

OCTOBER 1962

35 CENTS

# Popular Science

## ANNUAL NEW-CAR ISSUE

Monthly

### '63 CARS IN COLOR

Action  
Pictures  
of Detroit's  
Toughest  
Tests

Chop Wood  
Like a Champ

Ru

4

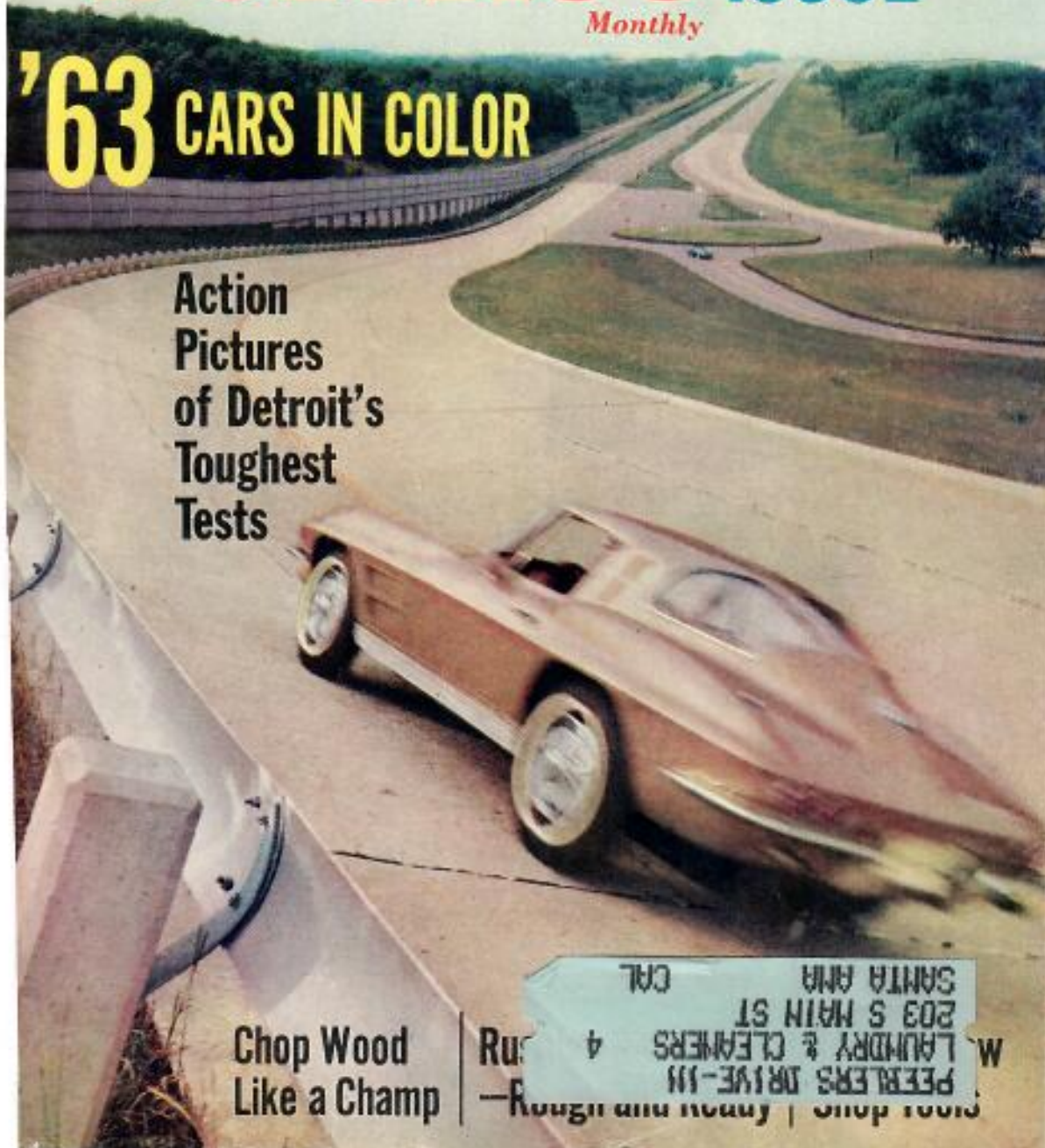
PEEBLES DRIVE-IN  
LAUNDRY & CLEANERS

203 S MAIN ST

SANTA ANA

CAL

—Rough and ready | Shop tools



# Detroit Tests the '63 Cars

Take a look at the turn signal on the car at right. It's amber for better visibility. That's one way to spot the 1963 U.S.-made automobiles. Detroit took the wraps off hundreds of different models last month in showrooms throughout the land.

This picture, and those on the color pages that follow, were taken at factory proving grounds, as the cars underwent testing. They are the result of a visit by **POPULAR SCIENCE** editors for a special preview of the new models.

We came away so impressed by the vast amount of testing that we arranged with each of the companies whose cars were being unveiled to

CONTINUED

PHOTOGRAPHED BY PS STAFF PHOTOGRAPHER ROBERT D. BORST



## DETROIT TESTS THE '63 CARS

photograph them as they were being put through their paces.

Two mint-fresh, voluptuous products of the technical research that is carried on throughout the year appear in this collection. They are Buick's Riviera and Pontiac's Grand Prix.

The story of what that research has produced for 1963 in engines, transmissions, brakes, ride, ease of control, and instrumentation appears farther on.

### Buick coins a sportster

*The Riviera, with a Cadillac's elegance and a Thunderbird's jauntness, has 340 horsepower. It is being tested here for its ride and "spring rate."*

→  
**The Galaxie**  
— new trim,  
new look

*Grille and some body panels, plus interior fabrics, are changed in Ford's "big" car. Water bath tests brakes and underbody seals.*





CONTINUED 59

## DETROIT TESTS THE '63 CARS

→

### Grand Prix — poshiest Pontiac

*The Grand Prix's unusual vertical headlamps are matched by an unusual concave rear window. The instruments are recording, among other things, crankcase oil pressure and horsepower output.*

### Wagons join Fairlane line

*Brand new for '63 are three different station-wagon versions of this car, as well as a hardtop and a sports coupe. The wagon pictured is flying off a ramp to test the bounce and rebound of its suspension.*





## Plymouth grows longer

*Once again with that big-car look—result of a long rear overhang—the Plymouth is back to sass Ford and Chevy. Test is on acceleration.*

CONTINUED 61



## DETROIT TESTS THE '63 CARS



### Merc's rear window drops

*Encased in sheet metal that is practically all new, the Monterey has a reverse-slant, power-operated rear window. This echo-less room checks the car's soundproofing.*

### Disk brakes for the Lark

*The standard Studebaker is stepping out in the company of its sister, the plush Avanti—at least in brakes. The front ones are disks. The cart behind tests acceleration.*





### The Chevy: a new engine

*A spanking-new engine powers the six-cylinder version.  
There's lots more, including a transistorized radio.  
Test is to see how the car keeps its feet in a hard turn.*

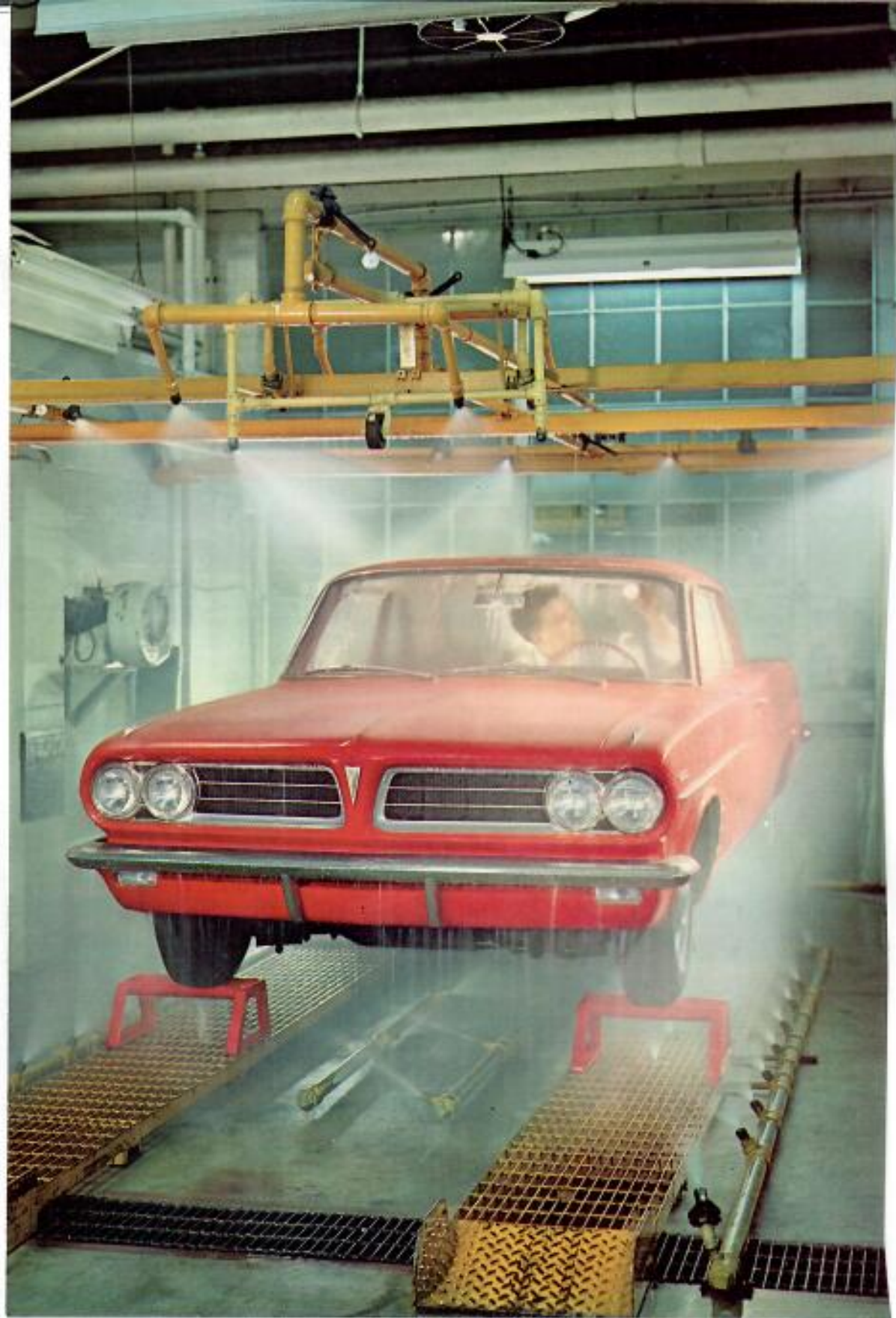
### The Chrysler is shorter

*One of the surprises of the new model year is a Chrysler  
that's four inches shorter—overall length, 215.5 inches.  
The New Yorker illustrated is entering the test track.*



CONTINUED 63



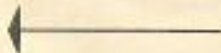


## DETROIT TESTS THE '63 CARS



### Comet has a convertible

*Another soft-top entry among the compacts is the Comet. The flossy extras include even an engine tachometer. The proving-ground test clocks its agility on a steep hill.*



### The Tempest grows muscle

*The Tempest's first convertible, the Le Mans, is five inches longer and comes with an optional 264-horsepower engine. The water barrage tests the car's rain-tightness.*

### The Dodge goes whoosh!

*Biggest horsepower announced so far for 1963 cars is the Dodge's—420, a Polara option. Here the car starts through timing traps in a test on the quarter-mile run.*



## DETROIT TESTS THE '63 CARS



### The Dart: a "senior compact"

*At an overall length of 196 inches—seven inches longer than the '62 Lancer—the Dart is Dodge's version of a smaller car. Test measures the car's stopping distance.*

### Olds moves an engine

*The middle front-seat passenger has a lot more foot room for '63. Moving the engine forward reduced the tunnel height. Here an oscilloscope tests engine vibration.*





## THE '63 CARS

... and now for the facts and figures

By Devon Francis

**N**OW that you have seen the 1963 cars in their test settings on the preceding pages and on our cover (reproduced at the left above), POPULAR SCIENCE is going to give you a more intimate look at them. And more—we'll give you a chance to drive some of them, by proxy. Here's what's what with the new crop of automobiles:

### Power, whew!

The size and diversity of optional horsepower is staggering. In the bigger engines, 400 horses seems to be par for the course, but they range upward of 425. Even some of the compact cars have blown their tops on power. Transistor ignition is here at extra cost.

