TOP TEN RODS IN THE U.S.A.

POPULAR HOT RODDING

APRIL 1963 50c

BEST CAR BUYS FOR THE HOT RODDER

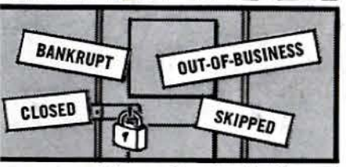
Tops for Dragging STICK vs. AUTOMATIC Transmissions

Greatest Chevy Engine Of Them All

World's FASTEST T-BIRD 228 mph!

ISKENDERIAN RACING CAMS

HERE TODAY... HERE TOMORROW!



A Painful Reminder To Those Speed Enthusiasts and Speed Shops Who Have Victimized By The PADLOCKED DOOR!

use a moment to consider the significance behind the above statement!

turally it is a direct reflection on those **cam grinders who are 'Here day... and Gone Tomorrow'.** This list is far greater than you would agine. Their customers were victimized twice... once by not having a oduct that performed as advertised, and secondly by not having the portunity to return worn cams that were supposedly guaranteed.

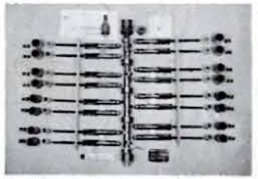
kenderian was not always the world's largest producer of Racing Camafts and Valve Gear Assemblies. On the contrary, when Isky first entered e racing camshaft picture in the early days of hotrodding he was completely dwarfed by the giants of the era. But he kept moving ever forward with new concepts and designs. While others pocketed profits and peddled only name prestige, Isky kept pouring revenue from sales into additional experimentation and product improvement. In the face of all-out competition this was the great equalizer.

IT WAS ISKY QUALITY THAT MADE ISKY GROW.

Throughout the years this has been the formula for Isky success. Isky progress has played a vital part in the rise in popularity of building racing engines. For Isky has contributed more innovations in the racing cam field than all others combined. We are firmly dedicated to this program of development. The Isky reputation, we firmly believe, is our most important asset.

So if you're the gambling type probably any contemporary racing cam will do. But if you're interested in **peak performance backed up by the integrity of a firm that will be in business tomorrow, as well as today... make sure you install a genuine Isky Cam & Coordinated Assembly!**

NEW, EXCLUSIVE ISKY PRODUCT DEVELOPMENTS FOR '63



505 MAGNUM POLYDYNE

Here is an installation with such **extended rpm range, massive power, and revs so fast past the normal peak-out point,** that you have to revamp all your old instinctively timed shifting habits. So completely dominant has the 505 Magnum been at competitive events that it has been appropriately labeled the **'BOSS'.** This was realistically proven at the 1962 NHRA Nationals where Isky equipped cars took a total of 27 1st Place awards, including a clean sweep of the 5 major 'Eliminator' titles. For full descriptive literature see your dealer... or write direct.

COLLECTORS NOTE: We have printed a limited number of giant (22 x 29) descriptive broadsides in 2 color with photos of all Isky winners of the '62 NHRA Nationals. Send for your copy while they last... **$1.00 pp.**

RPM 300° SERIES CAST BILLET-HARDENED-PARKERIZED — 2 YR. WARRANTY

The development of the Isky Polydyne Profile (electronically formulated on the miracle IBM Computer marked a major change in Isky rigid policy. For up till this time we have fastidiously shied away from an economy set-up that offered price but little in the way of performance. The RPM 300° Series now makes it possible to provide an economy installation **($55, cam only)** for drag and road use that provides a tremendous improvement in performance... yet has added new dimensions to camshaft life expectancy. For full details consult your dealer or write for literature.

NOTE: The above series is not to be confused with our premium HI-REV series which provides for optimum performance in all-out competition.

CHEV V8 and CORVAIR

HYDRAULIC RACING CAMS & Engineered Assemblies (Polydyne Profile)

The result of 3 yrs. devoted to research and development. So immensely successful and popular that we have gone on record as predicting Hydraulic installations will revolutionize the racing cam industry. Improves every area of engine performance. Soon available for other engines.

HYDRAULIC RACING TAPPETS

An anti-pump up tappet that heralded another break-through in motoring pleasure and performance. Allows for perfect timing, requires only 1 initial valve lash setting and no adjustments.

Eliminates tappet noise and revs easily into the 7000 rpm range. **Will provide superior performance when used to replace stock hydraulic tappets.**

CHEV. V8 and MOPAR B ENGINES OFFSET BUSHINGS

Isky exclusive, efficiency tuning aid. Available types now extended to include advanced timing of 2, 4, 6, and 8 crank degrees. **$3.00 ea.**

GROVES-ISKENDERIAN

MICRO ADJUSTABLE BY-PASS

Not only permits finer adjustments than ever before possible, but permits adjustments to be made from the cockpit, in a matter of seconds, even while the engine is running. This means you can leave the line on one setting and adjust to another during the course of a run.

Can be used with most of the popular port and supercharged injectors or any fuel injection where the fuel is partially metered by a controlled orifice. Two sizes available. No. 1 has a capacity from zero to .172 equivalent diameter and is for use on all gasoline and small pump fuel systems. No. 2 has a capacity from zero to .240.

Fully calibrated and cross referenced to equivalent jet sizes. As basic a tool to the tuner as a micrometer is to the machinist. As a matter of fact it has saved us so many valuable hours of experimental time on our own dynamometer that we now use it as standard equipment. **No. 1.....$25.00 No. 2.....$30.00**

SUPER STOCK CAMS and Engineered Assemblies

Isky success in this field has been well established, and has accounted for a new surge in popularity for modifying these engines. Space prohibits a detailed rundown on all available installations. See your dealer for detailed informaton or write direct.

TOP TUNERS TIPS No. 4 OF A SERIES

ARE FULL FLOW OIL FILTERS REALLY FULL FLOW?

Today's modern engine oil filter is referred to by the factory as a full flow type. Technically speaking this is a misnomer.

Petroleum engineers we have consulted inform us that it would take an oil filter nearly as large as the V8 engine itself to handle the high speed full flow requirements of the lubrication system.

Actually the modern filter begins to restrict oil flow at cruising speeds. Fully aware of this, factory engineers always design in a by-pass valve to circumvent the oil flow around the filter when it can no longer supply the full requirements of the engine. Some hotrodders, thinking they are improving on the factory, are blocking off the by-pass valve and are assuming this gives them 100% filtered oil to the bearings at all times. This is bad practice. Blocking the by-pass valve brings on collapsed filter cartridges and starved or burnt bearings. So leave the oil by-pass alone.

NEXT MONTH: How to get more 'ring life' with solid skirt racing pistons.

VALVE TIMING for MAXIMUM OUTPUT.

A completely authoritative book that has been heartily endorsed by the experts and a world of information for the new enthusiast. Hold up any engine modification until you have completely digested its contents. **Only $1.00 ppd.**

DECALS: Assortment of 4 — 25c

T-Shirts: Striking designs Indicate size **$1.50 ea.**

ED ISKENDERIAN

607 North Inglewood Avenue, Dept. H,
Inglewood, California ORegon 8-7791

DEALER INQUIRIES INVITED

APRIL POPULAR HOT RODDING - PAGE 71

IT'S SPEED SPECIALTIES

for WORLD'S LOWEST POSTPAID PRICES

SAVE UP TO 60% ON ENGINE REBUILDING PARTS

Buy our NEW COMPLETE ENGINE REBUILDING PACKAGE, everything you need to Rebuild your engine, supplied at Lowest SPEED SPECIALTIES delivered to your door prices!

It's easy to order: Send us the bore size, for the pistons and rings, and the crankshaft main and rod bearing journal sizes, together with full engine identification data; we will then supply you with TOP QUALITY Name Brand parts to complete your engine build-up!

MAKE & YEAR OF CAR	"A" Engine Package	"B" Engine Package
BUICK V-8 1953-62	$ 87.95	$117.95
CADILLAC V-8 1949-62	99.95	119.95
CHEVROLET V-8 1955-62 265-283 Cubic Inch Available up to 4" Bore Size **See Footnote!	72.95	99.95
CHEVROLET V-8 1958-61 348 Cubic Inch	74.95	106.95
CHRYSLER V-8 1951-58 All Chrys. Prod. with Hemispherical Heads	99.95	121.95
CHRYSLER V-8 1958-62 All "B" Series Engines	87.95	121.95
DeSOTO V-8 1956-58 DODGE V-8 1956-58 PLYMOUTH V-8 1956-62 All of above engines with Polyspherical Heads.	84.95	117.95
FORD V-8 Flat Heads 1939-53 Available 3-5/16 & 3-3/8 Bore, x 3-3/4 & 4" Strokes	64.95	72.95
FORD V-8 1954-62 239-292-312 Cubic Inch	72.95	104.95
FORD V-8 1958-62 332-352-390 Cubic Inch	74.95	114.95
OLDSMOBILE V-8 1949-56	78.95	104.95
OLDSMOBILE V-8 1957-62	89.95	114.95
PONTIAC V-8 1955-62	89.95	112.95

"A" ENGINE PACKAGE

NEW — Camshaft Bearings
NEW — Con-Rod Bearings
NEW — Main Bearings
NEW — Full Chrome Ring Set
NEW — Factory Duplicate Pistons with/Pins, Available .030, .040, & .060" oversizes.
NEW — Timing Chain and Sprockets
NEW — FREEZE PLUGS

"B" ENGINE PACKAGE

All of the parts listed under Kit "A," with the addition of JAHNS PISTONS, supplied in Racing or T-Slot design, in all standard bores, compression ratios, and strokes, as listed in JAHNS catalog. All JAHNS extra charge items, such as X-tra large size bores, special strokes, and blower pistons, will be additional.

**Corvette F.I. Pistons Available as an option on the 265-283" Chev. package kit at an additional charge of $10.00. available 3-7/8 +.030 +.060, & 4" Std X stock stroke for the 301" Combo.

AFB DUAL QUAD CARBURETOR & MANIFOLD KITS

MAKE-YEAR-MODEL OF CAR	DUAL QUADS AVAILABLE: Edelbrock	Offenhauser	Weiand	PRICES QUOTED ARE POSTPAID: Price with "gr" Series A.F.B. Carbs.	Price with "gr" Series A.F.B. Carbs	Price With "gr" Series A.F.B. Carbs.
BUICK 1959-62 401"		X		$129.95	$139.95	$167.95
CADILLAC 1949-62			X	$129.95	$139.95	$167.95
CHEVROLET V-8 1955-62 265-283-327"	X	X	X	$129.95	$139.95	$167.95
CHRYSLER V-8 1958-62 383-413" "B" ENGINES		X	X	$129.95	$139.95	$167.95
DODGE-DeSOTO 1958-62 361-383" "B" ENGINES		X		$129.95	$139.95	$167.95
FORD V-8 1958-62 332-352-300-406" ENGINES	X			$159.95	$169.95	$197.95
OLDSMOBILE V-8 1949-56			X	$129.95	$139.95	$167.95
OLDSMOBILE V-8 1957-58			X	$129.95	$139.95	$167.95
OLDSMOBILE V-8 1959-62		X	X	$129.95	$139.95	$167.95
PLYMOUTH-DODGE DART 86-277" 57-303" 59-62-318"		X		$129.95	$139.95	$167.95
PONTIAC V-8 1955-62		X		$129.95	$139.95	$167.95

NEW AFB Dual Quad Carburetor & Manifold Kits: for all late G.M., most all late Chrysler & Ford products O.H.V. V-8s! Consisting of 2 **BRAND NEW** AFB Carbs, with matching progressive linkage, and one of the **BIG THREE** Dual Quad Manifolds; Edelbrock, Offenhauser or Weiand; Our choice of make; depending on availability & production. We will give preference to make of your choice where possible!

AFB Carbs are furnished in 4 Series as follows — "A" Series, 2 matching AFB Carbs, with a total bore of approximately 14 square inches, & a total Venturi area of approximately 10 square inches, & Manual lever Chokes!

"B" Series, 2 matching Large AFB Carbs, with a total bore area of approximately 16.6 square inches, & a total Venturi area of approximately 12 square inches, & Automatic Chokes!

"C" Series, A matched pair, 409 Factory Specified Quads, With Automatic Choke on the Rear Quad only!

"D" Series, A matched pair of the X-TRA BIG 409 Single Quad Carbs. These are the Largest available Carbs. recommended For Large Cubic Inch Displacement Engines Only; for all out competition use!!

JAHNS HI-COMPRESSION PISTONS

CHEVROLET V-8, 1955-61, 265-283"

Raises Comp. Ratio 11½ Ratios, Available 3¾, 3⅞ & 4" Bore
No. 980-H2 Set of 8 Retail $86.40, SPECIAL $51.84 POSTPAID

CHEVROLET V-8, 1958-61, 348" Eng.

11-1 or 12-1 Comp. Ratio, Available 4⅛ & 4¼" Bore
No. 1116-H Set of 8 Retail $95.20, SPECIAL $57.12 POSTPAID

FORD V-8, 1954-62, 239-312"

Raises Comp. Ratio 2 Ratios, Available 3⅝, 3¾, 3⅞, 3-15/16" Bore
No. 979 Set of 8 Retail $86.00, SPECIAL $51.60 POSTPAID

OLDSMOBILE V-8, 1949-56 All,

Raises Comp. Approx. 2 Ratios, Available 3⅞, 3-15/16 & 4" Bore No. 941 Set of 8 Retail $86.00, SPECIAL $51.60 POSTPAID.

Chrome Oil, & Full Chrome Ring Sets, offered at these Special Low prices; only when purchased with a set of the above Pistons!
Chrome Oil Ring Set for any of above Piston Sets **Special $7.95** Postpaid
Full Chrome Ring Set for any of above Piston Sets **Special $12.95** Postpaid

CHEVY V-8 F.I. PISTON & RING SET SPECIAL!

A big inch special for the 283 Cubic Inch block, 8 factory duplicate F.I. pistons, approx. 11¼-1 Comp., complete with rings, and a Full Chrome ring set. Available 3⅞" Std. + .030" & + .060", and also 4" Std. X Stock stroke, for the 301" Combo. A Regular **$100.00** Value, SPECIAL **$49.95.** Postpaid to You!

TOP BARGAINS ON NATIONALLY ADVERTISED SPEED EQUIPMENT

	REGULAR	SPECIAL POSTPAID
HEDMAN HEDDERS Chevrolet 1955-57 Pass. & Corvette Reg. Single Outlet or Racing Dual outlet style	$62.50	$45.95
HURST Dual Pattern Floor Shift Kit	SPECIAL	34.95
HURST S/L 3 Speed Synchro/Lock Floor Shift Kits	$69.50	$41.70
HURST "Competition 4 Speed Shift Kits"	$94.50	$56.70
HURST MYSTERY SHIFT KITS (Note: M/S Kits do not have Synchro-Locks)	$39.95	$28.95
SUN R.C. Series 3 Pc. Tach Set, Head, transmitter, & Chrome Bracket. Specify style & Voltage when ordering. 3- 6- 7- & 8,500 RPM Range	$55.00	$35.95
SUN S.T. SUPER TACH. 3 piece set, as above 7,000 & 9,000 R.P.M. Range	$67.00	$45.95
S-W 240 Adjustable Electric Fuel Pump Specify 6 or 12 Volt	$39.95	$23.95
TRACTION MASTERS, All Cars	$42.45	$25.95
NOTE!! 60-63 Corvettes require special adapters $3.00 Additional		
WEBER Steel Faced Aluminum Flywheels, Buick — Cadillac — Chevrolet — Olds — Pontiac	$77.00	$49.95
W & H DuCoil. Competition Distributor, with 2 **FREE MALLORY COILS**	$108.00	$2.50
CORVETTE Valve Spring Assembly Set — 16 Heavy Duty Damper Type Springs, Complete with Shims & Hardened Aluminum Retainers, a Must on all Chevrolets	$ 31.95	14.95
CHEVROLET Chilled Iron Solid Lifter Set	$ 31.00	15.95
CORVETTE "Dual Point Competition" Distributor W/Free 440 Wire Set for 265-283-327" Chev.	SPECIAL	$27.95

ANNOUNCING!!

New Bargain Bulletin

- ★ 100 Top Bargains in Latest Speed Equipment!
- ★ Full Photo Decal Selection, with All Latest Speed Equipment Decals!
- ★ Exclusive Carburetor Venturi Area Comparison Chart — A Must If You Are Planning On Additional Carburetion!!

RESERVE YOUR COPY SEND 10¢ TODAY!!

DECALS

62 ACTUAL FULL SIZE SPEED EQUIPMENT DECALS

1 American Racing
2 Ansen Equip.
3 Autronic Rad.
4 Bell Dragster L.
5 Bell Dragster R.
6 Bell Helmets L.
7 Bell Helmets R.
8 C. T. Automotive
9 Chevrolet 3"
10 Cragar Name
11 Cragar Horse
12 Crane Cams
13 Crankshaft Co.
14 Dalbert Auto.
15 Delsi Chutes
16 Dempsey Wilson
17 Edelbrock Equip.
18 Eelco Small Feet
19 Engle Cams 11½"
20 Engle Cams 4½"
21 Ford Parts 3"
22 Foredtrue
23 Getz Geared
24 Grant Rings
25 Halibrand
26 Hays Clutches
27 Hedman Hedders
28 Hilborn Inj.
29 Howard Cams
30 Hurst Equip.
31 Iskenderian
32 J. E. Engineering
33 Jahns Pistons
34 Mallory Ign.
35 Maltese Cross 2"
36 McCulloch
37 McGurk
38 Mickey Thompson
39 Moon Car
40 Moon Eyes 11½"
41 Offey Car
42 Offey Turtle
43 Olds Parts 3"
44 Pontiac Parts 3"
45 Quincy Auto.
46 Racer Brown
47 Reath Auto.
48 Schiefer L. H.
49 Schiefer R. H.
50 Segal Equip.
51 Spalding Ign.
52 Speed Specialties
53 S/S Cam-Giri
54 Stewart-Warner
55 Sun Tachometers
56 Thornton Masters
57 Vertex Magnetos
58 Weber Equip.
59 Weiand Equip.
60 W & H DuCoil
61 Woodpecker 3" L.
62 Woodpecker 3" R.

NEW GIANT SIZE DECALS

Chevrolet Parts	6"	.50
Chevrolet Parts	12"	$1
Corvette's Decal		$1
Ford Parts	6"	.50
Ford Parts	12"	$1
Maltese Cross	6"	.75
Olds Parts	6"	.50
Olds Parts	12"	$1
Pontiac Parts	6"	.50
Pontiac Parts	12"	$1
Racer Brown Cameo Decals	8"	$2
S/S Cam Girl Riding BIG-STICK Cam		$1
Crane Cams-Nationals		
Eliminator	12"	$1
Eelco Footprints, Right or Left	9"	.75
Engle Cams, Giant		$1
Howard Cams, Giant		$1
Isky Cams, Giant	8"	$1
Jahns Pistons, Giant		.75
Moon 4" (Eyes)		.50
Large Woodpecker, Right or Left	6"	.50
Giant Woodpecker, Right or Left	13"	$1

SELLING PRICE ON ANY OF THE ABOVE 62 DECALS
BUYERS (YOUR) CHOICE 5 for $1.00
SELLERS (OUR) CHOICE 10 for $1.00
PACKAGE DEAL — FULL 62 DECAL ASSORTMENT, PLUS BARGAIN BULLETIN $8.00

FOR IMMEDIATE SHIPMENT, SEND POSTAL MONEY ORDER. PERSONAL CHECKS REQUIRE 2 WEEKS TO CLEAR OUR BANK!!

SPEED SPECIALTIES P. O. BOX 188, PACIFIC PALISADES 16 CALIF.

TELEPHONES Area Code 213 — Nationwide Phone 454-0016, Los Angeles County Customers 870-3970

POPULAR HOT RODDING

PUBLISHERS .....Gordon Behn, Don Werner
EDITOR .....Jim Miller
TECHNICAL EDITOR .....Barney Navarro
ART DIRECTOR .....Marshall Grey
PRODUCTION MANAGER .....D. L. Ruth
ADVERTISING DIRECTOR .....Marvin Patchen

CONTENTS

page 16


page 31


page 46

Volume 2, Number 4 April, 1963

POPULAR HOT RODDING is published monthly by Argus Publishers Corporation, 131 South Barrington Place, West Los Angeles 49, California. Telephone: GRanite 6-2881. Single copy price: 50 cents. SUBSCRIPTION RATE U.S.A. and possessions, 12 issues $5.00. All other countries and Canada, 12 issues $6.00. All editorial contributions should be addressed to Argus Publishers Corporation, and be accompanied by return postage. No responsibility for loss or damage to unsolicited contributions. Printed in U.S.A.

COVER—That beautiful Chevy engine may look familiar to many a rodder. It's the pretty and potent powerplant that has caught eyes and trophies in the famous "Mooneyes" dragster. You'll see more on page 54. Photo by Dean Moon.

THE STEERING COLUMN

This month's cover and the follow-up story on page 54 are our way of paying tribute to the retirement of a great hot rod. We don't mean to be sloppy or sentimental, but it seems sad that the really famous machines of this sport are forgotten so quickly, torn down so soon. About the only immortality that a famous rod can hope for is in the miniature plastics of one of the model makers. Until such time as hot rodding has its own hall of fame, we hope to capture here in POP ROD, portraits of the great ones before they are cannibalized to go into a younger dragster.

A few months back we used this soapbox to throw some nasty names at the jet drag machines. As you will see in a few pages, we have opened up PHR for a major story on the stovepipe speedsters. A sudden switch? Not really. We're still frightened at the dangers the jets represent in inexperienced hands, but we can also see that these big machines have caught the fancy of many rodders. You don't do away with new developments by ignoring them or outlawing them. You study and shape them, so that what is right and safe remains. That's the kind of study we hope that we are starting on page 46.

We receive many letters wanting to know how a particular car can reach print in POP ROD. We are always on the look-out for good cars and hope each month that a great one will pop up from another section of the country. The major problem is usually photography. If you think your car should be featured here, but you aren't a photographer, there is one possible solution. Look around the starting line of the local drag strip. There is usually a photographer in action there who knows cars and is anxious to shoot more for publication. Pool your car and his film; send the product on to us.

The PHR team is now preparing a major section that will appear on these pages next month. Under the title of "How To Build a Top Rod" this special report will present stories on engine swapping, hot rod suspension, dragster design, fiberglass bodies. There will also be our usual coverage of great cars, a drag test of the Ford 427 Super Stock and many pictures of the Oakland Roadster Show.

—Jim Miller

RR
RODDING READERS

WELCOME BATTLE

Your February account of the coming battle of '63 Super Stocks warmed my heart. Along with the majority of enthusiasts, I believe that competition for the GM-built cars is long past due. A glance at the record will show that 72% of the NHRA drag records are held by GM products; 18% by the Chysler Corporation group. I am sure that GM realizes that the '63 trend toward more and better competition will help interest. So, let the "Mayflowers' set sail, for I'm sure that the GM boys will be waiting for them at Plymouth Rock.

Warren McCreary
Big Spring, Texas

TIPPING THE CAN

I heard a reputable engine builder say that it is the blend rather than the high percentage of nitro used in a mixture of a fueler that is important. More precisely, is it true that the potency or power of a fuel blend increases in a straight line proportion as the percentage of nitro added increases, or in a curve (similar to the horsepower curve of a given engine) with the peak power available at a blend of about 55 to 70 per cent nitro?

Terry Cook
Murray Hill, N.J.

The more nitro you use, the more power you obtain. Theoretically, peak power is reached with full nitro. You can't simplify it, however, by saying that the potency advances in a straight line, for factors differ in each engine (heat problems, rate of combustion, etc.). Actually the detonation tendency isn't as great on straight fuel as it is in a blend of nitro and alky.

RODDERS REPLY

This is in reply to Mr. Hawkins' narrow-minded letter concerning hot rodders (Feb. POP ROD).

We are hot rodders, "thank goodness," but we also have a fair knowledge of sports cars, and we realize that each has its own place. We admit that hot rodders are *sincere*, but Mr. Hawkins has only to look at the machines of Tommy Ivo, Greer, Black and Prudhomme to realize that hot rodders are far from crude.

Mr. Hawkins states that one must go to a sports car race in order to find the ultimate in design, performance and driving. The chassis of Dragmaster Co. and Chassis Research are as far advanced in their respective field as are Ferrari and Maserati in theirs. As far as performance and driving ability are concerned, we suggest that Mr. Hawkins get behind the wheel of a blown dragster (such as Portsmouth's own Gordon Collett). He will find that controlling a machine capable of accelerating from a standing start to 180 mph in the quarter mile demands a very high degree of driving ability. (And if that isn't performance, what is?)

We realize that many drag racing machines cannot be driven easily on the street, but neither can a sports race Ferrari. Hawkins claims to have picked up POP ROD by mistake. We think the real reason was his interest in seeing how the other half lives. We think we live pretty well.

Doug Holcomb
Jon Smittle
Fuelers Car Club
Portsmouth, Ohio

I don't like the way Mr. Hawkins looks down his nose at hot rodding. I spent a good many months in building and driving a hot little roadster myself and know the fellows in the sport to be tops in all ways. But I must say that I agree with the gentleman when he champions sports cars. I don't think I could take another run down the quarter-mile. How boring can you get? There's just no comparison with the fun and skill involved in storming through turns with a little sporty job.

Chris Rafferty
Dallas, Texas

Perhaps I'm just another representative of the malcontented, insecure hot rodders, and our methods may appear to be crude to a highbred member of the bourgeois aristocracy of sportscar kooks. But, for some unknown reason, I do derive an immense amount of pleasure from the nation's second fastest growing sport — a clean, American sport where the motto is *not* "who happens to be the most plush takes home the trophies."

Tony Simpson
Rolling Hills, Calif.

JOIN 'EM

I was once in the same position as the "Girl in Distress" writer in the February Rodding Readers section. My husband and I both belong to the Revmasters Auto Club of Linden, N.J. When we went to the track, I used to get so tired of the fellows saying "a girl can't do this or that." I decided to learn when we rebuilt "270" in our '57 Chevy. By working right along with my husband I learned a great deal. He even taught me how to set my own car up when we go to the drags (every weekend, now). Before my runs I check the plugs, adjust the solids and set the timing up for competition. I have already

accumulated 36 trophies, several gift certificates and a few Savings Bonds. A girl can learn, if she puts her mind to it.

Marsha Buchinski
Linden, N. J.

RULE REQUEST

Can you tell me where I can get a copy of NHRA's '63 Rules? Also, I would like to get in contact with some POP ROD readers who are also amateur radio operators, so we can chew the fat about rodding over the air.

Thomas Krohn K3IJX
Hazleton, Pa.

Contact NHRA directly for those rules. The price is 50¢, the address is 1171 N. Vermont Ave., Los Angeles 29, California. We had planned a feature in this issue on the new regulations, but NHRA officials, embroiled in preparations for their Winternationals, asked that it be held off until next month.

CORRECTION

You made a mistake in your January issue. On page 18, you refer to the "tHansmission."

Chuck Kline
Lyons, Ill.

Tranks, Chuck

SHORTER THE BETTER?

I'll agree with Mr. Fenn's statement that the Dodge-powered dragster had a higher "efficiency" factor than the Chrysler. It seems that Mr. Fenn has failed to account for the Sprite mentioned on page 70 of the same issue. The 60-cubic-inch Sprite turns 70 mph in the quarter, giving it a much higher "efficiency" factor than either of the dragsters. Does Fenn suggest that Ivo, Garlits and Chrisman all switch to Sprites?

Since when is mph/cubic inches a measure of efficiency?

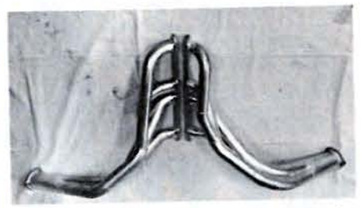
Bruce S. Albright
Dayton, Ohio

LONG VERSUS SHORT

I admire and respect Scotty Fenn for many reasons, but he's all wrong on wheelbase (February, POP ROD). Obviously the B Fuel dragster mentioned in his analysis is more efficient when the MPH/cubic inch yardstick is applied. But he mentioned that there are many other factors involved. I feel that driver skill and excess horsepower (in the A fueler) are two factors of tenfold importance. How he ever singled out wheelbase length and emphasized it as the major factor in this case is beyond me. His yardstick cannot be applied to wheelbase without including the other variables. It has been my observation that long rigs go straighter, lift less often and bite better, thus being a necessity for safety and performance in big-engined rails.

Terry Cook
Murray Hill, N.J.

SPEED AND EQUIPMENT DIRECTORY

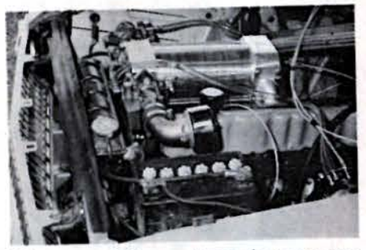


Horsepower-engineered headers for '62-'63 Dodge Ramchargers by the Dragmaster Co. This competition-proved design is fabricated from 1¾-inch mild steel tubing into 2-inch collectors, and then to 3½-inch collectors. This hp booster sells for $115, fob. Dragmaster Co., Dept. PHR., Carlsbad, Calif.

A redesigned kart brake and brake shoe with Ceramet lining have been put into production by the Bendix Corp. The lining material, developed by Bendix for use on such heavy aircraft as the DC-8 and 707, is made of a special combination of ceramic and metallic materials. The new shoes are offered as optional equipment on many racing karts.

Following Ford's more active participation in racing, Bell Auto Parts offers a new Cragar competition supercharger kit for the big Ford engines (332 to 427 c.i.). Used with a 6-71 GM blower, the three-inch kit, priced at $498, includes everything but the blower, carburetion and front cover. Bell Auto Parts, Inc., Dept. PHR, 3663 E. Gage Ave., Bell 49, Calif.

The Electro-Dyno Aligner, incorporating a special electronic computer, checks a wheel's toe and camber to within .05 of a degree and the caster to within .15 while the wheel is rotating on revolving drums. It instantly shows the operator correct adjustments. Literature and technical information is available from Merril Engineering Laboratories, Dept. PHR, 1025 W. Third Ave., Denver 23, Colorado.



This new Latham Supercharger can be bolted onto the Ford Falcon and Comet Six. Tests by the factory showed that installation of the axial flow unit improved economy by 12% and acceleration up to 50%. All parts are furnished with the $595 kit. Latham Mfg. Co., Dept. PHR, P.O. Box 165, West Palm Beach 1, Calif.

1963 third edition of Mickey Thompson's Speed Equipment Catalog includes engineered stroker kits, forged aluminum pistons, forged aluminum rocker arms, five-spoke chrome wheels and 300 other products for auto and marine racing. You will see the largest selection of lightweight magnesium equipment. Send 50¢ for catalog and new Challenger I decal. Mickey Thompson, Dept. PHR, 1419 Santa Fe Ave., Long Beach 13, Calif.

Crankshaft Co., originator of the Welded Stroker, introduces its latest assembly for the big 413-cubic-inch Chrysler Corp. engines. This newest unit features a choice of strokes, and, at extra cost, hard chroming for maximum bearing life. Kit is sold complete or parts may be purchased separately. Send 50¢ for new catalog. Crankshaft Co., Dept. PHR, 1422 S. Main St., Los Angeles, Calif.

The Vic Hubbard Speed and Marine Catalog now contains 80 pages of equipment. New edition emphasizes parts for competition, but there are thousands of parts for street and dual use. Engine swapping tips, bore and stroke chart and more than 300 engine-transmission adaptors are included. Send $1 (refundable) to Vic Hubbard Speed and Marine, 21032 Meekland Ave., Hayward, Calif.

At home on just about every top dragster are the great Moon fuel tanks. They are metal-spun .064 aluminum with Sun-Ray finish. Heli-arc welded, they weigh less than 2 lbs. "Knock-off" fuel filler cap is supplied. Available with 2-, 3½- and 5-gallon capacity from $32. Moon Equipment Co., Dept. PHR, 10820 S. Norwalk Blvd., Santa Fe Springs, California.

1963 DISCOUNT CLUB CATALOG

10,000 Quality Parts FOR EVERY SERIOUS COMPETITOR!

Membership in the Vic Hubbard Discount Club costs $1 (refunded in full with any order for $10 or more). It's the best investment you can make if you're a serious competitor interested in saving money on first quality brand-name merchandise that you can depend on. Discount Club packet includes: 1963 80-page catalog • Don Francisco's 64-page illustrated Hot Rod Engine Swaps book • $1 refund certificate • Discount club membership card.

ADAPTERS!

We've got 'em — hundreds of different types to fit any engine installation. For example:

No.	Engine	To Transmission	Price
304	Cad V8s. '49-54 Olds V8, '49-up	Late Ford, Merc	18.50
307 JC-4	Chevy '55-63 Cad V8s. '49-54 Olds V8s, '49-up	Early Ford, Merc Early Ford, Merc	16.50 12.95

...HUNDREDS MORE AT DOWN-TO-EARTH PRICES!

MORE BARGAINS:

Bruce slicks—Buy direct from the only factory distributor. Sizes, prices in our catalog.
Cannon swing pedals — Self contained units, ready for installation. (State year, make, model of car.)
One pedal for single master cylinder.....$8.95
Two-pedal unit for single master cylinder.....13.25
Two-pedal unit for dual master cylinders.....12.95
Traction Masters (per pair).....24.95

for Chevies:

FORGED VALVES: New Vic Hubbard item — 15/16" one-piece forged valves for Chevies. Tip hardened; eliminates stem stretch. Non-magnetic. VH PRICE, each $3.00

FORGED PISTONS: Hottest piston buys on the market. 10:1 or high compression 11½:1 forged aluminum pistons for Chevy V8s (including Corvette and fuel-injected Corvettes). High compression pistons are slipper-type. Special sets include rings and/or bearings.

SIZES — **10:1** in 3⅞" bore, stock and plus .030, .040 and .060. **11½:1** in 3⅞" bore, stock and plus .060.

PRICES: (for either 10:1 or 11½:1 pistons):
8 pistons, pins and regular Toledo rings.....$49.75
8 pistons, pins and CHROME Toledo rings.....51.25
8 pistons and pins, but without rings.....39.95

BEARINGS:
Toledo rod and main bearings (when ordered with pistons): Standards.....$15.28
.010 and .020 under.....17.45

Vic Hubbard
Speed & Marine

21032 Meekland Ave., Hayward, Cal. ELgin 1-8455

Prices FOB Hayward. Add extra for postage; overpayment refunded. No personal checks. 50% deposit, bal. COD.

Vic Hubbard Discount Club PHR-4
21032 Meekland Avenue
Hayward, California

Please rush me the Vic Hubbard Discount Club packet (catalog, swap book, etc., as described above). I enclose $1 (refundable with $10 order).

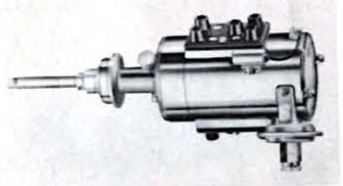
Name_____

Address_____

City and State_____

The first comprehensive handbook of repair and maintenance information for 1960-63 Corvairs has more than 500 photos, charts and drawings. Data on special equipment for speed and power is also included. Send $4.00 for the all-new Corvair Owners' Handbook, or for free catalog of over 200 auto books from Floyd Clymer, 222 North Virgil Ave., Dept PHR, Los Angeles 4, Calif.

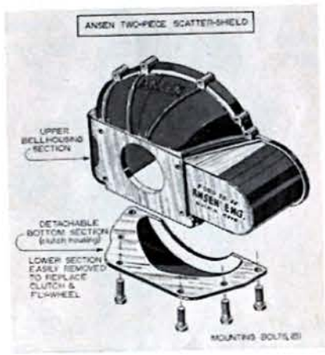
The latest from Weiand is the introduction of a dual-quad manifold for the 283 and 327 Chevy engines. Cast of aluminum, with a sandblast finish, this new manifold gives improved power and smoother performance. It will take AFB or Chevy 409 carbs without modifications. Weiand Power and Racing Equipment, 2733 San Fernando Rd., Dept PHR, Los Angeles 65, Calif.



Major improvements in the Flamethrower ignition system have been announced by Spalding. New are a self-lubricated sintered iron cam with operating tolerances held to .0002 inch. The main shaft is mounted in ball bearings instead of the usual bushings. For technical data, write Spalding Products Co., 1617 S. Mrytle Ave., Dept PHR, Monrovia, Calif.

The Lark by Bird Engineering is a small cycle designed especially for the competition enthusiast. The 45-inch wheelbase, 50-lb. charger opens up new dimensions of riding fun. Priced from $169.95, they are offered at great savings through factory-direct purchase. Bird Engineering, Box 427, Dept. PHR, Omaha, Nebr.

The complete line of Weber automotive and marine speed equipment is displayed in this new catalog. Included are Safti-Torq blow-up proof clutch assemblies, cams, crankshafts. Included for the 50c price is an invaluable cubic inch spec sheet. Weber Speed Equipment, 310 S. Center St., Dept PHR, Santa Ana, Calif.



Ansen Automotive now has a complete selection of NHRA-approved two-piece 360-degree scatter shields for '55-'63 Chevrolets, '55-'63 Pontiacs and '58-'63 Fords. Ansen-conducted test explosions show that nothing replaces steel. Write for free brochure. Ansen Automotive, 6317-9 S. Normandie Ave., Dept. PHR, Los Angeles 44, Calif.

PUT YOUR CAR WAY OUT FRONT... with these "go" accessories!

Now! for automatics...

the all new

—POWER-SHIFT→

Comes complete with handsome chrome handle, chrome plate, weatherproof boot, colored bakelite knob and all necessary parts.

FLOOR CONVERSION

Convert your present column automatic to a sassy POWER-SHIFT *Floor Conversion*. It's a natural for dragging because all forward speeds are in a straight line. Built-in reverse and neutral lock-outs mean there's not a chance of accidentally shifting into reverse, neutral or park.

Special Eccentric and Safety Stops are easily adjusted to suit car and driver—for faster, safer shifting on street or strip!

ONLY **24.95**

The POWER-SHIFT can be installed at home — simply and easily with ordinary hand tools. No welding necessary . . . no need to cut a large hole because "low profile" design keeps the shifter mechanism below the floorboard. Pre-formed control rods and adjustable mounting bracket make every installation a custom fit. Detailed instruction sheet with diagrams included.

transistorized

SUPER TACH

Shift right, tune right, drive right with a brand new SUPER TACH Tachometer. Makes any car or rod a really "hot one." Comes complete with distinctively designed deep chrome case that makes it perfect for mounting on steering column, top of dash, or instrument console. Special steering post mounting clamp and instruction sheet included.

more super tach facts:

- ACCURATE 0 TO 8000 RPM SCALE
- LARGE ILLUMINATED DIAL
- ECONOMY RANGE FINDER
- RELIABLE TRANSISTOR DESIGN
- COMPLETE, READY TO INSTALL

SPECIAL low price...this ad only.... **19.95**

special low price this ad only

—STRAIGHT-H→

FLOOR SHIFT CONVERSION

In any driving situation, the STRAIGHT-H permits accurate, lightning-fast gear selection. Fully adjustable pattern lets you tailor the shift stroke and tension to fit your own dimensions and driving style! Easily installed . . . comes complete with chrome plate, boot, instructions, all necessary hardware.

the only shift with these combined features:

NARROW STRAIGHT-H DESIGN
EXCLUSIVE ADJUSTABLE PATTERN
NON-SLIP ARMS AND RODS
SAFETY LOCK-OUT
"TRIGGER-ACTION" SELECTOR PIN

FOR ALL STANDARD & OVERDRIVE TRANSMISSIONS

19.95

FREE! CHROME PLATE AND BOOT

turn your car into a Detroit "special"... with the all new, pace-setting

SPORTS-CONSOLE

INSTALL IT IN MINUTES IN ANY CAR

Easily attaches to floor board right over carpet. . . . Prime-finished, ready for painting.

FOR ALL CARS

Now, at a fraction of the cost, you can give your car's interior the luxurious touch of prestige that Detroit reserves for its highest-priced models. The distinctive, new SPORTS-CONSOLE provides a handsome custom location for mounting gauges, switches, map lights, etc. Affords you additional glove compartment space, too. Molded of sturdy, shock-proof fiberglass, the SPORTS-CONSOLE is designed to fit firmly over the front hump . . . extends from below the dash to just in front of the seat. Absolutely will not effect seat adjustment, and may be used with either bucket or conventional type seats. Comes complete with hinged chrome-finished aluminum door, distinctive chrome crest, all necessary hardware.

ONLY **14.95**

FREE with every SPORTS-CONSOLE . . . a special chrome-hooded console lighting kit!

FREE ALL NEW 1963 CATALOG!

Includes the very latest equipment, applications and performance tips for 1963. Your one exciting up-to-the-minute 124-page guide to new pep, power, style and economy! *PLUS* top brands, big savings . . . and the exclusive Almquist E-Z Matic Payment Plan. FREE with any item from this ad (or send 25c to cover mailing cost).

