

# POPULAR MECHANICS

JAN. 1967  
35 CENTS

## TOO DANGEROUS TO DRIVE!

*America's Toughest Vehicle Inspector Tells Why Your Car Probably Won't Pass a Safety Check*

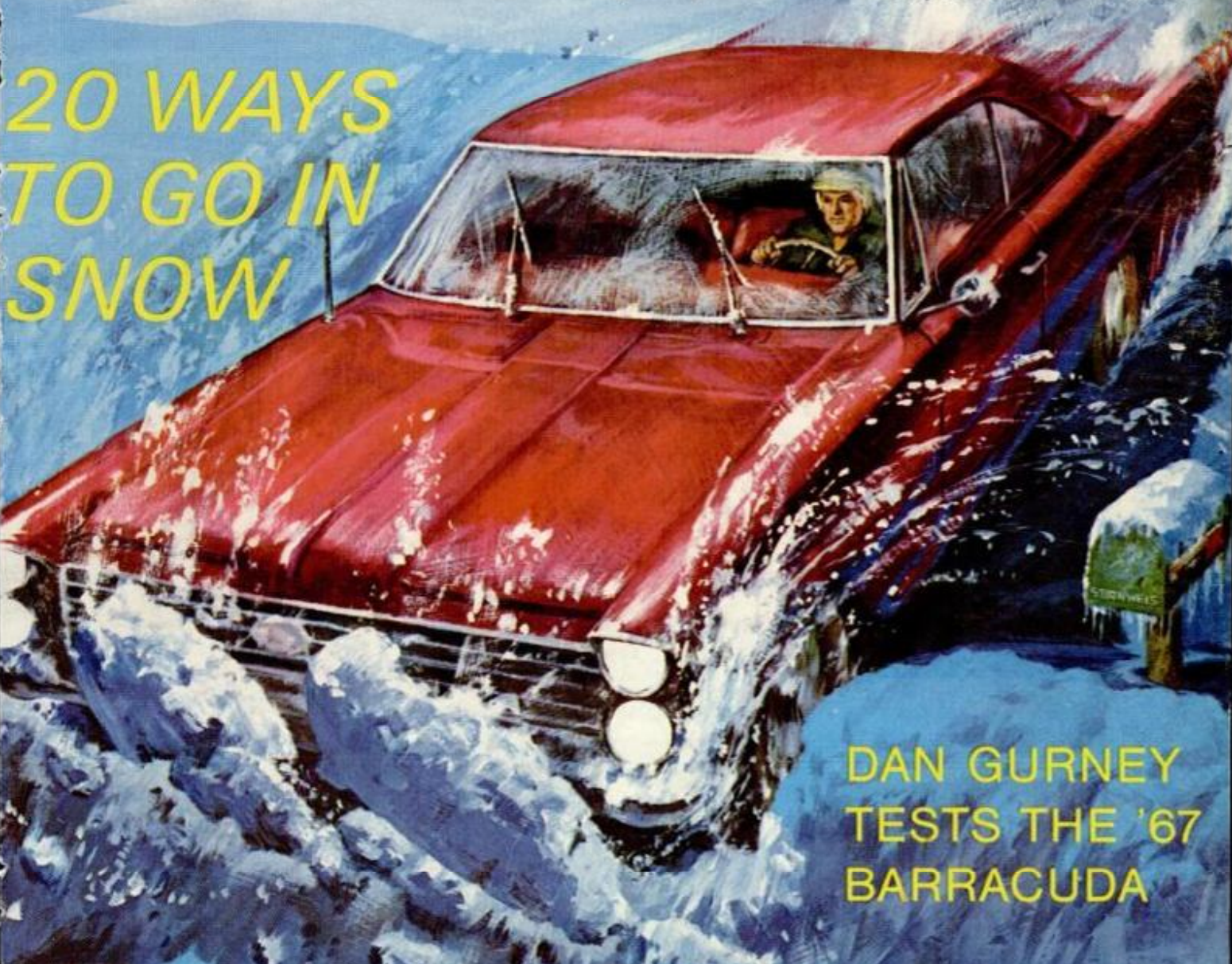
### HOW TO

Stuff a Submarine in a Bottle  
Make an Air Compressor from Junk Parts  
Build a 16-ft. SK Outboard  
Take Underwater Pictures

Do Your Own Body Repairs (Saturday Mechanic)  
Build a Zener Regulated Power Supply  
Hang Sliding Doors

Make a Spice Rack for Your Wife  
Make Templates for Contour Filing  
Get Started in Metal Turning  
'Saltproof' Your Car for Winter

## 20 WAYS TO GO IN SNOW



DAN GURNEY TESTS THE '67 BARRACUDA

**MOTORCYCLES:**  
PM Tests Three Trail Bikes

Our Wild New Weapons in Vietnam





# Get twice the "grip" on slushy streets with a 'Jeep' Wagoneer.

**Just flip one simple lever for the safety of 'Jeep' 4-wheel drive.**

Winter driving is no fun, no matter how you look at it. It can mean slipping, sliding, spinning your wheels, skidding round corners—or worse! But a 4-wheel drive 'Jeep' Wagoneer cuts winter driving dangers with twice the traction, twice the grip of ordinary station wagons. 'Jeep' 4-wheel drive helps you keep control when roads turn to ice and the snow piles up. You get where you're going comfortably, confidently, with greater safety, greater peace of mind. When roads turn bad, it's the best automotive insurance you can own. Plus, you have

the fun of 'Jeep' 4-wheel drive. With luxurious interiors, your Wagoneer compares with any quality station wagon, inside as well as out. It has all the options you'd expect:

like V-8 power, Turbo Hydra-Matic® automatic transmission, power steering, power brakes, air-conditioning. 'Picture window' visibility, complete choice of colors. No other wagon gives the combination of luxury...confidence...and sheer adventure...of the 'Jeep' Wagoneer with 4-wheel drive. Call your Jeep dealer for a test drive today!



**UNIQUE SAFETY PACKAGE AT NO EXTRA COST!**

- |                                       |                                          |
|---------------------------------------|------------------------------------------|
| High-impact windshield                | 4-way warning flashers                   |
| Padded sun visors                     | Seat belts front and rear                |
| Padded dashboard                      | Outside rear-view mirror                 |
| Dual brake system                     | Rugged 'Jeep' construction               |
| Self-adjusting brakes                 | Gas tank centered inside chassis         |
| Back-up lights                        | Plus the safety of 'Jeep' 4-wheel drive. |
| Windshield washers and 2-speed wipers |                                          |

**KAISER Jeep CORPORATION**  
TOLEDO 1, OHIO

**You've got to drive it to believe it. See your 'Jeep' dealer. Check the Yellow Pages.**



Now at **Sears**

## Amazing invention controls tool-speed like a thermostat controls heat.

**Keeps speed constant, no matter what your material. So work goes faster. And your tools last longer.**



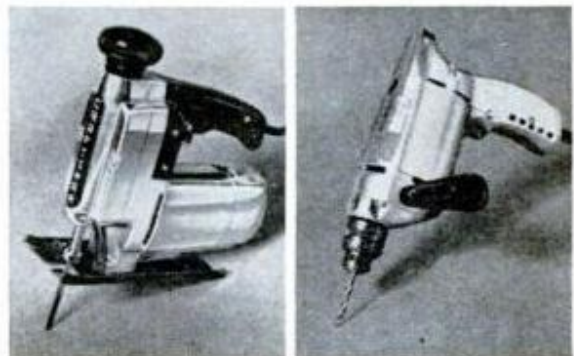
**U**NTIL today, there was no way to avoid a speed loss when the tool you were working with hit your material. Your work slowed down. Your tool wore out faster than it should have. And there was only one solution: a variety of tools with a variety of speeds.

Now Sears engineers have discovered an amazing new device called a Silicon Control Rectifier—or SCR. When it's built into a

Sears reserve power circuit, it adjusts the power to keep speed constant (much like a thermostat keeps temperature the same). It makes your work faster and more accurate. Your tools last longer, too.

SCR's are now built into Sears Craftsman® multi-speed sabre saws and hand drills. Come in and see them. They can't help but improve your work, no matter what material you're working with. Knotholes can't slow them down. Neither can flaws in metal or plastic.

Craftsman SCR tools are exclusive at Sears, Roebuck and Co. More proof, for the latest shop innovations, check Sears first.



The Craftsman 3-speed sabre saw and the Craftsman variable-speed hand drill both have SCR's in their circuits. (There are 7 other variable speed models to choose from.) See them now at Sears.

This one



80DW-EYT-AN80



# Why settle for less than high-quality, American-made tools?

Get to know  
**Skokie**  
quality!



**Skokie features a complete line of dependable cutting tools**

sabre saw blades  
circular saw blades  
hack saw blades  
high-speed twist drills  
masonry drills  
wood auger bits  
files and rasps  
taps and dies  
screw extractors  
hand saws  
pruning and bow saws  
coping and jig saw blades

Photograph  
enlarged  
one-fifth



Take this 1/4" high speed steel twist drill, for instance. It's been cut off, chamfered, fluted, pre-heated, heat-treated, quenched, tempered, grit blasted, centerless-ground, clearance-ground, point-ground, marked, rustproofed, display packaged, inspected 14 times along the way, all by American craftsmen... yet you can buy it for less than 80¢.

Get to know **Skokie** quality tools at these leading discount department stores

- ZAYRE
- ARLAN'S DEPARTMENT STORES
- TWO GUYS
- ALDEN'S SHOPPERS WORLD
- ALMART
- WELLES DEPARTMENT STORES
- ROTH-SCHLENGER
- WESTONS SHOPPERS CITY
- GIANT STORES OF NEW ENGLAND
- ANN & HOPE
- GIBSON'S DISCOUNT CENTERS
- K-MART
- GLOBE SHOPPING CITY
- BARKER'S
- COMMUNITY DISCOUNT CENTERS
- STEINBERG-BAUM
- DEAN PHIPPS AUTO STORES
- MAMMOTH MART
- CLARK DEPARTMENT STORES
- ONTARIO STORES
- SPARTANS
- ATLANTIC THRIFT MARTS
- TOPPS
- TURNSTYLE FAMILY CENTERS
- DIANA STORES
- TERRY'S DEPARTMENT STORES
- FORTUNOFF STORES
- SAX-ON PAINT SUPERMARTS
- YANKEE STADIUM STORES
- UNCLE BILL'S STORES



**Skokie**<sup>®</sup>

**SAW AND TOOL COMPANY**

Skokie, Illinois 60076



# POPULAR MECHANICS

INTERNATIONAL EDITIONS: AUSTRALIAN, SPANISH, CARIBBEAN, FRENCH, DUTCH, PORTUGUESE, DANISH, SWEDISH

## AUTOMOBILES AND DRIVING

- [24 Auto Clinic](#)
- [28 Detroit Listening Post](#)
- [34 Drivin' with Dan](#)
- [38 In the Driver's Seat: Toyota Corona](#)
- [87 20 Ways to Go in Snow](#)
- [92 Dan Gurney Tests Plymouth's Fastback '67 Barracuda](#)
- [99 Too Dangerous to Drive](#)
- [122 Saltproofing Your Car](#)
- [178 Saturday Mechanic: Go Ahead, Do Your Own Body Work!](#)

## SCIENCE AND INVENTIONS

- [12 Science Worldwide](#)
- [78 New Inventions](#)
- [102 Kill That Fire—With the Right Extinguisher](#)
- [106 The Capitol Nobody Knows](#)
- [116 There's Something About a Steam Engine](#)
- [136 They're Sewing Plastic Standby Hearts in People](#)

## SHOP AND CRAFTS

- [158 The Trick of Putting a Submarine in a Bottle](#)
- [172 Hints from Readers](#)
- [175 Plug into Power Anywhere!](#)
- [176 Templates Make Contour Filing Easy](#)
- [183 Build Your Own Air Compressor](#)
- [186 How to Get Started in Metal Turning \(Part I\)](#)
- [190 Lift-Out Panels as Tool Caddies](#)
- [209 Exciting New Products](#)

## REGULAR FEATURES

- [6 Letters](#)

## HOME AND YARD

- [56 Lightweight Snow Removers](#)
- [84 Homeowners' Clinic](#)
- [148 New for Your Home](#)
- [150 How to Hang Sliding Doors](#)
- [156 Solving Home Problems](#)
- [162 Two Ways to Add Spice to Your Life](#)

## AEROSPACE, AVIATION, MILITARY

- [14 Aviation Jetstream](#)
- [95 Wild New Weapons in Vietnam](#)
- [130 Our Keenest Ear Tunes in on Space](#)

## ELECTRONICS, RADIO AND TV

- [192 Build a Zener Regulated Power Supply](#)
- [196 Kit Builder's Report: Knight-Kit KG-415 Stereo Tape Deck](#)
- [198 New in Electronics](#)

## BOATING, OUTDOOR RECREATION

- [80 What's New Outdoors](#)
- [126 Starcraft's Caravel-V with New MerCruiser 80 Stern Drive](#)
- [140 3 for the Trail](#)
- [144 Knives for Astronauts and Everyone](#)
- [166 Build the Stiletto \(Flagged for filing\)](#)

## JOBS AND CAREERS

- [20 Career Barometer](#)

## PHOTOGRAPHY

- [110 How to Take a Picture at 10 Fathoms](#)
- [173 Make a Low-Cost Slave Tripper](#)
- [174 Photo Hints](#)
- [223 Picture This](#)

Cover Illustration: Shannon Stirnweis

## NEXT MONTH IN POPULAR MECHANICS

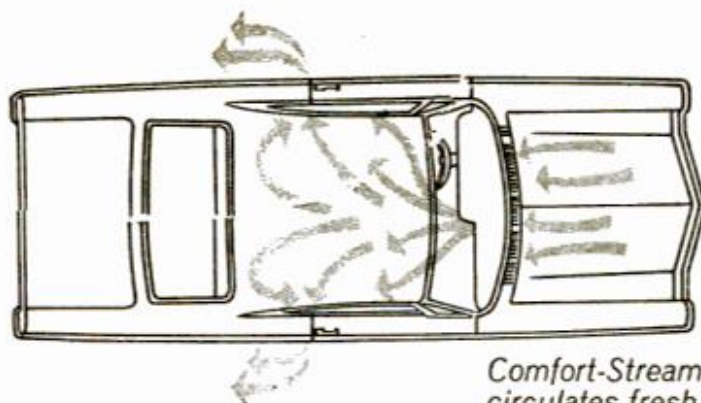
**Owners Report on the Dodge Charger.** Owners from all over the country tell their likes and dislikes in the first Owners Report on '67 cars.

**The Next Five Years in Space.** Willy Ley, famed aerospace writer, predicts the triumphs of our space program through 1972.

**Jackie Stewart Tests the Pontiac Firebird.** Read what a top competition driver says after wringing out the new hot GM car.



*New Engineering Magic:*



*Comfort-Stream Ventilation  
circulates fresh air  
without noise or drafts.*

## Better ideas make the '67s from Ford the easiest driving ever

**Ford engineering** goes all out with better ideas to provide total comfort for people who spend an important part of their lives in the driver's seat.

**Twin-Comfort Lounge Seat** is a new and better idea that's available on all LTD's. The two halves of what would normally be a bench-type seat are mounted on separate tracks so that they may be adjusted independently. When positioned together they form a single bench seat with ample room for three.



Other better ideas on the '67s from Ford: the handy, push-button release for the second seats in Ford and Fairlane wagons. Or the simple adjustment

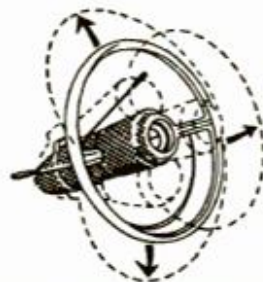
that lets you set the backs of all Ford bucket seats to their most comfortable angle.

**Another better idea . . .** Fingertip Speed Control (optional on Ford, Mustang and Thunderbird). Controls are located within easy reach. The driver's hands stay close to the wheel, and his eyes need never leave the road. The automatic control (a governor and vacuum bellows) keeps the car steady at any speed you set between 25 and 80 mph, yet disengages instantly at a touch of the brake or control button.

**Comfort-Stream Ventilation** (standard on Ford LTD and Thunderbird—optional on any other Ford) is a better idea that increases the comfort of every occupant of the car. Fresh air enters through the grille on the cowl, flows into the passenger compartment through control outlets on the instrument panel.

Incoming fresh air circulates through the entire car, then forces stale air out through special exhaust vents.

**Take the new Tilt-Away** steering wheel (standard on Thunderbird, optional on Mustang). It has a universal joint near the top of the steering column. This permits the driver to adjust the wheel through 9 different positions by simply touching a lever. The same universal joint allows the column to swing to the right automatically—to ease exit or entry.



For a closer look at all the many better ideas from Ford, drop in at your Ford Dealer's and see for yourself how easy driving can be in a '67 from Ford.

You're ahead in a Ford

# FORD

MUSTANG • FALCON • FAIRLANE  
FORD • THUNDERBIRD





Published By The Hearst Corporation  
**RICHARD E. BERLIN, PRESIDENT**

President, Magazines Division:  
**RICHARD E. DEEMS**

Publisher:  
**JOSEPH F. KERN**

Editor:  
**ROBERT P. CROSSLEY**

Executive Editor:  
**RICHARD F. DEMPEWOLFF**

Managing Editor:  
**JOHN A. LINKLETTER**

Shop Crafts Managing Editor:  
**WAYNE C. LECKEY**

Art Director:  
**THOMAS G. DAUER**

CLIFFORD B. HICKS \_\_\_\_\_ Midwest Editor  
THOMAS E. STIMSON \_\_\_\_\_ Western Editor  
WILLIAM KILPATRICK \_\_\_\_\_ Automotive  
KEVIN V. BROWN \_\_\_\_\_ Aviation  
ALFRED W. LEES \_\_\_\_\_ Home Workshop  
ARTHUR MIKESSELL \_\_\_\_\_ Boating  
JOHN F. PEARSON \_\_\_\_\_ Science  
STUART JAMES \_\_\_\_\_ Outdoors  
BILL HARTFORD \_\_\_\_\_ Electronics  
LEONARD SAMUELS \_\_\_\_\_ Photography, Shop Products  
JOHN J. SHEAHAN \_\_\_\_\_ Production  
TERRY HONIGFELD \_\_\_\_\_ Assistant Production  
MURRAY COOPER \_\_\_\_\_ Assistant Art Director  
ALVIN KIETZ \_\_\_\_\_ Assistant Art Director  
LEO R. WEEKS \_\_\_\_\_ Assistant Art Director  
GEORGE W. BLOW \_\_\_\_\_ Technical Art Director  
FRANK P. FRITZ \_\_\_\_\_ Chief Photographer  
EUGENE A. COLANGELO \_\_\_\_\_ Staff Photographer  
GARRY WINTER \_\_\_\_\_ PM Books  
EVERETT JOHNSON \_\_\_\_\_ Cabinetmaker

ADDRESS ALL EDITORIAL COMMUNICATIONS TO: 575 Lexington Ave., New York, N.Y. 10022. For additional sources of information on the articles and products in this issue, write to Bureau of Information, Popular Mechanics, for free "Where-to-Find-It" list.

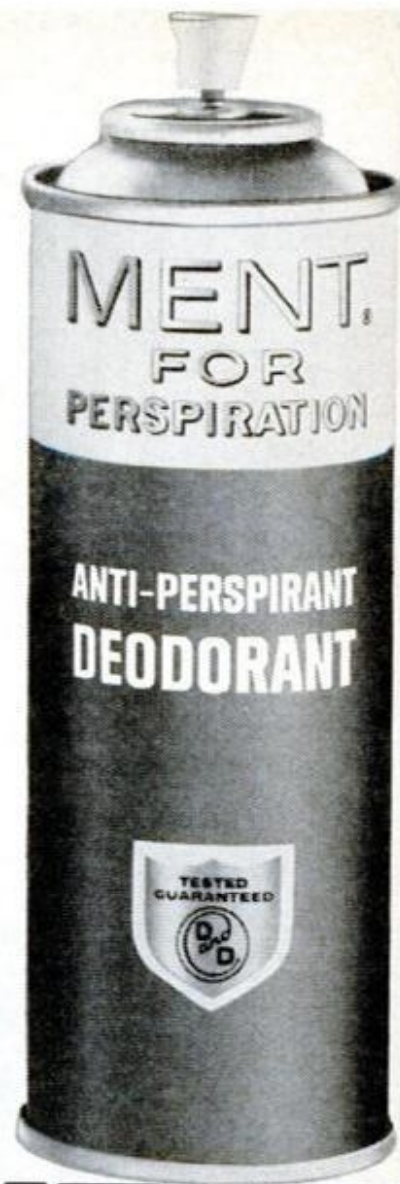
**L. PARK BENJAMIN, Advertising Director**

ADVERTISING OFFICES: New York: 575 Lexington Ave., Murray Hill 8-8500; Chicago: 520 N. Michigan Ave., 527-2400; Detroit: General Motors Bldg., TRinity 5-8711; Cleveland: Hanna Bldg., 1422 Euclid Ave., PRospect 1-0456; Los Angeles: 3460 Wilshire Blvd., DUmkirk 2-8458; San Francisco: 1101 Hearst Bldg., YUkon 2-0823; Savannah, Ga.: 310 Drayton St., ADams 2-1106.

SUBSCRIPTION SERVICE: Mail all subscription orders, changes of address, correspondence concerning subscriptions, and Postmaster notices of undeliverable copies to Popular Mechanics, Box 646, New York, N.Y. 10019.

Popular Mechanics is published monthly by The Hearst Corporation, 57th St. at 8th Ave., New York, N.Y. 10019, U.S.A. Richard E. Berlin, President; George Hearst, V-Pres.; Richard E. Deems, President of Magazines; John R. Miller, V-Pres. and Gen. Mgr. of Magazines; William S. Campbell, V-Pres. and Director of Circulation; Joseph F. Kern, V-Pres. for Popular Mechanics; Frank Massi, Treasurer; Harvey L. Lipton, Secy. Single copy in the United States and Canada, 35 cents. Subscription prices, United States and Possessions, \$4.00 for one year; \$7.00 for two years; \$10.00 for three years. Canada, add \$0.50 for each year. Pan American Postal Union countries, add \$1.00 for each year. All other countries, add \$2.00 for each year. When changing address, give old address as well as the new, with postal-zone number, if any, and allow six weeks for change to become effective. Second-class postage paid at New York, N.Y., and at additional mailing offices. Authorized as second-class mail by the Post Office Department, Ottawa, and for payment of postage in cash. Registered as second-class matter at the Post Office at Mexico, D.F., Mexico, June 20, 1950. © 1966 by The Hearst Corporation. All rights reserved. Printed in U.S.A.

JANUARY 1967



# NO SWEAT

No strain. No struggle. Nothing could be easier. A spray a day keeps odor away . . . checks perspiration . . . helps keep you dry under the arms. That's because new MENT for Perspiration contains aluminum chlorhydroxide, the true anti-perspirant. (Check the labels on most other aerosol sprays—you'll find it's missing.) If you want real daily protection against perspiration odor and dampness and stains, this is the "no sweat" way to get it. A great new daily push-button grooming aid—now at your favorite store. Try it!

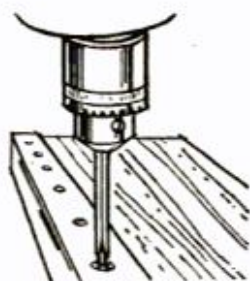


DeMert & Dougherty, Inc., Chicago, Illinois 60650

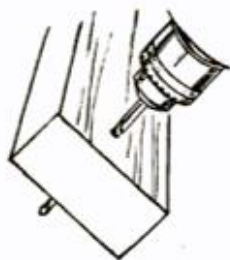




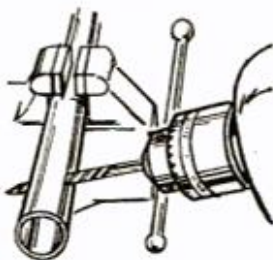
**Controlled speed.** You can use your Variable Speed Drill to mix paint in any size can and never slop or splash.



**Great for screwdriving.** Simply use slow speed to start screw. Speed up by squeezing harder until screw is tight.



**Drill in wood** as you do with any drill, using higher speeds. The same bits used for metal can be used for wood.



**Drill in metal** without center punching! You can start slow enough to drill into a rounded surface with ease.

## **New 1/4" Variable Speed B&D Drill gives you true workshop versatility.**

Use a Black & Decker Variable Speed Drill for a new experience in workshop versatility. This 1/4" Deluxe double-insulated model lets you squeeze any speed from 0 to 2250 rpm. Mix paint without splashing, start a drill bit on rounded metal, drive screws—do jobs ordinary drills can't do. For a limited time, Black & Decker includes two screwdriving bits for the \$29.99 price of the drill alone: one for slotted, one for Phillips head screws. Save \$2.65. See the selection of Black & Decker drills at your nearby dealer's, or write Black & Decker, Dept. C-017Y, Towson, Md. 21204.



# LETTERS TO THE EDITOR

## **Not belittling**

Being an old submariner (78 years old), I was much interested in *I Rode Our Newest Polaris Missile Sub* (page 112, Nov. PM). It's quite a story; I enjoyed it.

However, when I got to the remarks of Capt. Joe Williams, I thought they rather belittled the old subs and what they did. He said that the atomic subs are the first true underseas craft, and that older diesel-electric subs were "basically surface ships capable of submerging for relatively brief periods."

I think those are unkind words when you consider the hardship of living in those old-timers. I was in them before they even had diesel engines, and we were proud to state that we were submariners.

If it weren't for the old-timers, Capt. Williams, you would not even have your atomic subs. I'll not go into the comforts of home that are found in the modern sub, for God knows you chaps deserve them. We never had them, so we did not miss them.

Orange, Mass.

WALTER HALES

We're sure Capt. Williams would agree with you on all points—except that one on "belittling." He wasn't doing that; he was simply making a comparison between a Polaris sub, which can stay submerged indefinitely, and the diesel-electric sub, which was limited in the length of time it could stay underwater. Crewmen were no less brave and no less worthy of the title "submariners" simply because the subs weren't as advanced as today's craft.

## **Best in years**

Your *Guide to Basic Remodeling Measurements* (page 171, Sept. PM) is the best addition you've had in years in PM.

As a mechanic and a home handyman, I'd like to see other such inserts.

Wharton, N.J.

ROBERT L. DODGE

*You will; just keep watching.*

## **Deroached**

Those roaches had really been bugging me until I glanced over John Pearson's *Science Worldwide* (page 8B, Oct. PM). I had tried several different insecticides, only to watch a roach take a sniff and head off in another direction. With boric acid

*(Please turn to page 8)*



# 3 WAYS

## TO A PROFITABLE BUSINESS of your own with small investment

**YOU CAN START WITH ONE DETERGER...  
ANY TWO... OR ALL THREE  
FULL OR PART TIME!**



■ Von Schrader offers you these three tried and proven money-making businesses. You can start with one Deterger and, by working week-ends, add hundreds of dollars to your monthly income while still employed.

■ Or, you can start your business with any two, or all three Detergers, and build rapidly to a point where helpers and even additional Detergers are necessary. All three Detergers are reasonably priced...and many Associates make more than the price they paid in the first few weeks and from the supplies that came with their original order.

■ You need no shop because all work is done in customers' homes or on their premises. And you have no overhead because you work out of your own home.

■ Full operating instructions come with the Detergers and you need no special skill or training. You can grow as fast as you want to with the assurance that Von Schrader will help you every step of the way. Our Business Manual tells everything you need know, including how to go about getting business, suggested sales letters, tips on keeping books and tax records, suggested ads and radio announcements, etc. Von Schrader assistance is always at your service. Training and consulting with experts is also available... and without charge.

■ Von Schrader is the oldest and largest company manufacturing machines of this type and we are keenly interested in the success of each of our Associates. Our FREE ENTERPRISE PLAN has been developed and fashioned with your future in mind. Your business always belongs to you...no one can ever take it away. You pay no dues or fees or royalties to anyone. All the money you take in belongs to you...you are truly your own boss in your own business.

**VON SCHRADER MFG. CO.**

**READ BELOW** what a few of our many Associates have to say about the success of Von Schrader's FREE ENTERPRISE PLAN. Then return the coupon or write today. It costs nothing to get the details. Be sure to check the Deterger you are most interested in starting with.

**E. L. McLAINE • New York • Wall**—"I'm over 60 years old. In my spare time I make \$125 to \$175 per week."

**F. LOTMAN • Canada • Wall**—"Our machines have grossed us over \$50,000 for the past 12 months."

**R. MORTON • Michigan • Wall**—"This last month just working Saturdays and occasional evenings I cleared around \$600."

**G. WINTER • Wyoming • Upholstery**—"Last year I did \$10,000. This is a one-man operation. Many weeks are now \$250-\$300."

**E. ACTON • Oregon • Upholstery**—"I don't work very hard at this but in one day my boy and I made \$170."

**S. RALLINGS • California • Upholstery**—"I'm averaging about \$200 a week...one month went up to \$1000."

**T. NORTHRUP • New Jersey • Rug**—" \$2000 in two weeks...several weeks over \$1000."

**J. THORNTON • Illinois • Rug**—" \$90 and \$100 a day is common with your wonderful deterger."

**C. LEONARD • Ohio • Rug**—"My largest week so far brought me \$1568."

**SEND FOR THE FACTS TODAY**

**VON SCHRADER MFG. CO.**

110 "A" Place, Racine, Wisconsin

Please rush information about your  
 UPHOLSTERY DETERGER,  WALL,  RUG  
and how I can start my own profitable business.

Name \_\_\_\_\_

Address \_\_\_\_\_

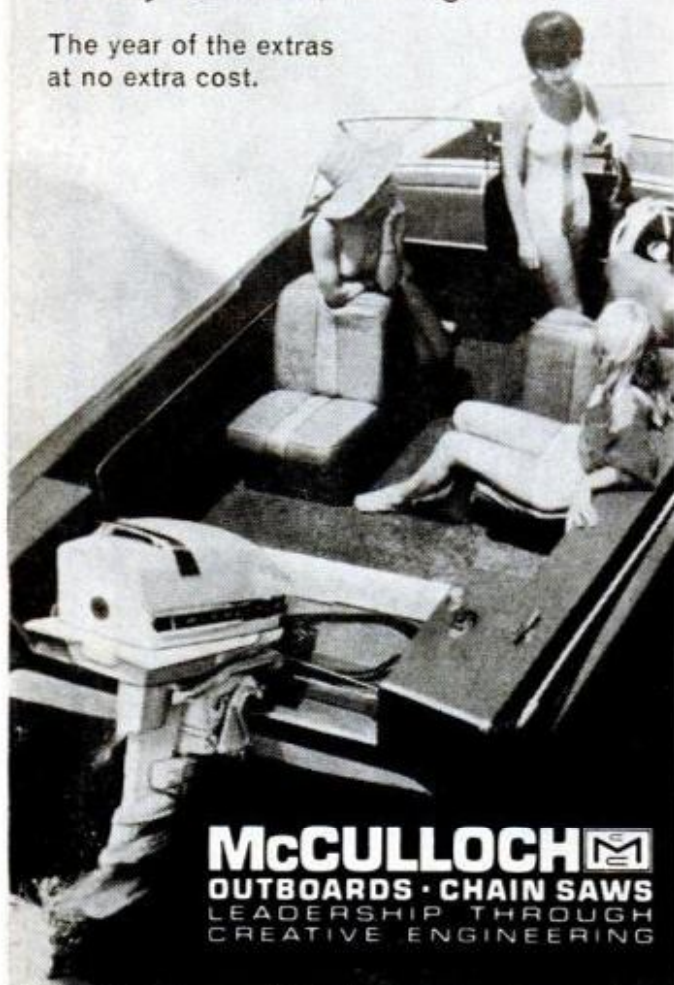
City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_



# 1967. The year of the McCulloch extras at no extra cost.

Extras like ShallowWater Drive® remote power-tilting lets you cross shallows and beach your boat without risk. Bail-a-matic® power bailer that pumps up to 300 gallons of water an hour. Special 100:1 oil. Reliable Surface Gap spark plugs. A built-in alternator/generator. All standard equipment on McCulloch 45's and 75's. See the McCulloch line today including the new 7½ & 9 h.p. electric start fishing motors. For literature, write McCulloch Corporation, 6101 West Century Boulevard, Los Angeles 90045.

The year of the extras  
at no extra cost.



**McCULLOCH**   
**OUTBOARDS · CHAIN SAWS**  
LEADERSHIP THROUGH  
CREATIVE ENGINEERING

All specifications subject to change without notice.

## LETTERS

(Continued from page 6)

powder, the roach doesn't know what's happened until it's too late! My thanks for Dr. Walter Ebeling's experimenting and Mr. Pearson's reporting.  
Moline, Ill. DAVE COLLINS

### Indirect PM

Like many American fathers, I looked with apprehension at some of the books my young son brought home. They featured stories of crime and killing.

If I took the books away, I knew others would appear in their place. Forbid them, and they'd go underground.

