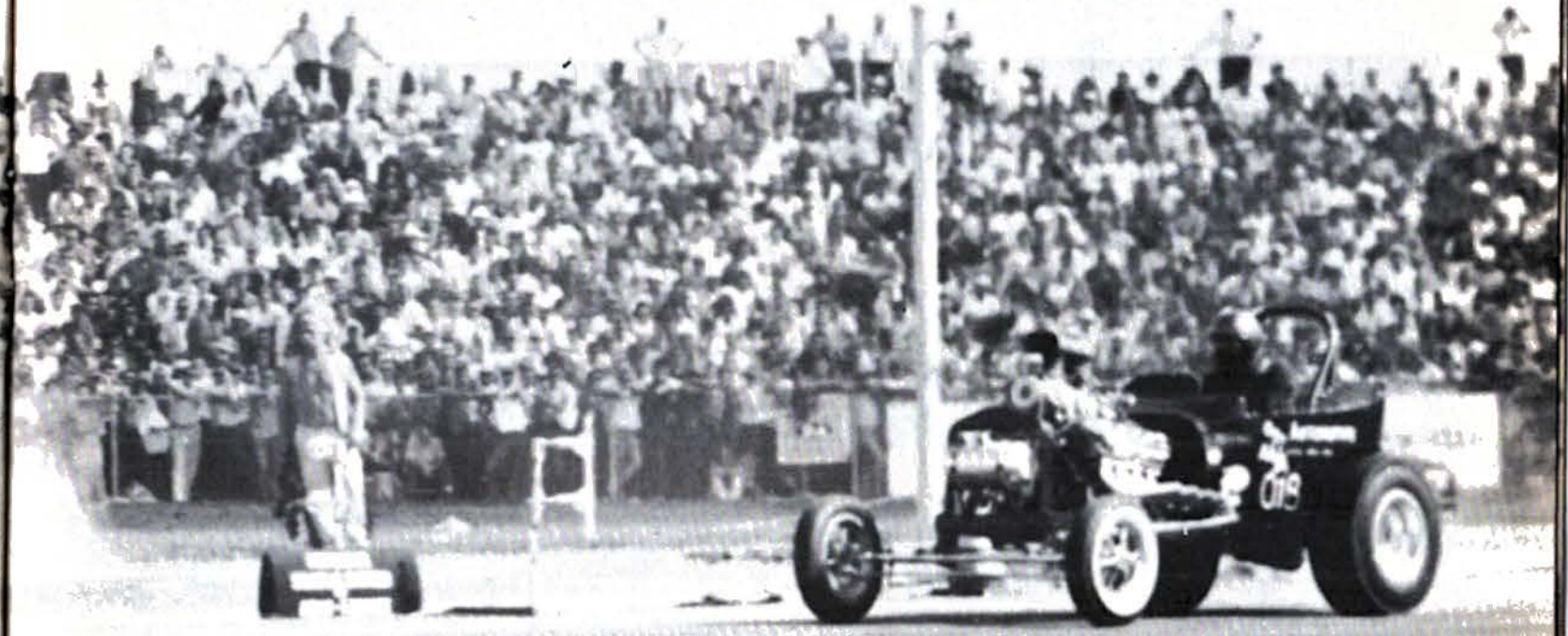
ROADSTERS ON THE RAMPAGE

6. Two hot Double A Altereds battle it out for Eliminator honors. Both run blown-injected mills, fiberglass bodies and lots of chrome and magnesium goodies. 7. Chevy-stuffed Street Roadster makes a warm-up run before running for the gold. Dig that wild scoop and T-bone grille shell! 8. MEDN Top Dog A/SR gets "out of the hole" at a recent record run. Note the chrome tube front end, small fenders and impressive headers. Halladay-Robertson roadster is a consistent winner.

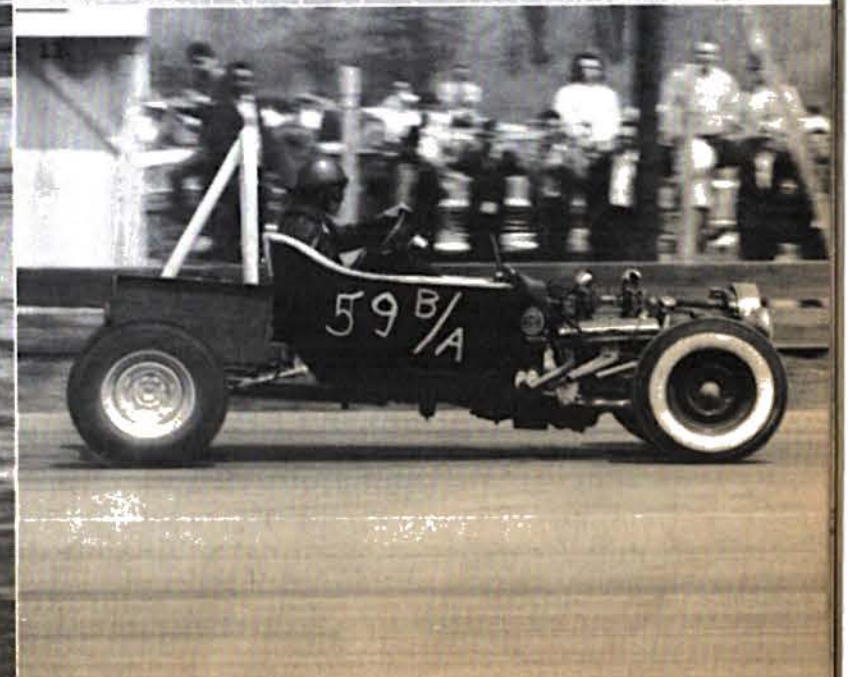
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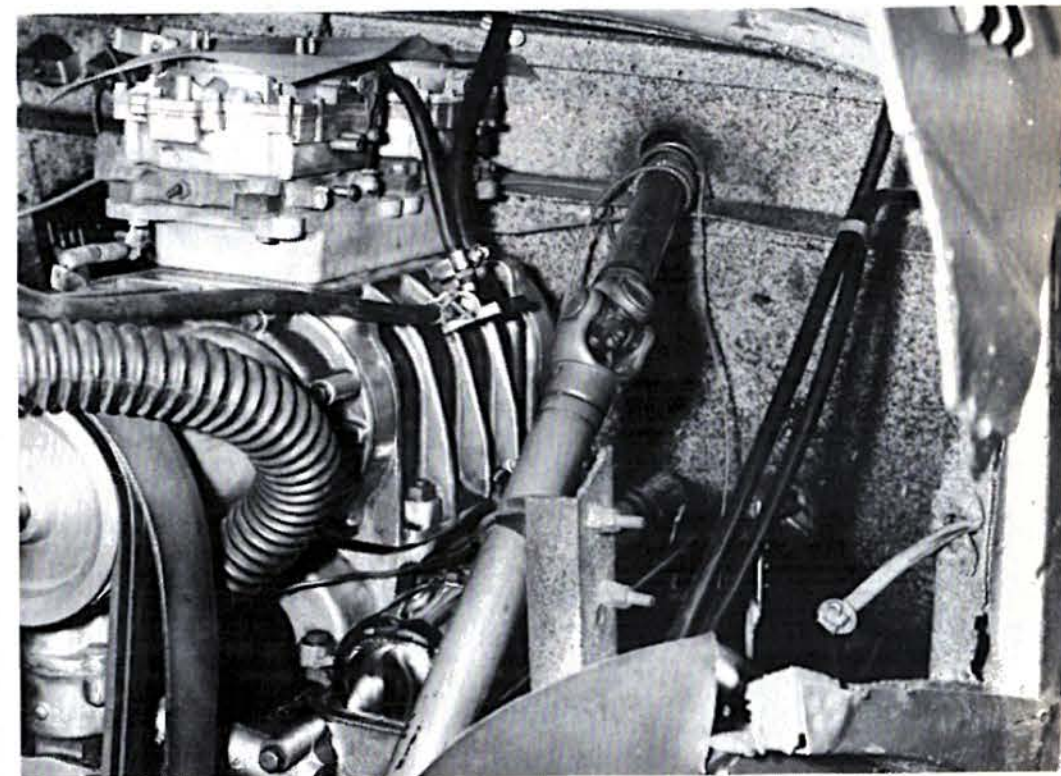
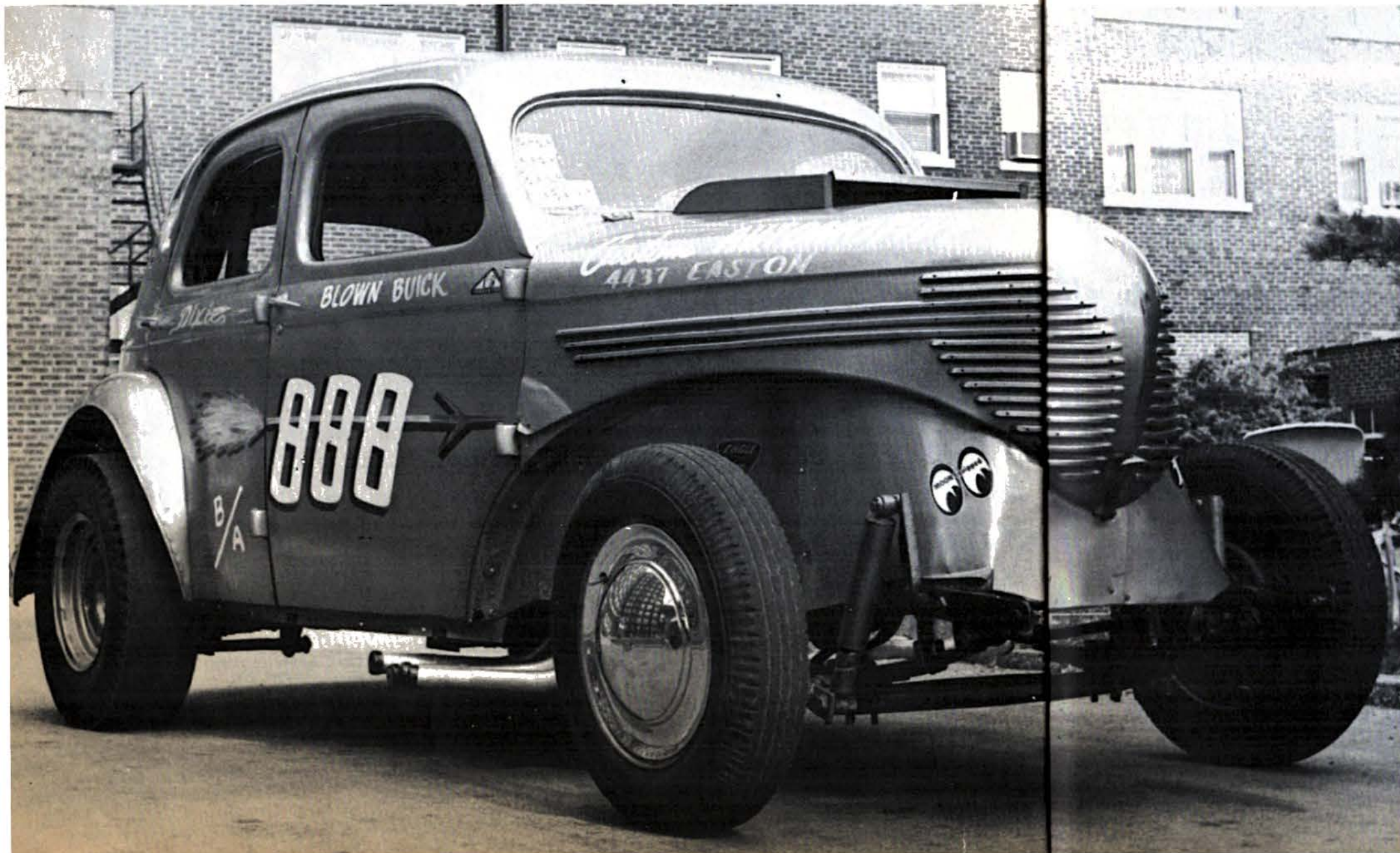
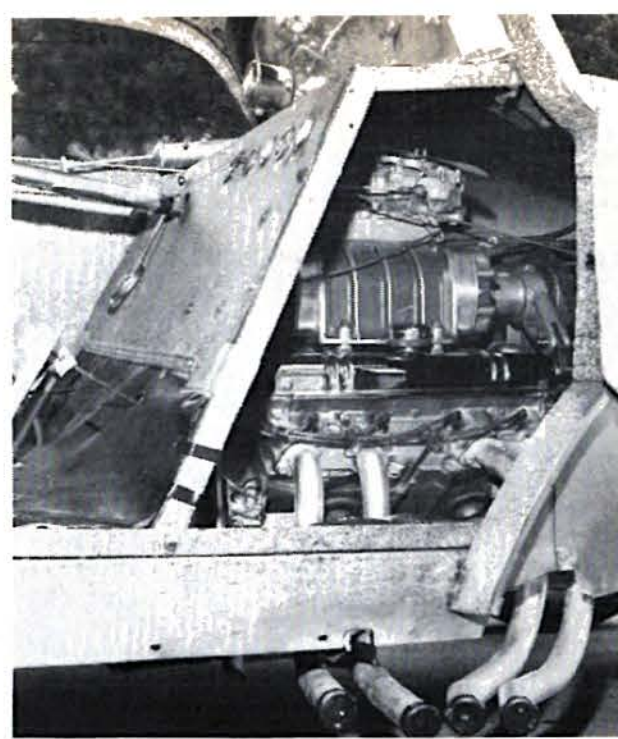
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9. The Fabulous Double A Altered roadster owned by the Pacers of Oceanside, N.Y. runs alky and other fuel mixtures. Fiberglass-bodied roadster packs a blown-injected Chrysler mill and a Chassis Research chassis. Rod kicks up quite a bit of smoke! 10. Nolly Simpson storms out of the chute with his Chevy-fired Deadwood Stage. A/Altered bomb is one of the fastest in the country today. 11. Seldom-seen pickup-roadster body forms the basis for this hot B/Altered.