(Please fill in order blank carefully.)

CAR_____ YEAR_____ MODEL_____
CYLINDERS: ☐ 6, ☐ 8 VOLTAGE: ☐ 6V, ☐ 12 V
TRANSMISSION: ☐ STANDARD, ☐ O.D., ☐ AUTOMATIC

I ENCLOSE $_____ SHIP C.O.D.
(I ENCLOSE 20% DEPOSIT).

PLEASE RUSH ME: ☐ **ALMQUIST CATALOG**
☐ SUPER TACH Tachometer ☐ POWER-SHIFT (for automatics) ☐ SPORTS-CONSOLE
☐ STRAIGHT-H (for standard & O.D.)

NAME_____
ADDRESS_____
CITY_____ ZONE____ STATE_____

FREE WITH EVERY ORDER
Handy Pocket Calculator tells your gasoline mileage at a glance. Helps save money . . . Eliminates arithmetic.

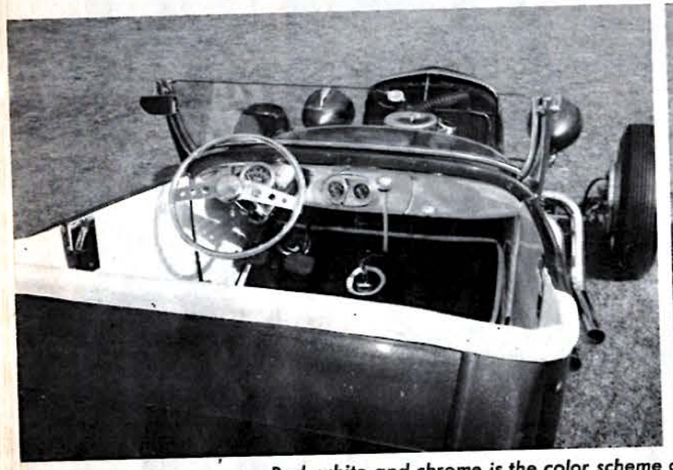
ALMQUIST ENGINEERING CO.
MILFORD, PA., DEPT.PHO-4

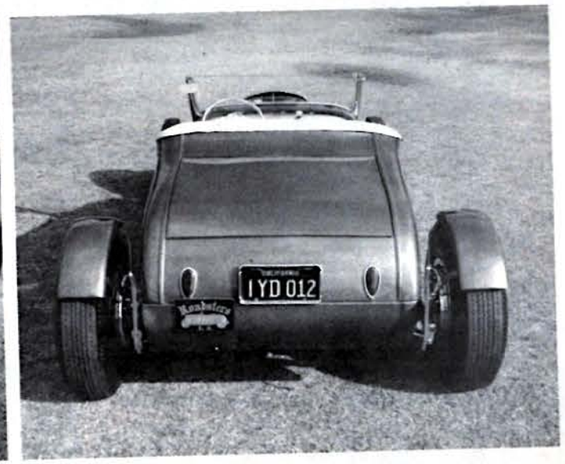
Louis Bridgeforth of La Habra, California is a man who wheels about town in and on some of the most eye-catching machinery you'll ever see. This active member of the L.A. Roadsters Club takes many a trophy with his bright red "T"-bodied rod. When the mood for two-wheeled travel strikes, he can switch right over to a potent Triumph cycle that matches the color, chrome and detailing of his roadster.

Gentleman's

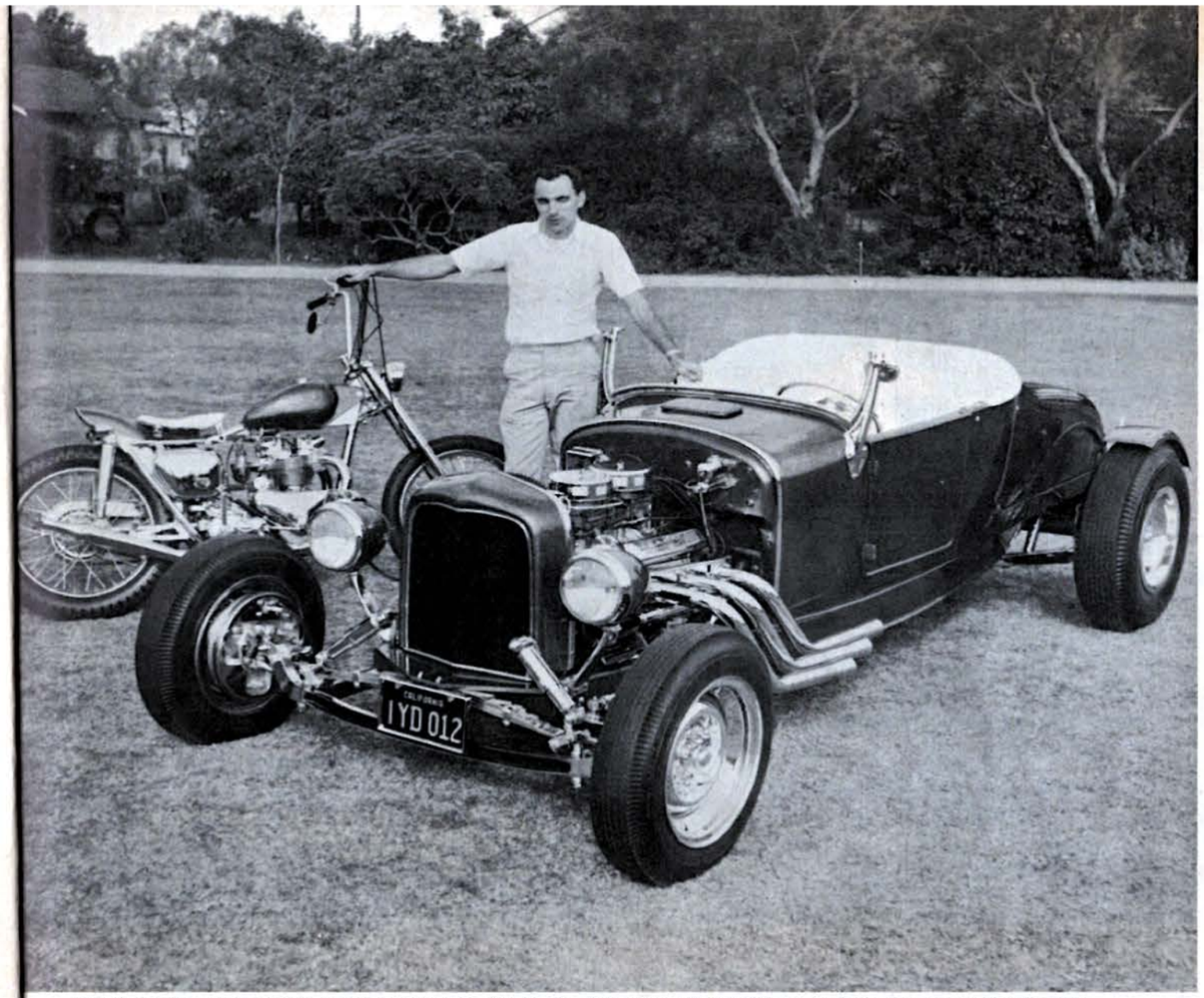
ROAD COMPANION

What every well-stocked garage should house

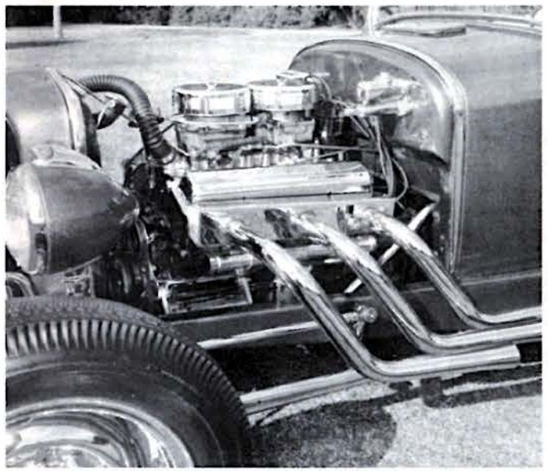




Red, white and chrome is the color scheme of this pure-bred roadster. Chromed aluminum rear wheels are originally from a truck design. Unique deep-dish steering wheel adds a different touch and allows better visibility.



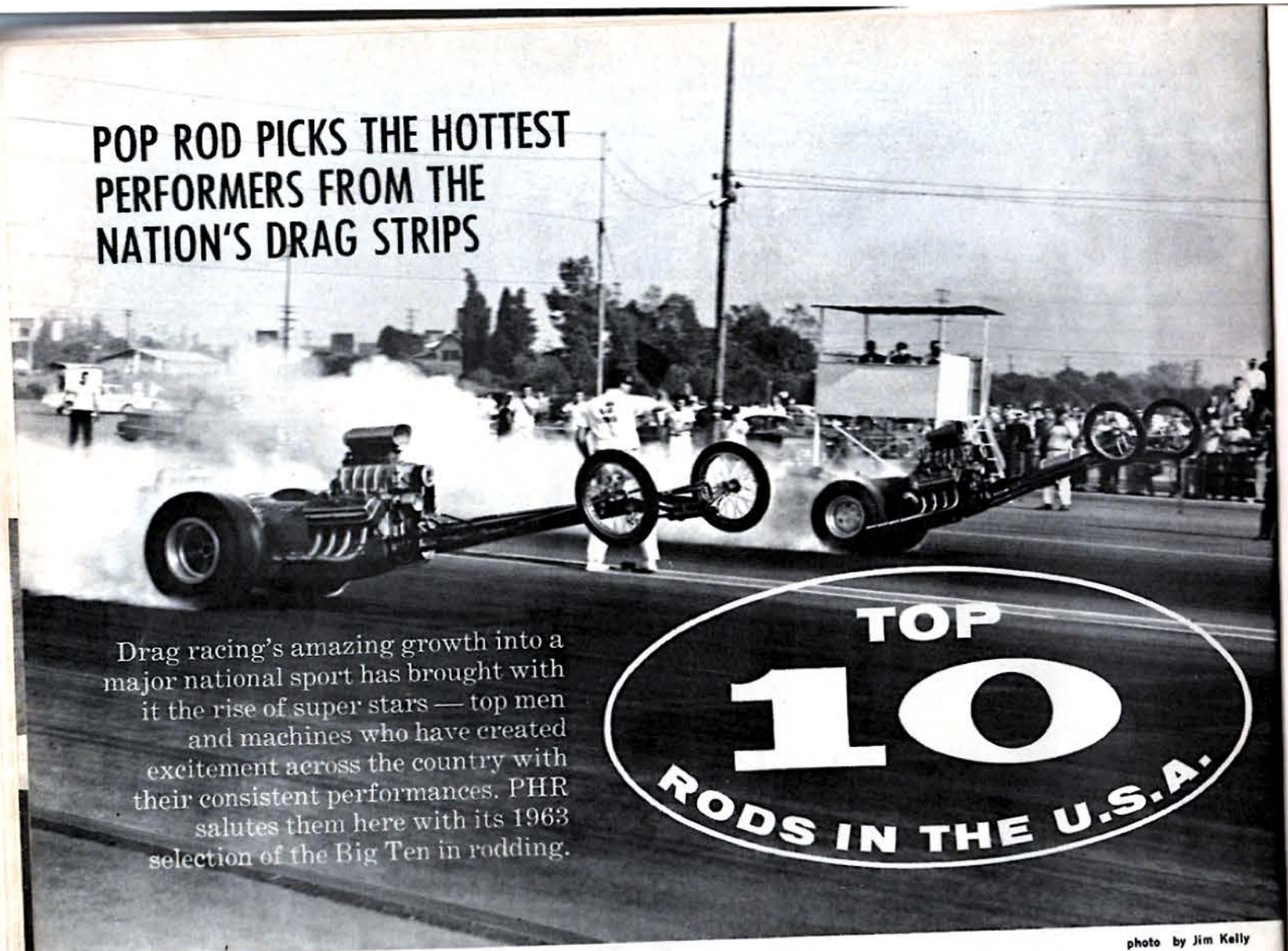
PROUD OWNER POSES WITH HIS TWO CLASSIC CHARGERS. ROADSTER HAS THE DROP FRONT FRAME OF THE '32 FORD.



Unique chrome headers, fabricated by owner, are for show only; real exhaust pipes exit at rear.

Smart trunk interior carries out the white leather, chrome theme of the rest of the car.

POP ROD PICKS THE HOTTEST PERFORMERS FROM THE NATION'S DRAG STRIPS



Drag racing's amazing growth into a major national sport has brought with it the rise of super stars — top men and machines who have created excitement across the country with their consistent performances. PHR salutes them here with its 1963 selection of the Big Ten in rodding.

TOP 10 RODS IN THE U.S.A.

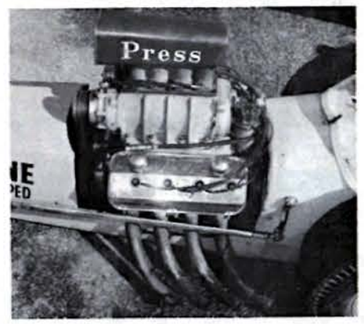
photo by Jim Kelly

Hunt-Payne

Flying the Texas colors, this A/Fuel dragster uses the driving skill of J. L. Payne and the mechanical know-how of Vance Hunt and Charles Sitton. Their biggest victory with the blown-Chrysler rail came last summer at AHRA's World Championship Drags in Green Valley, Texas. In a dramatic clash with another member of the Top Ten group, the Greer-Black-Prudhomme machine from California, the Texas rod took the big American honors, the first such showing for a Lone Star State entry in six long years. Among other achievements for this team has been the Number One Fuel spot on the Drag News Mr. Eliminator list.

The popular drag pilot from Lutz, Florida is a real veteran of the quarter mile. His bright Golden Rod has been clocked through the St. Petersburg traps at 192 mph with an ET of 7.67 seconds. Both builder and driver, Malone has stocked his machine with a 454-cubic-inch Chrysler engine and a 6-71 GM blower. Equipment includes Iskenderian supercharger drive and cam, Hilborn injector and fuel pump, Oldsmobile axle and brakes and Halibrand wheels. Besides his fine drag performances, Malone is noted as the man who drove the Osiecki-Dodge race car to a closed track record of 181 mph on the Daytona Speedway.

ART Malone



JACK CHRISMAN

Top Eliminator at the National Hot Rod Association's Nationals in Indianapolis last Summer, Chrisman is another veteran who has fought his way to the top of drag racing's Hall of Fame with consistent wins. Driving Mickey Thompson's Pontiac-powered rail, Jack took the championship with a thrilling victory over Don Garlits. Running gas, he had an ET of 8.76 and a top speed of 171.75 mph. An interesting aspect of the Pontiac engine is the Thompson adaption to Chrysler-type hemispherical heads.

TOP 10 RODS IN THE U.S.A.

Storming into the coveted Number One Fuel position on the Drag News Mr. Eliminator list has been the logical outcome of sensational performances by this California team. Driver Tommy Ivo and engine builder Dave Zeuschel have been burning up tracks and competition through the winter season. Their blown Chrysler machine has met the challenge of such top contenders as Hunt-Payne and Chris Karamesines with consistent runs above 190 mph and under eight seconds. They're already building a new dragster that is aiming at even more amazing times.

IVO-ZEUSCHEL

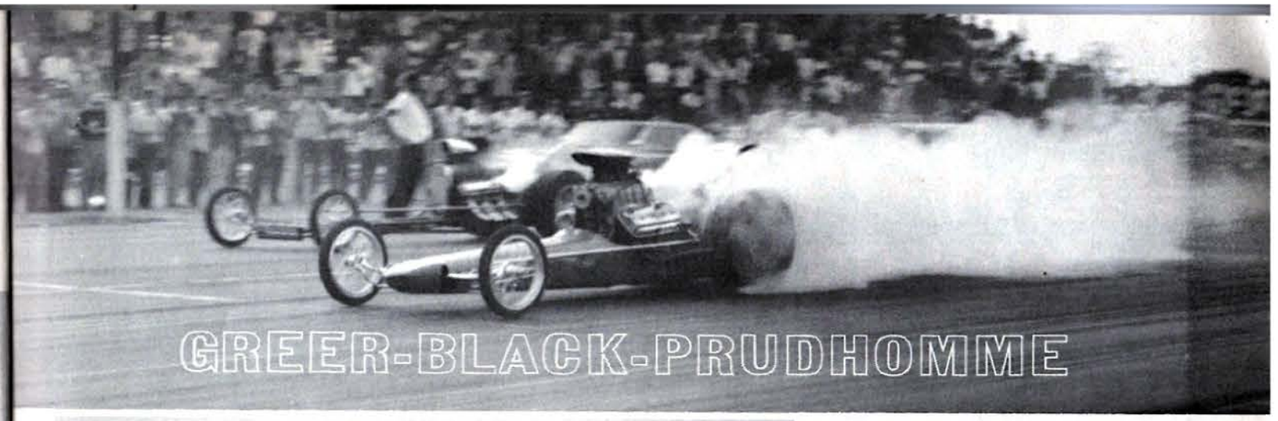
Chris Karamesines

The "Crazy Greek from Chicago" is a man who knows the little secrets of getting the most out of a drag machine. His famed "Chizler," a big blown Chrysler brute, has been knocking at records for some time. Karamesines is noted throughout the drag racing fraternity as one of the coolest drivers in action on the quarter mile strips today. Absolutely nothing seems to phase the man with the mustache. He's a real crowd pleaser.

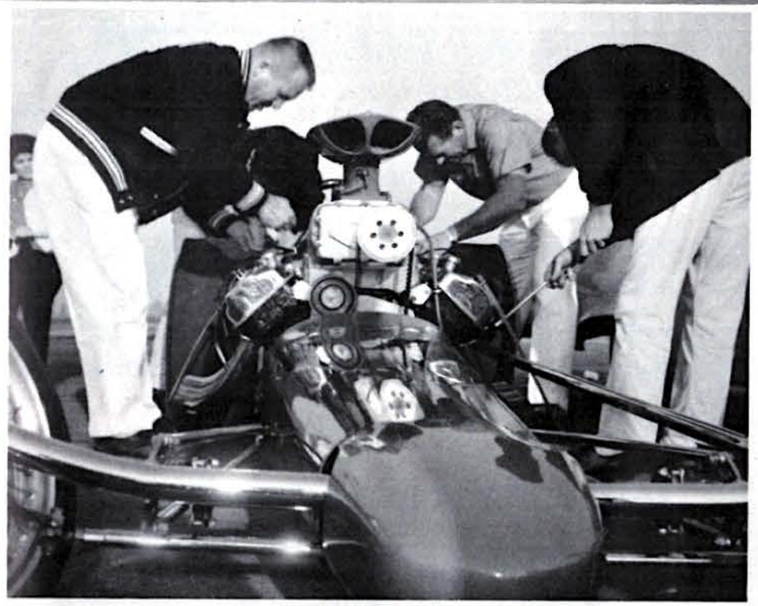
TOP 10 RODS IN THE U.S.A.

GORDON COLLETT

Ohio, one of hot rodding's major centers of activity, boasts a real national champion in the gas category. Gordon "Collecting" Collett drives a rail with built-in warning for other rods in its name, "Mr. Eliminator." The 465-cubic-inch blown Chrysler uses Hilborn injectors, Thompson pistons and rods and an Isky cam. The bright blue car has topped 182 mph on gas with ET's under the 8½ second mark.



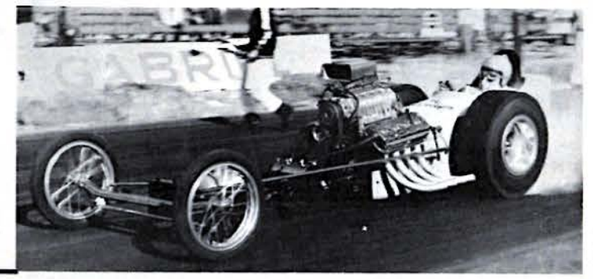
GREER-BLACK-PRUDHOMME



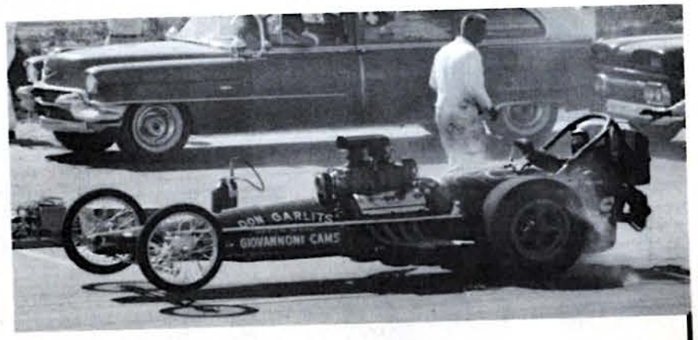
In late January, Don Prudhomme guided this tomato-red rail down the quarter-mile at San Gabriel, California in 7.77 seconds. It was the seventh time that this machine had cracked the eight-second barrier and record-breaking proof that this California team is ready to meet all comers. Engine builder Keith Black (March, Pop Rod) has put into the 400-cubic-inch Chrysler powerplant all of the knowledge that he has gathered in years of building some of the nation's leading speed boats. Spectator's at last year's World Championship AHRA drags will recall that this is the car that came within a wheelstand of capturing all of the marbles in a showdown with the Hunt-Payne machine. As it was, the Californians turned in the top time of the meet with 189.06 mph and the low ET with 8.09 seconds.

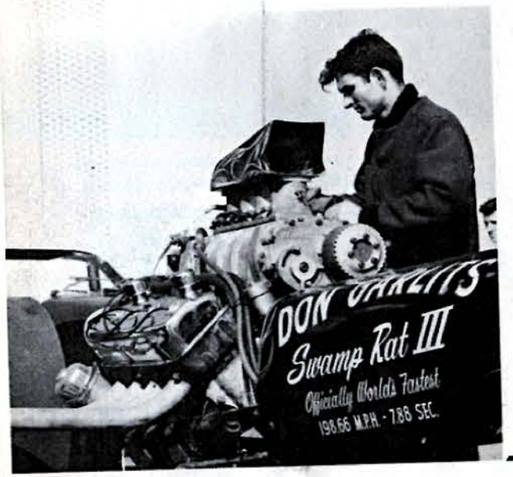
MASTERS & RICHTER

Fastest run in the West has been turned in by this big powerhouse sponsored by the combination of Masters and Richter with the Champion Speed Shop. Old hands Sid Masters, J. W. Richter, Rick Richter and Lefty Hay are the crew and Bob Haines the driver. They point with pride to a top run of 192.30 mph for the quarter-mile. The GM-supercharged engine (Chrysler, again) likes its mixture of Howard rods, Enderle injection and Grant rings.



TOP 10 RODS IN THE U.S.A.





DON GARLITS

Florida's famed drag champion, aboard his "Swamp Rat" machines, was the first man to crack the barriers of 180, 185 and 190 mph. He now holds the timing slip on a fantastic run of 198.66 mph in 7.88 seconds. That bit of low altitude flying was aboard the third version of the "Swamp Rats." This is an all-business dragster with Chrysler engine, Roots blower with Weiand drive, Hilborn injection, Grant Rings, Forged-true pistons, Giovannoni cam and Crankshaft Co. crank. Garlits is another one of those cool performers when it comes time for show-downs. Whenever the inevitable mechanical troubles occur, he calmly goes to work and is always ready for that next big run.

Reath-Van Deventer

Not a heavyweight contender in the dragster sweepstakes, this little B/Modified roadster ranks right up with the big boys on the basis of consistency. NHRA's Mr. Eliminator, an award gained on the basis of year-round wins, the Reath Automotive Special with little Jess VanDeventer at the helm has cracked records in both the NHRA and AHRA. The engine is based on the 1960 Corvette block. Its 283 cubic inches count on Hilborn injection and a Crower and Schneider cam.

A FACTUAL REPORT ON THE RECORD-BREAKING PLYMOUTH SUPER STOCKS BY DRIVERS AND EXPERTS

TOM GROVE
JOHN ABRAITIS
RAY BROCK
BILL NEILL
LOU FURLONG
AND OTHERS

A NEW VOICE OF VICTORY SOUNDS ON THE STRIPS... PLYMOUTH SUPER STOCK 426!

LAST MAY, THE FIRST OF THE NEW PLYMOUTH SUPER STOCKS BEGAN APPEARING AT DRAG STRIPS AROUND THE COUNTRY... AND NEW RECORDS WERE SET ALMOST EVERY WEEK. HERE'S HOW IT ALL HAPPENED.

By Tom Grove

About the author

Tom Grove of Oakland, Calif., is the first drag strip driver in history to crack the 12-second barrier in a production stock passenger car with factory option engine. Last July 15 at Fremont, Calif., Grove roared through the quarter-mile in 11.93 seconds in his 1962 Plymouth 413 Super Stock, hitting a top-end speed of 118.57 mph.

In August he put the same stock Plymouth through a flying mile at Bonneville at an average speed of 165.44 mph.

With his new Plymouth Super Stock 426, he has turned sensational runs of 12.02, 12, and 11.99 seconds.

When the new Plymouth Super Stock 413 first came out last May, I'll admit I was skeptical. I was a dyed-in-the-wool Chevy man, but in the speed business I had an open mind.

Charlie Di Bari of Melrose Motors in Oakland, Calif., approached me to set up a new Plymouth for quarter-mile drag racing. I agreed, and that's where it all began!

I became more and more and more enthusiastic as the work progressed. We kidded about the possibility of having the first stocker ever to make a quarter-mile run under 12 seconds. Little did we know that this was to become more than jest!

I had been racing a 409 Chevy that held all of the local track records. The first time out with the Plymouth 413 at Vaca Valley we topped the Chevy's best every time we ran, and I was grinning ear to ear. I'm now a Plymouth fan.

Our first "Melrose Missile" was down into the 12.3's the first week we ran it in competition and we broke 13 records and won 11 trophies the first eight times we had it out. Then the Plymouth *really* got hot.

At the Fremont, Calif., Drag Strip July 15 we turned our amazing 11.93 ET, with a top speed of 118.57 mph. Later, at Vaca Valley, the Plymouth hit 119.20 mph for its 19th track record and its best top speed. We were really rolling.

Expect more from '63

We expect even more performance from the 1963 Plymouth 426, due primarily to better handling characteristics and detail engine changes. The second run of our new 1963 Plymouth was 12.02 at Vaca Valley October 20, and a week later at Half Moon Bay it turned a 12 flat. Back at Vaca Valley on November 3, it turned a sensational 11.99!

Boy, those 12.0's sure look good! We expect to get numerous runs in the 11-second bracket, and speed in excess of 120 mph. The car's got the power and all I've got to do is get it out of it for those 11-second runs.

I feel the Plymouth has the strongest potential in the Super Stock field—more horsepower, and less car weight per cubic inch than any of the competition. The engine is a beauty—none better. And Plymouth is just starting to really tap its power. I have pulled numerous 430 rear wheel horsepower readings on Melrose's 500-horse dyno. These are steady readings that have been held —not flash readings. The best that the 1962 Missile I has pulled is a steady 450 rear wheel horsepower. Can any of your slide-rule mathematicians compute the actual shaft horsepower? Wow!!

With this much power, the drive train has held up beautifully. All of the gears, the rear end, U-joints, etc., have given absolutely no trouble. I have replaced one clutch—that's all.

Plymouth's unit construction also contributes to over-all performance —it gives a very rigid platform with a minimum of weight. It's strong and light. Couple this with the torsion suspension and you have the lightest Super Stocker, with excellent front to rear weight transfer. You've got to get that power to the rear wheels to do the good. The Plymouth does it.

A lot of people are interested in what I've done to the car. Most everyone feels that all you have to do is put out the ponies, that the rest will take care of itself. Well, putting out the ponies is real important, but there's more to it than that. Gears: anywhere from 4.30 to 4.89 in the rear end, depending on tire size and conditions. We use a Sure-Grip differential. I also make my own traction bars to keep the rear end solid, and to help get the weight transferred to the rear. Quite a lot of time is spent in pre-loading the chassis. It's very important to get as much of the car's weight onto the rear wheels as is possible, and for the car not to fishtail on hard acceleration.

Back to Bonneville

The Missiles will compete again at Bonneville in 1963. Our Missile I averaged 165.44 mph in strictly stock form in the 1962 Bonneville Nationals. Next summer we will run a blown version and shoot for the magic 200-mph mark for stock-bodied passenger cars. The Missile will probably do it.

I feel our toughest competition on the drag strips comes from other Plymouths, but I'd like to leave one big reservation. Any Super Stocker, prepared and driven by the right person, can be a threat. But, showroom stock against showroom stock, the Plymouth has no competition.

RAY BROCK REPORTS ON THE PLYMOUTH SUPER STOCK 426

(MR. BROCK IS TECHNICAL EDITOR OF HOT ROD MAGAZINE)

"If you like drag racing and are a poor loser, there's only one answer for you: Get a winner. We can recommend an excellent place to start. Plymouth."...

"We proved to our own satisfaction that the Super Stock 426 Plymouth has to be just about the hottest stock car available. With some more break-in mileage, a little extra attention in the engine by a sharp mechanic, a lightweight exhaust system and a few other drag strip techniques, the car should be capable of even more impressive performance."...

"The TorqueFlite transmission for use with the 426 is a beefed unit which has made quite a name for itself in the few short months since the 413's were introduced. This unit is capable of taking all the abuse heaped upon it by the Super Stock engine time after time without giving any trouble."

PLYMOUTH SUPER STOCKS SET 122 STRIP RECORDS IN FIRST 6 MONTHS!

John Abraitis

And they collected 636 trophies along the way! This is a compilation based on reports sent in after the Super Stocks first appeared by only 52 Plymouth Super Stock owners and drivers themselves. There are other Super Stock owners who hold other records and have collected still further trophies. (They win but don't write.) The average: over 2 records and 11 trophies for each owner.

Not bad. Some of these happy winners are pictured here. See what they have to say about the sound of Plymouth's new voice of victory. Then take a close look at *your* present equipment . . . and its performance record. If you'd like to join this select winners' circle . . . if you like trophies and records and the acclaim of victory . . . your Plymouth Dealer can show you how!

Robert Nance, Ringgold, Ga. His Super Stock has won 20 trophies and set 10 strip records. "I have been driving Plymouths since 1958. This is the hottest factory car on the market today."

Ed Robinson, Pasadena, Calif. He and co-driver Bill Hanyon have set 7 strip records and won 30 trophies. "Truly fantastic performance. Nothing can compare. I have been racing Plymouths since 1956 but nothing compared to the feeling you get from this one."

Ken Lutz, Columbus, Ohio. First time out, his Super Stock 426 won 2 trophies with record-breaking performance. "I have owned Chrysler products for the last 4 years, and I think they are the greatest."

Charles Rehl, Newark, Ohio. Set a strip record for the first time out in his Super Stock 426. "The Plymouth Super Stock is a 'natural born' race car."

Wayne Harden, Jacksonville, Ark. Unbeaten in 5 times out, his Super Stock has set 2 strip records. "The first time we took this car out I said it would not be beaten in class competition, and it hasn't."

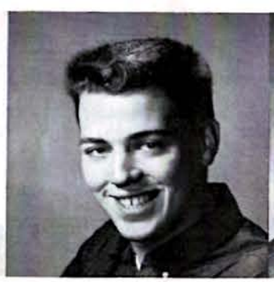
John Abraitis, New Brunswick, N. J. Winner of 54 trophies, holder of 6 strip records: "The most fantastic stock car ever built by any manufacturer. What other car can you take as it comes off the assembly line and turn such times?"

Patrick Minick, Summit, Ill. Won 18 trophies, 10 Stock Eliminators, $1,400 in prize money, and set 5 strip records. "In our opinion this car is unexcelled in its traction potential, horsepower output potential and handling characteristics."

Jack Sharkey, Matteson, Ill. In less than 3 months won 12 trophies and $2,125 in prize money. "I find the Plymouth Super Stock engine the most durable and best performing made. It's really the car to beat at the drag strip."

atrick Minick

Jack Sharkey



Bill Neill

Raefel Shields

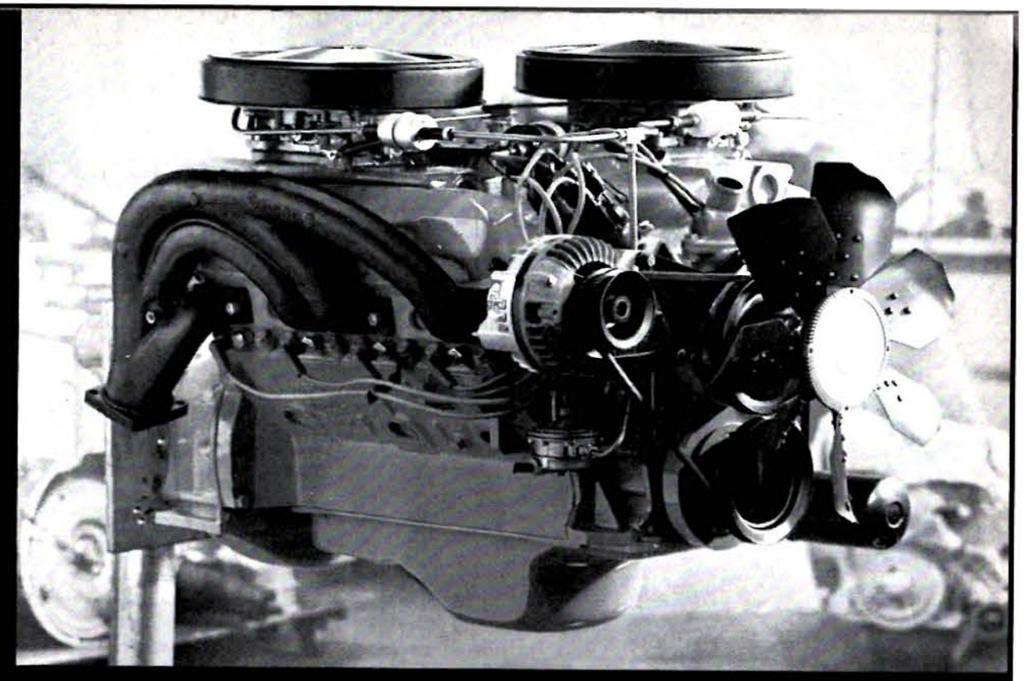
Lou Furlong

Bill Neill, Philadelphia. Won 36 trophies and the Eastern Division NHRA championship. "After one run I was convinced. Never have I been in a car that performed like this one."

Raefel Shields, Dallas, Tex. Running both Super Stock 413 and 426, he won 22 trophies, set 4 strip records. "On Nov. 4, for Top Stock, I beat the car that won Top Stock at the AHRA championship."

Lou Furlong, North Canton, Ohio. Set 9 records and won 64 trophies: "I've been a Plymouth booster for years, and my car has been a terrific, consistent performer, and trouble-free."

PLYMOUTH'S NEW MILL IS BUILT TO GRIND NOTHING BUT RECORDS



The Plymouth Super Stock 426 is a *born* trophy-taker. Built for strip and track competition only . . . *designed* to be a winner. It is the larger, faster, sturdier successor to the Plymouth Super Stock 413, the baby whose throaty voice of victory shouted down lesser plants in setting track records on strips from coast to coast! Yes, the big winner now has a big brother . . . and the 426 can make every strip *your* track to Trophy-town. Your Plymouth Dealer has all the details to get you on that winning track and keep you there! He also has the order blanks.

ALL THIS IS STANDARD ON SUPER STOCK 426

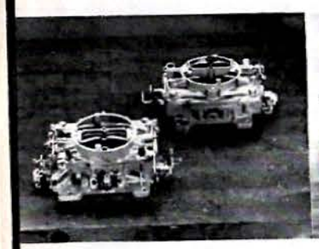
426-cu.-in. 8-cyl. engine • dual 4-bbl. carbs • short ram manifold tubes • special exhaust headers • special large dual-exhaust system • special heads, pistons, camshafts, valves, and valve springs • mechanical valve gear • dual breaker distributor • un-silenced air cleaners • deep-groove drive pulleys • special oil pan • heavy-duty radiator • 18-4-2 fan • closed crankcase vent system • Laker cutouts • hand choke • large-pinion rear axle with special-size axle shafts and heavy-duty pinion bumper • Sure-Grip differential (3.91 ratio) (with manual or automatic transmission) • heavy-duty rear springs • 59-amp. battery • 7.50 x 14 rayon tires and 5½ K wheels. For manual transmissions only: 10½" clutch with pressure plate; special clutch torque shaft and pivot, heavy-duty T-85 3-speed manual transmission with the Hurst shifter.

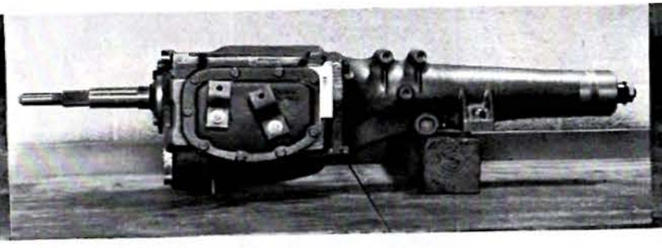
SPECIFICATIONS

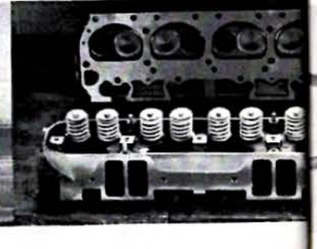
Displacement: 426 cu. in.; bore: 4¼; stroke: 3¾; standard rear axle ratio: 3.91; optional rear axle ratios (available for dealer installation): 4.10, 4.30, 4.56, 4.89.

ENGINE OUTPUT

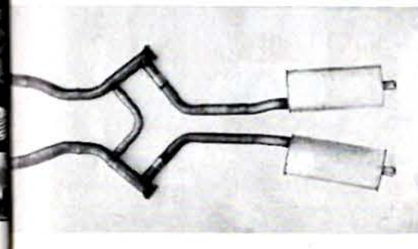
	STANDARD	OPTIONAL
Compression ratio:	11:1	13.5:1
Horsepower:	415 @ 5,600 r.p.m.	425 at 5,600 r.p.m.
Torque:	465 lbs./ft. @ 4,400 r.p.m.	475 lbs./ft. @ 4,400 r.p.m.

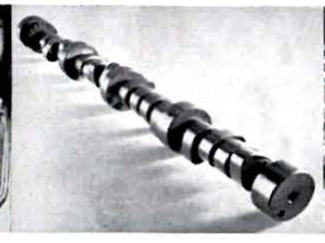






Dual 4-barrel carburetors with high-capacity un-silenced air cleaners are calibrated on the dynamometer for maximum power, with throttle blades set at precisely the proper angles. Governor set for 5,600 r.p.m. on the **heavy-duty automatic 3-speed transmission,** an extra-cost item. There are **new cylinder heads** with larger ports, streamlined intake valves, larger exhaust valves.

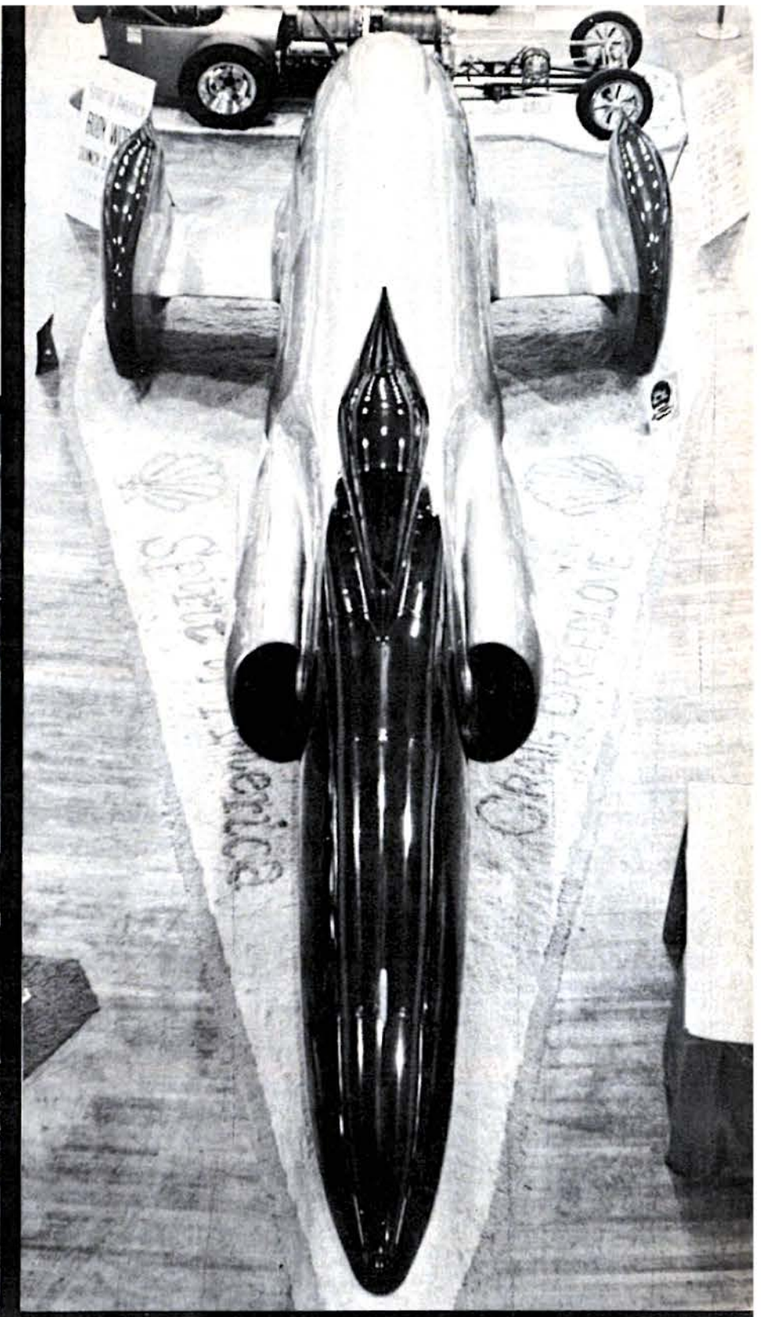




Special large dual exhaust system has 3-inch exhausts and 2-inch tailpipes. Special exhaust headers and Laker cutouts are standard. **Mechanical valve gear** has dual high-load springs and extra-heavy-duty retainers. **Special camshaft** is designed to run at speeds up to 6,500 r.p.m. **Short ram manifold** gives maximum output at high engine speeds, is the heart of the spirited Super Stock.