I experimented by placing a copy of *Popular Mechanics* among his story books and said nothing. Several days later, he asked for extra allowance to buy the next issue of *PM* so he could follow a continued project. A week later I found him working at my tool bench with an open magazine lying on the bench.

Several months more, and he had no time for other books, nor did a number of his close friends. They were busy on projects. In looking back, I must say that this influence had much to do with the future shaping of my son's attitudes, interests and ambitions.

When he grew older and was serving a hitch in the Navy, his skill with tools led his commanding officer to assign him to outfit a workshop at Argentina. Nfid.

A snapshot he sent showed that he had laid out a workbench, vise and shop exactly like the one at home, even to the little compartment where I kept my *PMs*.

I realize that shop work may not be the answer for all young boys. However, there are unlimited fields of interest to which a father can guide his sons. And I think a good way to whet such interests is by indirect suggestion.

Redwood City, Calif. JOHN MARSHALL

### Tight squeeze

All Sidler-type devices for cars (*Just Point 'er in and Push the Button*, page 62, Sept. *PM*) have this common, inherent and objectionable feature: If the parking space is so tight that you need such a device to get into it, then the car ahead or behind you—if it *doesn't* have a Sidler too—may damage your car in the effort to get out of the tight space.

A better solution is to make wider use of diagonal parking where street width permits it, thus, at the same time, creating more available parking space.

Philadelphia, Pa. ANDREW VENA



**EARN  
MONEY  
FAST!**

**REPAIR HYDRAULIC JACKS**

Earn while you learn at home. Trained and qualified mechanics needed. NOW to service inoperative hydraulic jacks. BIG opportunity for ambitious men. We show you HOW - in your basement or garage, spare time cash income in an expanding industry. Don't wait, ACT NOW! Get the facts.



Write for folder No. PM1 and free bonus offer.  
**HYDRAULIC JACK REPAIR MANUAL CO.**  
P. O. BOX 50 • BLOOMFIELD, N. J.

**REAL ESTATE**  
*BE A BROKER*

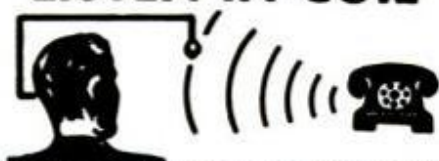
**PAYS BIG! SEND FOR FREE, BIG, ILLUSTRATED CATALOG NOW!** Graduates report making substantial incomes. Start and run your own business quickly. Men, Women, all ages, learn easily. Course covers Sales, Property Management, Appraising, Loans, Mortgages, & related subjects. **STUDY AT HOME** or in classrooms in leading cities. **DIPLOMA AWARDED.** Write TODAY for FREE Booklet!

**FREE BOOK TELLS HOW**

Accredited Member National Home Study Council. (Established 1936)  
**WEAVER SCHOOL OF REAL ESTATE**  
3521-P Broadway Kansas City, Mo. 64111

AMAZING NEW

**"LISTEN-IN-COIL"**



**PICKS UP ANY TELEPHONE CONVERSATION!**

**NO CONNECTION TO TELEPHONE NECESSARY!** You hear the entire two way conversation from a distance . . . undetected! Limited supply remaining at only \$1.98. **SUPER-SENSITIVE model \$2.98.** Satisfaction Guaranteed! Catalog of LISTENING DEVICES 35c. **FREE** with order! Save COD fee and send Check, Cash or M.O. to: Consolidated Acoustics, DEPT. 100, 1302 Washington, Hoboken, New Jersey.

This glue sticks to everything except its own bottle cap.



Does it take you longer to unstick the cap than to use the glue? Then switch to U. S. Plywood's White Glue with the new twist cap. It doesn't stick, keeps glue at instant readiness. For wood, paper, leather, fabric, all porous materials, it's easy and safe—even for children.

**U.S. Plywood Corporation**  
777 Third Ave., New York, N.Y. 10017

**--Earn To \$15 An Hour, Full or Spare Time--**  
**INVESTIGATE ACCIDENTS**

**CAR FURNISHED**

**EXPENSES PAID**

**NO prior experience needed. Only average education required.**

**YOU PERFORM A REAL SERVICE WHILE ENJOYING A BIG-PAY CAREER**

As an Accident Investigation specialist you will (1) **INVESTIGATE FACTS** and (2) **DISTRIBUTE MONEY** as the representative of wealthy organizations.

No other business offers you greater opportunities. Here's why: The huge, rapidly expanding Accident Investigation field right now distributes more money than any other service industry. And it's growing fast. Over 200 **MIL-LION ACCIDENTS** must be investigated this year for Insurance Companies, Airlines, Steamship Lines, and Government Offices.

**KEEP PRESENT JOB UNTIL READY TO SWITCH**

Already hundreds of men we have trained are earning thousands of dollars extra each month. Joe Miller earned \$14,768 his first year. A. J. Allen earned over \$2,000 in ten weeks. Robert Meier says "I'm now earning \$7.50 to \$15.00 an hour in my own business . . . Universal's course is wonderful."

**FREE EMPLOYMENT HELP GIVEN**

Firms needing men from coast-to-coast, in Canada and overseas, call upon Universal. We place far more men in this booming field than any other individual, company or school. Write today. Let me show you how easy it is for you to get into this exciting new career in just a matter of weeks. **State Approved for Veterans' Training**



**Mail Now for FREE BOOK**

M. O. Wilson, Dept. PM-1  
Universal Schools,  
6801 Hillcrest, Dallas, Texas 75205

Please rush me your FREE BOOK on Big Money In The Booming Accident Investigation Field. I will be under no obligation — and no salesman will call upon me.

Name .....

Address .....

City ..... State ..... Zip Code .....







## ALUMINUM SIDING

Learn how you can earn up to \$1000.00 per sale, showing our quality aluminum siding on your home.

TO: ALUMINUM INDUSTRIES, Dept. P-17  
KANSAS CITY 11, MISSOURI

Please send me complete information

My Name \_\_\_\_\_

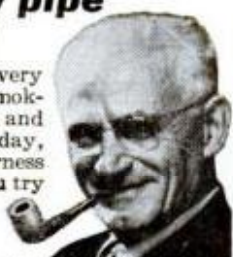
Street \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_

## DON'T QUIT SMOKING

before giving my pipe  
a 30 Day Trial

New principle that contradicts every idea you've ever had about pipe smoking. I guarantee it to smoke cool and mild hour after hour, day after day, without rest, without bite, bitterness or sludge. To prove it, I'll let you try a new Carey Pipe. Send your name and address today for my free complete trial offer. Write:



E. A. CAREY, 1920 Sunnyside Ave., Dept. 252-A, Chicago 40

Apply INSULATION  
faster,  
easier and,  
better ...  
with



T-50  
HEAVY  
DUTY  
ARROW'S  
STAPLE GUN

### THE GUN FOR 1001 FASTENING JOBS

- Install ceiling tile
- Install insulation
- Weatherstrip doors and windows
- Reupholster furniture
- Staple wire fencing to posts
- Repair window and door screens
- Fix loose wiring to floors, walls
- Replace worn window shades
- Tack down carpets
- Lay new linoleum
- Attach vines to trellis
- Affix plywood panels to walls
- Wrap and staple young tree trunks
- Line kitchen and closet shelves
- Hang drapes and curtains
- Make decorative cornices
- Cover valences with material
- Put up Christmas decorations
- Staple down building felt
- Quickly repair odd wood-working jobs

USE THIS AS A HANDY CHECK LIST

ARROW FASTENER COMPANY, INC.

Saddle Brook, New Jersey 07663

## BILL TROUBLES ?

NOBODY REFUSED UP TO \$15,000.00

Bad Credit ■ No Problem ■ Not a Loan Co.

Send your name and address for FREE application to nearest office for faster service

ATLANTIC ASSOCIATES, Dept. 54

146 Westminster St., Providence, R. I.

3312 N. Central Ave., Phoenix, Arizona

Career in

## ELECTRONICS?



Career training the new easy way with RCA Institutes, one of America's leading Electronics Schools. Lab work with first lesson. Pay as you go. No installment payments required. Send for free 64-page book.

RCA Institutes, Inc.

A Service of RCA

Dept. PM-17

350 W. 4th St.

N.Y., N.Y. 10014



KELSEY PRESSES

## Print Your Own

Cards, Stationery, Advertising, Circulars, labels, photo and movie titles, church work, tags, greeting, sympathy, prayer cards, etc. Save money. Pays for itself in a short time.

### Own a Printing Business

Good Profit. Raised printing like engraving too. Have home shop. We supply everything. Direct from factory, only. Easily followed rules. Write now for free details. KELSEY PRESSES E-37 Meriden, Conn. 06450

## Secrets of VENTRILOQUISM Now Revealed!



Easy to learn in 60 to 90 days with our Home Study Course. RESULTS GUARANTEED! Make Money! Be Popular! Have Fun! Big Opportunity! Radio, Television, Stage Appearances! For FREE Information regarding price and terms WRITE. You must state your age. Dummy Catalog 25c.

MAHER HOME COURSE OF VENTRILOQUISM  
Box 36, Studio PM-1, Kensington Station  
Detroit, Michigan 48224

## BOAT KIT Catalog FREE

FIBERGLASS OR PLYWOOD



Save \$1000 to \$2500 on 18', 20', 22' Luger Luxury Cruisers ... save to \$4000 on 22' Houseboat and 26' and 30' Cruisers ... to \$500 on speedy 14' or 16' Molded Fiberglass Runabouts! Over 50 Models! Easily assembled. Every part and every section pre-cut, pre-assembled or precision molded. Just put together! 3 Years to Pay! MONEY BACK GUARANTEE! Rush name, address for full color catalog—56 pages—FREE!

Low Down Payment  
EASY TERMS

LUGER BOAT KITS, Dept. B-17  
9200 Access, Minneapolis, Minn. 55431

## \$130 PROFIT A RACE-DAY WITH \$50 HORSES - HARNESS - DOGS

Sensational book reveals secrets of 10 world's greatest professional race investors. 25 yrs. actual results included, showing 7 in 10 plays won and \$130 average race day profit with \$50. Genuine copyright book supplied only by publishers. Wins at all tracks, horses, harness, dogs. Write for fascinating free brochure. Include Zip Code. HITCHINGS, Box 5715, PM-1, Carmel, Calif. 93921.

Cut out and send this ad NOW for bonanza offer

## MOW AN ACRE IN 30 MINUTES!

MAN  
SIZE!



Handles 48" and 60" mowers ... bigger implements for gardening, dozing, removing snow. Here's why: Big 12 hp ... extra size and traction ... all-gear-drive with automotive clutch, transmission and differential. More for your money! Send for free catalog.

ECONOMY  
TRACTOR

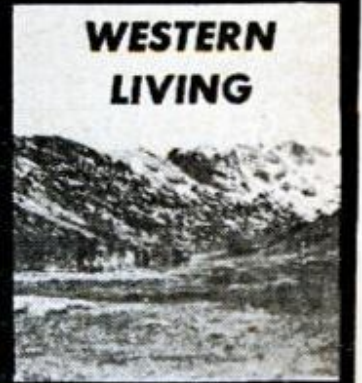
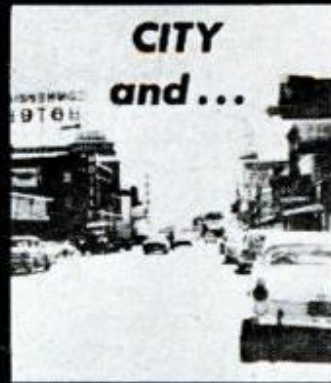
1005 K-1 Anoka Ave.  
Waukesha, Wisconsin



# NOW... Start Enjoying "THE BEST of TWO WORLDS"

# 1 1/4 ACRES

JUST 1 1/2 MILES from ELKO, NEVADA



**\$1 DOWN / \$10 PER MONTH / FULL PRICE \$595<sup>00</sup>**  
**NO INTEREST NO CARRYING CHARGES**

## MEADOW VALLEY RANCHOS



BOOMING NEVADA IS EQUALED BY ONLY A FEW PLACES IN THE WORLD. Population has surged Westward in ever increasing numbers. Westward to Nevada, where the air is fresh and clear, taxes are low or non-existent and opportunity is open to all. Yes, Nevada is booming and real estate investors are prospering. It is a proven fact that many purchasers of Nevada acreage have realized fabulous profits from small investments. Now, a NEW Nevada Real Estate Opportunity exists for you. This Ground Floor Opportunity is MEADOW VALLEY RANCHOS, located only 1 1/2 miles from the thriving city of Elko, Nevada.

### THE VERY BEST FEATURES OF TWO WORLDS

**... THE WORLD OF THE WEST** Located in prosperous Elko County, the ranchos have the backdrop of the majestic Ruby Mountains. The sparkling Humboldt River is a short 1/2 mile away. Every Rancho fronts on a graded road that leads into coast to coast U.S. Highway 40. Amidst these spectacular surroundings MEADOW VALLEY RANCHO owners can relax and enjoy the wonderful life of the Golden West.

**... THE WORLD OF CITY CONVENIENCES:** The bustling city of Elko with its modern schools, shops, theaters, hospital and airport is only 1 1/2 miles away. New homes, with FHA financing commitments issued, are now under construction... in the MEADOW VALLEY property area. The Experienced, Successful Developers of MEADOW VALLEY RANCHOS are not offering remote land where purchasers have to hope for progress and expansion. They offer you the opportunity of a life time, a chance to participate in Nevada's continuing boom... Minutes from the conveniences of hospitable Elko, in the midst of current growth and progress, MEADOW VALLEY RANCHOS has all the necessary ingredients to skyrocket in value!



**FISHING:** In jewel like lakes, and mountain fed bottom streams you'll catch trophy size German Browns, Rainbow and Brook Trout... large mouth fighting Bass. RANCHO owners can catch their dinner within easy driving distance of the property lines.

**HUNTING:** Hunters from all corners of the globe come to Elko County to hunt the big game species Mule Deer... Quail, Chukar, and Partridge are found in abundance.



**GOLF...** Only minutes from MEADOW VALLEY RANCHOS is the Ruby View Golf Course. No rush for starting times on this city owned and maintained golf course, but golfing as it should be enjoyed. Play a leisurely 9-18 or 36 holes surrounded by breathtaking scenery.

**YOUR OWN LAKE...** You, and your invited guests will spend many happy hours boating, fishing and picnicking at nearby Lake Osino. There is no charge to Rancho owners for full rights to the use of this private multi-acre lake and park area.



**PROVEN OPPORTUNITY:** Yes, individuals are taking advantage of Nevada opportunity. But the country's leading corporations are also investing in their Nevada futures. Industrial giants, who erect plants where increasing land values and population demand them, are building or have secured acreage throughout Nevada.

**LOW OR NON-EXISTENT TAXES:** As a result of Nevada's low realistic tax structure, Profits And Wages Are Kept; not paid out to the state. NEVADA HAS NO STATE INCOME, INHERITANCE, CORPORATION OR GIFT TAX. The low real property tax is definitely limited by the state constitution. YES, NEVADA IS ONE OF OUR LAST FRONTIERS OF TAX FREEDOM!

**TOTAL COSTS:** The full price of the title to your 1 1/4 acre Rancho is only \$595.00. Complete payment schedule is \$1.00 down and \$10.00 per month. No interest, no carrying charges. Live, Vacation or Retire on your land, or simply hold for investment security. Wise men like Andrew Carnegie said, "More money has been made in Real Estate than in all industrial investments combined." Make MEADOW VALLEY RANCHOS' PROSPEROUS FUTURE — YOUR FUTURE. DON'T MISS THIS GOLDEN OPPORTUNITY!



**MEADOW VALLEY RANCHOS**  
 4276 Stockmen Bldg., Elko, Nevada 89801

Yes! — Reserve acreage at MEADOW VALLEY RANCHOS for me — 1 1/4 acre parcel, \$595 — payable \$1 down, and \$10 a month, no interest, no carrying charges. Send purchase contract and map showing exact location of my holding. You will return my deposit if I request same within 30 days. Have indicated below number of Ranchos desired.

| SIZE ACRES | DOWN | PER MO. |
|------------|------|---------|
| 1 1/4      | \$1  | \$10    |
| 2 1/2      | 2    | 15      |
| 3 1/4      | 3    | 20      |
| 5          | 4    | 25      |

**MAIL COUPON TODAY**

Name: \_\_\_\_\_  
 Address: \_\_\_\_\_  
 City: \_\_\_\_\_ Zone: \_\_\_\_\_ State: \_\_\_\_\_

Indicate No. of Ranchos — Total enclosed \$ \_\_\_\_\_



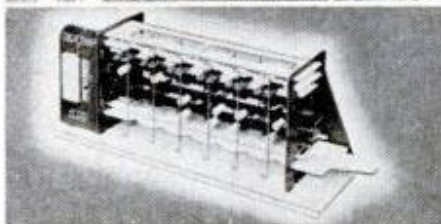






### 3" ASTRONOMICAL TELESCOPE

See the stars, moon, phases of Venus, planets close up. 60 to 180 power—famous Mt. Palomar reflecting type. Aluminized and overcoated 3" diameter f/10 primary mirror, ventilated cell. Equatorial mount with locks on both axes. Equipped with 60X eyepiece and mounted Barlow lens, 3X finder telescope, hardwood tripod. Included FREE: "STAR CHART"; 272-page "HANDBOOK OF HEAVENS"; "HOW TO USE YOUR TELESCOPE" book.  
**Stock No. 85,050H .....\$29.95 Ppd.**



### NEW MODEL DIGITAL COMPUTER

Solve problems, tell fortunes, play games with miniature version of giant electronic brains! Adds, subtracts, multiplies, shifts, complements, carries, memorizes, counts, compares, sequences. Colored plastic parts easily assembled. 12" x 3 1/2" x 4 3/4". Incl. step-by-step assembly diagrams, 32-page instruction book covering operation, computer language (binary system) programming, problems and 15 experiments.  
**Stock No. 70,683H .....\$5.98 Ppd.**



### DIAGNOSE MECHANICAL TROUBLE

Professional Stethoscope. Designed for use by physicians, this super-sensitive Stethoscope is ideally suited for detecting faults in machines and engines, and in fluid, air and gas leakage. Dozens of uses in auto repair shops, labs and for hobby and educational applications.  
**Stock No. 50,270H .....\$6.95 Ppd.**  
**BARGAIN PRICE STETHOSCOPE**  
**Stock No. 50,223H .....\$2.95 Ppd.**



### GIANT FREE CATALOG

Completely new 1967 Catalog. 148 pages packed with nearly 4,000 unusual bargains. Exciting new categories. Many new items. 100's of charts, illustrations. Many hard-to-get war surplus bargains. Enormous selection of telescopes, microscopes, binoculars, magnets, magnifiers, prisms, photo components, etc. For hobbyists, experimenters, workshops. Shop by mail. No salesman will call. Write for Catalog "H" to Edmund Scientific Co., Barrington, N.J. 08007.

JANUARY 1967



### "FISH" WITH A MAGNET

Now go treasure hunting on the bottom! Great idea! Fascinating fun and sometimes tremendously profitable! Tie a line to our 5-lb. Magnet—drop it overboard in bay, river, lake or ocean. Troll it along the bottom—your "treasure" haul can be outboard motors, anchors, fishing tackle, all kinds of metal valuables. 5-lb. Magnet is war surplus—Alnico V Type—Gov't cost \$50. Lifts over 150 lbs. on land—much greater weights under water.  
**Stock No. 70,571H ..... 5-lb. \$12.50 Ppd.**

**KEEP PACE WITH  
THE SPACE AGE!**

# AMAZING BARGAINS

for Fun • Study • Profit  
from  
**EDMUND SCIENTIFIC CO.**  
Barrington, N. J. 08007



### WOODEN SOLID PUZZLES

Here's a fascinating assortment of 12 different puzzles to provide hours of pleasure and stimulate ability to think and reason. Animals and geometric forms. Take them apart and reassemble them. Lots of fun for the whole family—young and old. Will test skill, patience and ability to solve problems. Order yours now.  
**Stock No. 70,205H .....\$3.00 Ppd.**



### GIANT SURPLUS BALLOONS

"Balls of fun" for kids, traffic stoppers for stores, terrific for amateur meteorologists. Create a neighborhood sensation. Great backyard fun. Exciting beach attraction. Amateur meteorologists use to measure cloud heights, wind speed and temp. Made of heavy black rubber. Inflate with vacuum cleaner or auto air hose; or locally available helium for high rise. 8" diam. \$2.00 ppd. Order Stock No. 60,568H. Edmund Scientific Co., Barrington, New Jersey 08007.



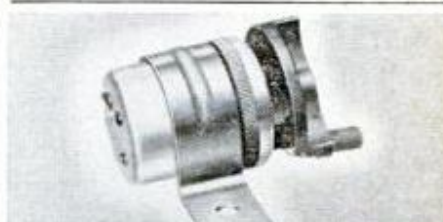
### AMER. MADE OPAQUE PROJECTOR

Projects illustrations up to 3" x 3 1/2" —enlarges them to 35" x 30" if screen is 6 1/2 ft. from projector, larger pictures if screen is further away. No film or negatives needed. Projects charts, diagrams, color or black-and-white. Operates on 115 volts A.C. current . . . 6 ft extension cord and plug included. Operates on 60 watt bulb, not included. Size 12" x 8" x 4 1/2" wide. Weight 1 lb. 2 ozs. Plastic case.  
**Stock No. 70,199H .....\$7.95 Ppd.**



### BUILD A SOLAR ENERGY FURNACE

Fascinating new field. Harness the incredible heat of the sun for experimentation —many practical uses. Easy! Inexpensive! Use scrapwood. We furnish instructions. This sun powered furnace generates terrific heat—2000° to 3000°. Fuses enamel to metal. Sets paper aflame in seconds. Use on Fresnel Lens—11" square, 1/16" thick, 19" Focal length, effective speed of f/1.9.  
**Stock No. 70,533H .....\$6.00 Ppd.**



### WAR SURPLUS ELECTRIC GENERATOR

Brand new Signal Corps Electric Generator. Generates up to 90 volts by turning crank. Use in high impedance relays. Charge ground & bring up night crawlers for bait or study. 2 Alnico Magnets alone now worth more than original gov't. cost of \$15. Wt. 2 lbs.  
**Stock No. 50, 225H .....\$6.95 Ppd.**  
**Mtd. with light, to demonstrate electricity.**  
**Stock No. 50, 365H .....\$11.95 Ppd.**



### BIG BARGAIN—"LITTLE GIANT PUMP"

Use this extra rugged miniature pump for ad and Christmas displays, table fountain, bird bath, photo darkrooms, etc. Continuous pumping for long periods—even pumps mild chemicals. Runs on household current. Pumps 28 gallons per hour to ht. of 1 ft. or 11 gallons to 2 ft. Maximum head 3 ft. Bearings pre-lubricated with year's supply of oil. 2 1/2" x 2 1/2" x 4" high. Wt. 8 oz.  
**Stock No. 60607H .....\$9.00 Ppd.**





# FREE!

## Trial lesson in DRAFTING & DESIGN

Prepare at Home In Spare Time  
For a Job with a Real Future!



Check the want ads in any city newspaper—SEE the big-pay opportunities open to you as a Draftsman. Thousands of men like yourself have prepared at home, in their spare time, for this well-paid, prestige profession. Easily learned in a few spare hours each week. Start now, and you'll soon be ready to take your pick of many good jobs!

### FREE INFORMATION— MAIL COUPON TODAY

Can YOU learn Drafting at home? You'll never know until you send for our FREE TRIAL LESSON and find out! No charge, no obligation . . . send for it today. C.T.C. resident and home study courses in Engineering and other subjects have trained thousands since 1904. Accredited Member, National Home Study Council.

**WE  
FURNISH  
EVERYTHING  
you'll  
need!**

## CHICAGO TECHNICAL COLLEGE

A-205, Tech Bldg., 2000 S. Michigan Ave.  
Chicago, Illinois 60616

Rush FREE Trial Lesson & information about high pay and exciting opportunities in DRAFTING.

Name..... Age.....

Address .....

City..... State..... Zip or Zone.....

## EARN \$200 A WEEK

### LEARN A TRADE YOU LIKE

After graduation you start as a mechanic in a good paying job; then advance to head mechanic or service manager. Many earn \$200 a week and up. You learn fast in our shops because you learn with tools on real equipment. Some students earn the greater part of their expenses while going to school.

Check the course in which you are interested.

- DIESEL MECHANICS       AUTO MECHANICS  
 WELDING                       BODY FENDER REPAIR

Mail to: **AUTO-DIESEL COLLEGE**

226 7th Avenue, North, Department 86, Nashville, Tennessee  
Send me FREE catalog about course I have checked, also information about your FREE Placement Service.

Name .....

Address .....

City..... State.....

## BY KEVIN V. BROWN AVIATION JETSTREAM

FLYING AUTOMOBILES, to coin a cliché, are still trying to get off the ground.

As a matter of fact, some of them have. One in particular, the Aerocar, has been certified by the Federal Aviation Agency but, the laws of economics being what they are, it never really got into production. Other men keep trying, though.

One, Carl Gorton of Farmingdale, N.Y., has designed one that not only operates on land, but floats on water and, in the air, converts from an autogyro to an airplane.

Two coaxial rotor-wings counter-rotate for vertical flight, then lock in place to serve as fixed biplane wings. A ducted pusher propeller provides forward thrust.

For road or water use, the rotors lock in the fore-and-aft position, and an electric rear-wheel drive propels it. A single steering wheel controls it in all modes.

Gorton has a patent on his Convertiplane, but has not built it yet. Another group in Cambridge, Mass., has started testing its flying automobile, called the Autocopter, a combination car and gyro.

Its specifications call for 125-mph cruising speed and a range of 450 miles in the air, and 65 mph on the ground. It seats



FLYING AUTOMOBILE, by Carl Gorton, also floats

four with a gross weight of 2500 pounds and overall length of 17½ feet.

The Aeronautical Research & Development Corp., which is building the Autocopter, hopes to sell it for \$13,000.

Among the innovations incorporated in it are hydraulically driven rear wheels.

Flying automobiles could take some inconvenience out of flying. If you fly somewhere, you're on foot when you get there. Or, when rush-hour traffic gets too heavy, take off and fly down the road a piece. So far, however, the compromises necessary to make two vehicles in one have discouraged most attempts.



# POPULAR MECHANICS Readers: **FREE!**

## Take this Big \$2.98 Picture-Filled Volume..

(with no obligation to buy even one book in this program)

It's Crammed with Hundreds of Exciting Fun-Filled Ideas, Plans, Projects for Home, Hobby, Yard, Car, Boat, Camp, Garden, etc.! 196 giant money-saving pages! 400 how-to pictures!

Why do we give you this exciting do-it-yourself Volume absolutely FREE? Because we want you to live like a millionaire! Thrill to the good things of life! Enjoy Vacation Cabins—Barbecues—Sailboats—Cabin Cruisers—smart Furniture for every room—luxurious Patio—Finished Basement—Extra Attic Apartment—super Work-Shop—Playroom—Added Bedroom—House-Trailer—Fishing Pram—Landscape Gardens—every type of improvement for HOME and OUTDOORS!

We give you this first Volume FREE—with no obligation—to prove to you how the famous PRACTICAL HANDYMAN'S ENCYCLOPEDIA will bring more fun into your life—bring you literally thousands of projects to save you money—keep entire family happy—keep yourself joyfully busy for pleasure and profit.

Here are clear, picturized instructions and plans for making all manner of wonderful things—from an acoustically damped microphone for \$2.00 to winterizing a vacation cottage for year-round living! And the cash savings you make by doing things yourself range from \$20.00 on a simple one-room paint job

up to \$2,200.00 on a cabin cruiser—or over \$2,000.00 on a summer cabin.

**Mail coupon for FREE Volume—  
Nothing to Buy Ever!**

Giant FREE VOLUME is a foretaste of help you'll get from the complete PRACTICAL HANDYMAN'S ENCYCLOPEDIA! 18 superb volumes, 3,456 fact-filled pages, over 7,000 show-how illustrations, thousands of ideas and do-it-yourself projects.

After you see your FREE volume you may, if you wish, collect other volumes in the Encyclopedia. Each volume comes ENTIRELY ON APPROVAL for 7 days FREE EXAMINATION—no obligation to keep or buy. Volumes 2, 3 and 4 come to you about one a month; remaining volumes come in two shipments... all ON APPROVAL. You may return any shipment within 7 days and owe nothing, or you may remit subscriber's low price of only \$2.98 per volume plus a few cents shipping—for only one book each month.

Even if you decide not to buy any books—giant first volume is still yours FREE. Mail coupon to: PRACTICAL HANDYMAN, Dept. PM-1, 100 Sixth Ave., New York, N.Y. 10013

**IDEA!** add an extra bedroom virtually for cost of materials alone. Save up to \$1,000!



**IDEA!** Build this outdoor grill. Enjoy 1,001 other money-saving projects!



**IDEA!** Install a new, modern ceiling—complete with recessed lighting! Save \$50 to \$100!



### Get all this and more in your FREE BOOK:

Additional Bedroom • Built-in Closets • Furniture • TV Repairs • Antenna Problems • Burglar Alarms • Aluminum Projects • Attic Expansion • House Framing • Garden Accessories • Boosting Gas Mileage • Window Framing • Plywood Projects • Power Tools • Air Conditioning • Car Transmissions • Spray Painting • Outdoor Furniture • Dormers • Weatherproofing • Attic Fans • Patios • Barbecues • Emergency Car Repairs • Roofing • Appliance Repairs • Much MORE!

### Mail Coupon for FREE Book NOW!

**PRACTICAL HANDYMAN DEPT. PM-1  
100 Sixth Avenue, New York, N.Y. 10013**

Please ship me ENTIRELY FREE the big 7 $\frac{3}{4}$ " x 11 $\frac{1}{4}$ " colorful Volume I of the PRACTICAL HANDYMAN'S ENCYCLOPEDIA. I will be entitled to receive additional volumes of this great new Encyclopedia in 18 volumes as outlined above. After examining each book, I may purchase it at the low price of only \$2.98 plus shipping if I am more than pleased... or I may return the book in 7 days and owe nothing. I may cancel ANYTIME after buying as many volumes as I wish, or none at all if I choose. And you will send no further volumes after you receive my cancellation.

**Big First Volume is mine to keep FREE in any case.**

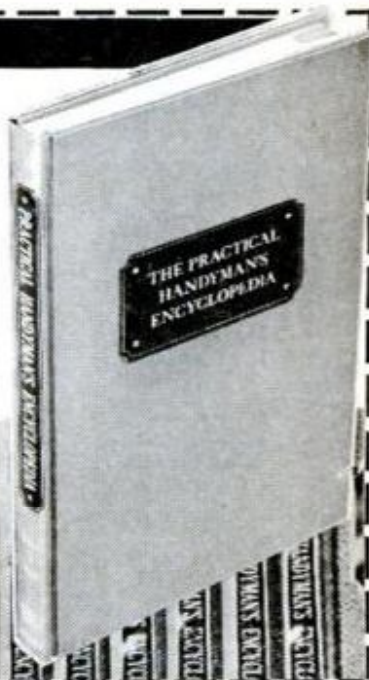
Print Name \_\_\_\_\_

Address \_\_\_\_\_

City & State \_\_\_\_\_ Zip Code \_\_\_\_\_

Canadian orders will be shipped and billed from Canada, duty free.

PH-3R





Huge Nationwide Demand for  
**DRAFTSMEN**  
 Learn at Home in Spare Time

**COAST-TO-COAST SHORTAGE OF TRAINED DRAFTSMEN THOUSANDS OF BIG SALARY JOBS FOR BEGINNERS!**

Now you can take your choice of thousands of big money drafting jobs listed every day in "help wanted" sections of newspapers everywhere. U. S. Dept. of Labor reports not enough applicants to fill jobs available. Our proven "Quick-Learn" Method has helped hundreds toward good income, security and prestige as draftsmen. Why not you?

**OTHERS REPORT**

Earns \$820 Month!  
 "My first position after completing your course jumped my income from \$350 to \$820 per month." G. W., Tenn.

Big Promotion!  
 "I was promoted from the production line ahead of 4 others and got a good pay raise." —W. A., Wisc.

**YOU NEED NO DRAWING SKILL**  
 Professional draftsmen guide you step-by-step. With NASD's Spare Time Home-Study Plan you work on actual projects — makes learning fun . . . easy to remember, too. Many graduates have succeeded with only grade school training. Others report good earnings drafting part time *while still studying!*

Rush coupon for FREE "DRAFTING CAREER KIT," 20-page BOOK, "Your Future in Drafting" and SAMPLE LESSON—ALL FREE!



**NORTH AMERICAN SCHOOL OF DRAFTING, Dept. 4500**  
 Campus Drive, Newport, California 92660  
 Rush "DRAFTING CAREER KIT" including 20-page Book, "Your Future in Drafting" and Sample Lesson — ALL FREE! No Salesman will call.

Name \_\_\_\_\_ Age \_\_\_\_\_  
 Address \_\_\_\_\_  
 City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

A HOME-STUDY PROGRAM IN ASSOCIATION WITH CLEV. ENGR'NG INST.