### Lots more models

The motorist's choice among models (sedans, hardtops, wagons, convertibles) is dizzying. There are more than 300. With options, the number of differently styled, differently equipped automobiles runs into the thousands.

### Those extras

The array of accessories is astonishing. Want an AM-FM transistor radio? Pshaw, that's simple! You can even get stereophonic sound. Bucket seats, four-on-the-floor transmissions? Naturally. Supercharger, tachometer, remote-control deck lid? Rear-window defroster, speed reminder, load levelers, electric tailgate? Just ask.

### Low maintenance

Moneysaving, sparse-service engineering has flourished. One company now guarantees its engines and drive trains for 50,000 miles. The 30,000-mile lube and 6,000-mile oil change are commonplace. So are alternators in place of generators. So are elaborate factory body dips to fight rust.

### Styling

What has been done to the appearance of the cars is something else again. The most damning criticism of U.S. automobiles is that all makes look alike. For 1963, with rare exceptions, they do. In fact, it's hard in some instances to tell a '63 from a '62.

Some of the cars—inevitably, it seems—are bigger than last year's. A handful are a smidgin smaller.

In addition to amber turn signals, all the new cars have plumbing to return crankcase fumes to the cylinders for reburning to cut down on smog.

This month, in advance of Detroit's Auto Show, October 20-28, the last of the '63 lines will be announced.

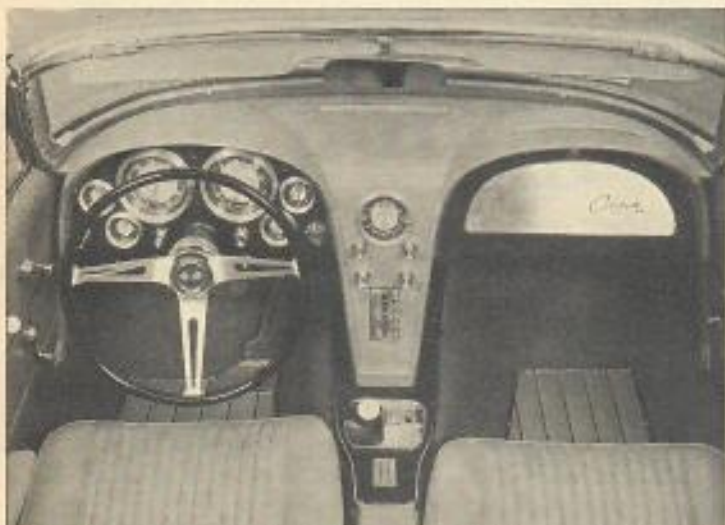
**NOW TURN THE PAGE.....**

## What's new at Chevrolet

- a fetching sports car
- horses, horses, horses!
- self-adjusting brakes
- alternators instead of generators
- extended lube periods

# A new Corvette bows in

Sports car's independent rear suspension and standard Chevy drip-dry rocker panel pace developments at this GM division



Controls for a new mixed-air heater are mounted on cockpit console.

WHEN Chevrolet Motor Division trotted out its 1963 automobiles last month, one of its four brands stood out like a swan in a flock of mallards. It was the dashing Corvette, America's only true sports car.

The frame was new. The suspension was new. The weight distribution was

more conventional. In the new Corvette, there was the standard soft top and a removable hardtop.

The '63 Corvette still faintly resembles the sculptured-fender sports car that Chevy restyled in 1956. It still offers engines ranging in horsepower from 250 to

[Continued on page 212]

## Driving the new Corvette

This sleek coupe looks at first glance like an E-type jag with gland trouble. The one I drove had a 300-hp. engine with a large four-barrel carb and hydraulic lifters. The gearbox was a smooth Borg-Warner four-speed.

I think it's easier to get into than the '62 model. The dogleg in the windshield is gone, the roof is notched, and the seats are lower.

Leg room is still skimpy, though slightly improved over last year. One nice feature: Seat cushions and backs are adjustable for tilt.

The steering wheel, even with adjustment, is too close to allow the straight-arm driving favored by many sports-car drivers; but then, the not-too-fast steering—3½ turns lock-to-lock—wouldn't make this position practical anyway. (You can change the steering ratio, with a wrench, from 19.6:1 to 17:1.)

Behind the seats is a sizeable luggage space.

## What's new at Rambler

- floor-mounted overdrive control
- new gear ratio
- more power

## Little Rambler: 2 shift sticks

THE plushiest of the Rambler Americans, with bucket seats and a console, has a brace of floor-mounted sticks that look for all the world like those in a 4-wheel-drive Jeep. They're not. One



Decorative chrome spruces up the convertible.



With overdrive "in," kickdown to a lower gear is made by pressing button on main shift lever.

works a conventional transmission, the other an overdrive control.

When the second lever is back, OD is in. When it's forward, it's out.

A chrome plate at the base of the gear-shift identifies the positions. A signal light tells when the OD is operating.

The second-gear ratio is changed from 1.63:1 to 1.906 for better spacing. The standard "E-stick" and automatic transmissions are not floor-mounted. Available: 138 hp. as well as 90 and 125.

The company will announce its Classic and Ambassador models this month.

## What's new at Studebaker

- optional supercharging on all cars
- optional disk brakes in front
- sun roof on station wagon

## Studebaker: "Blown" engines

STUDEBAKER sprang an impressive dossier of surprises for '63. By item:

The engine supercharger on the sporty Avanti [PS, June '62, p. 55] is an option on all Studebaker models.

The Avanti's front disk brakes ditto. The braking system incorporates as standard the split main reservoir-like Cadillac's and Rambler's—so that complete hydraulic brake failure is almost impossible. Brakes are self-adjusting.

Station wagons have sun roofs.

Larks and Hawks have alternators.

Cheers!—oil-pressure and amp gauges



Cruiser has new side moldings, tail lights.

read direct. Gone are those idiot lights.

Optional with all V-8 engines is a floor-mounted, 4-speed manual box.

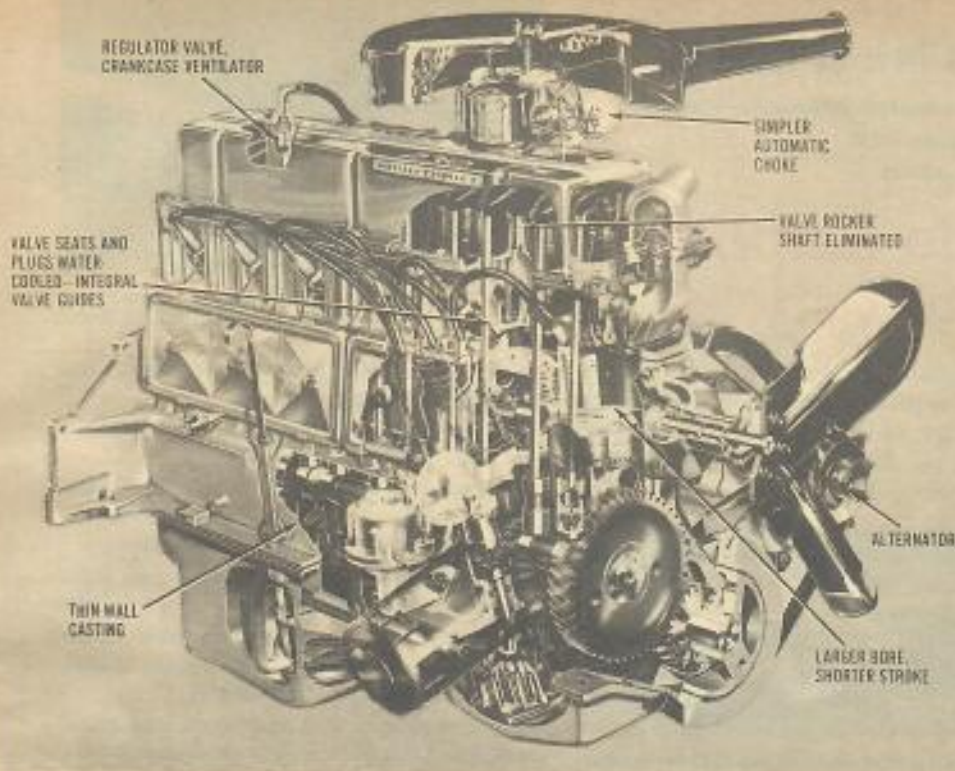
New rear shocks have larger insulators and a bayonet-type mounting to minimize noise transfer to the car body.

A viscous drive to slow down the fan and save engine power as road speed goes up is standard on all supercharged engines, optional on V-8s.

The Cruiser is now on its own—it's no longer the Lark Cruiser, just plain Studebaker Cruiser. This telegraphs some important changes for 1964.

The front-pillar dogleg is no more.

Parallel-sweep wipers overlap.



**In Chevy's new in-line six, inches lower and shorter, each crankshaft throw has two main-bearing supports**

the old engine—that is, without oil or water, but with all its accessories—was 608 pounds. That of the new engine is only 465 pounds.

New foundry techniques give its cast-iron block thinner walls. The exhaust passages are short. That exposes a minimum of their area to the cooling engine water, and that is largely responsible for what the engineers term the "low heat-rejection" characteristic of the new power plant. Lost heat is lost energy. If an engine spews less of its heat into the radiator water, the motorist gets more go from his fuel.

In the new engine less exhaust heat is transferred to the water that jackets its block. The engine, therefore, has to reject less heat through its radiator. The radiator can be smaller—that for the old engine held 18 quarts of water (with heater), that for the new one only 12.

The old engine, in yesteryear's tradi-



Tempest engine is an extra-cost option on all Pontiac's compact models. Rods, valves, cams, manifolds are the same as in 389-inch engine. Heads compensate for varying grades of fuel.

tion, had a small bore, long stroke for high thermal efficiency (use of fuel energy) but poor mechanical efficiency (friction). The new one, "oversquare,"

[Continued on page 216]

Now there's a plastic wood filler that comes in nine easy-to-match wood-finish colors!



better  
buy **DURATITE®**  
**WOOD DOUGH**

Molds like dough,  
hardens into wood

Write for free Wood Dough folder

DURATITE Division 23, DAP Inc., Dayton 31, Ohio

## Planer·Molder·Saw!



Now you can use this ONE power-feed shop to turn rough lumber into moldings, trim, flooring, furniture... ALL popular patterns, RIP... PLANE... MOLD... separately or all at once with a one HP motor. Use 3 to 5 HP for high speed output. Low Cost... You can own this power tool for only \$30.00 down payment.

Send postcard today for complete facts.

BELSAW POWER TOOLS, 323 Field Bldg., Kansas City 11, Missouri



## Best Remover FOR Refinishing Furniture

Low-viscosity Klean-Strip is a free-flowing remover that peels off all furniture finishes without making a gummy mess.

Old finish stays wet and workable, can be wiped off easily. Leaves surface dry, clean, ready for new finish. Non-flammable, safe.

**KLEAN-STRIP PAINT REMOVER**

THE KLEAN-STRIP CO., INC.