BUICK ALTERED WILLYS

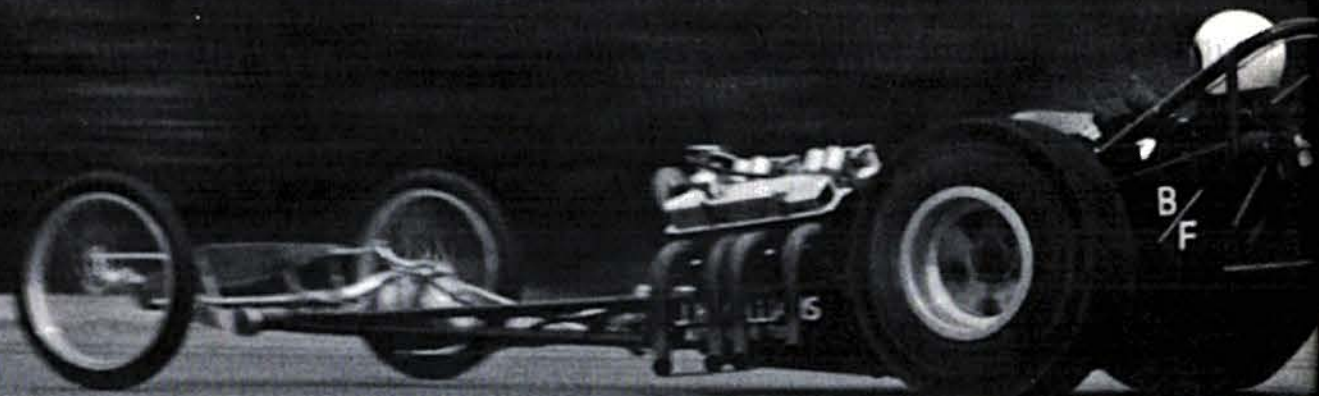
BY ROBERT HEGGE



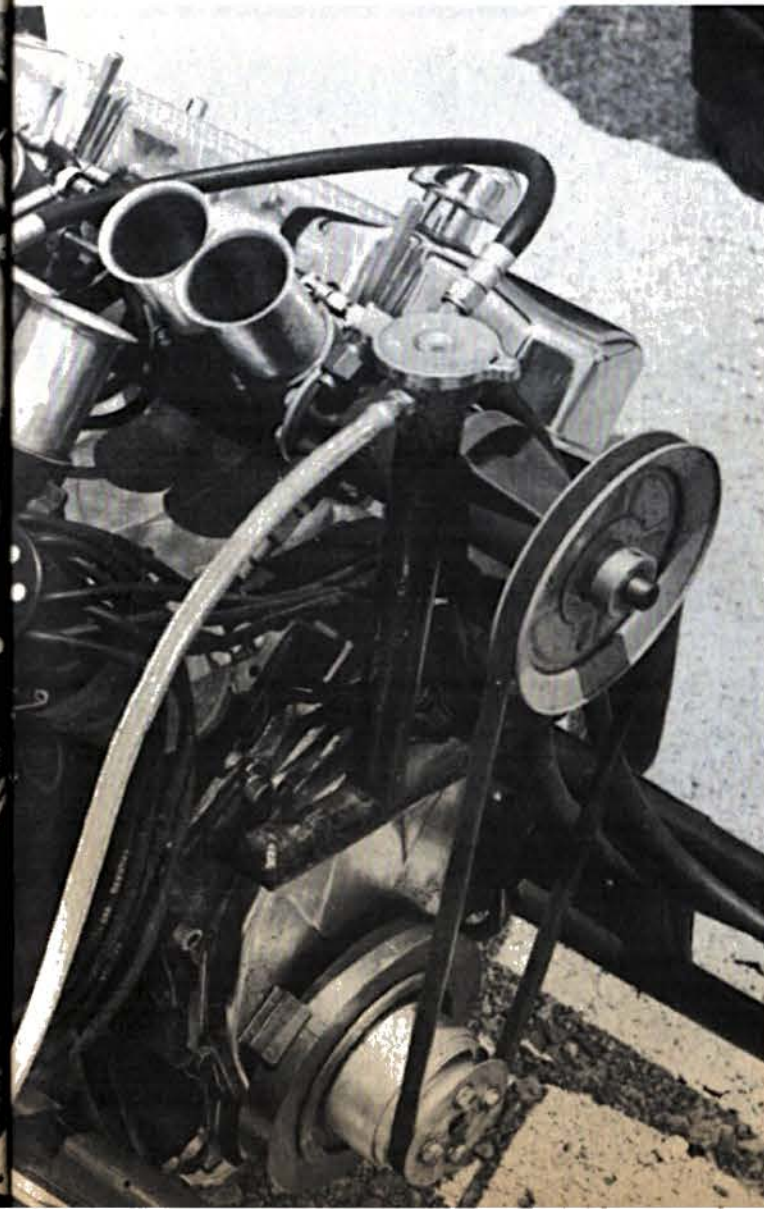
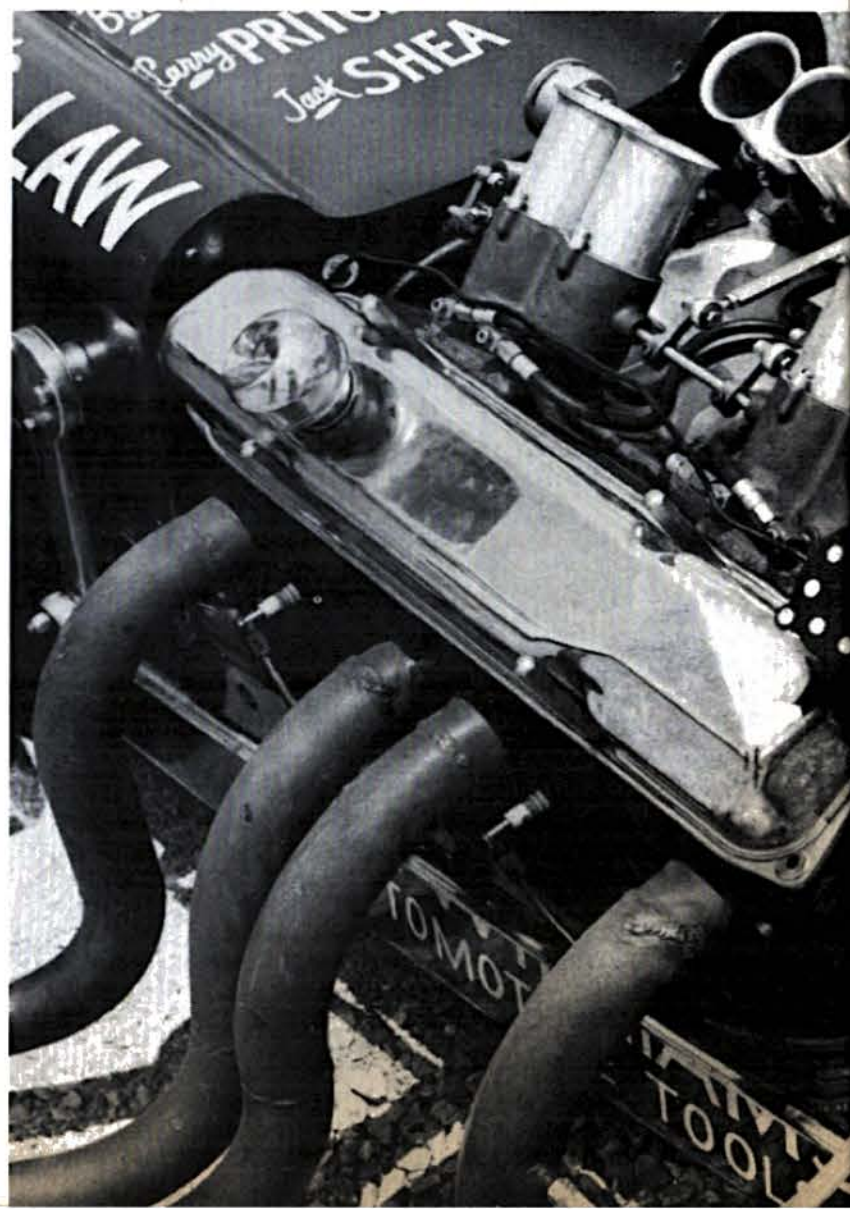
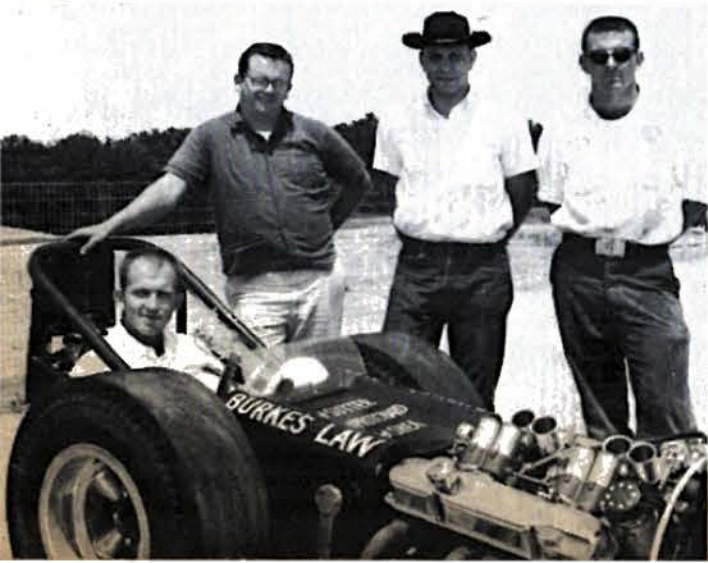
Dixie Kilgour, NHRA Regional Advisor in St. Louis, Missouri, is a Buick fan from way back. After five years of racing his Paxton-blown '56 Buick Century, Dixie made the big switch and built an Altered. Now he uses the Buick as a tow car for his new Buick-fired Willys! The vintage '54 mill sports a stock bore and stroke, plus factory export and commercial speed goodies. The valve train consists of an Engle 122 blower cam, Buick export pushrods and solid lifters, Gotha rockers, dual springs and oversize valves. ForgeTrue pistons stand the gaff of the GMC 4-71 blower. Transmission is from a '37 Roadmaster. Abbreviated '37 Willys makes use of many late-model GM components. Rear leaf springs, Monroe shocks and 4.11-1 rear end were pirated from a '52 Olds. Rear wheels and sway bars are from a '56 Buick. The spartan interior was designed for short (quarter-mile) hauls only! Flocking replaces all upholstery except for the rolls and pleats on the single Renault bucket seat. Combination firewall-dashboard boasts S-W instrumentation. Shoulder harness-seat belt assembly keeps Dixie in place during those 125 mph, 11-second runs. Seldom-seen sedan is a real stormer.

STAGE II FUELER

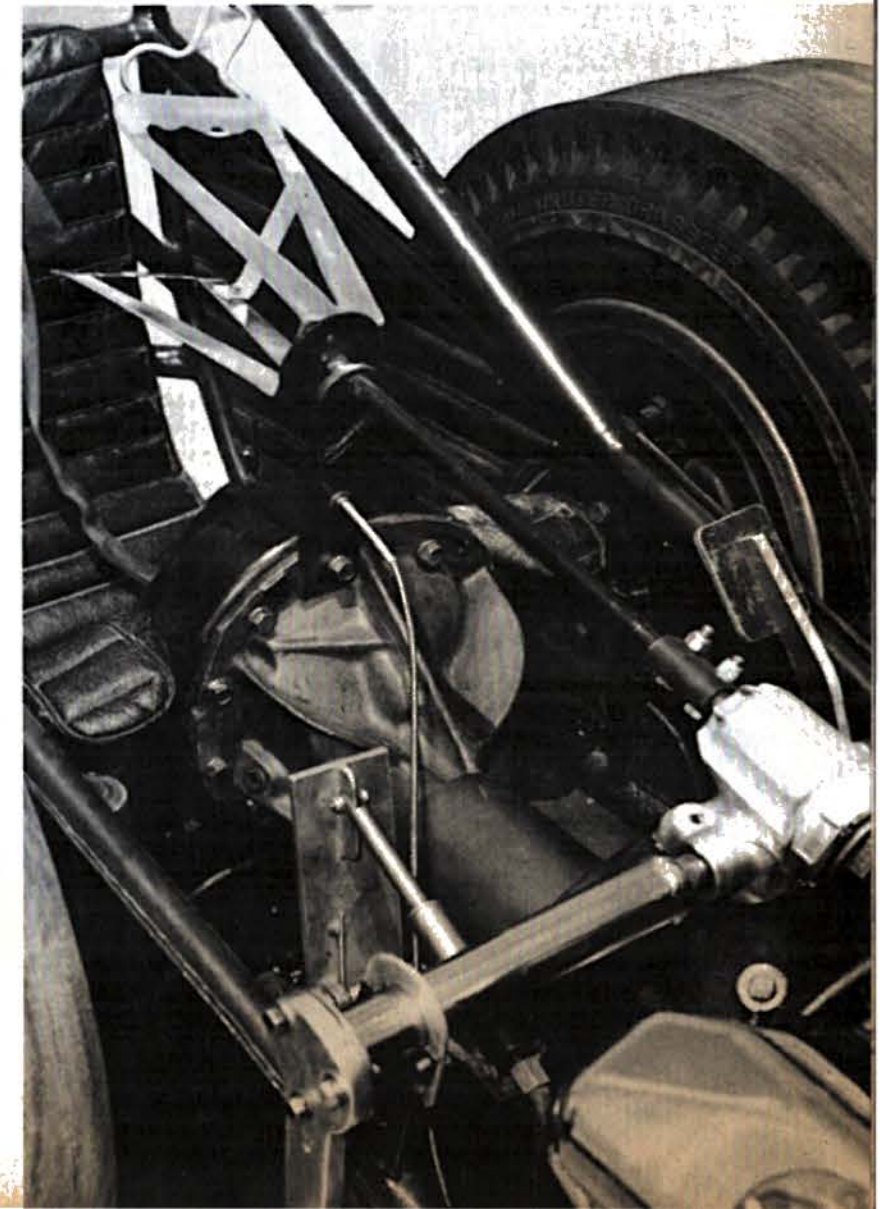
BY ROBERT HEGGE



Neat torsion bar suspension, airfoil and chromed tube axle are all homebuilt items. Touches of chrome set off the red-lacquered body. Small aluminum fuel tank supplies juice to the Hilborn injectors. Burke's Law team includes (L to R) Bob Sutter, Larry Pritchard, Burke Gardner and Jack Shea.