**Electric engraver:** This new compact Dremel permanently engraves names or identification numbers on steel, copper, brass, silver, aluminum, glass, wood, plastic. Handy for making tools, personal and business valuables, jewelry, industrial tools and dies—anything requiring permanent identification. Weighs only 7 ozs. Exclusive calibrated stroke adjustment regulates depth of engraving. Solid carbide engraving point. Diamond points also available. Price \$14.95 with solid carbide engraving point and storage case. See your dealer, or write for literature. *Dremel Mfg. Co., Dept. 87-A, Racine, Wis.*

ADVERTISEMENT

4421

**RUPTURE!**

An amazing Air-Cushion Invention allows body freedom at work or play. Light, neat, cool, sanitary. Durable, cheap. Day and night protection helps Nature support weakened muscles gently but surely. No risk. Sent on Trial! Write NOW for free Booklet and Proof of Results. All correspondence confidential.



Brooks Company, 346-D State St., Marshall, Mich.

1849-1858  
 50¢ CALIFORNIA GOLD PIECES  
 75¢ Each Seven Different . . . \$ 4.00  
 25 Assorted . . . \$12.00  
**METROPOLITAN COIN EXCHANGE**  
 DEPT. P-1  
 1380 Penobscot Building  
 Detroit, Michigan 48226

Learn how to become a  
**GAME WARDEN**  
 GOV'T HUNTER, FORESTER, WILDLIFE MANAGER

Exciting job openings now for qualified men who love outdoor work. Protect forests and wildlife—arrest violators! Good pay, security, prestige and authority for respected career Conservation Officers. Easy home-study plan! Send for FREE Fact BOOK, aptitude QUIZ, SUBSCRIPTION to Conservation magazine. State age.

**NORTH AMERICAN SCHOOL OF CONSERVATION**  
 Campus Drive, Dept. 4171, Newport, Calif. 92660

**BILL PROBLEMS?**  
**WE CAN HELP YOU**  
**NOBODY REFUSED UP TO \$15,000**

Bad Credit No Problem ■ Not a Loan Co.  
 Send your name and address for FREE application

**NATIONAL ACCEPTANCE, dept. M-8**  
 5133 N. Central Ave., Phoenix, Arizona

**LEARN Electronics Engineering AT HOME**

Fix TV, design automation, systems, learn transistors, complete electronics. College level Home Study courses taught so you can understand them. Earn more in the highly paid electronic industry. Computers, Missiles, theory and practical. Kits furnished. Over 30,000 graduates now employed. Resident classes at our Chicago campus if desired. Founded 1934. Catalog.

Vets—write for information about GI Bill training.

**AMERICAN INSTITUTE OF ENGINEERING AND TECHNOLOGY**  
 1131A W. Fullerton Pky., Chicago, Ill. 60614

**Build BEAUTIFUL CLOCKS**

Send just 25¢ for illustrated clock book—the most complete available, describing plans for grandmother, grandfather, wall and shelf clocks easily and inexpensively made with simple tools. Also pictured are a wide selection of finest dials, quality movements, and kits in high-grade cherry, mahogany and walnut.

**CRAFT PRODUCTS, Elmhurst, (1) Illinois**

**SAW SHARPENING IS EASY** FREE LITERATURE

Super Filer No. 11 joints and sharpens circular saws 8" to 10" with all teeth correct in height, depth, pitch, bevel. When file hits steel roller, teeth are finished. **\$9.95**  
 Saw runs true with no side pull. Includes 8" file. PPD.

**"TRU-CIRCLE"**  
 saw set automatically sets teeth at 10° **\$2.95** or more. PPD.

**MONEY BACK GUARANTEE**  
**A.D. McBURNEY, 1610 Victory Blvd., Glendale, Calif. 91201, A-17**

POPULAR MECHANICS



This Free sample lesson  
can start you on a  
high-pay career as  
**ACCOUNTANT,**  
**AUDITOR,**  
or **CPA**

**You can learn Accounting  
in your spare time at home**

**T**HE demand for trained Accountants far exceeds the number available. Salaries keep going higher, promotions come faster. Why remain in a dull job with insufficient pay when you can prepare easily — *in your spare time* — for the big rewards which are being offered today by the Accounting profession?

To prove this to yourself, send for the interesting sample lesson which demonstrates the remarkable LaSalle method of home training. This lesson is yours free of cost or obligation. It will show you how you are guided step by step through actual Accounting work, how you learn by doing, how thoroughly you are prepared for every Accounting task you will be called upon to handle in business.

**No previous experience required**

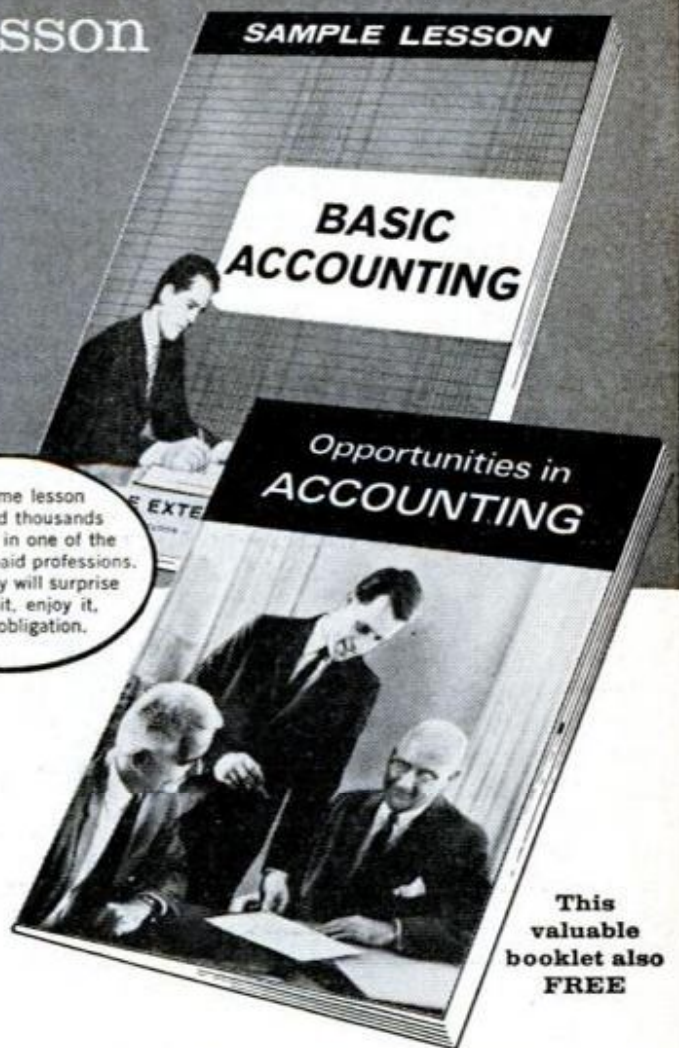
LaSalle's distinguished faculty of expert Accountants and CPA instructors starts you right at the beginning, then supervises, corrects and grades your work all the way — right up to training you to take a Certified Public Accountant examination, if this is your eventual goal. You train in your spare time — *at your own pace* — without losing a single day from the job you now have. The cost of instruction is remarkably low.

**Which of today's many positions do you want?**

Regardless of your present job — if you want to become a professional Accountant, Controller, Auditor, Income Tax Specialist, Government Accountant, or Public Accountant, LaSalle has the exact plan to prepare you rapidly and inexpensively. You will be trained for a high-pay position, or you may decide eventually to establish an Accounting business of your own — with hours of your own choosing.

For over half a century, LaSalle has been a world leader in business education. It has provided training at home to more than 1,000,000 ambitious men and women. That is why a LaSalle diploma in Accounting is a credential respected by employers. See for yourself. Mail attached card now for your free sample lesson and a copy of the booklet "Opportunities in Accounting." LaSalle, 417 S. Dearborn, Chicago, Illinois 60605.

This same lesson has helped thousands get started in one of the world's best-paid professions. Its simplicity will surprise you. Try it, enjoy it, without obligation.



This valuable booklet also **FREE**

**LaSalle graduates report  
up to 56% increase in pay  
within one year**



"My salary has more than doubled since enrolling with LaSalle and due to my fine training, my salary is still growing."

—William T. Black,  
Canoga Park, Calif.

"I am a strong supporter of LaSalle. My salary has increased two and three-quarters times—due to my training with LaSalle. Thanks for your splendid cooperation."

—James M. Umphlett,  
Cody, Wyoming



**IF CARD HAS BEEN DETACHED, MAIL THIS COUPON**



**LASALLE EXTENSION UNIVERSITY**

A Correspondence Institution

417 South Dearborn, Dept. 61-044, Chicago, Ill. 60605

Please send me, free of cost or obligation, your sample lesson and illustrated booklet "Opportunities in Accounting."

Name..... Age.....

Address..... County.....

City & State..... Zip No.....

Occupation..... Working Hours..... A.M. . P.M.



# CAREER BAROMETER

BY CREIGHTON PEET

## TOOL AND DIE MAKERS

YOU MAY SPEND a couple of days shaping an assembly of intricately interlocked steel parts the shape of a walnut. This tool of your making will shape and cut thousands of some single tiny electronic component found in an ordinary telephone handset. Or you may be machining a heavy-duty gear for a Texas oil-drilling outfit, working for a big Detroit automaker building jigs, fixtures, special tools and molds, or in an aircraft plant doing the same jobs for a new jet.

Good tool and die makers—the men who do all these things—are never out of work; they're absolutely essential to our modern industrialized world. A skilled T&D man can make from \$200 to \$250 a week, and it appears that many years will pass before automation reduces the demand for him. While tape-operated drilling and shaping machines have been in use for some time now, the need for such men has increased—there are always more jobs than qualified men.

Manufacturers in Bridgeport, Conn., for example, recently reported that while

287 machinists, tool and die makers and electricians will have completed training locally by next June, there will then be 2051 openings for such men. High-precision machinists today make tools for cutting, shaving, stamping or drilling plastics and rubber as well as metals, adding to the variety of jobs.

You can't become a tool and die man overnight. You have to like working to very close tolerances. You must have a solid respect for one ten-thousandth of an inch and be willing to sweat to achieve precise results. To do this you must usually serve four or five years as an apprentice, starting around \$1.75 an hour and slowly working up to a top level near \$4. However, with T&D men scarce, many shops work 9 or 10 hours a day, which means overtime.

A high school degree or trade school diploma is all the academic training required, but if you hope to be a supervisor some day or start programming one of the new automatic machines, the more math

(Please turn to page 22)

| JOB TITLE                                  | CURRENT NATIONAL DEMAND | STATE OR AREAS WITH SIGNIFICANT DEMAND | JOB TITLE                                         | CURRENT NATIONAL DEMAND | STATE OR AREAS WITH SIGNIFICANT DEMAND                 |
|--------------------------------------------|-------------------------|----------------------------------------|---------------------------------------------------|-------------------------|--------------------------------------------------------|
| Aeronautical Engineer                      | 761                     | Pa., Fla., Mo., Calif., Wash.          | Mechanical Engineer                               | 1373                    | N.J., Ohio, Wis., Calif., Wash.                        |
| Aircraft Repairman                         | 610                     | Conn., Pa., Fla., La., Calif.          | Medical-Dental Techn. Metal Turner, Miller, Borer | 210                     | D.C., Md., Ill., Minn., Conn., Ill., Ga., Iowa, Calif. |
| Air Pilot                                  | 243                     | Pa., Fla., Ill., Ariz.                 | Modelmaker, Patternmaker                          | 774                     | Ga., Kan., Mo., Calif., Wash.                          |
| Auto Body Worker, Transport Equipment      | 782                     | Conn., Md., Fla., Ill., Calif.         | Molder, Coremaker                                 | 93                      | Mass., Pa., Ill., Wash.                                |
| Carpenter                                  | 143                     | N.H., Va., Mont., Wash.                | Plumber, Gas Fitter, Steamfitter                  | 679                     | Conn., Va., Minn., Calif., Wash.                       |
| Civil Engineer                             | 442                     | Conn., N.J., D.C., Ohio, Calif.        | Policeman, Detective, Guard                       | 1158                    | D.C., Ky., Mo., Ill., Calif.                           |
| Computer Data Processor, Automatic         | 329                     | Mass., Va., Ill., Minn., Wash.         | Radio-TV Assembler, Repairman                     | 159                     | N.H., Va., Ill., Iowa, Calif.                          |
| Computer Programmer, Statistician          | 923                     | D.C., Pa., Mich., Calif., Wash.        | Sheet-Metal Worker                                | 729                     | Conn., Pa., Ill., Calif., Wash.                        |
| Draftsman                                  | 1234                    | Ohio, Mo., Wis., Calif., Wash.         | Timber Cutter                                     | 129                     | N.H., Pa., Minn., Ore.                                 |
| Electrical, Electronics Engineer           | 1162                    | N.J., Fla., Wis., Okla., Calif.        | Toolmaker                                         | 1574                    | Ga., Mich., Ill., Calif., Wash.                        |
| Electrical, Electronics Technician         | 474                     | Mass., Fla., Ohio, Mo., Calif.         | Transportation Equip. Assembler                   | 2879                    | Pa., Mich., Ill., Calif., Wash.                        |
| Electrical Products Assembler              | 327                     | Md., Ohio, Ind., Iowa, Calif.          | Transportation and Material Handler               | 538                     | Va., Fla., Mo., La., Calif.                            |
| Electrical, Electronics Fabricator         | 411                     | Va., Fla., Utah, Hawaii                | Vehicle & Rail Equip. Repairman                   | 244                     | Ill., Iowa, Utah, Ariz., Calif.                        |
| Electronic Components Assembler, Repairman | 201                     | N.H., Ill., Minn., Wis., Calif.        | Welder                                            | 930                     | Conn., Ohio, Ill., Calif., Wash.                       |
| Machinist                                  | 2712                    | Va., Ill., Ind., Calif., Wash.         | Wire Communication Assembler                      | 623                     | N.Y., N.C., Fla., Mich., Ill.                          |
| Marine Equip. Repairman                    | 72                      | N.C., Va., Fla., Calif.                |                                                   |                         |                                                        |
| Mathematician                              | 203                     | N.J., Pa., Calif., Wash.               |                                                   |                         |                                                        |

PM'S CAREER BAROMETER CHART, above, gives the actual number of job openings listed with state employment agencies by various industries. They do not represent all jobs available, but relative demand is reflected. "Current Demand" figures are true as of our closing date. Check this chart each month and it will tell you where your talents are needed, and how badly. For names of actual

employers represented by these listings you must apply in person to the state employment agency in the capital city of the state indicated.

Today, with proper schooling, you can qualify for many of the job categories shown. For a list of accredited correspondence and residence schools, write to PM's INFORMATION BUREAU, 575 LEXINGTON AVE., N. Y. 10022.



**\$20 U.S. Gold Coin Only \$1**

Authentic Replicas Genuine  
 Coins Worth Up to \$10,000  
 -200 Calaveras Gold Coin...\$1  
 -U.S. Gold Doubloon...\$1  
 -Spanish Gold Doubloon...\$1  
 -Pirate Treasures...\$1  
 -Gold Dollar, California...\$1  
 -Gold 1/2 Dollar, California...\$1  
 -First U.S. Coin, Silver...\$1  
 -America's Most Famous Silver Dollar "Place  
 of Mt. Washington three across river...\$1  
 Prices Postpaid, 10% off on new, 5% off on 10.



**Automatic Hypnotizing Record**  
 Learn hypnotizing in minutes. Amazing scientific recording by world famous hypnotist lulls subject into deep hypnotic sleep then turns control over to you. Second recording induces self-hypnosis. Bring fame and popularity into your life. Be the hit of the party. Imported hypnotic gram serves as aid with or without recording.  
 No. 6930. Complete Set \$5.00

**Hypnotic Whirling Coin**  
 HYPNOTIZE FAST! Fascinating pocket-size invention. Hold (place) HYPNOTIC COIN in front of person. Then, by gently moving coin it whirls, it captures and holds their attention while they are hypnotized (HYPNOTIC COIN) Complete with simplified book that tells you what to say and do, how to command, how to re-hypnotize with snap of fingers, amazing stunts.  
 No. 8103. Set... 65¢

**7-SHOT .22 CAL. GUN**  
 Rapid Fire Gun  
 Shoots Blanks EXTRA LOUD.  
 Looks and operates like real gun. For protection, emergency, celebrations, sports, training. Full size. Not sold in Michigan.  
 No. 9103. Revolver Style...\$4.95  
 No. 9102. Automatic Style...\$4.95

**SCIENTIFIC WONDER XRAY GLASSES**  
 IT CAN'T BE TRUE, BUT LOOK FOR YOURSELF.  
 Greatest illusion of the century! Apparently see bones thru skin, see thru clothes, etc. Girls will never trust you with these, but let them look for themselves and apparently see legs right thru your pants. Amaze and embarrass everyone! Regular size glasses with built in optical device.  
 No. 3762. Pair, Postpaid... Only 95¢

**Sun Battery - Photo Cell - Solar Cell**  
 Converts light to electric current. Many experimental and practical purposes. Use as a photocell or electric eye to turn lights on or off, operate electric appliances, open or close doors, etc. As a solar cell or sun battery the power will operate many transistor circuits including motors, etc. Generates its own electricity from light. No batteries necessary. With instructions and experiments. Get several for added power.  
 No. 4924. 50¢ ea. 3 for \$1.25. 5 for \$2. 10 for \$3.50

**Spy Pocket Telescope**  
 8 power. Magnifies 64 times area. Terrific view of a small city pocket telescope about size of fountain pen. Precision ground lenses, all metal chrome finish. Also used as 30X microscope giving 900 times area.  
 No. 6724. \$2.95

**POCKET RADIO - \$1.75**  
 Listen to MUSIC, SPORTS, NEWS, SPECIAL BROADCASTS with your own personal pocket-size radio. Self-powered - nothing to plug in. Listen in bed, at school, almost anywhere. Hearing-aid style earphone included. Plastic case. Dial turn. Size of cigarette package. About \$1.75. Lifetime guarantee.  
 No. 6598. Complete Ready to Play Only \$1.75

**CARBIDE CANNON**  
 \$5.95  
 Sounds like dynamite blast! BRILLIANT FLASH! Slightly roar echoes for blocks. Fine July 4th noise-maker, starting gun, celebrations, etc. Safe. No recoil. Hundreds of shots for few cents. Uses carbide. Fast firing. Attractively made of heavy cast iron.  
 No. 7383. 9" Cannon \$5.95. No. 7384A. 17" \$9.95  
 No. 7385. Annunciation. 50¢ Tube (500 Shots)

MAIL YOUR ORDERS TO JOHNSON SMITH & CO., Dept. 206, Detroit, Mich 48207

**New Ram Jet Engine Burns Gasoline!**



For boats, cars, plane models, jet engine experiments, science of jet propulsion, etc. No moving parts. Easy to start. Runs on standard gasoline. Gives continual thrust. About 6-inches long. Adaptable to most models. Comes complete. Get two for more power!  
 No. 7411. Price Each... \$1.75 2 for \$3.00

**BUILD THIS 250 Power Telescope**



**ASTRONOMICAL & TERRESTRIAL TELESCOPE**  
 BUILD THIS POWERFUL 6-FOOT TELESCOPE IN ONE EVENING  
 Set includes completely finished and polished lenses and lens fittings. Main objective lens is 50 mm with 80-inch focal length. Eye piece lenses supplied for 50-100-150-200-250 power. Illustrated directions for assembling complete optical system. Easy and fun. No special tools needed. Tripod and mount not supplied but easy to build from directions. Lenses are precision ground and guaranteed to give sharp images.  
 No. 6004A. 250-Power Telescope Lens Kit. Postpaid \$3.50

CRATERS OF MOON, RINGS OF SATURN, MOONS OF JUPITER, SUN SPOTS, STARS, CORONAS, STARS, GALAXIES and many other fascinating sky phenomena. Imagine the moon 250 times wider & bigger. Explore secrets of sky! Watch the adventures of the ASTRONAUTS. Also serves as powerful telescope that makes things on earth 250 times larger. Object 2 miles distant seem only 50 feet away!



**Precision Miniature Camera**  
 Less than half size of regular cigarette package! Weighs 2 1/2 ounces. Takes surprise, candid & regular pictures. Solid, all-metal construction, leather-lined body, chrome trim. Enclosed eye-level view finder. Single action, 1/25-sec. or time shutter. Precision ground lens. Takes 10-1/2 x 1-1/2 inch pictures per roll (16 mm. film). Fine enlargements from negative.  
 No. 4896. Camera Only. Price \$1.00  
 No. 4897. Camera with Pigskin Leather Ever Ready case...\$1.50  
 No. 4898. Film. 15c per Roll; 3 rolls... 40c

**World Wide All Wave Transistor Radio**  
 New set brings in regular stations, world wide foreign stations, short wave, police calls, amateur, ham, marine, commercial, etc. Portable, compact size made possible by a transistor circuit. Sensitive tuning, good volume control. Uses standard flashlight cells. Only 5 x 4 x 4". Weighs one pound. Complete operating instructions. Gives loud speaker volume on near-by stations.  
 6554. Price Postpaid... \$8.95  
 6952. Hearing-Aid-Type Phone Postpaid... \$1.50

**Electrostatic Generator**  
 Lights up from Atomic Energy.  
 Self-generating. Do experiments, stunts, and tricks with amazing results.  
 Gold metallic balls accumulate high-voltage charge or shock that causes neon light to light up when discharged. Operates on millions of electrons you accumulate as static electricity. Hold in hand. Touch ball to person or object to discharge shock. Lasts forever. Harmless.  
 No. 4997. 75¢ ea. 3 for \$2.00

**EXPLORER MISSILE SPACE ROCKET**  
 SHOOTS 1000 FEET INTO SPACE! Powerful thrust carries this rocket missile high into air. Stabilizing fins provide vertical or controlled flight. Each set comes complete with 3 Explorer Missiles, launching pad, and good supply of solid fuel. Fuel re-fills always available.  
 No. 7674. Complete Missile Set... \$3.98

**15-SHOT BB GUN**  
 SHOOTS STANDARD BB's Model Army Combat Machine Gun, or remove base and use as hand-held Automatic Pistol.  
 Fires 15 BB's in 3 seconds or one at a time. Precision model with removable swivel base, Automatic hand-crank firing mechanism. 7-inches overall - standard gun size. Postpaid  
 No. 2908. \$1.00. BB's 10¢ Pkg.

**UGLY BLACKHEADS OUT IN SECONDS!**  
 Eliminates Pimples! Be Good Looking!  
 VACUTEX removes blackheads in seconds, cleanly and safely. No pinching. Guaranteed.  
 No. 4641. \$1.35

**"JET" RACE BOATS**  
 LOUD & FAST!  
 Jet engine burns any fuel. Race or run indoors or outdoors. Adjustable rudder. All metal with all metal engine. Nearly 5-in. long. 2 Boats with fuel.  
 No. 3389. Complete Set... \$1.00

**100 CARS** Magnetic Motor \$1.50  
 All popular late U.S. Cars, Foreign (Jag. MG, V8, Mercedes, etc.). Old Timers (Ford, Studebaker, 1910 Ford, etc.) Jeep, Station Wagons, Racers, Hot Rods. Die-cast. 2" long. Bumper to bumper set stretches 17 feet! Correct detail, trim, wheels, styling. Name & country on each. With alnico magnet motor. Speed crash, stunts. Postpaid.  
 No. 7640. Set, \$1.50 2 for \$2.75

**"Flash" Paper**  
 FIRE FROM YOUR FINGERTIPS. Hottest trick in wizardry. Thousands of joke, magic & trick uses. "Flash Paper" breaks in brilliant flash of flame. Can hold in fingers since quick flash does not generate much heat. Comes in pad of about 15 sheets. Use one sheet, or less.  
 No. 2673. Pad 50¢. 3 for \$1.25

**FIREWORK FUSES**  
 Useful in all kinds of experiments, tricks, etc. For making fireworks, starter fuses for practical jokes as "fake" bomb, etc. Burns about an inch every two seconds. Cut to any length you desire. 26-inch  
 No. 2150. 20¢ each. 3 for 50¢

**DeLuxe High School Graduation Ring**  
 Massive Men's Military Style Ring with Synthetic Ruby. Special cut makes it sparkle with brilliant red fire. Heavy mounting with raised "HIGH SCHOOL" in panel. American Eagle in deep relief on each side. American gold finish. State size.  
 No. 8316. Postpaid Only \$1.50

**Surprise Package**  
 Special "loss leaders" for new customers. Most worth several times cost. LIMIT: One of each per order. Surprise items include new samples we receive from all over world, factory surplus bargains, special novelties, etc. Money back if not delighted.  
 2996 - 25¢ Pkg. 2997 - \$1.00

**WOLF RING**  
 GETS THE GIRLS! Brings 'em back alive! WILD!  
 You're out for no good and they love you for it! Mammoth size, brass fully formed. State size.  
 No. 8286. Postpaid. Only \$1.00

**2 Passenger Midget Racer** Real Car Plans \$1.00  
 REAL CAR. Midget road car holds 2 passengers. Excellent runabout. Easy to build for about \$25.00. Goes 50 m.p.h. gets 40 m.p.g. Has motorcycle or outboard engine, old auto parts. Fun building, fun driving.  
 No. 1794. Complete Plans \$1.00

**SMOKE BOMBS**  
 Produce clouds of smoke. Does not explode, just generates smoke. Many useful & joke purposes. Used to smoke animals, etc.  
 No. 2142. 20¢. 3 for 50¢. 12 for \$1.50

**Smoke Bomb Powder**  
 Easily ignites to give large amount of smoke. Used for tricks, TV work, movies, etc. In ash tray, cigarette pack, etc. acts as cover-up. Hundreds of uses.  
 No. 2671. Large Pkg. 65¢

**Leather Bull Whip**  
 HARD HITTING! HARD CRACKING!  
 Experts knock ashes off chimneys with this whip. Yank people off feet. Used by trainers, ranch-hand platted all leather. With loop.  
 6-ft. Long - \$1.98 8-ft. Long - \$2.69 10-ft. \$3.29  
**Big Throwing Knife \$1.00** Special

**PIERCES METAL!** Specially weighted & balanced point scores right into anything with a wallop! Positive accuracy! Deep penetration! Easy throwing! Hard hitting! Cutlery steel, double edge. Big 10" long. Leather handle. You must be delighted or your money back. Price Postpaid \$1.00. Matched Set of 2 \$1.85. Set of 3 \$2.65. Leather Sheath 50¢. Professional Knife Throwing Book 25¢.

**Imported Stiletto Knife**  
 OPENS WITH FLICK OF FINGER AND LOCKS INTO POSITION. Prevents blade from snapping when in use. Push button release. Convenient pocket size, yet powerful. Fine royal. Narrow, tapered stiletto blade with thick right handle for firm grip. Fine multi-bar knife for sportsmen and emergencies. Comfortable. Safety guards. (2 for \$4.75) \$2.50

**New Catalog of 2700 Novelties**  
 Send 10¢ for amazing catalog of novelties, makers, gifts, live animals, hobbies, fun makers, planes & boats, magic tricks, joke articles, unusual seeds, gadget timepieces, cameras, optical games, projectors, movies, jewelry, disguises, stamps, coins, puzzles, artists' supplies, printing sets, motor, smokers' gadgets, guns, sports, books, games, music, scientific supplies, plants, fireworks, gifts & household items, etc., from all over world. Rush name, address 10¢ now!

MAIL TO: Johnson Smith Company  
 Dept. 206, Detroit, Mich. 48207

Please send me:

| How Many | Number or Name | Price Each | Total |
|----------|----------------|------------|-------|
|          |                |            |       |
|          |                |            |       |
|          |                |            |       |
|          |                |            |       |

Use Other Paper if Necessary. Orders Under \$3.00 Add 15¢ Catalog (if desired) Add 10¢

Send Money in Cash, Check or Money Order. Safe delivery. TOTAL ENCLOSED \$

Name \_\_\_\_\_ Address \_\_\_\_\_



## CAREER BAROMETER

(Continued from page 20)

you get the better off you'll be. Some understanding of tape-operated equipment that will drill and shape a blank sheet as required will be a help, too.

If you're interested in getting into tool and die work, contact a shop in your neighborhood about becoming an apprentice. Employers often test an applicant's mechanical aptitude and knowledge of math before taking him on. He will then work under the supervision of older men, learning to use machines and attending classes. He'll be taught heat-treating and other working processes, shop math and blueprint-reading.

One way to get ahead of the game is to contact Norton R. Munn at the National Tool, Die and Precision Machining Assn., 1411 K St. N.W., Washington, D.C. 20005, and ask for information on apprentice training programs it conducts under the auspices of the U.S. Department of Labor. Last year 1671 men participated in 73 such programs.

You'll be paid a small wage while being trained, both in classes and in shops where the instructors can concentrate on you. In ordinary shops the men best qual-

ified to teach often are too busy to take the time needed, so the going there may be slow. When you graduate from the year-long apprenticeship program, you become a journeyman and can then command a much better salary than if you had come in green from high school.

Mass production of thousands of identical parts for everything from television to cars is dependent entirely on an ample supply of machine tools. Because good tool and die men are so essential to produce these tools, experimental prototypes and one-of-a-kind devices, many companies keep such men on the payroll in slack times when other workers are being laid off. On the other hand, a T&D man can be as mobile as he wants, moving from job to job and state to state when he feels like it.

The work is seldom strenuous and working conditions are generally excellent, which accounts for many men staying on the job until they are quite elderly. They find that \$8000 to \$12,000 a year for work they really like, and can take pride in, is too good to give up.

In this era of mass production, the T&D man is among the few who still do individual jobs. If you like precision work, this may be just the life for you. ★★★



## It seems, more people ask to borrow **SHOPMATE** Circular Saws than any other brand!

Because *any* construction goes better with the 7½" 12.0 amp. Mod. 1875 Shopmate Circular Saw. Has overload clutch, sawdust ejection chute, Visa-port lets you watch blade action while cutting. Mirror finish. \$39.95 Sug. Ret.

Mod. 1895 Zip Screw Driver. Drives, removes #4 through #12 slot or Phillips head screws. Over 150 other uses. Compact, powerful—3.0 amp. motor, 100-1 gear ratio. \$34.95 Sug. Ret.



**SHOPMATE**  
Power Tool Primer. Get yours now. Send 10c to address shown below.

Product Improvement—a continuing process at

**SHOPMATE**  
Portable Electric Tools, Inc., Dept. E,  
1200 E. State St., Geneva, Ill. 60134



# TUNE UP ELECTRONICALLY ANY CAR EVER MADE...

domestic or foreign; compact or limousine; 4 cylinder, 6 cylinder or 8 cylinder; 6 volt or 12 volt.

With New  
Improved  
Model BT-162

# DWELL TACHOMETER



**NOTE:  
GIANT 6 1/2"  
METER FOR  
EASY,  
ACCURATE  
READINGS**

At last a streamlined instrument designed to provide the most important services for "tuning up" any and every car ever made from a Model A Ford up to and including the current automatic transmission cars produced today.

The Model BT-162 includes the very latest design Dwell Meter, working in conjunction with a dual range Tachometer and incorporating all modern improvements in circuitry design.

**Assure easy starts, optimum performance and maximum gas economy with Model BT-162.**

The Model BT-162 will perform the services specified below in addition to many other tasks too numerous to mention:

- Assure precise adjustments of points that are slightly worn or pitted.
- Indicate the most effective point setting without removing the distributor cap.
- Indicate the correct settings for external adjustment type distributors. (A feeler gauge cannot be used for making correct adjustments on this type of distributor since many manufacturers' specifications do not list the point gap in inches. They list only the dwell angle in degrees.)
- Insure maximum gas economy and quiet engine running. Read the exact RPM while the engine is in neutral position. Then adjust the carburetor in conformity with the car manufacturer's recommendations.
- To locate a "miss" you need only disconnect or "short" the spark plugs one at a time with the Model BT-162 switched to the Tachometer position.
- Cars with automatic transmissions function efficiently only if the fluid pressures are correctly maintained and since manufacturer's instructions always refer to RPM, the Model BT-162 (or an equivalent tachometer) is required to properly service automatic transmissions.

The Model BT-162 is the most complete unit in its price range ever produced. It comes absolutely complete, ready to use. Only .....

**\$29<sup>95</sup>**

## SEND NO MONEY WITH ORDER PAY POSTMAN NOTHING ON DELIVERY

Try it for 10 days before you buy. If completely satisfied then send \$5.00 and pay the balance at the rate of \$5.00 per month until the total price of \$29.95 (plus small P.P. and budget charge) is paid. If not completely satisfied, return to us, no explanation necessary.

ACCURATE INSTRUMENT CO., INC.

Dept. D-492, 2435 White Plains Road, Bronx, N.Y. 10467

Please rush me one Model BT-162. If satisfactory I agree to pay \$5.00 within 10 days and balance at rate of \$5.00 per month until total price of \$29.95 (plus small P.P. and budget charge) is paid. If not satisfactory, I may return for cancellation of account.