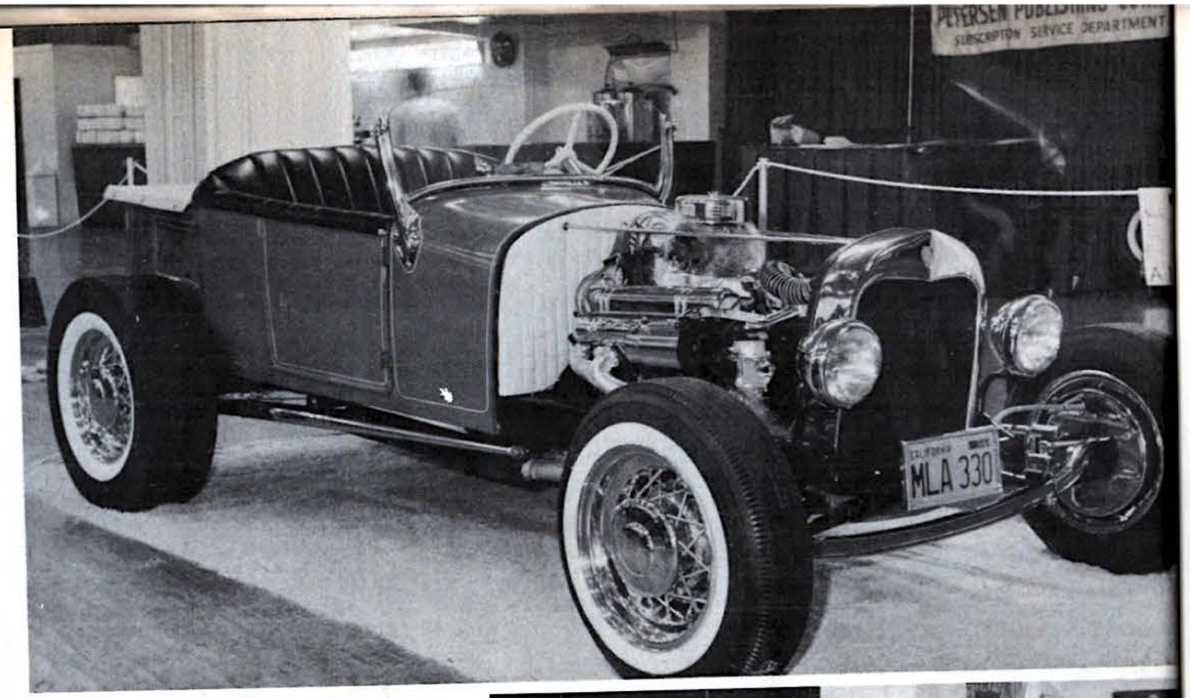
Rare sight was display not far from 406-mph Challenger I of Craig Breedlove's radical Spirit of America jet car. This machine has undergone some testing and may try for 500. Car now is being redesigned, particularly in the steering department. But even if it never runs at all, it's a beautiful sight.

Rundell and Brasckett 292-inch Chevy-powered sedan below has turned 128 mph and nabbed six wins in seven starts. At bottom, Darryl Deleeuw used kitchen drawer pulls to restyle the grill on his '59 Pontiac. The car is painted gold metalflake.



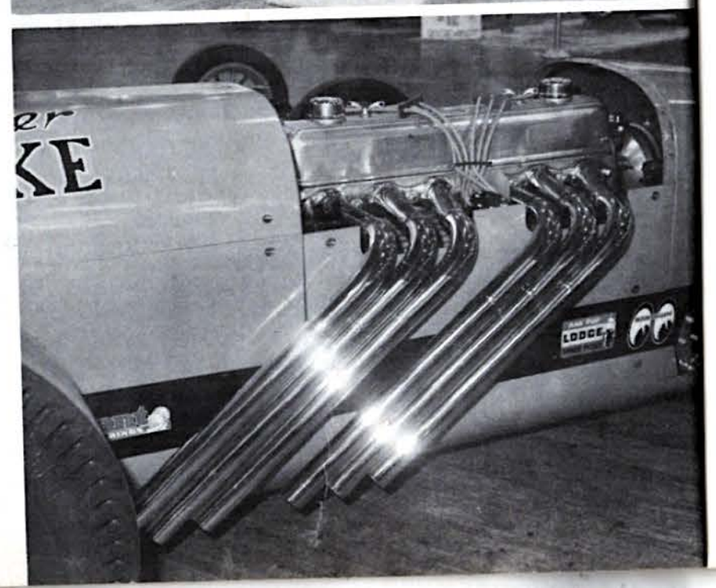
Mickey Thompson's GREAT SHOW OF CARS AND SPEED

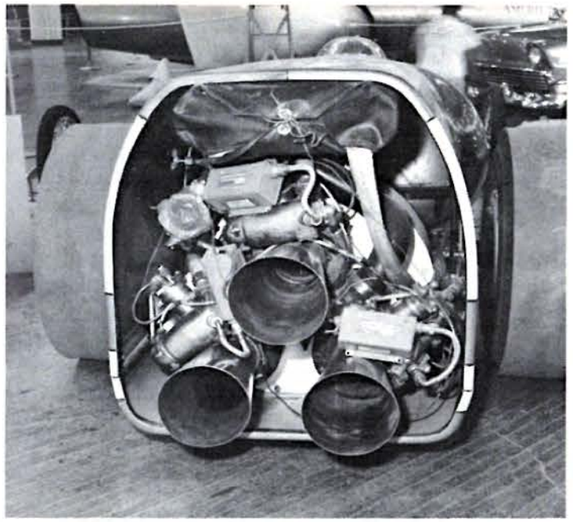
Nowhere else is any display so dedicated to high performance machinery!

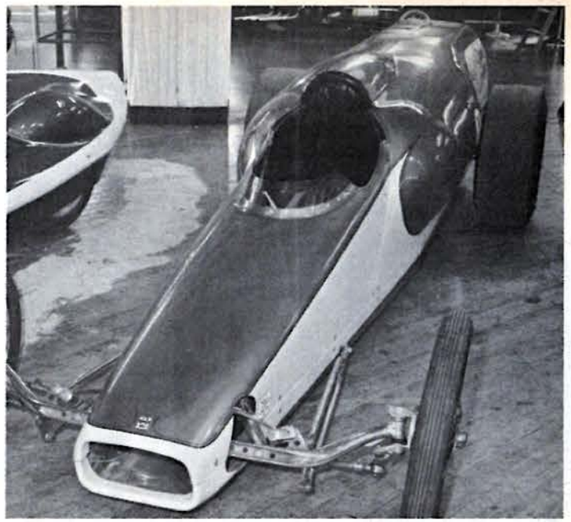


It's difficult to believe that Roland Hall's fine 27 T roadster, above and at right, was extensively damaged by fire just three weeks before this show appearance. But friends turned out and helped. Engine is '55 Buick. Color red.

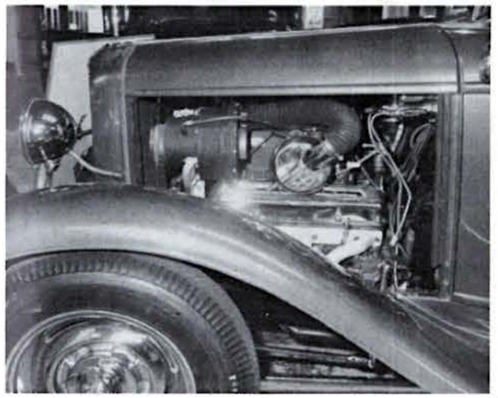
An uncommon sight in an uncommon configuration is this GMC six in Frank Iaacono's rakish competition body style, below and lower right. No times listed.

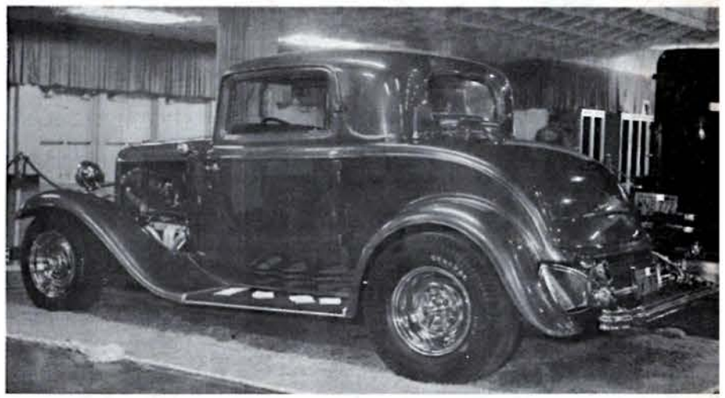


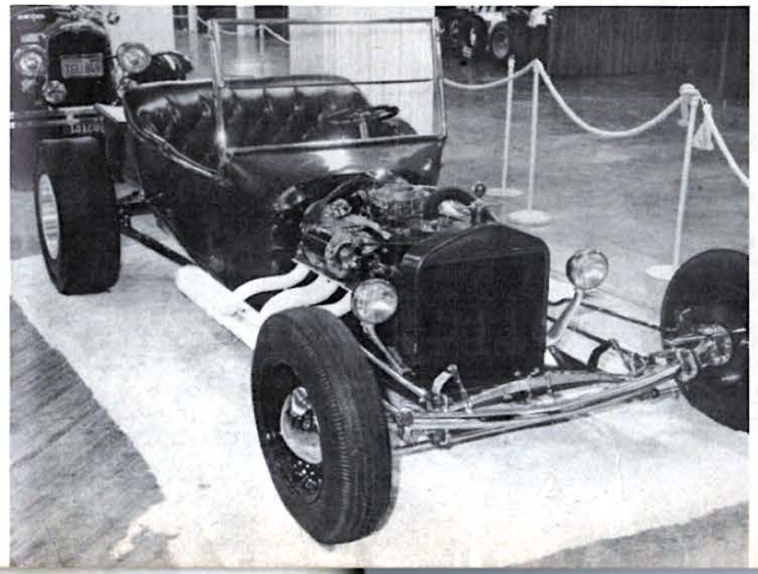




Another unusual vehicle attracted to the Thompson show was the famed drag machine created by AiResearch engineers in Proenix. It is propelled by compressed air, the units involved being jet starter engines.



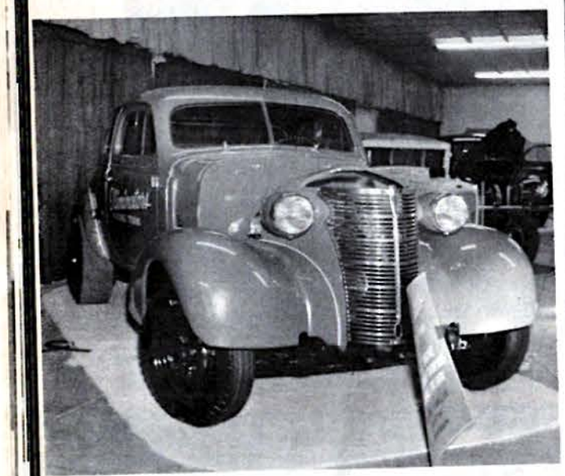


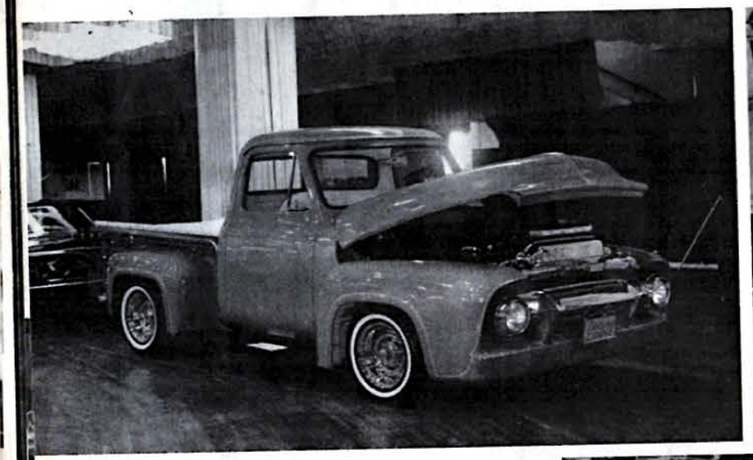


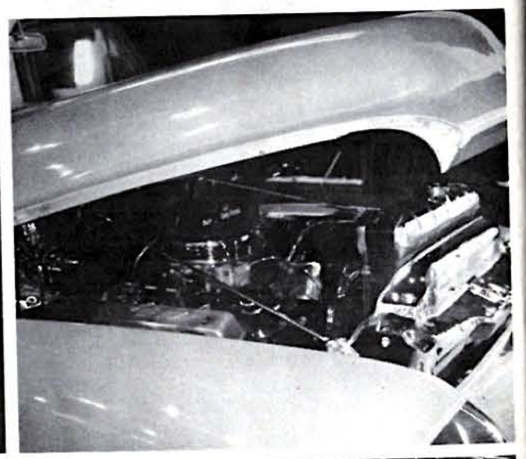
Nifty red coupe with body work by Jefferies of Hollywood was shown by Joe Goslin. Engine is blown Corvette, in photo at upper left. Very clean job.

Dick and Larry Thompson took only ten months to create this great '24 roadster. Engine is '59 Pontiac. The car is now valued at $2800!

The Eliminators club of Westchester, in Los Angeles, won a '62 Pontiac engine in last year's Mickey Thompson show, came back this year with this '38 Chevy shown below. And with that prize V-8. At right, C&L Automotive's fine dragster.

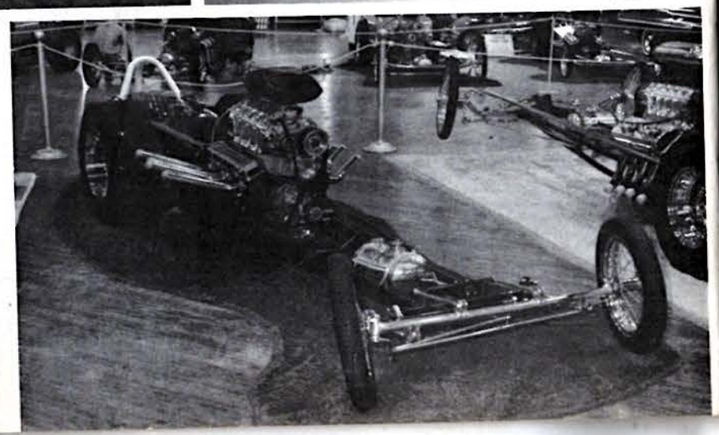




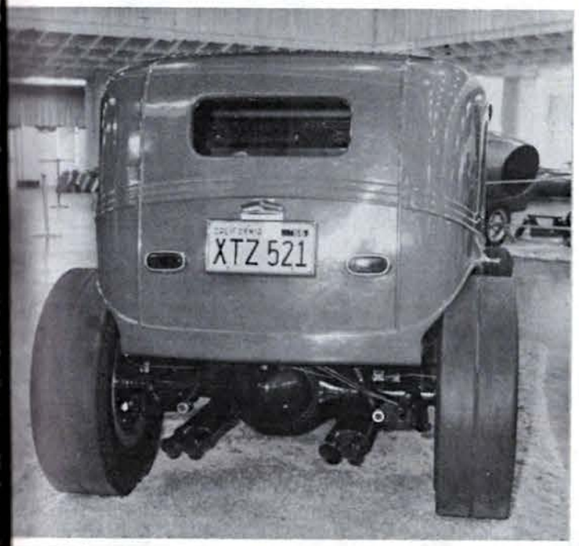


California Orange is the name Kenny Prussak has bestowed on his Chevy-engined pickup, shown in two photos above. Pickup has Chevy engine, many custom details, both inside and out.

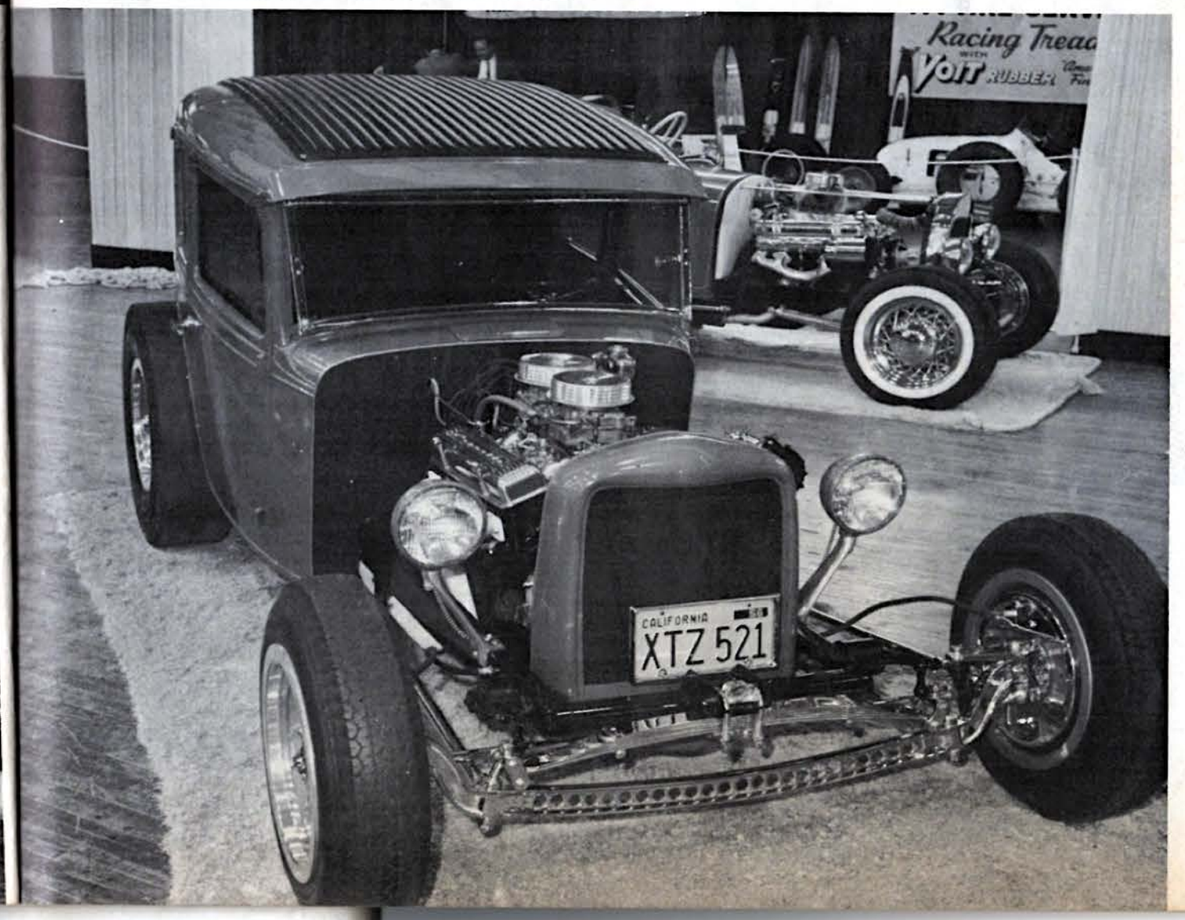
A top dragster is the blue-bodied and blown Olds of Ken Safford, Don Gaide and Don Ratican. Top time: 186.92 mph.



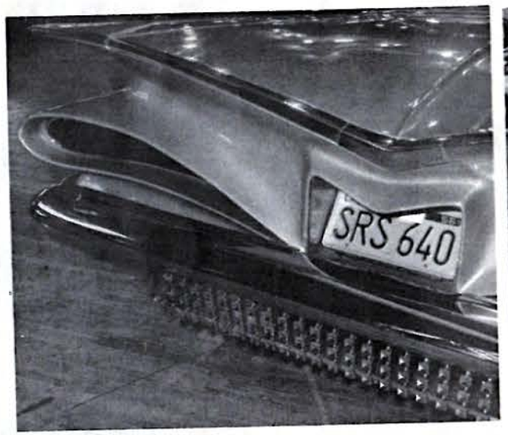
Eric Altman's extensively restyled Henry J, at right, previously seen in Pop Rod, has been altered further with new radical rag top.

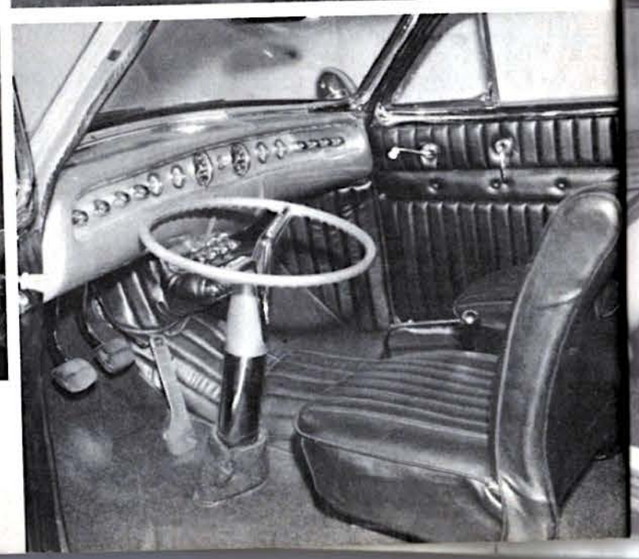


Really great rod in the classic style is Marv Ginter's bright red '33 Bantam coupe on '29 A frame. Engine is '59 Corvette, with Engle cam, driving a '56 Chevy trans and rear end. Car is so new the interior has not yet been completed. Workmanship and detail are outstanding.



One of the wildest and best customs in the show was this 1959 Chevy Impala, with custom grill both front and rear. Exterior paint was a fabulous gold metalflake. Note unusual exhaust at lower right.

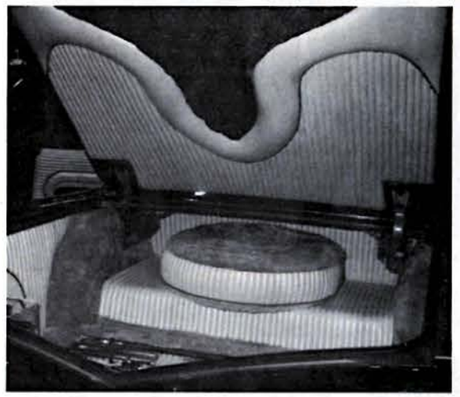


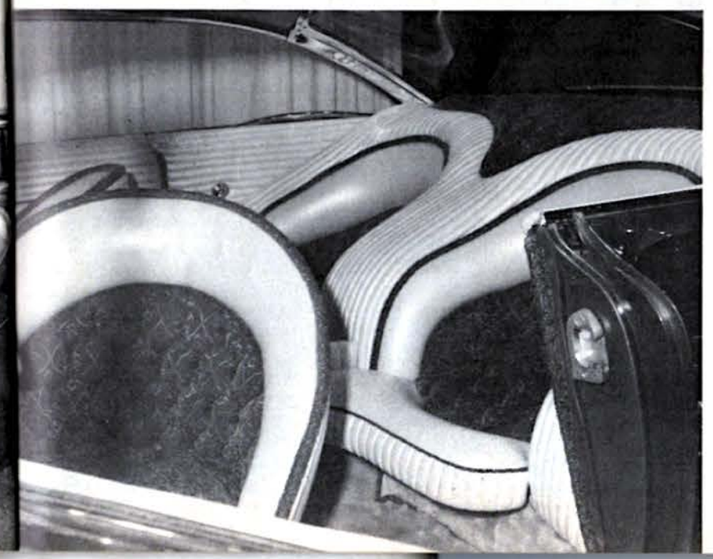


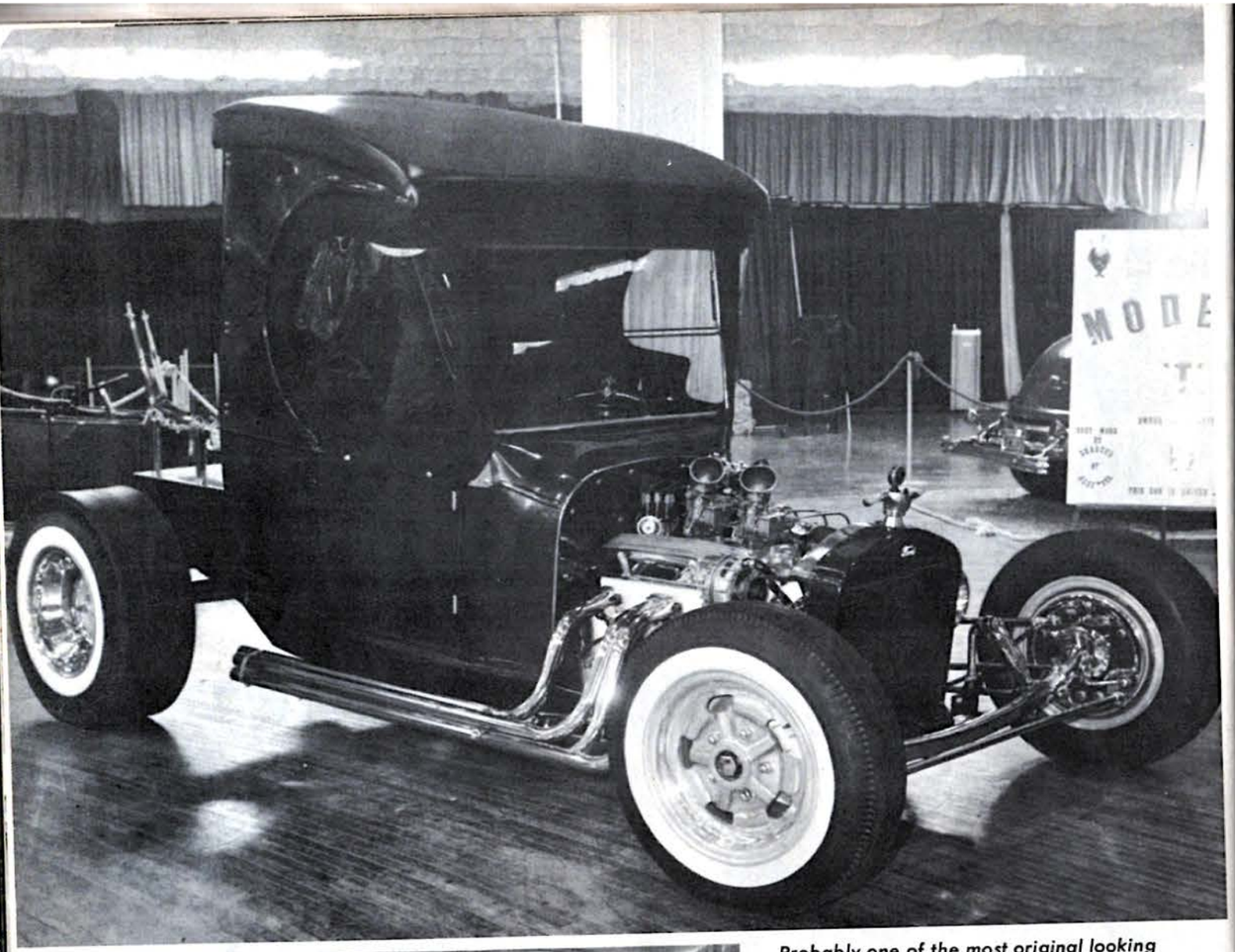
Exceptional '54 Plymouth finished in gold, above and at right, is creation of Don Wallace, of Fresno, California. Note unique interior. Engine is Buick V-8, with triple two-barrels, racing cam, matched to a Chevy four-speed box.

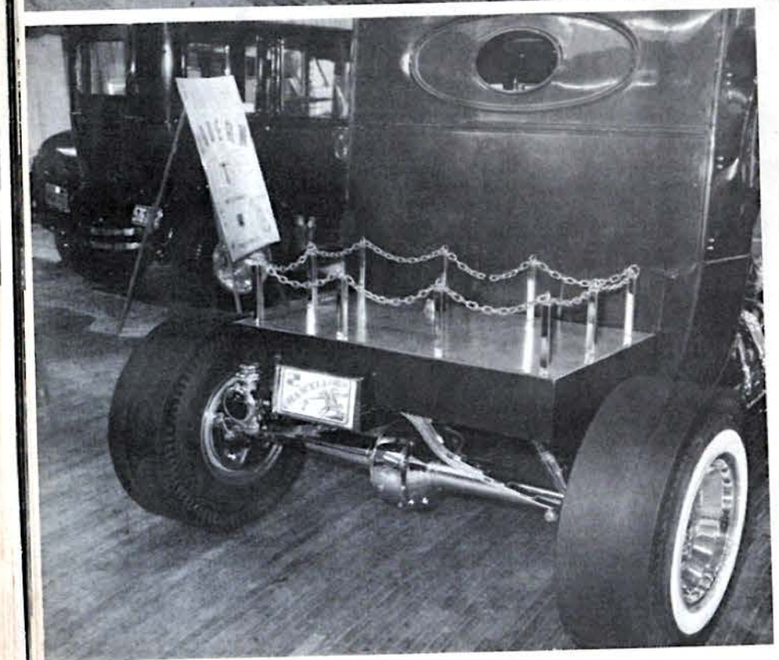
Very neat and clean is Don Bartlett's black 1940 Ford coupe. Engine under open hood is 1954 Cadillac, mildly modified.

Four photos below cover Tats Gotanda's Buddha Buggy, previously shown in Pop Rod. All-new and worth seeing, however, is the fantastic interior upholstery job. Note the wild barrel-style swivel seats in front, and the crazy sloping type in rear. Car is '59 Chevy, with Chrysler grill, Frenched taillights and fins.



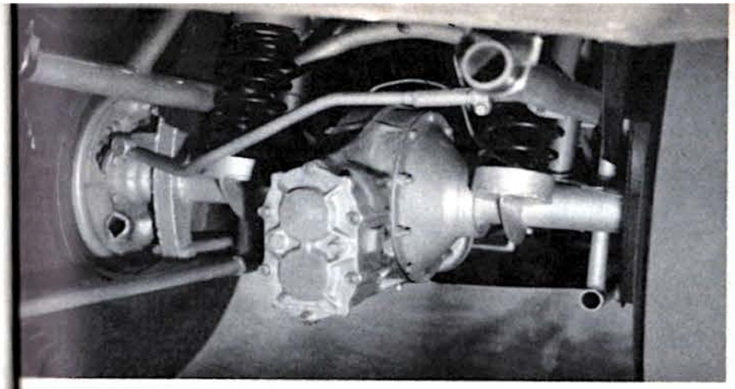


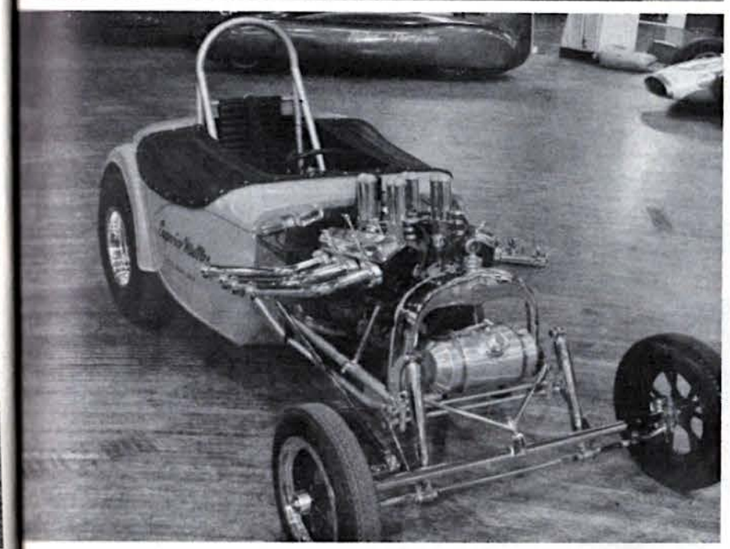


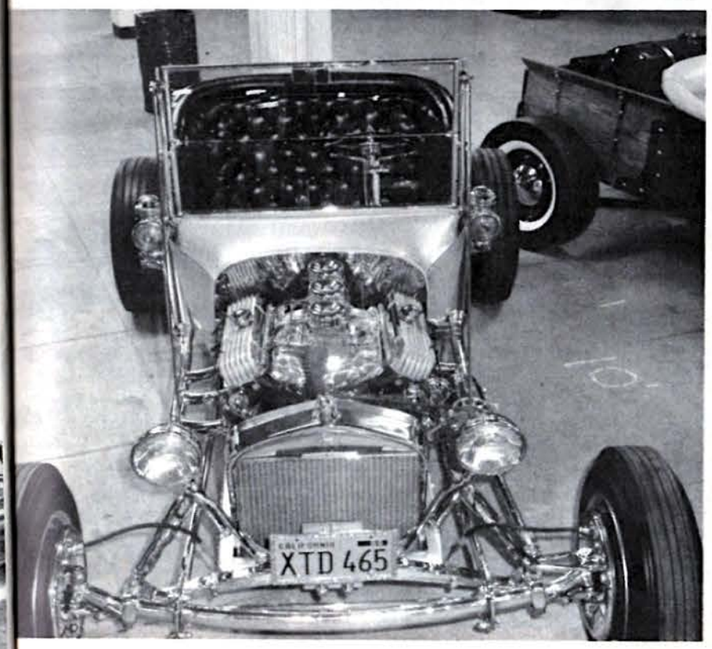


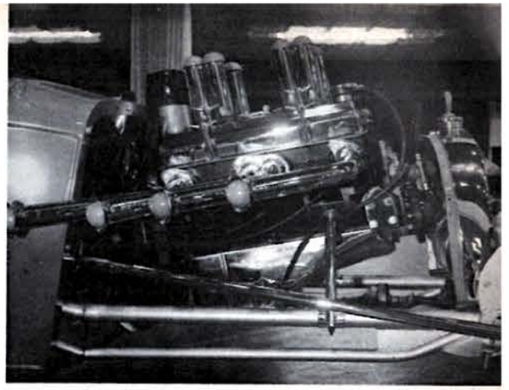
Probably one of the most original looking custom rods in a long time is Larry Ready's '23 Ford T coupe he calls "The Milk Truck," shown above and at left. Engine is 1957 Chrysler. Color is dark marlin green.

Most drivers would simply be satisfied with a Grand Prix, but George Wentworth has restyled this '62 with nose and deck jobs, side scoops, Cad grill and a candy blue and silver metalflake exterior finish.



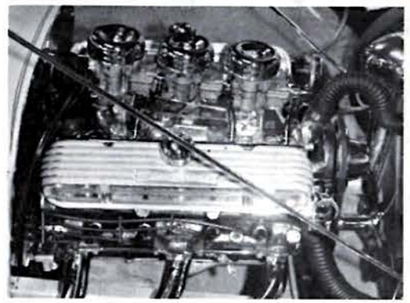






Three photos at left and above show '32-Austin-bodied red roadster of Skip Gibson, John Peterson and Mel Madison, all of Santa Maria, California. Engine 301 Chevy, with Thompson rods and pistons, Engle cam, B&M Hydra. Body is Cal Auto glass. Basic chassis is Lefty Mudersbach original, with coils at rear. New car has already turned 147.

Terrific T-Bucket is Walter Kaline's '24 T shown below. Engine is '56 Pontiac, with Isky 606 cam, and Hydra. Custom wheels, radiator, stainless steel gas tank are outstanding features.



POP ROD Speed Secrets

The race gets closer in this battle of boxes for drag racing

STICK VS. AUTOMATIC Transmissions

By Greg Curtis

TEN years ago — or even five years ago — there wouldn't have been much of an argument about the stick vs. automatic transmission for hot cars. The automatics just weren't in the picture. Slip in the fluid drive and pump losses in the gearbox ate up a lot of horsepower. Less refined shift mechanisms took excessive time changing gears. Most automatics lacked the beef to handle a really hot engine. The sticks definitely had all the advantages.

It's a different story today. Modern automatics are fast nibbling away at the traditional performance superiority of the manual transmission. They're more efficient than they were, shift faster and more positively (or can be easily modified to do so) — and more and more companies are offering specially beefed versions with their big high-performance engine options. Several private companies are in this same beef-up business now, and will fill in where the factories leave off. And most important: It is becoming more and more obvious that the fluid-drive transmission may offer superior initial acceleration on certain types of high-performance cars. This can more than compensate for any inherent slip or pumping losses in terms of e.t. on the quarter-mile drag strip.

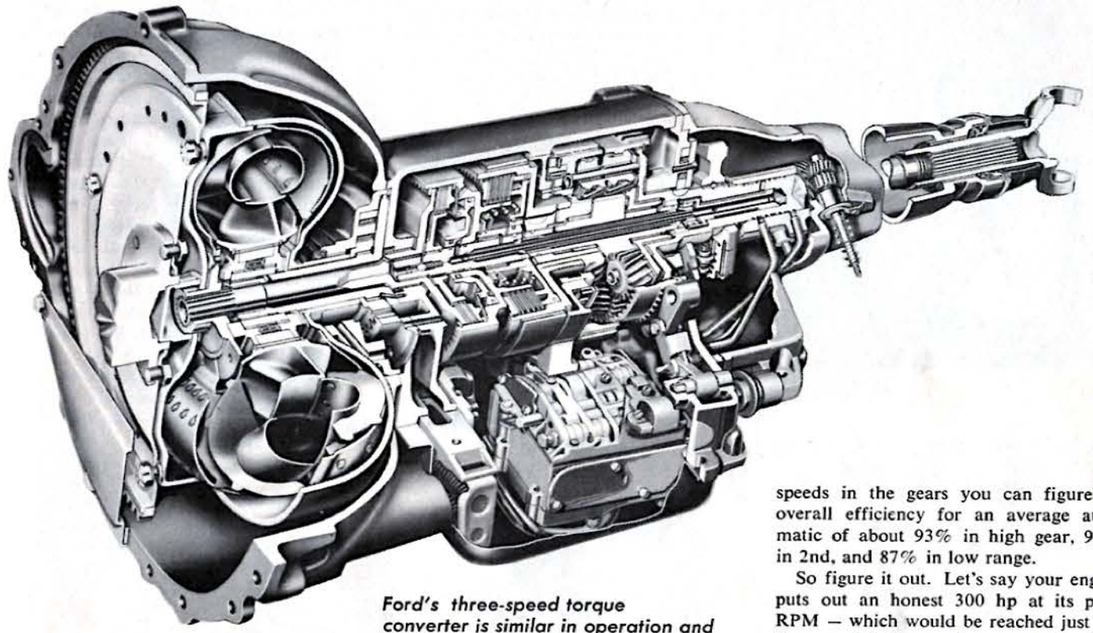
All this is of vital importance to you if you're about to select or modify a high-performance car, either for the street or the drag strip. You can't afford to ignore the automatic anymore. In some cases it could give you better results; in others you won't want it. Let's consider all the facts . . .

There's no argument at all that the manual-shift transmission and friction clutch is by far the most efficient power transmission combination for an automobile. The clutch is virtually 100% efficient when it's locked up, and the conventional gearbox has only very small losses from bearing friction and churning of the oil. Average full-throttle mechanical efficiency figures would be 99% in high gear, 97% in 2nd, and about 94% in low. (Efficiency falls off in the lower gears because the higher rotational speeds increase friction and churning losses.)