MEMPHIS 6, TENN.—WINNIPEG, MAN.

## A New Corvette Bows In

(Continued from page 88)

360. But there all comparisons end.

The frame is heavier. Steel stiffeners lace together inside the plastic body panels. The rear wheels, like the front ones, are now independently suspended. A unique differential housing is attached to the frame. Two universal joints on each side of it sop up jounce. (See story below.) To give the rear wheels added bite, they carry more of the car's weight than the front ones.

The headlights retract. Doors hide them in daytime. At night the press of a switch exposes them. The steering wheel is adjustable by three inches fore and aft. Not instantly, though. It takes a wrench. The same wrench can be used to change the overall steering ratio from a normal 19.6:1 (21:1 in 1962) to 17:1.

The Corvette is a mite smaller. The wheelbase is 98 inches, down 4 from 1962, and the overall length 175.2, down 1.5.

## Corvette's new rear axle

For 1963, Corvette engineers had a problem. They wanted the riding qualities that independently suspended rear wheels would give but, more importantly, the rear-wheel control that a solid axle housing destroys when one wheel hits a bump or pot hole.

But independent suspension in a competition car, slewing around corners? True, the rear wheels of some European competition cars were independently sprung, but their springs were far stiffer to take the side loads.

The engineers wanted not only a better ride and improved handling, but less unsprung weight and an elimination of wheel tramp as well. For rear-wheel control, the wheels would have to move almost straight up-and-down on jounce and rebound. For that reason, notwithstanding the beauty of its engineering, the Corvair's system of swing axles [PS, Oct. '59, p. 108] would not do. The wheel camber altered too much with jounce, and particularly with jounce augmented by side loads.

How did they solve the problem?



# SPECIAL OFFER FOR OCTOBER

# ARROW

## T-50 ALL PURPOSE STAPLE GUN

### SHOOTS

A STAPLE WHEREVER YOU'D DRIVE A NAIL!



## FREE!

\$1.00

### STAPLE LIFTER

with purchase of T-50 Staple Gun

Uses 6 staple sizes up to 9/16", including CEILTILE.

1001 HANDY USES for this heavy duty ARROW Automatic Nailing Tool in and around the house! Saves time and labor applying insulation, ceiling tile, screen, weatherstripping, etc.

COMBINED Retail Value: \$13.50

**BOTH only \$12.50** (Reg. Price of Gun)

ARROW FASTENER CO., INC. Brooklyn 12, N. Y.

Available at HARDWARE, LUMBER, BUILDING SUPPLY & STATIONERY STORES EVERYWHERE.

CARBONUM  
STANLEY  
GUPONY  
WEN  
Crestliner

**DISCOUNTS to 40% BY MAIL**  
**NEW CATALOG READY!**  
More than 1000 finest U.S. products for home, workshop, garden, boat... plus paint and painting supplies—all at great prices!—in our new, expanded catalog! 80 fully illustrated pages. Each item guaranteed. Send only 25c for your copy.

**GATES GENERAL CORPORATION**  
P.O. BOX 355 PS, FARMINGTON, CONNECTICUT

Garage  
Basement  
Shed, Shop  
Barn

**SOLVE STORAGE PROBLEMS**

### WITH HERCULES HOOKS

Patent applied for  
obsoletes every other method of  
**HEAVY DUTY WALL STORAGE**

These giant steel hooks are approx. 1/4" thick. They fit over the common 1" x 4" wood board. Simple to put up. NO perforated wallboard is used.

Hold the heaviest tools, equipment, shelves, etc. **HOLDS EVERYTHING.** Ask for them by name at your dealer. **HERCULES HOOKS!**

Sample hook sent direct to you. Enclose 10c for mailing. Literature **FREE!**

**THE KERR WIRE PRODUCTS CO.**  
835 N. Cicero Avenue • Chicago 51, Illinois



**FlexPort PET DOOR**  
Ends Whining, Scratching, Door-Tending

Why be a doorman for your pet? FlexPort ends scratched doors and whining. Keeps out flies, wind, rain. Gives you and pet complete freedom. Soft elastic triangle close gently and tightly. Easily installed. Send for free folder.

**TUREN, Inc.**  
Dept. PS-10  
2 Cottage Ave.  
Danvers, Mass.

**WAR SURPLUS AND OTHER BARGAINS SAVE UP TO 90%**



**DELCO ELECTRIC STORAGE BATTERY WINCH**

Model 350' of 1 1/2" cable. Operates on 6 and 12 V. battery, 1000-lb. max. resistance. Lift cap. 2500 lbs. Heavy-duty mounting base with roller bearing and steel support. Heated construction. Over-size. Dia. 2 1/2" L x 9" W x 6" H. For jets, trailers, boats, trucks, cars, etc. 30 lbs. Approx. GOVT. COST \$490. NEW, Model E-D. \$99.50.

**MODEL E** Same as above but without heavy-duty base and support support. Steel cap. 70', 1 1/2" cable. NEW. \$49.50



**BUILD YOUR OWN ARC WELDER, LIGHT PLANT OR BATTERY CHARGER \$39.50**

Kit incl. 1 Navy NEA-5 Gen. combination AC-DC type. AC 115 V. DC 24 V., 200-300 Amps. 2 complete generators in 1, yet no larger than reg. gen. load for home, shop and farm lighting loads. Delivers 1200 Watts AC, DC side for charging, locomotives, welding and operating war surplus motors. Also 15 amp 1 DC Voltage Reg., Reverse Current Relay, 1 Voltmeter, Rheostat, Electronic Indicator, Toggle Switch, Walter's Shield, Wiring Diagram for kit. Kit. \$39.50. Navy NEA-5 Gen. as above, purchased separately, \$23.50



**DELCO DC GENERATOR** - 18V. 50 Amp. at 2400 RPM. Pedestal mounting. Rugged, ball-bearing construction. 3/4" shaft with key and keyway. 1 1/2" Dia. 23 lbs. Great for trailers, buses, boats, for battery charging or wherever heavy emergency is required. Approx. GOVT. Cost \$87. NEW \$17.88

**BIG NEW 1963 CATALOG!**

Send 50c in coin for amazing new catalog with 1000's of surplus bargains in hydraulics, electrical, precision tools, machine parts, automotive, etc. for hobbyists or industrial. Or order now this ad and receive a free copy. All prices F.O.B. Culver City, Calif. 50% disp. for C.O.D. Send check, cash or money order. Order today!

**AIRBORNE SALES CO., INC. DEPT. PS1062**  
8501 Steffer Drive • Culver City, California



**Clock Plans & Movements**

Build this beautiful grandmother clock from kit which includes plans, 110V movement and dial—only \$9.95. Fed. Tax included. Send 10¢ for 24-page booklet describing other plans, movements, dials and moldings.

**CRAFT PRODUCTS, ELMHURST 2, ILL.**



**DRAINS** cisterns, wash tubs; **\$7.95**  
**IRRIGATES - CIRCULATES - SPRAYS**

1,001 uses. Stainless shaft. Won't rust or clog! Use 1/4 HP motor or larger . . . 3/4 HP for up to 2,400 GPM; 400 GPM 80' high or 1800 GPM from 2 1/2' well. 1" inlet; 3/4" outlet. Complete included from \$7.95. **HEAVY DUTY BALL-BEARING PUMP.** Up to 3,200 GPM or 2,000 GPM from 2 1/2' well. 1 1/4" inlet; 1" outlet. \$12.95. *Jumped if sent with order. MONEY BACK GUARANTEE*

**Centrifugal and Gear Pumps in All Sizes**  
**LABAWCO PUMPS, Belle Mead 2, New Jersey**



**AUTO COMPASS**

**WHICH DIRECTION IS WHICH?**  
—This West German made Fluid Auto Compass will tell you, quickly and accurately. Attaches to windshield or dash panel by suction cup with ball and socket swivel for level alignment. A useful accessory for any car.

**FLAMINGO HOUSE INC.**  
3726 DAVIE BOULEVARD  
FORT LAUDERDALE  
FLORIDA

**PRICE**  
each **\$3.50** P.P.D.

**New Engines: Chevy, Tempest**  
(Continued from page 79)

has a big bore, short stroke for high mechanical efficiency. The thermal efficiency nonetheless remains good, due in part to head design but mostly to today's superior fuels.

For what it may portend for the future, the big news is the engine's seven main bearings. Practically a twin of the 120-horsepower six brought out last year to power the Chevy II, the new engine can grow still more.

On the basis of today's sales ratios, the engine will power a little better than one out of every three standard Chevrolet cars produced during the 1963 model year. If its basic design is as good as that of the 1929 engine, Chevy won't have to junk it until 1985.

**Tempest V-8.** The reason for the new Tempest engine is simple. The car was engineered and styled for younger motorists. Younger motorists want performance. The standard four-banger engine left something to be desired when the light turned green.

The 185-horsepower aluminum V-8 that had been borrowed from Buick for the Tempest had proved too costly for the customers.

So, for the same reason that Buick brought out its less costly cast-iron V-6 last year, Pontiac brought out its less costly cast-iron V-8 this year.

To describe the Tempest's new 326-inch, 260-horsepower engine as brand-new is a slight abuse of the truth. Actually, it is the standard Pontiac 389-inch, 348-horsepower block with a bore so much smaller that it is undersquare. The bore is 3.72 inches against the bigger engine's 4.06. The stroke for both is 3.75.

It also would abuse the truth to say that a smaller bore is the only change. Cylinder heads are new. So are the oil rings, pan, and exhaust manifold. The added torque of the new engine—352 pound-feet against 230 for the aluminum V-8—necessitated a heavier clutch ahead of the manual transmission, bigger components in the automatic, and heavier gearing in the drive train. ■ ■

# SURPLUS SALE

GOVT SURPLUS  
EXCESS INVENTORY  
BANKRUPT STOCK



**HYDRAULIC SURPLUS BARGAINS**  
Great savings. Build load  
up. Divers. pressure, etc.  
# Item #2004. 1000 lb., 10 gpm. \$33.95  
# 12-v battery. Hyd. Pump \$8.95  
# Hyd. Hyd. Pump \$10.95  
# reservoir \$29.95  
# Hyd. Hyd. Hyd. \$16.95  
# Hyd. Hyd. Hyd. \$16.95

**DIAL TELEPHONE**  
# Item #718. 400. 400. 400. 400.  
used on old phone systems. Use  
as extension or from phone and  
on private systems. Directories furnished.  
Tel. 8 lbs. Cost \$23.00. SALE \$7.95

**AIR COMPRESSOR EQUIPMENT**  
Make your own outfit. For painting  
trees, shop use, etc. Save to  
# compressor. \$21.50. Govt. Tank.  
\$10.00. Gauge. \$1.75. Paint Disp.  
\$11.50. Auto switch. \$4.75. Air  
Regulator. \$2.95.