Name \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ Zone \_\_\_\_\_ State \_\_\_\_\_

Save Money! Check here and enclose \$29.95 with this coupon and we will pay all shipping charges. You still retain the privilege of returning after 10 day trial for full refund.



# SOLUTIONS FOR MECHANICAL HEADACHES

# AUTOMOBILE CLINIC

BY MORT SCHULTZ

## Clashy question

*My 1965 Falcon, with stick, refuses to go into low gear without a clash of gears. My mechanic has checked the clutch adjustment a number of times and has found everything to be in order. Has anyone reported this? If not, what else should be investigated?—W. A. Pierce, Altadena, Calif.*

I conducted a cursory search of Ford service shops in this area and found that this is not a problem with them. Assuming clutch adjustment is okay, it is possible that the clutch is simply not getting enough release; that is, it may be hanging up on the shaft. Several reasons for this are shaft misalignment, a misaligned bell housing, incorrect flywheel run-out or, perhaps, the pressure-plate fingers don't have enough release. Your next stop, I suggest, should be a Ford shop.

## Floored accelerator

*I have a serious problem with my 1958 Chevrolet with automatic transmission. When I push down on the gas pedal, instead of holding at the speed I want, something pulls the pedal to the floor. Some people might get a thrill from this, but I don't, and want it to stop. Why does it happen?—John F. Deal, Sharpsville, Pa.*

Thrills like this you need like a toothache. I can think of three likely reasons why it's happening—a broken or loose motor mount, sticking carburetor linkage or throttle plate, or a sticky valve body in the transmission.

## Help—I'm all gassed up!

*I have a 1956 Oldsmobile 98. When I park on a hill of any angle, with the front end facing down, the car floods and won't start. Two rebuilt carburetors, a new fuel pump and a dozen mechanics haven't helped. Can you?—Joe Rustico, Brooklyn.*

This is a real oddball. To track it down, I'd do this:

1. Adjust float level to spec— $1\frac{5}{8}$  inch from bottom of floats to gaskets with the needle seated. And make sure floats are centered in the bowl.

2. Check fuel pump pressure—a maxi-

mum of  $5\frac{1}{4}$  lbs. is called for (the minimum is 4 lbs.).

3. Make sure the atmospheric idle vent is properly adjusted—it should open  $\frac{1}{2}$  of an inch at 1400-1500 rpm.

Other than these things—who knows?

## Timid linkage

*The transmission linkage of my 1959 Chevrolet wagon Six with stick shift won't hold an adjustment. I had it adjusted only a week ago, and it's out again. I can hardly shift into first and reverse. Are there any service bulletins telling how to fix this?—Alan Rayde, Shawnee Mission, Mo.*

No, sir, no service bulletin. However, when a problem such as this creeps up, you'd best look for the linkage binding in the steering column, a worn linkage or worn transmission forks.

## Bobbing around

Our thanks to Michael G. M. Preston of Lancashire, England, for this insight into a most mysterious problem:

"I had a terrible misfire in my Morris Minor which proved difficult to track down. New plugs and plug leads proved of no use. Neither did new points, condenser, distributor cap, coil and adjustment of ignition timing to specification.

"I finally decided that a firm hand was needed. I chugged down to my electrician man and told him I didn't want to see the bloomin' car until it was fixed. He found that the bob-weights in the distributor had shattered. Cost of this cure was \$6.

"The car now goes beautifully, but I wish I had had those weights checked before—I could have saved a lot of money."

## Gasping gaskets

*No amount of adjustment has helped idle down my 1964 Mercury with the 390 4V engine. This has been going on for two years. I love the car, but I'm just about ready to give it up.—Earl Frank, Nashville, Tenn.*

Don't do that yet, Earl. If it's what I think it is, you can keep the car and be happy. But I wonder why this wasn't

*(Please turn to page 26)*





## Here's another better idea... now your finger does your foot work.



You're driving down the turnpike. You lift a finger. Just one. And set the optional Automatic Speed Control on the turn indicator lever. Now you relax.

You don't keep your foot on the accelerator. You don't keep your eye on the speedometer. Automatic Speed Control controls your speed. You control Automatic Speed Control. Just set it... and go. Just touch the brake... and release it automatically.

Ford Motor Company has a better idea. Now your finger does your foot work.



...has a better idea



## AUTOMOBILE CLINIC

(Continued from page 24)

caught by someone and remedied before.

Anyway, early production '64 Mercs of the type you have were equipped with a two-piece carburetor spacer. Some got into the field with the incorrect gasket between the aluminum and steel spacers, resulting in air leakage and a high or rough engine idle.

A way to check for air leakage is to put some mineral spirits or kerosine around the spacers. If leakage is present, install the correct gaskets, which are Part No. C4AZ-9447-A and Part No. C2AZ-9447-E.

### Waterbug or beetle?

*My 1966 Volkswagen runs beautifully in clear weather, but let it rain and, brother, do I have trouble. It stalls continually if I have to make a stop during the first five miles. After that it's okay. All these so-called VW specialists just twiddle things with a screwdriver which, of course, doesn't help. Have any ideas?—John Geraci, Berkeley Heights, N. J.*

I sure do, but I've got to be frank and say that this is the first complaint I've got-

ten of this sort on the VW. Its engine compartment is much tighter than the average. The problem's more prevalent with other makes of cars whose engine compartments do not lend themselves to use of splash pans as do the VW's.

I have little doubt that there's a leak into that engine compartment from somewhere. Could be because of a less-than-tight lid, or maybe water's coming through a channel. In any event, the ignition is probably picking up moisture and shorting out.

Advise the "twiddlers" to put down their screwdrivers and begin to look for that leak. Meanwhile, a spray can of ignition waterproofing, available at any auto-supply outlet, may help.

**Note: The great reader response to Auto Clinic has resulted in a considerable backlog of letters. However, the recent introduction of a new, faster method for handling this mail will soon help speed back the answers to your inquiries. In the meantime, please be patient. Your letter is being researched and will be answered at the earliest possible date. Thanks.**

## Service Tips

● **A PEPPIER CLUTCH PEDAL** in a 1956 Plymouth Six with manual transmission can be yours—if you stop back at your dealer, that is. Seems that some pedals aren't returning beyond the point of free play. Under the provisions of Service Bulletin 66-85, your dealer will install a new return spring (Part No. 2643705) between the clutch fork and clutch housing.

● **CHEVROLET EMPHASIZES TRANSMISSION SERVICING.** If you have a Powerglide or Turbo Hydra-Matic in that Chevy, don't forget to drain and replenish automatic-transmission fluid every 12,000 miles. The Turbo Hydra-Matic should also have the sump strainer replaced every other oil change. Want to know what happens if you don't do this? The transmission friction elements will wear prematurely, and that means a transmission job which runs well over \$100.

● **IF YOU HAVE A POWER-STEERING PUMP RATTLE** and vibration in your 6601 series Rambler with six-cylinder engine at idle and up to 18 mph, you don't have to put up with it. The problem—occurring in cars with airconditioning, Air Guard or both—is resolved in Service Bulletin 5, group 10.000, dated Aug. 8, 1966. It calls for installation of a power-steering, pump-brace rod kit (Part No. 3208161) between the pump-reservoir stud and the right front engine support-cushion bracket.

Each month Auto Clinic answers questions on car repair. For a personal reply, send 50 cents in coin to cover mailing and handling. Write Auto Clinic, Popular Mechanics, 575 Lexington Ave., New York, N.Y. 10022. One question per letter, please.



# HERE'S PROOF!



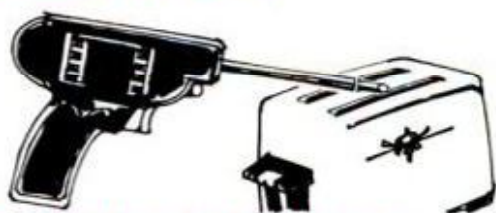
## Wen single post soldering guns go where no other guns or tools can!



Go inside delicate printed circuits!



Go inside tiny models!



Go inside household appliances!

When it comes to "keyhole tight" soldering, WEN's "slim-line" single post goes where other guns or tools can't touch! Makes soldering easier, more accurate, more fun! And WEN's built-in brain *automatically* controls the flow of heat. Never overheats! Never underheats! Gives perfect soldering every time. See the complete line of WEN "automatics" . . . models with up to 450 watts of heat power! Prices start as low as \$4.95. WEN . . . the hottest thing in soldering.



**WEN "HOT ROD" GUN KIT**  
Model 222 gun. Two tips, two accessory items, solder, case.  
**\$11.95** (suggested list price)



For free brochure write Dept. 21,  
WEN PRODUCTS, INC.  
5810 Northwest Highway, Chicago, Ill. 60631



DETROIT

# LISTENING POST

BY BOB IRVIN

**FIREBIRD IS THE NAME OF PONTIAC'S NEW SPORTY CAR** due out next month. It's a familiar name, one used several years ago by General Motors for its early experimental turbine passenger cars. (Pure Oil also applies the name to its gasoline.) Pontiac decided against calling the car the Banshee after learning that banshee is also a wailing death spirit in Gaelic folklore.

The Firebird will be built on the same "F" body as the Chevy Camaro. But the grille, hood, front bumper, lower back panel and taillights will be different. The car will have dual horizontal headlights—not the concealed type. On the hood, a V-shaped convex sculpture starts to form the traditional Pontiac split grille. The front bumper and grille come to a peak, adding two or three inches to the length when compared to the Camaro. Like the Camaro, the Firebird will be a two-door, four-passenger car available in a convertible and coupe. The car will probably be priced below its principal competition—the Mercury Cougar.

**GM'S '68 INTERMEDIATES WILL GO LONG HOOD, SHORT REAR DECK**—the theme popularized by the Mustang. The "A" body on the Chevrolet Chevelle, Pontiac Tempest, Olds F-85 and Buick Special will be one or two inches wider at the belt line. Glass will be curved more. At the top it will be further inboard than now. This had led some to dub the new "A" body "torpedo shaped." But actually, it isn't as "far out" as the "B" body (now on GM's standard-size cars) will get in 1969, when it will be all new. The so-called torpedo shape will be even more pronounced in regular '69 Chevys, Pontiacs, Buicks and Oldsmobiles.

**MICROCIRCUITS ARE SLATED FOR SOME 1968 CAR PARTS** to improve reliability and cut cost. Initial use will be on voltage regulators. Philco-Ford officials predict they'll also be used by 1969-70 for ignitions, light controls and electric speedometers. The Ford subsidiary has also developed an electronic traffic control system using microcircuits on a chip of silicon no bigger than a grain of salt. The Philco system eliminates mechanical timers on traffic lights, regulates them via actual traffic flow. Ford plans to run a full-scale test on streets near its suburban Dearborn headquarters.

**INSIDE STORY ON THAT FLAP OVER 1967 CAR PRICES:** Ford and Chrysler gambled and lost. They hoped, in raising prices more than \$100, that GM would go along. When it raised prices \$55, Ford and Chrysler had no choice but to roll back. "It was a calculated risk we took," says one insider. "We lost."

**RADIAL-PLY TIRE PROBLEMS PLAGUED SOME U.S. RUBBER FIRMS** trying to get into production for the 1967 model cars. Some of the early radials failed before they should have because of ply separation at the shoulder. Most radials have a two-ply cord, in turn covered by four "belts" beneath the tread. There were adhesive problems between the cord and the belts. As a result, Ford—which wanted to pioneer original equipment installation on American cars—was two months late getting any out. When its proving-ground drivers encountered the "late life" failure, Ford yanked the radials before they reached the public. Tire firms say the troubles are being corrected.

**FORD IS READYING GAS TURBINE TRUCKS FOR FLEET TESTS THIS YEAR.** It has cranked up a full operations staff to get its new turbine ready for production by the early '70s. GM's Detroit Diesel Div. has a new laboratory-computer center devoted to turbine research and in a few years may offer its big 500-700-hp units for stationary power installation (oil-well drilling rigs, for example). A turbine truck is also in GM's

*(Please turn to page 30)*



Sure beats smoking!



Enjoy Copenhagen: Place a small pinch between cheek and gum. No chewing.

United States Tobacco Company

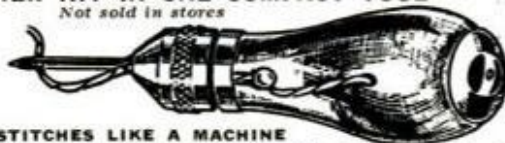
## SEW LEATHER AND TOUGH MATERIALS EASILY

COMPLETE, EASY-TO-USE, HEAVY DUTY STITCHER KIT IN ONE COMPACT TOOL

Not sold in stores

\$1.98

Postpaid



MAKES LOCK-STITCHES LIKE A MACHINE

HEAVY-DUTY STITCHER makes it easy to stitch anything made of leather, canvas, nylon, plastic, other heavy materials. Push-pull action makes even lock stitches like machine. Ideal for repairing luggage, footwear, convertible tops, awnings, seat covers, sports gear, rugs, saddlery, etc. Complete with 3 different needles (fine, heavy, curved), bobbin of strong waxed thread (10 yds.) and simple directions. Only \$1.98 postpaid. Money Back Guarantee. Sportsman's Post, Lake Ave. Ext., Dept. M-121, Danbury, Conn. 06810

## Now Many Wear FALSE TEETH With More Comfort

FASTEETH, a pleasant alkaline (non-acid) powder, holds false teeth more firmly. To eat and talk in more comfort, just sprinkle a little FASTEETH on your plates. No gummy, gooey, pasty taste or feeling. Checks "plate odor" (denture breath). Dentures that fit are essential to health. See your dentist regularly. Get FASTEETH at all drug counters.

## Get Into Your Own BIG PROFIT HOME IMPORT BUSINESS



**BUY BELOW WHOLESALE** Fantastic Bargains Get You Off to Quick Start

Cash in now at home, full or spare time. No experience needed. New, Drop Ship Plan offers first day profits. Deal direct by mail with overseas sources at below wholesale prices. Thousand more dazzling bargains with no product investment. FREE Book tells how.

8mm MOVIE CAMERA \$550

WALKIE TALKIE \$325



FIELD GLASSES 7 x 35 POWER \$240



CALENDAR WATCH WITHOUT BAND \$233

MAIL THIS COUPON

MELLINGER, DEPT. A251

1554 S. Sepulveda, Los Angeles, Cal. 90025

Rush FREE book "How to Import and Export" No obligation.

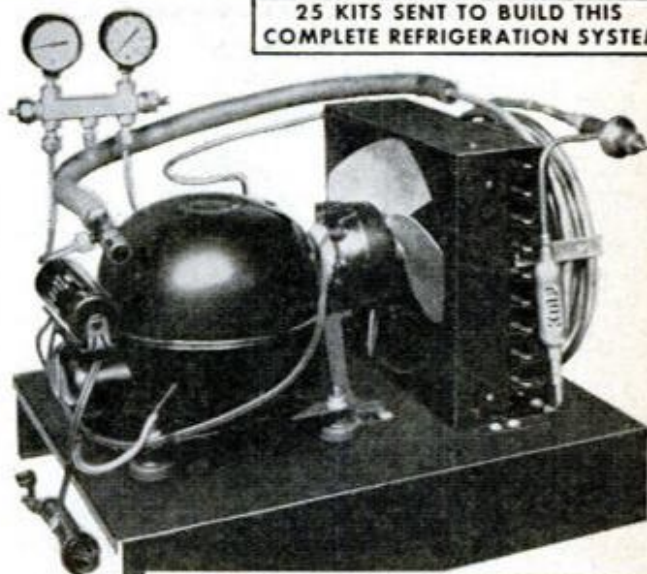
NAME \_\_\_\_\_ AGE \_\_\_\_\_

ADDRESS \_\_\_\_\_

CITY \_\_\_\_\_ STATE \_\_\_\_\_ ZIP \_\_\_\_\_

# EARN BIG MONEY IN AIR CONDITIONING, REFRIGERATION AND HEATING

25 KITS SENT TO BUILD THIS COMPLETE REFRIGERATION SYSTEM



**NEW GI BILL** If you served since January 31, 1955 or are in service, check GI line in coupon

A better job, top pay and steady work are easily within your reach. Learn to repair and install air conditioning systems, refrigerators and freezers. Air conditioning is one of America's fastest-growing industries. Millions of autos and homes are being air-conditioned. The need for trained men is immediate and great.

**Make Home Your Training Center** — Learn by practicing. CTI sends 25 kits of tools and parts to build a complete refrigeration system — which you later convert into a refrigerator or freezer. The course is easy!

**Earn Money As You Train** — Since the CTI course includes training with real equipment, many students earn money repairing units soon after enrolling. On completing training they go into top pay jobs. Many get started in their own business.

**Mail Coupon Today** for free book. No obligation. Prove to yourself that the air conditioning, refrigeration and heating field is best for you — the easiest training to master and loaded with top pay opportunities.

Commercial Trades Institute, Chicago, Ill. 60626

COMMERCIAL TRADES INSTITUTE

1400 Greenleaf Avenue

Chicago, Illinois 60626

Dept. PM-167

Send book, *Be a Success in Air Conditioning, Refrigeration & Heating*. No obligation.

Name \_\_\_\_\_ Age \_\_\_\_\_

Address \_\_\_\_\_ Zip \_\_\_\_\_

City \_\_\_\_\_ County \_\_\_\_\_ State \_\_\_\_\_

Check for facts on new GI Bill

Accredited Member National Home Study Council



# PROFESSIONALS USE NICHOLSON FILES.



## DON'T YOU THINK IT'S ABOUT TIME YOU TURNED PRO?

Send for your free copy of the filer's handbook, "File Philosophy." Please include your name, address, zip code.

*There's never a dull moment with*

# NICHOLSON

Nicholson File Co., Providence, R. I. / Quality cutting tools



## DETROIT LISTENING POST

*(Continued from page 28)*

future, an experimental beauty now being tested by Chevrolet.

**ANOTHER RUSSIAN AUTO PLANT** is not on Ford's agenda. The firm built one once, back in 1931, and last summer had feelers about helping the Russians again, as Fiat and Renault are doing. Ford might be interested if it could sell cars in the Soviet Union, but apparently the Russians just want technical help and will continue to do their own marketing.

**SHOULDER BELTS** apparently hold no appeal for the American car buyer. Chevrolet acknowledges that in the first seven months they were offered as an option, the installation rate was a pitiful half of one percent—about 5000 out of one million cars. Ford, which began offering them with the 1967 models, reports about the same response.

Common complaint concerns appearance. Others are being heard about the positive-locking device on folding front seats of GM cars—a Washington inspired feature. Even so, there are likely to be many more unpopular and costly features on future cars because of new federal safety laws.

**ELECTRIC CAR RESEARCH** finds GM ahead of Ford, but GM doesn't share Ford's notion there's a market for a small electric city car with limited range and performance. GM's continuing its research, though, and in a year probably will build its third operating electric prototype.

Both firms are working on motor systems to provide regenerative braking and charging. GM's thought would replace hydraulic brakes with an electrically operated system. But the silver-zinc batteries in the latest electric Corvair are deemed too expensive for regular use. Ford's at least two years away from installing its highly touted sodium-sulphur battery in a car.

So don't bet any money on a rebirth of the electric in five years. GM's talking in terms of 15 years. And it hasn't revealed all its secrets. It has a vehicle powered by a Stirling thermal engine and believes heat batteries hold great promise for future propulsion systems.

In the meantime, a number of "backyard" inventors have evolved electric car designs of more than passing interest to the big auto companies. What could come of this go-it-alone activity is anyone's guess. ★★★





### KING MIDGET FOR 1967

More powerful Kohler engine. Amazing performance. Faster. Smoother. Quieter. Many new features. World's Lowest Priced Car. Drive it for 75¢ per week. Owner demonstrators wanted. Send 25¢ for 32 page book, fully illustrated, dealer's price. Or send \$1 (refundable first order) for this plus service and repair manual and 16 5x7 photos of car and factory.

**MIDGET MOTORS CORP., ATHENS 1, OHIO**

## GUITARS **Big Discounts**

**BUY DIRECT! WHOLESALER-TO-YOU!**

**SAVE! BIG DISCOUNTS!** Nationally advertised guitars. Over 100 models, all styles, for students and professionals. Low as \$19.95! **DIRECT from Wholesaler-to-You.** Easy Terms, low as \$5.00 down! **FREE Home Study Course and Bonus Gifts!** Discounts on banjos, mandolins, ukes. Satisfaction or money back. **Free Color Catalogs, low discount prices.** Write: **GUITAR WORLD, Dept. R-17**  
5535 W. Belmont Ave., Chicago, Ill. 60614



**E-Z TERMS**  
**5-Day FREE Trial**

## YOU CAN GET RICH RAISING MINK



Mink, chinchilla, nutria, and other fur animals always are in demand. You can earn \$10,000 to \$15,000 a year and more, full or part time. Low cost, greatest rewards! Details sent by return mail. **FREE BOOKLET Tells All—Ask For It!**  
**FURS,** Dept. RR  
Bewdley, Ontario, Canada

## Bill Problems ? CAN'T MAKE ENDS MEET NOBODY REFUSED UP TO \$10,000.00

- POOR CREDIT, No Trouble. NOT A LOAN CO. ■
- Send Your Name for FREE APPLICATION ■
- AUTOMATIC ACCEPTANCE • Dept. 98 ■
- 307 Pocasset Ave., Providence, R. I. or ■
- 318 Broadway Blvd., Reno, Nevada ■

## New Portable LIGHT PLANTS

110-120 V. A. C. 1500 watts, 60 cycles. Weight 24 lbs. Size 10" x 5". Fanbelt driven from car, pickup or gas engine of 2 1/2 or 3 h.p. Operates 1/2" Drills, Saws, T.V. Brand new. Money back guarantee. Regular \$89.50 now \$49.50. With switch, pulley and voltmeter. Send check or money order.  
**VIRDEN PERMABILT CO.**  
Box 7066 Amarillo, Texas 79109

## DON'T PAY FOR THESE GREAT SHOES



**Tar-tan Grain with Air Cushion & Arch Support**

**GET THEM WITHOUT COST AS A REWARD—PLUS THE CHANCE TO "BE BOSS" OF YOUR OWN \$10,000 A YEAR SHOE BUSINESS!**

Brand new plan! You can earn marvelous new shoes instead of paying for them . . . and develop an extra income for life! Sell friends new Work, Dress, Casual Shoes and Boots in spare time. Revolutionary new leather soles guarantee twice the wear! Also earn Advance Commissions up to \$10.00 a pair, plus big Bonus. No experience. Samples supplied. Write for new Selling Outfit—without obligation, **CHARLES CHESTER SHOE MFG. CO., Dept. 85.** Brockton, Mass.

JANUARY 1967

# THE INSULT THAT MADE A MAN OUT OF "MAC."



## Let Me Show You How I Can Make YOU A NEW MAN

ONCE I was so ashamed of my scrawny frame that I dreaded being seen in a swim suit. Then I discovered a wonderful secret that changed me from a 97-pound "runt" into "The World's Most Perfectly Developed Man." Now let me show you how I can build up YOUR body the very same natural way—without weights, springs or pulleys. Only 15 minutes a day—in the privacy of your room. Let my "Dynamic-Tension" method help YOU become a real he-man in double-quick time. Right NOW!



*Charles Atlas*

"World's Most Perfectly Developed Man"

## Mail Coupon Now for My FREE BOOK



I'll send you a FREE copy of my 32-page illustrated book, "How Dynamic-Tension Makes You a NEW MAN!" Tells how and why my method works. Mail coupon NOW.

**CHARLES ATLAS, Dept. 81,**  
115 East 23rd St., New York,  
New York 10010.

**CHARLES ATLAS, Dept. 81,**  
115 East 23rd St., New York, N. Y. 10010

Dear Charles Atlas, Here's the Kind of Body I want: (Check as many as you like)

|                                                   |                                              |
|---------------------------------------------------|----------------------------------------------|
| <input type="checkbox"/> Broader Chest, Shoulders | <input type="checkbox"/> Powerful Arms, Legs |
| <input type="checkbox"/> Iron-Hard Biceps, Grip   | <input type="checkbox"/> More Solid Weight   |

Show me how "Dynamic-Tension" can make me a new man. Send your famous 32-page FREE book, full of pictures, valuable advice. No obligation.

PRINT NAME..... AGE.....

ADDRESS.....

CITY & STATE..... ZIP CODE.....

In England: Atlas, Chitty St., London, W.1



# CUT-TO-FIT HOMES SAVE LABOR COSTS UP TO 100%

Save labor cost up to 100%, reducing completed home cost. You can assemble any of 57 designs from easy-to-follow plans. No measuring or cutting . . . every piece precision machine pre-cut and marked. **BUY DIRECT FROM MILL.** Eliminate all between overhead, profit and labor

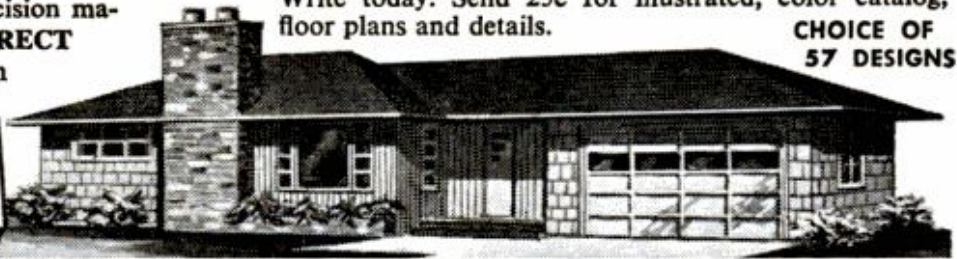
costs. Nothing to plan or figure. Complete with all lumber, hardware, paint, nails, glass, roofing, etc. Sterling Home quality material throughout. Freight paid most areas. Write today. Send 25c for illustrated, color catalog, floor plans and details.

**CHOICE OF 57 DESIGNS**

**PRICED FROM \$2295 UP**

Prices do not include carpentry labor, heating, lighting, plumbing and masonry materials. **FIVE EASY-PAYMENT PLANS,**

**THIS HOME \$6535**



**INTERNATIONAL MILL & TIMBER CO.** Bay City, Michigan, DEPT. PM-17

**"\$8,500 PROFIT MY FIRST YEAR"**

**WITH INLAND 3-IN-1 RADIATOR SHOP**

—John Burrus, Sr., Fredericksburg, Va.

Inland shop owners make good money testing, cleaning, repairing auto-truck-tractor radiators. You can too! Compact shop only 11'7" x 3'6". Inland, world's largest radiator equip. mfr., trains you free in 2 weeks or less. Pay-As-You-Profit purchase plan. Proved merchandising assures volume. Write for **FREE BOOK**, owner letters, details on program. Profitable dept. for garage or gas station.

**INLAND MFG. CO.,** Dept. PM-1, 1108 Jackson, Omaha, Neb., 68102



**NEW!**

## I-N-V-E-N-T-O-R-S WE NEED INVENTIONS

Sell your invention for cash—need money for Patent?—Are technical problems holding you back? Universal Inventions has helped inventors all over the world—just like yourself—why not you? Inventions provide the magic spring-board to sudden riches. **REMEMBER**, we either sell your invention or pay you a cash bonus. Write for details.

**UNIVERSAL INVENTIONS, Dept. 13, Marion, Ohio**

**SAVE HUNDREDS OF \$ \$ . . . BUY**

# GOVERNMENT SURPLUS



## Fantastic BARGAINS

Many items go at 2 to 3c per dollar of original cost.

The government is one of the largest buyers in the world. And one of the largest sellers too, often at prices so low as to stagger your imagination. Government needs change, specifications change, improvements make items obsolete, installations close down or are moved and thousands of items have to be quickly disposed of. That's your opportunity and we can show you how you can take advantage of it.

### SAMPLE SURPLUS SALE PRICES\*

|               |        |                |        |
|---------------|--------|----------------|--------|
| Army shoes    | \$1.60 | Knife          | .60    |
| Binoculars    | 1.30   | Machetes       | .70    |
| Typewriters   | 8.00   | Bayonets       | .40    |
| Rifles        | 7.70   | Rucksacks      | 2.00   |
| Blankets      | .60    | Shirts         | .20    |
| Sleeping bags | 3.80   | Field Jackets  | .80    |
| Parkas        | 4.90   | Army coveralls | .60    |
| Walkie talkie | 15.00  | Jeeps          | 300.00 |

\*Purchase price possibilities dependent on demand

Send only \$1 (refundable) for **DIRECTORY** with complete sources, data on where and how to buy low cost surplus items.

**FREE** — giant catalogue of hundreds of bargains. Items you can order direct by mail when you send for directory.

### WORLD LARGEST STOCK

|                      |         |
|----------------------|---------|
| Rifles               | \$10.95 |
| Boats                | 16.45   |
| Steel Helmets        | 2.15    |
| Shoes                | 1.65    |
| Jackets              | 3.25    |
| Tents                | 6.55    |
| Bayonets             | 1.65    |
| Cartridge Belts      | 1.65    |
| Pistol Belts         | 1.05    |
| <b>HUNDREDS MORE</b> |         |

**MAIL COUPON TODAY for FREE HOME TRIAL!**

**You can't lose PRICE OF \$1 REFUNDED**

if not satisfied

**OR WITH FIRST ORDER of \$5 or more**

**HELLER COMPANY, Dept. PM-G1**  
Box 826, Niagara Falls, N.Y. 14302

I enclose \$1.00. Send the combined catalog and Directory immediately. I understand that my money will be refunded if I am not completely satisfied. Also I will receive a full refund with my first order of \$5.00 or more.

NAME \_\_\_\_\_  
(Please Print)

ADDRESS \_\_\_\_\_



## PROFIT IN YOUR SPARE TIME



**SMALL ENGINE REPAIR PAYS BIG!**  
 Outboard • Powermower • Chain Saw • Tractor  
**MAKE EXTRA MONEY** — or fix your own engines and **SAVE!** Illustrated, easy-to-learn Home Study Course qualifies you as expert. Approved for Veterans. Write today!

**LINCOLN TECHNICAL INSTITUTE**  
 SUITE 1E, 427 MARKET STREET, NEWARK 5, N.J.

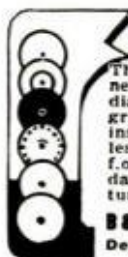
## BRONZE FOUNDRY



Since 1935

**Schools • Home Workshops • Inventors**  
 Make your own castings of aluminum, copper, bronze, silver. Foundry sets are available in six sizes, capacity 1½ lb. to 48 lb. of red brass. 2400 Deg. F. blast furnace included with each. Write for Free Circular.

**KANSAS CITY SPECIALTIES CO.** Dept. P-1, P.O. Box 193, Middleton, Wis.



## make your own *Gems* 36<sup>50</sup>

The Gem Maker comes complete with all necessary equipment, including a super-charged diamond blade for sawing, and all the wheels for grinding, shaping and polishing; also complete instructions. The complete equipment as shown, less motor and belt for only \$36.50, f.o.b., Burlington, Wisconsin. Write today for information and literature.

**B&I MANUFACTURING CO.**  
 Dept. P, Burlington, Wis.



## BASEMENT TOILET FLUSHES UP



TO OVERHEAD SEWER OR SEPTIC TANK.  
 NO DIGGING UP FLOORS. INSTALLS EASY. Write  
**McPHERSON, INC. BOX 15133 TAMPA, FLA.**

## LIFE INSURANCE UP TO \$5000

**IF YOU ARE NOT OVER AGE 74.** Supplement Social Security to help survivors meet your after-death bills, debts or family needs. Legal reserve life insurance pays in all states and countries for death from any cause, except during the first policy year for either suicide or death from undisclosed pre-existing health conditions. Compare lifetime protection and guaranteed rates. No medical examination. Easy to apply by mail direct to the Home Office. Introductory offer and application mailed to you without obligation. Tear out this reminder and mail with your name, address, zip code and year of birth to Great Lakes Insurance Company, Elgin, Illinois 60120. Dept. A89X14.

## NEW WESTERN HAIG .12 CALIBER SPECIAL FACTORY OFFER!



**\$300** post-paid

### USES POWDER CHARGE

This small bore gun shoots .12 cal. lead bullets fired by small 4.4 mg. powder charge. Not a CO<sub>2</sub> gun! You'll like the handsome lines, grip, and balance. Western in style, but patented ball and cap action allows this low price. 9¾" steel barrel cased in knurled styrene stock, overall 13½". Develop pistol form, accuracy at a fraction of cost of large caliber pistols. Comes with 50 lead bullets. Satisfaction guaranteed. Send \$3 to:  
 Haig Mfg. Co., P.O. Box K-4, Alhambra, Calif, 91802

## TO YOUR OWN DOCTOR'S PRESCRIPTION



**EYEGASSES BY MAIL AT GREAT SAVINGS!**

Mail orders filled by **\$9<sup>95</sup>** licensed optician from

(Including single vision lenses, frame and case).

Doctor's prescription will be filled by a skilled, approved and licensed optician or your own prescription duplicated. Lenses are ground and manufactured to U.S. optical standards. Choose from complete catalog of men's, women's and children's glasses. Bifocals, trifocals, sunglasses or SAFETY HARDENED LENSES at low additional cost. We guarantee accuracy, perfect fit.