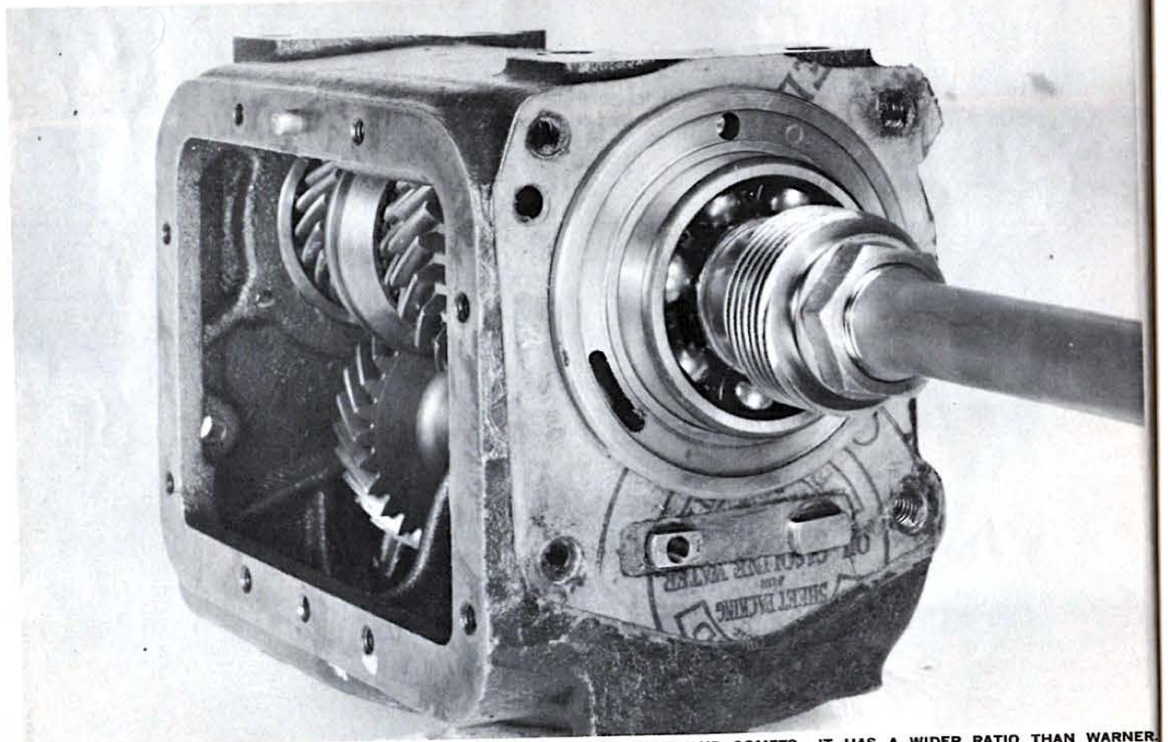
The automatic fluid-drive transmission has three types of losses: The loss from oil slip and churning in the fluid drive section; the loss from friction in the planetary gearbox — and we also lose the HP required to drive the oil pumps that do the shifting and change the fluid drive. Slip losses are greatest, of course, under full throttle at low car speeds when the fluid-drive pump turbine is overrunning the output turbine by a wide margin, and you have a high degree of "slip" (speed difference). When you're revving up on the starting line with your brakes locked the slip is 100% — and your efficiency is zero. As the car picks up speed the efficiency shoots up. But even with 75% slip (output running 1/4th of input speed) the efficiency of a fluid coupling is only 25% — and a torque converter is about 50%. At peak speeds in the gears you can figure an overall efficiency for an average automatic of about 93% in high gear, 90% in 2nd, and 87% in low range.

So figure it out. Let's say your engine puts out an honest 300 hp at its peak RPM — which would be reached just before you hit the speed traps on the drag strip with 4.56 rear end gears. Thus a stick transmission would deliver 300 X point. The automatic would deliver 300 X .93 = 279 hp. That difference of 18 hp could chop 2 to 3 mph off the trap speed with the automatic. This is pretty well taken for granted. Most automatic enthusiasts will admit that you do lose some trap speed because of the pumping and slip losses.

But they say you gain it all back'—

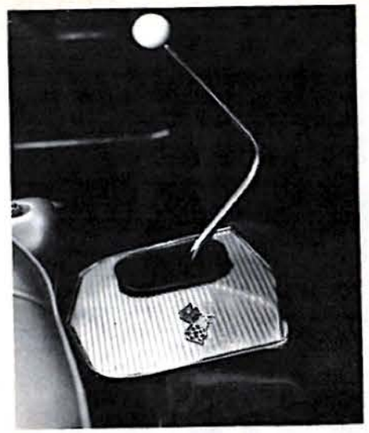


Ford's three-speed torque converter is similar in operation and performance to Chrysler Torqueflite but has not yet been beefed up to handle potent 500-hp powerplants.



ENGLISH FORD ALL-SYNCHRO FOUR-SPEED BOX IS OFFERED ON FALCONS AND COMETS. IT HAS A WIDER RATIO THAN WARNER.

Borg-Warner four-speed manual transmission is available in the '63 Dodges. Standard with this transmission is the Hurst-Campbell floor-mounted shift.



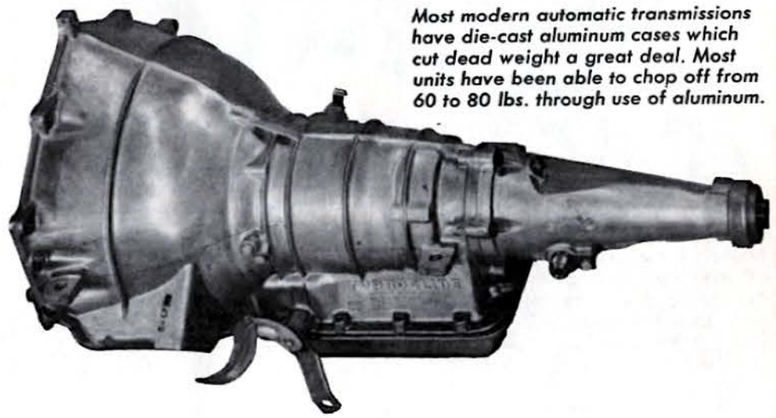
Factory floor gearshift linkage for Warner four-speed on the Chevrolet Super Sports. Such factory components have to go a long way to match the performance of most commercial kits.

and then some — by superior traction coming off the line. With an automatic you can lock the brakes and build up static thrust at the rear tires by revving the engine. When you release the brakes the car jumps off with a smooth, steady application of torque. It's the nearest thing to jet propulsion we have for street machines! With a stick transmission the friction plate clutch is disengaged on the starting line. The best you can do is let up the clutch pedal until the plates are just starting to rub (with the engine held at a constant RPM). But even with all your precautions there's bound to be a substantial jolt on the drive line when you engage the clutch further on the start-up. Any type of friction mechanism like this is bound to be jerky and grabby in its operation. (They used to use oil-filled friction clutches to get away from this; but they were too expensive and troublesome.) Anyway these drive line shock loads tend to break the rear tires loose and hurt tractive thrust. If you try to go easier on throttle and clutch application you're not utilizing all the available tire traction. There's no way around it. With a fluid drive and locked-brake start you can adjust your initial torque application (and thus utilization of traction) by merely varying the static engine revs on the line.

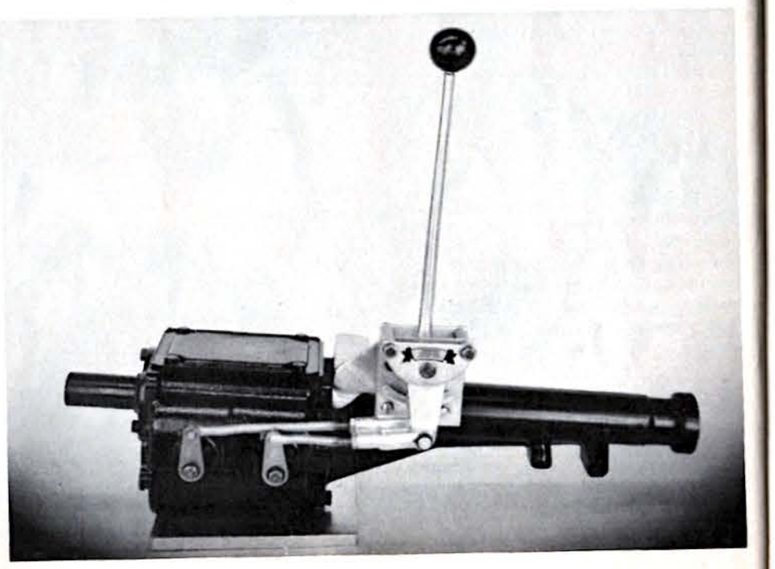
Result: Your automatic trans will almost invariably show a higher initial rate of acceleration than the foot-operated friction clutch and stick transmission. This advantage should hold up for at least 30 feet on most hot cars. And it is well known that getting the initial jump is the most important factor in e.t. on the short quarter-mile course. The automatic has the marbles here.

These are the most important advantages and disadvantages of each type. But there is the matter of time required to shift gears. This is wasted time on any type of transmission. You might think that the internal shifting of planetary gearsets on an automatic (through the release and application of bands, clutches, sprags, etc.) is instantaneous. This is not the case. The transmissions would be impossibly jerky if these shifts were really quick. Special modulator circuits are put in the shift valve bodies to purposely slow down these automatic shifts. You can speed them up a lot by modifying the circuit, or raising line oil pressure in the gearbox; but you'll never get "instantaneous" shifts.

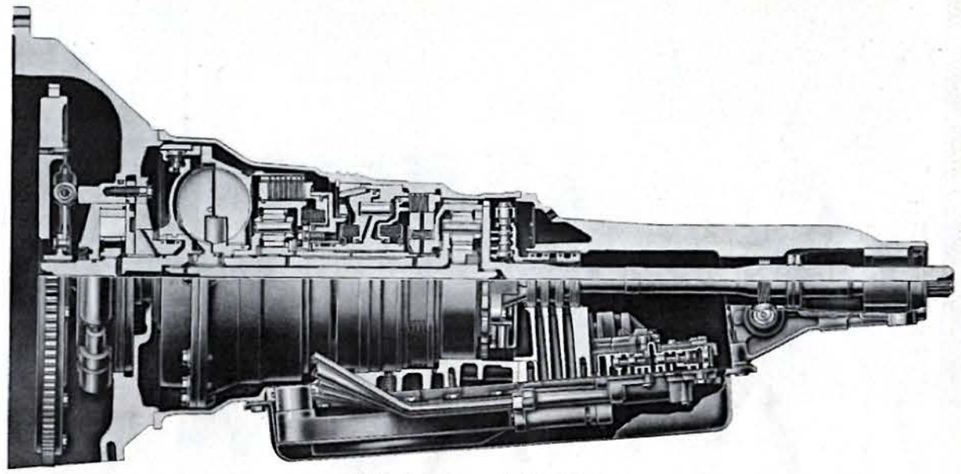
There is every reason to believe that the manual transmission is inherently faster in shifting time. But this depends on the type of box. In a conventional



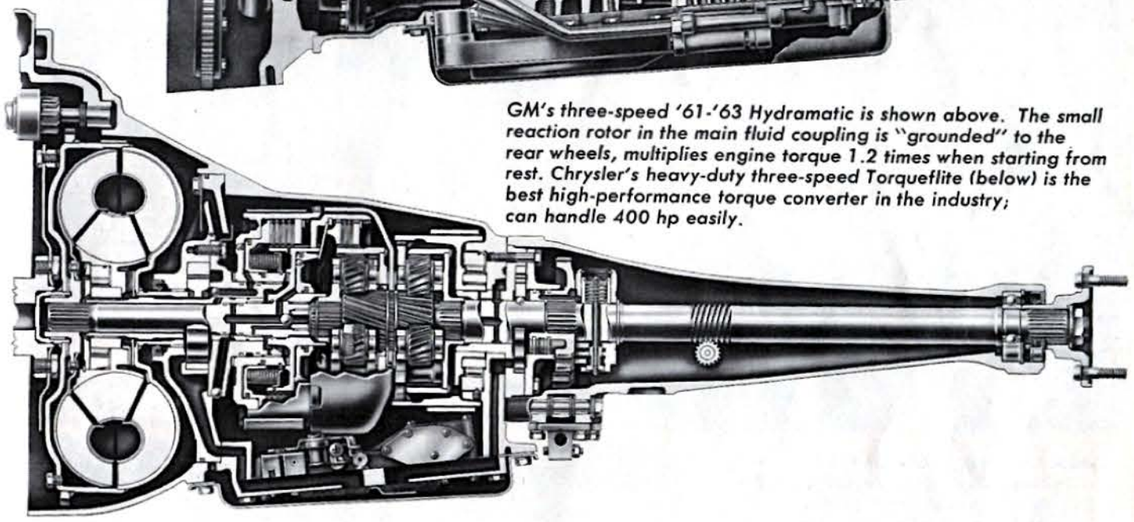
Most modern automatic transmissions have die-cast aluminum cases which cut dead weight a great deal. Most units have been able to chop off from 60 to 80 lbs. through use of aluminum.

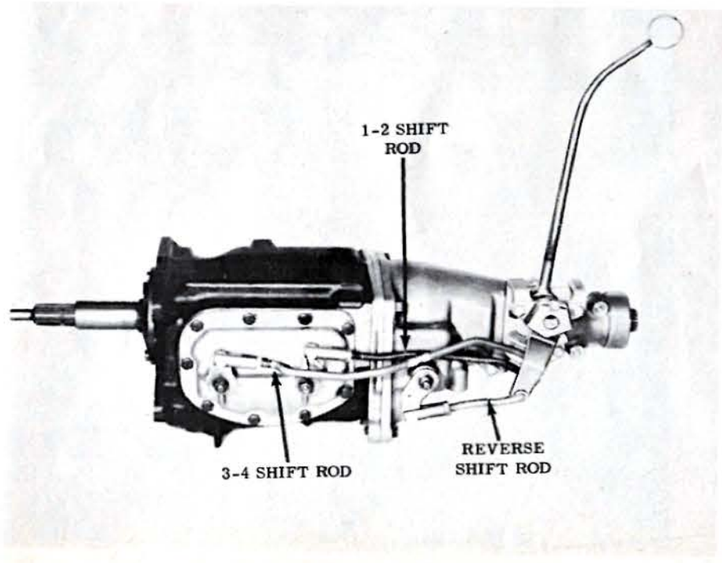


Tornado Shiftmaster floor linkage kit. From Lee's Speed Shop in Oakland, Calif., it is typical of the quality kits that are a must for those who are planning to try the drags with a manual transmission.



GM's three-speed '61-'63 Hydramatic is shown above. The small reaction rotor in the main fluid coupling is "grounded" to the rear wheels, multiplies engine torque 1.2 times when starting from rest. Chrysler's heavy-duty three-speed Torqueflite (below) is the best high-performance torque converter in the industry; can handle 400 hp easily.

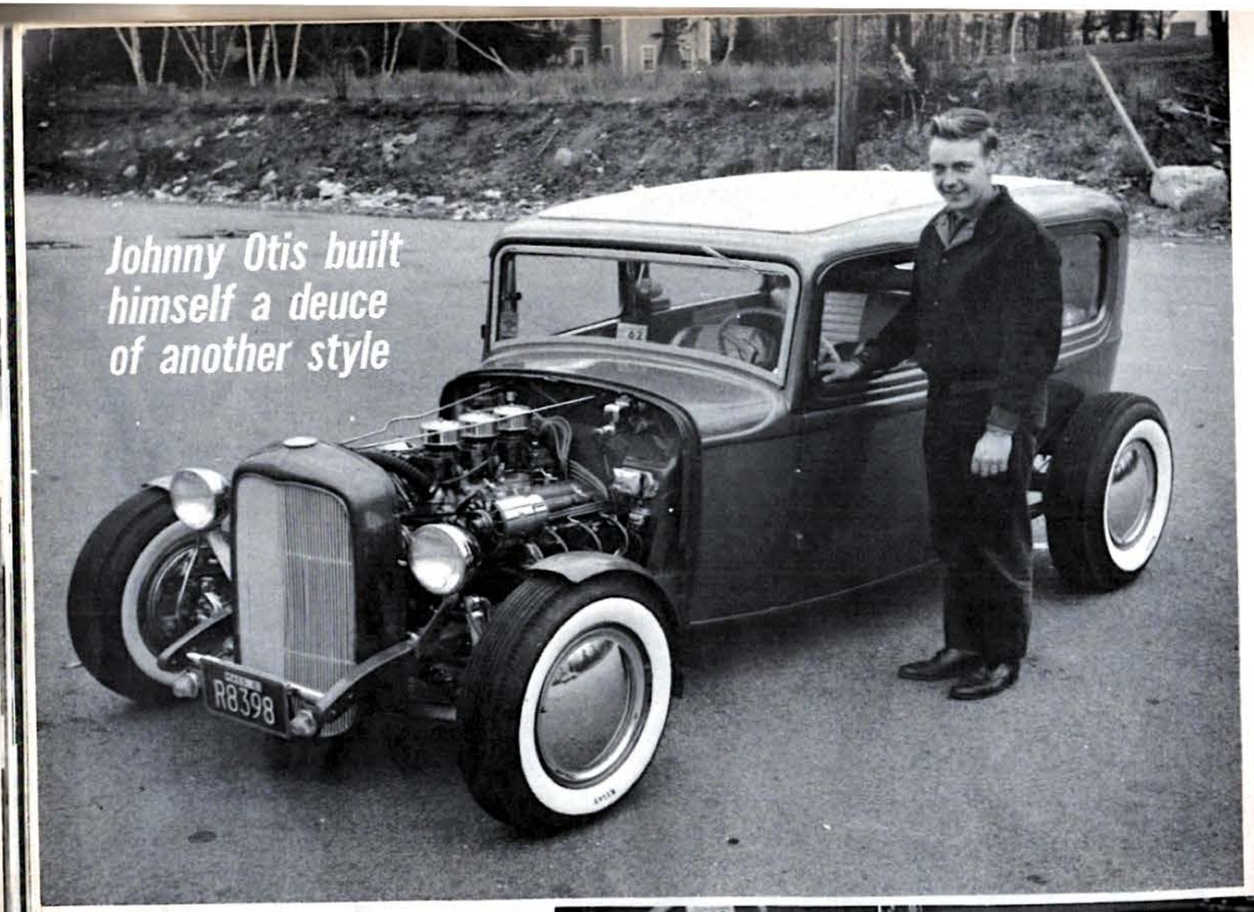




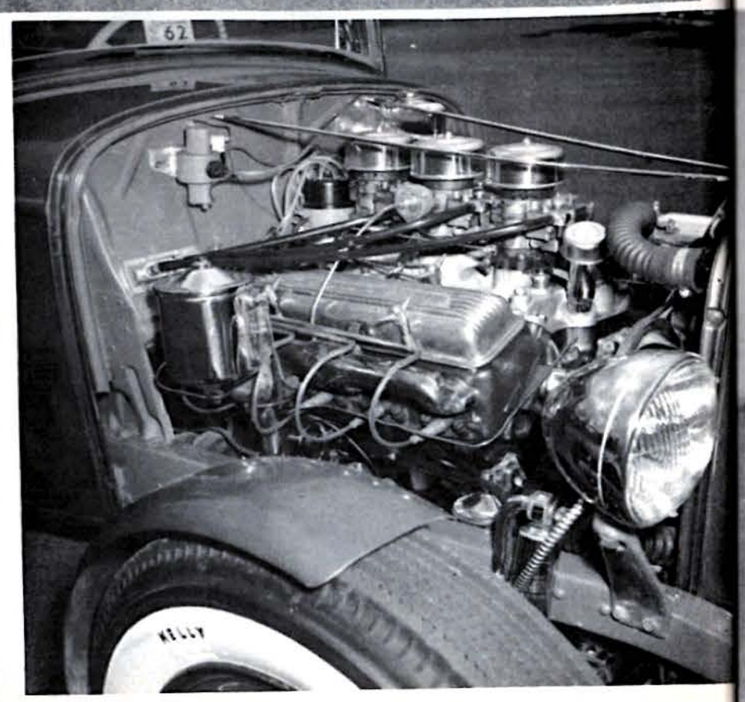
three-speed you must slide the heavy low gear back one to two inches on the one-to-two shift. This builds up inertia, tends to foul up the interlock mechanism, and slows down the shift. The optimum set-up for quick shifting is all constant-mesh synchro gears and very close ratio spreads. Then you need move only light synchro rings and collars when shifting, and the narrow RPM drop with the close ratios means that the synchros don't have as much work to do slowing down the heavy clutch disk. And, of course, any manual trans needs a good positive, smooth-working floor gearshift linkage

Continued on page 89

Warner T-10 four-speed transmission with Olds F-85 floor shift linkage. This is one of the finest four-speed boxes made. It is rugged, quick, inexpensive



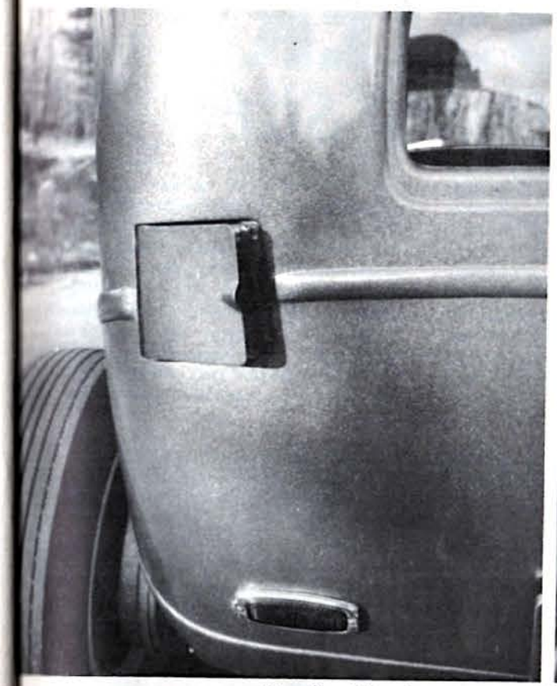
Beautiful metallic blue sedan has a very potent Chevrolet powerplant. Other components are a Chevy pressure plate, a Dodge truck clutch disc, Ford transmission and rear end. Axle is dropped '32 Ford.

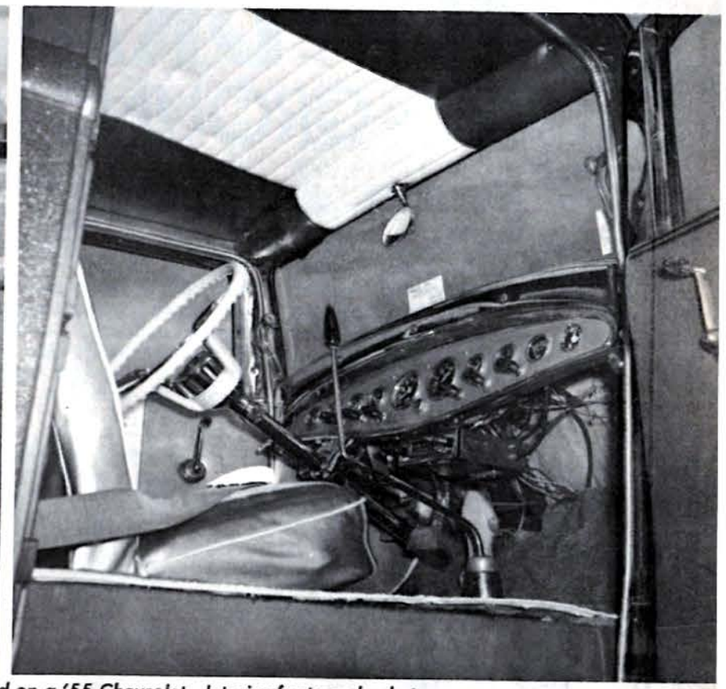


DANDY DEUCE

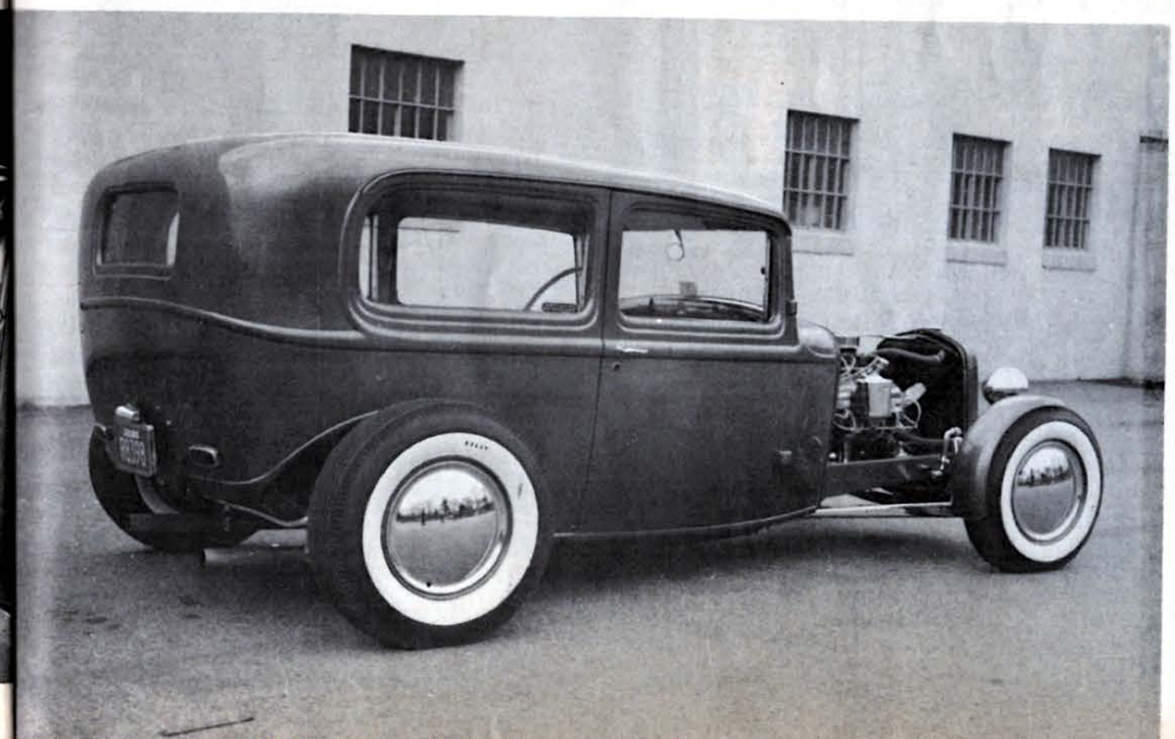
By Ed Sarkisian

Johnny Otis, a member of the Flywheels of Braintree, Mass., took a bit of a different route to build his version of a hot rodder's favorite car. Choosing a sedan rather than the normal coupe version of the famous "deuce," Otis channeled the two-door Ford eight inches. Power comes from a '55 Chevy engine sporting a vintage '56 Duntov cam. Heads have been ported and polished and breathing is via three pots mounted on an Offy manifold.





Gasoline filler door once rested on a '55 Chevrolet. Interior features bucket seats grafted from a Renault. The impressive line-up of instruments are Stewart-Warner. Steering wheel is from the 1960 Pontiac. Most distinctive view of this different "deuce" is the high-backed rear.



JET DRAGSTERS
. . . THE GROUNDED MISSILES

By Keith Thorpe

Are they dangerous freaks or the start of a new era for the hot rodder?

IN mid-January of this year, a story ticked off the Associated Press news wire that must have shaken every hot rodder who read the first paragraph: "An automobile went from a dead stop to 287.704 miles per hour in one-quarter mile here (Lodi, Calif.) Sunday."

The second paragraph should have been a huge relief — at least to those drag racers who think they are accomplishing something at 180 mph: "It was powered by an F-86 jet aircraft engine and driven by Bob Smith of San Jose."

Actually, a follow-up story revised the speed downward a few miles, but it was still a huge surge of acceleration, a crowd-dazzling display that reportedly broke three windows in nearby cars from sound waves.

It is a fact that jet cars are here. But their presence raises some pertinent questions: What is the significance of jet cars? Do they fit into hot rodding, and if they do, is it a class to which budding rodders should give serious attention?

The best answers come from the cars themselves — how they are built, what they are doing and where, how much they cost, how safe they are — all factors which must be faced by anyone who wants jet-powered drag racing.

The most serious argument against jet cars comes from the National Hot Rod Association. Their policy, which bans jets at NHRA meets, says that jet cars are inherently dangerous, not because of the fiery jet blast (as might be supposed) but because they are too difficult to control and stop at the speeds which they can attain. Even with the best brakes and multiple parachutes, it is logical that a 5000-pound jet car (and most weigh in this vicinity) is far more difficult to stop at 200 mph than a 1600-pound dragster would be at this speed. And a slight swerve off course could mean a crowd tragedy that would surely reflect itself in strict laws against all organized drag racing. The NHRA says that jets belong at Bonneville where there is lots of room.

Whether or not this attitude is correct, jets are running at independent strips, so far without incident. In fact, the first jet dragster began operations about three years ago. This is the Green Monster 16, built and driven by Walt Arfons, whose series of Allison-engined dragsters made the Green Monster name synonymous with outstanding performance from unusual cars. Walt learned about jets the hard way through trial and error. Today's jet car builders have a considerable background of land jet research from which to draw.

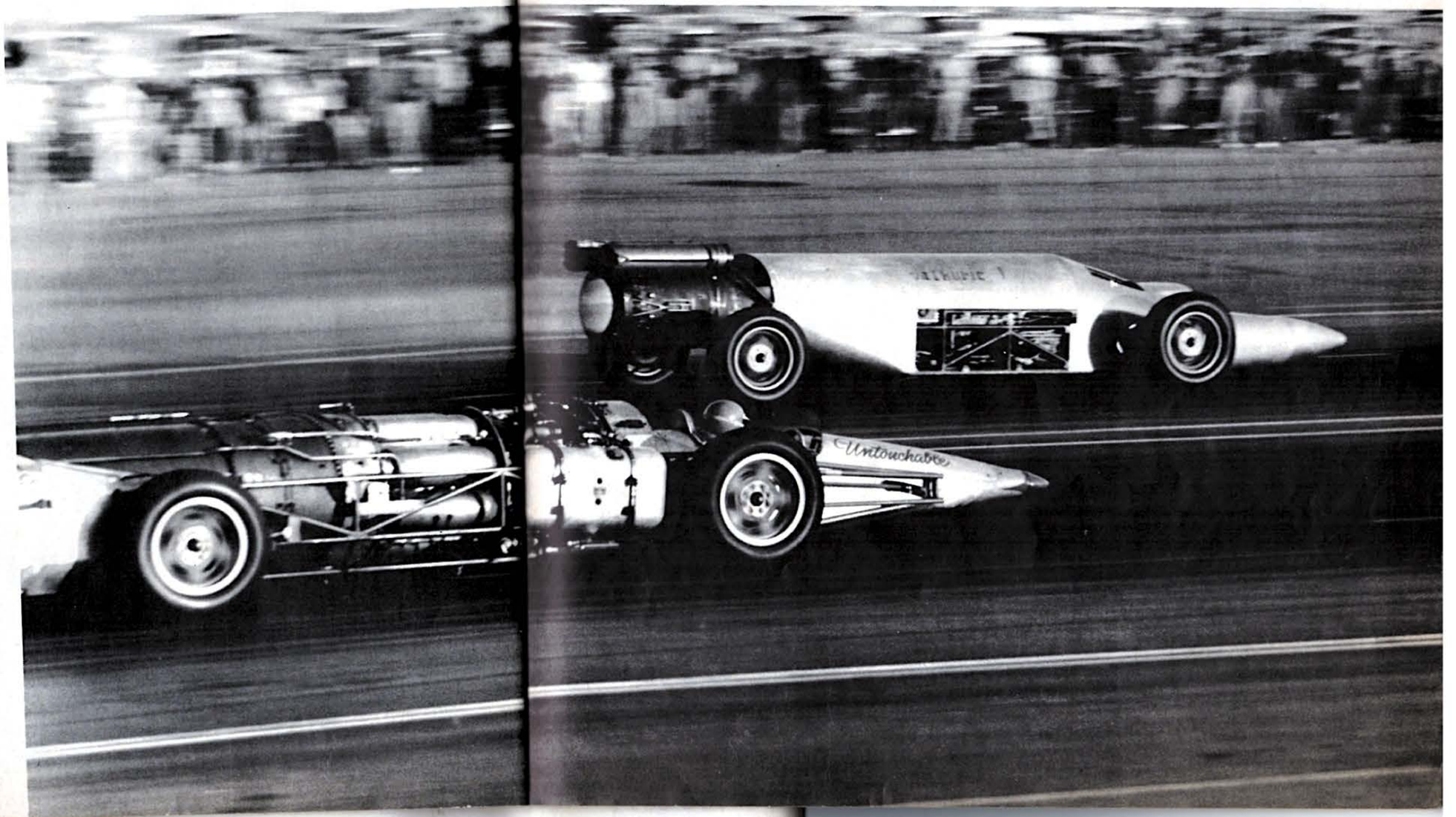
He proved that a jet car can be relatively simple to build. His engine, a J-46 from a Navy F7U Cutlass, was dropped into a chassis and became little more than a huge jet kart. He made his frame from 1½ x 2-inch box-section mild steel tubing with .125-inch wall. Rear suspension is independent with a solid front axle, all four corners carrying aircraft air-oil shock struts. He modified a Chevrolet truck steering and for stopping uses Bendix aircraft drum brakes, 2¼ x 11-inch plus two 16-foot parachutes. His cockpit is open and the jet engine is exposed in a skeletal framework, the latter on the theory that the spectators would be more impressed by the sight of the exotic-appearing jet than a streamlined body shell.

At the beginning, Arfons was bombarded with advice, most of it negative. Jet engine mechanics had plenty of don'ts to offer. But Arfons had to ignore most of them simply because he couldn't have built his car if he had observed all the taboos. He had to do away with the electrical complex that controls starting in favor of a system that he could control in order to keep weight down. Additionally, there were a whole series of automatic controls that he had to switch to manual in his adaptation.

Finally, he was ready. He brought the machine from his Ohio home to the Long Beach drag strip on August 6, 1960 — and the maiden run was a dismal flop at a mediocre 121 mph. Bit by bit he learned and the speeds crept into the 150s. But one basic problem remained — the thrust wasn't really effective until near the end of the strip.

He knew he must try the one thing every jet technician had warned against — an afterburner, a device which greatly increases the jet's thrust, providing a surge of instant power. Skeptics said that the car would be thrown into an uncontrollable spin, but Arfons tried and it worked. Very shortly he was posting speeds in excess of 200 mph with regular E.T.'s in the seven-second range and one super-low 4.18 E.T., set at Houston in 1961.

Walt Arfons has since used his pioneering drag-strip jet on a series of exhibitions across the country. During the 1962 season alone he made more than



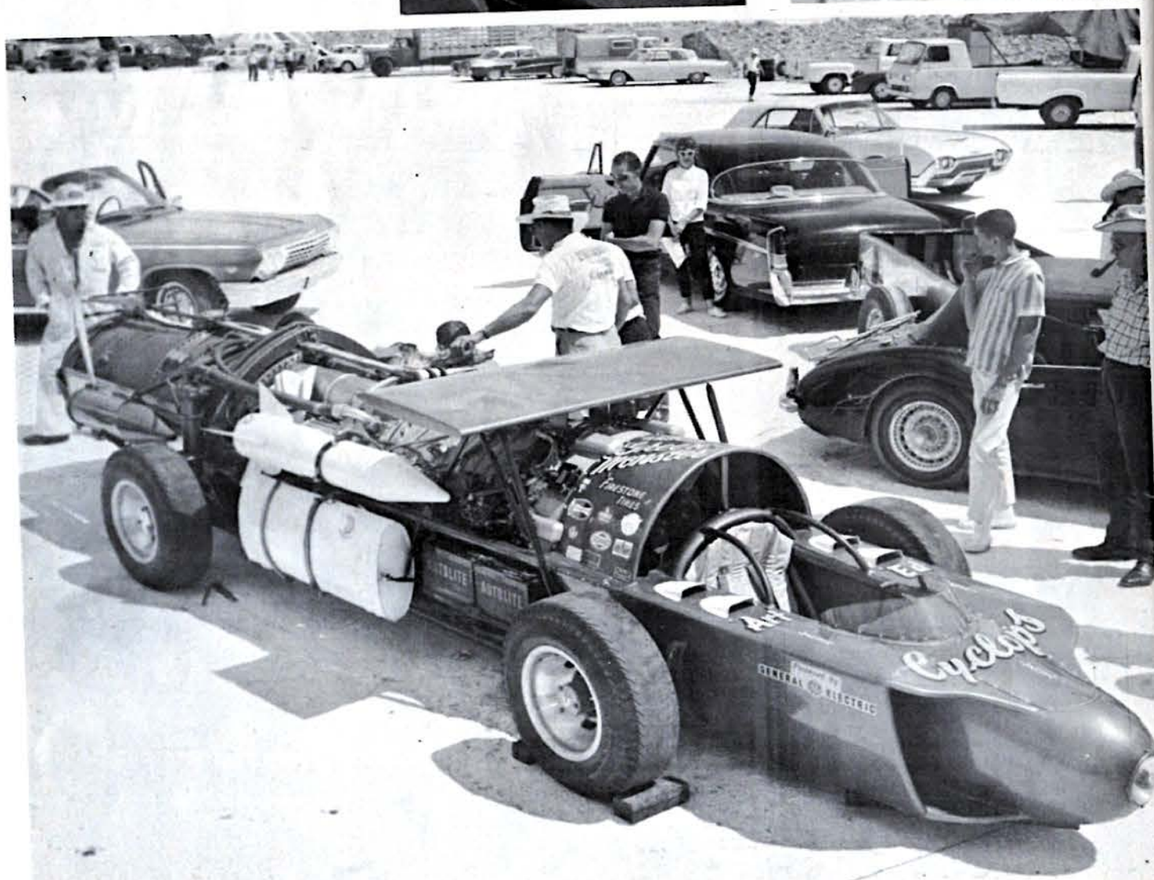
One of the year's most dramatic drag moments saw the Valkyrie I roar ahead of the Untouchable in a match race at Bakersfield. Time: 228.48 mph, 7.28 seconds. (Photo by Bellomy)

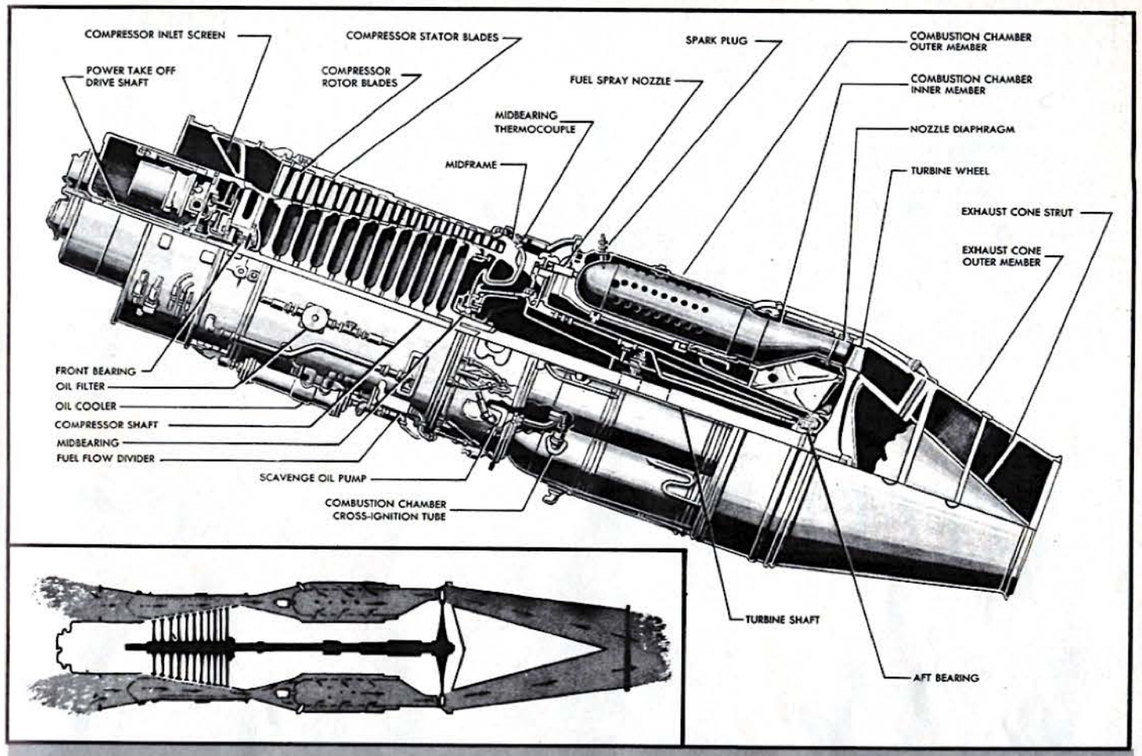
500 runs without difficulty, sometimes starting the turbine and running four times a day. And he has exceeded 200 mph in the quarter-mile more than 600 times. His primary source of trouble has been shredding parachutes at speeds above 220. To counteract this he has taken to shutting off power before reaching the end of the strip.

A simple jet dragster is relatively inexpensive to build. Available jet engines are military surplus and cost about $1000, a fraction of what they cost the taxpayers when new. Accessories and controls may add another $1000. The engine in most plentiful supply is the J-47, which powered the Air Force's F-86 fighter. The J-46, which is slightly smaller, is more difficult to find.