Bob Sutter of St. Charles, Missouri, teamed up with Larry Pritchard and Jack Shea on a dragster project. Six months and \$2,500 later, the boys were ready to campaign their Class B stromer. Engine chores were farmed out to Burke Gardner, hence the title "Burke's Law." The powerplant is a stock displacement Stage II Plymouth 426, bolstered by Hilborn fuel injection, a Vertex mag and tube headers. Stock valves were retained, while the cam was swapped for a Racer Brown 53R roller cam, complete springs and pushrods. Backing up the 800 hp (dyno) Super/Stock mill is a Donovan direct drive setup with a Schiefer double-disc assembly. Bringing up the rear is a 3.42-1 Olds banjo with special billet steel axles. The chassis, which has a wheelbase of 112 inches, front tread of 58 inches and a rear tread of 34 inches, was fabricated from .040-inch steel tubing. The torsion bar front end sports a hand-crafted tube axle complete with an airfoil. Chrome spokers mount on modified Crosley spindles. Steering was pirated from a '63 Corvair. Big Olds drums and a 12-foot Carter Cross-Form drag chute handle all stopping problems. Weighing in at 1,100 pounds, this Super/Stock-powered rail tripped the clocks on its first run at 166 mph in 8.8 seconds. Not exactly bad for a "B" machine! Red-lacquered railster has encountered no problems enforcing the "Law" around the St. Louis area. Neat aluminum body was designed by Burke Gardner. Upholstery is rolled and pleated naugahyde.



HOW TO INSTALL AND USE A TACH

BY BRUCE DIXSON

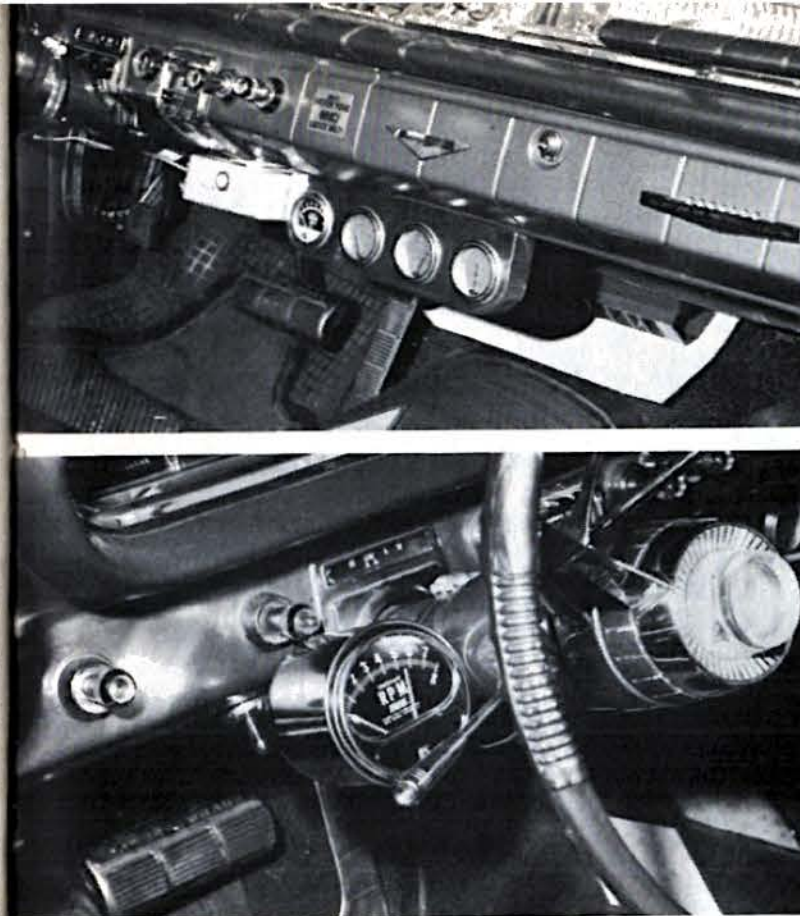
ALTHOUGH the name Bruce Dixson may be unfamiliar to the rodding fraternity, Mr. Dixson is no stranger to performance. He is an instrument engineer and the designer of the famous Dixco line of rodding gauges. His transistorized tachometers are used on top flight drag and Bonneville machines, as well as commercial trucks and experimental Army vehicles. We managed to kidnap him from his lab in Grand Junction, Colorado, long enough to write this feature!

EVEN though some manufacturers have officially dropped their drag and NASCAR racing interests, there are still optional big engines available from each and every maker. Chevy still offers the 409; Pontiac still pushes the big 421. Just about every compact is available with V-8 engine options, and many of the standard V-8's in the full-size cars are truly high performance engines. With the trend to high performance engines, it is vital that you should know at what rpm your engine develops maximum torque, horsepower and fuel economy. Testing and sharp tuning are the keys to a better running engine. Factory service manuals specify a given rpm for many testing operations. It would require many volumes to catalog all these values for various engines. Therefore, I will briefly describe typical operations that require rpm information, and suggest that you consult the factory service manual for applicable values and procedures.

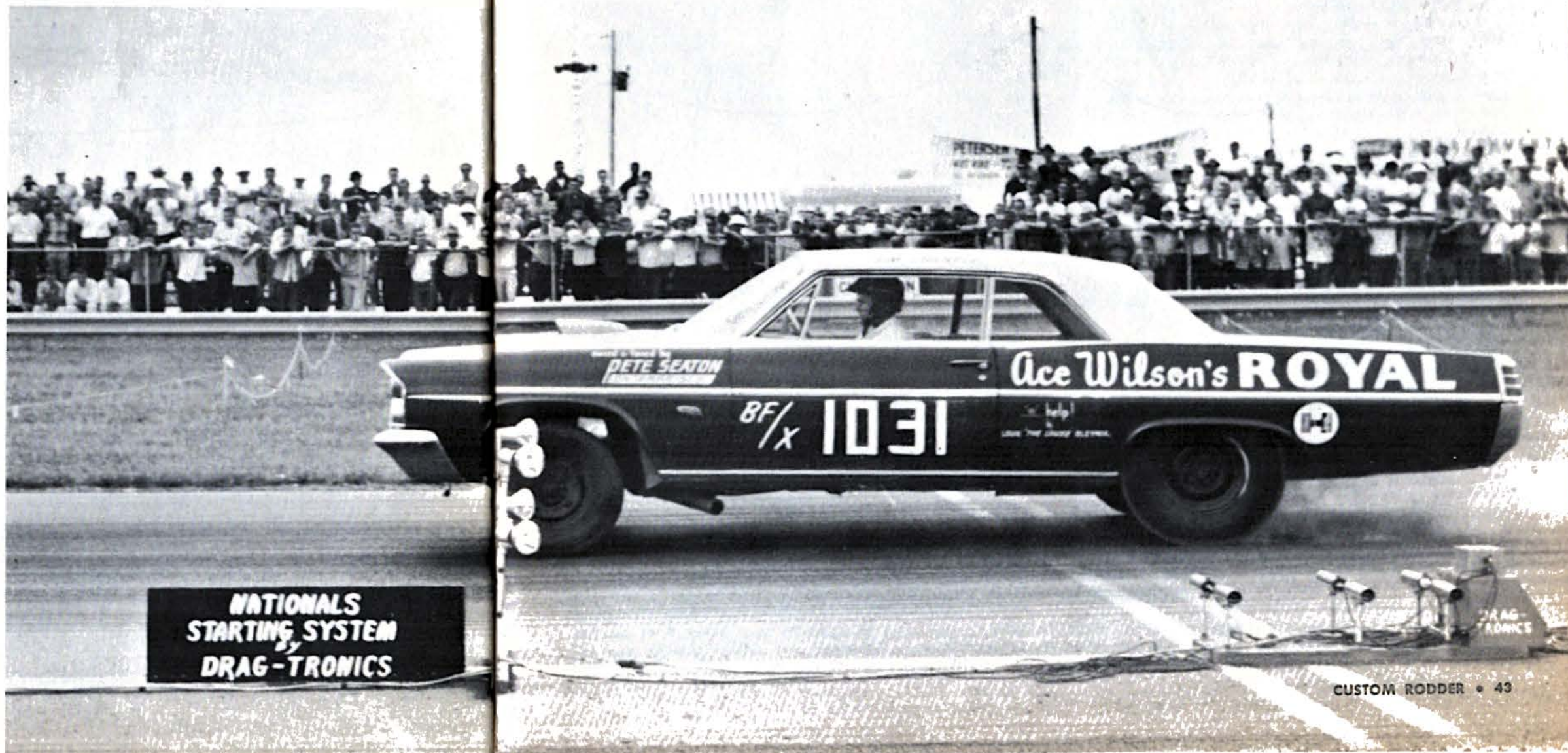
CARBURETION

Adjust the idle mixture setting to the highest steady rpm reading. Set the specified hot idle rpm, usually 400-500, before you conduct any other checks. Set the cold idle rpm and check the throttle linkage—dash pot against the recommended factory settings.

You can run a simple test on almost any engine to check the fuel mixture. Keep your eye on the tach as you



Darrel Coddington, one of S&P Automotive's ace speed tuners, uses a panel-mounted tach to set the idle on a new Sting Ray. CR's Pontiac test car sports a chrome-cased full size Dixco tach for the driver and a panel-mounted Series 60 tach for the co-pilot. Small unit comes in handy for recording rpm during on-the-strip product tests. Small tach can be used in any standard (2-1/16-inch) instrument panel. All competition cars, except dragsters and other direct drive rods, should be equipped with a tach if maximum performance is desired.



INSTALL AND USE A TACH

slowly cover up about $\frac{1}{4}$ of the air intake. Check this at various rpm over the normal operating range. If the mixture is correct, you will note a slight increase in rpm (approximately 100) as you cover part of the intake. There will be no increase in rpm if the mixture is too rich.

To test for a dirty or damaged air filter, remove the filter, run the engine to 1,000 rpm and observe the tach while replacing the air filter. If rpm decreases noticeably the filter is choking air flow.

FUEL PUMP

To check fuel pump performance, you should branch a pressure gauge into the output fuel line and check pressures at various rpm ranges. Your factory service manual specifies recommended pressure readings at set rpm.

IGNITION

Inasmuch as electric tachs operate from the ignition system, you shouldn't have any problems detecting ignition troubles. Sticky valves and ignition misses will appear as pulses on the tach long before you note a change in engine performance. Points, condenser, cap and wiring should be checked.

In order to fine tune the ignition timing, you must run the engine at a low enough rpm so that vacuum and centrifugal spark advance mechanisms are non-operative. After initially setting the ignition at this speed, you should run the engine at various specified rpm and check the advance operation with a timing light and an engine specification chart. Try this operation without a tach!

GENERATOR OUTPUT

To know if a generator is working properly, hook up a test circuit as specified for your particular unit and record amperes at various rpm.

GENERATOR VOLTAGE AND CURRENT REGULATOR

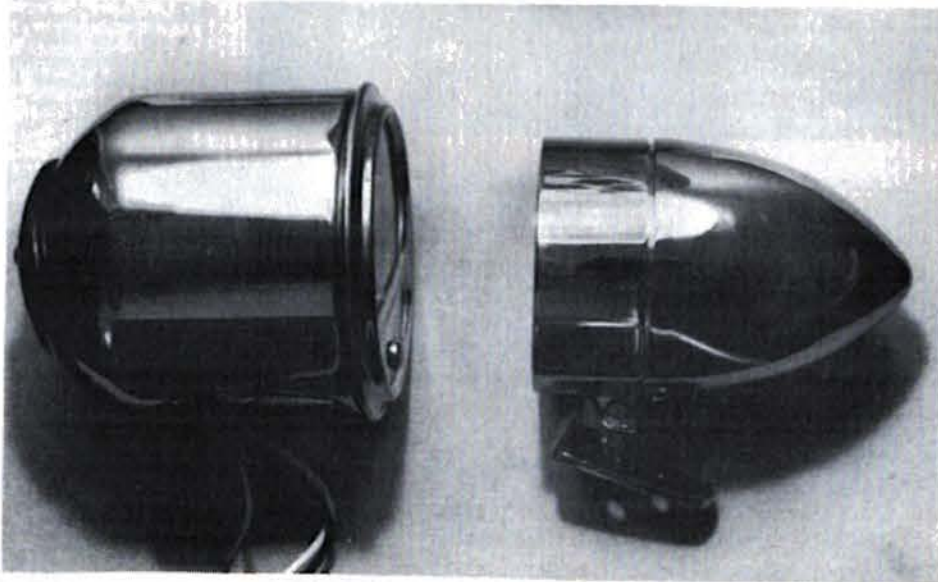
Measure for proper voltage and current at specified engine rpm.