SEND FOR YOUR FREE CATALOG TODAY  
**PRISM OPTICAL INC.**

Dept. PM-8 136 Liberty St., New York 6, N. Y.

## MAGIC MAIL PLAN

that comes with this Little Machine

### CAN MAKE YOU \$1200 AN HOUR

The machine is turning out a job that will bring operator \$2.58, by mail. Material cost, only 11c



Write today for free facts about the newest and most fascinating of all new home operated businesses. For the first time, a simplified machine brings the fabulous profits of Plastic Sealing and Plastic Laminating within reach of the small operator. Anyone can learn to operate it with a few minutes practice. Then—with our MAGIC MAIL PLAN—can get mail orders pouring in daily with cash in every envelope.

### No Canvassing or Selling

Fill orders at home in spare time to start. Then expand to full time business. We even supply circulars to bring back cash and orders. Rush name for all the facts you need to start. A postcard will do. No charge.

**WARNER ELECTRIC CO., Dept. L-2-AT**  
 1512 Jarvis, Chicago, Ill. 60626

## LAFAYETTE RADIO ELECTRONICS

### FREE!



**1967 Catalog 670**  
**Over 500 Pages**

Featuring Everything in Electronics for  
 • HOME • INDUSTRY  
 • LABORATORY  
 from the "World's Hi-Fi & Electronics Center"

Mail the Coupon for your **FREE 1967 Lafayette Catalog**

**LAFAYETTE Radio ELECTRONICS**  
 Dept. LA-7, P.O. Box 10  
 Syosset, L.I., N.Y. 11791

Send me the **FREE 1967 LAFAYETTE Catalog 670** LA-7

Name .....  
 Address .....  
 City .....  
 State ..... Zip .....



# Drivin' with Dan

Will any engine take over from Ford at Indy? Where should the best tires go—front or back? 'Natural' driver vs. 'combative' driver—which is tops? Dan Gurney answers these and other provocative questions



**GURNEY** and Weslake Development's Michael Daniels discuss last-minute adjustments to the new Gurney-Weslake V12 engine that made its American debut in the 1966 Watkins Glen Grand Prix. Dan's car proved very quick for the first few laps, passed several others before retiring due to engine overheating

**Q.** I have a relative working with Carroll Shelby. He told me about the Gurney-Eagle. Where and when do you plan to race it?—Tim Brennan, Aurora, Ill.

**A.** We call the car the American Eagle and build it in two versions, Indianapolis and Grand Prix, at our All-American Racers facility in Santa Ana, Calif. We had five of our Indy Eagles qualify for last year's "500" and one, driven by Lloyd Ruby, led more laps (68) than any other car. Roger McCluskey won Langhorne in another and Bobby Unser was second in the Mount Fuji, Japan, Indy-type race in another. Our Grand Prix Eagle is very similar to the Indy version, the biggest difference being the engine, which Formula One rules limit to a maximum

of 3 liters, or about 183 cu. in. We have built our own 12-cylinder engine, called the Gurney-Weslake, for this car and hope to have it developed to a competitive stage by next season. We plan to have Eagles on both the Indianapolis and Grand Prix circuits again this year.

**Q.** If there are two good tires on a vehicle, and two bad ones, which two should go on the front (assuming one has to use 'em for the moment)? I've always believed the poorer tires should go on the front to maintain greater control in the event of a blowout. Am I right?—Wm. G. Pollock, Fort Myers Beach, Fla.

**A.** Almost. In such an unfortunate position you would want to utilize the better tires for greatest possible control in case of a blowout, but you would want your good rubber on the front wheels, where steering control takes place. I would put the poorer ones on the rear and drive slowly enough to avoid being in serious trouble if one should happen to blow.

**Q.** I read that Jimmy Clark and Jackie Stewart are considered "natural" race drivers, whereas you and Graham Hill and John Surtees get by through being "combative." How do you feel about this?—Jim Schultz, Chester, Pa.

**A.** Every man has a right to his opinion. Some drivers have more natural talent than others, some have more "combative spirit." I feel that all top drivers have both qualities in pretty large quantities.

**Q.** How many engines does a really competitive team need at Indy? Do you see any engine replacing the Ford as the dominant engine there?—Bill Chester, Oak Park, Ill.

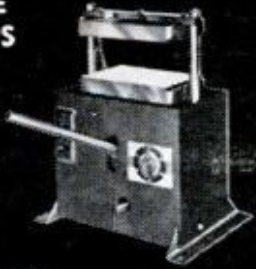
**A.** You should have two engines per car going in, and three, or access to a third, in  
*(Please turn to page 36)*



# BE YOUR OWN BOSS!

**INCREASE YOUR INCOME  
MAKING RUBBER STAMPS  
PART OR FULL TIME!**

Big profits . . . little investment  
. . . small working area. Deal direct  
with manufacturer providing lowest  
prices on professional presses &  
supplies, plus valuable aid. For  
FREE prices and full facts write



**CUSTOM MFRS.**

402 E. Elm, Springfield, Mo. 65801



## MASONS!

Send today for free catalog  
of Masonic & Eastern Star  
books and rituals

**EZRA A. COOK PUBLICATIONS, INC.**

P.O. BOX 796, DEPT. L-62, CHICAGO. 60690

# Save 1/2 "New Sound" ACCORDIONS\*



**5 DAY HOME TRIAL!  
IMPORTER-TO-YOU PRICES**

**Buy on EASY TERMS**  
Low as \$7.95 a month  
42 "New Sound"  
STANDARD and  
ELECTRONIC Models

### All Famous Makes

\*SAVE 1/2 off retail prices  
of comparable accordions!  
Amazing selection—models  
for Students, Hobby Players,  
Teachers, Professionals. New  
ELECTRONIC accordions  
with sensational new features and  
exciting engineering advances. Full  
line Amplifiers. Buy Direct from  
World's Largest accordion dealer. Big  
discounts! Buy just like Dealers do!  
**Try before you buy!** Valuable accessories  
FREE! Anything of value in  
trade—big allowance! Lifetime  
Performance Policy. Satisfaction  
guaranteed or your money back.

### RUSH COUPON TODAY!

Get Big color catalogs, Import-  
er-to-You Discount prices,  
Selection Guide and Color  
swatches—**ALL FREE.** No obli-  
gation, write now!

**ACCORDION CORP. OF AMERICA,**  
DEPT. R-17, 5535 W. Belmont, Chicago 41, Ill.

### FREE BONUS GIFTS

for promptness  
• E-Z Lessons  
• Music Stand  
• DeLuxe Case  
other gifts, too!

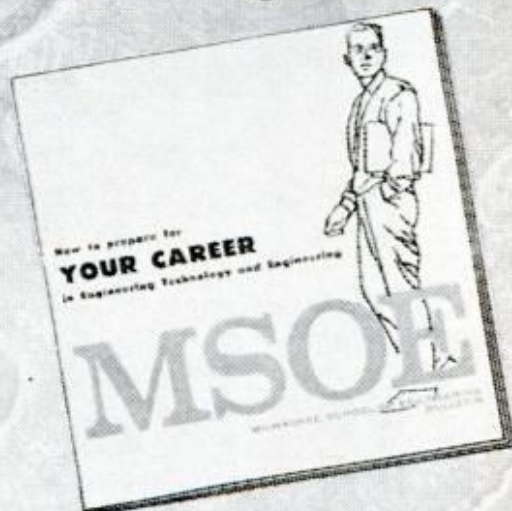
**MONEY BACK  
GUARANTEE**

**FREE  
COLOR CATALOGS**  
and discount prices

**ACCORDION CORP. OF AMERICA, Dept. R-17**  
5535 W. Belmont Ave., Chicago, Illinois 60641  
Send FREE COLOR CATALOGS of ACCORDIONS,  
AMPLIFIERS—DISCOUNT PRICE LIST.

Name \_\_\_\_\_  
Address \_\_\_\_\_  
City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_  
( ) Check here if you have trade-in.

Thinking of college and  
a space age career?



Send for this booklet on  
**ENGINEERING TECHNOLOGY  
AND ENGINEERING**

Learn how you can prepare for a dynamic  
career as an electrical or mechanical engi-  
neering technician or engineer in such  
exciting, growing fields as avionics, mis-  
siles, reliability control, fluid mechanics,  
data processing, metallurgy, microelectro-  
nics, and advanced aerospace research.

MSOE offers residence study programs  
leading to these degrees in engineering  
technology and engineering:

- 2 years — Associate in Applied Science
- 4 years — Bachelor of Science

Also get facts about scholarships and fi-  
nancial aids, job placement and other  
student services, plus photographs of  
MSOE technical laboratories and  
student activities. Courses ap-  
proved for veteran training.  
For your copy, just mail  
the coupon —  
no obligation.

# MSOE

Milwaukee, Wisconsin 53201

Milwaukee School of Engineering  
Dept. PM-167, 1025 N. Milwaukee Street  
Milwaukee, Wisconsin 53201

Please send the "Your Career" booklet.  
I'm interested in

- Electrical fields       Mechanical fields

Name.....Age.....

Address.....

City.....State.....ZIP.....

MS-284



## DRIVIN' WITH DAN

*(Continued from page 34)*

the event of trouble. Certainly there is always the chance of another engine taking Indy supremacy from Ford. In fact, the current rules give an advantage to supercharged engines, so you might even see the Offy revived. Rules also give a stock block engine a displacement advantage, and it's possible someone may come up with the right combination there. We happen to be giving consideration to a stock block Indy engine now, utilizing our Gurney-Weslake cylinder heads.

**Q.** *How did you get started in racing?—Bill Walts, Clayton, N.Y.*

**A.** The first racing I did was in an old car I had as a teenager—drag racing. Shortly after I was discharged from the Army I became interested in sports car racing and borrowed money to buy a Triumph TR-2, which also served as our family car. So did my next "racer," a Porsche, but it was just too expensive. Fortunately, I was invited to drive someone else's car about that time, and one ride led to another. I also tried to practice frequently on remote-desert dirt roads during those days, timing myself and learning what was happening and why.

**Q.** *After the big pileup at Indianapolis, you said it was stupid to try to win the race on the first lap. But if a driver loses 10 or 12 seconds at the start, aren't they awfully hard to make up?—Pete Walters, Joplin, Mo.*

**A.** I never actually said it was stupid to try and win the race on the first lap, but if anyone figures out how to do it I'd certainly like to know. It's true that every second is hard to make up. Still, you must finish to win and the opening laps are the most accident-prone.

**Q.** *Please explain what is meant by "weight-jacking" as applied to a symmetrical-track racing car such as an Indianapolis or dirt-track car. Is this technique also used in road racing?—Rod Bennett, Washington, D.C.*

**A.** Try to imagine a race car as a four-legged table sitting on a level floor. If you want to drive the car around a left-hand corner and get help from weight-jacking, you would either saw a little off the left front leg or lengthen the right front leg, thereby carrying more weight proportionally on the right front and left rear. Then, as centrifugal force

pours weight on the right rear in a left-hand corner, some of it is shared by the right front and left rear. You obtain the effect of "sawing off" or lengthening the front "legs" by raising or lowering the springs there. The technique is occasionally used in road racing if a road course is predominately made up of more left-hand turns than right (or vice versa), but not as often as in oval racing.

**Q.** *When A.J. Foyt drives at Riverside, for whom and what make car does he drive?—Lee Thedens, Rock Rapids, Iowa.*

**A.** In recent 500-mile stock car races at Riverside, A. J. has driven Fords for Junior Johnson and Banjo Matthews and a Pontiac for Ray Nichels. In sports car races there, he has run his own Lola, a Scarab, Lotus 40 and a Hussein for John Mecom.

**Q.** *I read in a magazine that Mario Andretti dropped out at Indy because his car was running on only seven cylinders and would have overheated and "exploded like a mortar shell." Then in the same magazine I read Mel Kenyon, who finished fifth, ran the last one-third of the race on three cylinders! I don't get it.—Cecil Roberts, Grafton, N.D.*

**A.** I don't believe Mario's car would have exploded like a mortar shell. More like a hand grenade, maybe. If Mario dropped a valve, as reported, it meant it could have led to more and bigger trouble which no intelligent driver would want to risk. To appreciate Kenyon's three-cylinder finish you must first of all remember he only had four to start with in his Offy. He evidently lost the use of one cylinder for some minor reason, such as a wire dropping off. There are no hard and fast rules as to when an engine can limp through and when it can't.

**Q.** *Dan, I've tried everywhere to get the proper address of Carroll Shelby's driving school and been unsuccessful. Can you get me a straight answer?—Ron Kanerva, Sudbury, Ont.*

**A.** Gladly: Carroll Shelby School of High Performance Driving, 6501 W. Imperial Highway, Los Angeles, Calif. 90009.

---

*If you have questions on racing, high-performance and everyday driving techniques, send them to "Drivin' with Dan," c/o Popular Mechanics, 575 Lexington Ave., New York, N.Y. 10022. Questions cannot be answered by individual letters. Questions on maintenance and repair should be addressed to the Auto Clinic (see page 224).*

---



## PLAY GUITAR IN 7 DAYS OR MONEY BACK



**TOP GUITARIST ED SALE'S** famous 66 page secret system worth \$3.00 teaches you to play a beautiful song the first day and any song by ear or note in seven days! Contains 52 photos, 87 finger placing charts, etc. plus 110 popular and western songs, (words and music): a \$1.00 Chord Finder of all the chords used in popular music: and a \$3.00 Guitarist Book of Knowledge.

**TOTAL VALUE \$7.00  
—ALL FOR ONLY \$2.98**

SEND NO MONEY! Just your name and address, pay postman: \$2.98 plus C.O.D. postage. Or send \$3.00 with order and I pay postage. (Sorry, no C.O.D. outside Continental U.S.A.—please remit with order).

**Unconditional Money-Back Guarantee**  
ED SALE Studio 153-A AVON BY THE SEA, N. J.

## 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.

Send postcard today for complete facts.  
BELSAW POWER TOOLS, 9071 Field Bldg., Kansas City, Mo. 64111

- MAKE
- BIG PROFITS
- ENGRAVING
- DOOR PLATES
- DESK PLATES
- BADGES, ETC.

**F**ast-growing, high-profit field. Unlimited prospects all around you. Full or part-time business you can do at home. No experience necessary. Low-cost kit starts making money for you right away. Engrave plastic (samples on left) or soft metals. For complete information write Dept. PM 167

Scott Machine Dev. Corp., 215 Prospect Ave., Walton, N. Y. 13856.

## BUILD YOUR OWN CAMPER AND SAVE!



Complete, easy to follow Camper Plans, Instructions and Materials List . . . \$3.95

Satisfaction Guaranteed!  
PICKUP COVER PLANS \$2.00  
EQUIPMENT CATALOG \$1.00  
refundable on first order.  
Also Factory Built Units.

Save 50% With This Viking Package Deal  
All items from our catalog to build a 10' or 10'6" Camper. Average retail \$1,795. Total Pkge. \$847.10.  
SEND CHECK OR M.O. FOR DETAILS SEND DIME

**VIKING**  
CAMPER SUPPLY, INC.  
94-BP Glenwood Ave.  
Minneapolis, Minn. 55403

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

# The quickest way to learn WATCH REPAIRING . . .

People learn watch repairing for many reasons: Some want a new career in this mushrooming trade. Others aim for the rapidly expanding precision instrument field. Some look for a second income. Others want lighter work. Some want the enjoyment of a challenging occupation. Others desire work after normal retirement. And others simply seek relaxation from the cares and tensions of the day.

Whatever your reason, doesn't it make sense to learn professional methods? The right methods? The time-saving, systematic methods of the skilled repairman? This is the quickest way to acquire these much needed skills now so much in demand. And you can do this at home.

### DOUBLE YOUR PROGRESS • HALVE YOUR LEARNING TIME

Couple these methods with the unique approach used in Chicago School of Watchmaking's home study course and you double your progress and cut your learning time in half. You'll learn the common repairs first . . . those which you meet with most often . . . so you can use your training soon after your start. You'll learn how to identify watches worth repairing, how to order needed parts, how to estimate the work to be done. And you'll learn a streamlined procedure for making repairs which develops speed and saves doubling back over your work.

So if you are looking for a swift, sure way to learn watch repairing, get full information now on Chicago School of Watchmaking's home study course. Age is no barrier. Previous experience is not required. Diploma awarded. Write today for free sample lesson. There's no obligation and no salesman will call.

## CHICAGO SCHOOL OF WATCHMAKING

Founded 1908

Dept. 117, Fox River Grove, Illinois 60021

JANUARY 1967



When you study at home in your spare time, you are a class of one. You go as fast as you wish. There are only 35 lessons, each one a fascinating new facet of a fascinating trade. Many students have completed these lessons in three months' time, although the average student takes somewhat longer. Your instructor—an experienced, professional repairman—will answer your questions, inspect and check your practical work, guide and counsel you throughout your enrollment and as long after as necessary.

## FREE SAMPLE LESSON

Chicago School of Watchmaking  
Dept. 117, Fox River Grove, Ill. 60021

Please rush FREE SAMPLE LESSON and full information on learning watch repair at home.

Name \_\_\_\_\_ Age \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip No. \_\_\_\_\_





in the driver's seat:

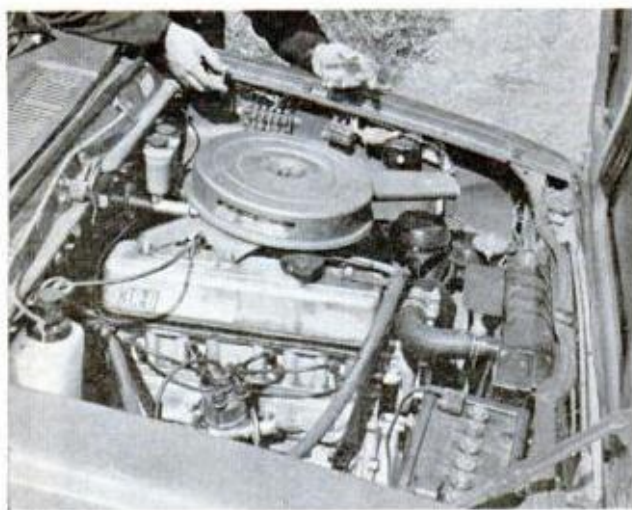
# THE TOYOTA CORONA

Quad lights and swept-back grille mark this Eastern import with Western values

By ALEXANDER MARKOVICH

**J**APANESE CARS? The only decent ones are the kind my kids stash in their toy box. At least that's what I thought several years ago after driving a few of the overweight and underpowered vehicles first imported from Japan. But things have changed. If the Toyota Corona I've just tested is any indication, the Japanese have gone their European competitors one better.

The Corona is a civilized-looking car. Styling is modern and functional, with more than a passing Italian influence. Workmanship puts many luxury cars to shame. The odometer in our test car was



**FRONT-HINGING HOOD** reveals a well-planned engine compartment. Accessories are easy to reach

just shy of 6000 miles, but the unitized body didn't let out a squeak or a rattle.

The interior, though not quite luxurious, is neat and tasteful. The upholstery passed the supreme durability test: my three urchins.

The instrument panel is dominated by an easy-to-read speedometer flanked by a water-temperature gauge (unfortunately featuring "hot" and "cold" markings rather than numerals), a fuel gauge and warning lights for oil pressure, amps., directionals, high beams and parking brake. Both fixed and trip odometers register in



**PADDED DASH** is standard. Gas and brake pedals are perfectly spaced for quick heel-and-toe driving

tenths of a mile. There is also a proliferation of air vents, large glovebox (opening easier than anything from Detroit), cigarette lighter, ashtrays front and back, three grab handles and an under-dash shelf.

Other standard equipment includes automatic choke, fully lowering rear windows, three-way courtesy light actuated by all four doors, ignition switch with "accessory" position, two-speed electric wipers, windshield washer, key locks on both front doors and backup lights. Our test car also had an optional radio (\$57.70) with

*(Please turn to page 41)*



## How can UNIMAT be exciting if it bores?



Simple. It also mills, drills, grinds, polishes and more. That's UNIMAT, a miniature machine shop that operates both as a precision lathe and multi-functional tool on metal, plastic and wood. Converts in just seconds. Only 17" long. UNIMAT has satisfied thousands of exacting hobbyists with its versatility and tool-room accuracy (up to .0005"). Performs like costly big equipment while taking up a minimum of space.

No prior experience is necessary to use this valuable tool. The basic unit plus lots of extras sells for \$139.50. Send for free literature, 'Miniature Machining' photo-packed manual or \$1.00 and get the whole story in 'Techniques'; a 40-page Write: American-Edelstaal, Inc., Dept. G-A7, 350 Broadway, New York, N.Y. 10013.



## DRAINS cellars, cisterns, wash tubs; IRRIGATES - CIRCULATES - SPRAYS \$8.95



1,001 uses. Stainless shaft. Won't rust or clog! Use 1/8 HP motor or larger... 3/4 HP for up to 2,400 GPH; 450 GPH 80' high; or 1,800 GPH from 25' well. 1" inlet; 3/4" outlet. Coupling included free. \$8.95. HEAVY DUTY BALL-BEARING PUMP. Up to 5,200 GPH; or 3,000 GPH from 25' well. 1 1/4" inlet; 1" outlet. \$12.95. Postpaid if cash with order. MONEY BACK GUARANTEE

Centrifugal and Gear Pumps in All Sizes  
LABAWCO PUMPS, Belle Mead 7, New Jersey

# FREE! WORLD'S LARGEST ELECTRONIC KIT CATALOG!



108 colorful pages... illustrates over 250 kits for space-age fun at 50% savings. Build your own stereo system, color TV, electronic organ, guitars & guitar amplifier, portables, marine electronics, ham and shortwave radio, plus many more. No special skills or knowledge needed. Find out how easy it is... mail coupon for FREE copy!



CL-256

Heath Company, Dept. 17-1  
Benton Harbor, Michigan 49022  
Please send FREE 1967 Heathkit Catalog.

Name \_\_\_\_\_  
Address \_\_\_\_\_  
City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

## FREE Key Machine

Kind master locksmiths use. Sells for \$125, but yours FREE with Locksmithing Course.



## You Can Learn To Be A LOCKSMITH in your spare time

There's a big demand for skilled locksmiths. You can earn big money either full or part-time in your own home. Be your own boss; earn steady, year 'round income with no layoffs. The BELSAW INSTITUTE training, recommended by professional locksmiths, teaches you to make keys, open and repair locks on homes, cars and buildings. Easy, step-by-step illustrated lessons complete with all tools and supplies. We tell you how to get servicing jobs, how much to charge, how to earn while you learn and how to build a secure cash profit business.

Mail Coupon for FREE Book Today!

BELSAW INSTITUTE, 1071 Field Bldg., Kansas City, Mo. 64111  
Send FREE book, "Keys To Your Future!"  
No obligation. No salesman.

Name \_\_\_\_\_  
Address \_\_\_\_\_  
City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

## Save Money on WOOD

Hardwood Veneers... Hardware...  
Wood Shop Supplies and Equipment  
...Power Tools



Hardwoods, Fine Plywoods,  
Inlays, Mouldings, Mosaic  
Tile, Tools, Lamp Parts,  
Upholstery Supplies

Your new MONEY SAVING wood and workshop buying guide now ready! 140 page. Full color! Your best "one stop" source for finest kiln dried domestic and imported hardwoods, veneers, plywoods, modern and traditional legs... over 1500 items.

STANLEY TOOLS at Discounts  
Startling savings on top name power tools, hard to find cabinet hardware, lamp and upholstery supplies. New projects and kits. Enclose 35¢ to help pay mailing and handling costs. Mail coupon.

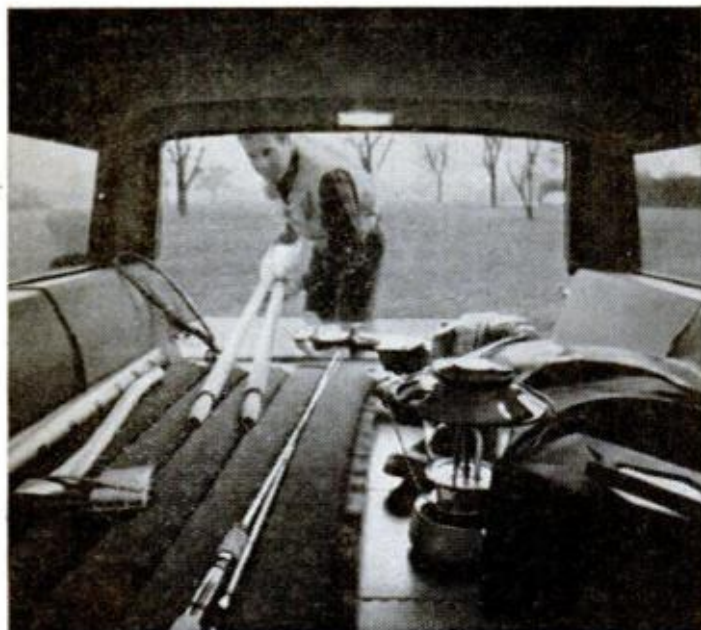
New Catalog  
over 1500 items  
Now Ready!

## CRAFTSMAN WOOD SERVICE COMPANY

2729 South Mary, Chicago, Illinois 60608. Dept. A-17  
Rush new Craftsman WOOD Catalog. I enclose 35¢ to help pay mailing cost.

NAME \_\_\_\_\_  
ADDRESS \_\_\_\_\_  
CITY \_\_\_\_\_ STATE \_\_\_\_\_ ZIP CODE \_\_\_\_\_





## This man's wagon has a tailgate that turns into a door, and a hobby shop in the back.

Mercury figures that what happens in the back is pretty important to a wagon man. You want more than space alone.

So, first, we put an ingenious tailgate-door on this Colony Park. It swings down like a tailgate to load vacation gear. Or it swings open like a door to let you load heavy items without reaching across the tailgate. Spares your aching back.

Next we came up with optional center facing rear seats. With one folded flush, you've got a nifty work table. A far better place to adjust a gun sight or a fishing reel than some rock at your camp site.

Mercury simply believes that better ideas make a better wagon. You see two better ideas here. Come see a whole bunch more. At your Mercury dealer's.



**Colony Park:  
man-sized luxury!**



# Mercury, the Man's Car.



## THE TOYOTA CORONA

*(Continued from page 38)*

the finest tone I've heard in a car and an excellent heater that sells for about \$60.

One of the Corona's most endearing features is that you can jump in for the first time and drive away without fumbling. Controls operate conventionally and are well-placed, except for directionals operated by pushing the partial horn ring to either side. My turns often were inadvertently heralded by a blast of the horn. Headroom is excellent, legroom adequate. Though the car is rated as a four-seater, six can be sardined in for short trips.

The Corona's biggest advantage over other cars in its price range is its 90-hp engine (the Volkswagen, for example, offers only 53 hp). The smooth 115.7-cu.-in. Four was built especially for America.

Our test car needed just 15.1 seconds to reach 60 from a dead stop; 40-60 took 8.0 seconds, 50-70 took 12.1. Even more impressive were the gas-mileage figures. At steady throttle I logged 42.1 mpg at 30 mph; 36.8 at 40; 31.7 at 50; 25.8 at 60; 24.3 at 70. And that 8 to 1 compression happily guzzles regular gas.

The three-speed manual transmission is synchronized in all forward gears, but the gobs of linkage necessary for the column shift don't do much for precision.

An automatic patterned after Chevrolet's Powerglide is available at extra cost. But the automatic Corona felt droopy compared to the stick version.

The car negotiates corners at a sporting clip, never plays unexpected tricks. On rough roads, where live rear axles have problems, rear-end hop doesn't go crazy.

The finned aluminum brake drums are outstanding. After eight consecutive panic stops from 60, fade was barely noticeable, and there was no grabbing. Many American cars I've tested fared worse after one or two such stops. But the steering is slow; 4¾ turns lock-to-lock is excessive.

An unadvertised Corona bonus is its owner's manual. Some of the translations from Japanese alone are worth the price of admission. But in spite of the amusing manual, Toyota is firmly entrenched among the top 10 foreign makes in this country, thanks to a nationwide network of nearly 600 dealers. Their big seller is the Corona—and for good reason. At \$1760 it's a steal. ★ ★ ★

JANUARY 1967

Kodak  
TRADEMARK

# The tray lies flat. That's what makes it dependable as gravity.



The KODAK CAROUSEL Projector has a round tray that sits on top—the best set-up for problem-free slide shows.

Gravity (you can depend on it) lowers each slide gently into the projection gate. There's no pushing, no pulling. No jamming, no apologizing to your audience! And each edit-easy tray is a full show—80 slides.

Choose from three models, starting at less than \$80. The KODAK CAROUSEL 600 has easy push-button controls. The 700, push-button plus remote forward and reverse. And the 800 gives you fully automatic slide change, push-button and remote forward and reverse, even remote focusing.

See your Kodak dealer and enjoy cheers all around. *Price subject to change without notice.*

## Kodak Carousel Projectors





MAKE UP TO  
**\$100 A WEEK**  
 IN YOUR SPARE TIME WEARING  
**SHOES WE GIVE YOU!**

Imagine getting high fashion shoes without cost—and making yourself an easy \$5 to \$10 in an hour in your spare time! You can do it just by showing comfortable, latest style Mason Shoes to friends, relatives, neighbors. No experience needed. You start to take orders, make money, right away. You'll offer 275 different styles for men and women for dress, work and sports. You draw on our stock of 300,000 pairs. Nationally advertised Mason shoes are NOT sold in stores. Folks must buy from YOU! That means automatic repeat and referral business. Mail coupon today!



**FREE STARTING OUTFIT**

**FREE! EVERYTHING YOU NEED!** We send you everything you need to start a successful spare time business. No investment, no inventory, no overhead. You keep 100% of your profits. Mail coupon today and we'll rush you a FREE Starting Outfit with everything you need to start making big money right away. No obligation. Mail coupon now.

**Rush Coupon for Your FREE OUTFIT**

The Mason Shoe Mfg. Co. Dept. G-590  
 Chippewa Falls, Wisconsin

Please rush FREE and postpaid everything I need to start making money the very first spare hour in my own "Shoe Store Business" I can run from my home.

print  
 Name \_\_\_\_\_  
 Address \_\_\_\_\_  
 Town \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_  
 (If Known)

**MAIL TODAY FOR FREE BOOKLET...**

Showing the most beautiful school in the country... elaborately equipped with the most modern, scientific testing equipment known.

Day and evening classes. Good, full & part time jobs and housing provided.



**G. I. APPROVED**  
 1645 S. Grand, Dept. P.M., St. Louis, Mo. 63104

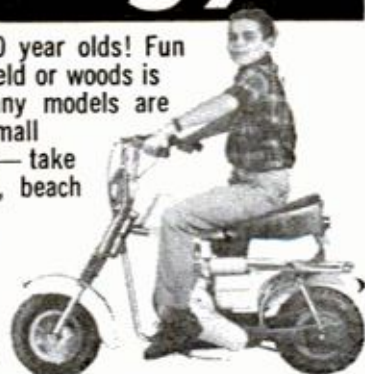
Name \_\_\_\_\_ Age \_\_\_\_\_  
 Street \_\_\_\_\_  
 Town \_\_\_\_\_ Zip \_\_\_\_\_ State \_\_\_\_\_  
 Telephone \_\_\_\_\_

**WORLD FAMOUS  
 BAILEY TECH SCHOOL**

POPULAR MECHANICS

**FOX MINI-BIKES**  
 Do-It-Yourself or Fully Assembled  
**16 MODELS from \$59.50**  
 2½ hp to 5 hp

Simple enough for even 10 year olds! Fun and easy! Any empty lot, field or woods is your playground. And, many models are licensable for street use. Small enough to fit in a car trunk — take it camping, to the cottage, beach... anywhere!



**BIG CATALOG \$1**  
 Shows Bikes, Plans, Parts, Access., Pictures  
 Colored Brochure only -25¢

**FOX CORP.** Box 797PM • Janesville, Wis. 53545

**train for Drafting Career in one year**

Graduates of the *Tri-State Drafting and Design* Program employed by leading companies. Trained in everything from basic technical drawing to technical illustration and writing. They have entree into responsible positions in important industries. *Tri-State* also offers four-year degree programs in five fields of engineering... three areas of business administration. Accredited. Professionally-oriented college. Modest costs. Enter March, June, Sept., Jan. Write Director of Admissions for Catalog.



**TRI-STATE COLLEGE**

417 College Avenue, Angola, Indiana 46703



**REPOWER** with a 6 or V-8. H.D. ADAPTORS for using Car. Compact and some Truck engines. Conversion Kits \$45.35 to \$56.90. Want fast action? Give us **FULL INFORMATION**. Send \$15.00 Dep. and we will ship correct kit, bal. COD. Send full amount for prepaid shipment. Wire, phone or write today. Details **FREE**

**HOOSIER MACHINE PRODUCTS CO.**

312 S. E. 6th St., Phone 276-3442, Pendleton, Oregon 97801



**WARN HUBS**

**ON 4-WHEEL DRIVES  
 STOP FRONT END DRAG  
 IN 2-WHEEL DRIVE**

save gas, gears, tires!