So we obtain a serviceable J-47. What do we have? Depending upon model, we have a device that produces about 6000 pounds of thrust which will jump to 9000 when the afterburner is lighted. Thrust is more easily understood when it is converted to horsepower. A jet engine has one peculiarity which should be understood: the faster it is moving through the air, the more hp it delivers. To find jet hp, multiply the thrust by the speed in feet per second and divide by 550. We use 550 because one hp equals 550 foot-pounds per second. If one wants to deal strictly in miles per hour, take thrust in pounds, multiply by speed in mph, divide by 550, and multiply by 1.47 to get hp. Simple arithmetic indicates that a jet engine produces enough power for some phenomenal speeds.

Art Arfons Cyclops turned on at Bonneville to the tune of 338.79 mph. Airfoil on top of car was used to hold it down. Unique sighting device on front of nose gave driver warning in case the car became airborne.





The J-47 turbo-jet engine, as shown above, is the most commonly available jet powerplant for civilian use. In it the compressor and turbine wheel are mounted on a single shaft at opposite ends of the combustion area. When combustion occurs, the rapidly expanding gasses flow through the turbine vanes and cause the wheel to rotate. The turbine wheel then drives the compressor which packs more air into the combustion areas (the increased combustion pressure applies additional force to the expanding gasses). This is the combustion cycle, and if there is some means of starting the rotation and combustion, the engine will produce a continuous flow of power.

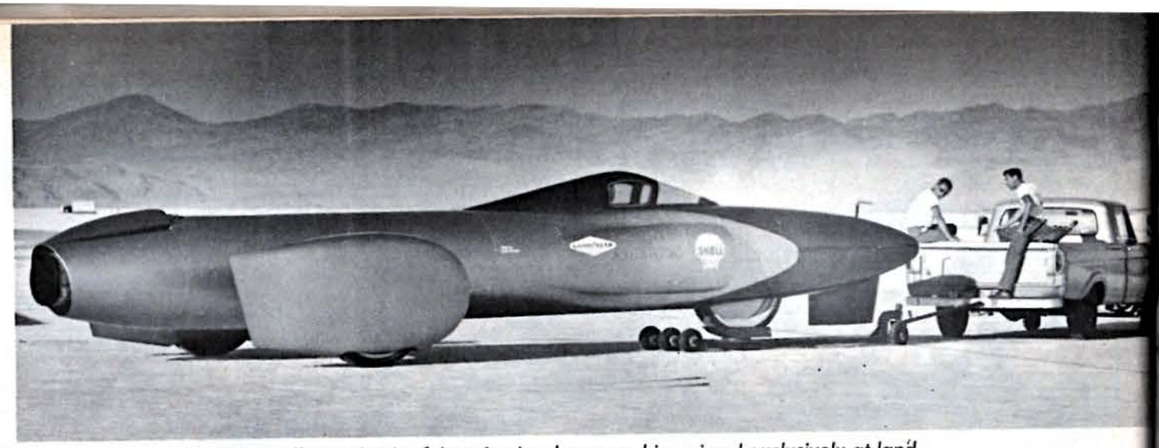
Additional equipment must be added to provide fuel, lubrication, cooling and to compensate for operating variables. The turbo-jet may seem to differ radically from the conventional four-stroke cycle engine, but by comparison it can be seen that both involve the same basic processes. The conventional engine utilizes four piston strokes in its five-event cycle (intake, compression, power and exhaust). The turbo-jet cycle performs these same functions continuously and without the reversal of piston travel.

Just how much top speed a jet can attain on the ground has yet to be determined. Several have already tried at Bonneville. Their failures have not been due to lack of power, the very least of the problems. The problems revolve around safe components and physical control of the machine at high speeds. Reaching 500 or even 600 mph in a streamlined jet can be predicted with accuracy on a slide rule; doing it is more of an exercise in personal bravery than in finding sufficient power.

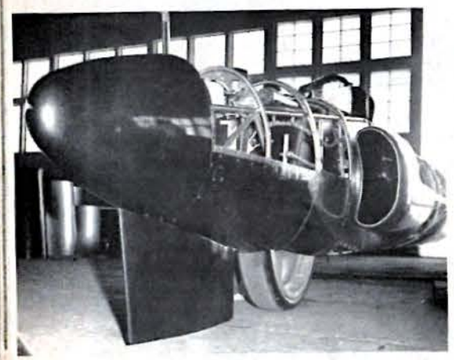
Jet cars do not have unlimited power, a point demonstrated by a jet dragster that ran at Bonneville last August. Art Arfons, brother of Walt, brought his unstreamlined Cyclops to the salt just to see how fast it would run. He was able to work the car's speed up to 338 mph, the speed where the open wheels and almost total lack of streamlining formed a barrier beyond which the engine would not push the car. Yet, Art's car has turned 210 mph with a 6.96 second E.T. at the drags.

He found several problems at the higher speeds which are not present in the quarter-mile. Wind buffeting in the open cockpit was severe, in spite of the windshield which deflects air over the driver at 200 mph. Also, his air intake ducts were not up to the higher velocities. Made from fiberglass, as is the nose section, they broke loose and were forced into the cockpit.

Ducting is important if maximum efficiency is to be extracted from a jet. Ideally, air intake ducts are calculated to a length and opening area that permits maximum compression without a phenomenon called separation, when bodies of air break away from their flow along the duct wall. The result of separation is cavitation which causes com-



Craig Breedlove's Spirit of America is a huge machine aimed exclusively at land speed records. It has been troubled so far by the lack of good steering controls. Small fin at the bottom of the nose was meant to guide the car at high speeds. Its failure has led to need for steerable nose wheel.



pressor stall and loss of power. The ducts should be placed outside the boundary layer of air that is close to the body to insure good intake. Ducting is a specialty of jet power-plant engineers, far too complicated to explain here. It is not of prime importance to a drag machine, but is highly significant for top speed. Craig Breedlove, for example, retained a Lockheed Aircraft powerplant engineer to design the 10-foot-long ducts on his three-wheeled Spirit of America, the car in which he hopes to crack 500 mph.

Arfon's Cyclops is another example of straightforward design. In many ways it resembles his brother's car in concept. Chassis tubes are large diameter and the engine nestles between them. Front axle is a '48 Ford, reinforced with an extra steel plate. A set of long radius rods locate front and rear wheels while the front wheels are suspended with a pair of aircraft tail wheel air-oil shock struts. Rear wheels use a set of oleo struts from a Wolrd War II BT-13 aircraft. He stops the car with a set of '57 Buick brakes fitted with Grey-Rock ceramic linings, backing himself with a pair of 24-foot parachutes. Jet engine size dictates overall car dimensions. Wheelbase on the Cyclops is 114 inches, and it is 23 feet long, 41 inches high, with front and rear tread at 65 and 67 inches.

Unlike a car with conventional drive, a jet car will tend to take off a la Atlas missile if it hits a bump. Once airborne, the situation would become serious before the driver/pilot could shut down the jet. Arfons has developed a safety device to forestall such a possibility. He has a short airfoil section above the engine and just behind the cockpit that is attached to the front radius rods. Should the front end lift, the airfoil will be pivoted to exert negative lift, hopefully holding the nose to the ground. As a visual reminder, Arfons installed a short antenna extending up through the nose. Rigged to the suspension, it rides at a constant position. When it drops, Arfons knows that the front end is lifting.

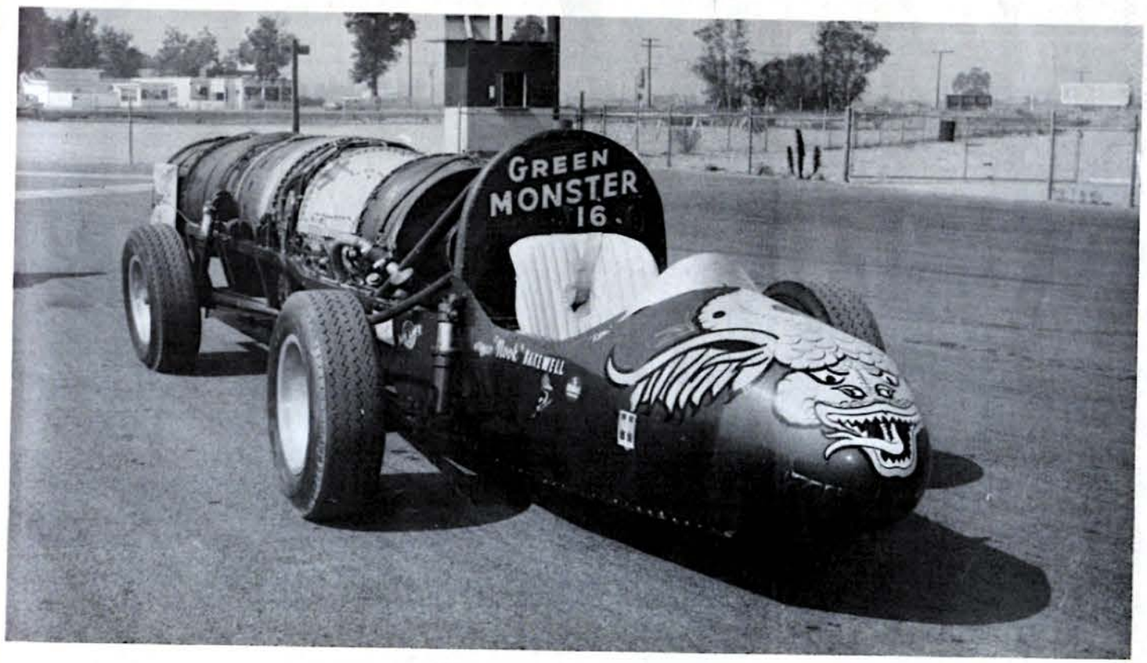
Another factor that must be taken into account is the jet's penchant for moist air. Thrust is roughly a product of air mass and velocity. This means that the more air that can be packed into the compressor, the more power the engine will produce. And, since moist air has more mass than dry, it follows that cool, moist air will produce more power than hot, dry atmosphere. In practical terms, this means some form of water injection. Aircraft inject water directly into the burner but this is not always practical in a dragster application. The Cyclops gets its water shot into the compressor, a practice frowned upon by jet experts. Even though it works for Arfons, the possibility exists that the reduced temperature in the compressor could be enough to cause the case to contract and the rotor tips to hit. If this ever happens — goodbye, engine. Another method is to inject water directly into the air intakes. Breedlove's Spirit of America will use this technique although it is believed that the superior streamlining of the car, and the fact that a long acceleration run is available, will make water injection unnecessary.

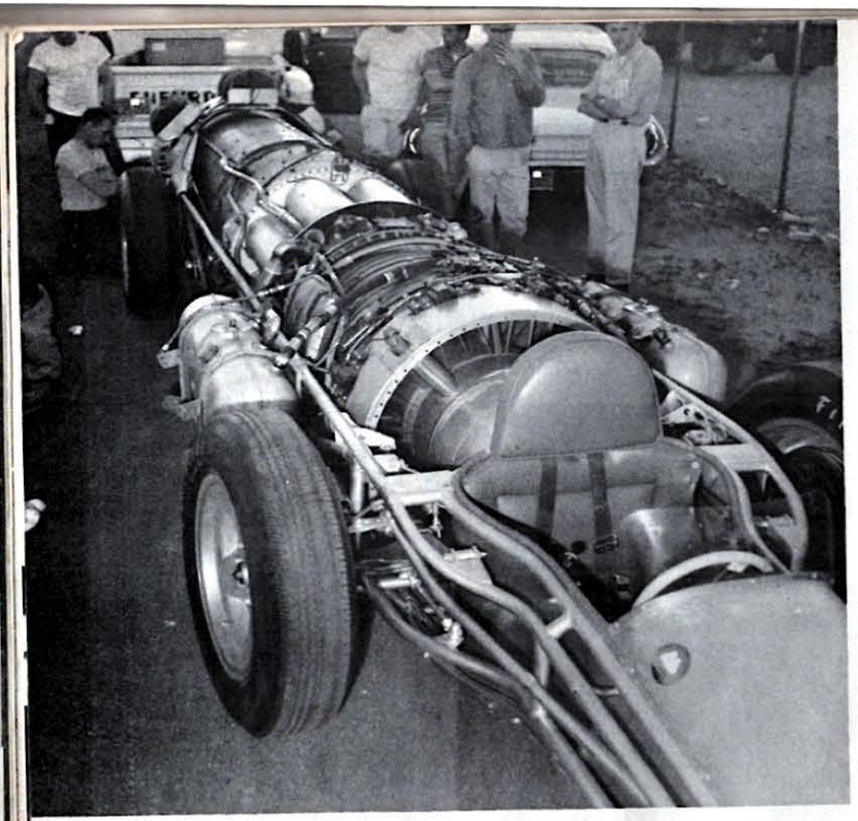
Arfons operates his afterburner in a decidedly unorthodox fashion, and it makes for quite a show. Instead of using a special igniter plug, he dumps raw jet fuel directly into the tailpipe where it flames out the rear in a spectacular display of fire and noise. His driving procedure is simple. He has adapted a simple 24-volt starter-generator unit which he plugs into the car. At about 1000 rpm, fuel is started and ignition switched on. The starter turns the engine to 1800 rpm where it can take over on its own. With brakes set, Arfons runs the engine up to an ear-splitting pitch, turning on 100 per cent power. Just before take-off he cracks the afterburner. Immediately he releases the brakes and he is on his way.

At the end of the tailpipe is a set of adjustable "eyelids" that can be closed to provide power changes. The more they are closed, the higher the tailpipe temperature and the more power generated. They are adjustable from the cockpit from wide open for the afterburner to a pre-set stop for normal running. With its shortened tailpipe, the Cyclops' engine is a sort of jet hot rod that probably develops more thrust than it did when originally installed in an F-86D.

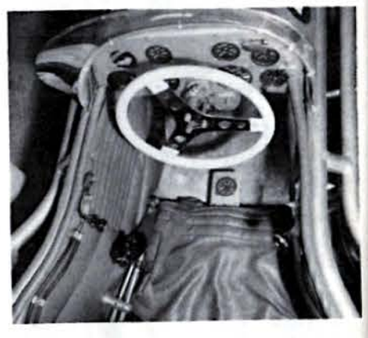
The most magnificent of the jet land

Walt Arfons' latest version of the famous Green Monsters (below) has been making consistent runs over the quarter-mile distance at speeds well over the 200-mph mark. This pioneering will pay off in knowledge for every future rodder thinking of jet dragging.





Romeo Palmides' Untouchable is another jet using the J-47 powerplant. Driver Bob Smith has used the well fitted cockpit as his headquarters in top runs such as his Bakersfield mark of 217.76 mph with a 7.93 ET.



vehicles is the above-mentioned Spirit of America. There is virtually no chance that it will ever see a drag strip, since it was designed exclusively for Craig Breedlove's effort to be the fastest man on wheels on the salt. Even if Breedlove never achieves his goal, the car is so unique that it deserves mention. The Spirit stands out in sharp contrast to most of the other jets currently running because of its size and workmanship. Not that the other jets are poorly constructed; the Spirit has been built to standards that would be hard to match without more money than most rodders could command.

Backed by Goodyear and Shell, the Spirit represents possibly $100,000 and the talents of skilled engineers and car builders. In its original form, as tested at Bonneville during 1962, the nose wheel was fixed. Low speed steering, below 150 mph, was accomplished by differential braking of the rear wheels, while high speed control was to be by a canard fin below the nose. Wind tunnel tests showed that the system would work, but in practice it soon proved impractical. Some means of minimal steering will be incorporated by Breedlove in Los Angeles before the car is run again.

The Spirit is a large machine, 35 feet long, 11 feet wide and six feet high. The three specially designed wheels and tires are four feet high. There is no suspension as such. However, the nose wheel is on an air-oil shock and has 1½ inches of static deflection. The nose tire has been designed for a 4000-pound load and to prevent exceeding this at speed, a recording graph constantly measures nose wheel deflection so that total load can be calculated.

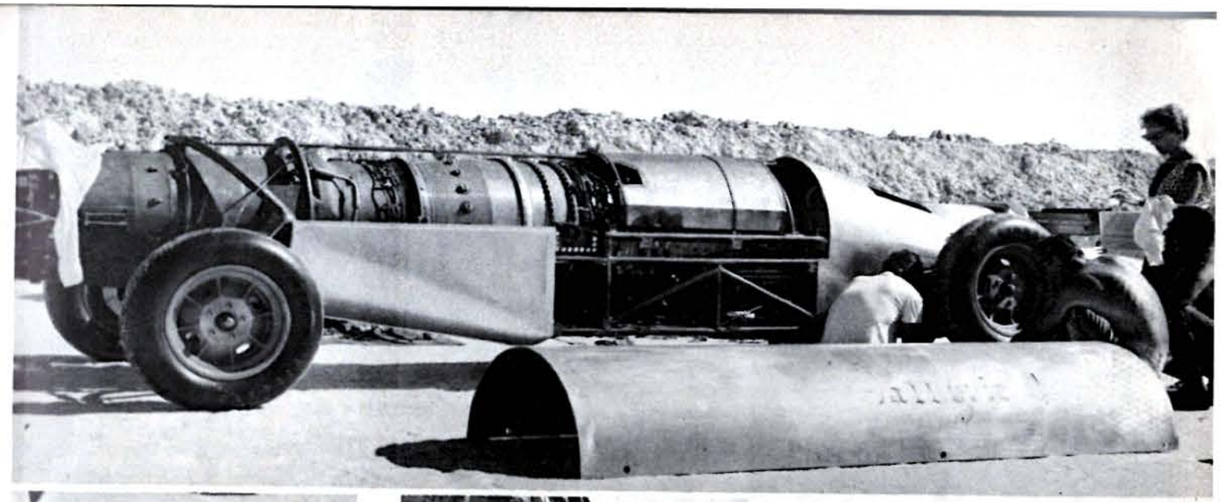
At the rear, the wheels are carried on a 350-pound steel arch that circles the top of the engine and acts as a huge spring, also deflecting 1½ inches in its static state.

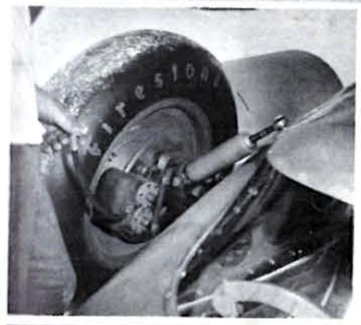
As an example of the care that went into the car, the wheel fairings had to be made dead accurate. The least deviation in shape or mounting would cause them to act as steering fins. They were formed of aluminum and filled with plastic foam to prevent high speed flutter.

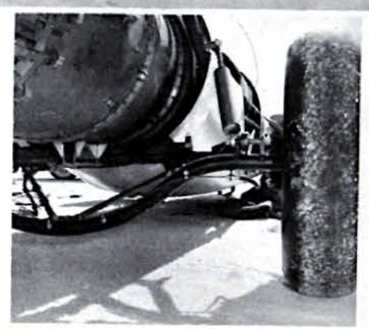
Breedlove has engineered devices and gadgets into the car for which the average jet dragster builder would have little use, but they indicate the thoroughness of the car's planning. A kill button on the steering wheel, which he hopes to push at the car's 565-mph design speed, automatically shuts off the jet, and jettisons a fiberglass canopy in the tail which pulls out 20 feet of nylon line. The line actuates dual solenoids which fire powder charges behind the braking parachutes. If this elaborate system should fail, he has a manual ring in the cockpit which does the same thing. He even has a built-in fire extinguisher to flood the engine with foam.

Two other jets currently running, Bill Fredericks' Valkyrie I and Romeo Palamides streamliner, Untouchable, represent the first time that jets have competed side by side on a drag strip. Fredericks, a youthful Woodland Hills, Calif., hot rodder, built his J-46-powered Valkyrie for Bonneville, but insurance difficulties prevented him from making any formal runs during his 1962 salt appearance. He did manage to fire the engine briefly on the highway and again unofficially along a practice area of the salt. The car represents simplicity in its construction, but its aluminum shell gives it far better aerodynamic qualities than either of the Arfons' jets. He is currently campaigning the Valkyrie on drag strips as is Palamides, a long-time rodder from Oakland.

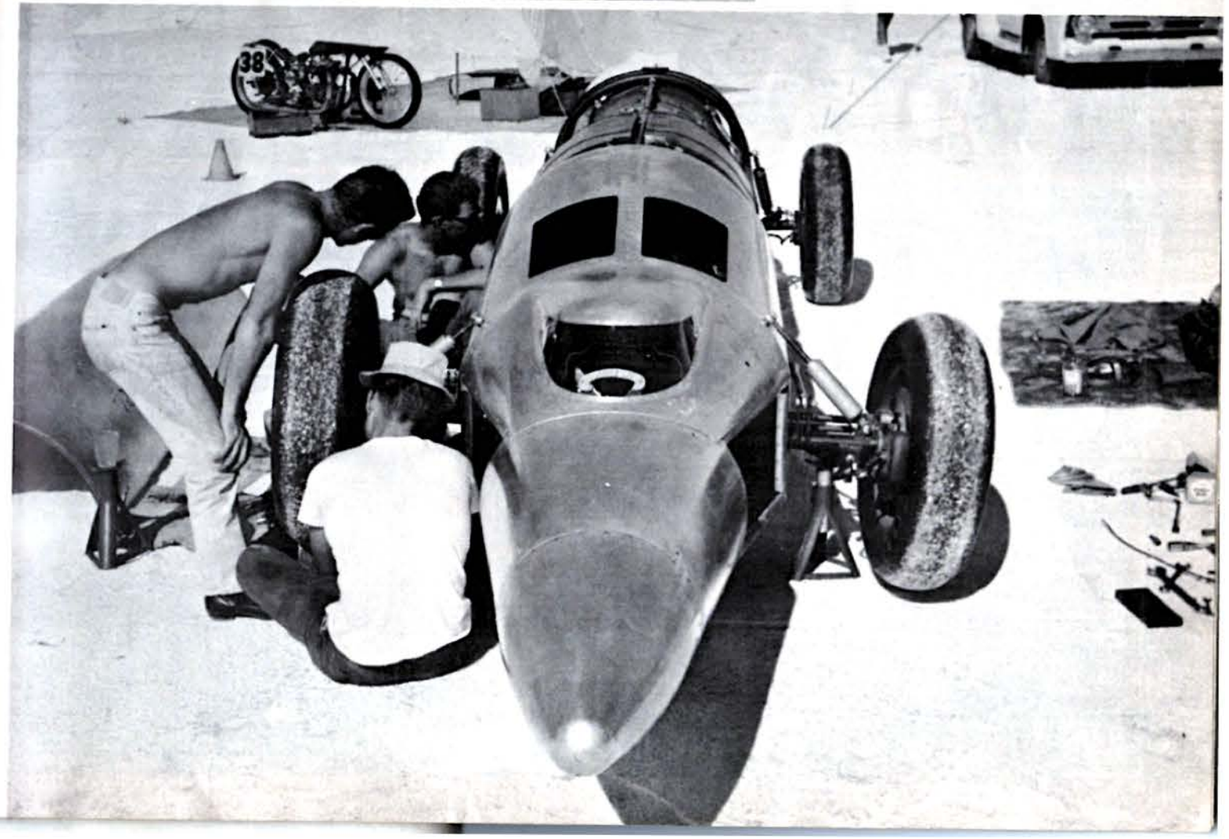
The way that they have pulled crowds and attention leads us to believe that the jets are turning out to be something more than a drag side show. What happens next depends upon the ingenuity of the pioneers. We only hope that inexperienced hands don't begin playing with this extra potent machinery before it is fully refined for hot rod use. —PHR







Bill Fredericks' Valkyrie I was designed for Bonneville use. Insurance troubles kept it from ever trying the Salt and have turned it into a dragster. Driver Gary Gabelich has proven to be a fine drag pilot.



The greatest CHEVY Engine

Ever since overhead valve V-8 engines began to dominate the hot rod scene, one particular engine has outranked all the rest in virtually every department. That engine is, as every car enthusiast knows, the great Chevrolet 283-cubic-inch V-8. After nearly 10 years of hot rodding development, it has reached a point of performance refinement that gives it a clear and unchallenged all-purpose status in the field. It is the ranking engine in all types of competition machinery at the drag strips, and is equally preferred among those who create vehicles primarily for the street.

How long this condition will continue cannot be predicted. One set of circumstances that insures its position for a prolonged period, however, is the vast collection of highly specialized speed equipment that has been designed and developed specifically for the 283.

Obviously, with the 283 engine so superior and such a universal favorite, outstanding individual 283 engines of exceptional reputation are numerous. There are 283's in vehicles that hold many performance records. Others are recognized for the fine workmanship that went into them. Still more have become regionally famous as show engines and dress up many fabulous displays.

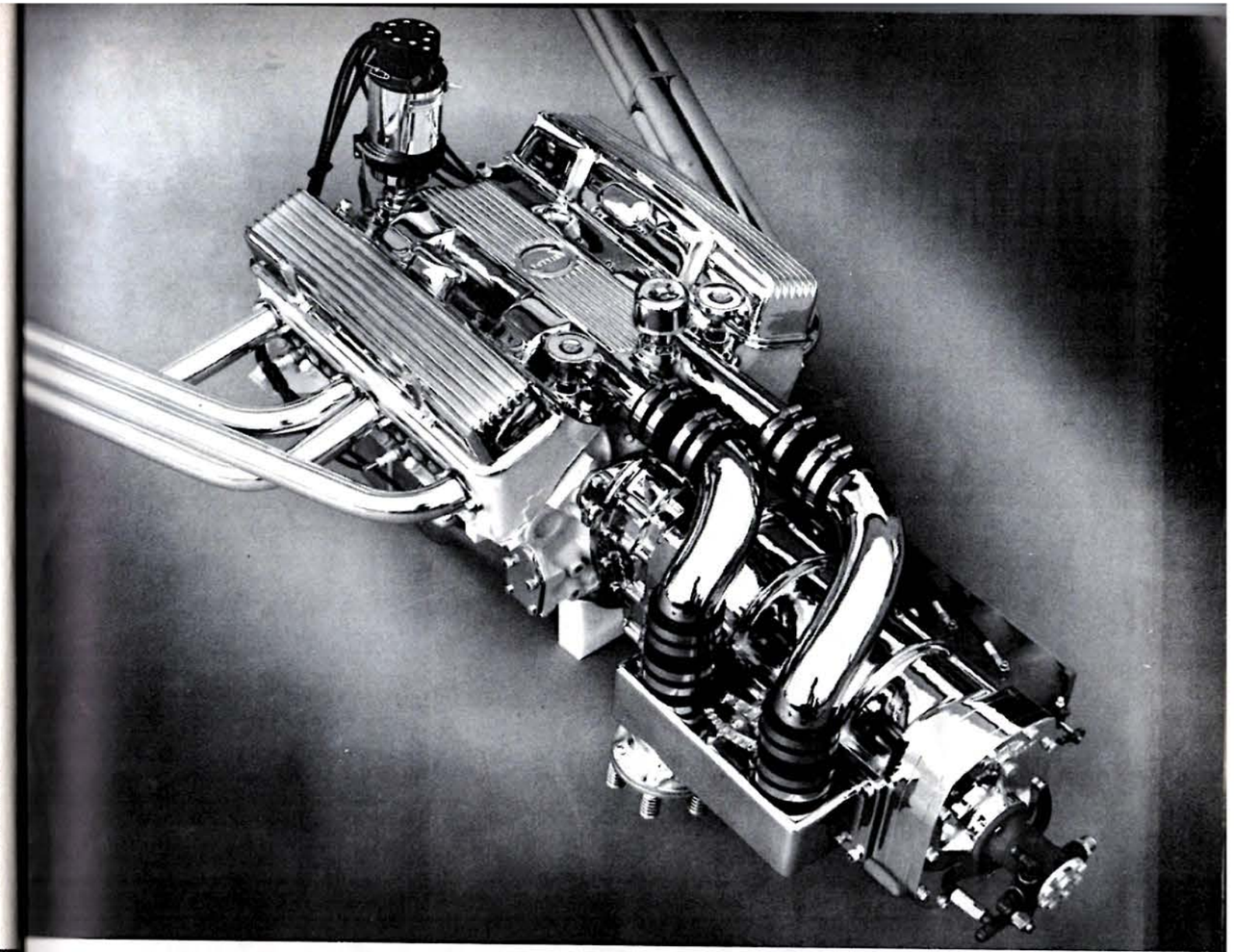
The engine of the 283 design that appears on the front cover of this issue of POP ROD, and shown in added detail on these pages, is one so outstanding that it holds the coveted honor of being a top powerplant in all of these departments. The engine is the one that has been the driving force in the famous Mooneyes dragster on many occasions, and occasionally in the Moonbeam sports car. It has been a record holder at the drag strip and at Bonneville. Currently, it is in a kind of retired status — after having been used by Revell to duplicate as a plastic miniature model and it is now on tour in car shows as a major display.

The Mooneyes engine is, of course, the creation of Dean Moon, the famous manufacturer of speed equipment bearing both his name and that of Potvin. As it is fitted out, the engine is made up chiefly of his speed equipment units, and the vehicle was used mainly by Moon as a kind of rolling laboratory, as was reported in the November issue of POP ROD.

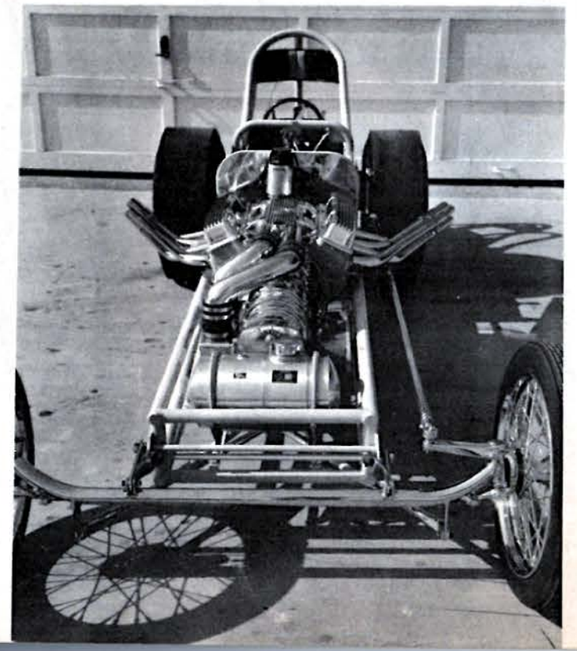
During its campaign in competition, Moon's engine established many performance records in gas classes in the 1320 distance or the quarter-mile, and in straightaway top speed runs at Bonneville. Top mph has been 164, while the best elapsed time was 8.97. Salt flat runs resulted in a spectacular 202 mph. In the Moonbeam sports car, the engine holds a top time of 159 mph in the half-mile drags at Riverside Raceway.

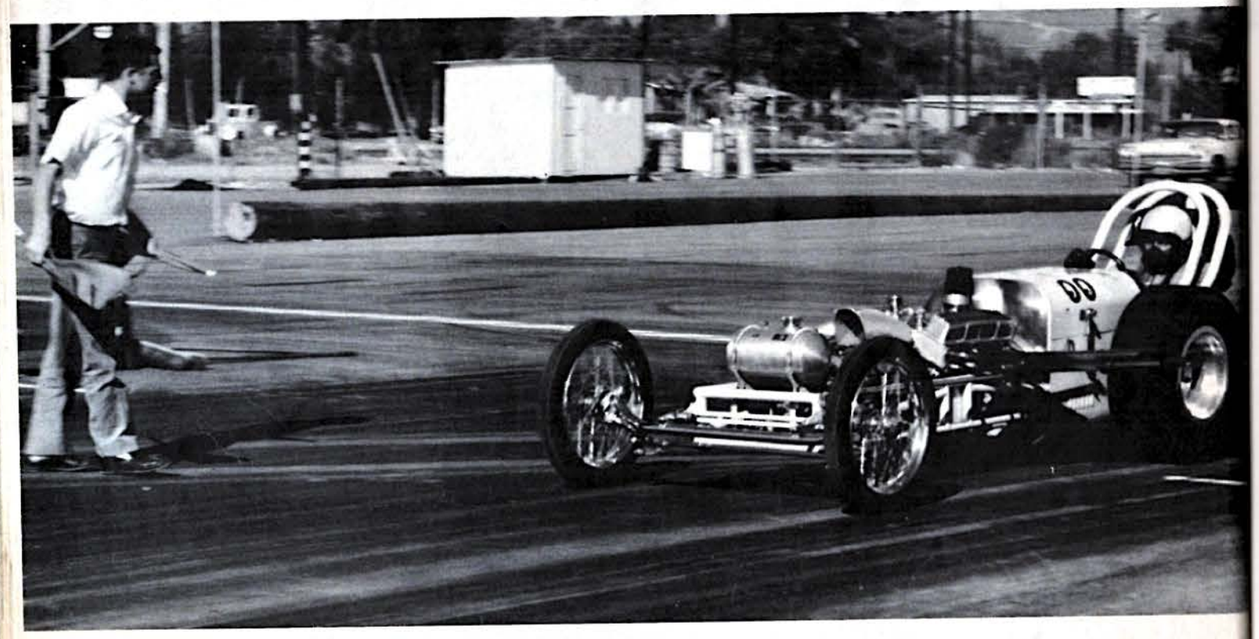
The glittering exterior of the engine reflects the beautiful workmanship in the highly functional interior. The layout, with the crank-driven blower, makes the appearance even more unique and attention-getting.

All of which makes every tribute to this particular engine even more deserved. The combination of the great Chevrolet 283 design, undoubtedly the most important engine in the history of hot rodding, and the genius of Dean Moon is an event which does not happen often.



Glamour shot of engine above in its latest show display condition. At right below is frontal view of the Mooneyes dragster at the Moon speed equipment plant where it was created. Left below is Dean Moon in cockpit he occasionally occupies.



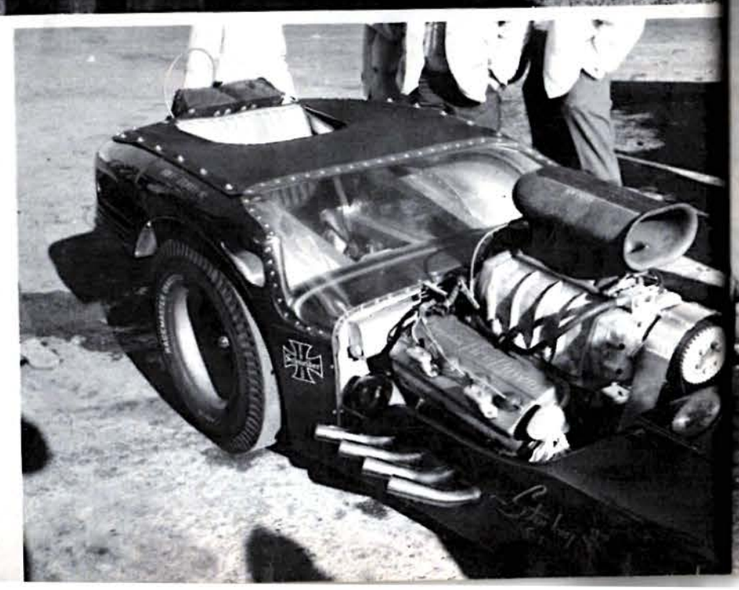


Mooneyes at the Pomona, California drag strip. Dragster holds many records in gas classes, using the outstanding engine developed by Moon.

Gallery of GREAT CARS

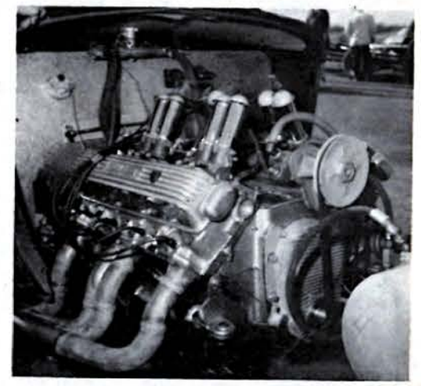
THE ANIMAL

This is without question one of the most eye-catching machines to make its appearance on the drag strips during 1963. It is the A competition coupe of Bill Traylor, of Wichita, Kansas. Traylor, who drives his car himself, turned out the power train, chassis and running gear in his own speed shop. The body, aluminum in front and sheet metal in the rear, was fashioned by Dave Stuckey, in his Kansas City custom shop. The engine is a 400-inch Chrysler, with a Schneider cam, C&T crank, and a 3.30 Ford rear end. Wheelbase is 104 inches, weight 1470 lbs. and top time on fuel is 175 mph, ET 8.70. The Bantam body, chopped 11 inches, is candy tangerine.



NARROW TRACK

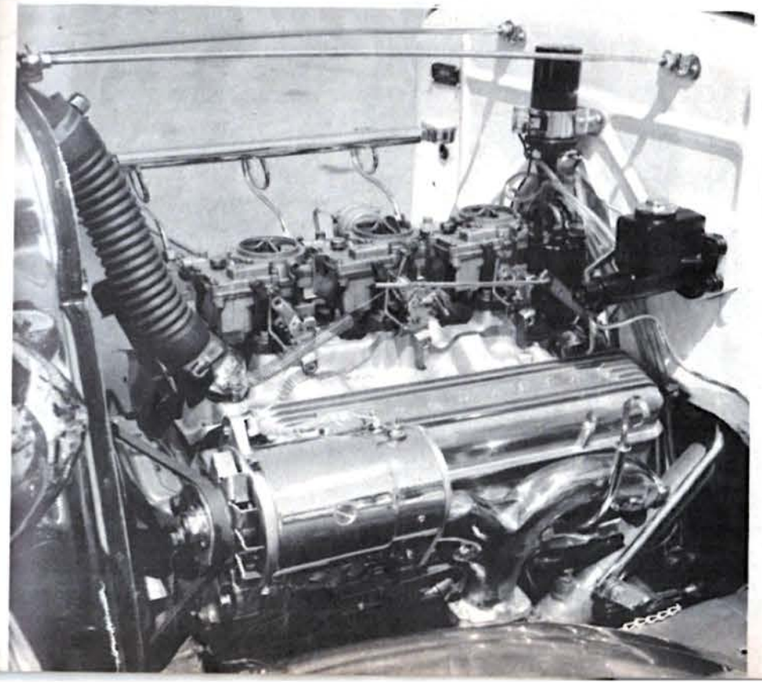
Approached from the rear, this roadster gives every indication that it was designed to ride on narrow gauge railroads. Ray Carcelero and Bill Eddy of Lakewood, California designed and built the chassis for this hot one. It is powered by a 303-cubic-inch Olds engine with Hilborn injectors, Jahns pistons, Isky cam, Vertex mag and Cord rings. A 1941 Cadillac side-shift box sends the power to an Olds rear end. In its early days the car was limited to a diet of gas and it ran a top time of 122 mph in 11.50 seconds. Its owners are now ready to feed it fuel and some fine runs are due.

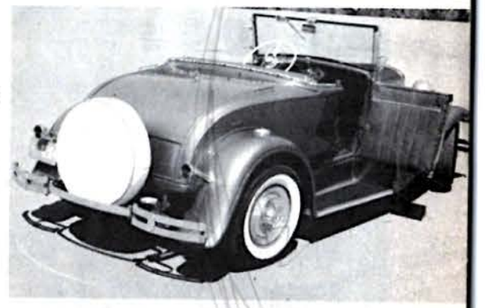


One-of-a-Kind Roadster

Neither 1930 Ford roadster bodies nor Lycoming four-cylinder air-cooled engines are uncommon but in combination they are so rare as to be almost without precedent. That's the car-and-engine team, however, that Jim Rotta elected and his achievement is shown here. The unique powerplant has a 4½-inch bore and a four-inch stroke for a total of 277 cubic inches. And it runs a Howard cam and Jahns pistons. Its times to date are 107.26 mph, with a 12.46 ET. Lycoming engines of this particular style are normally confined to aircraft of the light personal type. Many years ago, however, Lycoming engines were stock in the great Cord classics of the 1930's. But, again, they were vastly different in layout, if not in engineering principles, from this aircraft version.