GENERAL ENGINE TUNING

All interrelated adjustments of fine tuning, particularly carburetor and



Miniaturized tach can be purchased with or without the Custom Trio chromed panel. Panel comes with dual chrome hooded lights and a complete installation kit.



Chrome cases for top-of-the-dash and steering post installations are available for both the full-size Series 90 and miniaturized Series 60 tachs.

ignition, show up in rpm. Whenever you try a special adjustment or modification, be sure to record rpm before and after under equivalent test conditions. Other tests, such as manifold vacuum at specific rpm, are helpful in reaching peak power and efficiency.

STARTING MOTOR

Hook a voltmeter to the starting motor terminal and ground connections. Read voltage and engine cranking rpm; compare with specifications.

STALL TEST

All you Stick-Hydro and Torque-

flite boys should pay close attention to this one. Most automobile makers recommend a stall test (automatic transmission models) as a quick means of checking engine and transmission performance. With brakes locked, lever in gear, and full throttle applied, the engine should stall at a given speed (1,600-2,000 rpm). Some of the Ramcharger automatic transmission valve bodies are set up for a 3,000 rpm stall speed. If the engine stalls at a higher engine speed, the transmission is most likely slipping. If it stalls at a lower than normal engine

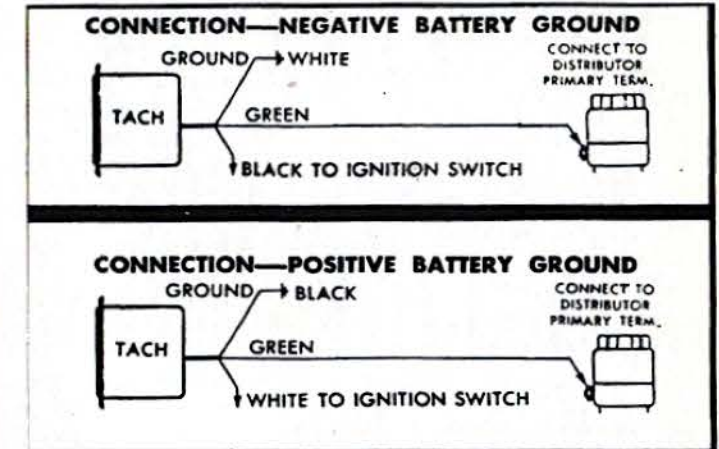
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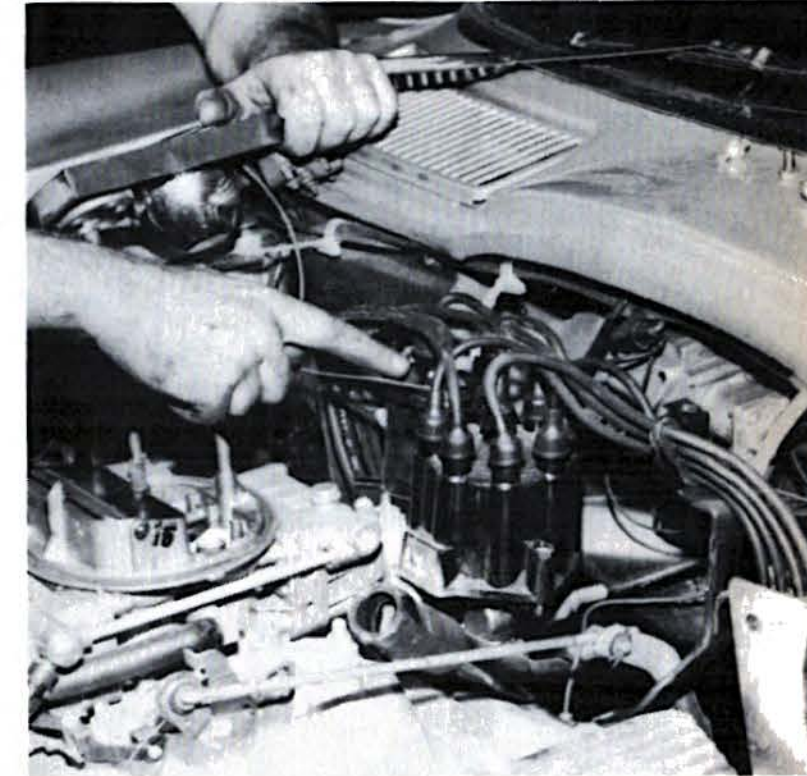
An adjustable redline or shift pointer is a must if you want to get the most from each shift. Shift points vary with transmission, rear end gear, and tire changes.



By simply removing the red resistor from the rear of the large Model 97 tach, you can install an Eight-cylinder unit on a Six-cylinder engine. Installation is simple.



Color-coded wires and detailed instructions prevent installation goofs. Tach can be grounded by running either the black or white (depending on battery ground) wire to dash bolts.



The hot line must be connected to the primary distributor or coil terminal. Photo shows temporary hookup of a portable tach-tuning panel on a '64 Corvette Sting Ray.

All you need is \$30 worth of tubing, two talented partners, a friend who owns a speed shop and some good old rodding ingenuity to . . .

BUILD A \$125 DRAGSTER!

BY RON LODEN

WHAT does the average rodder do when his machine is up on jacks, and he has a few free weekends with nothing to do? Well, some boys catch up on the latest rodding news via magazines and drag papers, spend some time with members of the opposite sex, or even pitch in and help a friend who may be working on a new machine. These are basically standard extracurricular activities for members of the go-fast set.

Harry (Butch) Lehman of Alexandria, Virginia, a member in good standing, has some of his own ideas regarding spare time and extracurricular activities. He is the owner-builder of a most unique rear-engined flat-head dragster that boasts a maximum bore-stroke Merc mill, wild Hilborn injection, lots of chrome goodies and a host of unusual components. He recently decided to make a few changes, so he parked his rail on jacks and sent out some components for intricate machine work. The machinist needed three weeks for the job, so Butch decided to put his spare time to good use. Since he had nothing better to do, he teamed up with two of his

friends, Joe Anderson and Russ Barnes, and built another dragster. Total building time—three weekends! Total cost—\$125!

Butch and friends made the rounds of local junkyards and came up with enough spare parts to build a dragster. Butch and Russ designed the ultra-lightweight chassis and body, while Joe came through with an all-out economy dragster engine. More about the mill later.

The 117-inch chassis was fabricated using .049-inch and .065-inch mild steel tubing. To form a front end, the boys mated a chromed Model A Ford transverse leaf spring assembly to a '48 Crosley solid axle. Spindles were pirated from the same Crosley, while the Ross steering and the small wheels came from a vintage '50 Crosley wagon. The front end has a tread width of 39½ inches, while the '53 Fiat rear measures 40¼ inches. They originally installed a '46 Fiat aluminum rear end, but replaced it later with a '53 model cast iron model with 4.87-1 gears. The aluminum rear could not take full throttle abuse! Handcrafted aluminum friction

shocks (front) serve as lower radius rods. Braking chores are handled by drilled-out Fiat rear brakes with an aluminum ('60 Ford Prefect) master cylinder. No binders are used up front. The chassis materials carry a total price tag of \$30!

For convenience and cost reasons, Lehman and Associates voted on a four-banger Fiat for the ultimate powerplant! Master engine builder Joe Anderson is the man responsible for the supercharged Fiat dragster engine that powers this radical machine. The '46 Fiat flathead engine has a 2-1/16-inch bore and a 2-3/8-inch stroke. This figures out to a whopping 30.5 cubic inches! Joe retained the stock Fiat cam, lifters, aluminum pistons and rocker arms, but milled (.080-inch) and polished the aluminum head. For maximum engine efficiency, Joe spent many hours working over the minute ports. Both the intake and exhaust manifolds were handcrafted from ¾-inch lightweight steel tubing. The tuned intake manifold works in conjunction with a '36 Graham supercharger and a re-jetted 97 two-barrel carb. The single V-belt drive puffer turns on to the tune of 10,000 rpm! Boost is approximately six pounds. A 15-pound Fiat flywheel and a six-inch clutch assembly transmit all 22 hp to the late-model rear. An aluminum Fiat four-speed box with heavy-duty shift guides works just fine with the blown engine.

One of the biggest construction problems was the mating of the four-speed transmission to the rear end. This problem was solved by cutting the rear yoke slightly and using a fiber coupling (stock Fiat universal). The transmission shaft bolts to the fiber coupling; the coupling bolts to the yoke.



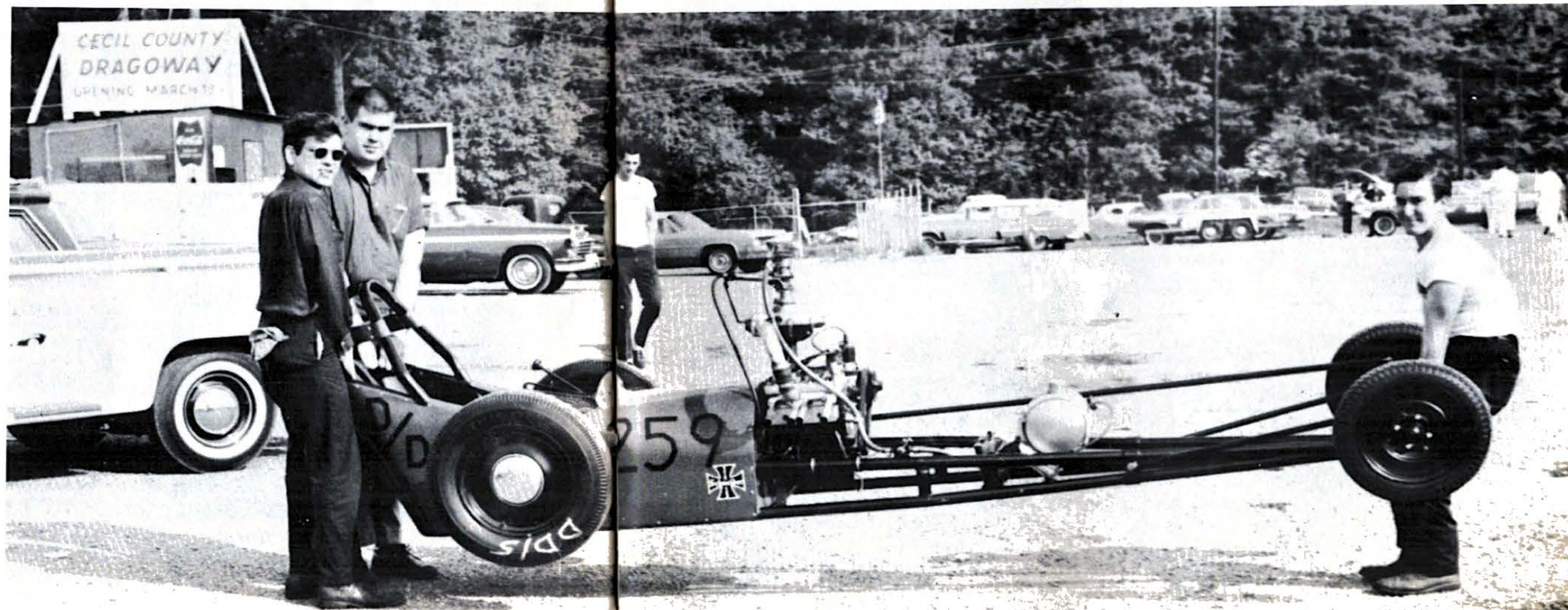
Small aluminum fuel tank and pressure pump mount up front. Team members (below) demonstrate just how light this dragster is. Ultra-lightweight rail tips scales at 550 lbs!



Graham centrifugal supercharger is used with a Ford 97 two-barrel carb for the intake system. Carb linkage is hydraulic.



Roll bar offers adequate driver protection in case of spill. Note the long shift lever and abbreviated plexi windshield.



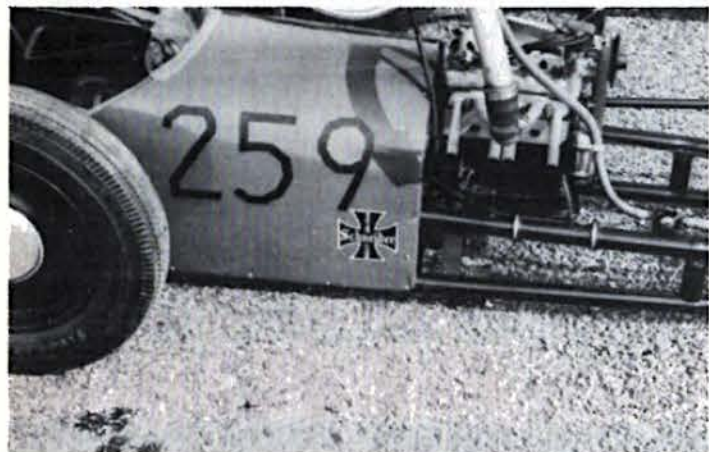
BUILD A \$125 DRAGSTER!