See your 4-w.d. dealer or write WARN Mfg. Co., 9050-A Empire Way S., Seattle, Wash. 98118



**Excitement! Security! Good Pay!**  
**CRIME DETECTION**

**LEARN AT HOME IN SPARE TIME—START NOW!**  
 Crime everywhere is on the rise! Learn now, in your own home, the profitable profession that enables you to track down criminals and bring them to justice! Hundreds of Identification Bureaus employ I. A. S. graduates... trained in finger printing, police photography, handwriting identification, firearms and investigation. Our 44th year! **FREE "Blue Book of Crime"**... packed with crime facts and the full story of famous I. A. S. training. State exact age. No salesman will call. Rush Coupon!  
 A Correspondence School Founded in 1916.

**FREE Blue Book of Crime MAIL COUPON**

**INSTITUTE OF APPLIED SCIENCE, Dept. 1331**  
 1920 Sunnyside Avenue, Chicago, Illinois 60640  
 Rush Blue Book of Crime... **FREE!**  
 NAME..... Age.....  
 ADDRESS.....  
 TOWN..... STATE..... ZIP.....



# You get more for your money from NRI— oldest and largest home-study school of its kind

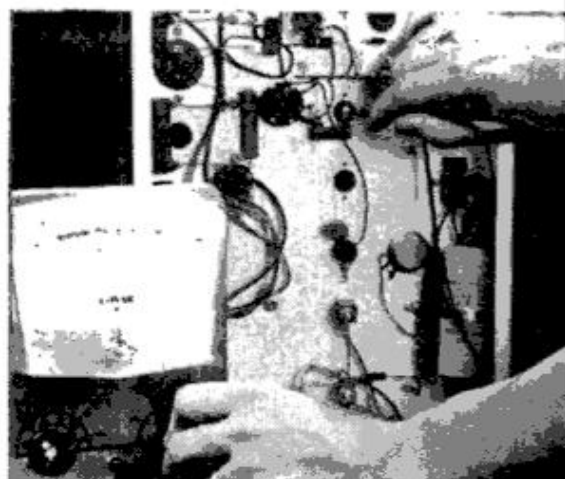
Compare. You'll find NRI "3-Dimensional" training can't be equalled. NRI gives you more value—from the delivery of the exclusive Achievement Kit sent the day you enroll, to "bite-size" texts and custom training equipment. And NRI training is simplified and dramatized to make learning at home fast, easy, interesting.

## BE A SKILLED TECHNICIAN IN AMERICA'S FASTEST-GROWING INDUSTRY

Mail postage-free card. The NRI catalog you get will open your eyes to the great number of success opportunities in the wonderful world of TV, Radio-Electronics. Catalog also tells you how you can qualify quickly for engineering jobs in business, industry, broadcasting, government, now offered to men without college degrees. If you take any NRI Communications course, *earn your FCC License or money back!* With NRI technical training, you can take your choice of a wide variety of career openings.

## STEP UP TO BETTER PAY, A BRIGHTER FUTURE

Regardless of your educational background, you can learn the Electronics field of your choice the NRI way. You'll find NRI has a training plan for every interest, every need. Tens of thousands of NRI graduates are proof it's practical to train at home in your spare time. Keep your present job while you prepare for a better one. Be a part of the Electronics Age — starting soon. Mail postage-free card for your free NRI color catalog. No obligation. No salesman will call. NATIONAL RADIO INSTITUTE, Electronics Division, Washington, D. C. 20016.



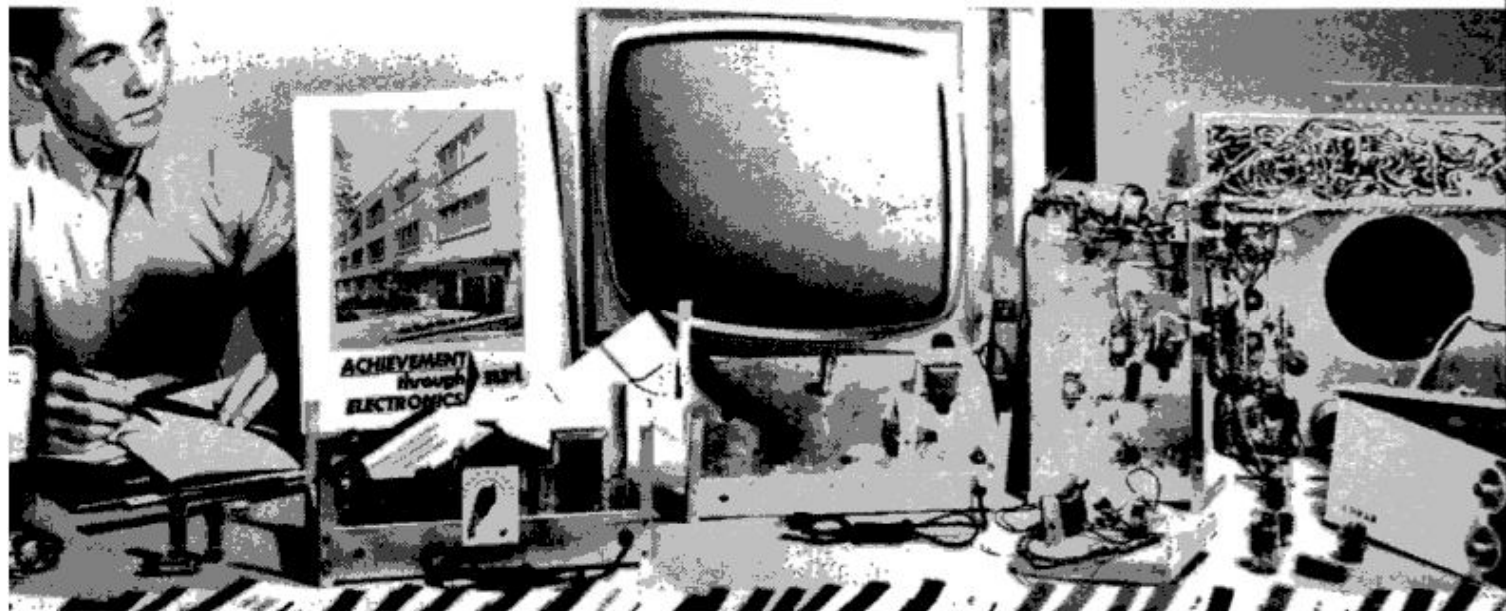
## CASH IN ON COLOR TV BOOM Make \$4 to \$6 an Hour in Spare Time Starting Soon

NRI shows you how to make extra money in spare time while training, fixing sets for friends and neighbors. You cash in on the boom in color television, earn \$4 to \$6 an hour in spare time or build your own full time Radio-TV Servicing business. Color catalog tells how. Mail postage-free card today.

**AVAILABLE UNDER NEW GI BILL**  
If you served since January 31,  
1955, or are in service, check GI line  
on postage-free card.

# Learning Electronics, Television-Radio is fast, easy, interesting with NRI

**BUILD • TEST • EXPLORE** Learn-by-doing with custom designed training kits you get and keep. Everything you see below is yours when you enroll for NRI's Radio-TV Servicing course. Other NRI courses are equally complete. Get your hands on actual parts and watch Electronics come alive. Mail postage-free card.







**THREE MAKES**—gas-driven above and two electrics below—qualify as “power snow shovels” your wife can handle. One above is AMF Western Tool’s 27-lb. Husky Jr. Below, left, is Toro’s 20-lb. Snow Pup hung on garage wall with its 100-ft. cord. At right: Sunbeam’s 48-lb. CDL-18 with automobile headlamp. First two clear a 14-in. swath, latter is 18-in. wide.



# Finally— a “snow shovel” your wife can use

**M**ANY A MAN with a short driveway and walk faces the chore of shoveling each day’s snowfall when he gets home from work. Few wives will touch a shovel, and it makes no sense to invest in a full-size snow thrower to clear small areas.

The low-cost solution is a lightweight snowblower, and several models are now on the market, either gas or electric powered. Toro offers its Snow Pup in both versions—with a 2½-hp chain-saw-type gas engine, or a 2-hp, 12-amp. electric motor. The electric Pup weighs only 20 lbs., the gas version is two pounds heavier; this puts the Pups in a weight class with vacuum cleaners.

When it comes to “power snow shovels” most housewives take a vacuum-cleaner approach: they favor models that start with a flip of a switch, and they’re used to that trailing cord. You may find, on the other hand, that even a safe, waterproof cord can become a nuisance—especially







### Solves Repair Problems

Durham's fills cracks and holes in plaster, wood and tile. Won't shrink or fall out. Economical, easy to use. Big 4-lb. can, only 1.60 at lumber, paint, and hardware dealers, or shipped direct postpaid in U. S. for \$2.00 Money-back guarantee. Order now. Donald Durham Co., Box 804-T, Des Moines, Iowa.

## GET INTO ELECTRONICS



V.T.I. training leads to success as technicians, field engineers, specialists in communications, guided missiles, computers, radar, automation. Basic & advanced courses. Electronic Engineering Technology and Electronic Technology curricula both available. Assoc. degree in 20 mos. B.S. obtainable. G.I. approved. Start Feb., Sept. Dorms, campus. High School Graduate or equivalent. Catalog.

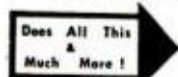
**VALPARAISO TECHNICAL INSTITUTE**  
DEPARTMENT D, VALPARAISO, INDIANA

## LAW FREE BOOK THE LAW TRAINED MAN

Write today for a FREE copy of illustrated law book, "THE LAW TRAINED MAN," which shows how to earn the professional Bachelor of Laws (LL.B.) degree through home study of the famous Blackstone Law Course. All necessary books and lessons provided. Moderate cost; convenient monthly terms. Write for FREE law training book today.

**Blackstone School of Law, 307 N. Michigan Ave.**  
Founded 1890 Dept. 51, Chicago 51, Illinois

## MINI-DOZER



- SNOWMOBILE
- BULLDOZER
- LAWNMOWER

— Complete line of Attachments —

CATALOG 50¢ — PLANS & PARTS PRICE LIST 55.00

C. F. STRUCK CORP. CEDARBURG 1 WISC.



## LEARN TO BE A DENTAL MECHANIC



**SECURITY • PRESTIGE • GOOD PAY**

Learn at home, in your spare time, to make Crowns, Plates, Bridgework, etc. Dental Mechanics are employed by Dentists, Dental Laboratories or open your own shop, full or spare time. FULL EQUIPMENT OF TOOLS AND MATERIALS INCLUDED WITH COURSE. Low tuition. Easy Terms. Write for FREE BOOK about this money-making profession that's not affected by automation.

**McCARRIE SCHOOL OF MECHANICAL DENTISTRY**  
127 So. 13th Street, Dept. 96, Philadelphia 7, Pa.

## 1000 TRICKS 10¢

AMAZE! ENTERTAIN! START NOW!

BIG EXCITING MAGIC & FUN CATALOG! 160 Pages! Tricks, Jokes, Magic, Illusions, Secrets! Puzzles, Stunts, etc.! Rush name, address and only 10¢.

**VICK LAWSTON'S MAGIC DEN**

Dept. PM17 • 4018 N.E. Fifth Ave., Ft. Lauderdale, Fla.



## NEW Improved Scope-Shot

SCOPE-SHOT COMPLETE WITH 50 DISINTEGRATING PELLETS They crack like a rifle when they hit—leave mark—pull of smoke! \$1.95 P.P.

Big Bag of 250 EXTRA Pellets 98¢ P.P.

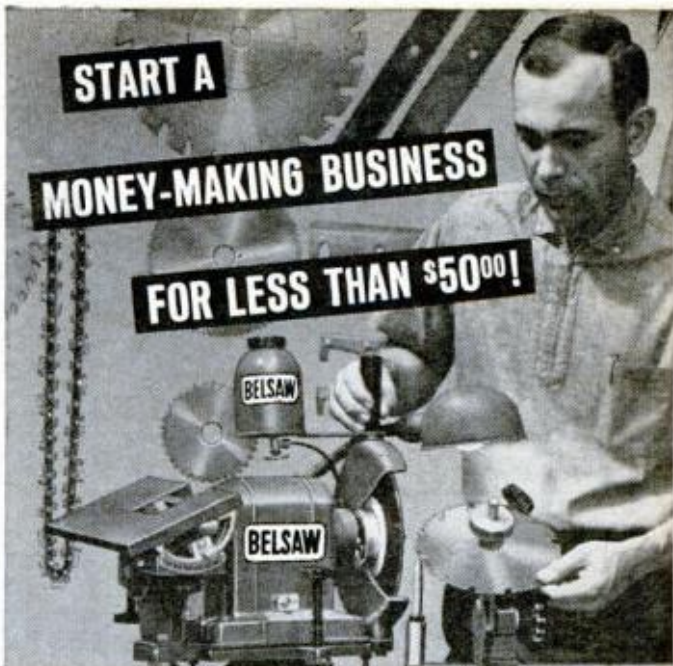
World's Finest Precision SLINGSHOT Scope-type sight! Millions Sold! Patent No. D-178,837

ROUTES PESTS! Price without pellets \$1.50 P.P.

Pure gum rubber slings. Beautifully polished cast aluminum stock. Pistol grip. So powerful it kills small game. Fits pocket perfectly! Guaranteed. FREE shooting manual. EXTRA RUBBER SLINGS, 4 pairs \$1.00 p.p. Leather Pouch & Sling assembly only 40¢ p.p. Order NOW from:

**GENERAL SPORTS**

4184-MX Apple Street, Cincinnati, Ohio 45223



START A

MONEY-MAKING BUSINESS

FOR LESS THAN \$500!

## No Selling, No Inventory... All Cash Profits and YOU Set The Hours!

You can have your own lifetime business right at home... work in spare time... and make up to \$200 a month CASH! My FREE PLAN gives you all the facts: How to start, how to grow. You don't need previous experience. You don't have to sell. I'll even finance you. People bring you the work and pay cash. Over 90¢ of every dollar you collect is clear cash profit. And you work when you want to. Let me prove you can't find a more certain, lower cost, higher paying business of your own.

**Does The Belsaw Pay? YOU BET!**

W. R., Maryland

C. S., Minnesota

"My BELSAW is working fine and business is increasing by 20 to 30 customers a month. I've added one employee and am looking for a night man to handle rush jobs."

"The sharpening business has helped me buy two homes and three motor cars. The nice thing about the Sharp-All is that you get some cash every day."

## RUSH COUPON TODAY!

Just Mail Coupon — No Salesman Will Call

**BELSAW SHARP-ALL CO.**  
Stan Field, President  
7175 Field Bldg., Kansas City, Mo. 64111

Name \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

**FREE BOOK**



# Earn Extra \$\$\$ RIGHT AWAY

## You Can Be a SKILLED LOCKSMITH

### LEARN AT HOME

Here is one field where mature men can earn better pay—have unlimited job opportunities. No need to wonder how you'll make ends meet if laid off, replaced by a machine, disabled, forced to retire! Locksmithing skill lets you say goodbye to such worries—CASH IN FAST in a big opportunity job or your own high-profit business spare-time, or full-time.

### All Locks, Keys, Tools, Materials, & Equipment Supplied.

Age, education, minor physical handicaps don't matter in this booming profession. As little as one hour a week doing real jobs on all kinds of locks and keys under expert guidance brings quick mastery—and ends job and income worries forever.

### FREE Book, Sample Lesson Pages.

Send for FREE illustrated book and sample lesson pages today. No salesman will call. Only school of its kind. Licensed by N.J. State Board of Education; Accredited Member, National Home Study Council; Approved for all Vet Training.

### LOCKSMITHING INSTITUTE

Division of Technical Home Study Schools  
Dept. 1-110-017, Little Falls, N.J. 07424

### FINDS 3-WAY INCOME INSURANCE



"I earned \$2,901.72 while learning locksmithing and now make \$5000 a year—doubling my income. Worries about layoff, retirement, more money are over for me—thanks to the Locksmithing Institute Course!" — Stanley Nowak, Saginaw, Mich.

306 Pieces of equipment  
LOCKS, PICKS  
and TOOLS  
supplied for  
use with course.  
SEND FOR  
FREE BOOK

LOCKSMITHING INSTITUTE, Dept. 1-110-01

Little Falls, New Jersey 07424

Est. 1948

Please send FREE illustrated Book—"Your Big Opportunities in Locksmithing," complete Equipment folder and sample lesson pages—FREE of all obligation—(no salesman will call).

Name..... (Please Print)

Address.....

City..... State..... Zip.....

Check here if eligible for Vet Benefits.

# FREE!

## BIGGER... BETTER THAN EVER!



## 40th ANNIVERSARY 1967 CATALOG



**YOUR BUYING GUIDE FOR:**

- Stereo & Hi-Fi Systems & Components.
- Tape Recorders.
- Electronics Parts, Tubes, Tools.
- Phonos & Records.
- Ham Gear.
- Test Instruments & Kits.
- Cameras & Film.
- PA.
- Citizens Band.
- Radio & TV Sets.
- Musical Instruments.

**SEND FOR YOURS TODAY!**

### BURSTEIN-APPLEBEE CO.

Dept. PM, 1012 McGee, Kansas City, Mo. 64106

Rush me the FREE 1967 B-A Catalog.

Name.....

Address.....

City..... State..... Zip Code.....

when the gas version starts so easily after storage in a warm basement. It's cheaper, too: \$89.95 against \$109.95.

Somewhat similar to the Pup is AMF Western Tool's Husky Jr.—though it's offered only with a 5.2-cu.-in. chain-saw-type gas engine. Like the Pups, it clears a 14-in. swath with polyethylene paddles whirling at high speed, has fins that you can position to throw to either side or straight ahead, and sports a second handle for easy lifting to clear steps and porches—or to dig out a snowbound car. The Husky sells for under \$100.

Sunbeam's new 18-in. lightweight electric model has steel auger blades, a 2-hp, 10-amp. motor and a center-mounted Teflon-coated discharge chute. Its 48 lbs. makes it the "heavy" of the lightweights, but it can still be hung on a wall. A headlamp makes it practical for after-dark snow-clearing. The CDL-18 is \$159.95.

To sum up: You have to *push* the lightweights—don't confuse them with self-propelled throwers in the \$200-and-up class. The 15- to 20-ft. throw claimed for the Pup and Husky is with light, fluffy snow. But, with luck, your wife (or the kids) will have buzzed it away before it's too deep or frozen. *Any* of the lightweights is far more likely to get such results than a shovel.—James Liston

126  
WORLDWIDE  
STAMPS

just released

ONLY  
10c



RUSH REPLY and get 126 colorful stamps. From ancient Africa, romantic Europe, the Far East — NEW ISSUES: religious, animal, bird stamps from Colombia, Surinam, Nigeria, many others. OLD ISSUES: Monaco, Maldive Island, more. Pictorial, airmail — odd shapes, sizes, everything. Plus exciting selections of stamps to examine. Buy any — or none — return in 10 days. Cancel service anytime. Plus color souvenir, story of World's Rarest Stamp. Send 10c today.

GARCELON STAMP COMPANY, Dept. PM-13, Calais, Maine  
Enclosed is 10c. Rush 126 Worldwide Stamps and other offers.  
(PLEASE PRINT)

.....

.....

..... Zip .....



For Sparetime or Full Time  
Income, There's Good

# MONEY IN SHARPENING



Here's a proven practical way to earn extra dollars in spare time—to develop a money-making repair business of your own. Investment is small. There's no overhead, no stock of goods to carry. No experience needed, no canvassing. You do it with the famous Foley Saw Filer that automatically sharpens all kinds of saws—and the Modern Lawn Mower Sharpener that precision sharpens all types of mowers.

## EARN \$3 TO \$6 AN HOUR SPARETIME

Hundreds of people like yourself are making cash like this—\$20 to \$30 a week—right now in spare time. "My spare time saw filing business has made me \$952 these first ten months"—says R. T. Chapman. Many have built a complete sharpening service with such year-around profits. You can too, simply by following the sure, easy Foley Plan.



**Foley**

MANUFACTURING CO.  
MINNEAPOLIS, MINN.

### MONEY MAKING FACTS BOOKLET FREE!!!

This valuable book shows you how to start, how to get business from home owners, factories, carpenters, etc., and how to make profits fast. Mail coupon today. No salesman will call.

FOLEY MFG. CO. 116-7 Foley Bldg., Minneapolis, Minn. 55418  
 Saw Filer information.  Lawn Mower Sharpener information.  Money Making Facts booklet.

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



### Learn Profitable Profession in few months at Home

**MEN AND WOMEN, 18 TO 60**

\$4.00 to \$5.00 for 1-hour treatment is the established charge for a skilled operator. Easy to learn and do, Diploma awarded. Open your own office or earn good income from Doctors, Hospitals, Clubs and other health or recreational centers. Wonderful part-time profession. Low monthly payments. Write today for free Anatomy Charts and catalog. No obligation.

ANDERSON SCHOOL OF SCIENTIFIC MASSAGE  
Dept. A-1, Princeton, Illinois

At Last a New Amazingly Simple

### GAS TURBINE JET ENGINE



Build from easy to follow plans. Length 15", Dia. 8 1/2", Wt. 15 lbs. Fuel: Gasoline or Kero.

"Screamin' Demon" develops 20 H.P. Ideal project for serious-minded hobbyists, students; scientific and industrial arts classes. Make on 9" metal cutting lathe with milling attachment. For use on small racing boats, midget cars, etc. Full size assembly drawings with critical dimensions, bill of materials and photos. Price \$5.00. No C.O.D.

SAVOY SCIENTIFIC, BOX 1398, SANTA MONICA, CALIF. 90406

# LEARN MEAT CUTTING AT NATIONAL

Pay After Graduation



The steady dependable trade of Meat Cutting taught easily in 8 short weeks. YOU LEARN BY DOING under actual meat market conditions in big modern school at Toledo.

For beginners or men with experience. Get a profitable store of your own. Remember, PEOPLE MUST EAT! Big pay jobs. Free employment help. Thousands of successful graduates.

Buying, cutting, percentage, pricing, advertising, selling, etc. A complete retail meat education. National School established 44 years. Get National training NOW. Pay your tuition in easy weekly

payments after you graduate. Send coupon for FREE school catalog—TODAY. G.I. approved.

National School of Meat Cutting, Inc., Dept. 50-Q, Toledo, Ohio 43604

Send me your FREE school catalog on National Training at Toledo in Meat Cutting, Meat Merchandising and Self Service Meats. No obligation. No salesman will call.

Name..... Age.....

Address .....

City..... State.....

Approved for Veterans



# POPULAR MECHANICS SHOPPING GUIDE

**FREE** Electronics Bargain Catalogs for 1 Year!



Exclusive House Brands | Nationally Famous Makes | Closeout Special Buys  
Stereo • CB • Parts • Kits.  
Testers • Tubes • Tools • Tape.

Read the exciting catalogs of America's biggest nationwide electronics store chain. Get our latest issue today.

**RADIO SHACK** 2727 West 7th St.  
Fort Worth, Texas 76107, Dept. PM

Name \_\_\_\_\_  
Street \_\_\_\_\_  
City \_\_\_\_\_  
State \_\_\_\_\_ Zip \_\_\_\_\_

Radio Shack Corp.—Division of Tandy Corp.

TAPE THIS AD TO THE BACK OF YOUR TV SET

## ALL TV-RADIO RECEIVING TUBES \$1

ALL BRAND NEW, all at a flat discount price of only... 89.

No exceptions... all tubes \$1, regardless of list price. Virtually all types available, including the new color tubes.

- All Tubes 1st QUALITY
- All Sold on Written 24-MONTH WARRANTY
- All Orders SHIPPED 1st CLASS SAME DAY REC'D!



- If you know for sure which tubes are defective, order them \$1 each, plus 50¢ postage and handling on your entire order.
- If uncertain which tubes need replacing, send for our FREE leaflet "How To Save On TV-Radio Repair Costs". This valuable leaflet should be taped to the back of your set and kept handy.

Write today to Dept. PM-167

**UNIVERSAL TUBE CO.**  
Ozone Park Station, N. Y. 11417



### USE THOSE BABY FOOD JARS

Handy Dandys are sturdy, plastic caps that snap into 1/8" pegboard and hold quarter twist baby food jars. Ideal for storing all kinds of small parts and things. Keep your workshop neat. 1 doz.—\$1; 3 doz.—\$2.50; 6 doz.—\$4; 500—\$25. Handy Dandys only. No jars. Shipping paid anywhere USA. Send payment with order—no C.O.D. Sold by mail only by

**WICKLIFFE INDUSTRIES, INC.**  
DEPT. A-8 WICKLIFFE, OHIO 44092

## VERSATILE MULTI-METER PUMP

NO HOME SHOULD BE WITHOUT ONE!

Ideal for dispensing bottled water and other home fluids (except solvents). Fits 5-gal. glass bottles. Use it to empty air conditioners—pump out plugged sinks—and other household chores. The Multi-Meter Pump (Model MR-50-G) is made of durable plastic. Order by mail. \$5.95, FOB, Auburn. Satisfaction guaranteed. Write:

**RIEKE CORPORATION**  
Multi-Meter Div., Dept. P, Auburn, Ind. 46706



### CLEVER KLEPS 30 TEST PROBE

Push the plunger. A spring-steel forked tongue spreads out. Hang it onto a wire or terminal, let go the plunger, and Kleps 30 holds tight. Bend it, pull it, let it carry dc, sine waves, pulses to 5000 volts peak. Not a chance of a short. The other end takes a banana plug or a bare wire test lead. Slip on a bit of shield braid to make a shielded probe. What more could you want in a test probe?

**RYE INDUSTRIES INC. \$147**  
124 Spencer Place, Mamaroneck, N.Y. 10543

### THE SECRETS OF LANDING THE JOB YOU WANT!



In this 16 page booklet are six dynamic pointers to help you land a better job. "The Six DYNAMICS of Landing the Job You Want" is written in a straight-forward, no-nonsense style by Mr. Richard Starr, President of one of America's largest personnel placement agencies. This booklet may easily add tens of thousands of \$\$\$ to your lifetime income. With your future at stake, can you afford to play Russian Roulette with your career?

Send \$1.00 (Money back guarantee.)  
Superior Consulting Services, Suite 914  
3600 Wilshire Blvd., Los Angeles, Calif.



**PAINT YOUR OWN WALL MURAL!**  
Enjoy the beauty, creative satisfaction of painting a lovely 5 to 14 ft. wide mural directly on your wall! New "paint-by-numbers" method is fun. Incredibly easy. Takes just 3 to 5 hours. Artists charge up to \$350; wallpaper scenes cost \$100 and more. Our complete kits, \$12.95 up! Also fabulous "Black Light" mural kits. Many exquisite modern, provincial, oriental, etc. designs. A stunning prestige touch! Send for FREE Color Catalog. "How to" details (encl. 30¢ for postage handling). MURAL ART CENTER, Dept. 4171, 4401 Birch St., Newport, Calif. 92660.



## Art LESSONS \$6 a month

Study Art for pleasure and profit. Learn Drawing, Painting, Advertising Art at home in spare time for only \$6 a month. Assignments corrected with overlays and returned to you by mail. Write for FREE BOOK. No obligation.

**WASHINGTON SCHOOL OF ART** Studio 141, Port Washington, New York 11050. Established 1914. Accredited Member NHSC. Tear out ad as reminder.



Micro edge finders & center finders

### NEW COMBO EDGE AND CENTER FINDER

Edge Finder tips all .200" plus or minus .0001". From left: 1/2" COMBO \$4.45; 3/8" COMBO \$3.95; 1/2" Center Finder \$3.45; 3/8" Center Finder \$2.95; 1/2" Edge Finder \$3.45; 3/8" Edge Finder \$2.95. Includes plastic case and guarantee. Shipped postpaid same day. The COMBO Edge & Center Finder is the handiest as ONE instrument serves BOTH purposes. Fisher Machine Shop, Inc., 11704-PM Inglewood Ave., Hawthorne, Calif. 90250. DEALERS SEE PAGE 66.



SEND ONLY \$2.00

Money Back Guarantee

## HEAVY DUTY-ARC WELDER

Life Time Guarantee

All New 110 Volt Heavy Duty Arc Welder. You cannot buy a better welder anywhere at this low price. NO EXPERIENCE NECESSARY. Anyone can braze, solder, cut and weld metal up to 1/4" thick. Generates heat to 10,000 degrees for cutting through steel plate, etc. NOTHING ELSE TO BUY. Comes complete with heavy duty power cable, twin carbon torch, helmet, instruction book, rod holder, and a supply of 1/16" and 1/8" welding and brazing rods, carbons, and flux, etc. MONEY BACK GUARANTEE. Try it for 10 days. If not completely satisfied, we will immediately refund your money without question. LIFE TIME GUARANTEE. Never a repair charge for parts or labor. Do not confuse this new improved welder with other units selling for \$14.95. This is a heavy duty deluxe model selling for \$18.95 and we have over 25,000 satisfied customers throughout the world. SEND ONLY \$2.00 and when delivered pay postman \$16.95 plus postage, or send \$18.95 and we will ship postpaid. (For an extra supply of rods, carbons, and flux, send an additional \$2.00.)

Order Direct from factory: NATIONAL ELECTRIC, Dept. PM-1, DELRAY, FLORIDA



**ABCs OF TAPE RECORDING** are clearly diagrammed, illustrated and expertly discussed in a 96-page booklet. Dubbing from records and tape, recording off the air, adding sound to slides and home movies, caring for the recorder and editing tape are some of the topics studied in *Using Your Tape Recorder*. Mail 50 cents to Allied Radio Corp., 100 N. Western Avenue, Chicago, Ill. 60680.

# INVENTORS

**INVENTIONS—NEW PRODUCTS—IDEAS DEVELOPED & PREPARED**  
For Commercial Appeal & Sales

**DESIGN—MARKETING—PATENT SEARCHES—DRAWINGS**

United States Patent Office former Patent Examiner  
United States Government former Patent Adviser  
Member: United States Chamber of Commerce

Second Decade of Reliable Service to  
**INVENTORS—MANUFACTURERS—ATTORNEYS**

**THE RAYMOND LEE ORGANIZATION**

130-Z West 42 Street—New York, New York 10036

**SENT FREE** "INVENTION RECORD" Form & "IMPORTANT PATENT INFORMATION"

Name \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_



**PELLET FIRING LUGER AUTOMATIC**

- Magazine loading Clip
- Over 15 Moving Parts
- Fully Automatic

**ONLY \$1.98**

Automatic full size model of a Luger Automatic pistol—Contains over 15 moving parts. Loads 8 complete rounds which snap into the hard butt simulating a Luger. Fires 8 bullet shaped pellets. Has automatic slide action. Made of heavy, high-impact styrene with amazing attention to detail.

**MOST AUTHENTIC MODEL GUN WE'VE EVER SEEN**

Comes to you with working parts disassembled with cleverly engineered springs, full instructions. Supply of pellets and targets. Full Money Back Guarantee. Simply send \$1.98 plus 27¢ shipping charge.

**HONOR HOUSE CORP., Dept. 96LG25**  
Lynbrook, N. Y.

\*T.M. Used by consent of Stoeger Arms Corp. N.Y. State residents please add 4¢ sales tax.

**Sharpen with TREYCO**  
**6 Machines-in-1** for Low Price of 1

Be independent, enjoy having your own money making business. Make as much as \$6.00 an hour sharpening circular and hand saws, knives, scissors, pinking shears, tools, planer blades, clippers, skates, etc. Spare time or full time.

**MAKE MONEY SHARPENING**  
Housewives, hobbyists, barber and beauty shops, supermarkets, farmers—everybody needs sharpening service.

Start Now for Less than \$50  
Thousands of successful Treyco users.  
Guaranteed quality. Factory-to-you savings. Write me for complete new catalog right now.

**BURTON W. MANTH, President**

**TREYCO PRODUCTS, INC.** 381 Niagara St. N. Tonawanda, N.Y. Established 1946

## TALL or BIG MEN SWEATERS

EXTRA LONG SLEEVES  
BODIES CUT 4" LONGER



Alpaca — Wool — Mohair Sweaters, McGregor Jackets, Sport, Dress Shirts, Slacks, etc. . . . all in Tall or Big Men's Sizes. Plus 70 Shoe Styles 10-16, AAA-EEE. By Mail only. 100% Guaranteed. Write for FREE Color Catalog of Footwear and Apparel.

**KING-SIZE, INC.** 757 Forest Street  
Brockton, Mass.

AMERICA'S NO. 1  
CLASSIFIED SECTION  
CAN BE FOUND  
ON PAGE 62  
IN THIS ISSUE

150,000 Candlepower

## FLAMETHROWERS

EXTEND YOUR SAFE DRIVING RANGE

**\$9.95** per pair Prepaid U.S.A. No C.O.D. please.

Fits all 4 light systems—bright sockets. American made for American cars. 75,000 candle power each sealed beam—over 2½ times as bright as stock. A fine pencil of light that stays on your side of the road. A safety feature for highway driving. May not be approved in some states yet.