PURE ROADSTER



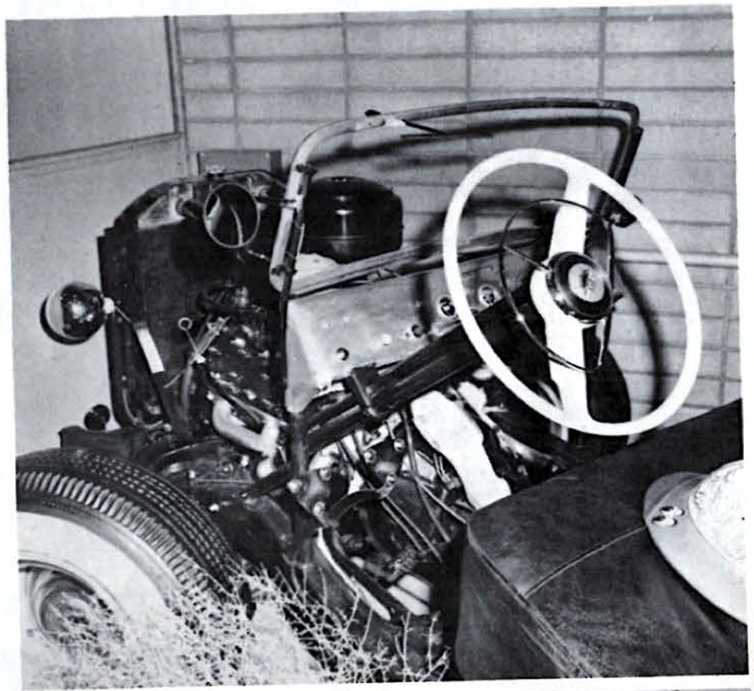


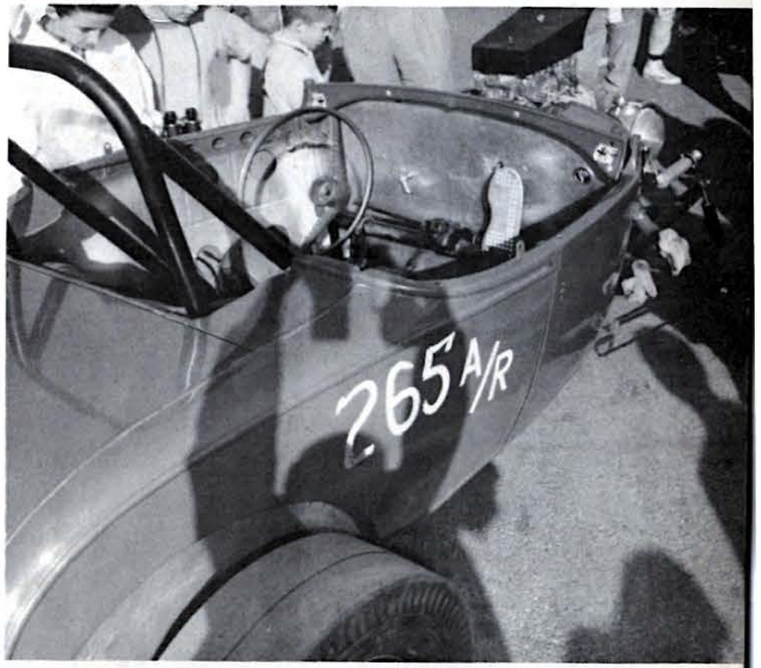
Charles Rothenberger of Allentown, Penna. is a draftsman by trade and he has applied the careful attention of that profession to the building of this beautiful street roadster. The 1930 Ford body shell and chassis have been retained in most of their original configuration. The engine is a 283-cubic-inch '57 Chevy with a Duntov cam, Offy manifold and three '26 carbs. Of interest here are a chromed fuel block and pressure gauge. The latter was originally meant for use in a distillery.

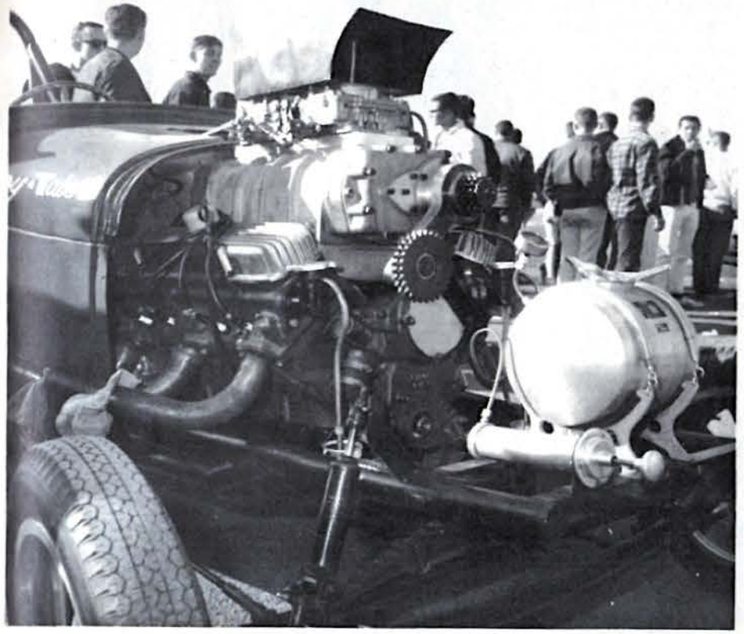
—Woody Higgins

Great for SHOW, GO, STREET, STRIP and SAND

Very few, if any, rods can claim to be such all-purpose vehicles as the unique creation shown here that is the personal project of Jim Hanson, of Riverside, California. His machine is, at one time, a dune buggy, a drag strip competitor and street transportation. What's more, the workmanship is of such high order that the car qualifies as an outstanding show display. The basis for the design is a '50 Ford chassis and flathead V-8. Other gear, such as the dual rear tires, is aimed at making the machine a good off-the-road champion. Drag times are a respectable 98.83 mph and 14.56 E.T. Hanson says the whole deal cost him less than $200. What more can you ask for that kind of money?

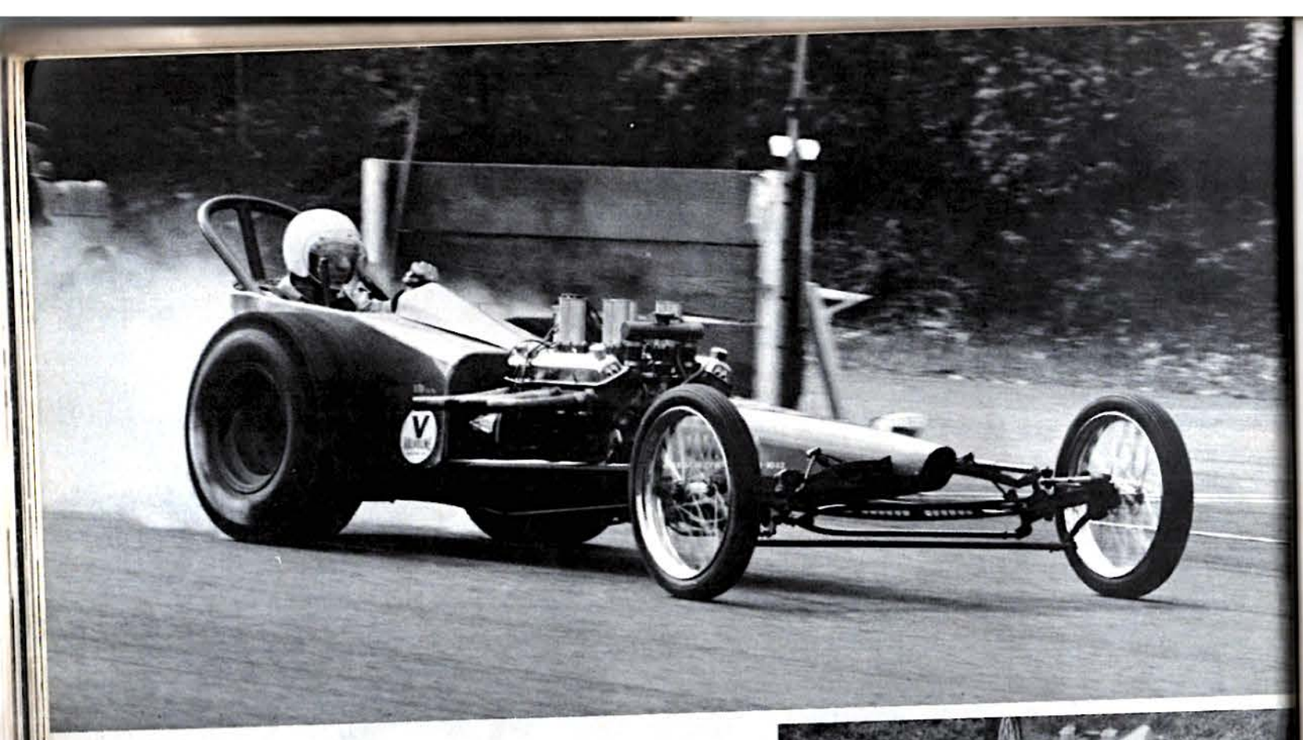


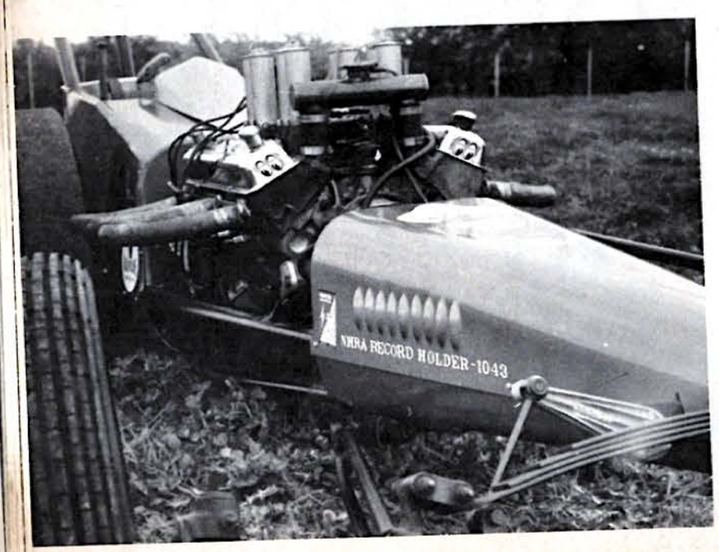




ALL BUSINESS

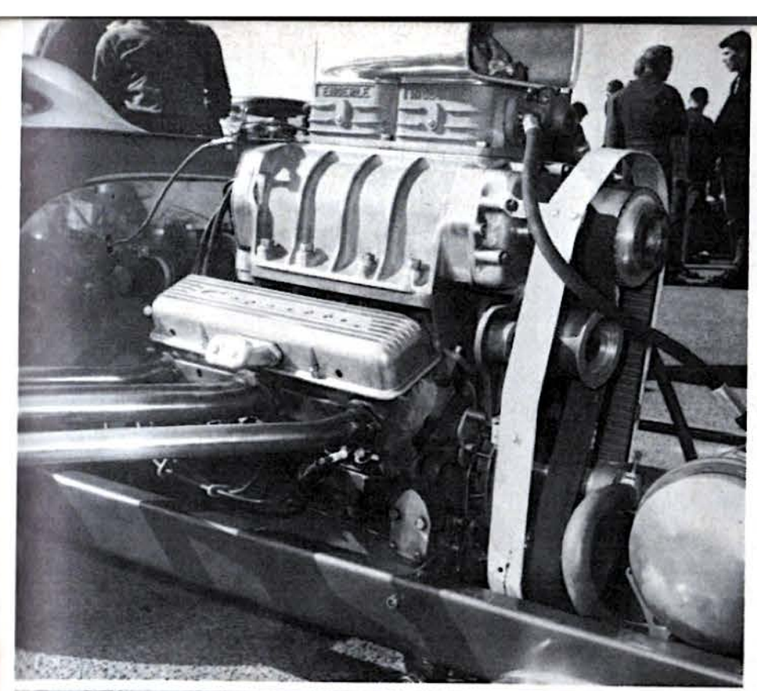
The California team of Hoy and Taber approached the building of their drag strip entry with a real no-nonsense attitude. Strictly a competitor, the red-bodied roadster sits on a chassis fabricated by the builders. Dual four-barrel carburetors pump fuel into the big GM 6-71 blower. The driver is encased by a mighty healthy roll bar as he guides this charger with a Corvair steering wheel. Mag wheels with Pirelli tires are up front; healthy re-cap slicks take the back load.





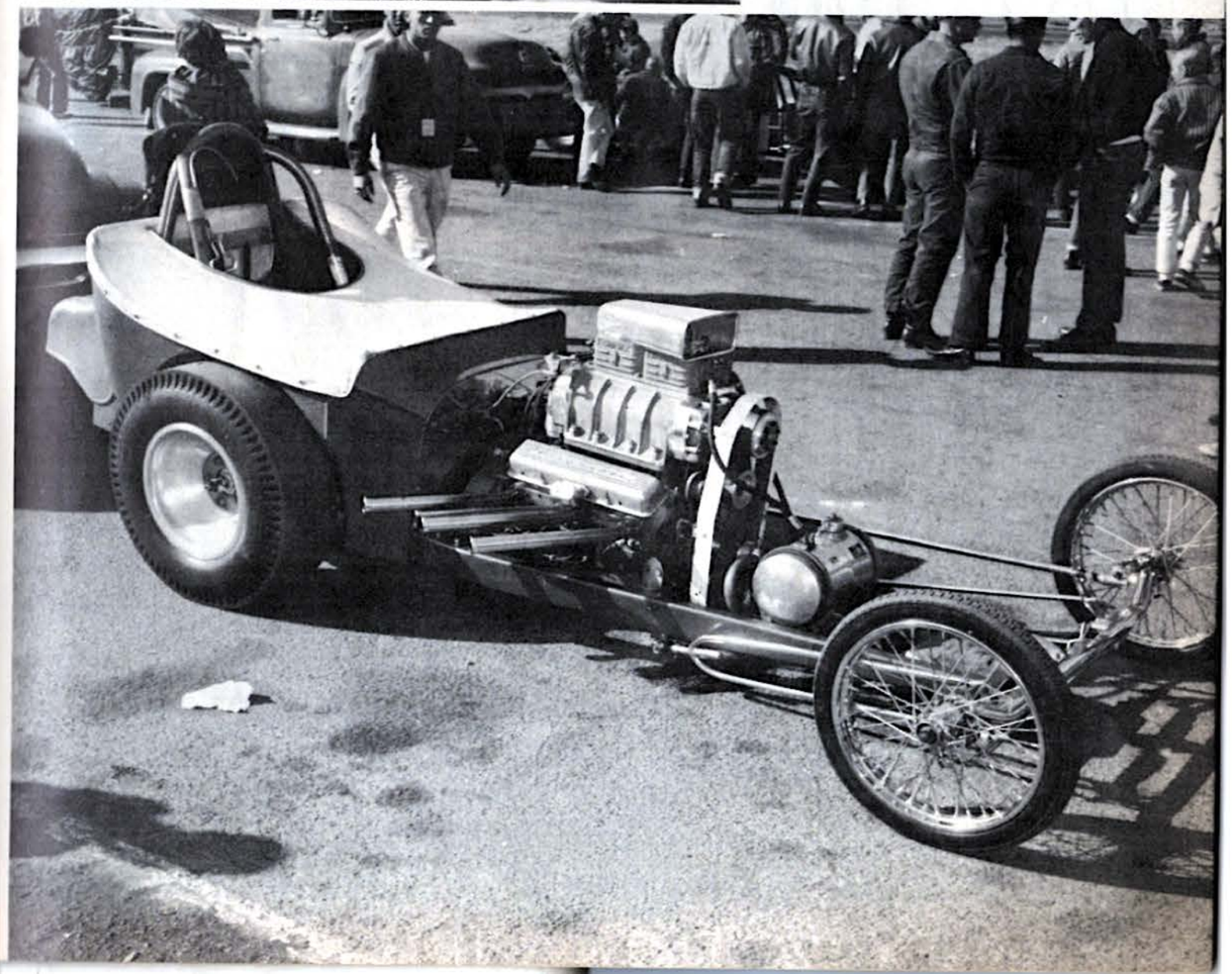
. The Spring City, Penna., trio of Walt Weney and Ed and John Bliss have built many a moving machine before, but never with as much success as this '56 Chevy-powered C dragster. One year in the making put the S & W rail at the top of its class with an ET of 10.83 at 132.74 mph, the winning time at the NHRA Nationals. Since then they have bettered the mark with 137.82 mph in 10.21 seconds. They started with 270 cubic inches, added a little balance, bored it to 30,000 and added oversize valves and Jahns pistons. Other features are Hilborn injection, Schiefer clutch, flywheel and pressure plate. The 100-inch wheelbase dragster has a Crane cam and a stock Chevy box twisting a 456 Olds rear. —David Lee Mullin

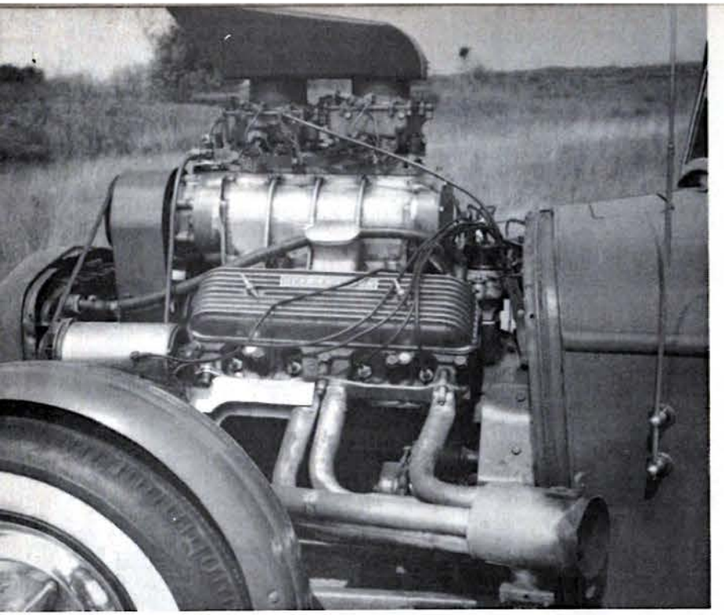
Look "C" AND C

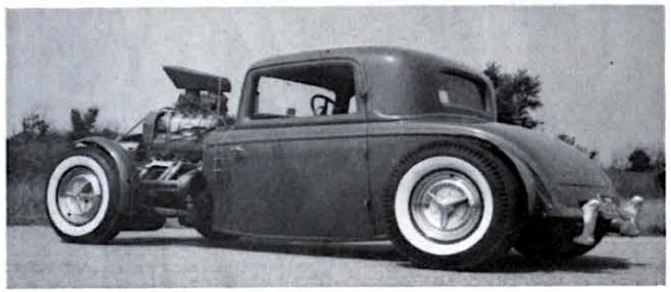


FAST GLASS

Now everyone knows that Corvette engines go hand-in-hand with fiberglass bodies, but here is a combination of those two elements that looks quite unlike the current crop of Stingrays. The fiberglass body in this case is LaDawri's new version of the Ford roadster. It shapes up the Elgin Freeman drag contender that is powered by Chevrolet. Freeman and his father did the building that sees Enderle injection mounted on a 6-71 GM blower.



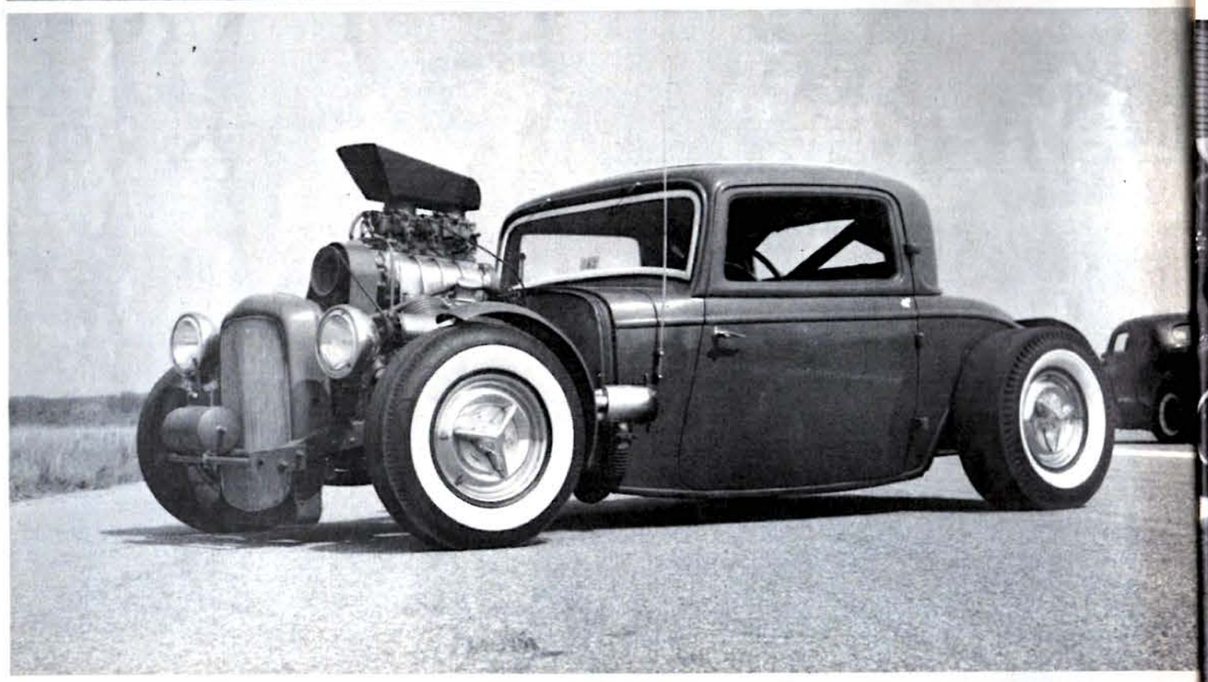




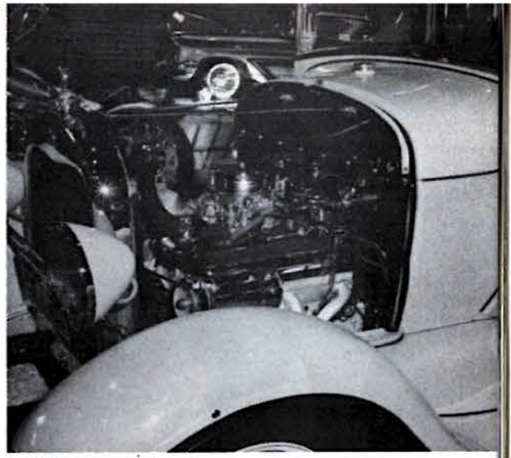
Charlie Hiller of Mattapoisett, Mass. put together this "Economy Special," as he likes to call it, to run the popular New England Street/Coupe drag class. Believe it or not, he does operate the deuce coupe on the street, when his gas tank and pocketbook can take it. The chassis has been "C" sectioned in the rear with a 9 3/4-inch channel job to the body. The mill is '51 Olds with a displacement of 324 cubic inches. Two '55 Olds pots feed a 6-71 GM huffer. The blower drive and manifold are Cragar. Heads are of the 1955 Olds variety to take advantage of the larger valves. The cam is by Weber while the plugs are fired by a Rev-Pol distributor. Best time turned in so far is 109.75 mph in 12.86 seconds.

—Ed Sarkisian

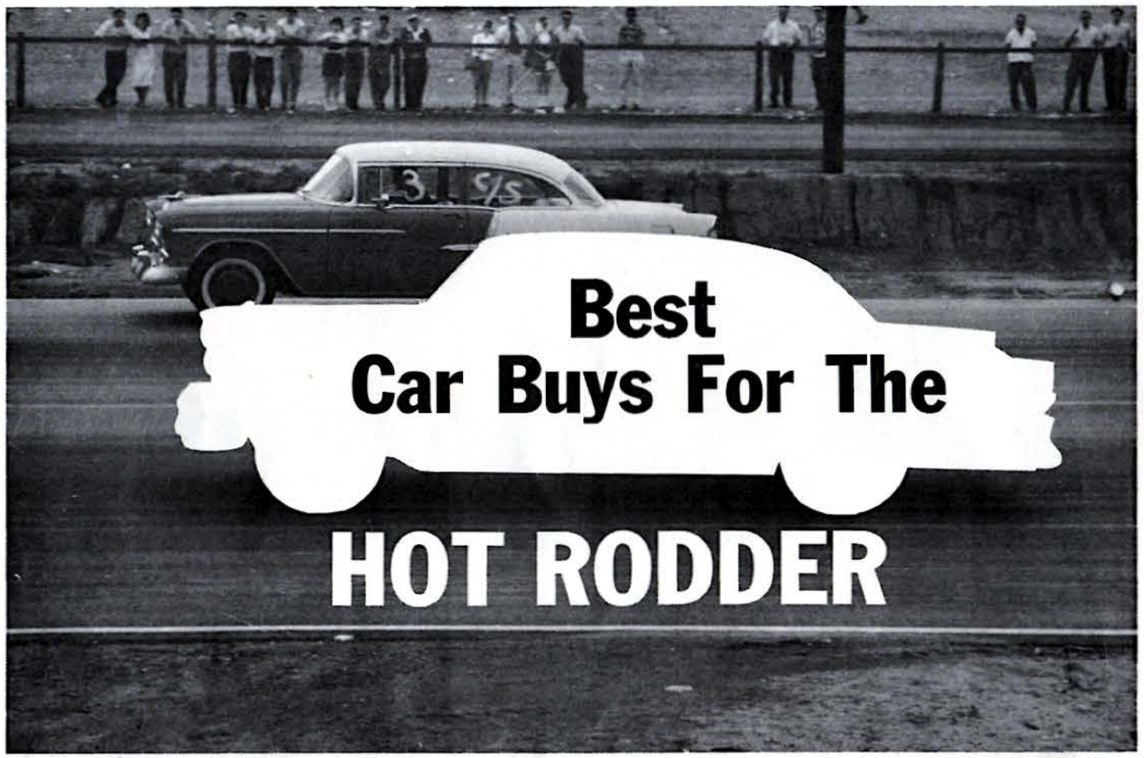
Big BAD COUPE



Bob and Carl Shrode, of Burbank, California, have their individual car projects within the family. Bob chose to go along with the yellow '29 Ford coupe, shown here, while Carl went for the same color, make and model year but in the roadster body style. The two machines, viewed together, form a terrific combination. There is one other major difference than the body type. Bob fancies the Chevy as an engine in his coupe, whereas Carl went for the traditional Cadillac V-8. It would be difficult to argue that one choice is better than another, in these cases.



ROADSTER AND COUPE TO MATCH



Best Car Buys For The HOT RODDER

BY JERRY McGUIRE

Dollars aren't the only key to fun in drag racing. Here's a guide to low cost used cars that offer real rodding potential

YOU don't have to go in hock up to your ears for a brand new car to have a ball on the drag strip. With the mushrooming popularity of stock car competition the various drag racing organizations have come up with arm-long lists of stock classes that give a fighting chance to every make and model of American car back at least 25 years. You can have as much fun fighting it out for the L/Stock trophy in a '50 Ford as you can running Super/Stock with a 409 Chevy. The race is the thing — not how quickly you get there. Furthermore, the way most of the classes are set up for modified drag strip machinery, your older cars actually have an advantage — when fitted with modern horsepower. We'll find out why later.

Anyway don't ever count out active drag racing participation because you can't afford to invest two or three thousand in a new car. Low-priced used cars are just as good. You just have to pick the right one. Here are some ideas:

Let's talk about stock classes first. Remember again that there are classes for a very wide range of weight/HP ratios (the NHRA system runs from 8.69 to 28.00 lbs./hp and over), and the divisions are quite close. This means you've got a good chance to win trophies with almost any combination of shipping weight and advertised HP prevalent in the U.S. passenger car field. It does not have to be a late model car. In fact in many cases the earlier models have a slight advantage because the factories weren't so optimistic with their HP ratings years ago. Obviously the more true HP you can develop in relation to the advertised figure, the better off you'll be in classes that are based on advertised HP. At last fall's NHRA Nationals at Indianapolis a 1939 Buick coupe won L/S, and a '54 Studebaker (120 hp) won K/S. Don't be afraid of the real old cars in stock car dragging.

Old cars are attractive for another reason: You can buy them for very low prices (usually under $200) — and this might make it practical for you to build the car up specifically for drag racing. You wouldn't drive it on the street. You'd tow it to the strip with your everyday car. The drag job could be tuned razor sharp for competition, and you wouldn't be fouling up the tune by slow street driving. You could take advantage of all the legal modifications in the stock classes, and wouldn't need to compromise to get smooth street transportation. You could possibly have a national winner for an investment of less than $500!

So which specific models in the "old car" category? Consider models, say, 1954 or earlier. The first thing you should look for at all times, of course, is an engine that seems to give unusually good horsepower and torque at the clutch, in relation to its advertised ratings. I think all Ford and Mercury flathead V-8's would fall in this class. From the time this basic engine was introduced in 1932 it was one of the quickest-accelerating in the U.S. passenger car field, bar none. And Ford engineers never went overboard on ratings. The postwar models, with the 239 and 255-cubic-inch blocks, have always been quite successful in their drag strip classes.

The various in-line flathead engines (Olds, Dodge, Pontiac, Plymouth, Ford 6, Studebaker, etc.) never did much on the drag strips. By the time drag racing got well rolling in the early '50s they were pretty obsolete on breathing. But some of the early in-line overhead-valve engines — especially the Buick straight-8 — have done well. These respond better to fine tuning. You might consider one of these if you're on a shoestring. Late prewar or early postwar models are still plentiful. Keep in mind the performance of Paul Hatton's '39 Buick at the recent NHRA Nationals. His winning times were 17.98 e.t. at 75.37 mph! Not bad for a 23-year-old car.

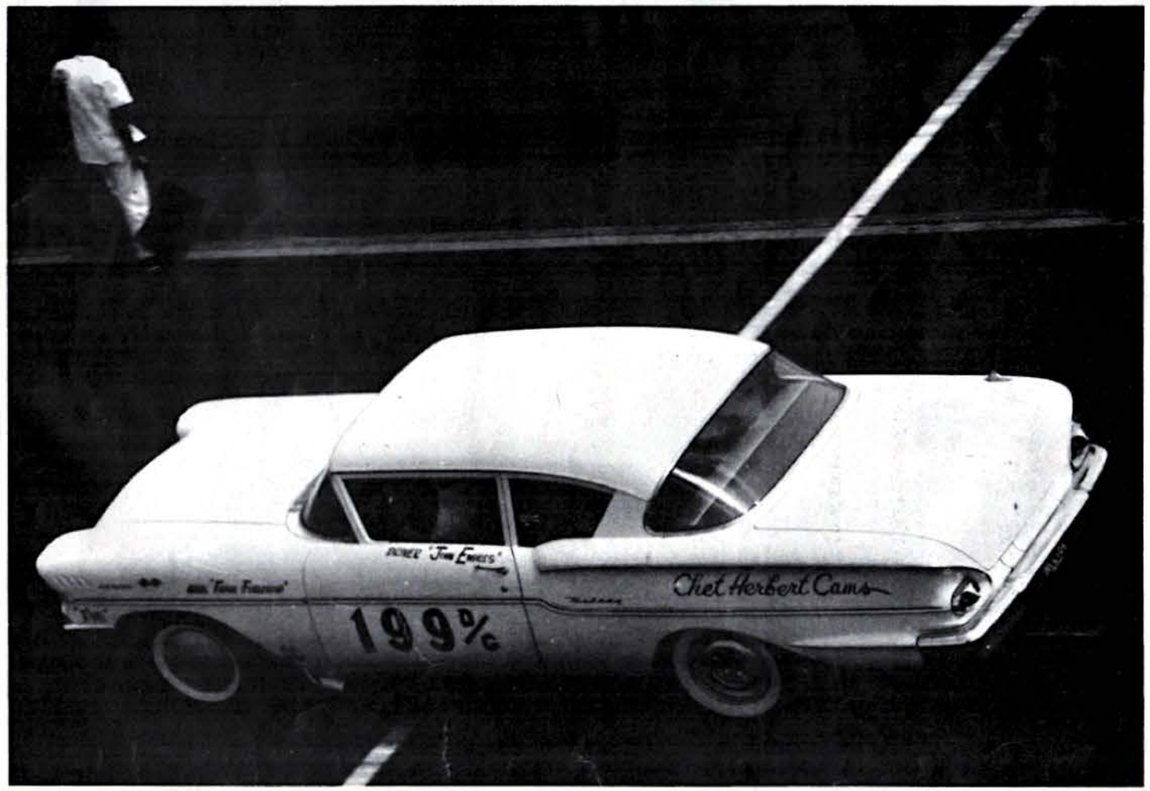
Paul played it sharp on the selection of this model . . . and we might do well to analyze his reasoning. He knew the straight-8 Buick had potential. But most of the prewar models with the big 320-cubic inch engine (141 hp) fell below the limit of 28.00 lbs./hp for the L/S class. And most of the Special series with the 107-hp, 248-cubic-inch engine were so far over the limit that he would be lugging unnecessary weight. So he looked in the specification tables and found that the little two-passenger business coupe with the 248 engine had a shipping weight of 3390 lbs. — and this figures out to 31.7 lbs./hp with the 107-hp engine. This is the combination he's using. And his trap speeds of 75-77 mph suggest that he's pulling between 130 and 140 honest horses from that old long-stroker! It helped matters, too, that Buick supplied gear ratios of 3.90, 4.18 and 4.44 for that axle.

Don't count out the old cars!

Some of the early short-stroke OHV V-8's have been very successful in the lower stock classes. This was before the horsepower race, and Detroit was strictly Sunday school on power ratings. Most successful were the lighter models with relatively small-inch engines of moderate HP, which could run in the bottom K

Late Pontiacs put out a high true hp figure in relation to their advertised rating, thus are very competitive in stock classes which are based upon the advertised horsepower figures.

The 1958 Chevy was fairly light and had improved trailing-arm suspension that eliminated wheel-hop and axle wind-up. Appearance of the 348-cubic-inch V-8 that year meant much.

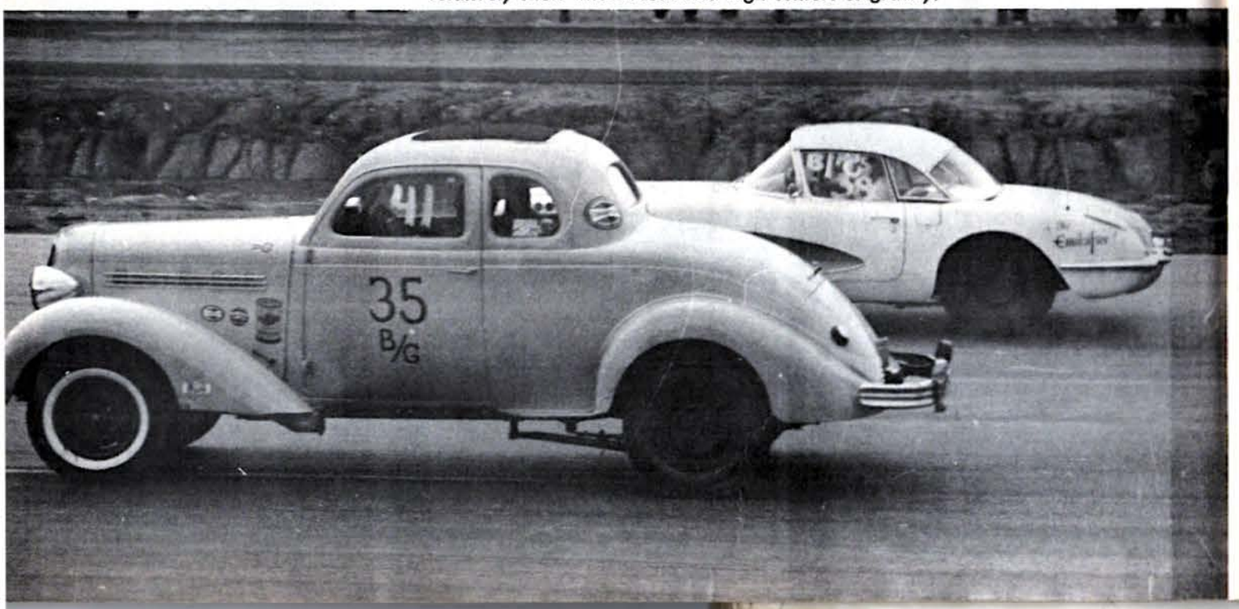


and L/S classes. These would include the '49-'53 Oldsmobiles with the 303-cubic-inch engine, '51-'54 Studebakers with 232 cubic inches and 120 hp, and the early Dodge V-8's with 241 cubic inches and 140 hp. Any of these engines can be made to exceed their power ratings with minor tuning (and legal stock modifications like open exhausts); the cars are light enough to get off the line — and the modern short-stroke engines respond readily to the finer tuning that it takes to win the big ones. (Some of the old long-stroke engines had so much internal friction and low revving ability that you were licked almost before you started.) The early Olds Rocket V-8's have been especially tough in the low automatic transmission classes. The four-speed HydraMatic, with that terrific 3.82-to-1 first gear ratio, gives an awful belt off the line when you build up a little static thrust with your foot on the brake. On later models with much more power and torque this isn't so much of an advantage, because of the traction problem. But in those low stock classes the old Hydro is murder.

Now, of course, there's no use kidding ourselves: An old car is an old car. It's OK if you're just going to use it for the drag strip. But probably most of our readers can only afford to own one car. If they're going to do any dragging they have got to drive it on the street too. Most of you probably won't be interested in living every day with a 10 or 15-year-old car. They're noisier, ride rougher, don't have the modern efficient heating and defrosting systems — and they're bound to cost more to maintain. If you want to step up into a more modern car there are still dozens of intriguing possibilities for promising drag strip machinery.

The 1955 model year is a good place to divide "old" and "modern" cars because that's the year Chevrolet brought out their now-famous OHV V-8 engine. Right from the start the performance of this engine was so hot that it was almost as if Chevy engineers had designed it for competition. It weighed 100 lbs.. less than most of the other late OHV V-8's, breathed like crazy through big valves and ports, and the light reciprocating weight of the unique ball-joint valve gear allowed useable shift points up to 6000-6500 rpm with no sweat. This basic engine has since been increased in displacement from 265 to 283 to 327 cubic inches, and almost every imaginable type of performance equipment has been issued for it. Horsepower ratings vary from 162 to 360. It will fit in any number of stock classes with various bodies, years and HP ratings. And it's been a pretty consistent winner in all of them. One big reason: The actual HP output at the clutch, as you get the engine from the showroom, is usually within 15 or 20% of the advertised rating — with no special tuning or modification. This is better than any other American passenger car engine. And when you do a little tuning you can go 'way over the rating with no trouble. A combination like this is pretty hard to beat on the drag strip.

So if you want reasonably modern street transportation, in a package that still has a good chance in the drag strip stock classes. you could do a lot worse than a '55 or later small Chevy V-8. Your class will depend on the body type and equipment on the engine. This can



Older cars of the 1930's are extremely popular Gas Coupes. Models such as the '37 Willys (above) and '35 Plymouth (below) are sought because of their relatively short wheelbases and high centers of gravity.

Hydramatic Oldsmobiles of the early '50's have been very successful in the lower stock automatic classes. That low 3.82-to-1 first gear gives terrific jump off the line in lower-powered car that doesn't have traction problems.

be readily juggled by merely swapping engine equipment. For instance a '56 Chevy Bel Air two-door with the 205-hp power pack engine would fall right in the bottom of class F/S — where it would have to run cars with somewhat better weight/HP ratios. By merely adding the Corvette cam and dual 4-barrel carbs we up the power rating to 225 hp, and jump to the top of E/S, where we'll be in a more competitive position. With a 1957 Chevy model you would have the choice of running the 265-cubic inch V-8 at 162 hp, or the new 283-cubic inch block at ratings of 185, 220, 270 or 283 hp with fuel injection and Duntov cam! There are dozens of possibilities.

A big factor in your choice of a used car for dragging is bound to be nothing more than money. What can you afford? Current used car prices of the above-mentioned '55-'57 series of Chevrolet V-8's would range roughly between $300 and $800. (This would depend a lot on condition, of course; a really clean '57 might run over $800.) But this will give you an idea of the range. Probably most young enthusiasts who have a steady job can afford to buy a car in this price range — though it will likely have to be their only car, so will need to be suitable for the street as well as the strip. If you can afford to go up to $1200 or $1500 you can get much more luxury and modern features in a two-year-old car. The drag strip potential is just as good if you get the right model and HP rating. (In fact, in one way the '58 and later Chevrolets are a better bet for the strip, because of the trailing arm rear suspension that prevents wheel-hop and improves traction.)

On the other hand some of our readers are high school students with part-time jobs. Many of them can't afford even $500 for a car. In this case your best bet is to go back to the oldies — the ones we talked about earlier. It's better to spend $100 for a 1950 model, and have a hundred or two left over to get it running good, than to shoot your whole wad trying to get the latest possible model — and then be pinched when you have to buy a few extra parts for competition (gears, headers, tires, etc.).

There are any number of other specific models we could mention here that have a lot of potential for the stock classes at the drag strip. Remember: Always look for the ones that seem to show a maximum of actual engine HP in relation to the advertised rating. All Chevrolet V-8 engines are noted along this line — and this includes the later 348 and 409-cubic-inch blocks. (Remember the 315 and 335-hp "police" versions of the 348 engine that dominated S/S in the '58 and '59 seasons?) The late Ford V-8 engine, that started life in 1958 at 332 and 352 cubic inches, has a lot of potential with the right combination of equipment. This basic engine has since been expanded to 390, 406 and now 427 cubic inches. It's a screamer . . . and some of those earlier '58-'60 models are available in the used car market at prices well under $1000.