At this point, Russ Barnes took over and knocked out a jiffy quick aluminum body. Using .025-inch aluminum sheeting, Russ managed to do a darn nice job. Bright red lacquer for the body and black lacquer for the rails completes the picture. To keep costs down to a minimum, Butch turned the upholstery assignment over to his mother. Anyone who has ever seen the rear-engined Lehman D/Dragster, knows that Mrs. Lehman can really stitch up some mean rolls and pleats!

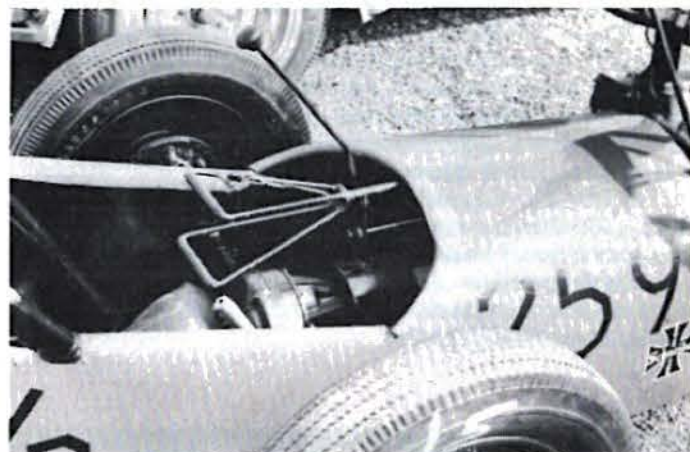
Big Ed of Ed's Speed Shop in Alexandria, felt sorry for the boys and chipped in some goodies for the cause. Heim bearings, a fuel tank and seat belts were some of the components that were in Big Ed's care package. When asked about the running potential, Butch com-

mented: "We have a few bugs to work out before we run anyone for a trophy, but we do feel we are going faster per dollar invested than anyone else in the country!"

When the car was equipped with a stock sidedraft carb (no blower) the dragster was clocked at 52 mph. More impressive times are expected when the bugs are worked out of the blower setup. According to Butch, the boys spent approximately 130 hours building the car, and at least that much time getting up their nerve to take it out to the strip! They may not break any records, but they get as much enjoyment out of the car as the fuel boys do with their \$6,000 rigs!



Red-lacquered body was handcrafted from .025-inch aluminum. Note short exhaust stacks and remote fuel shutoff valve.



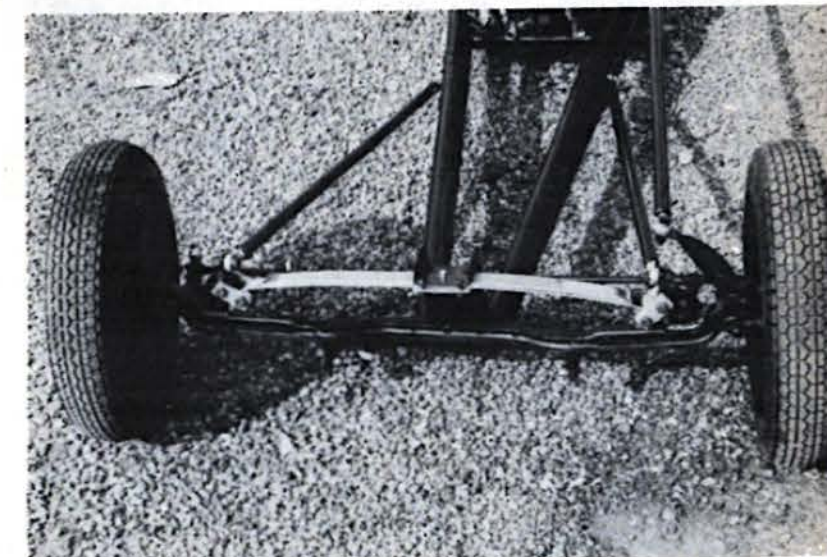
Both the four-speed shifter and rear end are late-model Fiat. Rear brakes (Fiat) sport drilled out backing plates.



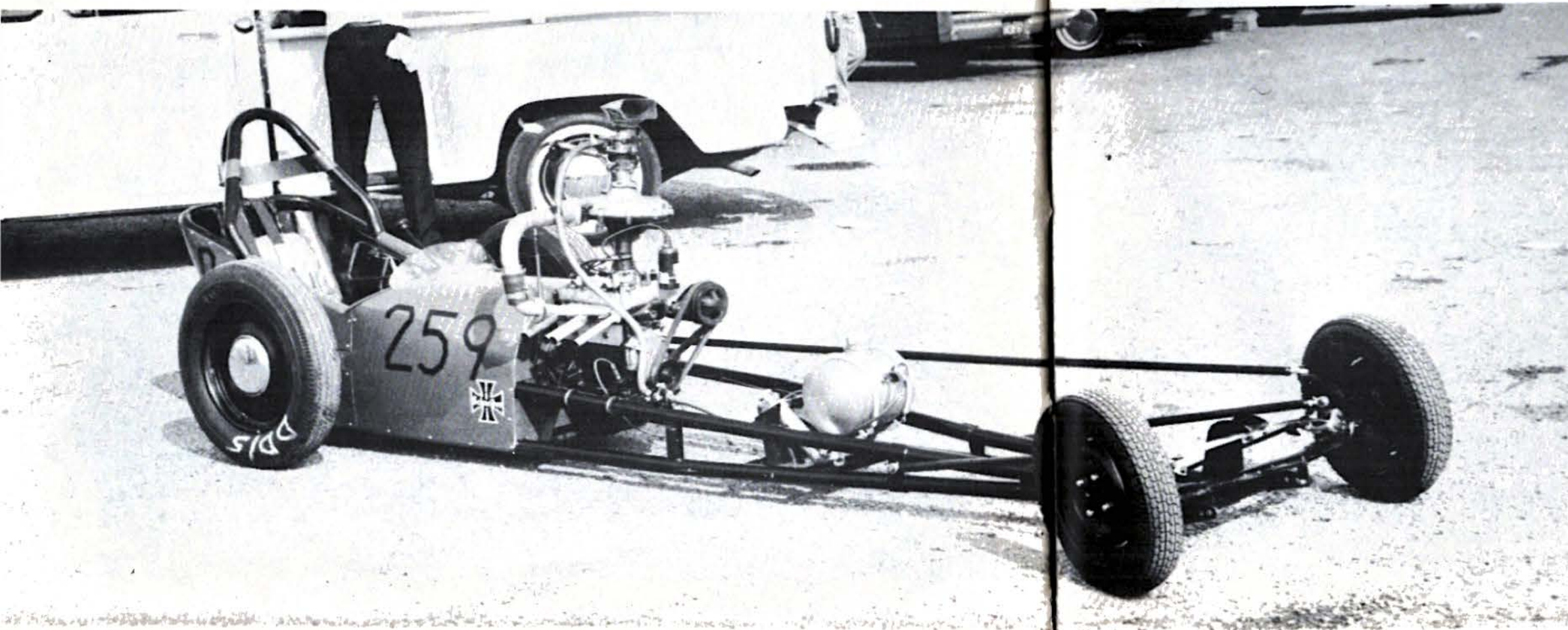
Blown '46 Fiat displaces 30.5 cubes. Aluminum head was milled .080-inch for extra power. Pistons are stock.



These photos were taken while the dragster was under construction. Rails are .049-inch and .065-inch mild steel tubing. Wheelbase is 117 inches.



Front end boasts a '48 Crosley axle and spindles, Model A springs and Ross steering. Tread width is 39 3/4 inches. Aluminum friction shocks and tube steel drag link were handcrafted by Butch. Wheels are from a Crosley station wagon.



A COBRA FOR THE QUARTER

BY DON HAYES

CARROLL SHELBY has expanded his Venice, California, Cobra emporium, and now offers a ready-to-drag, tire-frying Cobra. Dubbed the Dragonsnake, this fiberglass-topped roadster has already made a name for itself with the quarter-mile set.

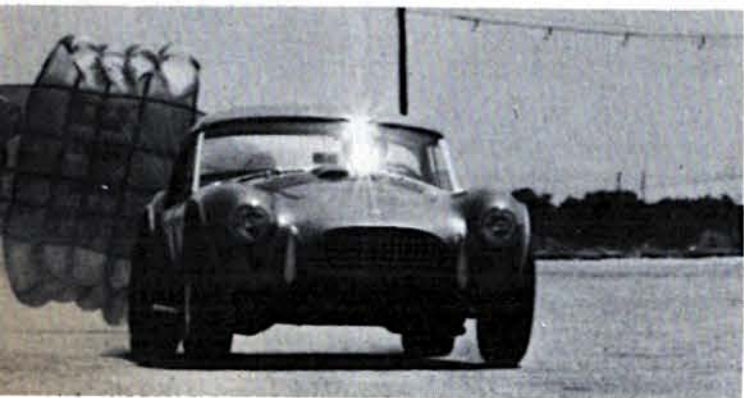
More than just a glorified sports car, the Dragonsnake is actually a thoroughbred quarter-mile machine. The engine is a fully blueprinted 289 with dual Carter AFB quads or Weber dual throats, drag headers with tuned dumps, and a stock Ford 289 HP bump stick. Backing up the mill is a special clutch assembly and a Ford QK-1 four-speed transmission with a 2.36-1 First gear.

Bringing up the rear of the powertrain is a 4.89-1 limited-slip rear and mag wheels with Bruce-capped Goodyear tires. Except for 90/10 UpLok front shocks and 50/50 Down Lok rear shocks, the suspension is standard Cobra. Disc binders are used fore and aft.

Standard equipment for the Dragonsnake includes full instrumentation, a top-of-the-dash electric tach, scattershield, racing belts and a fiberglass hardtop. With all this ready-to-drag equipment, the Dragonsnake Cobra lists at \$8,250 F.O.B. Venice.

One of these Dragonsnakes made its NHRA debut a successful one, by breaking two National class drag racing records during the Championship drags at Riverside Raceway. The mag-wheeled beaut copped a class win and set the record at 114.83 mph in 12.00 seconds.

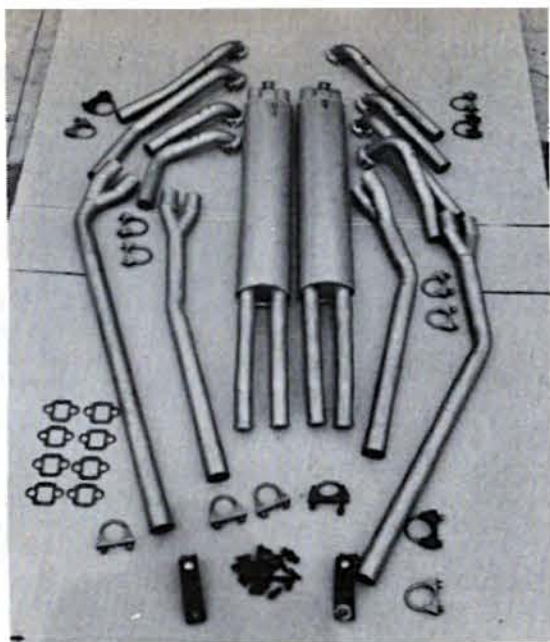
Besides building Cobra drag machines, Carroll and his technicians have come up with a complete line of high performance goodies for the 260 and 289 FoMoCo engines. Latest in this line is the special high perform-



Prototype dragging model (above) makes use of a drag chute during the debugging tests. Production models are not equipped with chutes. Cobra (right) "hangs one on" a hot Sting Ray during the trophy runs at the NHRA Championship drags. Winning time—114.83 mph 12.00 secs.



**A
COBRA
FOR
THE
QUARTER**



ance custom header-exhaust system for all 260-289 mills. Months of development on the Cobra Racing team cars and the Shelby American dynamometer have proven the value of the 180 degree firing setup. Individual pipes are used instead of single four-port flanges to facilitate its installation and spark plug removal. The complete "Snake Pipes" kit including mufflers lists for \$150.

Other goodies which are of interest to the hot rodder include big port heads, special valves, notched pistons for valve clearance, solid lifter cam kits, dual point distributors with high performance wiring, competition clutch discs and pressure plates, 6½-quart finned aluminum oil pans, high-carbon cast steel scattershield bell-housings and dual exhaust systems for V-8 Falcons.

There are four induction systems available from the "Speed Merchant of Venice." They range from an economical single four barrel job that comes complete with manifold, quad carb, air cleaner and installation kit for \$120, to the ultimate quad Weber setup which lists for \$1,230. In between are the tri-power 406 Ford-type setups at \$210 and the dual Carter AFB kits at \$243. Three of the four kits are for street-strip use, but the Weber package is for all-out competition only!