**warren ENTERPRISES** Box 562 F Skokie, Ill.



Play **MUSIC** in spare time for a richer life

## Stamp Your Name PERMANENTLY

reg. size Identify articles you own

**\$3.95** ppd. **EVERSTAMP**



**DIE TOOL**  
Comparable to a \$9.00 die tool, now available at this special price.

- TOOLS
- LUGGAGE
- BOOKS
- SPORTS EQT.
- PAINT BRUSHES
- PIPES
- GUNS
- FLASH-LIGHTS
- DRAFTING TOOLS
- PLUS HUNDREDS OF OTHER ITEMS

Hardened tool steel. Reg. Size 1 1/2" 15 letters max. last name only.


Names shown actual size **SMITH**

Large size 3/4" \$5.25 10 letters max.

Stamp just about anything you own with one blow of a hammer. Made by the Henry A. Evers Co., Inc., makers of quality marking devices since 1898. Makes thousands of impressions. Send check or money order.

**HENRY A. EVERS CO., INC.**  
Dept. P 72 Oxford St., Prov., R. I. 02905

## 500 PRINTED RETURN ADDRESS LABELS 50c



USE YOUR "ZIP" CODE  
RICH GOLD TRIM  
FREE PLASTIC BOX

Quick and handy way to put your name and return address on letters, checks, books, records, etc. ANY name, address and Zip code up to 4 lines, beautifully printed in black on white gummed labels with rich gold trim. About 2" long. Free plastic box for purse or desk. Set of 500 labels just 50¢ postpaid. Shipped within 48 hrs. Money back if not pleased. Don't know the Zip code? Add 10¢ per set and we will look it up. Send for free catalog.

**Walter Drake & Sons**  
B7101-2 Drake Building  
Colorado Springs, Colo. 80901

NO SPECIAL TALENT, no previous training needed. The U.S. School home-study Courses are successful because you learn by playing real tunes, by NOTE, right from the start. You can learn piano or any of your choice of 14 instruments for only a few cents a day. See how easily you learn at home, in spare time, without a teacher. Unique new Isometric Finger-Control Course is included FREE!

**MAIL COUPON FOR FREE BOOK**

Write for 36-page illustrated Free Book. No obligation; no one will call. Mail coupon today! (Estab. 1898)

**U.S. SCHOOL OF MUSIC, Studio A301, Port Washington, New York 11050**

Please send me your 36-page illustrated FREE BOOK. I would like to play (instrument) .....

Print Name.....  
Address.....  
City & State..... Zip Code.....





# CLASSIFIED ADVERTISEMENTS

Rate: \$1.50 per word payable in advance each insertion. Capitalized words—75¢ per word additional. Minimum insertion ten words. To be inserted under the proper classification, copy must be in our office by the 15th of the second month preceding date of issue. The next available issue to place an advertisement in America's No. 1 Classified Section is March. The closing date is January 15th. Send remittance and order to C. A. Martin, Popular Mechanics, 575 Lexington Avenue, New York, New York 10022.

## POPULAR MECHANICS

## GIFT SHOPPING

**CHEAPEST Gifts!** Free catalogues. Mandarin International, 214 Shaws Building, Hong Kong.

### AUTOMOBILES, MIDGET CARS

**KART** Frame \$5, Minibike \$10, Simplex Motorcycle \$5, Cushman \$5, Indian Scout \$45, less engines. Engines \$4 up. Isetta \$75. Kart \$15, Minibike \$30. (Mailorder Only). Send 25¢ (35¢ for first class mailing) for Directory-Catalogue Number 131, listing these and hundreds of other bargains, homebuilders parts, plans, etc. Midget Motors Directory, Athens, Ohio.

**HALF-Scale** replica 1910 Model T. 50" wheelbase, 3 H.P. engine, body of steel, pneumatic tires, wooden spoked wheels. Drives forward, neutral, reverse & handles like the original Model T. Seats 2 youngsters. Shipped from factory \$409.95 plus freight. Wt. 195 lbs. Write for free brochure: Tin Lizzie, Box 385, Warrensburg, Mo. 64093.

**AUTOMOBILE Literature**, antique, classic, rare reprints. Non-profit hobby club. Free information. Enthusiasts, Box 451B, Mt. Clemens, Mich. 48043.

### AUTO SUPPLIES AND EQUIPMENT

**JEEP Parts catalog:** Military and Civilian. For owners, dealers, garages, service stations. Save \$\$\$ Surplus and replacements. American Auto Parts Co., 1830 Locust, Kansas City, Missouri 64108.

**FOREIGN Car parts**, Discounts. Catalog. Box 7, Elmont, N.Y.

**SAVE Money!** New sparkplug guaranteed for 100,000 miles. Less gas consumption. Pre-gapped. Approved by National Testing Laboratory. Price \$1.95 per plug postpaid. Special price on larger orders. Viking Sparkplug Co., P.O. Box 223, Bronx, N.Y. 10463.

**REMARKABLE** New glow gage monitors ignition system. Free details. Q-arc, Box 47876, Los Angeles, Calif. 90047.

**NEW And used parts savings.** Complete guaranteed service all model cars and trucks. Largest in West. Jeep and Army parts specialists. Shifting hubs for all front-end drive vehicles. \$27.50 up. Foreign parts. Fast service. Pioneer, 734 W. 13th Avenue, Denver, Colorado 80217.

**HIGH Pressure water cleaner.** Build yourself and save. Free instructions; price list. Write: Cleaner, P.O. Box 293, Roscoe, Illinois 61073.

**FREE Information** on building or buying Capacitor Discharge Ignition Systems under \$25.00. SYDMUR, Dept. 25 Midwood, Brooklyn, N.Y. 11230.

**AUTOMOTIVE AND MARINE PRODUCTS DESIRED BY AGGRESSIVE YOUNG MANUFACTURING COMPANY WITH NATIONAL DISTRIBUTION.** 6400 SOUTH WEST FREEWAY, SUITE 400, HOUSTON, TEXAS.

**NEW And used parts savings.** Complete guaranteed service all model cars and trucks. Largest in west. Jeep and Army parts specialists. Shifting hubs for all front-end drive vehicles. \$27.50 up. Foreign parts. Fast service. Pioneer, 734 W. 13th Avenue, Denver, Colorado 80217.

**BATTERY Troubles—Renew** dead or weak cells. No additives or tools needed. Send \$1.00 Joho, P.O. Box 223, Kearny, N.J.

**NOW! NEW MACHINE** with "FORWARD & REVERSE" permits YOU to adjust SPEEDOMETERS, tachometers, tickometers, hour meters, etc. WITHOUT REMOVING DIAL HEAD from panel! Works on cars, trucks, boats, airplanes, cycles, farm tractors, etc. Simply hook up to cable and switch "ON". Agents wanted. \$24.95 postpaid or 25¢ for circular. Gulf Manufacturing, Box 5217-PMJ, Gulfport, Florida 33737.

**(SAVE \$150) Ring-Valve Job** while driving. \$6.00 postpaid. Unbelievable results! Safe! Guaranteed! Our 16th year. Details free. Motaloy, Grantham, Penna. 17027.

**PROTECT Yourself** against auto theft. Do it yourself for under \$3. Make and install tried and proven simple personal Gimmick in your automobile. For complete instructions mail \$1 to: Waggi, P.O. Box 551, Manahawkin, New Jersey 08050.

**NEW Five minute Jet-X Home Car Washer.** Just hook to garden hose, add soap, wash, rinse with flip of switch. Free descriptive brochure or send \$6.45 postpaid moneyback guarantee. Value Mart, Dept. PM, 2941 West 23rd Ave., Denver, Colo. 80211.

**AUTO THEFTS DISCOURAGED** Simple system costs under \$2. Instructions, \$1. Protective Systems, Box 503, Chattanooga, Tennessee 37401.

**JEEP Owners—V8 conversions.** Read Jeep Owners ad, page 42.

**CROSLLEY.** New, used, parts. Discounts. Catalog. Box 7, Elmont, N.Y.

## AUTO TRAILERS

**BUILD Aluminum pickup camper** over-cab, hi-boy, lo-boy. blueprints, material, list. 3 models included. \$3.00. Blance Custom Campers, Wolflake, Indiana 46796.

**WILD Life decals**, full color, large. Free folder. Dealer inquiries invited. Washington Poster Co., 16824-PMC Pacific Highway So., Seattle, Wash. 98188.

**BUILD Your Pickup Camper.** Pre-cut kits. Blueprints. Supplies. Literature 10¢. Comstock Trailers, Dept. 664, Parsons, Kansas 67357.

**CAMPER Unit—Compact Buses, Volkswagens, Econoliners, Dodges.** Easy construction—Save. Plans, \$2.95. Dot Campers, P.O. Box 67M, Saugus, California. 91350.

**RECREATIONAL Vehicle parts** and equipment catalog. Everything for building, remodeling campers, trailers, covers, including aluminum skin. Only \$1.00 ppd. (refundable). Plans to build. Details 10¢ Viking Camper Supply, Inc., 94-FA Glenwood, Minneapolis, Minn. 55403.

**CAMPING Trailers, plans & kits.** Sleeps 6 or more. Basic kit \$140, tent \$146. Complete plans \$3.00. Circulars, 10¢. Stratford Trailer, Seymour St., Stratford, Conn.

## MOTORCYCLES, BICYCLES, MOTORSCOOTERS AND SUPPLIES

**BUILD Motorbike from Bicycle!** Plans, \$1.00: Go-Byk Industries, Rothsay, Minnesota 56579.

**HARLEY-Davidsons—Used bargains.** New, used parts, accessories, all models. Bulletin 35¢. Knuth's (Factory Dealer), 1753 Muskego, Milwaukee, Wis. 53204.

**HONDA 50 to 90-S big bore & stroker kits.** Columbia Engineering, 2105 E. 37th, Los Angeles, Calif. 90058.

**NEW Mini-bike frames**, \$15.95 Ppd. Plans, \$1.00. W. Johnson, 3812 Allison St., Brentwood, Md. 20722.



## AVIATION

**PROPELLERS, Plans, kits, supplies** for airboats, snowplanes. Gauges, spark plugs, gas-oil hose, oil coolers, primers, wrenches, switches, propeller hubs, engine mounts. Corvair-Volkswagon conversion parts. 125-190 Lycoming engines, manuals, gaskets, parts. Catalog, \$1.00. Banks-Maxwell, Box 3301E, Ft. Worth, Texas 76105.

**BE A Government licensed aviation mechanic.** Practical training. Free information. Aero Mechanics School. Municipal Airport, Kansas City 16, Missouri.

**BARTLETT Flying Saucer.** Amazing machine hovers 200 lb. man across land/water, powered by ordinary lawn mower engine. Complete Plans Kit information, \$3.00. Write: Herb Bartlett, Box 367-C, Silverdale, Wash.

**PROPELLERS, Plans, Engines, Supplies** for airboats, snowsleds, hovercraft, autogyros. Catalog, drawings \$1.00. ESCO-P, Brookport, Illinois 62910.

**HOMEBUILT.** Real enclosed helicopter, 24 pages ideas, information, \$2.00. Build "executive" helicopter. drawings, specifications, \$1.50. Helicopter Development, Box PM147, Washington, New Jersey.



## BOATS

**FIBERGLASS Canoes.** Three exciting models. Easily assembled kits. \$34.95 up (factory direct). Free literature. Riverside Canoes, P.O. Box 5595BK, Riverside, Calif.

**DACRON SAILS** Custom built to your specifications at bargain prices. Over 75 years sailmaking experience. Send insignia desired, type of boat, or sail plan to Phyllon Sails, 1 Washington Avenue, Providence, R. I. 02905.

**HYDROPLANES.** Runabouts, inboards, outboards. Ski and class. Plans, kits or complete. Big catalogue. 25¢. Champion Boats, Dept. 10A, Box 9215, Long Beach, California.



**KAYAKS**—One-man \$19.50; two-man \$24.50; Sailboat \$44.00. Exciting Sitka Kayak Kits known world wide for speed and safety. Assemble in one afternoon. Free pictorial literature. Box 78-P, Brecksville, Ohio 44141.

**BOAT Plans**, full size patterns, and frame kits especially prepared for amateur builders. Save the "Glen L" way by selecting from modern up to date designs—Deep Vee's and SK styled inboards and outboards, cruisers, houseboats, sailing catamarans. Every type from 8' to 35'. Huge new 80 page catalog. 50¢. Glen Designs, 9152 Rosecrans, Bellflower, Calif. 90707.

**FREE Catalogue**—dozens of plans for kayaks, canoes, sailing rigs. Bruce Clark, PM; 115 McGavock Pike, Nashville, Tenn. 37214.

**FULL Size**, cut-to-shape boat patterns, blueprints. Send 60¢ for big new illustrated "Build a Boat" catalog includes fishing boats, garvies, cruisers, catamarans, houseboats—outboards, inboards, sailboats—7½ to 38'. "How to Build a Boat," booklet, \$2.50. Cleveland Boat Blueprint Co., Box 18250, Cleveland, Ohio.

**BUILD Your own boat** from our large-scale blueprints. Books of plans give how-to-build help. Hundreds of professional designs—motor, sail or auxiliary—for amateur builders. Free catalog. MoToR Boating, 959 Eighth Ave., Dept. RS, New York 19, N. Y.

**PLANS & PATTERNS, FRAME KITS, BOAT KITS**, world's largest catalog over 200 proven designs including 40 new complete Boat Kits, fishing boats, cruisers, sailing, ski boats, houseboats, inboard and outboard hydroplanes. Send \$1.00 for large 1967 catalog or \$2.00 for catalog plus boat building handbook to: Clark Craft, 1709-P Niagara Street, Buffalo, New York 14207.

**FIBERGLASS Cloth and resin**. World's finest cloth and non-run resin, at direct mill prices. Flotation foam. Complete line of plastics, silicon bronze and brass screws, save 60%. No sales tax. Boat Plans. Free catalogue. Freight prepaid. Stiles Boat Supply Box 11P, Linden Ave., Mantua Hts., N.J.

**HIGH Pressure water cleaner**. Build yourself and save. Free instructions. Price list. Write: Cleaner, P.O. Box 293, Roscoe, Illinois 61073.

**BOAT KITS**. Save money—assemble yourself. Factory molded fiberglass or pre-assembled plywood. 12' to 32' Cruisers, Runabouts, Houseboats, Sail Boats. Big line accessories, motors, trailers. Easy terms. Free catalog. Luger, Dept BC-67, 9200 Bloomington Freeway, Bloomington, Minnesota, 55435.

**SPORTSCRAFT Canoes and Kayaks**—factory-direct. Many different canvas-hulled kit models, from \$18.95. Simply assembled, unsurpassed appearance, finest materials, tremendous performance! Also: paddles, and canvas bargains. Free literature. Sportsraft, Box 8393-P, Columbus, Ohio 43201.

**12' CATAMARAN**, Twin cockpits, safe, beautiful and fast. Carries four. Kit including molded fiberglass hulls, sail, mast \$450.00. Ready to sail \$795.00. Write for specifications. Sailboats Mfg., 1480 So. Washington, Denver, Colorado. 80203.

### MARINE EQUIPMENT AND SERVICES

**BUILD Your boat engine** from Chevy, Ford, others. Complete kits. Free catalog. Star Marine Engine Works, Berkeley, Calif. 94710.

**NEW**, Used, rebuilt marine motors. Marine conversions, fittings. Free catalog. Stokes Marine Supply, Dept. 24, Coldwater, Michigan.

**FIBERGLASS Cloth, mat, polyester and epoxy resins**. Lowest prices. Seifert's, Box 1206-M, Green Bay, Wisconsin.

**NEW**, Used, rebuilt marine motors. Marine conversions, fittings. Free catalog. Stokes Marine Supply, Dept. 24, Coldwater, Michigan 49036.

### ATHLETIC AND BODY BUILDING COURSES

**POWERFUL Muscles fast!** Free brochure! Universal, Box 4327-C, Northeastern, Dearborn, Michigan 48126.

**"GIANT Arms."** Dr. Young's, D.C. revolutionary discovery. \$2. Satisfaction or refund. Gaucho, Box 9309-S7, Chicago 60690.

**KARATE**—Complete instructions, illustrated, only \$1.25. Bales Co., Box 5050, Rt. 2-PM, Escondido, Calif. 92025.

**KARATE Instructions**. Break Boards. Complete Course \$2.00. Results Guaranteed. P.M. Midway Studios, 104 North Tenth St., Miamisburg, Ohio.

**CROSS Roads Of The Oriental Arts.** Moynahan and Henry, not an instruction book, but history and explanation of the Oriental self-defense forms, \$2.85. Catalog of self-defense books 15¢. Combat, Box 482B, Worcester, Mass. 01601.

**NOW! Build great strength and health!**; Illustrated manual, only \$2.00. Box 1423, Brooklyn, New York 11202.

**FEAR No bully!** Master authentic Chinese Kungfu unbeatable techniques! Defeat within seconds any attacker including giant Judo-Karate experts. Free details by air. Write Asia's Greatest Master, Leong Fu, (MI/20) 119 Anderson Road, Ipoh, Malaysia.

### SPORTING GOODS AND EQUIPMENT

**BIG Money raising crickets** and 12 inch African fishworms. Free literature. Carter Ranch, Plains, Georgia 31780.

**SILENCERS:** Pistol, rifle details, diagrams, simpler, cheaper! Plus new design for .22s \$1.00. Twin, Box 192-A, Dunellen, New Jersey 08812.

**FREE . . . Wholesale catalog**. Arrow shafts, broadheads, fletchings, fisharrow parts, tools, bows. FinnySports (22G), Toledo, Ohio 43614.

**HUNDREDS Of Army-Navy surplus items**, camping, hunting, fishing equipment, gun accessories, etc. Write for free catalog. P&S Sales, Box 115, Tulsa, Oklahoma.



### FISHING, TACKLE, LURES

**FREE . . . Wholesale catalog**. Beads, Spinners, Lure parts, Sinkers, Jigs, Reels. FinnySports (ME), Toledo, Ohio 43614.

**MOLDS For fisherman's sinkers, jigs, squids, casting and spinning lures**. Free catalog. Sweet's Molds, Tonawanda 1, New York 14150.

**FREE!** Newest edition famous Corcoran catalog. Largest selection hunting, camping, fishing equipment. All items field tested. Boots, clothing, fishing tackle, tents, gun cases, sleeping bags. Dozens of specialties. Corcoran, Dept. PM-17-B, Stoughton, Massachusetts.

**OVER 5,000 HARD-TO-FIND FISHING SPECIALITIES** and kits galore. Send for free 170 page catalog. Netcraft Co., Dept. PM, Toledo, Ohio 43613.

**FREE.....Plastic fishing lure pricelist**. Ami-Flip, Box 237, Clearwater, Fla. 33517.

### EARTHWORMS, LIVE BAIT

**EARN Money raising fishworms for us!** Exciting details free! Oakhaven—56, Cedar Hill, Texas.

**SUCCESS For you!** Raise Carter's Pure-bred hybrid red wiggler fishworms, crickets. "Known All Over the World." Write for free literature and our success story in Life Magazine. Pure-Bred Fishworms—3000—\$5.95, 5000—\$8.95, 10,000—\$16.95. Postpaid with Free Raising Instructions. Carter Redworms, Plains, Georgia.

**HYBRID Redworms 1000—\$3.00, 3000—\$5.75, 5000—\$8.00, 10,000—\$14.00, Bedruns 20,000—\$19.00**. Postpaid with raising instructions. Brazos Worm Farms, Route 9, Waco, Texas 76705.

**EARN BIG MONEY** Growing fishworms, giant African crawlers, crickets, Grey Nightcrawlers. Free Literature. Fain's Hatchery-31, Edison, Georgia, 31746

### FROGS, FISH, REPTILES

**FROG Raising**. Young frogs and giant breeders. Stock your lakes, pond. Nu-Tex Frog Farm, Box 4029, Corpus Christi, Texas 78408.



### HUNTING, GUNS, DECOYS

**FREE!** Newest edition famous Corcoran catalog. Largest selection hunting, camping, fishing equipment. All items field tested. Boots, clothing, fishing tackle, tents, gun cases, sleeping bags. Dozens of specialties. Corcoran, Dept. PM-17-C, Stoughton, Massachusetts.



### DOGS AND KENNELS

**TELL** The more than 1,550,000 avid readers of Popular Mechanics about your products and services. It costs very little to place your classified message in front of these proven mail order buyers. For further details, write: C. A. Martin, Dept. 14N, Popular Mechanics, 575 Lexington Avenue, New York, New York 10022.



### GAME BIRDS

**LAYING Quail**. World's greatest laying bird. Free information. Marsh, 12252 Haga, Garden Grove, Calif.

### RABBITS—FUR BEARING ANIMALS

**EARN \$10,000 Yearly** raising Angora rabbit wool for us. Particulars 25¢ coin. Angora, Malta 12, Montana.

**RAISE Rabbits successfully** by knowing facts. 48 page illustrated book describing 25 breeds, housing, breeding, feeding, markets, marketing etc. 25 cents. American Rabbit Association, 36 Arba Building, Pittsburgh, Penn.

**RAISE Rabbits for us** on \$500 month plan. Free details. White's Rabbitry, Mt. Vernon, Ohio 43050.

**MINK Raising information free**. Lake Superior Mink Farm, Inc., Superior EE1, Wisconsin 54880.

### PETS—BIRDS, CATS, HAMSTERS, ETC.

**HAWKS**, Reptiles, raccoons, skunks, squirrels. Catalogue 25¢. Trails End Zoo, St. Stephens, S.C. 29479.

**MAKE Money raising chinchillas, mink, rabbits, cavies for us**. Free catalog. Keeney Brothers, New Freedom 2, Penna. 17349.

**FLYING Squirrels**, wonderful pets. Literature 10¢. Squirrel Ranch, Neches, Texas.

**LIVE TRAPS:** All sizes, mouse to dog. Collapsible or rigid. Carrying cages. Free literature. National Live Traps, Tomahawk 14, Wisconsin 55487.

**LIVE Seahorses**, marine specimens, aquarium supplies. Illustrated catalog 15¢. Marine, Box 248-110, Dania, Florida.

### HORSES & LIVESTOCK

**"HOW TO TRAIN HORSES"**—Everyone who likes horses or ponies should have this book: FREE. Send name, zip code. Beery School, 1101, Pleasant Hill, Ohio, 45359.

### CAMPING EQUIPMENT AND TENTS

**FREE!** Newest edition famous Corcoran catalog. Largest selection hunting, camping, fishing equipment. All items field tested. Boots, clothing, fishing tackle, tents, gun cases, sleeping bags. Dozens of specialties. Corcoran, Dept. PM-17-A, Stoughton, Massachusetts.



**CAMPING** Equipment, tents, sleeping bags. World's greatest selection. Send 25¢ for giant catalogue. Print name, address, zip code. Morsan, 810R Route 17, Paramus, New Jersey 07652.

**SAVINGS** Plus dividends! Campers-fishermen-outdoorsmen cooperative. Free 56-page catalog. Recreational Equipment, Inc., 1525-P 11th, Seattle, Washington 98122.

## TRAVEL AND RESORTS

**BACHELOR Party** @—Worldwide cruises and tours for single people. Free 36-page catalog, Dept. PM, Bachelor Party Tours, 444 Madison Avenue, New York 10022.

**WORLDWIDE** Freighter Guide—\$1.25. Rates—schedules—700 passenger carrying freighters. TravLtips, 40-21KA Bell, Bay-side, N.Y. 11361.

**TRAVEL** Bureau. Post Office Box 190, Franklin Park, Illinois 60131.

## ELECTRICAL SUPPLIES

**LAMP** Parts. Catalog, prices, wiring instructions. 50¢. Refunded first order. Gyro, 5208P N.W. 35 Ave., Miami 42, Fla.

**YOUR Ad** in this space will be read by more than 1,550,000 active mail order buyers. Join the march to greater profits, place your products and services in front of them today with a small low cost classified ad. For further details write: C. A. Martin, Dept. 20N, Popular Mechanics, 575 Lexington Avenue, New York, New York 10022.

## BATTERIES, GENERATORS

**DIESEL** And gasoline powered electric generator sets. 5-KW to 60-KW. 110-220 volts, 60 cycle, excellent condition government surplus. K. A. Weimer, 1300 Richard Road, Decatur, Georgia 30032.

**TRANSFORMER** Rebuilding simplified. Provide any voltage wanted for electric projects. Plans and instructions \$1.00. Lectrix, Box 106, Guilford, Conn. 06437.

**COMPLETE** Rebuilding Manuals!!! Batteries \$3.00. Hydraulic Jacks \$3.00. C.O.D. Accepted. Write Today! Bayer Publications, 938FT Betty Avenue, Neenah, Wisconsin 54956.

**BATTERY** Reconditioning kit, includes molds, material, complete instructions. The Battery Shop, P.O. Box 477, San Marcos, Calif. 92069.

## ENGINES, MOTORS, DYNAMOS

**DIESEL** Injector parts and fuel pumps wanted. GM51-53-71-110. Bares, 2093 East 19 Street, Cleveland 15, Ohio.

**LIVE** Steam powered backyard railroads! All sizes. Complete "bolt-together-kits" and rough castings. Excellent drawings. 100 page catalog \$1.00. Little Engines, Lomita, Calif. 90717.

**FREE** Catalog. Motor rewinders supplies. Modern, Box 10025, Kansas City, Mo. 64111.

**OPERATE** Three phase motors from single phase. Plans \$1.00. Donald Howell, Barnesville, Ohio. 43713.

**WINDING** Data. 275 motors, single and three phase \$1.10. Data Company, 512 Kensington, Kansas City, Mo. 64124.

## MACHINERY, TOOLS AND SUPPLIES

**SOCKET SET**, 3 1/8 to 3/4 openings, special bargain. Write for complete description and price. Ray Ricke, 2023 Lucas, Dallas, Texas.

**MAGNETIC** Chuck V blocks & parallels, edge finders, center finders, thread measuring wires, sine bars. Hi-precision—first quality—low prices. Factory distributors wanted. Be the dealer in your locality. Buy for yourself and sell to others. Liberal discount, products guaranteed. Est. 1943. Write for brochures. Fisher Machine, 11704-M Inglewood, Hawthorne, Calif. 90250. Pictures edge-finders, Page 47 this issue.

**"RAFTERULE"** Solves any rafter cutting problem. Free literature. Emmert, Sycamore, Illinois 60178.

**MICROMETERS** - Indicators - chucks - rods. Small Shop Supplies, 1424 Barclay, Springfield, Ohio 45505.

## WELDING, SOLDERING, PLATING

**A.C. WELDERS**, 150 Amperes, \$49.50. Morris, 1070 Inner, Schenectady, N. Y. 12303.

**CHROME** Plating equipment, supplies. All other finishes. Home workshop and production sizes. Send \$1.00 (refundable) for formulas, operating data, equipment guide and catalog. HBS Equipment Division L50, 3543 East 16th, Los Angeles, Calif. 90023.

## GOVERNMENT SURPLUS

**GOV'T.** Surplus. How and where to buy in your area. Send \$1.00. Surplus Information. Headquarters Building, P.M., Washington, D.C. 20006.

**JEEPS** Typically from \$53.90 . . . trucks from \$78.40 . . . boats, typewriters, airplanes, sporting equipment, used, 100,000 bargains direct from Government nationwide. Complete sales directory and surplus catalog, \$1.00. Deductible first \$10.00 order. Surplus Service, Box 820-A, Holland, Michigan 49423.

**JEEPS** From \$50.00. Many other bargains direct from Gov't. Complete "buying directions" plus our "color" Surplus and Camping Catalog \$1.00. Quality Surplus (PM 1) 2546 W. Michigan, Indianapolis, Indiana.

**SURPLUS** Army, Navy store illustrated catalog. Ruvel & Company's Mail Order Division. Send 25¢ stamp or coin (refundable with first \$5.00 order). Ruvel, 707 Junior Terrace, Dept. 9-J, Chicago, Ill. 60613.

**GOVERNMENT** Lands . . . Low as \$1.00 Acre! Millions acres! For exclusive copyrighted report . . . plus "Land Opportunity Digest" listing lands available throughout U.S., send \$1.00. Satisfaction guaranteed! Land Disposal, 222-RM Georgetown Building, Washington, D.C. 20007.

**\$50 JEEPS?** Wrecked? Repairable? New? Learn the Truth! Our New 1967 United States Government Official Jeep and Surplus Personal Property Buying manual is the most! Latest, most accurate information available. Nothing like it elsewhere. 1000's of items Big Amazing Surplus Bargain catalogue Free with every \$1.00 order for Manual, Box 177P, Abbottstown, Penna.

**GOVERNMENT** Surplus Manual, how and where to buy in your area. Send \$1.00. Surplus Manual, Box 8, Thomasville, Penna.

## HOBBIES AND COLLECTIONS

**SEASHELLS** Worldwide price list free. Javo Distributors, Box 13288, Tampa, Florida 33611.

**50 JUNGLE** Butterflies \$2.00. Giant nature hobbies catalog 25¢. Collectors Wonderland, Box 1170, New York 10008.



## STAMP COLLECTING

**CANADA** Sports complete, 10¢. Canada approvals. Valley Stamps, Little Valley, New York 14755.

**225 STAMPS** For only 10¢! This mammoth value includes airmails, pictorials, stamps from strange countries cataloging up to 25¢ each! Also approvals. Mystic Stamp Company, Camden 80, New York 11316.

**AMAZING OFFER!** 200 United States stamps—including commemoratives, airmails, high denominations to \$1.00. Only 10¢ to approval applicants! Illustrated bargain lists free. Mystic Stamp Co., Dept. 80, Camden, New York 11316.

**100 DIFFERENT!** Free! 1/4¢ upward British Commonwealth or world approvals. Bush, 1677 Wimborne Road, Bournemouth, England.

**TRIANGLES!!** Twelve exotic birds, insects, flowers!! 5¢. Approvals. Hamilton, 7150 South Cyril, Chicago, Illinois 60649.

**FREE!** 25 Portuguese, colorful approvals. Elkhart, Box 33, Elkhart, Indiana 46514.

**UNITED** States, 100, 35¢; 300, \$1.00; No approvals. Mitchell Stamp Co., Lanham, Maryland 20801.

**TEN** Different nudes: 20¢. Approvals. Stamp Farm, 2M17, Oxford, Wis. 53952.

**50 DIFFERENT** Old U.S. Revenue stamps 50¢. Winchester stamps, Box 1592, Mansfield, Ohio 44907.

**FREE!** Congo triangle set! Boy Scout beauty! 25 others, different. Approvals. Cambridge, Box 411, Cambridge, Ohio 43725.

**100 OLD** United States between 1861 and 1935. \$1.00. Roush Stamps, 51 Chestnut, Mansfield, Ohio 44903.

**500 DIFFERENT** Stamps, \$1.00. Smith, 508-A Brooks, College Station, Texas 77840.

**PENNY** Stamps! 1000 Mounted in book at 1¢ each. Trust Stamp Company, P.O.B. 132-P, Jamaica, N.Y. 11435.

**ONE** Pound value Geo. VI Bermuda, plus 100 worldwide 10¢, approvals. Stevens, Box 105A, Homecrest Sta., Brooklyn 29, N.Y.

**PENNY!** Approvals! Regardless catalogue! Kloster, 4164 52nd St., San Diego 5, Calif. 92105.

**64 PAGE** U.S. and U.N. catalog free. Stone, 260 Washington, Boston 8, Mass.

**FREE** Sample. Interesting, illustrated, informative National Stamp News, Anderson, South Carolina 29621.

**INTRODUCING** Our better United States approvals we offer 15 United States stamps including Columbian, Bi-Centennials, famous American, airmails, others: only 10¢. Ocean Stamps, Box 64-PM, Brooklyn, New York 11229.

**UNITED** States commemorative collection containing 33 different—10¢. Approvals. White, 516-A Avenue L, Brooklyn 30, New York.

**UNITED STATES** price list, 132 pages, price 30¢. Mark Hanna, 335 Fifth Ave., Pittsburgh, Pa. 15222.

**121 DIFFERENT** Flag stamps free. Approvals. W-B Stamps, Wilkes-Barre, Pa. 18703.

**U.S. Mint** specials! Flag set, complete \$1.00. 1¢, 2¢, 3¢ famous Americans (21 different) \$1.00. Free list. Brooks, 2601 Avenue "U", Brooklyn 29, N.Y.

**U.S. Approvals.** Low prices. Eagle, 2221 Romine Ave., Pittsburgh, Pa. 15226.

**GERMAN** Commemoratives, 10¢ with approvals. Schaefer, Box 1704, Washington, D. C. 20013.

**50 DIFFERENT** U.S. Commemoratives 25¢. No approvals. Earl Mills, Box 272-K, Auburn, Mass. 01501.

**FREE** 1966 U. S. list, mint #704-15 \$4, #740-9 \$2.10, #859-99 \$6, #909-21 \$1. Simmy & Co., 40 Court St., Boston, Mass. 02108.