**SELF PRIMING WATER PUMP**  
# ITEM #304. New Govt. Five  
1/2" bore. pump. etc. 75000  
centrifugal. 1 1/2" intake and dis-  
charge ports. 4" shaft. 1/2"  
12" x 10" x 10" Wt. 22 lbs.  
SALE \$19.49

**12-V BATTERY ELECTRIC CAR MOTOR**  
# Item #454. Powerful  
your motor. 10 1/2" bore.  
1 1/2" shaft. 1/2" x 1/2" x 1/2"  
etc. with selector.  
etc. Size of 12-v battery. 10 1/2"  
1000. 1000. 1000. 1000.  
Wt. 24 lbs. Govt. cost \$20. \$18.95  
SALE \$18.95

**STORAGE BATTERY WINCHES—HOISTS**  
# Item #218. 12-v. Govt.  
reversible. 500 lb. bearing  
motor. capacitor winch.  
1000. 1000. 1000. 1000.  
Wt. 24 lbs. Govt. cost \$20. \$18.95  
SALE \$18.95

**HYDRAULIC SPEED REDUCER**  
# Item #1311. 1 1/2" D. trans-  
mission. Variable 1 to 200 rpm.  
Instantly reversible. Ideal for  
lathes, mill cutters, etc. Roller  
bearings. Complete except motor.  
Use your own shaft or 2  
plans motor. Equipped with  
pully. Heavy in. Motor. Size 2 1/2" x 2 1/2".  
Wt. 300 lbs. Govt. cost over \$90.  
SALE \$79.50

**ARMY CAPSTAN WINCH**  
# Item #325. Just can't do it  
without. New Army winch with  
expansion winches. 2000000 ft.  
steel cable. 100 lb. weight. 4"  
shaft. Ideal for boats. Also in-  
cludes shaft which can be driven  
from flexible coupling to the motor shaft.  
Also easily adapted to 12-v battery motor  
drive. Size 1 1/2" x 1 1/2". Wt. 20 lbs.  
Govt. cost over \$100. SALE \$33.95

**GOVT. SURPLUS A-C POWER PLANTS**  
# Wonderful buys in Govt.  
plants and generators. Save  
to \$1000.  
# 1000-w 115-v 60-c. \$175.50  
# 2000-w 115-v 60-c. \$205.50  
# 3000-w 115-v 60-c. \$225.50  
# 4000-w 115-v 60-c. \$255.50  
# 5000-w 115-v 60-c. \$275.50  
# 6000-w 115-v 60-c. \$295.50

**GOVT AIR COMPRESSOR**  
# ITEM #454. Expensive Gov't.  
Compressor. 60-c. make 12-v  
3/8". Ball-be air driver. roller  
shafts etc. Very compact and  
efficient.  
# Low noise portable. Incom-  
plete. air pump. etc. "Star"  
type. Wt. 24 lbs. Govt. cost over \$19.97  
SALE \$19.97

**GENERATOR—3000W—115V**  
# ITEM #454. D.C. load bear-  
ing capacitor wound Delco  
type. 1 1/2" shaft. 2800 RPM.  
10000 ft. portable. 1000.  
1000. 1000. etc. Wt. 24 lbs.  
Govt. cost \$100. SALE \$54.75

# SPECIAL OF THE MONTH!

**PORTABLE GOV'T. SPRAY TANK**  
# Item # 1810. Govt.  
spray tank with built  
in pump for spraying weeds,  
fertilizer, herbicide, etc.  
1100. 1100. 1100. 1100.  
Wt. 24 lbs. Govt. cost \$117.79  
SALE \$117.79

**POOL WATER FILTER**  
# Item #2019. Provides in-  
termediate water for small  
swimming pools. For res-  
taurants, industry, etc. Com-  
plete or multi-section filter  
in steel tank with diaphragm  
cover. 2 1/2" bore and 1 1/2"  
etc. multi-section. 1000.  
1000. 1000. 1000.  
Wt. 24 lbs. Govt. cost \$179.71  
SALE \$179.71

**GOV'T. CABLE AND WIRE**  
Have V-8. 600. 600. 600. 600.  
cable, paper wire. power  
cable, etc. For tele-  
phone systems.  
# Item #787. Govt. 225 gauge  
cable. 1000. 1000. 1000. 1000.  
Wt. 24 lbs. Govt. cost \$19.97  
SALE \$19.97

**Wonderful buys Saragosa Instruments—WRITE!**  
All Items This Ad **FREE** Send For  
Your Free 1962 CATALOG  
FROM LINCOLN  
**SURPLUS CENTER**  
Dept. 832, LINCOLN, NEBR.

## Get a goldmine of hunting and shooting know-how in great \$1.00 book

Jack O'Connor, Shooting Editor of Outdoor Life Magazine, and America's top gun expert, hands you a million dollars worth of gun and shooting know-how in his **OUTDOOR LIFE SHOOTING BOOK**. It's packed with inside tips, expert advice on small-bore rifles, big game rifles, shot-guns, handguns, ammunition, scopes, sighting, chokes and patterns, plenty more. Lavishly illustrated with 100 photos, diagrams, trajectory tables, ballistics charts, etc. Large format, fully indexed, handsomely printed—worth its weight in gold! And the **OUTDOOR LIFE SHOOTING BOOK** is yours for **JUST \$1.00 postpaid!** Act fast! Send name, address, \$1.00 to:

**Outdoor Life** Dept. 1062  
355 Lexington Avenue, New York 17, N. Y.

priced from \$109.50...  
HAND-HELD, MOBILE, BASE STATION

## 2-WAY RADIO

### VIKING MESSENGERS



Now, 3 feature packed Johnson Messengers...  
**outperforming everything else in the field!**  
Compact, hand-held 100 milliwatt or 1 watt "Personal Messengers". Rugged and reliable—11 transistors, 4 diodes Superheterodyne receiver and exclusive tuned RF amplifier gives twice the sensitivity and 40% more range than similar units with conventional circuitry—more output than similar units with same rated input!  
For mobile or base stations—performance proved Viking "Messenger" punches your signal across the road! High efficiency design makes full use of maximum allowable legal power. Excellent receiver sensitivity and selectivity. Automatic "squench" control—5 channel coverage. Only 5 1/2" x 7" x 1 1/2", easy to install anywhere!

**WRITE TODAY**  
for  
Information packed  
& Color Catalog

**E. F. JOHNSON COMPANY**  
1407 10th Ave. S.W., Waco, Minnesota

Please rush "Messenger" details to:

NAME \_\_\_\_\_  
ADDRESS \_\_\_\_\_  
CITY \_\_\_\_\_ STATE \_\_\_\_\_

Manufacturers of the world's most widely used personal communications transmitters.

Why borrow?  
**Speedy Sprayer**  
 now only **\$39<sup>95</sup>**



New! Speedy Sprayer Outfit complete with motor, ready to plug in and spray! Pays for itself on your first big paint job. Does an hour's work in minutes—spray fences, screens, shutters, furniture, rough walls, floors, etc. Smooth, flawless finish. A real professional tool! Ask for "Compact" 404. Write for "How to Spray" and folder.

**W. R. BROWN CORP.**

Specialists in Portable Sprayers Since 1921

2637 North Normandy Avenue • Chicago 35, Illinois

**SEND FOR BOOKLET**

All you need to know, in simple "get-it-hot" language... priceless experience of best-qualified wood finishing experts. "Short-course" booklet tells how to get top results from primers, sealers, finish coats, today's improved materials and methods. Save money, time and possible mistakes. Send \$6 to Pierce & Stevens Chemical Corp., 715 Ohio St., Buffalo 2, New York. At Fair, Hardware, Lumber Stores. In Canada: Pierce & Stevens Canada, Ltd., Fort Erie, Ont. Published by the makers of Farrow.

**NATURAL  
 Wood  
 Finishing  
 Made Easy**

Expert Results Every Time

**WOOD LORE**

**SELF-RUBBING SATIN FINISH**

**GUNK**® removes grease  
 -- scourfully!  
 cleans -- degreases -- freshens



- power mowers • engines
- cement floors • kitchen walls • ovens • exhaust ducts
- paint brushes • furnace filters • barbecue grills
- implements • machinery

**AT AUTO SUPPLY, FARM & HARDWARE STORES!**

GUNK CHEMICAL CO., 3001 South Blvd., Chicago, Ill.

REGISTERED TRADEMARK, Springfield, Mass.

**Ford Stable: A Clashfree, 3-Speed Box**  
 (Continued from page 73)

regulator, generator, or both. A bimetal automatic control dumps hot air from the carburetor to prevent vapor lock when the engine is turned off. Another automatic control retards the return spring on the throttle linkage to stop engine stall-out during hard stops.

The Fairlane, in common with all Ford Motor's cars, retains those rear "Thunderbird-roof" supports—inelegantly called ear muffs—that shut off part of a driver's rear view. They must have appeal, though—almost every other car in the industry has copied them.

**Thunderbird** The T-Bird introduces an astronomical lubrication figure: After factory greasing, the front suspension is good for 100,000 miles, or seven years, whichever comes first.

Ford tried for two years to achieve this almost-permanent lubrication. Rain kept washing out the grease. If it didn't wash out, the stuff froze. Ford and the oil industry finally got the combination—molybdenum disulphite combined with lithium. Among other properties it had to have was chemical stability.

The 100,000-mile lube covers upper and lower ball joints, tie-rod joints, and steering geometry. Transmission oil and differential grease are already a life-of-the-car deal. And who remembers when he last had rear leaf springs greased?

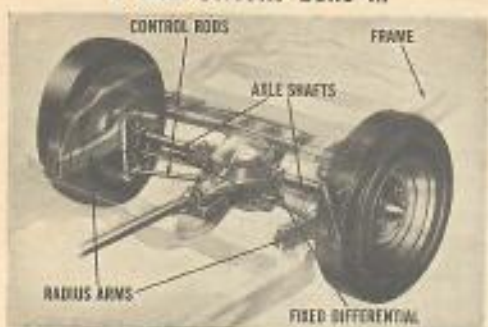
The T-Bird's windshield wipers are hydraulically powered by tapping fluid in the power-steering unit to run a pump motor. It keeps the blades going in high winds, at high speeds, when electric and vacuum-powered ones tend to balk.

An alternator replaces the generator. The exhaust pipe is double-walled to deaden sound.

In the next two months the T-Bird will have a transistor ignition system.

Grille, tail lights, and wheel covers are new. A sharp eye will detect also a change in the front fenders, doors, and sheet-metal sculpturing.

### A New Corvette Bows In



Four axle universals transmit Corvette's power.

They use what they call a three-link system. Its components: a radius arm running longitudinally from trunnion at the car frame rearward to the wheel spindle support; a lateral control rod anchored to the differential and wheel spindle; a double universal tubular axle.

The differential housing is anchored to the frame to make it part of the car's sprung weight. With no room for longitudinal leaf springs, the engineers adopted a single, transverse, nine-leaf spring. At center it is bolted to the differential and, therefore, to the frame. Floating rods connect the spring's main leaf to the radius arms. That relieves the spring of any forces except vertical suspension loads, lending it as much fore-aft rigidity as paired leaf springs.

The differential becomes the key to acceleration and braking forces and the absorption of side loads. Radius arms, axles, and control rods transmit these to the differential and thence to the frame.

Axle shafts and control rods work like the suspension system used on front ends to retain the proper wheel camber angle on jounce and rebound. Rear-wheel motion is practically vertical. ■ ■



Reversible motors operate headlamps. Dash light warns if lights are on with doors closed.

# Test your automotive I.Q!

QUICK QUIZ BY QUAKER STATE



1. What is significant about this motor?



2. What does this symbol stand for?

This is the new V-6 engine developed by Buick. The life preserver at bottom stands for Quaker State Motor Oil—because it is the best engine life preserver. Made from 100% pure Pennsylvania Grade Crude Oil, Quaker State keeps your car on the road, out of the repair shop. Insist on Quaker State—the best engine life preserver.



QUAKER STATE OIL REFINING CORP., OIL CITY, PA.



Corvette StingRay is two inches lower than '62 model. Car's shape helps cut wind drag.

**Chevy** For several years the Chevy passenger car has carried on a bland now-and-then flirtation with an engine of 409 cubic inches used in the heavier Chevy trucks. It was available on special order.

Now Chevy has formalized its addiction to huskier horses. The 409 engine, turning out 425 hp., is, for the second straight year, listed as a regular option.

On the saner side, Chevy has its second in-line six-cylinder engine since the year 1929.