Then there are the '55 and later Pontiac V-8 models. This engine is patterned closely after the small Chevy V-8, has the same lightweight ball-joint valve gear and big ports, and has also been noted for coming close to its advertised HP in showroom trim. There is also a long list of optional performance equipment that will allow you to swap HP ratings to get in a better competitive position if you want. In fact Pontiac offers more possibilities along this line than Chevrolet. On some of the later molels you can run eight or 10 different HP ratings by juggling equipment on one basic cylinder block! Another promising engine is the '58-'63 Chrysler "B" engine — available in displacements of 350, 361, 383, 413 and 426 cubic inches, in some models of all the corporation's big-car lines. This basic engine has always showed a high true output in relation to the rating. And it's been very successful on the drag strip, in spite of the fact that controversial body styling in some years has hurt sales among the young fellows. But for this same reason, used car prices on '58-'60 models of Plymouths and Dodges are very low. You can get real bargains with this basic "B" engine.

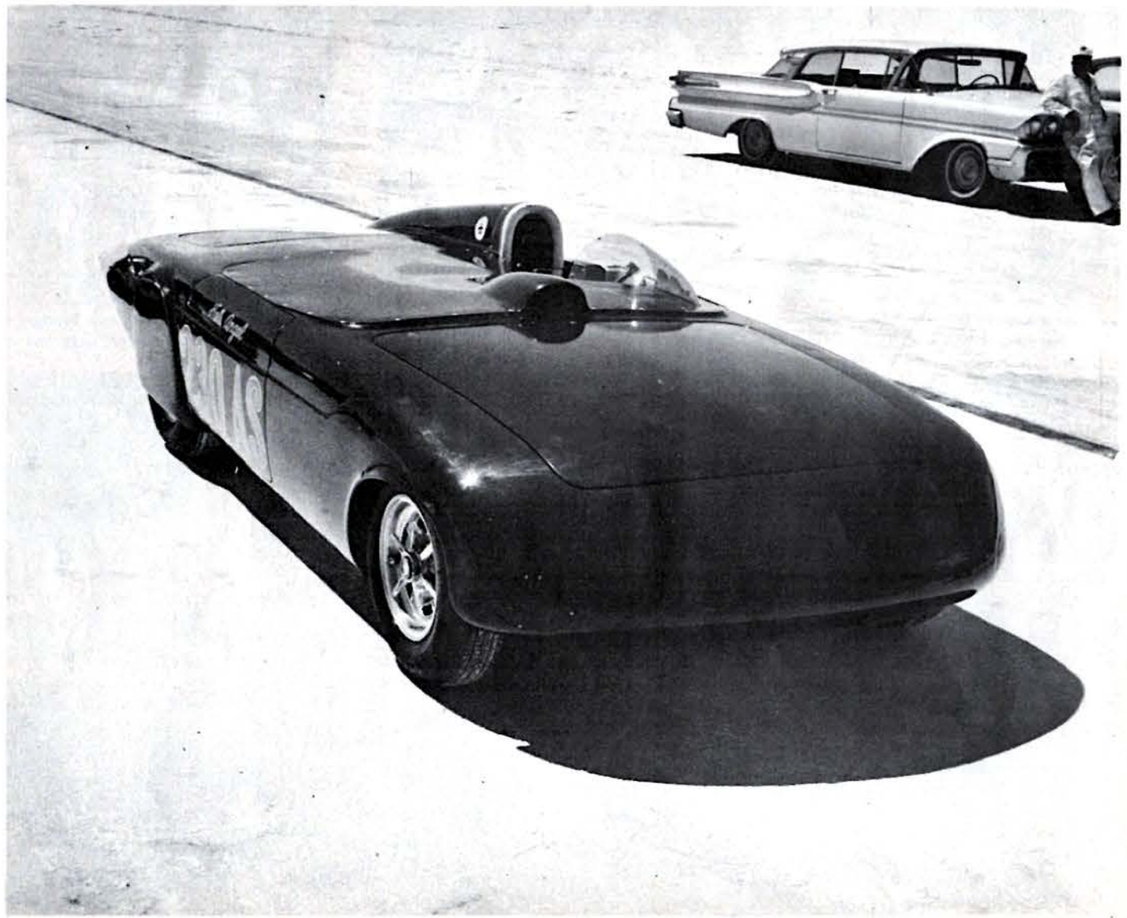
So much for the stock car classes. How about choosing a used car for one of the various modified drag classes? There's just as much fun to be had here as in the stock classes — in fact, competition is not as tight in many of them, and you can actually build up a trophy-winning car with possibly less investment than a late-model stock winner. The "Gas Coupe/Sedan" division is the big attraction, of course, because the rules requiring full fenders and upholstery, etc. leave you with a car that can be driven on the street. This opens the door to a lot of fellows who cant' afford to own two cars. Essentially this Gas division requires a full-bodied car, with full fenders, upholstery, headlights, radiator, full transmission, four-wheel brakes, conventional suspension, self-starting, etc. These rules certainly don't prevent you from building an out-and-out competition car to race in these classes . . . but at least you won't be at a big disadvantage

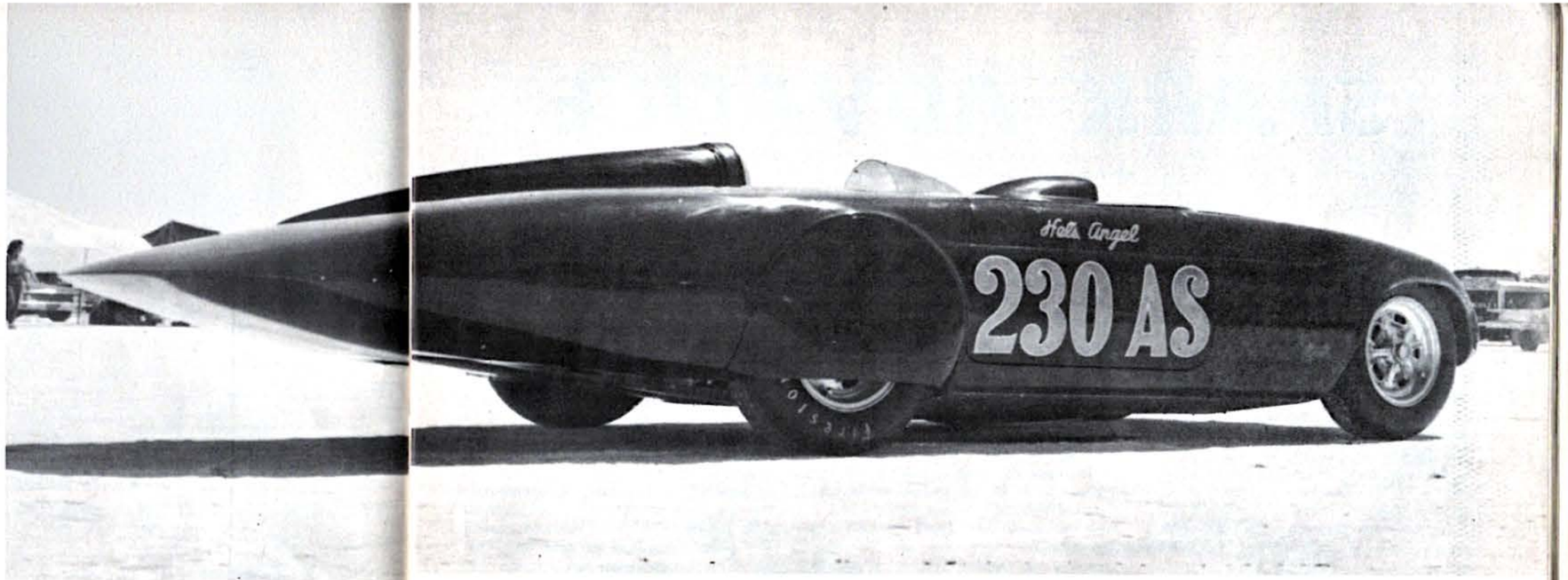
Continued on page 86

World's FASTEST THUNDERBIRD

New Orleans has the high honor of producing this sensational speedster

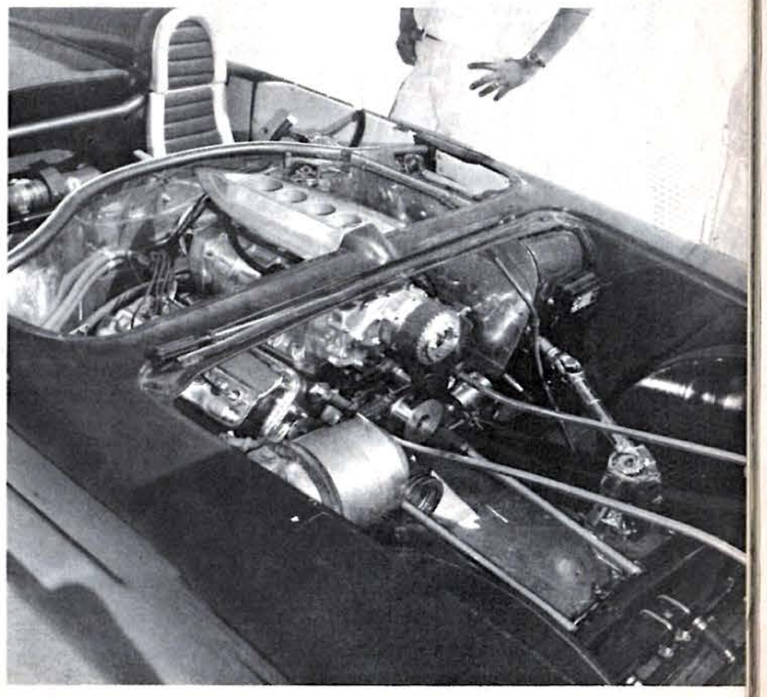
Original '55 T-Bird body was radically streamlined by Floyd Pfeffer. Wheel openings are designed for mounting drag slicks, but machine has not yet been run at a strip. Car is called "Hel's Angel."





Long tapering tail gives the 'Bird a nearly perfect streamlining. The wheels are Halibrand mags, turning on a rear axle with a 2.22 ratio. The front end setup is '34 Ford, while the gear box is from a '56 Thunderbird. Color of body is a deep maroon.

Cockpit, at left, is well finished, has gear lever almost aft of driver. Engine, below, is 452-incher from Chrysler 300, with Isky drive to GM 6-71. Crankshaft Company crank is stroked five-eighths. Hilborn injectors are used. Cylinder bore is four inches.



While there are many, many sensational T-Birds of virtually every style and speed, this one probably tops them all. It first appeared at Bonneville in the speed trials of 1961 — and then returned again a year later to surpass its terrific high performance. First time out its time was 219.898 mph. Its latest effort resulted in 228.988 mph! The T-Bird is the project of Knot Farrington, of New Orleans, Louisiana. And it unquestionably qualifies for the title of "the world's fastest Thunderbird." Nothing else has ever aproached this kind of speed. And it's very likely that "Hel's Angel," as the 'Bird is called, will be turning even quicker times in the future. Knot's wife is named Helen — which explains the origin of the car's name.

SPARK ADVANCE

Any modification of an engine requires changes in distributor or magneto advance mechanisms

By Barney Navarro, Technical Editor

FOR many years we have been hearing a lot about the virtues of hot ignition systems. The benefits derived from hot coils, special distributors and magnetos have been discussed so often that they hardly make news. Most commentaries deal with the size of the spark generated by these devices and the peak rpm at which they function. Though the delivery of hot sparks to the plugs is very desirable, the omission of other important specifications creates the impression that the distributor and coil are doing an exemplary job if they can produce a 3/4-inch lightning bolt at 8000 rpm.

Consistent miniature lightning bolts delivered at high rpm will satisfy the ignition requirements of some all-out-racing-engines, such as the Offies used at Indianapolis. In the same category, though they operate at lower rpms, we find the majority of aircraft piston engines. Although these two powerplant classifications are used to glorify a certain type of ignition system, such applications prove no more than the centenarian's claim that a quart of bourbon and six big cigars per day are responsible for his long life.

Offies and aircraft engines actually have the most easily solved ignition problem. All that is required of their magnetos is that they be dependable and provide sufficient spark over the full operating range of rpm. Since the manufacturing cost allowance is placed rather high for such applications, our modern technology is quite capable of producing high quality magnetos that fit the bill. Money solves the problem.

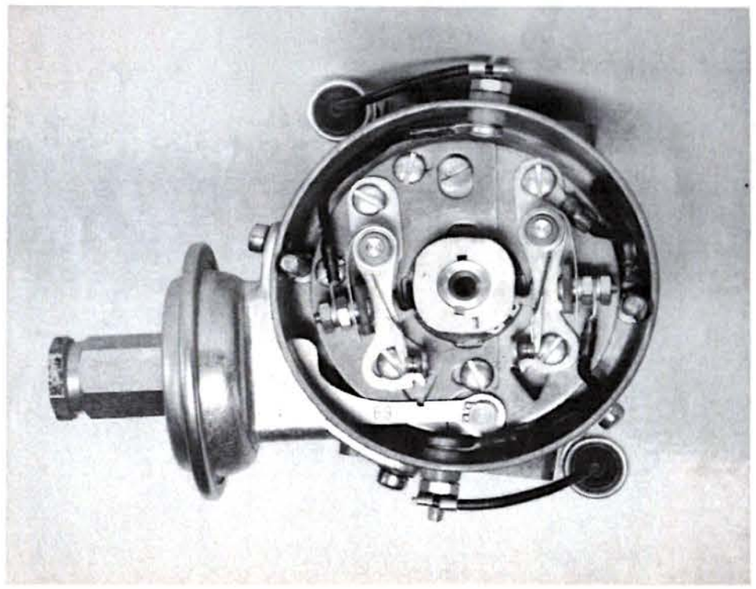
My apparent down grading of the prima donnas of the engine world may sound like some sort of heresy, and it very well could be if spark intensity and dependability were the only requirements of an ignition system. However, there is more to "lighting the fire" than our prima donnas normally demonstrate. What is more important is the matter of when we light the fire, or more correctly, the point of ignition. The Offies and most of the piston type aircraft engines have a fixed point of ignition. In other words, the magneto delivers a spark to each cylinder a specified number of degrees before each piston reaches top dead center regardless of engine speed, load or throttle opening. It is in this area that the automotive ignition differs most strongly with the Offy and aircraft types. Fixed advance just won't work in the average passenger car so, in addition to providing a hot spark, the automotive ignition must be provided with a means of altering spark advance to conform to speed and load.

Text books usually oversimplify the explanation as to why engines are fitted with automatic advance mechanisms. As the explanation goes — something is said about the burning of the fuel charges requiring a certain amount of time and of lighting the fire early to compensate for the time consumed. It is assumed that the burning time remains closely the same, regardless of rpm and, that since the compression stroke takes less time as rpm increases, ignition must start earlier so that burning will be completed at an ideal point in the power stroke. Statements such as this tell such a small part of the story that they can actually be considered misleading.

The text books in their light coverage of the subject usually ignore load compensation advance. This is the action by the diaphragm attached to the breaker plate of most modern automotive distributors. Of course, the omission of these devices on the distributors of factory high performance machinery does not help matters any. It seems to create the impression that they are unnecessary appendages.

A broad view of an engine's characteristics must be taken in order to comprehend its spark advance requirements. There is just no short cut to gain an understanding of the subject. Most simple hard and fast rules covering spark advance will be found in error more often than not. Despite the foregoing, a predictable behavior pattern does exist although it is interdependent on a lot of factors.

Starting with the rpm and burning time relationship as discussed earlier, we find that turbulence also enters the picture. Turbulence hastens burning by moving fuel mixture that isn't burning into the area of the combustion chamber where burning is taking place, instead of depending on the comparatively slow travel of the normal combustion flame front. This process can be likened somewhat to the rapid advance of a brush fire in a high wind.



Spalding Flamethrower is good example of a custom distributor fitted with a load-compensating diaphragm. Vacuum applied to unit rotates breaker plate in clock-wise direction through action of the connecting link.

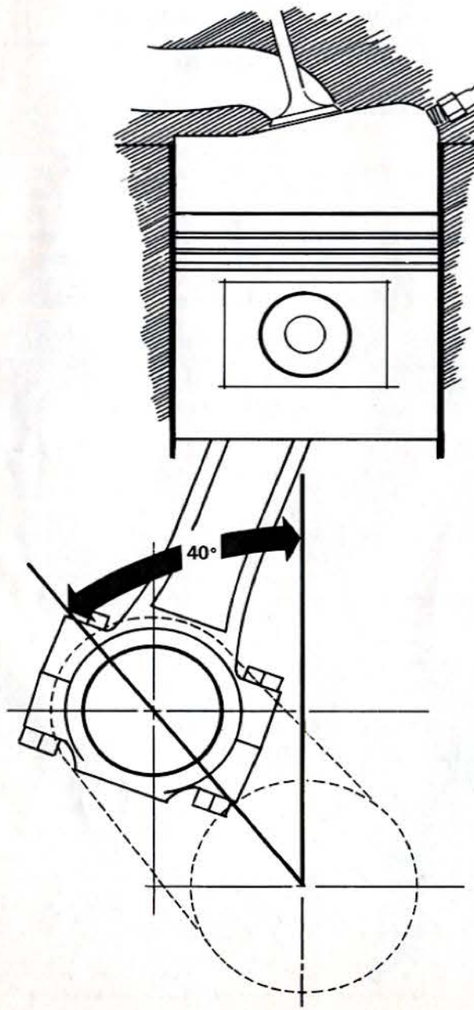
In many cases, the increased turbulence coincident with high rpm operation eliminates the necessity for the automatic spark advance mechanism to operate above 3000 rpm. Turbulence is one of the factors that makes it possible to operate an Offy with fixed spark advance. Its range of operation varies between 4000 and 6500 rpm, so turbulence to a large degree provides the means of speeding up the burning rate of the fuel charges.

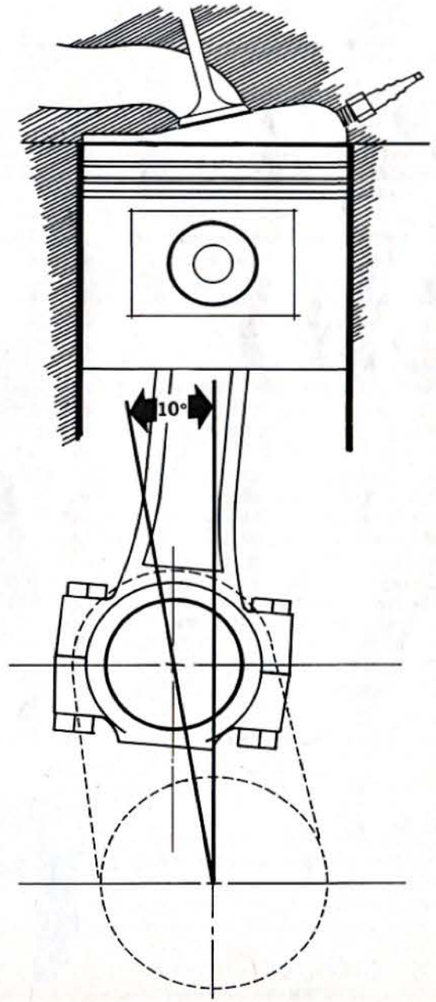
Variations in charge density also have a lot to do with the spark advance required by an engine. It is for this reason that distributors are fitted with load compensating diaphragms. A light charge, the kind that results from partial throttle operation, burns more slowly than a heavy charge, so it must be ignited earlier. Modern overhead valve automobile engines of U.S. manufacture require from 15 to 18 degrees more advance under certain partial throttle conditions than they do at full throttle.

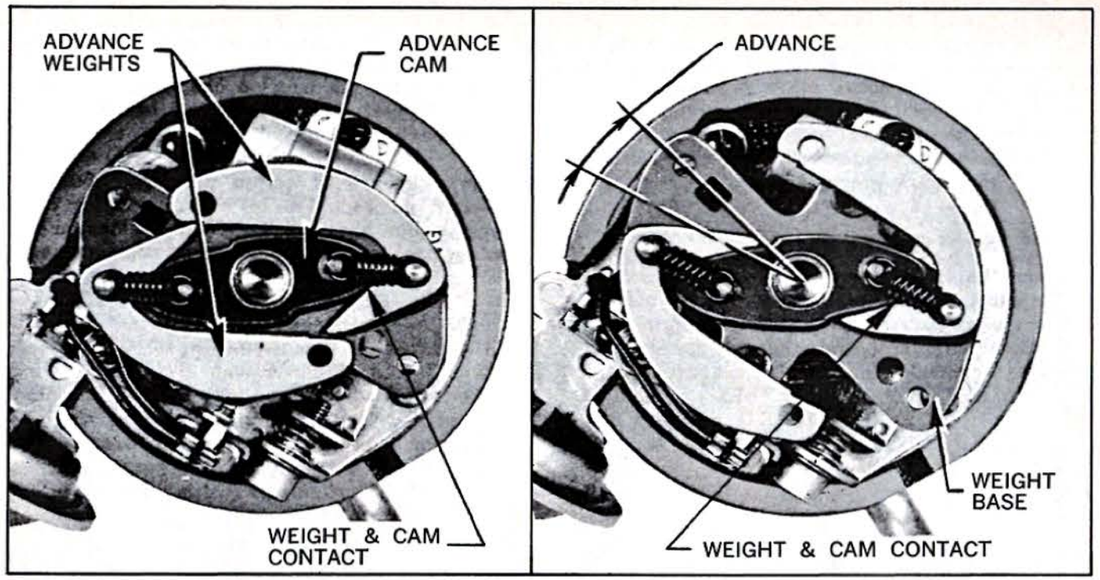
A diaphragm, operated by manifold vacuum, makes an ideal device for adjusting spark advance to conform to engine load. Small throttle openings produce a high manifold vacuum which advances the spark a large amount, whereas large throttle openings reduce the vacuum to the degree that the diaphragm becomes inoperative. Varying amounts of throttle opening change the manifold vacuum to such a degree that the spark advance is always tailored to fit the load placed on the engine. The diaphragm is never a substitute for the mechanical advance mechanism which compensates for rpm changes, but is merely a supplement to it. (Certain Ford products, which use venturi vacuum applied to a diaphragm in place of a flyweight governor type of mechanical advance, are exceptions to this rule.)

When the diaphragm is removed from a standard distributor and the engine is forced to depend on mechanical advance exclusively, gas mileage suffers horribly and spark plug fouling is experienced. Without the diaphragm, the engine in effect, is called upon to oper-

Diagram on right shows firing points of typical modern engine at 500 rpm with throttle wide open. Engine on left, running at 3500 rpm with throttle open, must ignite the charge 40 degrees before the piston reaches TDC. Though speed has increased, burning speed has not, thus the ignition must be earlier.







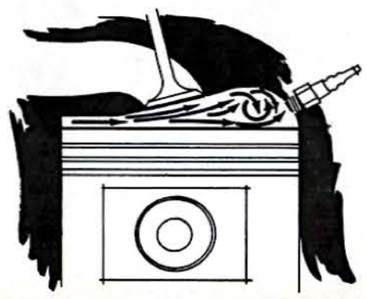
A—NO ADVANCE **B—FULL ADVANCE**

Advance mechanisms are shown both fully retarded and fully advanced. Centrifugal force swings weights outward, levering tail ends against cam. Advance rate depends on the relationship between this point of contact on cam and the actual spring tension.

ate with the spark retarded under cruise conditions. We all know that retarding the spark reduces thermal efficiency, hence, poorer gas mileage. Retarding the spark also makes spark plugs run cooler causing soot to form on the insulators. Black soot is a good electrical conductor so misfiring results from the spark travelling along the sooty insulator instead of jumping between the electrodes where it can do some good.

Load compensating diaphragms are not needed on engines that are used exclusively for racing or other applications where full throttle is used most of the time. (Full throttle is defined as a condition where the carburetor's throttles are wide open but does not mean that the engine is necessarily running at peak rpm. Throttles can be wide open with the engine only turning 500 rpm.) The flyweight governor of the distributor and some magnetos provide an advance rate, when properly designed, that conforms to the engine's full throttle requirements. This advance rate, often referred to as a spark advance curve, is established by dynamometer testing. When optimum power is desired over the full range of rpm, engineers try to make the ignition advance at a rate that keeps the engine on the verge of detonation but doesn't quite allow it to take place. However, due to the extremes of temperature and barometric pressure to which a passenger car is subjected, plus the effects produced by combustion chamber deposits, less than optimum advance is provided for public consumption.

Up to this point, we have only related charge density to the degree of throttle opening. (Charge density should not be mistaken for fuel/air ratio, commonly referred to as mixture.) When the cylinders receive weak charges because of a nearly closed throttle, the mixture doesn't become excessively lean — the combustion chambers just become sparsely "populated" with fuel and air molecules. However, racing engines and many high performance Detroit machines have another factor governing charge density — hot camshafts. Long duration cams actually have a throttling effect on on engine's ability to breathe at low and moderate rpms.

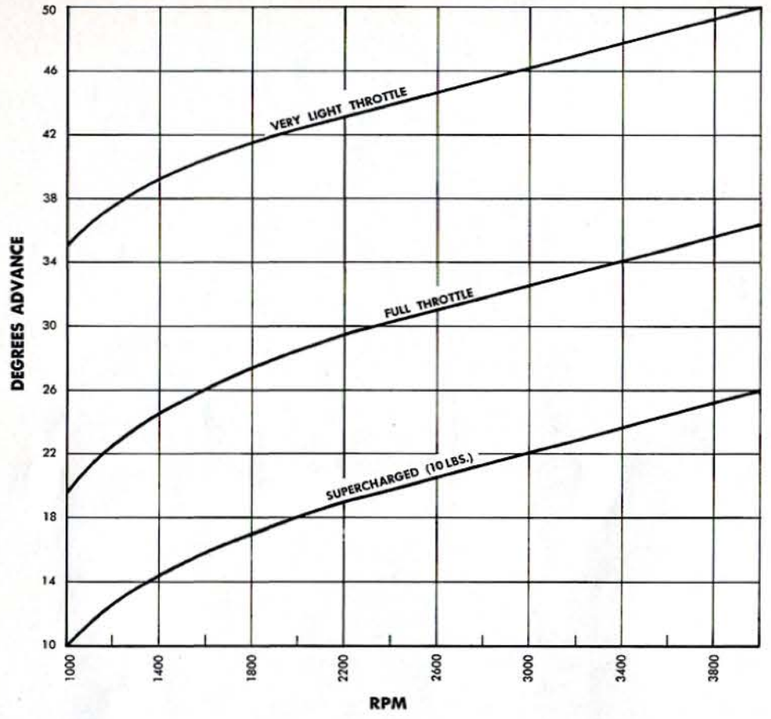


Turbulence induced in the combustion chamber has the effect of carrying fuel mixture to the area of burning initiated by the spark plugs. This process accelerates combustion beyond the rate of normal flame propagation, reducing the need for mechanical advance.

A camshaft that closes an intake valve when the piston is half way up the compression stroke, allows nearly half of the charge to be pumped back into the intake manifold at low rpm. Of course, as rpm increases, this reverse pumping tendency is reduced and the charge density increases. Because of this build up, some engines perform quite well with fixed spark advance — the progressively increasing burning rate of the denser charges has somewhat the same effect as the distributor advancing the spark.

The Corvair Spyder is a good example of a modern engine that uses fixed spark advance over a wide range of rpm. Initial advance is set at 24 degrees and can be increased to 28 or 30 degrees depending on temperature, barometric pressure and duration of full throttle operation. Its flyweight advance mechanism does nothing until the engine is turning between 3600 and 3800 rpm, so it is almost completely dependent on the progressive lessening of reverse pumping as a means of indirectly speeding up combustion. The 90 degree late closing of its intake valves makes this seemingly unorthodox practice possible.

Although I feel that there is a great deal lacking in the execution of the

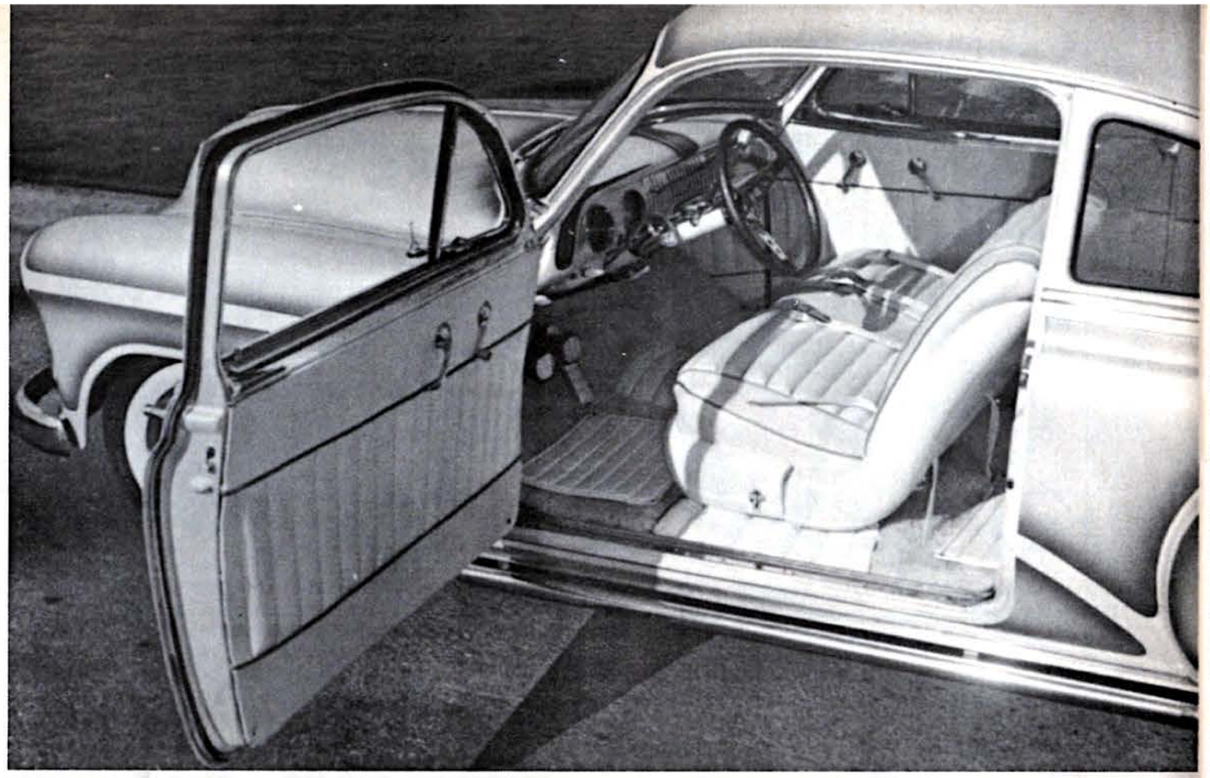


Spyder's turbosupercharger application and the total design of its distributor, the engine does provide the best basis currently available for explaining certain important factors. Its supercharging allows us to go more deeply into the charge density subject and the exhaust driven turbine that drives the supercharger brings up the subject of charge dilution.

When the charge density fed to an engine is boosted by a supercharger, burning rate is increased somewhat beyond that of its normally aspirated state. This increased burning rate naturally calls for less spark advance. Crude supercharger installers through the years have persisted in compensating for this condition by setting the initial advance back or by limiting the range of the flyweight governor so that it stops advanc-

Continued on page 87

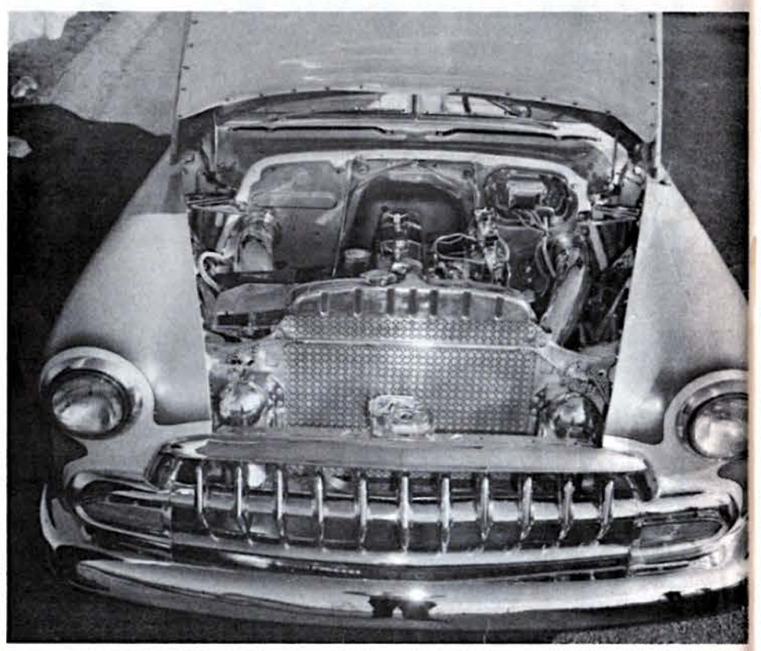
Typical spark advance rates are shown here in graph form for easy comparison. Top line shows degree of advance required at partial throttle as rpm changes. Middle line traces the firing point at full throttle and the lower line shows that a further reduction is required for supercharged engines.



INTERIOR OF '51 CHEVY CUSTOM IS JUST AS OUTSTANDING AS THE EXTERIOR. CAR HAS WON MANY FIRSTS IN SHOWS.

Blue Ribbon BLUEBIRD

Owner and builder Bill Haddad, above, gazes at six and wonders if time has come to swap it for a V-8. Teriffic underhood customizing includes the radiator dressed up with perforated mesh.



The '51 Chevy has pearl white exterior with blue trim. Same idea in colors extends to the interior tuck and roll upholstery and rugs. All body seams are filled.

Engine is completely chromed. It is a '52 Chev, stock except for solid lifters and Isky three-quarter cam. The exhaust is porcelain covered. Carburetion has been improved.

CHANGES INCLUDE '54 GRILL TEETH, MOLDED BUMPER, PEAKED HOOD, DECKED, NOSED AND ALL BODY SEAMS FILLED IN.

tremendous TRIKE

A NEW CONCEPT IN THREE-WHEELED DRAGSTERS

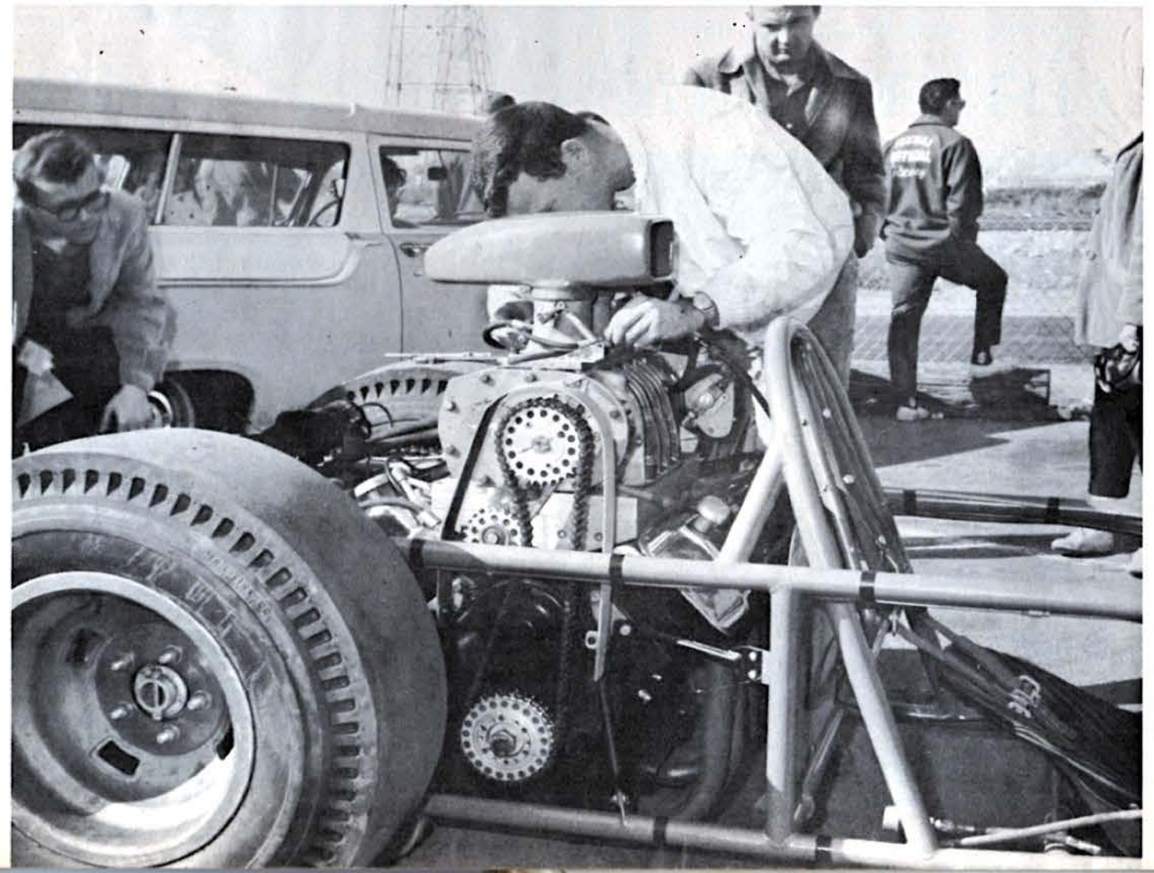
Four men about to ride to drag racing fame on three wheels are the Cook Brothers, Gary and Don, Jeff Jahns and Pete Hedges. This California quartet set out to build a dragster and decided in the middle of their building that they could save an appreciable amount of weight by dropping one wheel. The tricycle configuration has resulted in a cut of some 50 lbs. from the car.

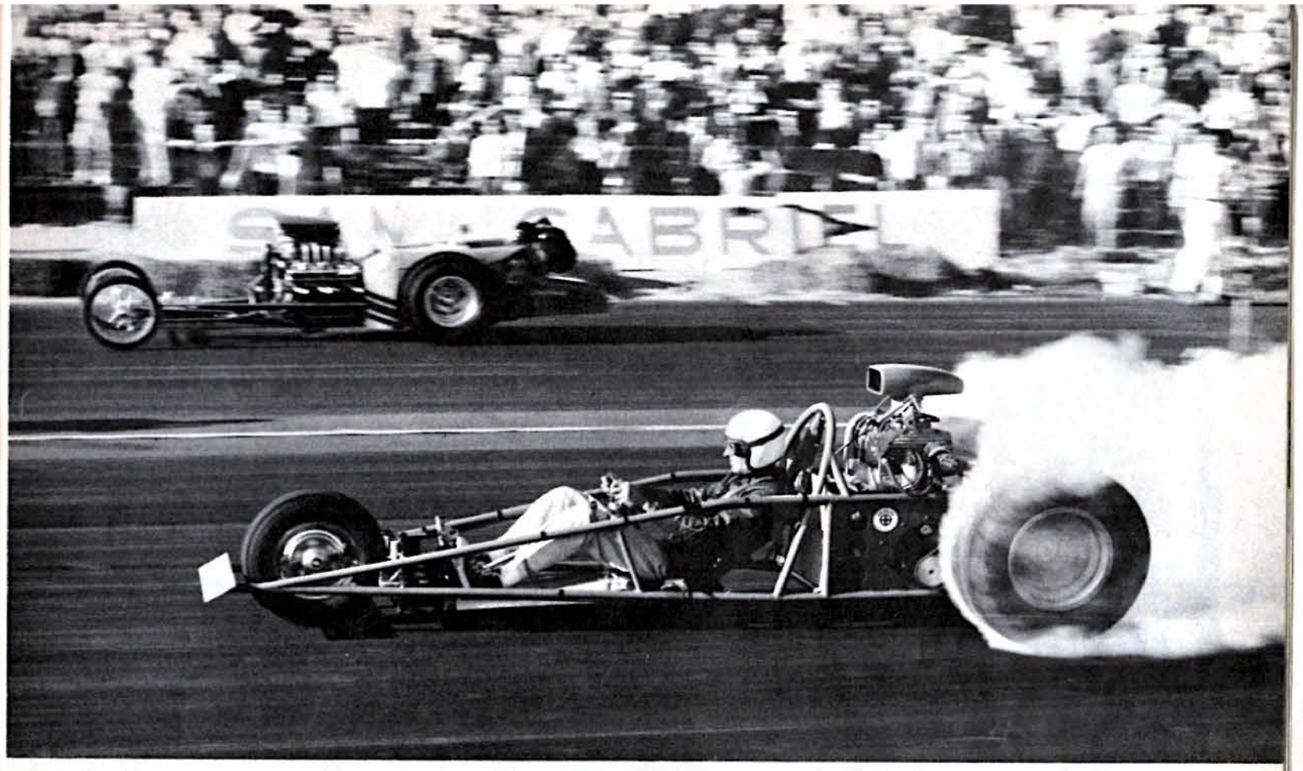
What is even more interesting than the trike set-up is the quality and originality of the engineering that went into the dragster's make-up. The 297-cubic-inch Dodge engine sits in the rear, sidewinder style. With Hilborn injection, a 4-71 GM blower, Clay Smith cam and Crankshaft Co. crank, it spent its first day on the strip turning a time of 177.84 mph in 8.77 seconds, running straight alky.