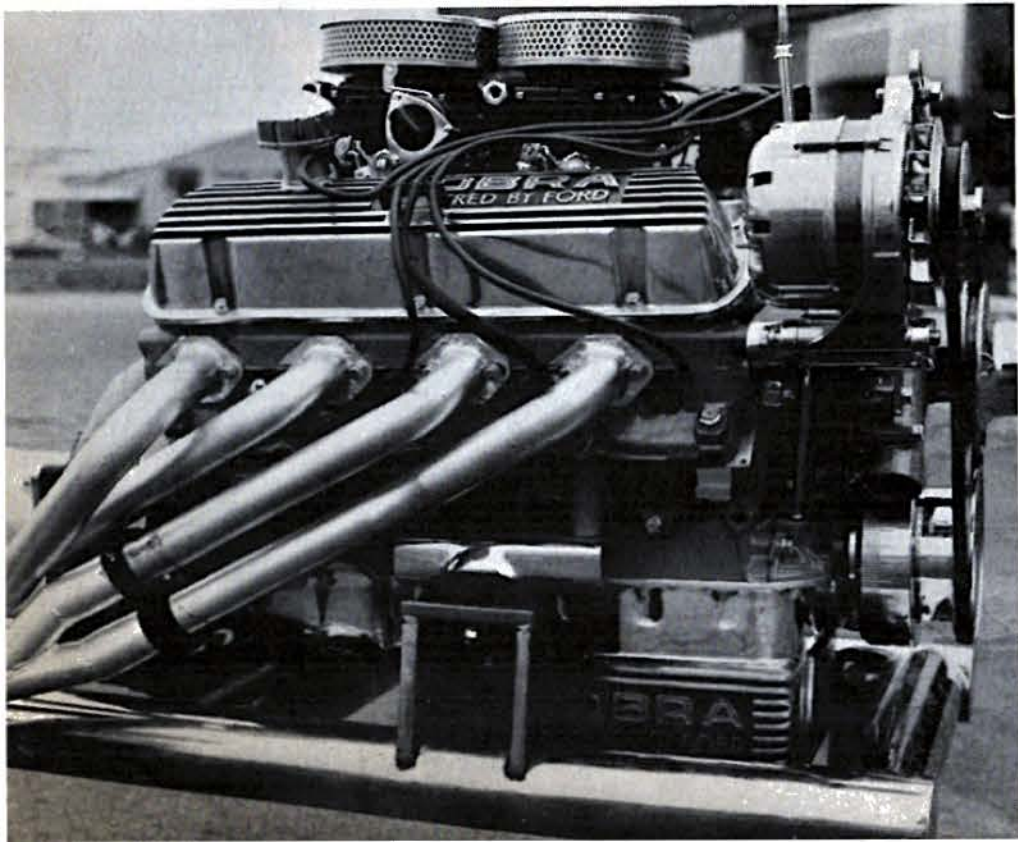
If you are interested in a dragging Cobra or some quarter-mile equipment for your Cobra or 260-289-powered machine, I would advise writing to Pete Brock at Shelby-American, 1042 Princeton Drive, Venice, California. He's the man responsible for the hot 'Snakes'!



Shelby offers a highly efficient dual header-exhaust system (above) for all 260-289 FoMoCo mills. Complete package lists for \$150. Unique artwork (left) and mag wheels set off the drag models.



Cobra mechanic (above) protects the Weber carbs from dirt after the car set a new National record. Some drag engines are equipped with dual quad intake systems (left) instead of the more expensive Weber setups. Shelby offers a full line of go-fast goodies.



KNOWLEDGE IS POWER

WHEN IT COMES TO

BEEFED HYDROS

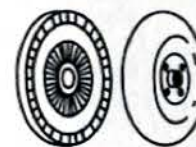
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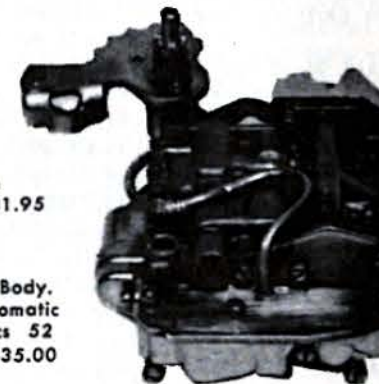
Beefed Drive and Torus Wheels....\$25.50 ea.
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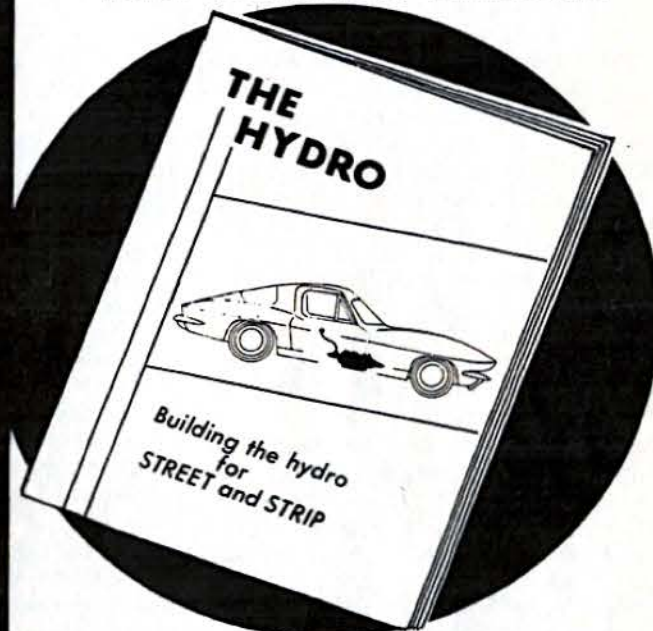
Gear your Automatic Transmission to the Strip . . . with NEW DASH ADJUSTABLE Pressure Plug for Driver Control. Exclusive Hi-Rank ADVANCED DRAG ENGINEERING development eliminates Bogging, Slipping and Slow Shifts . . . for an edge that results in CONSISTENT WINS. Controlled from dash to give you 65 to 300 p.s.i. hydrodynamic pressure gives complete adjustment to strip surface, you gear your Automatic Transmission to edge out competition WITH YOUR FINGERTIPS.

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EXHAUST continued

the conditions to which a car is subjected at the strip.

Ready-made, extra-simple formulas passed out with a free hand in magazine articles are very nice, but the only way to work out those pipes is by running, cutting and trying. One method would be to make up flanged sections of various lengths which could be tried out at the strip, one at a time till the right combination is obtained. Pipe lengths should be kept within five inches of each other for best results (ten inches maximum spread).

A collector is not just something you tack on at the end of a set of pipes because the rule book says so! You should not only make a good one, but also experiment with its length. A collector pipe has the job of smoothing out the torque curve and eliminating holes from it. The pipes should be brought to the collector in a diamond pattern, not lined up like a row of *tin soldiers!* This is a must because transition areas and flow patterns from the pipes to the collector are important. Make a small adapter piece to bridge the gap between the four pipes, then form a transition section that can be welded from outside. If the transition section is too large and bulky, it creates the effect of a small *atmosphere* at the ends of the stacks. The pipes then feel that they are breathing out to open air, and the collector just goes along for the ride.

Even though Jere Stahl specializes in tuned headers for competition use, he feels, and rightly so, that they are impractical for street use. They are difficult to route and are subject to corrosion and certainly sensitive to vibration failure. Smaller interference-type headers with stacks first branched in pairs and then joined in fours are easier to route, give adequate flow, and provide a better return for the money in terms of horsepower increase. Interference headers don't put out maximum horsepower figures like a tuned set of headers, but they are generally easier to live with because the torque is smoother. Since the branches are shorter, the welds and pipes are less sensitive to vibration and breakage. These headers are also easier to install on the average car.

Stahl gave us quite a few valuable tips on how to maintain a set of headers and repair or alter them to suit your particular needs. For instance, when a pipe cracks next to a weld, don't try to weld up the crack itself. The pipe is almost certain to

break again right next to the new weld. Instead, deposit a bead next to the crack. Now you can bridge the old and new beads with weld and insure a lasting repair. When you do weld or splice in a new section, keep the flame low and avoid sags. The ends to be joined must be hacksawed clean and ground to remove inside burrs.

Header pipes often crack off next to the header plate. The best repair is to braze them in position from the outside of the header. Direct the heat to the header plate and enough of it will reflect against the pipe. Use a coated rod and apply heat so as to draw the braze into the section between the plate and the pipe. If you are building a set of headers, tack braze the pipes to the plate, complete the header, then braze completely. Don't strain the pipes while making headers. This generally leads to cracks. You can relieve stresses by bolting the header to a head, heating a short section of the pipe and letting it cool slowly. The pipe realigns itself while hot and the slow cooling anneals it.

When a header plate is warped, you can straighten it as much as possible by cross filing to find highs and lows. Any low spot can be filled with braze. Preferably, use a file with large teeth (body file) to avoid digging in.

Normal cleaning and maintenance rules apply. If you keep the pipes painted a light color and rust-free on the outside, their chances of survival are improved. You can also spot cracks more readily. Leaky headers cost power, especially when you deal with tuned lengths. The coat of paint must be heat resistant, and if you keep it very thin, it is less likely to crack.

Just before we left his shop, Jerry also gave us some good tips on reducing the occurrence of cracks and on header installations. The better the pipes are supported and tied into each other, the less likely the chance of vibration cracks. Cross bracing in the form of welded straps, or tying in adjacent pipes to each other, will help. Sometimes a brace from the pan rails to the underside of the headers will prevent shake in a long outboard extension. Use flanged connections if pipes must be disassembled frequently. When you install a set of headers, and must connect them to a street exhaust system, you have to choose between race and street performance. For a race installation, the header must be in line with the collector end, and the street exhaust is branched in at right angles to the pipe. For a street version, the exhaust pipe is in line with the head-

ers. A cross-over pipe must be used between the two collector pipes to avoid excessive noise.

TACH continued

speed, the engine may not be putting out design hp, or the transmission itself may be malfunctioning. If you continue this test for more than 20-25 seconds, you may need a new transmission. A word to the wise is sufficient!

The standard test for automatic transmissions is to attach pressure gauges at tap-off ports in the case, and check oil pressure at given rpm against the specified figures in the service manual.

ACCESSORY SYSTEMS

Engine rpm is the basis of test values given for power steering and air conditioning systems.

PERFORMANCE

In order to get maximum performance, engine life and fuel economy, you must use a tach to control engine operation. For any car with a given power-to-weight ratio, axle ratio, etc., acceleration is greatly affected by the shift pattern. By shift pattern, we mean the rpm at which shifts are made from gear to gear. Working out the best shift pattern is a job that can only be done with the aid of a good, accurate tach.

Torque and power curves determine the best shift rpm ranges. The road racing pilot relies on his tach for primary engine control, actual road speed, shift selection and to prevent engine blow up. The dragging boys use the tach for shift selection and to pick the right rpm for getting "out of the gate" without frying a set of slicks!

MAXIMUM ECONOMY AND ENGINE LIFE

In general, maximum fuel economy and engine life are attained by holding rpm below a conservative maximum, but high enough so that the engine remains in the best operating range. If manufacturers recommendations are not available, you can determine the best economy rpm range via some simple road testing. Record fuel consumption for a given distance at various rpm ranges. Then compare your notes!

To get an idea of how various acceleration rates affect fuel consumption, measure consumption for a week of stop and go driving where you do not exceed conservative engine rpm. Compare with higher maximum rpm, and you'll have the answer.

Use the tach to set up minimum rpm in various gears. Never allow an engine to lug down. Excessive lugging causes detonation, which in turn has a nasty habit of melting holes in the tops of pistons. You can also use your tach to control maximum rpm when using engine braking on downhill grades. Too much rpm upon downshifting has been known to cause thrown rods.

Maximum fuel economy and engine life are generally obtained by operating at 60 to 80 percent of the rpm at which the engine delivers its rated horsepower.

Few people realize that a simple tach can do so much for your car!

INSTALLING THE TACH

Before you attempt to install any tach, you should familiarize yourself with its operation and installation instructions.

All model Dixco tachs (except magneto ignition models) have one wire that must be connected to the ignition switch, so that it receives electricity when the switch is on. Do not connect this wire directly to the coil, it must be fixed to the switch. Check that you have purchased the correct model for your engine. Make sure that ignition points and condenser are properly adjusted and in good shape. Arcing or bouncing points cause erratic tach operation. Install dual points for engine operation over 6,000 rpm. Check all electrical system connections and ground wires to insure accurate tach operation.

We recently added new models to our already extensive line, to cater to members of the rodding fraternity. Our large size Series 90 tach has a flange diameter of 3 1/4-inch, works with all 6 or 12 volt ignition systems, is transistorized and factory calibrated. Installation consists of bolting on the gauge and connecting three color coded wires. The new Series 60 tach has miniaturized circuitry and measures just 2-1/16-inch in diameter. Except for overall diameter, this tach is essentially the same as its big brother. Fully adjustable chrome cups, above dash mounting brackets and in-panel U-clamps are available to handle all mounting situations. The Series 60 tach can be incorporated in the Custom Trio chrome panel along with precision oil pressure and amp gauges. This exceptionally neat package can be installed above or below the dash of any car.

If a tach is needed for a special ignition system or a special engine, I'll be glad to try and adapt a model for you. Just write to me at Dixson, Inc., P.O. Box 1701, Dept. CR, Grand Junction, Colorado.

CHRYSLER continued

the Chevrolet Impala, Ford XL and the Pontiac Catalina. Each major series breakdown offers a full array of sedan, hardtop, ragtop and station wagon body styles.

The Dart, Dodge's hottest mover as far as sales are concerned, has undergone minor styling and mechanical changes for '65. A new headlight treatment and a one-piece, die-pierced anodized aluminum grille give the Dart a wide-low look. Simple stainless steel and chrome trim brighten up this top selling compact. Broad tail blinkers, half on the fender and half attached to the deck lid, and a rear grille carry the wide, low theme to the rear. Vinyl roof trim, console shifters, wood grained steering wheels, and bucket seats are some of the features of the top line GT.

Optional on all Dart models is the high performance version of the proven 273 Charger V-8. This engine is equipped with a single Carter AFB (small venturi model) quad, long duration cam and solid lifters, high compression 10.5-1 pistons and a chrome plated air filter. This engine is easily identified by its chrome air filter and crackle and chrome finish dress-up kit. All Dart automatic transmissions boast new HD thrust bearings for longer, more durable transmission life. The indestructible four-speed all-synchro Corporation transmission is available at extra cost with 225 and 273 engines.