Improvements in the standard car are, for the most part, subtle. Windshield pillars are straight, making it easier to get in and out of the car. Brakes are self-adjusting. An alternator replaces the generator. The lube period is extended from 2,000 to 6,000 miles, or every six months. Transistors replace tubes in the radio.

In a car's rocker panel, moisture and dirt collect. The panel rusts eventually. Chevy engineers have routed rain water through the rocker panels to flush them. Then air, following the same route, dries them.

For short trips it can also accommodate a child sitting laterally in a penitent position.

In stock form the car is softer-sprung than imported sports cars. Happily, stiffer springs, discontinued in 1962, are again optional for competition. Despite its softness, our test car with standard suspension handled quite creditably. The independently sprung rear end can be drifted accurately through corners, and a light tap on the load pedal sets things straight again. The tendency to fishtail out of a corner,

**Chevy II** This in-between car has a new grille, new interior trim, self-adjusting brakes, and improvements in the front suspension and steering linkage. The 300 and Nova 400 series sport new body side moldings.

The car goes 6,000 miles between lubes. An addition to the line: the Super Sport with—what else?—bucket seats, a floor-mounted selector lever when the transmission is automatic, and all manner of Christmas-tree baubles to drool over.

The Super Sport is available either as a coupe or convertible. Its instrument cluster includes a clock and gauges (instead of warning lights) for oil pressure, ammeter, and engine temperature. Special wheel covers are supplied, but whitewalls are an option.

**Corvair** Adhering strictly to its body lines at birth in 1959, the Corvair has some new chrome, new tail lights, new interior trim, a new color called Fawn.

The most important changes are not visible. Brakes are self-adjusting. The front suspension is firmer. Heavier aluminum interior coating on the exhaust pipe defers rust. Transistors replace tubes in radios. Carried over as an option: the Monza Spyder with a supercharged, 150-hp. engine. Greenwood station wagons have been dropped.



Corvair retains all of its basic sheet metal.

exhibited by earlier models, is gone. Lean is mild.

Acceleration? With only 130 miles on the odometer and 3.36 gears in the rear end, I ran 0-60 m.p.h. in 8.4 seconds and 40-70 m.p.h. in 6.5. If this isn't good enough for you, try a well-broken-in 360-hp. job with more zest in the axle ratio. Or if you're lazy, order a milder engine with slushbox and power steering and brakes. These babies come tailor-made as mean or as docile as you like.—Alex Markoich.

## What's new at Pontiac

- a transistor ignition system
- horses, horses, horses!
- a classic Grand Prix
- safety-recessed control knobs
- lighter, thin-walled engines

# Pontiac: A new ignition

Deadpanning a major piece of its news, this factory adds two razzmatazz models and recesses controls on its instrument panel



Tilting steering wheel lets you take your pick of seven positions for driving comfort.

PONTIAC had a chunk of major news for 1963—a transistorized ignition system. (Other prospective users as of now: some versions of Ford's T-Bird and Galaxie, and of Mercury's Monterey.)

True, Pontiac's new ignition comes at extra cost. True, it's available only on high-compression engines. But for Pontiac, as for all the U.S. automobile industry, it is a portent of things to come.

As described three years ago by *POPULAR SCIENCE* [May, '59, p. 94], a transistor spark system for a piston engine is designed to last for a car's lifetime. It provides a hotter spark, quicker starting. It's easier on plugs. It does away with distributor points and a condenser.

Fully transistorized, trouble-free ignition systems for all cars are as inevitable as tomorrow's sunrise.

## Driving the new Tempest

The 1963 Tempest with that wicked 326-inch V-8 is a likeable car—a whole lot more so than last year's model. I thought the seating position excellent. The buckets give as much lateral support as any from Detroit. Instrumentation, what there is of it, is well designed. A circular speedo and tach sit right in front of the driver. All other engine data are relayed via little blinking lights.

Visibility is fine. So is the angle and distance of the steering wheel. But oh, that slow steering—a painful six turns lock-to-lock. This is excessive even for a big car; for a compact, it's unbelievable.

Ride is on the soft side, as in previous years. Handling is eerie at first; the independent rear suspension is responsible for strong oversteer—a tendency of the turn to sharpen up on you

and of the tail to slide out. But thanks to redesigned rear-suspension geometry, wider track, and slightly firmer springs, the breakaway point comes with more warning. With practice, I could use the oversteer to get around corners faster. If you try it, keep one eye open for the boys in blue. They usually don't approve.

Heavy-duty brakes are standard with the V-8. They consist of large finned drums in front and longer primary brake shoes all around. All stops were fast, firm, and straight. Fade was minimal.

If you've driven a four-cylinder Tempest recently, the performance of that big 260-hp, 326-incher will really startle you. I batted out a 0-60 time of 8.1 seconds—with a 2.91 rear end and automatic box, no less. The 40-70 run took six seconds flat. That's handy in passing on two-lane roads.

I keep wondering what she'd do with a four-speed stick.—A.M.

Pontiac did have other news of consequence. It pulled the shrouds off a sleek model called the Grand Prix. The name was borrowed from a last year's model, but this Grand Prix is a new car in its own right, classic in line and with an attractive minimum of decoration.

All of Pontiac's '63 cars feature instrument panels with controls safely mounted in a cove for driver crash-protection.

Thinner-walled engines reduce weight. They also can bulge more. Pontiac's biggest engine for the new model year measures 421 cubic inches, up 11. Horsepower has climbed from a top of 348 to 370. Alternators are standard.

Pontiac's Tempest is equipped with the most muscular engine among U. S. compact cars—a V-8, it produces 260 hp. [See a following article.] It's an option.

The Tempest now comes in a sports-style, bucket-seated convertible version, and at 194.3 inches it is a full five inches longer in all its configurations.

The Tempest's rear swing axle, with its unique stern transmission, has been re-engineered to offer greater resistance to centrifugal forces on turns. Propeller shafts are beefed up.

Still another option: a tachometer.

## Driving the new Grand Prix

When I went to Pontiac to pick up a Grand Prix, I wasn't expecting one with the 421-cu.-in. engine. But that's exactly what I got, so I couldn't resist starting my tests with the acceleration runs. The 0-60 run took 7.9 seconds, and 40-70 took 5.9 seconds.

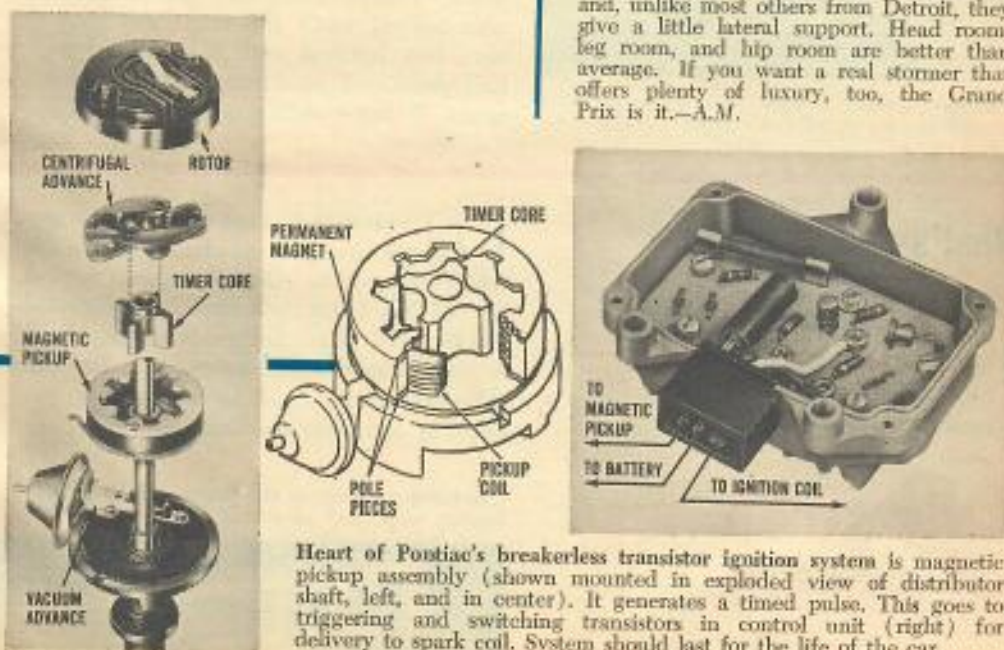
These figures, though impressive, don't compare with those of the 421 engine with a four-speed manual gearbox. Some months ago I tested this combo and polished off 0-60 in 6.1 seconds.

Why the big difference? The rear-axle ratios account for part of it. The slushbox runs a 3.08 rear end, the manual a 3.42. Also, the HydraMatic box was slipping. But this may be a fault only of this particular car—it had just undergone a long series of rugged hill-climbing tests. The brakes, too, had suffered from the tests; they were pulling to the right slightly. But this was a simple adjustment. I still believe those Pontiac aluminum drums are one of the best setups offered by the industry.

The suspension is typical of GM products—soft. But the car corners quite well. A mild understeer is evident, but not enough to cause serious trouble. Lean is minimal. Steering is as slow as a ferryboat; even with power assist it requires 4½ cranks lock-to-lock.

The horizontal speedometer (ugh) may please the stylists, but it can't be read as easily as a circular one. And there's that ridiculous floor-mounted tach again. And all those blinking idiot lights.

But the bucket seats are comfortable and, unlike most others from Detroit, they give a little lateral support. Head room, leg room, and hip room are better than average. If you want a real stormer that offers plenty of luxury, too, the Grand Prix is it.—A.M.



Heart of Pontiac's breakerless transistor ignition system is magnetic pickup assembly (shown mounted in exploded view of distributor shaft, left, and in center). It generates a timed pulse. This goes to triggering and switching transistors in control unit (right) for delivery to spark coil. System should last for the life of the car.



## What's new at Buick

- a sleek, un-gewgawed model
- self-adjusting brakes
- alternators
- new heaters and air conditioners
- tilting steering wheels

# The Buick story: Glamor

European simplicity in exterior style is combined with a driving compartment like an airliner's to produce the Riviera



Windows without frames were made possible by redesigning the Buick's outer door panels.

THE engineering departments and sales departments of automobile factories maintain a sort of armed truce. The engineers are coldly practical. The salesmen, bursting with adjectives, keep prodding the engineers to come up with something new to sell cars.

Last month Buick engineers brought out what, in their terse language, was a "two-door, four-window, pillarless coupe." The salesmen called it a "revolutionary, four-passenger sports hard-top."

Splitting the two descriptions down the middle produced an approximate truth. The spanking-new Buick Riviera was indeed what the engineers said it was; but, teamed with the stylists, they had produced something more—a glamorous, if unrevolutionary, vehicle. Like

## What's new at Olds

- new low maintenance
- self-adjusting brakes
- wheel-driven speedometer
- new sheet metal
- reduced turning diameter

# Olds stretches oil periods

OLDSMOBILE cars now need undergo an engine oil change only each 6,000 miles. The oil-replacement period for '63 has been stretched an additional 2,000 miles. This low-maintenance item is added to lifetime lubrication for the differential and front undercarriage, excepting the steering linkage.

Clustered on dash at the driver's right are the heater, vent, and air-conditioning controls.





On console are controls for transmission, radio, and lights, plus ash tray and map box.

Pontiac's Grand Prix, the Riviera is designed to compete with Ford's Thunderbird.

Its lines are clean in the tradition of costly European cars, its sheet metal almost free of chrome gewgaws. It has four bucket seats. The Riviera's machinery is substantially that of the standard Buick's. Its engine, Buick's biggest, produces 340 horsepower.

On a wheelbase of 117 inches, the car is 208 inches long and 53 high.