There is no clutch. The engine chain drives the rear axle directly. This calls for a unique starting procedure. The car is brought to the line wtih the rear wheels raised off the ground by two small metal wheels which are held in the

Continued on page 81

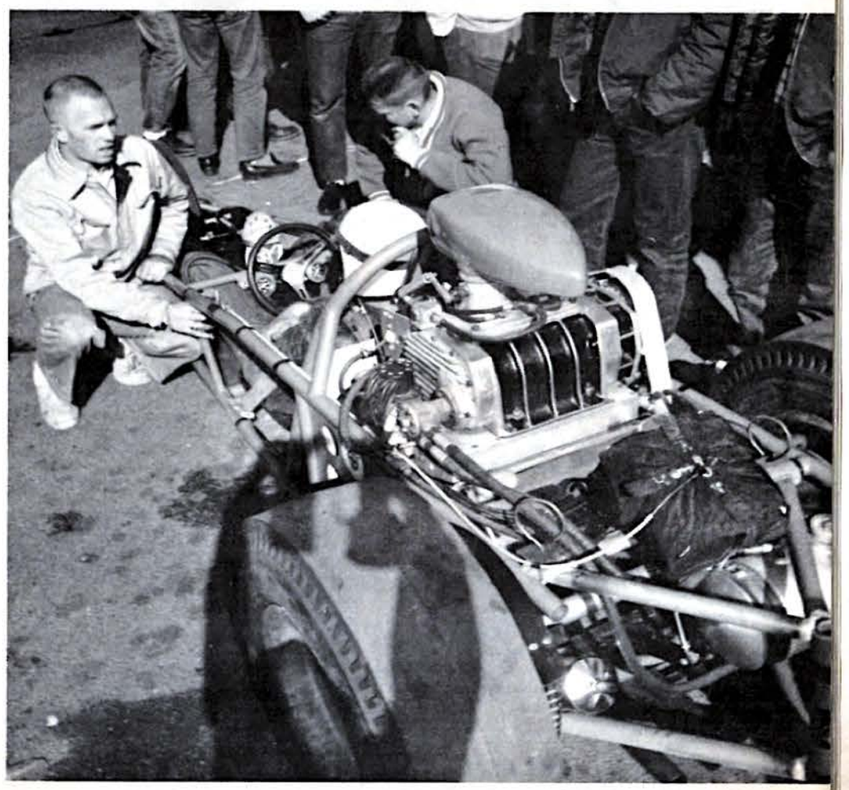
Driver Jeff Jahns sits way out in front with the best of visibility from his semi-reclining position. The sidewinder mounting of the Dodge engine makes the best use of space.

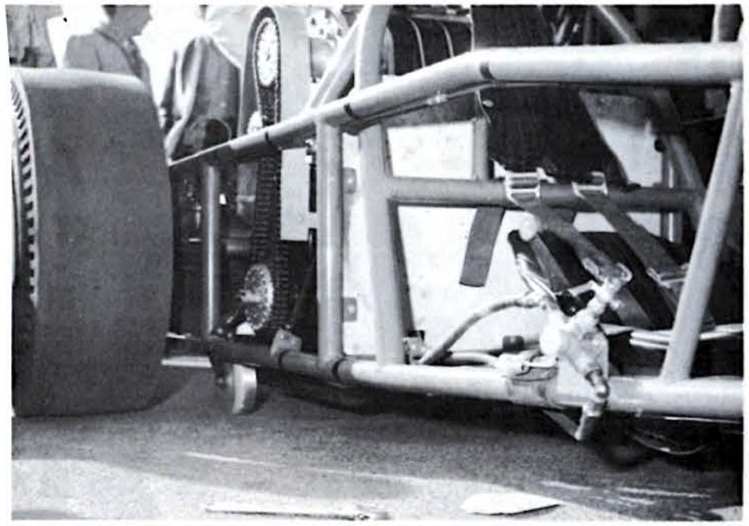


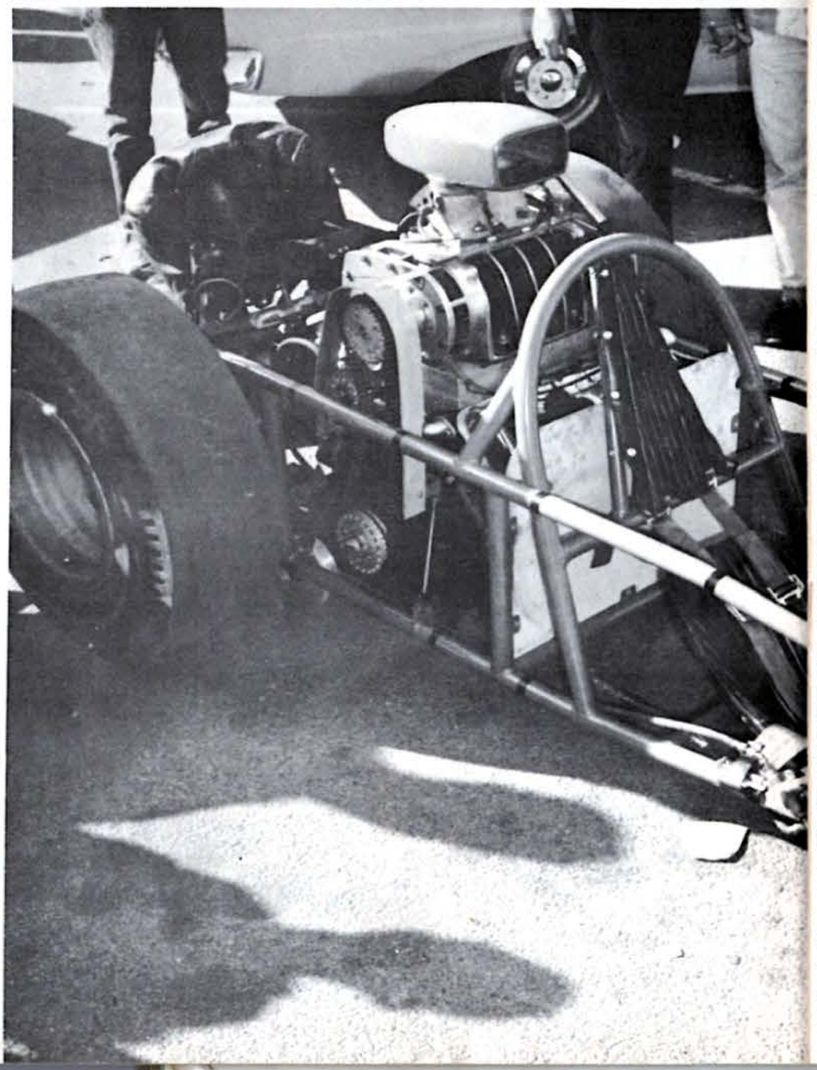


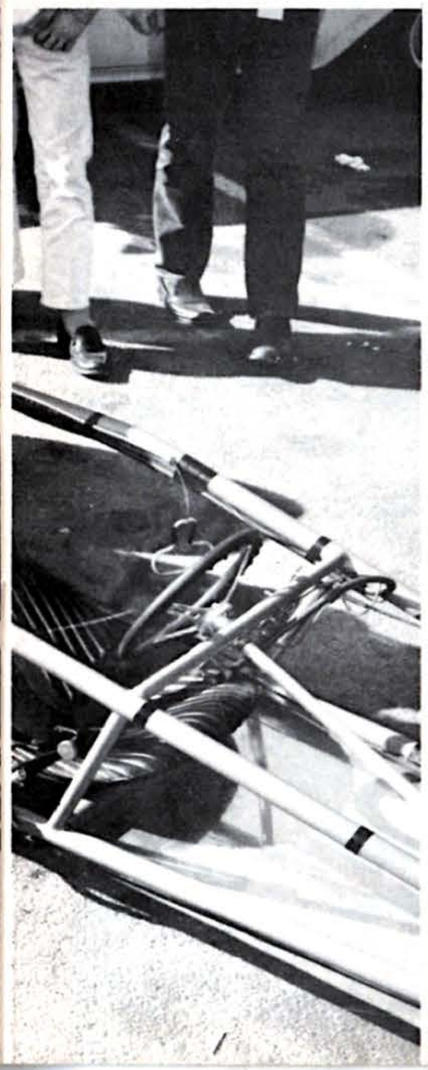
Compressed air is fed into lines of the small jacking wheels before each run. This holds the big M&H slicks off the ground until it is take-off time for the quarter-mile.

Airscoop high above the driver does the breathing for the Hilborn injector and GM 4-71 blower unit. There is no clutch. The engine is mated to the rear axle directly by chain drive.









down position by compressed air. The engine is fired up with an air-powered starter and, when the starter drops his flag, the driver releases the pressure on the jacking wheels. The big rear slicks hit the strip and the car is off in a cloud of smoke.

Given time to practice procedures and to burn a little more potent fuel, driver Jahns will be on his way to records.

Small metal jacking wheels, inboard of the big rear slicks, hold the driving wheels off the pavement until it's time to roll. Engine is fired with an air-powered starter and driver releases jacking wheels with valve.

CHUTE!

The fastest brakes in the world

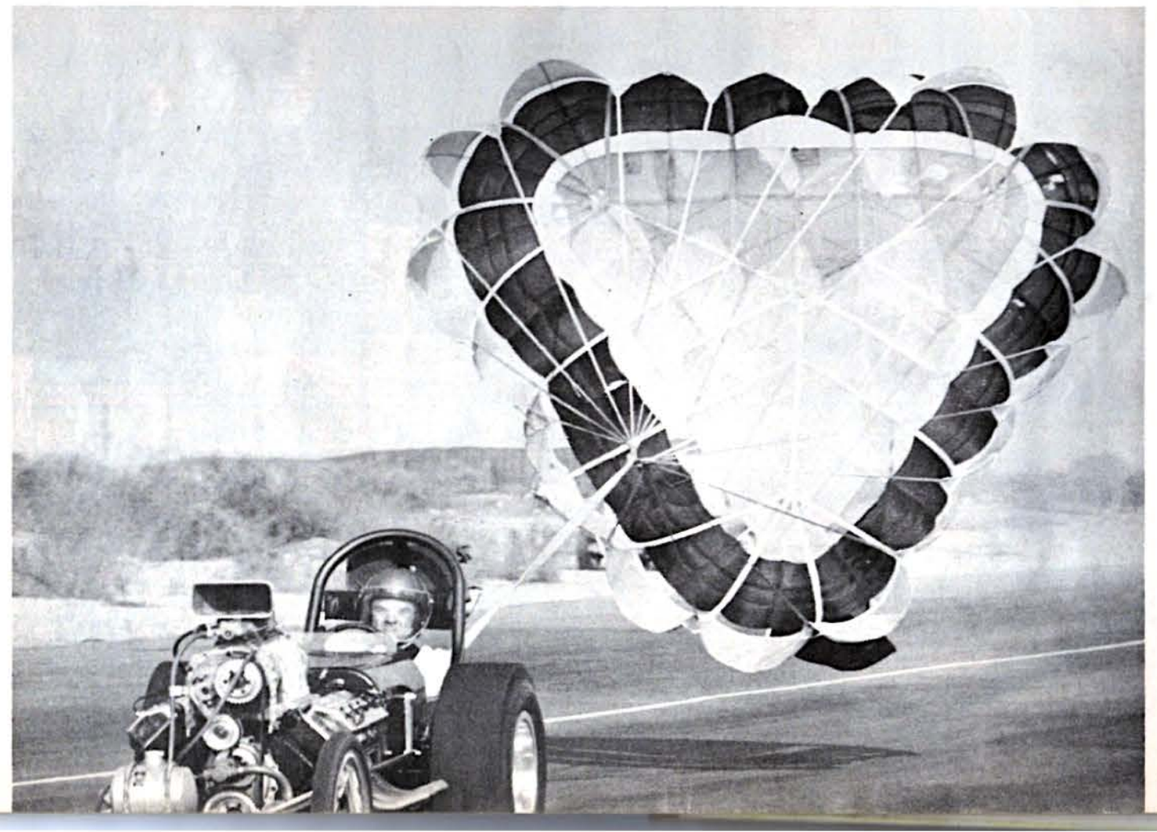
BY PHIL BELLOMY

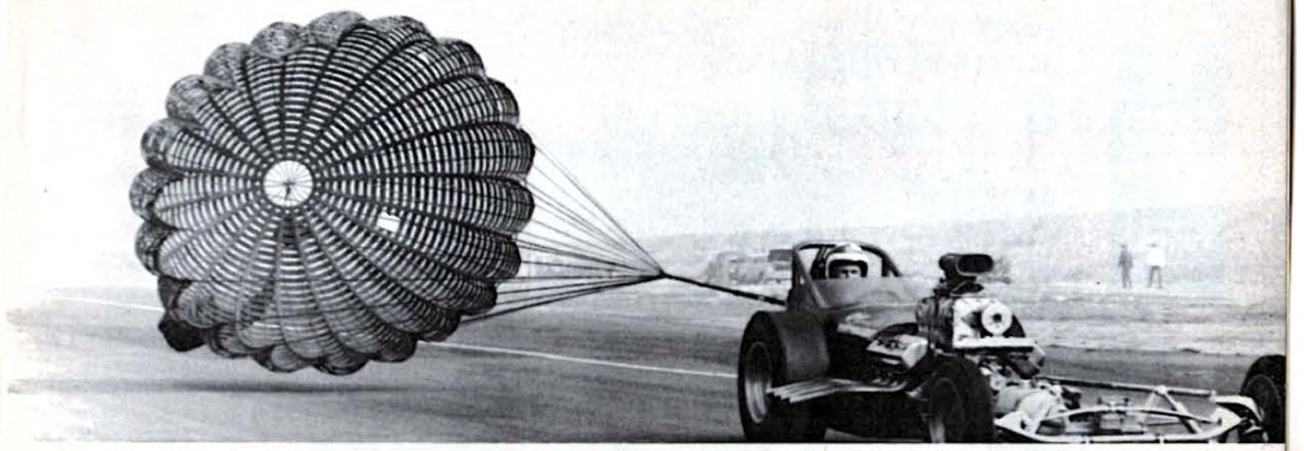
DURING the second World War, the Germans developed what they called the "Drag Chute" to slow airplanes down for landing. It consisted of hundreds of small two-inch nylon ribbons, fashioned in chutes about eight feet in diameter.

The Americans picked it up from there, but found the ribbon chutes inadequate. It was taking them too long to slow the larger planes down. So, being the ingenious Americans we are, we developed the "Ring Slot" drag chute. Rather than having hundreds of ribbons, we had five large rings of material with a slot in between each one where the air could pass through. This one worked somewhat better but the opening shock was increased. This put more force on the tow line, suspension lines, and the canopy itself, making it imperative that the material be made stronger and heavier and the tow lines and suspension lines be reinforced.

A giant hand that reaches out to grab the atmosphere, the drag chute will offer consistent help only if treated properly and mounted correctly. Chuck Taylor uses the Security drag chute on Shigs Service Spec. (below).

The French had quite a different idea about drag chutes. They came up with one that had the easy opening shock of the ribbon chute but had the steady drag force of a ring slot. It was a whole new design in parachutes, and was called the Cruciform. It had a large square piece of fabric in the center with four pieces of equal size sewed on either of the four sides, giving it the appearance of a cross.





The ribbon chute, one of the originals for aircraft use, has an equal lacing of silk and cavities. The unit in action here is on the Mooneyham and Sharp dragster with Art Chrisman at the helm.

At the same time an American firm, called the Security Drag Chute Co., developed a rectangular parachute which offered a steady drag force estimated between that of a ring slot and a ribbon chute.

When a group of racing enthusiasts in Santa Ana, California put on the first official (unorganized) organized drag race about 15 years ago, they worried more about making it through the lights, 1320 feet away, than they did about stopping after they got that far. And why shouldn't they? The cars didn't go more than about 80 mph and it didn't take much to stop them. But, as the years rolled by, the cars went faster and the strips seemed to grow shorter (they really didn't, it just seemed that way). Consequently, they had to do something about the braking problem.

So, in 1958 Jim Diest helped set a parachute on a dragster, and Abe Carson, who got the idea, was the first person to use a parachute on a drag car. These chutes, however, were just army surplus and there was no assurance that they would always work.

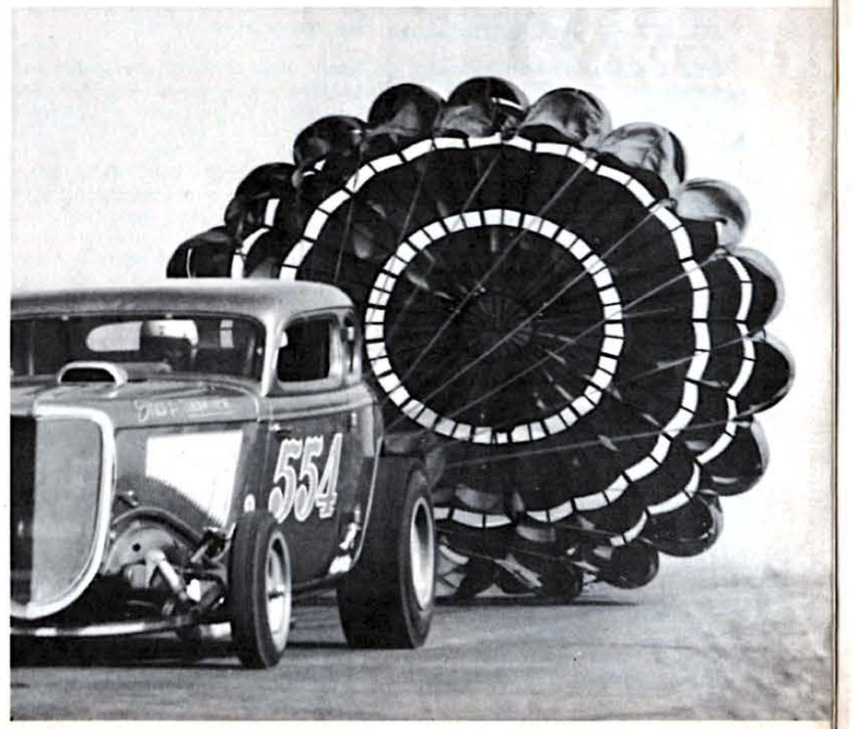
So, after working for the Irving Air Chute Co. for 10 years, Jim Diest went into business for himself. He remanufactured and reinforced ring slots and he built ribbon chutes from scratch, with chutes ranging in size from about six feet to over 40 feet in diameter.

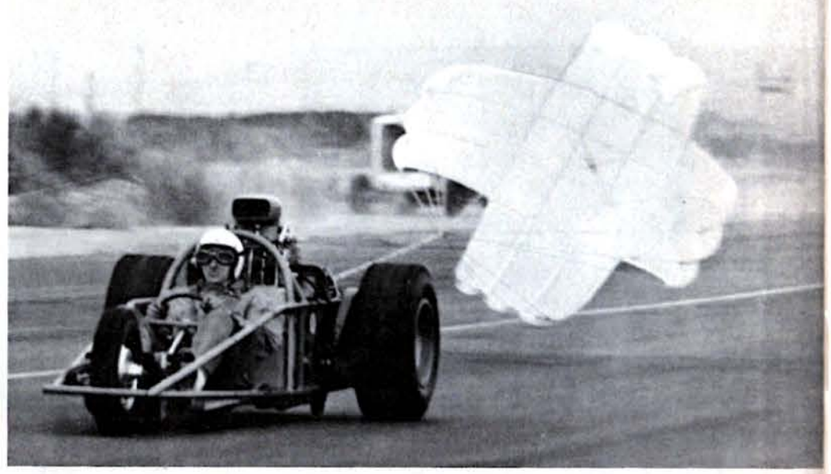
Jim has built chutes for just about every big name driver, from Don Garlits to Tom Ivo, with nary a failure due to workmanship. But one of the biggest problems a drag chute manufacturer encounters is that of persuading the drivers and car owners to put the chute on right. Too many times the chute will hang up on the push bar which will either rip a hole in it or cause it not to open at all. Most cars have them mounted on or near the role bar, hoping the pilot chute will push out with enough force to hit the ground and drag the chute out with it. Sometimes this won't happen. The car may be built in such a away that the slip stream will hold the pilot back and the chute won't open until the car drops to a lower speed. By this time the driver may be into the fence at the end of the strip.

For this reason some cars mount the chute high and straight up. The wind will catch the pilot chute when the spring behind it pushes it out and then pulls the main chute out. This seems the best method.

Another common mounting has the

The ring slot chute is the most common variation of the drag chute in use in hot rodding today. This is the style proven and perfected by Jim Diest.





Newest variation to threaten the popularity of the ring slot chute is the crossform. It seems to have the latter's stopping power and is less bulky. Some drivers complain that it is hard to tell whether this chute has popped right.

chute pointing down and very close to or beneath the push bar. This is probably the worst way, because your parachute wears out faster, from dragging on the ground. It also can get caught in the slip stream or on the push bar.

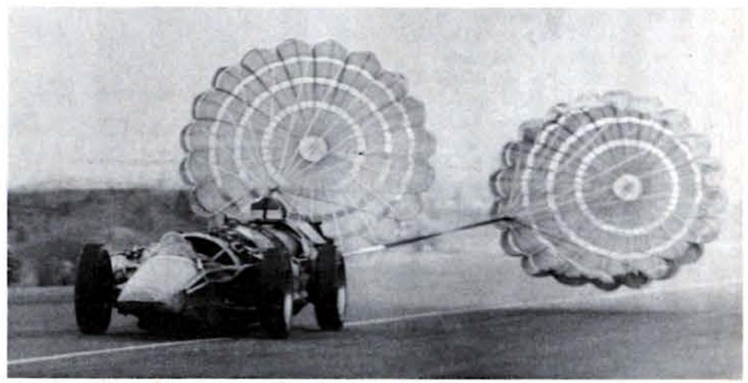
Up to now probably the most commonly used chute on the larger cars (A/Fuel dragsters and the like) has been the ring slot, because of the force it exerts when it opens (a 1600-lb. rail going 180 mph will drop to 50 mph in about three seconds and 460 feet, with a 16-foot ring slot exerting 9,130 lbs. of opening shock). This way the driver knows it is open; with a cross form there is little or no opening shock even though the drag is the same. The advantage here being, that if the chute doesn't open, the driver can start using his brakes immediately. Also, if the dragster is going "squirrely" or sideways coming through the lights, the force of a ring slot can pull him straight again.

A while back Jack Carter went to his first drag race and much to his surprise, found out that dragsters stop with drag chutes. Up to that time he had worked for North American Aviation, repairing helmets and packing parachutes. Now he's in the drag chute business, very successfully manufacturing cross form (cruciform) drag chutes and reinforcing ribbon and ring slots.

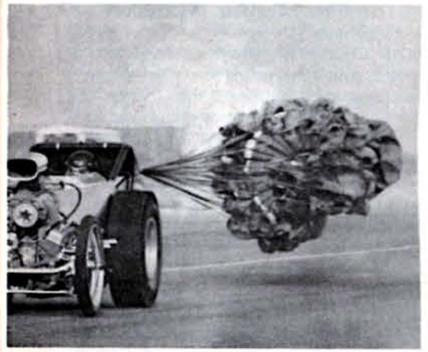
The cross form is becoming more and more popular with all size cars because it will stop a car quickly, but doesn't take up the room of the ring slot and is easier to pack. And, being lighter weight, it opens quicker.

The ring slot still seems to have its champions. Some drivers complain that they can't tell when a cross form is open, so they're back with a ring slot. However, not too long ago, I watched Chris Karamesines, a confirmed ring slot man, try out a cross form. Now I'm told he wouldn't be without it; claims it stops him quicker than a ring slot.

Drag racing has come a long way from the days in Santa Ana. The faster cars go the faster they'll have to stop. Who knows? Maybe someday they'll start using dive brakes. Already they've adapted butterfly valves, fittings and various other parts from airplanes. Parachutes, air foils and wings have been put on some cars. But the one thing they may never adapt is the pilot. Says he: "When I'm doing 190 I want my wheels to be up!" —PHR



When the big jet dragsters end a run, they need double the stopping power. Romeo Palimedes' "Untouchable" uses two 16-foot ring slots for the job.



Art Arfons' Cyclops jet (top) uses just one ring slot chute, but it has a huge span of 24 feet. Picture above catches ring slot before complete deployment.

BEST CAR BUYS *Continued*

with a car that can run on the street. This is the key. Never try to compete with a stripped racing car against a street machine.

Actually your problem of selecting a basic used car for one of the Gas classes is considerably simpler than for stock racing. This is because you can use any engine you want, with any modification. It's just a matter of choosing the basic body and chassis that will do the job — then swap in the engine that will give the needed performance.

There are two big things to look for: One, you want the maximum possible front-to-rear weight transfer for optimum traction off the line. This calls for a short wheelbase and a high center of gravity. This is the reason for the increased popularity of the '33-'41 Willys coupes in the Gas classes on the strip; they have a wheelbase of 100 inches and a very high CG. The '32 Ford coupe, with 106-inch wheelbase and reasonably high CG, is another favorite. Unfortunately these old cars are getting pretty scarce even in junkyards these days. You just can't find 'em. So the boys are having to go to later models with somewhat lower CG's and wheelbase lengths in the 112-116 inch range. The '55-'57 Chevys and Fords are very popular here — especially the Chevys, because you can use the basic small V-8 engine in modified form in the lower Gas classes without having to swap in another block. In C, D and E/Gas the '55-'57 Chev with displacements from 265 to 352 cubic inches or so is apt to be top dog on most strips. The Willys coupes haven't filtered down to these classes yet — though they may soon.

A second important consideration in choosing a basic used car for the Gas classes is the engine positioning. The latest NHRA rules permit the engine to be set back 10% of the wheelbase (measured from the wheel spindle to the front spark plug). On a 115-inch wheelbase this would be 11.5 inches. With late-model cars, where the normal engine position is over the front wheels, you can't move the engine back this far without putting it just about in the driver's lap. On the older cars, with stock engine position farther back, this is not so much of a problem. So this is one more reason why a real old car is good for Gas dragging. But you can put the engine back 10% on a '55 Chevy. I've seen it done. You certainly don't drive it on the street that way — but it's a legal competitor on the strip, and a very formidable one at that. So don't give up the ship if you can't locate that '40 Willys!

You don't need to be in a new car — or even a two or three-year-old car — to have fun on the drag strip, in either the stock or modified classes. Just be careful to pick the right old car.

SPARK ADVANCE

Continued from page 75

ing when boost starts to build up. Either shoddy method penalizes non-boost operation.

For 13 years I have been modifying distributor diaphragms so that they would reduce spark advance in a manner proportionate to blower boost, so it is with some degree of pleasure that I point to the Spyder as an example. Though it does use a diaphragm actuated by a blower boost to reduce spark advance, it regrettably lacks the vacuum actuated load compensating feature that could improve gas mileage under cruise conditions.

As pointed out earlier, the Spyder's mechanical advance is designed to do nothing until the engine speed reaches 3600 to 3800 rpm, then the flyweights add more spark advance until the rpms reach 4800. One of the main reasons for this strange distributor activity is to compensate for the combustion inhibiting effects of exhaust dilution. Poor scavenging is at the root of the problem, and is brought about by increased exhaust gas pressure resulting from the restricting effect of the turbine at higher engine speeds. The long overlap cam, which actually keeps the intake and exhaust valves open together for 90 degrees of crank rotation, becomes somewhat of a detriment when the exhaust manifold pressure exceeds that of the intake by a sizeable figure. A more sophisticated turbine would reduce this tendency considerably.

Among the many things that effect the spark advance requirements of an engine, we even find engine temperature and air temperature. The hotter the fuel charge before ignition, the faster it burns, therefore requiring less spark advance. The speed of any chemical reaction is doubled by a temperature increase of 18 degrees fahrenheit, so it is easy to see that distributors should be fitted with temperature compensating devices, especially those of air cooled engines. The average modern ohv engine can utilize from five to eight degrees more advance when it is cold than when it reaches operating temperature.

Increases in charge temperature account for a portion of the spark advance reduction that is required when supercharging. Compressing the fuel air mixture to double atmospheric pressure can raise the inlet temperature to as high as 175 degrees F. on a warm day.

Though we have only touched lightly on the factors affecting spark advance, it becomes very plain that any modification of an engine will in turn require modification of distributor or magneto advance mechanisms. Engineers and hot rodders who seek the ultimate in performance must do more than pick an ignition off the shelf. —PHR

COMING EVENTS

ROCHESTER, N.Y. — 2nd National Auto Review sponsored by Onondaga Hot Rod Association, April 5, 6, & 7. Rochester Community War Memorial, 100 Exchange St. For information: Frank Kaylor, chairman, Onondaga Hot Rod Association, P.O. Box 70, Cicero, N.Y.

SYRACUSE, N.Y. — 3rd National Motorama sponsored by Road Aces Auto Club, Inc., April 27 & 28, Onondaga County War Memorial, Montgamery & State Sts. For information: Road Aces Auto Club, Inc., P.O. Box 70, Cicero, N.Y.

SANTA BARBARA, CALIF. — Ed Cholakian's Santa Barbara County Autorama. May 2, 3, 4 & 5 at the Exhibit Hall, Earl Warren Show Grounds. For information: Ed Cholakian, 10068 Riverside Dr., North Hollywood, Calif.

SOUTH BEND, IND. — 3rd Annual Rod & Custom Cavalcade sponsored by the Coachmen Auto Club. April 6 & 7, Stepan Center, University of Notre Dame campus. For information: Coachmen Auto Club, Box 2592 Station A, South Bend 14, Indiana.

WENATCHEE, WASH. — Apple Blossom Rod & Custom Show sponsored by the Ti-Rods Car Club. May 3, 4 & 5 at the Skookum warehouse in Wenatchee. For information: Jay Reed, Box 1141, Wenatchee, Wash.

LOS ANGELES, CALIF. — 3rd Annual International Car & Boat Show sponsored by the Tridents. May 22, 23, 24, 25 & 26 at the Los Angeles Sports Arena. For information: Gary Canning, Box 101, Maywood, Calif.

BOISE, IDAHO — 2nd Annual Rod & Custom Car Show sponsored by the Boise Timing Association. April 6 & 7 at the Western Idaho State Fairgrounds, Boise. For information: Charles D. Coulter, Boise Timing Association, Box 4134, Boise, Idaho.

LAS VEGAS, NEV.—Third Annual Rod and Custom Show, Las Vegas Convention Center, sponsored by the Road Runners. Contact Ray Potter, 2619 Ashby, Las Vegas, Nevada.

STICK VS. AUTOMATIC

Continued from page 43

that takes all the free play and slop out of the shifting process. The spongy column linkages are no good at all.

Add it all up and we think you'll find the sticks a little quicker shifting than most automatics. Probably a conventional three-speed stick (where low gear must be withdrawn on the 1-2 shift) would be about equal to a good automatic with increased line oil pressure to speed up the shifts. Next in line would be Ford's new all-synchro, constant-mesh three-speed — with a good floor gearshift linkage. And quickest of all would undoubtedly be the Warner T-10 four-speed, with all synchro gears and close ratios.

The only other major point of controversy between sticks and automatics centers around weight. Automatics have traditionally been extremely heavy — which put them at a disadvantage in relatively light, high-performance cars. But this doesn't apply so much today. Most of the latest automatics have die-cast aluminum cases. For instance the weight of the Chyrsler three-speed Torqueflite was reduced from 230 to 170 lbs. by adopting an aluminum case. The new two-speed converter in the Buick Special weighs less than 100 lbs. And don't forget this: You must add the weight of the heavy flywheel and clutch to the weight of a stick transmission when you compare overall weights. The automatic uses just a light sheet metal wheel. When you take total weights the modern aluminum-case automatic is no longer at any great disadvantage.

So there's your balance sheet of advantages and disadvantages. At least this is the picture theoretically. How does theory hold up out there on the drag strip?

In the first place, there seems little argument that the Warner four-speed trans is better on the drag strip than any three-speed manual. The all-synchro shifting and close ratios are the key. Even if you had all-synchro shifting and equally close ratios on a three-speed the Warner would still have the edge. This is because you have four gears instead of three, so there's that much more total torque multiplication for getting off the line in low with an axle ratio that will still be optimum at the finish line. That is, the average spread between ratios in the close-ratio Warner is about 1.3-to-1 — with a 2.20 ratio in low gear. A three-speed manual with this spread would have a 1.70-to-1 low. With the popular 4.56 axle gears this would give you an overall ratio in low of 4.56 X 1.70 = 7.75-to-1. This isn't enough. It would be about like starting out in 2nd gear. The only solution is to widen out the ratio spreads in the three-speed . . . and then you're right back where you started. Shifting takes a little longer, and the RPM drops off farther when you shift gears — so the engine is not developing as high an average HP output as the car moves down the strip. You need a narrow RPM band and close gear ratios to get maximum effective engine output.

So your three-speed manual definitely isn't in the picture with the close-ratio four-speed manual. With wide-ratio four-speeds, like on the Corvair, things are closer.

How about the four-speed manual vs. the automatic?? This is a tough question. It is very significant that Torqueflite Dodges and Plymouths had all the best clocked times at the recent NHRA Nationals at Indianapolis. Al Eckstrand had low e.t. in time trials at 12.55 in the Ramchargers club car. Bill "Maverick" Golden had top stock speed of 114.94 mph, and Ray Brock turned the low stock e.t. in eliminations at 12.37. These were all automatics. In almost all cases these Torqueflite-equipped Super/Stock Dodges and Plymouths have proved to be quicker on e.t. than their three-speed stick counterparts — though trap speeds are generally off 2 to 3 mph. (Though they weren't at Indy.)

Unfortunately the Warner four-speed was not offered on Chyrsler products last year — so we have no direct yardstick for comparing this with the Torqueflite. Maybe the four-speed would be slightly quicker on these cars. Maybe the light weight of these MoPars, and the superior engine torque, actually overcame the disadvantage of the automatic. We may soon know, because the Warner T-10 trans has just been released as a regular production option on all Dodge and Plymouth big cars for '63. It will be interesting to watch developments.

Meanwhile the sticks would seem to have the edge in the record books. Compare these winning times from the 1962 NHRA Nationals in the top stick and automatic classes:

CLASS	STICK		AUTOMATIC	
	ET	MPH	ET	MPH
Super/Super	12.97	113.35	12.72	113.35
Super	13.40	108.43	13.69	106.25
A	—	—	14.43	98.79
B	14.31	98.25	14.77	96.77
C	15.05	93.95	15.85	93.20
D	15.01	93.95	14.92	92.78
E	14.95	93.95	—	—
F	15.72	89.19	16.18	86.82
G	15.31	89.10	16.04	84.90

The sticks would definitely seem to have the edge here— though not in every case . . . and not by very much in any case. The race is getting close.

From all the evidence so far it looks like the automatics are most advantageous with the higher-horsepower-cars that have a tough traction problem. Here the higher initial acceleration off the line apparently more than compensates for the increased power losses after the car gets

Continued from preceding page

a solid bite and starts rolling. In other words the automatic will usually beat the stick out of the hole by one or two car lengths, other factors equal. And the sitck will inevitably gain on the automatic at higher speeds — (other factors equal). In the higher stock classes the two effects just about balance out, so it's a toss-up who will win.

But in the lower classes, where traction isn't so critical, apparently the initial jump isn't enough to win the race. Notice, in the above table, that the differences between the stick and automatic times in each class get wider as you go down the list. On these lower-power cars the sticks and automatics would probably come off the line just about together — then the stick would begin to pull away because of lower power losses. It's the way the ball bounces.

Which brings up another vital question: Which specific models are the best performers among the various automatics? Certainly we would have to rate Chrysler's heavy-duty three-speed Torqueflite right up in there. Torqueflite-equipped S/S Dodges and Plymouths are winning top stock eliminator trophies on drag strips all over the country these days. They sell a lot more automatics in these super-hot cars than three-speed manuals. And they're quicker — no question about it. The converter stall torque ratio of 2.2-to-1, multiplied by the low gear ratio of 2.45, gives you enough rear wheel torque to get optimum tractive thrust out of today's hard-biting stock drag tires. You can safely wind over 7000 rpm in the gears — and shifts are quick and positive with the unique pushbutton panel. It's a tough combination to beat.

GM's Hydramatic is another terrific transmission. This has an efficient fluid coupling to pick up the load, and the torque flow through it is split between the fluid path and a strictly mechanical path through gears — which adds to the overall efficiency. (That is, not all the torque is subject to slip in the fluid coupling.) Also the H-M has always featured a very stiff torque multiplication ratio in low gear. The late four-speed jobs have a 3.97-to-1 gear ratio in low, and the three-speeds have 2.97 with 1.2-to-1 step-up through a unique reaction rotor in the main coupling that gives almost the effect of another gear. All this adds up to tremendous bite right off the line. Biggest drawback of the H-M is relatively slow shifting, which is accomplished by filling or emptying a fluid coupling (either the main coupling or an auxiliary unit). This can be speeded up by minor modifications; but it can never be made really quick — like shifting conventional planetaries with bands and clutches.

For this reason the companies developing special high-performance automatics for the hot rod market generally use the '53-'55 four-speed Hydramatics that shift entirely by bands and clutches. These can be readily beefed up to handle any desired HP and torque; the control mechanism is modified to permit manual control of the shifts or raised shift points — and the fluid couplings are chopped or "de-vaned" to increase the low-speed slip and allow higher static revs on the starting line with big-inch engines. Companies like B&M Automotive can do anything with these Hydros. And when they get done you've got an automatic that's better than any stick on cars of very low weight/HP ratio that have a great traction problem coming off the line. The famous Stone & Woods A/GS Willys coupe has turned e.t.'s in the high 9's at 140-142 mph, hauling 2500 lbs. with a 470-cubic inch blown Olds and Hydros! They could never have done this with a stick transmission. The quick, smooth take-off with the fluid drive, the lightning-quick shifting with the modified shift pattern, plus the terrific beef built into this transmission by the B&M people give reliable drag strip performance that is hard to beat.

There seems no question that the current B&M Hydros are the finest automatics available for super-horsepower modified engines in the heavier cars that can't use a high-gear start. Probably Chyrsler's heavy-duty Torqueflite is currently the best of the stock automatics — (though Pontiac is just starting to install heavy-duty three- and four-speed Hydramatics on their factory racing cars, so we'll have to wait to see how they perform).

There are many other specific automatic transmissions models . . . but none of them look too promising for all-out performance. Ford's Cruiseomatic is a three-speed torque converter, similar to the Torqueflite; but it hasn't been beefed up and developed yet for real hot engines. The two-speed converters like the Chevrolet Powerglide are available in heavy-duty form; but they don't have enough total torque multiplication to really bug off the line — and the very wide ratio spread gives too much RPM drop when you shift. The twin-turbine Buick Dynaflow is in a similar fix. There just isn't much else that looks interesting.

So that's the story on stick vs. automatic transmissions. Of course this isn't the last word. The picture is changing all the time. Maybe by the time you read this the new Hydramatic Pontiacs will be blowing off the Torqueflite Mo-Pars in some of the top stock classes. And maybe the new four-speed Dodge 426's will be mopping up the Torqueflites in SS/S! This might be a good thing . . . because it will always be more fun to punch a floor lever up through the gears than push buttons on the dash!!

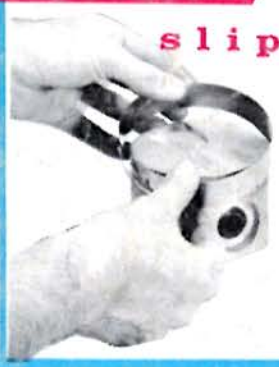
THIS EXCELLENT PISTON DESERVES GRANT PISTON RINGS

You've Paid Good Money For the World's Best Pistons — Naturally, GRANT'S Go With The Best.

- QUICK SEATING
- POWER PICKUP
- SIMPLE TO INSTALL
- EASY ON CYLINDER WALLS
- WORLD WIDE ACCEPTANCE
- COMPLETE COVERAGE

SAVE OVER 40 MINUTES ON EACH RE-RING JOB

Grant "TIME-SAVER" COMPRESSORS



SLIP the "Time Saver" around the pre-oiled rings, SNAP the retaining tab and the reconditioned piston is ready for return and installation . . . a TAP of the mechanic's hammer eases it back into the cylinder. The simple operation broadens the service man's utility — increases revenue . . . can save over 40 minutes per job for the busy mechanic.

HEAVY DUTY

AROUND THE WORLD

STOP AND GO DRIVING

ACCELERATION RECORDS

Write for Grant's Technical Facts Folder, or see your local GRANT Dealer.

Grant
PISTON RINGS

241-P NO. WESTMORELAND AVE.
LOS ANGELES 4, CALIF.