CORONET

Dodge's all new 117-inch Coronet line, built to compete with the Fairlane, Tempest and Chevelle, is available with a full range of engines, from the 225 Six to the 426 Hemi-Charger drag engine. This is Dodge's performance leader for '65.

With an overall length of 204 inches, the Coronet falls into the ideal family car as well as competition car fields. The front end of the car is characterized by a full-width chrome grille, simple, yet effective headlights and a massive bumper. Fender-mounted tail blinkers fit in with the full-width chrome grille. All Chrysler products, from the lowest priced Dart to the top line Imperial, feature new buffable acrylic enamel exterior finishes. This new finish is more durable, better looking and can be more easily restored, than the old standard enamel.

Coronet models sport a chromed name plate on the front fender, aluminum side moldings and chromed tail blinker bezels. The 440 series offers a unique split molding and color



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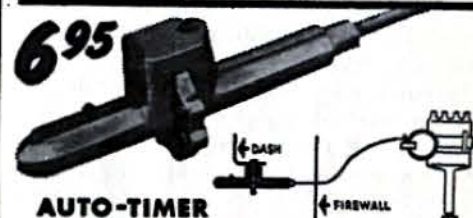
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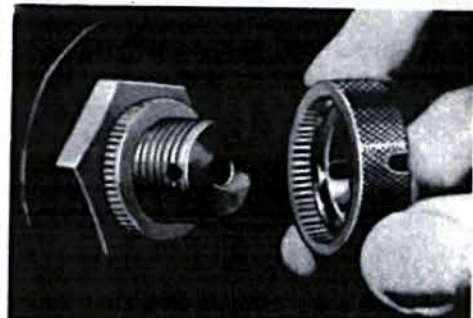
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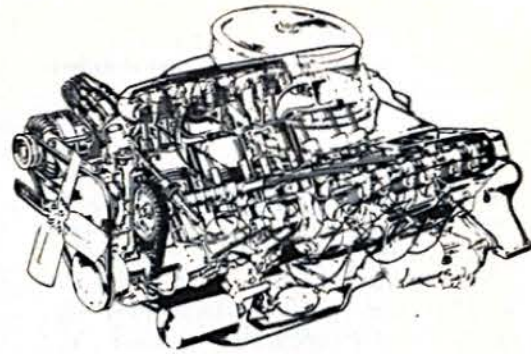
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mike arnone's answer box



Q. Chrysler's new Hemi engine is just what I have been looking for. I am going to purchase one and drop it into a Ford Mustang. I could use some operating tips on this new engine since I'm not familiar with it.

Mike Byrne
Oakland, California

A. For peak performance while participating in acceleration trials, the following practices are recommended:

Spark Plugs—For street use and short bursts of wide open throttle operation, use Champion N61Y sparkers. For extended operation at high power output, use Champion N58R or N55R sparkers.

Ignition System and Valves—Inspect the following items frequently: Valve clearance, spark plug condition, high tension wires and spark timing. This is necessary because the full output of the engine may not be realized with faulty plugs, weak ignition or insufficient valve clearance, even though misfiring and backfiring are not observed. However, excess valve gear noise and valve breakage may result from clearance settings that are too high.

Engine Operation—Do not operate the engine over 7,000 rpm. Wide open throttle operation must be limited to fifteen seconds in duration!

Gasoline—Use high octane Super Premium gasoline rated at approximately 102 octane or higher.

Brakes—Adjust brakes to eliminate any possible drag.

Tires—Use large tires of high Butyl content on the rear since they improve traction on most surfaces. Increase air pressure in the front tires to reduce rolling resistance. Do not exceed 45 psi.

Compression Ratio—The combustion chamber volume and piston-to-block deck height should be at the recommended factory minimum to get the maximum allowable compression ratio.

Compression Ratio Specifications: Combustion Chamber Volume—Minimum 170 cc; Maximum 174 cc. (To reduce the volume of the combustion chamber 1 cc, .0041-inch must be milled from the head surface. The cylinder head surface finish should be 100-120 micro-inches. For each .010-inch removed from the cylinder head, .0085-inch must be removed from each intake port side of the intake manifold and .0116-inch from the front and rear stock rail. The holes must also be elongated.

Distance from top of piston to block deck—Minimum .742-inch, Maximum .767-inch.

Maximum variation between cylinders—25 psi.

Carburetion—Carburetors have been calibrated for maximum power (leaner mixtures should be used at altitudes above 4000 ft.). Throttle blade

56 • CUSTOM RODDER

angles have been set for maximum power on the dynamometer and should not be changed. Cool air should be routed to the carburetors by whatever means the rules permit.

Valve Springs—The valve spring should be set to the minimum specified heights (1.83 inches).

Assembly Procedure—When the engine is being assembled, all parts must be kept immaculately clean, and MoPar Engine Oil Supplement, Part Number 1879406, should be used.

Fuel Pump—Three electric fuel pumps, available from a local Bendix dealer, should be installed in parallel and close to the fuel tank as added protection against high-temperature vapor lock.

Q. Will Chrysler's Hemi engine perform much better than the 426 inedged Ramcharger engine?

Bob Jeffries
Huntington, L. I., New York

A. Ask Richard Petty! He was able to make the winners' circle at Daytona after installing a Hemi into his Plymouth. He set a NASCAR stock record at 175.095 mph. I believe by next year, almost every major racing event will be won by a car sporting some sort of double cam or double rocker arm engine. Chrysler's hemi, Ford's double overhead and Chevy's lost angle valve engine prove that valves play an important role in an all-out racing engine. The same holds true for drag racing engines.

Q. I own a 1950 Olds coupe which is in mint condition. I would like to beef up the engine so I can compete with the new Fords and Dodges. How can I do this?

Mel Lawson
Akron, Ohio

A. I'd wait! Olds is building a new 425 cubic inch engine for 1965. It may be against a rodders creed to swap to a new mill before souping, but it's the only intelligent way to do it. Check with your local Olds dealer to see how the price of a new 425 cube engine compared with souping the old workhorse.

Q. What material should I use to build a strong, light-weight sports car chassis? How should it be welded?

Vince Morrison
Bronx, New York

A. ChromeMoly is what the champs are using for competition rails. Heli Arc is the best type of welding for tube rails. Helium is an inert gas which prevents deterioration of the properties being welded. An oxy-acetylene torch should not be used instead heli-arc equipment.

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accent treatment on the quarter panels, satin-finish aluminum rear deck trim and stainless steel door frame covers on sedan models. The jazzy 500 series offers many of the above mentioned goodies plus a stainless steel belt molding and wheel opening and sill moldings. A forged gold aluminum Dodge script name plate is mounted over the rear deck trim.

Also new for '65 is the column-mounted gear selector lever which replaces the pushbuttons. This is an across the board change for '65. The illuminated selector quadrant, with shift positions reading P-R-N-D-2-1, is mounted on the column. A survey indicated that 50 percent of the owners of competitive cars would not buy a car with push buttons, so Chrysler made the big move. Shucks, just when the drag honchos were used to punching the buttons!

POLARA

The all-new '65 Polara, built on a 121-inch wheelbase, is Dodge's top line model series this year. From its expansive grille and massive bumper to its delta-styled rear deck, the Polara is a highly competitive, medium-priced luxury car. A chromed, die-cast grille with vertical lines accentuates the width. Because of the con-

toured bumper and lower grille opening, the grille and bumper appear to be a single, integral unit. Curved side glass and sharp body contours characterize the lean Polara profile. At the rear, delta-shaped tail blinkers fit in with the lines of the deep-skirted bumper. Polara interior treatments can be described as First Cabin all the way. Two round instrument clusters set the Polara off from the rest of the '65 models. Optional for '65 is electric door locking buttons. Pushing down on either front door locking button automatically locks all four doors.

A new 383 cube two-barrel engine with 9.2-1 compression is the standard V-8 for the Polara. Options include the 383 four-barrel, 413 four-barrel and 426 four-barrel V-8's. New flanged-type rear axles replace the conventional tapered units. Torqueflite transmissions are now equipped with a sliding spine assembly on the output shaft for superior driveline smoothness.

All 121-inch models feature revised front and rear suspensions. Rubber isolated torsion bar rear anchors reduce the transmission of road noise, while vertically mounted shocks insure a smoother, all around ride. Lower rear spring rates also contribute to the overall luxury ride.

Sharing the 121-inch wheelbase with the basic Polara line is the new, luxuriously appointed Dodge Custom 880 and Monaco. The Custom 880 line includes a two-door hardtop, four-door hardtop, four-door sedan, two wagons and a ragtop. Exceptional headroom, fantastic glass area and super deluxe interior and exterior trim set this line off from the Polara models. The luxury-sports model Monaco is a sophisticated car that appeals to the man in the market for a Grand Prix, Riviera or Starfire. Available only as a two-door hardtop, the Monaco sports an interior that should please the most critical automobile buyer. A three-spoke steering wheel, full length console, floor shift, tachometer mounting (strictly for show), four vinyl bucket seats, and plush carpets are some of the standard equipment features of this top-line model.) Brisk performance is guaranteed with the standard 383 four barrel 10-1 engine, but those interested in tire-frying acceleration can order their car with either of the optional big V-8's. Engine options for this model include the 413 four-barrel and 426 four-barrel performance V-8's. Mechanical specifications of the Monaco are similar in almost every detail to the two-door Custom 880 hardtop.

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Mike Marvel

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VALIANT

Power options, rather than style changes, highlight the Valiant line for '65. A bright one-piece aluminum grille, reshaped front fenders and deck lid and dressed-up tail blinkers are the main exterior changes. The vertical tail blinkers are supported by circular bezels with built-in clear plastic backup lights.

Powerplants for the new Valiant include the two Slant Sixes plus two 273 cube V-8's. The top performance engine is the Commando 273 V-8 which boasts a four-barrel carb, 10.5-dome-top pistons, high-lift cam, solid lifters, dual point distributor, low backpressure single muffler exhaust system, special air filter and a dress-up package. This option is available with either the beefed Torqueflite auto transmission or the sturdy all-synchro four-speed.

A new Rallye suspension, developed by Scott Harvey and other competition-minded Corporation engineers, can be factory-installed on any V-8 Valiant sedan, hardtop or ragtop. The Rallye Suspension Package consists of beefy torsion bars, rear springs and a special sway bar. To supplement this package, there are optional firm-ride shocks.

The Barracuda fastback, introduced late last year, remains unchanged, except for a new instrument panel with a built-in tach. However, there are many options available in '65 that were not offered on the late '64 models. Special racing stripe paint jobs, dealer-installed disc brakes and floor shifts for four-speed and automatic transmission models bolster the appearance and performance of the new models. All other Valiant performance and handling options can be ordered on the V-8 Barracudas.

BELVEDERE

Basic dimensions for the '65 Belvedere remain the same as in '64, with the exception of overall length, which has been reduced 3.1 inches to 203.4 inches. Although basically a family car, the 116-inch wheelbase lightweight will be the NASCAR and drag model for '65.

The 273 is the standard Belvedere V-8, while the 225 is the standard Six. However, this model can be ordered with any V-8 option up to and including the 426 dual quad hemi head drag engine.

New front fenders, hood, bumpers, interior appointments, grille, exterior trim, and tail blinkers bolster the appearance of the intermediate-size Belvedere. The one-piece stamped aluminum grille is surrounded by a bright frame and flanked by neat

single headlights. A narrow horizontal bar connects the wide spaced headlights. Chrome square bezels adorn the massive tail blinkers.

The Belvedere is available in the following body styles: Belvedere I—two and four-door sedans and wagons with Six or V-8 engines; Belvedere II—two-door hardtop, ragtop, four-door sedan and wagons with Six or V-8 engines; Satellite—two-door hardtop and ragtop, each available only with V-8 power.

Sporty Satellite models are equipped with V-8 power, bucket seats, all-vinyl trim and a center console. Distinctive styling features are stainless steel wheel well trim, sill and belt moldings, chromed fender name plates and spinners.

FURY

Both size and styling set the 22 cars in the Fury line (Fury I, II, III and Sport Fury) apart from other Plymouths, which total 60 models in four lines for '65. There are 14 additional models in '65.

The all-new Fury has a completely new body, a 119-wheelbase chassis, wider front and rear tread and overall width. Vertically stacked quads and a mesh-type aluminum grille account for the bold appearance of this jazzy Fury. Horizontal roof, hood and deck lines contribute to the car's long, low appearance. Gracefully curved side glass and one-of-a-kind ornamentation add to the sleek, classic lines of this new big Plymouth. Besides the many obvious styling features, there are many mechanical improvements that make this Fury a more desirable automobile. Roof panels are stiffer; doors and quarter panels have box section reinforcements; there is improved corrosion protection through body design features. Lengthening and widening the chassis has paid off in superior road holding ability and increased passenger comfort. Most of the mechanical changes and engine options listed for the Belvedere and Dodge models are the same for the Fury. In general, the Belvedere and Fury are superior riding, handling and performing automobiles. The new stretchable vinyl boot (it's about time!) for ragtops, column and floor mounted sticks for automatic transmission - equipped cars, new axles and torsion bar suspension improvements are on all full-size Dodge and Plymouth vehicles.

CHRYSLER

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What's more, the KASHI-NO-BO defense weapon is perfectly legal. You need no permit to carry it, there are no laws against it.