All '63 Buicks have self-adjusting brakes, alternators, throw-away fuel filters, and batteries warranted for 36 months. Excepting the Special, all have new heaters less sensitive to car speeds, heaters and air conditioners in single-package combinations, optional cruise control, and tilting steering wheels.

All brakes are self-adjusting. Heretofore they were service-free only on powered units. To compensate for the added front-wheel weight when the engine was moved forward to reduce tunnel height, the timing-chain cover and water-pump housing are aluminum, not cast iron.

Turning diameters are down almost three feet, even though the cars are an inch-and-a-half longer. Fenders, hoods, doors, and deck-lid sheet metal are all new. For more accurate speedometer readings, the cable is run off the left front wheel, not the transmission.

## Driving the new Riviera

If you haven't been behind the wheel of a Buick for four or five years, you'll doubly appreciate the Riviera. It handles better than any Buick that preceded it.

Of course, this staid 4,185-pound sedan wasn't meant to be thrown around turns, but I tried it just for fun. The front end ploughed noticeably and the tires screamed wildly—like banshees at a wake. But lean was moderate, and the abundant horsepower got me through the turns with a minimum of wrestling. The power-assisted steering is pleasantly fast for a car of this bulk; it requires about 3½ turns lock-to-lock.

The traditional Buick featherbed ride hasn't suffered. The worst ruts and bumps are ironed out completely. Road noise is practically nil.

The engine is a bear. It displaces 425 cubes and puts out 340 hp. Our test car had a double handicap: air conditioning and a mild cam left over from 1962. Even so, 0-60 and 40-70 times were 8.5 and 6.5 seconds respectively. Without refrigeration and with the new cam, these times would probably be pared down to about 7.8 and 6 flat.

The Turbine-Drive transmission is undoubtedly the smoothest automatic made. Brakes, too, are beyond reproach. Visibility is good except for a blind spot at the right rear caused by a fat roof pillar. But my big gripe is the instrumentation—or lack of it. The dash is a Milky Way of warning lights. And the tachometer is well hidden on the drive-shaft tunnel. With a slushbox, who needs a tach anyway?

An optional feature I wouldn't be without is the vertically adjustable steering column. It makes entry easier and allows the tilt of the steering wheel to be changed. Seats are comfortable, and leg room is good all around.—A.M.



Shades of yesteryear! Photo shows spindle on lugs side of wheel, speedometer cable, and mounting. Installation is on inside of wheel.

of gears from its fully synchronized 4-speed. But U.S. factories had never bothered with low, especially after the advent of automatic transmissions, because of manufacturing cost.

For 1963, Ford had other things to talk about, too. It published 11 different horsepower ratings for its engines. While this was two less than in 1962, it remained an impressive array, especially when combined with a buyer's choice of eight axle ratios. Mechanical changes ran into the dozens. By brands:

**Galaxie** The bread-and-butter car in the division's line-up, the Galaxie has a softened ride. Insulation under the hood and fenders, on the firewall, cowl, and floor pan, and in the rear-seat area dampens noise.

As in the Falcon [PS, Sept., p. 55], Galaxie engines—indeed, all Ford Motor engines—no longer require dealer inspection after the first 1,000 miles. The first oil change by the buyer: at 6,000 miles. Added to the considerable list of low-upkeep items is universal-joint lubrication good for 30,000 miles.

The Thunderbird's swing-away steering wheel is now a Galaxie option. So are a "reverberator" rear-seat speaker for stereophonic sound and an AM-FM radio.

Lustiest (405 hp.) and flossiest Galaxie is the 500 XL, with bucket seats and optional 4-on-the-floor transmission. That new synchronized 3-speed is available, too, as it is in the Fairlane. For the big engine: transistorized ignition.

The conventional, squared-off styling of the Galaxie's 209.9 inches bow to stern has been touched up.



Most muscular of Ford's engines, in Galaxie 500 XL, produces 405 hp. at 6,000 r.p.m.

**Fairlane** Two hardtops 13½ inches shorter than the Galaxie, and two wagons four inches longer than the sedans have been added to this line of middle-size Fords. An optional, rearward-facing third seat tucks under the floor when unused.

For all Ford engines, terminals are sealed on the voltage regulator to keep all-thumbs mechanics from shorting-out

[Continued on page 214]



Sole change in T-Bird's controls is removal of power-window buttons from doors to console.

tires. Surprisingly, in view of all the rumpus, the car sticks well to the road. I soon found myself relaxing while cottontailing through the corners at a respectable clip.

But ride is this car's best feature. The new suspension incorporates, besides the conventional up-and-down cushioning, a slight amount of horizontal give. Minor road irregularities such as tar strips—usually a problem with all but the most gooey suspensions—are damped beautifully. Yet the suspension is firm enough

to soak up the worst potholes with no pitching. The cabin is well insulated from road noise and engine vibration.

And no complaints on performance. Of course, the 500 XL that I drove—with 406-inch engine, four-speed gearbox, and 4.11 axle—wasn't exactly typical. My 0-60 run took a short 7.3 seconds. Then I ran it up to 100 from a standing start. Time: 17.4. It's in the upper speed ranges that this engine really comes on.—A.M.

## What's new at Chrysler

- industry's first long-term guarantee
- drastic restyling
- horses, horses, horses!
- Valiant, Dart convertibles
- vacuum-operated parking brake

# Guaranteed: 50,000 miles

Chrysler adds to its list of low-maintenance items a stunning warranty on engines and drive trains—if you abide by the rules



Valiant—as well as Dart—has returned to single headlights.

**I**N the last couple of years the U. S. motorist has been treated to a shocking extravagance by the factories that make his automobiles. The old 90-day guarantee on parts, as sacred to the industry as the extra cost for heaters and

radios, has given way to a 12-month, or 12,000 mile, warranty. Last month the Chrysler Corp., in a spectacular gesture of confidence in its products, raised the ante. Not by one year, not by two years, but to a full five years, or 50,000 miles, whichever comes first. The warranty applies, of course, only to engines and drive trains. Specifically, the company will pay for the parts and labor if the head or pan of an engine has to be removed, or if transmission, propeller shaft, or rear axle must be disassembled.

There are provisos. Spark plugs are

## Driving the new Dart

There's a good reason why I saved my road test of the Dart GT for last. It's a car I feel at home in. Yet I wouldn't unqualifiedly recommend it for everyone.

Need a car large enough to ferry a small family to Aunt Millie's every Sunday? Want good handling and firm, fast cornering? Unwilling to put up with the shaky parts and service facilities of many foreign jobs? The Dart is for you.

Of course if you have a sensitive seat, buy General Motors or Ford. The Dart suspension is a bit softer than that of the torsion-bar Dodges of a couple of years ago, but it's still firm by Detroit standards. This can actually improve the ride on a really bad road; no pitching or bottoming. But on smooth roads, small irregularities are more readily felt.

I strongly recommend the power-steering option. It gives good road feel, allows easy parking, and, more important, provides faster steering (3½ turns lock-to-lock).

All controls are easy to reach except for the hand brake—that's hidden under the dash to the left of the steering column. Visibility is good except in the right rear, where a roof pillar gets in the way.

Head room is good, front leg room better than average, rear leg room barely adequate.

A handy feature is the glove-box lid with two indentations for holding cups or glasses.

Brakes are good in spite of those kiddy-car 13-inch wheels. Performance is okay. With the 225-inch engine, TorqueFlite box, and 2.83 rear end, I got 0-60 and 40-70 times of 12.9 and 14.0 seconds without manually shifting through the buttons. If you want more, see your friendly Mopar dealer about his speed options.—A.M.

# YOU need BALANCED RIDE CONTROL

for your car



Balanced Ride Control is the big motoring benefit you receive when you equip your car or truck with Air Lift Adjustable Air Springs. They are the only sure way to keep your car level at all times, regardless of road or load conditions.

Cornering is improved, side-sway greatly reduced, A LEVEL CAR IS A SAFE CAR.

Air Lift Adjustable Air Springs are unexcelled if you carry heavy loads or haul a trailer—just add a little AIR and you're on your way in 10 seconds with a LEVEL... SAFE car.

Air Lift Air Springs save money, too, by improving tire wear... keeping wheels in alignment and reducing vibration.

Available at leading garages and service stations or write to:

**AIR LIFT COMPANY**

LANSING 2, MICHIGAN



## UNUSUAL TOOLS BY MAIL



**DRILL GRINDER**  
Sharpens round shank drills like new with hand or power grinders. \$2.95 ppd.



**EASY SAW POWER**  
No. 11 gives correct height, depth, pitch, bevel to any 6" to 10" hand or circular saw with no side pull. Includes 8" file. \$2.95 ppd.



**90° CORNER CLAMP**  
No. 22 MITER BOX COMBINED

Adjustable to any angle. Accurate cuts with any hand saw from 6" to 100". Full 2" capacity. Sides exposed for nailing and gluing. \$2.75. No. 22 corner clamp, only \$1.75 ppd.

**SAW SET**  
Automatically sets teeth at 10° or more. \$2.95 ppd.



WRITE FOR FREE CATALOG

A. D. McJURNEY, 5908 Hollywood Blvd., Hollywood 28, Cal. Dept. S-102

## 22 Ft. PARACHUTE—

22 ft. in circ. Orange color rayon, complete with white rayon shroud lines. The cloth alone is worth more than the price of the chute. Use them for dozens of things—covers, children's play tents, shrub protection, lawn furniture covers—even kites!

\$2.95 ppd.



EMPIRE MDSG.

140 Marbledale Rd., Dept. P5-3, Tuckahoe, N. Y.

## FRAME SPLIT?

fix it quick with

**PLASTIC WOOD**

Handles like putty-hardens like wood!



Guaranteed: 50,000 Miles

[Continued from page 77]

bumper to bumper. The Imperial received only a face lift.

As was reported in last month's Detroit Report, the Dodge Lancer grew 7.1 inches and took on the Dart nameplate. The Valiant has been stretched 2.2 inches, the Plymouth 3 inches, and the Dodge 6.2 inches. Only the Chrysler New Yorker has shrunk; it's 4 inches shorter.

Good news for fresh-air fans: Valiant and Dart are available as convertibles.

Engines: a wide range. Valiant and Dart retain last year's 170- and 225-inch slant-six engines. In the Plymouth and Dodge (except Polara 500) the 225-inch six and 318-inch V-8 are standard. The 383-inch V-8 with two-barrel carb is standard on the Polara 500, and a four-barrel version is optional. The power-pack 318 with its four-barrel and hot camshaft is no longer available on the Dodge. Neither is the 361-inch V-8. The competition-only 413-inch engines (410-440 hp.) are still available on Plymouth and Dodge.

The Chrysler 340- and 380-hp. engines have now been replaced by a 360-hp. version. Still available is the 361-incher on the Newport and 383-incher on the 300. The 300J engine will be more powerful. The car will be introduced in November. Imperial's 340-hp. 413 remains basically unchanged.

A number of engine accessories, including carburetors, starters, alternators, and exhaust-system components, have been improved throughout the Chrysler line.

On the Dodge Dart 170-inch engine a spring-staged choke improves starting at low temperatures. The improvement reduces the choke blade closing torque at temperatures below zero.

Improved windshield wipers and rust-proof chrome-trim fasteners are used on all the new Chrysler cars. An interesting addition to the Imperial is a vacuum-operated parking brake that disengages automatically when the engine is started and the transmission put in gear. ■ ■

## What's new in engines

- a smaller, lighter block producing more power
- thinner walls, shorter exhaust passages
- high thermal and mechanical efficiency
- more main bearings
- a lot of horsepower at a lower price

# New engines: Chevy, Tempest

For entirely different reasons—at least one will surprise you—two companies offer better power plants in the new model year

**T**WO new engines provide muscle for two brands of cars in the 1963 crop announced last month, and their displacement and power are in sharp contrast. So are the reasons for their appearance.

One of the engines was designed by Chevrolet for its standard car, the other by Pontiac for its compact Tempest. The Chevrolet engine, an in-line six, is of modest proportions and power. The Pontiac engine, a V-8, is husky and boisterous.

**Chevrolet veteran.** Chevrolet produced its new engine simply because its old, in-line overhead-valve six was obsolete. It had a right to be. Its grandpappy first powered a Chevrolet in 1929, when this GM division switched from four to six cylinders. That first six had a piston displacement of 194 cubic inches and produced 46 horsepower.

A lot of things happened to it in the next 33 years. Now and then it underwent minor surgery. In 1937, in a burst of generosity, Chevy gave it another main bearing—for a total of four. Every so often it got new cylinder heads. The holes for the pistons grew little by little.

This is the way the cubage and horsepower went up:

YEAR	CU. IN.	HP.
1933	207	65
1937	216	85
1950	235.5	105
1953	235.5	115
1954	235.5	125
1955	235.5	135

It was in 1953 that the Chevy six, still lubed by the bucket-and-splash system it had been born with, was extended a gesture of affection by the company for its noble service. It was given a pressure oiling system.

When, last August, the last of the old Chevy sixes rolled off the production line, the basic engine—for all the refinements it had undergone—was still, as far as design went, the 1929 engine. In more than three decades it had propelled 23,700,000 cars, not to mention uncounted tens of thousands of motor trucks, at least 1,185,000,000,000 miles.

**The new six.** The replacement for the old engine is of exactly the same type, but smaller. It weighs only three-fourths as much, yet produces more power. (See comparison box.) The "dry" weight of

### How Chevy's new and old sixes compare

	1963	1962
Type	OHV	OHV
Displacement (cu. in.)	230	235.5
Bore & stroke (in.)	3.56 x 3.25	3.56 x 3.94
Comp. ratio (:1)	8.5	8.25
Hp. (@ r.p.m.)	140 @ 4400	135 @ 4000
Torque (lb.-ft.)	220 @ 1800	217 @ 2400
Fuel	Reg.	Reg.
Main bearings	7	4
Max. journal dia. (in.)	2.3	2.77
Max. journal length (in.)	.76	1.18
Piston weight (oz.)	17.6	18.88
Con-rod weight (oz.)	20.8	28
Firing order	1-5-3-6-2-4	1-5-3-2-4-6
Lubrication	Pressure	Pressure
Oil capacity (qt.)	4	5
Oil change (miles)	8,000	4,000



Parking control locks Imperial's transmission. A round steering wheel is optional.

not covered. Neither are accessories such as batteries.

And—buyer take note, this is where Chrysler really lays down the law—a car owner must return his vehicle to the dealer for maintenance every 4,000 miles, or every two months, whichever comes first. Otherwise, the warranty is void.

But Chrysler even sweetens that—the guarantee is transferable, owner to owner. The guarantee follows by only a year an impressive expansion of the company's list of low-maintenance items.

Stylists have a field day. Biggest changes in Chrysler cars for '63 are in the bodywork. Except for the Imperial, all have new metal from

[Continued on page 218]



Extra appointments inside Plymouth Sport Fury include console. Available: a tach.

## What's new at Lincoln-Mercury

- a bulging engine
- alternators, tachometers
- compact convertibles
- different pistons, carburetors
- new sound insulation

## For Mercury: Zoom!

THE Ford Motor Co.'s Mercury Monterey nudged the Ford Motor Co.'s Galaxie last month and muttered darkly, "Move over." For 1963, the Monterey had advanced into the same major power league, with an engine of 405 horses—with transistorized ignition—that almost bulged the hood.

There were other engine options, but Mercury plainly was courting customers who liked the bouquet of scorched rubber when the accelerator was floored. A six-cylinder engine and a V-8 of 292 cubic inches are summarily abandoned in the new model year. Standard now is a 390-inch engine that, depending on the compression ratio and carburetion, pumps out from 250 to 300 horsepower.

Like the other three cars of Ford's Lincoln-Mercury Division—Comet, Meteor, and Lincoln Continental—the Monterey included other appetizing tidbits in its announcements. Road,

[Continued on page 192]



For better combustion, Continental swaps old piston (left) for half-wedge-top type.

# NEW! CUTS EXTRA FAST!



cuts with grain, against grain, curves, shapes, intricate patterns.

## Weller® Hi-Speed SABRE SAW

Combines extra-fast cutting and easy guiding. Makes all kinds of cuts through wood (up to 1" finished stock) and many other materials. Powered by Weller's new heavy-duty, 4.8 ampere reciprocating motor. 7,200 cutting strokes of  $\frac{3}{16}$ " a minute. Cuts smooth. Never bucks, splinters or tears. Makes its own starting hole for inside cuts. Trouble-free. No gear box, commutator or brushes to wear out. Never needs lubrication. Safety design. UL approved for ungrounded 2-wire operation. 5 assorted blades and blade-changing wrench included.

**\$22<sup>95</sup>**  
MODEL 88

WELLER ELECTRIC CORP., EASTON, PA.

192 POPULAR SCIENCE OCTOBER 1962

### For Mercury: Zoom!

[Continued from page 77]

engine, and transmission noise is reduced to a whisper by an elaborate envelope of insulation. Alternators are standard. The car shares with other company vehicles transistorized radios with AM-FM receivers.

A tachometer and a swing-away steering column are options.

**Continental** The posh Continental, Ford Motor's contribution to the man who has everything, published its news with, appropriately, a Rolls Royce accent. There was quite a bit of it. For instance:

Aluminium (sic) brake drums on the front, old chap, heretofore only on the convertibles, now come in the sedans. More stops with less—what do they call it?—fade. Makes the tyres grip.

Engines? All right, old boy, but one doesn't talk about power, y'know, not in a Continental. A new piston development reduces all that thrashing around in the cylinders with poor petrol.

Then there's that new carburetion. Quite the thing, really. It's a four-holer. The two primary barrels operate 90 percent of the time, which is from idle to—if you insist on statistics—75 miles an hour. The throttle plates open the other two barrels beyond that.

An alternator in place of a generator, of course. It has that new AM-FM radio, and when it's on FM there's none of that annoying blackout under bridges.

**Meteor** New station wagons bow in for the Meteor, opposite number in the Mercury line to the Ford Fairlane, with rearward-facing third seats. An electric tachometer, with an error of less than one percent, is yours at extra cost.

**Comet** Bucket-seated convertibles make their appearance in Mercury's compact car. That major lubrication each 1,000 miles in 1962 is stretched to 36,000. A new fuel filter is good for the same distance. ■■



CRAMPED, OLD-FASHIONED MESS...?



Organize your garage with  
**PRESTO PEG-BOARD**

New Presto Peg-Board by Masonite makes it easy work to transform children's rooms, garages, utility rooms into neat, well-organized areas.

No need to paint Presto Peg-Board Hardboard. It comes prefinished in an eye-pleasing pattern.

More good news: this strong, heavy-duty Presto Peg-Board is priced so low it will amaze you. Why not start from the plans we'll send you? Just fill in the coupon.

 **MASONITE** *shows the way!*  
Masonite and Peg-Board are registered trademarks of Masonite Corp.

SEND FOR  
**FREE**  
PLANS BOOKLET  
AND  
LITERATURE



Masonite Corporation, Dept. P5-10, Box 777, Chicago 90, Illinois  
Send me plans booklet and literature for Presto Peg-Board.

Name \_\_\_\_\_  
Address \_\_\_\_\_  
City \_\_\_\_\_ Zone \_\_\_\_\_  
County \_\_\_\_\_ State \_\_\_\_\_



## It pays to keep your Chevy the Chevy-est

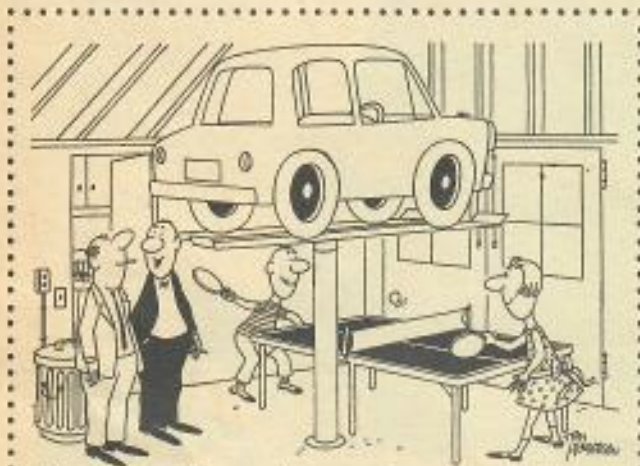
WITH GENUINE GM CHEVROLET REPLACEMENT PARTS

Naturally you care what parts go into your Chevrolet—because your Chevy does! Whether your pride and joy is a new Chevrolet or an older vintage model you're keeping in mint condition, the important thing is to use only *genuine* GM Chevrolet replacement parts. That way you're sure of maintaining the dependability that makes a well-cared-for Chevrolet such a pleasure to drive. The reason, of course, is that *genuine* GM Chevrolet parts are built *especially* for Chevrolets to fit right (for easy, fast installation) and work right for a long time to come. They're available at your Chevrolet dealer's and at leading independent garages and service stations. . . . CHEVROLET DIVISION OF GENERAL MOTORS, DETROIT 2, MICHIGAN.



"The cheapskate I got it from only left a quarter tankful of gas in it. I used most of that trying out the car before I paid for it. So right after, I went to a gas station.

"The guy there knew me. Soon as he heard I'd bought the car, he laughed fit to bust a hyena. He says it's a gas hog. The owner swore he'd sell it cheap because even the dealer couldn't stop it from guzzlin' gas."



"We still don't have quite as much room as we'd like."

"What'd they say at the dealer's shop?"

"Tried to sell me a tune-up. But I give a mechanic four bits and asked him private. They tried new points, plugs, and carburetor jets but none of it did no good, he said. Gus, you gotta fix it—I been cheated!"

With a droplight, Gus inspected the gas lines, carburetor, and automatic choke. The choke was open and working freely. Cranking resulted in no sign of a sticking float valve or improper float level. The flexible fuel link was sound and the fuel-pump housing dry.

Gus pulled out the oil dipstick and sniffed it. Mixed with the odor of oil was the reek of gasoline. He opened the fuel filter and drew out the cartridge. It was surprisingly clean—and also smelled of gas. Gus replaced it.

"I know the trouble, Silas. If I fix it, you'll have to pay spot cash."

"Go ahead," growled Barnstable.

Gus backed out the bolts holding on the fuel pump and pulled it off.

"See that rocker arm? Most are oily and dirty. This one's washed clean—by gas leaking into the crankcase."

"Goin' to stick me for a new pump?"

Gus didn't answer. Silas watched suspiciously as Gus opened up the fuel pump at a bench and inspected the diaphragm. To Gus's surprise he found no sign of the pinholes he had expected. Then he noticed that the flange of one washer on the actuating rod wasn't turned up all around. He pulled the diaphragm gently away. Where the flange lay flat against it was a short open slit.

"There's your lost gas mileage. Faulty stamping left this washer flange flat at one spot. In time, the flexing of the diaphragm against that sharp edge cut it through. The pump still delivered gas to the carburetor—and a squirt into the crankcase each time."

Silas nodded glumly.

Whistling, Gus took apart the diaphragm assembly, put on a new diaphragm and a properly flanged washer. Then he buttoned up the pump and installed it on the engine.

"That tames your gas hog," he said.

"Costs you much less than a new pump. Want to change that gas-thinned oil?"

"Yup, but not here. Station out my way gives a free lube job with each oil change. How much you askin', Gus?"