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It is widely used in the Orient, by men and women who are too old, too young, or too weak to defend themselves by brute muscle.

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Please ship _____ extra sticks at \$1.00 each, for which I enclose \$ _____

suspensions. The New Yorker, Sports 300 and 300 L, the Newport and Imperial make up the Chrysler lineup for '65. All look longer and lower than previous models. There are 17 more models in three series; nine of the models are available with reclining front passenger bucket seats and optional headrests.

All models, including the letter series 300-L are heavyweight luxury cars that are of little interest to the rodding fraternity. However, a full list of high performance options makes the Chrysler lineup especially appealing to the man who wants a high performance luxury car that is roadable and capable of cruising at sustained high road speeds.

All models, with the exception of the 129-inch wheelbase Imperial, are built on the 124-inch wheelbase chassis. Standard engine for the Newport is the two-barrel 383, with the four-barrel 383 available on order at extra cost. The 300 models are equipped with 383 four-barrel engines as standard, and offer a 413 four-barrel, high-performance cam and dual exhaust engine as optional equipment. This same engine is optional on the New Yorker and is standard on the 300-L hardtop or ragtop. A single four-barrel 413 engine is standard for all New Yorkers.

We found that the big Chryslers are still superior riding and handling automobiles. Performance is more than adequate with the optional 413 engine packages. We don't see the Chrysler as having any drag strip potential, but we can visualize many rodders using them as tow cars for their hot machines. I can see it now—Tony Nacy pulling into the pits towing his Plymouth-powered dragster, with an air conditioned 413-powered 300-L. It's the only way to go!

FORD continued

MERCURY

For '65, Mercury offers a wide choice of 15 models in three series, Monterey, Montclair, and Park Lane plus two station wagons. Each series includes a Breezeway-styled four-door sedan, a two-door fastback hardtop and a four-door hardtop with a formal roof.

Many of the styling features of the all-new Mercury line are direct descendants of the classic Lincoln Continental. Crisp, clean, rakish lines set off this top contender for medium-priced honors. Just as the Ford banished excess chrome for '65, Mercury

followed suit and replaced the usual chrome and sculptured *geegaws* with intelligent prestige ornamentation. The low, wide front end is accentuated by a simple quad headlight treatment and a massive chrome bumper. Flanking the grille are full-height parking blinkers set into the razor-sharp fenders. Delicate chrome rims frame the ultra-safe parking blinkers. The hood, which does not take up the full area between the crisp fenders, is neatly sculptured for effect.

The razor sharp classic lines that start at the front fenders end at the rear in the form of tall vertical tail blinkers. In keeping with the styling cleanup campaign, the clean, wide deck lid is free from useless dress-up goodies.

The top-line Park Lane has full wheel lip moldings, special rocker moldings and crown-like crest ornamentation. The cleaner, lower-priced models are far more attractive than the luxurious Park Lane!

A myriad of interior treatments are available including bucket seats, vertical tilt steering wheels and elapsed time clocks. The Park Lane series is available with genuine leather interior upholstery plus special vinyl roof coverings.

The '65 Mercury is three inches longer than the '64, has a new torque box frame and rigid body design and utilizes the new FoMoCo coil spring rear suspension. The wheelbase is 123 inches and the overall length is now a full 218 inches. Because of a 13 percent reduction in transmission tunnel dimensions and a recessed instrument panel, there is far more interior room than in the '64 models.

The performance-proven 390 cube V-8 is the standard engine for the Mercury line. Transmission choices are the three-speed manual, four-speed manual and three-speed automatic. The base engine has a two-barrel carb and is rated at 250 horsepower. Optional engines include a 266 hp two-barrel engine, 300 hp four-barrel, 330 hp four-barrel and 427 cube single and dual quad engines rated at 410 and 425 hp respectively. Because of its 4,000 pounds plus curb weight, the full size Mercs are not ideally suited for drag strip performance. When equipped with a large 390 or 427 V-8, however, they are naturals for high performance open road driving. Make no bones about it, the '65 Merc is a luxury car all the way!

MUSTANG

Inasmuch as the '65 Mustang was introduced in April '64, the actual '65 models available in Sept.-Oct.

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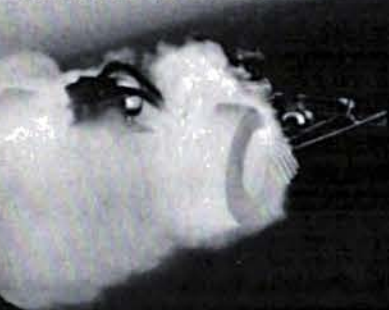
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'64 remain basically unchanged, except for minor detail items. New for '65 is the 2 + 2 fastback coupe. Built on the same 108-inch chassis, the fastback weighs in at 2,606 (curb weight) pounds. This exciting new addition features a molded-in fastback roof with a huge rear window. Total glass area is 3,479 square inches!

Functional air louvers, adjustable from the interior, provide adequate ventilation and do away with the need for quarter windows. The interior is styled identically to the stock hardtop and ragtop models. However, the neatly finished rear seat folds down to convert the rear compartment into a storage area. A small separate trunk compartment can be used for storage when the rear seat is occupied.

Optional on all Mustangs (standard equipment on the T-Bird and Continental) are front wheel disc brakes. These superior binders, manufactured by Kelsey-Hayes, utilizes a cast iron disc with an oblong brake pad on either side. Each brake pad is actuated by two brake cylinders. With these binders installed on our test vehicle, we found it almost impossible to induce brake fade. They are far superior to drum brakes and are less affected by water because the centrifugal action of the disc removes water quickly. Lining life is equal to or better than standard drum brakes.

The Mustang offers ten power team combinations for '65. The seven-main bearing Six and 289 cube two-barrel,

four-barrel and four-barrel HP V-8's are available in any model Mustang. All engines, except the 289 High Performance engine rated at 271 hp, are available with all transmissions.

There are many options available for the performance enthusiast who wants the ultimate in acceleration and handling. Some of the options include 6.95 x 14 low-profile tires, column-mounted clock and tach assembly, limited slip differential, HD front and rear shocks and springs, HD front stabilizer bar, 22-1 steering, plus wheel and roof dress-up accessories. With the 271 HP engine and full array of performance options, the Mustang becomes one of the hairiest production cars made in this country. It's quite a package!

FAIRLANE

The Fairlane line, consisting of the Fairlane and Fairlane 500 series, has been revamped to take advantage of the new Ford look. The Fairlane has a wider, more substantial appearance than its predecessor. Dual quads in rectangular housings set off the horizontal aluminum bar grille and high fender lines. Rectangular tail blinkers with chrome trim and star ornamentation bring up the rear of this sensibly styled automobile.

Headlining the new and improved power train combinations for the Fairlane is the 200 Six. Optional engines include the 289 two-barrel, 289 four-barrel and 289 four-barrel HP (271 hp). Included as standard equipment on the 289 HP Fairlanes are dual mufflerless exhaust systems and chrome engine dress-up goodies. You can order the 271 HP models with either four-speed manual or three-speed Cruise-O-Matic transmissions. We drove a test Fairlane with the 271 hp engine and new automatic transmission on the Ford drag strip and road course, and found it to be a top performing vehicle. In

fact, it was hard to believe that Ford actually built the automatic shifter! Under full throttle acceleration, the transmission upshifted like a Chrysler Corporation Torqueflite!

Low profile tires, quicker manual and power steering ratios, vinyl roof trim, HD 55-amp alternator, and limited slip differential are some of the options that can turn a docile Fairlane into a most desirable performance machine.

COMET

For the second consecutive year, Mercury's top selling Comet has received major styling and mechanical changes. An all-new front end, greenhouse (sedans only) and a rear end with tail blinkers integrated into the narrow grille add that fresh touch for '65.

The '65 Comet gives the appearance of a longer, lower car, even though the wheelbase remains at 114 inches. Nominal changes in length and height, plus a 1.5-inch increase in width do wonders for Mercury's sales leader.

The super-jazzy Cyclone models sport a unique grille and trim plus a standard-equipment tachometer. Stacked quads and wire wheel covers really bolster the appearance of this trim compact.

Standard powerplant for the Cyclone is the durable 225 hp 289 cube V-8, while the new 120 hp seven-main bearing Six is the standard powerplant for all other models. Optional at extra cost are the 200 hp 289 V-8, 225 hp four-barrel V-8 and 271 hp four-barrel High Performance V-8. Power Transfer rear ends plus a variety of rear end ratios make it possible to convert any Comet into a top performer. Three-speed stick and automatic transmissions plus the all-synchro fourspeed complete the power options available for '65.

For those interested in better handling and road adhesion, there is an optional ride and handling package which includes a sway bar, stiffer shocks and spring plus a 21.6-1 steering ratio. Thanks to lower rate front springs and increased body insulation, new Comets offer a more luxurious ride.

The '65 Comet model lineup consists of the spartan 202 Series of sedans and a wagon, the dressed up 404 series of sedans and wagons, the top line Caliente series of hardtops, a sedan and the ultra-jazzy Caliente Cyclone bucket seat hardtop with V-8 power and lots of goodies. It's an impressive lineup, and one that should do a lot for Mercury's position n '65.

FALCON

For '65, the Falcon lineup consists of 13 models including the Station Bus and Club Wagons. The Futura Sports ragtop, hardtop and two Sprint models were dropped from the '65 lineup. However, all the Sprint goodies such as V-8 engine, console, tach, buckets, etc., are available on the Futura sports models.

Forward thrust styling with a thin horizontal bar grille and pointed fenders conveys the low, wide look. Full length spear moldings, jazzy emblems and Sprint nameplates on the V-8 models, dress up the Futura line. Round tail blinkers with cross-hair chrome trim accentuate the tasteful rear end treatment.

The 170 Six is standard for the Falcons, with the new 200 Six and 289 V-8 optional at extra cost. The 289 V-8 option, which replaces last year's 260 V-8 Sprint, is rated at 195 hp. This is a full 31 hp increase over the hottest '64 model. Three-speed automatic and stick transmissions, plus the old reliable four-speeder are available with most engine options. The four-speeder is available only on V-8 models. Limited slip rear ratios are available with all engines.

It is rumored that there will be disc brakes and fiberglass front ends available on Falcons for rallye and drag competition. Some racing-minded dealers are running fiberglassed and disc-braked Falcons in drag and sports car events. Inasmuch as Ford has officially dropped the Fairlane Thunderbolt drag project, it looks like the '65 car will either be a 427 Falcon or Mustang. There are two fiberglassed 427 Falcons that are consistently putting down the hot Comets and Chevelles, so it looks like Ford is back on the warpath.

GM continued

and squealed your way through turns, or you rode an imported buckboard that cornered flat but jarred your teeth loose on every bump. Since the late Fifties, a definite trend took place at GM in favor of improving handling and simultaneously keeping ride on an ever more comfortable level as well.

Can you have your cake and eat it? GM's new frame design and suspension just about proves it. The major purpose of ride is to insulate the passengers from noise, harshness and vibrations. It can be done through extra soft springs and shocks,

or by filtering out much of this vibration between the frame and the body through proper design. For '65, all the big GM cars have similar frame designs, inspired by that of their intermediate line (Chevelle, Tempest, etc.). It is a perimeter frame, with rails that dovetail with the rocker panel sills, so that there is little interference with foot space. This is unlike a cruciform frame which forces up the floor level. The frame has a pair of faired-in torque boxes at the front, that add a bit to flexibility at the front and cushion out vibrations.

Corvette is the first American production car to come through with four wheel disc brakes. One morning's use of them through a series of acceleration runs and hard stops failed to produce any signs of fading, pulls or dives. Since the straight on the course we used is conducive to a pair of accelerations to 90-100, consecutive stops show up very quickly on drum brakes, but not on these discs.

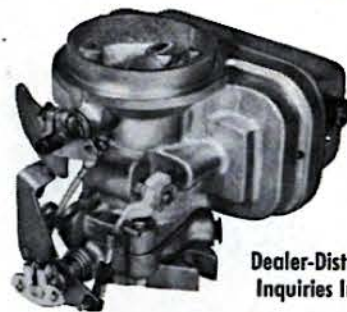
The discs themselves have a series of radial cooling air passages cored inside them, and are apparently a major help in keeping the temperatures down to acceptable limits. Delco Morraine makes the brake caliper assemblies, which have two pistons on each side of the calipers, all fluid connections are assured by drillings in the housings. A single pin, retained by a couple of cotter pins, is all that must be removed to gain access to the brake pads. It's a five minute operation per wheel.

Pontiac is definitely on the march again with hotter engines. Some of the stuff is not brand new, in terms of past Pontiac history. Last year the 421 was brought down to more modest proportions. This year the high output heads are used throughout, and a set of three two's with progressive mechanical linkage is used on both the hot 389 GTO and the 421. A low air cleaner makes it possible to use a high riser single four-barrel manifold with corresponding power improvements. Don't be surprised if you find ever increasing interest in Pontiac and Olds cars with automatics as class machines. Also, both the F85 and the GTO are likely to show up with the biggest engines. Arnie Beswick is already doing it on his own with a GTO, and it won't be long before you see Olds engines pitching, too.

We don't believe that any moves will be factory sponsored, and feel that GM as such is out of racing for a while. However, there will be much individual effort. This you can be sure of!

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Run the battery down completely until it is so weak the lights barely glow. Now turn off the light switch. Wait 3 minutes. Switch on the ignition and turn (or step) on the starter. The battery with VX-6 in it will start the car with a surge of power IT REGAINED IN THOSE FEW MINUTES.



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