Stan shook his head as the car drove out of the shop. "Boss, you're too good to that skinflint. I'd have sold him two new fuel pumps."

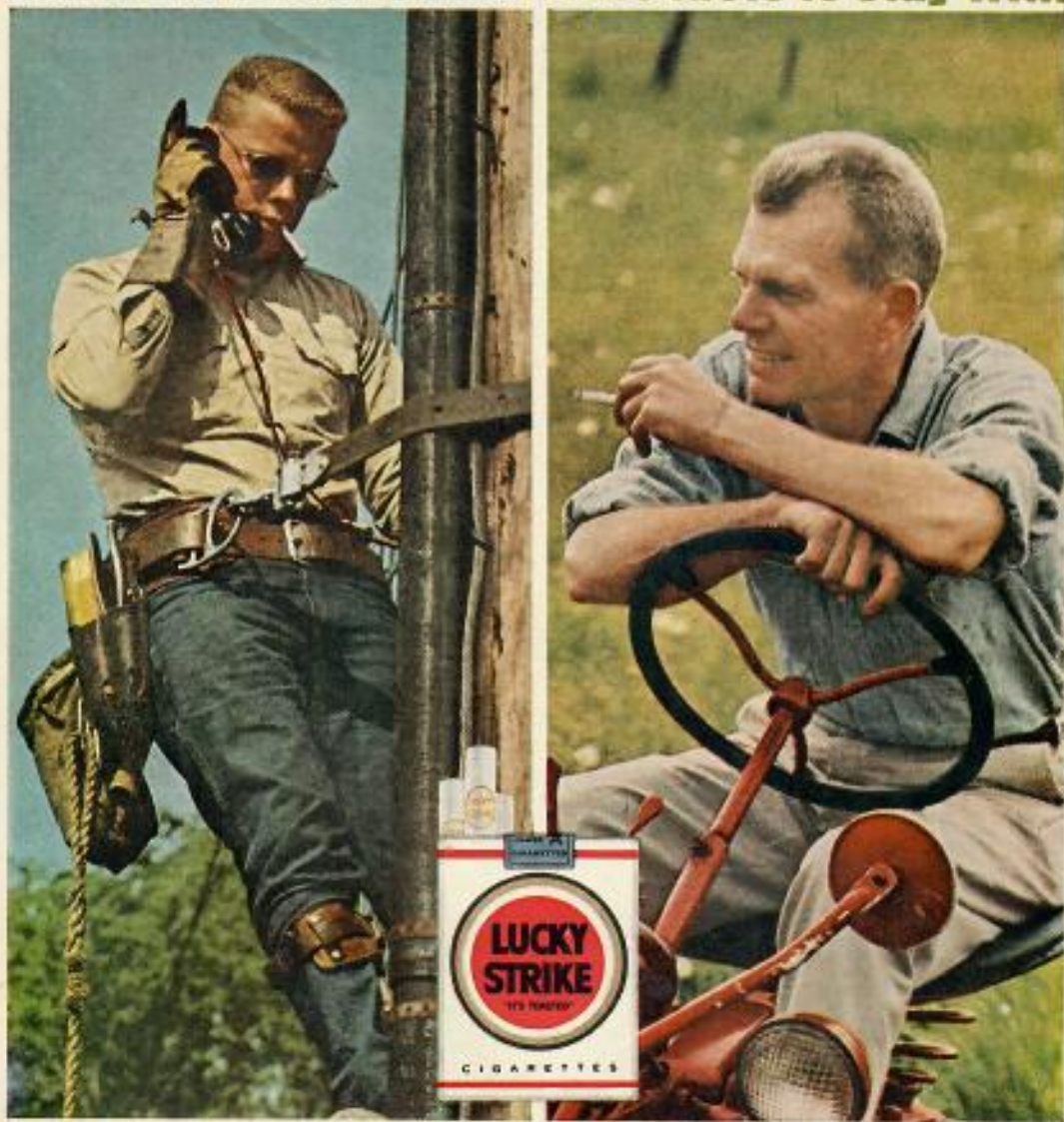
Gus shook his head. "No, you wouldn't. There's just one fellow Silas has to watch out for."

"Who's that?"

"The one who's just as sharp as he is—and a little more crooked." ■ ■

# Get Lucky

the taste to start with... the taste to stay with



The taste of a Lucky spoils you for other cigarettes. This famous taste is the best reason to start with Luckies... the big reason why Lucky smokers stay Lucky smokers. How about you? Get the taste you'll stay with. Get the fine-tobacco taste of Lucky Strike.

© A. T. C.

*Product of The American Tobacco Company—"Tobacco is our middle name"*

# New models! New engines! New reliability features throughout the most complete line ever offered by FORD

## **NEW!** V6 and V8 Cummins Diesels cut engine weight 1000 pounds!

Up to 1000 pounds lighter than other Vee and in-line Diesels, new Cummins engines can add 50,000 ton-miles a year to a highway tractor's earnings. Compact and easy to service, the 588-cu. in. V6 develops 200 horsepower . . . the 785-cu. in. V8 produces 265 horsepower.

## **NEW!** 8-door option for Ford's Econoline Van!

Now you can unload America's most popular Van from the street or curb, front or rear! Econoline saves loading time . . . saves on price, gas, tires and upkeep, too!



## **NEW!** Transistorized ignition saves 3 out of 4 ignition tune-ups!

Electronic breakthrough—Perma-Tuned ignition! Transistors relieve points of heavy current, keep plug voltage high. Points and plugs last far longer; starting is easier; performance is better. No condenser to fail. Optional on Super Duty V-8's.

## **NEW!** City-size Ford Diesels —4-cylinder, 6-cylinder!

New 330-cu. in. Diesels for tilts and 89" BBC models! New 220-cu. in. Diesels for parcel delivery units! In typical city operation, they can give twice the fuel economy of comparable gas engines!



## **NEW!** Low gear synchronized for easier downshifting!

Only from Ford! Standard 3-speed transmissions in '63 Ford pickups and Econolines are synchronized in all forward gears. You can downshift to low while moving without gear clash. Helps maintain momentum, cuts chance of stalling in heavy going. Reduced stress extends gear life, too!

## **NEW!** Over 30 major reliability advances!

New durability in big and small components. Added corrosion resistance in bodies! New weather-sealed electric connections! Lifetime lubricated speedometer cables! All to give you more trouble-free trucks—at Ford Dealers' now!

## **NEW 89" BBC LINE CUTS LENGTH, ADDS MANEUVERABILITY!**

Priced between conventionals and tilts, new short "N" models range from 11,000-lb. GVW to big 76,800-lb. GCW. Both single- and tandem-axle series offer wide choice of Diesel as well as gasoline engines.



PRODUCTS OF  MOTOR COMPANY

# FORD TRUCKS

For  
Outstanding  
Reliability &  
Durability

THIS IS PLEASURE TOO GOOD TO MISS!

# CHESTERFIELD KING \$181,000 SWEEPSTAKES!



FIRST PRIZE:

# \$46,000

INCLUDES:

**\$21,000 CASH**

**\$20,000** JOHNS-MANVILLE  
7 STAR HOME

Featuring J-M quality products inside and out—roofing, siding, walls, floors, insulation. It's JOHNS-MANVILLE for lasting beauty, comfort, safety and low upkeep!

**1963 THUNDERBIRD LANDAU by Ford**

New dignity—refinement—and craftsmanship distinguish the '63 Thunderbird Landau—unique in all the world! Coming to your Ford Dealer's soon!

2ND PRIZES:

**21 1963 FALCON CONVERTIBLES**



This new Falcon Convertible for '63 features new fun, excitement and pleasure—plus Falcon's famous economy! Racy styled—smart new bucket seats—sprung new performance, a ride smoother than ever before. Best bet for fun-loving, car-loving folks. See it at your Ford Dealer's soon!

3RD PRIZES:

**20 G-E STEREO SETS**



Custom Decorator Stereo featuring GENERAL ELECTRIC's new HOME MUSIC DISTRIBUTION SYSTEM for music throughout the home without custom wiring!

4TH PRIZES:

**21 8MM FAIRCHILD**



SOUND MOVIE CAMERAS AND PROJECTORS... captures sound at the same time you're shooting the scene. It's the FAIRCHILD Cinephonic for color, action and sound!

5TH PRIZES:

**20 RCA VICTOR COLOR TV SETS**



From the world leader in perfecting Color Television! Enjoy new pleasure and new realism in a color TV set. You have to see it to believe it!

**120 CHANNEL MASTER TRANSISTOR RADIOS**



Amazing power, big speaker tone, rich, good looks. Easy slide-rule tuning, 6 matched transistors. With carrying case as a valet.

**OVER 2200 CHANCES TO WIN!**

Join in the fun of helping us coin a short, catchy way of asking for CHESTERFIELD KING—just check your favorite of the four nicknames on the entry blank. And change to CHESTERFIELD KING today—TOBACCO TOO MILD TO FILTER, PLEASURE TOO GOOD TO MISS.

## FOLLOW THESE EASY RULES:

1. On an official entry blank, print your name and address and check your favorite one of the four short, catchy ways of asking for CHESTERFIELD KING. You may also use a plain sheet of paper on which you have printed your favorite of the four ways of asking for CHESTERFIELD KING (see entry blank) along with your name and address. Mail to CHESTERFIELD KING Sweepstakes, Box 258, New York 46, N. Y.

2. Entries must be postmarked by November 9, 1962 and received by November 30, 1962. Send in as many entries as you wish. Each entry must be mailed separately.

3. Each entry must be accompanied by any of the following: three empty CHESTERFIELD KING wrappers, or an end panel from a carton of CHESTERFIELD KING, or three pieces of paper, 3" x 5", on which you have hand-copied the words "CHESTERFIELD KING" in block letters from any source.

4. Prize winners will be selected in random drawings conducted by the D. L. Blair Corporation, an independent judging organization. Its decision, with respect to all phases of the sweepstakes, will be final. All winners will be notified by mail approximately 30 days after final drawing, which will be held on or about November 30, 1962.

5. First prize does not include lot or landscaping for house. First-prize winner may elect to substitute \$15,000 cash, in place of house (total value \$30,000). This election must be made within 60 days of notification. If winner chooses house, a good lot must be provided within one year. No cash substitution will be made for other prizes. Any tax or liability on any prize will be the sole responsibility of prize winners. Only one prize to a family.

6. Entries limited to residents 18 years of age and older, of the United States and Puerto Rico, Employees, and their families, of D. L. Blair Corporation, Liggett & Myers Tobacco Company and its advertising agencies are not eligible.

7. Residents of Wisconsin, Florida, and New Jersey may enter, but should disregard the requirements in rule #3 above. Sweepstakes void in any locality or state where prohibited by law. Federal, State and local government regulations apply.

8. For a list of prize winners, send self-addressed, stamped envelope to: CHESTERFIELD KING Winners List, Box 25, New York 46, N. Y. Do not send this request with entry blank.

## OFFICIAL ENTRY BLANK

Join in the fun of coining a short, catchy way of asking for Chesterfield King. Check your favorite among the four names listed below and you qualify for the Sweepstakes. (check one)  Chester King  CK's  Chester K  King Cheaty

NAME \_\_\_\_\_

STREET \_\_\_\_\_

CITY \_\_\_\_\_ ZONE \_\_\_\_\_ STATE \_\_\_\_\_

**IMPORTANT.** Remember to enclose three empty Chesterfield King packs or one carton end (or substitutes, see Rule 3) with each entry. Mail to: CHESTERFIELD KING SWEEPSTAKES, Box 258, NEW YORK 46, N. Y.

OCTOBER • 1962 **POPULAR SCIENCE** 90<sup>TH</sup> ANNIVERSARY BONUS ISSUE