**U.S. Bargain.** 50 different 10¢, with beautiful worldwide approvals. Stamps, Kennebunk, Maine.

**25 Different** United States Commemoratives 1893 Up 10¢. Approvals. K. & B. Stamp Company, Box 70, Brooklyn, New York 11223.

**FIPEX—Tipex-Cipex-Ashville.** Four miniature sheets used for \$1.00 if you ask for our bargain priced U.S. approvals. Triboro, 38 Park Row, New York, New York 10038.

**MILLION** Foreign stamps! 2¢ each! Send for thrilling, giant approvals! ABC Stamps, Box 6000-MB, San Francisco 1, Calif.

**NEW** Issues — Free weekly illustrated list. Brooks, 2601N Avenue "U", Brooklyn 29, N.Y.

**FREE** Surprise collection sent with approvals. Gould, 1784 Union, San Francisco 94123.

**FROM** War torn Vietnam 50 scarce pictorials \$1.00. Approvals accompany. Merriam Stamps, PO Box 50, Somerville, N.J. 08576.



50 YEARS Old, fifteen different United States, over fifty years old—10¢ with approvals. Jaxon, Box 145-P, Brooklyn, New York 11230.

U.S. Overrun countries complete mint, \$1.00, approvals. Stamper, 2013 San Salvador, Fairfield, California 94533.

40,000 DIFFERENT. Amazing new plan builds your collection systematically, country by country. As low as 50¢ weekly. Ware, Monroe 75, Conn. 06468.

FREE Space collection with approvals. Tiquet, Box 1496, Denver, Colorado 80201.

"INVERTED Error," Dag Hammarskjöld 5¢ with Approvals. Belmont Stamps, Washington, D. C. 20015.

230 DIFFERENT U.S. commemoratives, \$1.00 approvals. H. Holub, 18 East 198th Street, Bronx, N.Y. 10468.

BREATHTAKING, 50 Mint Monaco pictorials, \$1.00. Approvals accompany. Stamp Exchange, Box 103, Fairfield, California 94533.

FREE 100 World wide stamps with request for mint pictorial approvals. Dept. PM, K & B Stamp Co., Box 70, Brooklyn, N.Y. 11223.

1027 DIFFERENT \$1.25 With approvals. Klondike, 682 Jefferson, Elgin, Ill. 60120.

NEW African Stamp Collection—including Burundi, Guinea, Mali, Rwanda, Togo and others. A colorful addition to your collection. 10¢ with approvals. Capital Stamps, Dept. #57B, Ferrysburg, Michigan 49409.

BEAUTIFUL Topical collection — includes Olympic sports stamps, wild animals, bicolor triangles, colorful birds, outer space stamps, Poland kitten stamp, and others. 10¢ with approvals. Sunny Stamps, Dept. #57-A, Fruitport, Michigan 49415.

EXCHANGE. Send 100-200 different stamps with 20¢. Receive different. Patterson, Lancaster, New York 14086.

65 DIFFERENT United States stamps only 10¢. Approvals included. Shelton, Box 187, Hempstead, New York 11551.

100 DIFFERENT Canada, 25¢ with approvals. Riverside Stamps, Box 1044, Riverside, California 92502.

SENSATIONAL Clearance. Forty different packets only \$1.00. Norge, Ho-Ho-Kus, N.J.

DEFECTIVE U.S., Real bargains. Karl Swartz, Box 373, Venice, Florida.

FREE New mint, Ecuador, Olympics, approvals inc. Alpaugh, Highbridge, N.J. 08829.

SPORTS Sets: Three for 10¢, with quality foreign approvals. Ramco, Box 24007, Columbus, Ohio 43224.

AMERICANS On foreign stamps—Presidents Kennedy, Roosevelt, Lincoln, U. S. spaceman, Princess Grace & others. 10¢ with approvals. Roseland Stamps, Dept. #57, Spring Lake, Michigan 49456.

1500 FOREIGN \$1.00, 5000 \$3.00, 1000 prewar foreign from 1860 to 1940 \$3. 5000 \$12.00. 5000 USA-commemoratives, airmails, revenues, 19th century, high values, etc. \$3.00. 200 USA from 1873 to 1923 \$1.00. 700 \$3.00. 3000 \$12.00. 50 USA revenues \$1.00. No approvals. Meyers, 5321 Fleming, Richmond, California.

SURPRISE COLLECTION! Exotic mint British Colonials, absolutely free with approvals. VIKING, Great Neck 8, N.Y.

FREE Mammoth collection, \$10,000 airmail, world's smallest stamp, Scott's International, Master Global Albums given only approval buyers. Bargain Stamps, Tustin, California.

FREE Mint set given collectors requesting approvals. South, Box 22092, Memphis, Tenn. 38122.

25 DIFFERENT Colorful giant Poland Pictorials, 10¢ Approvals. Free Kennedy set. Kata, 130-12 232nd Street, Laurelton, New York 11413.

SELECTED U.S. Approvals. Brunner's, 121 Glen Moore Circle, Lancaster, Penna. 17600.

SEND 50 CENTS American Mint Stamps and receive 100 different used Canada stamps. No approvals. Stamp Bureau, Box 249, Outremont, Montreal, Canada.

FREE Fabulous airmail collection, actual catalogue value over \$100.00 when you buy our approvals. Fairplay Stamps, 1411 Marion Way, Santa Ana, California 92706.

RARE Stamp BARGAINS, FREE lists. Takagi, 1658 Chambers, Escondido, California 92025.

FREE Yugoslavia with discount approvals, builds value for less. Stamps, Box 15362, Sacramento, California 95815.

FRENCH Colonies-20 different colorful stamps-includes sports, animals, triangles, diamonds. Only 5¢ with approvals. Mounblow, 19F Cedarhill, East Northport, New York 11731.

ROUND Gold Qatar stamps (4) 10¢ with approvals. Belmont Stamps, Washington, D. C. 20015.

MAKE MONEY Selling Stamps. Details 25¢. Davis, 847 Main, Tiverton, Rhode Island 02878.

MINT GERMANY: THREE Panes Cataloguing \$3.30; YOURS—FREE! to introduce our Bargain Approvals. Stampex, Box 47-GM, White Plains, N. Y.

FREE World's greatest premium—5000 all different stamps, actual catalogue value over \$100.00 given approval buyers. Thrifty Stamps, Grossmont, California. 92030.

STAMP Album, 10¢. Collecting outfit, 25¢. Free lists. Drawer B, Buckland, Connecticut 06040.

1000's PENNY Approvals with better singles, sets on approval, discounts. Box 336, Naranja, Fla. 33030.

FREE—Valuable, mysterious, Formosan Collection given foreign approval buyers. Wesco, 1609 South Park, Santa Ana, California 92707.

1000 \$1.00, UNITED States or foreign, large variety. Mission Distributors, Box 386, St. Petersburg, Florida 33731.

SEND 10¢ For Stamp Grab Bag. Over 100 unassorted old and new Asia, Africa, Europe, South Seas, etc. Approvals, illustrated catalog included. LITTLETON STAMP CO., Littleton GB1, N. H. 03561.

FREE Mint Africa set. Approvals. Litho, Box 51, Canoga Park, Calif. 91305.

UNITED STATES Bargain list free. Bydahl, Box 1293-PMU Seattle, Washington 98111.

"COLORFUL" SET FREE! Worldwide approvals. GORLIZ, Drawer 388PM, Park Ridge, Illinois 60068.

FREE! Big Bargain Catalog—New Edition listing thousands of bargains including U.S. & B.N.A. stamps, packets, albums, accessories and supplies. Also, fine stamps from our approval service which you may return without purchases and cancel service at any time. Jamestown Stamp, Dept. E17PM, Jamestown, N.Y. 14701.

WOW! 110 All Different Germany 10¢ Commemoratives, airmails, high values, big catalog, bargain lists also, fine stamps from our approval service, which you may return without purchases and cancel service at any time. Jamestown Stamp, Dept. A17PM, Jamestown, N.Y. 14701.

FREE! Hundred worldwide; approvals included. Martin, Box 218, Tustin, California 92680.

24 CANADIAN Commemorative plus 50¢ spinning, 10¢ to approval applicants. Lewis Stamp Co., 360 Fundy Drive, Lancaster, New Brunswick, Canada.

EXCELLENT Foreign mixture, over \$20.00 catalog value, only \$2.20 Postpaid. Russell, Box 262, La Crescenta, Calif. 91014.

250 DIFFERENT U.S. commemoratives \$1.00! 50 different 10¢ Approvals. Gordon Davison, Henniker, New Hamp. 03242.

100 WORLDWIDE, 10¢ — Approvals. Jayne, 510 N. 30th Ave. St. Petersburg 4, Fla.

FOREIGN, U.S. Free monthly bargain lists. No approvals. Henry Faville, 400 West Broadway, Monona, Wis. 53716.

115 DIFFERENT Stamps Free. Stamps on approval. Send 10¢ for handling. Globus Stamps, New York, N.Y. 10010. Dept. PM-4.

COLORFUL SET FREE! Worldwide approvals. GORLIZ, Drawer 388PM, Park Ridge, Illinois 60068.

GERMANY 100 Different 5¢. Approvals, Hijop, Box 505, Norristown, Pa. 19404.

FREE! Illustrated price lists. Discounts. Picture Stamps, Box 46193, Hollywood, California 90046.

998 UNITED States stamps only 35¢, with colorful approvals. Box 5580, Milwaukee, Wisconsin 53211.

50 DIFFERENT India 10¢ with approvals. Iannuzzi, Box 76241, Los Angeles, Calif. 90005.

JACQUELINE KENNEDY HONORED! Now, at last, Jacqueline Kennedy is honored on a Special Commemorative Envelope! Issued for the Dedication of the new \$2,270,000 JFK Memorial, this beautiful Envelope is officially postmarked at Arlington, site of the National Cemetery, on the 3rd Anniversary of the President's assassination. We'll send this valuable Commemorative Envelope to introduce you to Stamp Collecting—World's Most Rewarding Hobby. Also, selections of JFK and other fine stamps from our Approval Service for Free Examination. You may return selections without buying and cancel service anytime, but the Jacqueline Kennedy Commemorative Envelope is yours to keep. Send 25¢ today for mailing costs. KENMORE CO., Milford R-123, N.H. 03055.

ABOMINABLE Snowman, Bhutan's latest multi-colored triangle commemoratives—free. Approvals, plus 101 bonus sets. William Deems, 226x Race, Ravenswood, West Virginia 26164.

70,000 VARIETIES, 1¢ and up. Premiums. Discounts. Penny Stamps, Orange, California 92669.

ONE Cent a stamp. Write for a jumbo book of foreign stamps at 1¢ each, mounted in Scott order. Bullot Approvals, 6815A Bay Parkway, Bklyn., N.Y. 11204.

RARE Stamp free. Also new packet Aden to Urundi, with Kennedy, triangles, space, sports, ships, dogs, cats, reptiles plus others. All free. Send 10¢ for mailing. Empire Stamp Co., Dept. PM, Toronto, Canada.

SPECIAL Sale: Generous bargain lot \$1.00. Giant fine stamps assortment \$5. High value packet \$3. 450 Mixed stamps 40 cts. List free. Persile, 436 N.Y. Ave., Brooklyn 25, N.Y.

ICELAND Highest value Airmail, showing Skymaster and pioneer plane, sparkling mint, only 10¢ with approvals. Lindeman, 348 Primrose, Syracuse, New York 13205.

ABSOLUTELY Free 50 worldwide. Request inexpensive approvals. University Stamps, P.O. Box 326, Pompano Beach, Florida 33061.

230 DIFFERENT U. S. commemoratives \$1.00 Rockefeller 400 West Market, Red Hook, N.Y. 12571.

## COINS, TOKENS, CURRENCY

U.S. List plus 54S cent 10¢. Schultheis, (Devonshire) New Hyde Park, New York 11040.

SPECIALS: Scarce date Lincoln cents. All good or better. Satisfaction guaranteed. 50¢ each 1916S, 1927S, 1939D, 1955S, 75¢ each 1915, 1915D, 1921S, 1924S, 1932, 1932D, 1933, \$1.00 each 1909VDB, 1913D, 1923S, \$1.50 each 1911D, 1912D, \$3.00 each 1913S, 1922D, 1931D, 1933D, \$4.50 each 1910S, 1915S, 1926S, \$5.00 each 1912S, 1914S, \$10.00 each 1911S, 1924D, Bryson Inc., 612A White, Toledo 5, Ohio.

SILVER Dollars uncirculated, 1878-79-80-81-82 S mint \$3.00 ea. Illustrated Catalogue 50¢. Shultz, Salt Lake City, Utah 84110.

LARGEST Coin magazine, 200 pages, 50¢. Scrapbook, 7320-J Milwaukee, Chicago 60648.

40 PAGE Illustrated United States and Canadian coin list 10¢. Stoney, 260 Washington, Boston 8, Mass.

LINCOLNS: 22 Different "S" including rare 1955S, \$1.60. 28 different before 1940, plus odd 1960D small date, \$1.60. 10 different "S" Jefferson nickels, \$1.60. All three \$4.50. Harris, P.O. Box 732-P, Sunnysvale, California 94088.

FREE Coin supplies! Giant coin list 20¢ (refundable). Economy Sales, Mansfield, Massachusetts 02048.

HIGHEST Prices paid immediately for coins. Send 10¢ for 1967 buying prices. Wilmot's, 1067-F Bridge St., Grand Rapids, Mich., 49504.



25 BEAUTIFUL Coins from 25 countries. Mostly uncirculated. Terrific assortment. \$1.00 Hindley, Box 706, Aurora, Illinois 60507.

30 DIFFERENT Worldwide coins, \$1.00 Newcomers, Box 91, North Quincy, Mass. 02171.

SILVER Dollars, uncirculated rolls of twenty, \$39.50 each. Circulated rolls \$29.50 each. Bill's Coins, 3166-M 16th St., San Francisco, Calif. 94103.

LIBERTY Nickels—7 different, \$2.00. Catalogue, 10c. Hubers, 147 Baker Building, Minneapolis 55402.

U.S. \$20.00 Gold coins \$49.95. Guaranteed uncirculated, Pacific Coin, Box 274-PM, Downey, Calif.

SPECIALS! 18 Different Lincoln cents below 1931, \$1.00; 1943 P-D-S Reprocessed steel cents snap-lock case, \$1.00; 7 different Mercury dimes, \$2.00; 6 different S Jefferson nickels, \$1.00; Uncirculated silver dollar, \$2.50; 10 different dates uncirculated dollars, \$23.00. Bill Bainum, Inc., Box 143, Batavia, Ohio.

LINCOLNS: 15 Different "S", 95c. 15 Different brilliant uncirculated, 95c. Rare 1943PDS (steel)—1954P-1955S, all 95c. All three packets, \$2.60. Bonanza, Box 4491-P, San Jose, California 95126.

INDIAN Cents, 12 different dates in album only \$3.00 postpaid. Bob's, 3346 Lawrence, Chicago, Illinois 60625.

BEAUTIFUL Uncirculated World Coins—Monaco's new Princess Grace Silver Dollar. In case \$8.00. Pope Paul Vatican Set \$4.65. General Douglas MacArthur Philippine set \$5.95. World's Greatest Bargain Catalogue \$1.00. Bebee's, Inc., 4514 North 30th, Omaha, Nebraska 68111.

FREE Coin catalog, write, John Nelson, Box 999, Dept. PM, Jamestown, New York 14701.

8 DIFFERENT Indianhead cents \$1.98; V-Nickels \$1.95. Free price list. Edell's, Carlyle, Illinois 62231.

CANADIAN NICKELS Forty different very good to uncirculated, \$4.25. Heath, Box 106, Lachine 11, Quebec, Canada.

CALIFORNIA Gold quarters, halves, dollar. Six different for \$5.00. Coffman, Box 27034PM, Indianapolis, Indiana 46227.

4 INDIAN Cents \$1.00. 4 Liberty nickels \$1.00. Doktor, 5028 W. Pico, Los Angeles, Calif. 90019.

SIXTEEN Page current listings COIN BARGAINS only 25c. RARCOA, 31-A Clark, Chicago, 60602.

INDIANHEAD Cent with terrific bargain list, 25c. Nelson, 346-M, Rye, New York 10580.

5 ROLLS Unsorted buffalo nickels \$15.50. Lists, 5c. Ace, Jamesburg, New Jersey 08813.

BRILLIANT Uncirculated 1965 Jefferson nickels, 5 for \$1.00. Hobbies, Box 3114-P, Des Moines, Iowa 50316.

LINCOLNS Good and better: Pick ten different \$2.00—1921S, 1955S, 1916D, 1954, 1917D, 1917S, 1918D, 1918S, 1919D, 1920D, 1920S, 1921, 1925S, 1926D, 1927D, 1928D, 1929D, 1929S, 1930D, 1930S, 1931, 1934D, 1935S, 1936D, 1943D, 1943S. Another bargain: 18 different uncirculated Lincolns \$1.00. (Catalog value \$1.95) Martin's, 36 East Broadway, Tucson, Arizona.

COINS Wanted. Pay cash. Selling \$20 gold pieces, \$48.75. Gabby, 4546 170 St., Lawndale, Calif. 90260.

SILVER DOLLARS, BRILLIANT, UNCIRCULATED. 1885-P, 1886-P, 1887-P, 1888-P, 1921-PM., 1922-P, 1923-P, 1879-S, 1880-S, 1881-S, 1882-S, 1883-O, 1884-O, \$2.00 each! 1879-P, 1882-P, 1883-P, 1884-P, 1900-P, 1899-O, 1900-O, 1901-O, 1902-O, \$2.25 each! 1889-P, 1878-S, 1881-O, 1882-O, 1888-O, \$2.50 each! 1880-P, 1896-P, 1924-P, 1898-O, 1904-O, \$3.00 each! 1881-P, 1925-P, 1880-O, \$3.50 each! 1878-P, 1890-P, 1887-O, 1890-O, \$4.00 each! 1897-P, 1898-P, \$5.00 each! 1890-S, 1897-S, 1878-CC, \$10.00 each! 1899-P, 1898-S, 1900-S, 1901-S, 1925-S, 1897-O, 1882-CC, 1883-CC, 1890-CC, 1891-CC, \$25.00 each! 1893-P, 1901-P, 1894-S, 1902-S, 1880-CC, 1885-CC, 1892-CC, \$55.00 each! 10% DISCOUNT on \$50.00 orders! THOUSANDS OF OTHER COINS! SILVER CENTER, Box 22-171-M, San Francisco, California 94122.

HOW TO MAKE MONEY selling U.S. SILVER DOLLARS... with no investment or risk... and our copyrighted Special Report, "HOW TO MAKE MONEY INVESTING IN U.S. COINS," sent Airmail to you for \$2.00. Unconditionally guaranteed and refundable. FREE your "LUCKY" coin for writing today. Write Col. E.D. Lewis, U.S. COINS, 2344 East Cactus Road, Phoenix, Arizona 85022.

START your world-wide collection with hard-to-get foreign coins, 25 each from a different country, only \$1, postpaid. Superior, Dept. PMF-1 34 E. 12 St., N.Y. 3, N.Y.

LINCOLNS: 10 Different before 1921 \$1; 20 before 1931 \$1.50. Lenox Hill, Box 155, New York, New York 10021.

INDIANA SESQUICENTENNIAL COINS—state seal on obverse, emblem on reverse, 12ga goldline—1 7/16 diameter, 2 for \$1.00, 10 for \$4.00—cash. Oswald Dist., Box 6, Milan, Indiana 47031.

INVESTORS—Dealers brill. Uncirculated roll cents 1956-P \$4.50, 1956-D \$1.75, 1957-P \$3.50, 1957-D \$1.50, 1958-P \$3.50, 1958-D \$1.50, 1959-P \$1.50, 1959-D, \$1.25, 1960-P \$1.40, 1960-D \$1.25, 1961-P \$1.25, 1961-D \$1.25, 1962-P \$1.25, 1962-D \$1.00, 1963-P \$1.00, 1963-D \$1.00, 1964-P \$1.00, 1964-D \$1.00. Ray's Coins, Dept. PM, Streator, Ill. Send postcard for our Free mailing list.

### ANTIQUES, RELICS, INDIAN GOODS AND CURIOS

ARROWHEADS, 10 for \$3.00. List free. Hyde's, Box 1788, Santa Fe, New Mexico 87501.

10 PERFECT Arrowheads \$3.00. George Smith, 9825 Conway Drive, Indianapolis, Indiana 46236.

2 INDIAN War arrowheads, scalping knife \$2.00. Catalog free. Arrowhead, Glenwood, Arkansas 71943.

ANTIQUES! Monthly magazine, Sample 25c or free circular. Antiques Journal, Uniontown, Penna. 15401.

BEAUTIFUL Navajo "Ghost Beads". Excellent gift, \$1.98 each, 2 for \$3.75. Torii Trading, DP Box 25, Salt Lake City, Utah.

TONS OF antique gun parts and supplies. All reproduction muzzle loading guns. Send \$1.00 for enlarged illustrated catalog No. 116. Dixie Gun Works, Union City 12, Tennessee.

### MODELS—SHIPS, TRAINS, PLANES, ETC.

BUILDING Materials, 1/4" & 1/8" scale, windows, doors, siding, roofing, lumber and structural shapes. Send 35c for catalog with samples. Small Sales Co., 6025 Martway, Mission, Kansas 66202.

SHIP Model kits and fittings: clippers, frigates, etc. Catalog paint-tool list, book list, 40c. Model Shipways, Box 65, Bogota, N.J. 07603.

ROCKETS: Real flying models—flights up to 2500 ft. New illustrated catalog 25c. Single and multistage kits, cones, engines, launchers, trackers, rocket aerial cameras, technical information. Fast service. Estes Industries, Penrose 2, Colorado 81240.

SHIP and yacht model fittings: Pine construction hull kits; blueprints. Send 50c for illustrated catalog. A. J. Fisher, Inc., 1002 Etowah Avenue, Royal Oak, Michigan 48067.

SHIP Models. Kits, fittings, plans, books, tools, engines, motors. Big illustrated catalog, 50c. James Bliss & Co., Dept. SM, Route 128, Dedham, Mass. 02026.

SHIP Models, new catalog 15c. Scientific, Inc., 113 E. Monroe, Newark, N.J. 07105.

PARTS Machined, spec. reg. Darco, 181 Falmouth St., Brooklyn, N.Y. 11235.

HOT Off press! Many new items! Also our conventional steam, gasoline, Corliss, Fire Engines, Case Tractor, Boilers, Accessories. Beautifully illustrated 100 page catalog = 20, \$1.25. Cole's Power Models, Ventura, Calif. 93002

LIVE Steam model engine kits. Fascinating hobby for model mechanics. Boilers, fittings, accessories. Pictured catalog 65c. H.P.K. Models, Box 34, Centuck Station W. Yonkers, New York 10710.

### GAMES, TOYS, NOVELTIES

AMAZING Swiss warbler bird call whistle, 50c Post Paid. Dubicki, 182 Driggs Avenue, Brooklyn, N.Y. 11222.

THINK-A-DOT. Adult and children computer-age game \$2.00. Free catalog. Qualifine, Box 283, Syosset, New York 11791.

FUNNY Cards—50 samples 25c. Trick-joke catalog free. Sell friends. Dohn-24R-Marks, Broadview, Illinois. 60153

### MAGIC TRICKS, PUZZLES, JOKER NOVELTIES

COMPLETELY Illustrated catalog, 84 pages, 25c. Manhattan Magic, Box 334-M, N.Y.C. 11.

WORLD'S Finest professional magic tricks, Joker's Novelties, Giant illustrated catalog 10c. Top Hat, Evanston, Illinois.

MAGIC Catalog. World's finest, 3000 tricks. (340) pages \$2.50 Beginners, amateurs, professionals. Kanter's, A-200 South 13th St., Philadelphia, Pa. 19107.

VENTRILOQUISM! Information free! Dummy catalog, 25c. State age. Maher, Studio A, Box 36, Kensington Station, Detroit, Michigan 48224.

BE A Magician! Introductory catalog with free trick, only 35c. Ireland Magic, 5082 Lincoln, Chicago, Illinois 60625.

BOOK "300 Tricks You Can Do", dollar. Free Catalogue, Mandel, 2912C Neptune Ave., Brooklyn, New York 11224.

TEACH Yourself the Art of Magic. Magicians secrets revealed. Send 10c for our catalog of tricks and gags. "Fabulous Tricks and Magic", 3319 E. Charleston, Las Vegas, Nevada 89104.

2600 NOVELTIES, jokes, tricks, scientific gadgets, hobbies. Catalog 10c. Johnson-Smith, D-146, Detroit Michigan 48207

NEW EDITION, 1967 Catalog of 500 Tricks, only 10c. Fastest same-day service to magicians for 40 years. Send 10c today. DOUGLAS MAGICLAND, DEPT 21, Dallas, Texas 75221.

LATEST World famous giant surprise catalog!! 1000 Professional tricks, magic, jokers!! 164 pages!! 10c. House of 1000 Mysteries, Dept. PM7C, Ft. Lauderdale, Florida 33308.

### BOOKS, PERIODICALS

FREE Catalog. Self-help books. Write Wilshire, 8721 Sunset, Los Angeles 69P.

INTERESTING Books. Free Catalog. Postal PM, 2217 Lackland, St. Louis, Missouri 63114.

CHALLENGING! Different! Unusual books! Free catalog. Ruby's, D-26, Paradise, Pennsylvania 17562.

BOOKS, Free general catalog, 60 pages. Text, vocational, educational, instructional subjects. Millions of volumes, new and used. Bargain prices. Books bought, Est. 1902. Long's College Book Co., Dept. PM, Columbus, Ohio 43201.

PROPHET Elijah coming before Christ. Wonderful book free. E. Megiddo Mission, Rochester, New York 14619.

UNDERSTAND Your dreams! Fascinating book reveals mysterious inner meanings. Only \$2.00. Hocking Valley Sales, Dept. 21, Box 163, Logan, Ohio 43138.

USED Courses, books, Catalog 10c. Bayles, 78B Courtright, Wilkes Barre, Pa. 18702.

FREE List of low cost popular books. Success, happiness, personality, wealth, personal problems. Wilson Sales, P.O. Box 5025, Mobile, Alabama 36605.

EX-Minister's book insists religion is gigantic illusion, \$1.00. Truth Seeker, Box 2832, San Diego, Calif. 92112.

FREE Catalog big book selection: self-help, inspirational, business opportunities, instruction. Write: Woodhull Publishers, Box 62PA, Hales Corners, Wisconsin 53130.

FREE Book Catalog—Self-improvement, hobbies, sports, reference. Athens, Box 9254-E, St. Louis, Mo. 63117.

PEANUTS! Mail \$2.25 for 5 funny books. Tower, Lafayette Hill, Pa. 19444.



**JAMES BOND BOOKS** 3/125, 7/250 Delivered; Casino Royale, Diamonds Are Forever, For Your Eyes Only, From Russia With Love, Goldfinger, Moonraker, Thunderball. CATALOG Included. Bookbin, 1247 Granville, Vancouver 2, B.C. Canada.

1,237 HOW-to-do-it-books. Guides, Manuals. Interesting subjects. Free catalog. Write today. Hallmark Books, PM-1126, 19003 Jamaica, Hollis, New York 11423.

**IMPROVE** Your personality! Dynamic thinking shows how. Send \$1.00 book WB-113. R. A. Williams, Box 641, Newark, N.J. 07102.

**OUT-Of-print** books at lowest prices! You name it, we find it! Fast service. No obligation. International Bookfinders, Box 3003-PM, Beverly Hills, Calif. 90212.

1,000,000 **BOOKS!** Bargains! Catalogs—dime. Bookanza, 6990 Aberdeen, Upper Darby, Penna. 19082.

### PLAYS, STORIES, MANUSCRIPTS

**WANT** Your book published? Learn how we publish, advertise, promote, distribute. Many successes. Free booklet PM, Vantage, 120 West 31, New York City.

**TELL** The more than 1,550,000 avid readers of Popular Mechanics about your products and services. It costs very little to place your classified message in front of these proven mail order buyers. For further details, write: C. A. Martin, Dept. 34N, Popular Mechanics, 575 Lexington Avenue, New York, New York 10022.

### BUSINESS OPPORTUNITIES

**OPERATE** Lucrative Information Service (Research). It's terrific! Free literature. Career Aids, 119 11th Avenue, San Francisco, California 94118.

**YOU** Too can have a business of your own. Write for free information to Fredrick's, P.O. Box 598, Claremont, Calif.

**SAWDUST.** Tin-cans, newspapers. 200 uses. Instructions \$1.00. Charles Company, 42-GPS, Norwood, Ohio.

**I MADE \$40,000.00** Year by Mailorder! Helped others make money! Start with \$10.00—Free proof! Torrey, Box 318-Y, Ypsilanti, Michigan 48197.

**BUSINESS** Experts guide you to success. Power packed guide shows 101 ways to be own boss in business you prefer. Business Careers, 3001 North 28th Place, Birmingham, Alabama 35207A.

**MAKE \$46** from square foot plywood; jigsaw or bandsaw necessary. Free details. Woodard, Bridgewater, Mass. 02324.

"MAIL-Order plan of the month." New service for those wanting their own Mail-Order Business. Free details. Volz-UN, Ypsilanti, Michigan 48197.

**LEARN SPEEDOMETER** Repair. Make good money. Instrument School, Box 5319, Tulsa 4, Okla.

**MAILORDER** Catalogs. No inventory required. Discounts 40% up, postpaid. Send 25c for 32 page sample catalog, featuring 150 unusual, fast-moving products and complete details. Satisfaction guaranteed. Gaylords, North Adams 7, Mass.

**BIG** Money raising fishworms and crickets. Free literature. Carter Farms, Plains, Georgia 31780.

**\$400.00 MONTHLY** Raising giant fishworms. Soilless method. Charlie Morgan, Bushnell, Florida 33513.

**COLORGLAZED** Concrete pottery made without molds. Patented method. Cemetery products, novelties, tiles. Basement leak-sealing. Money-making projects. Booklet, details free. Men only. National Potteries Company, Grand Rapids, Minnesota.

**BUILD** Custom cases at home for profit. Get orders by mail. We supply materials, instructions, everything. Free home business details. Customcase, 805CPG, Sunset Los Angeles 12.

**ADDRESSERS** And mailers needed. Send stamp for information. Lindbloom, 1508 West Erie, Chicago. 80622.

**VENDING** Machines. No selling. Operate a route of coin machines and earn amazing profits. 32-page catalogue free. Parkway Machine Corporation, 715 PMB Ensor Street, Baltimore, Maryland 21203.

**OPERATE** Home mailorder business. Vosacek Printing, 4444AI Ute, San Diego, Calif. 92117.

**\$60.00 DAY.** Manufacturing concrete posts. Carlayne, 1803 Fremont, Rapid City, South Dakota 57701.

**400,000 BARGAINS** Below wholesale! Many free. Liquidations... closeouts... job lots... single samples. Free details. Bargainhunters Opportunities, Box 730A, Holland, Michigan 49423.

**VENDING** Machine big catalog. Rake, 1214A West Girard, Phila., Pa. 19123.

**SELL** Advertising book matches. Write us today: we put you in business by return mail, handling complete line ad book matches in demand by every business right in your town!! No investment; everything furnished free! Top commissions daily! Superior Match, Dept. MX-167, 7530 S. Greenwood, Chicago 19, Ill.

**SECRETS!** Secrets! Mail order success revealed by internationally famous expert who discovered how to make home business fortunes. Beginners: Get free copy "How to Make Money in Mail Order." Discloses free advertising, profitable products, everything! No obligation. Write Mailco, 1554 Sepulveda, Dept. A701, Los Angeles 90025.

**PACKAGE** At home for profit! We supply everything. No "selling." Free home business details. H.P.C.-807HPG, Sunset, Los Angeles 12.

**FREE!** 128 Page illustrated catalog. More than 2000 name brand items: below wholesale prices. Sell full or part time. Save hundreds of dollars on purchases for yourself! Watches, jewelry, cameras, radios, phonographs, tape recorders, appliances, housewares, cookware, hardware, power tools, luggage, musical instruments sporting goods, toys, many others. Orders shipped within 24 hours. Continuous supply. Send for free catalog now! H. B. Davis Corp., Dept. PM 1177 Main St., Hartford, Conn. 06103.

**\$200.00 DAILY** In your mailbox! Your opportunity to do what mailorder experts do. Free details. Associates, Box 136-A, Holland, Michigan 49423.

**BOOKKEEPERS** Earn \$1000.00 month. Operate simplified Bookkeeping tax service. Universal, Box 664-M, Springfield, Missouri.

**WANT** To make big money at home? \$10.00 profit in an hour possible with invisible mending. Make tears, holes disappear from clothing, fabrics. Steady year-round demand from cleaners, laundries, homes. Details free. Fabricon, 1585 Howard, Chicago, Ill. 60626.

**\$70.00 WEEKLY**—home, spare time. Simplified mail bookkeeping. Immediate income, easy. Auditax, 3474A, Los Angeles 90034.

**RAISE** Rabbits for us on \$500 month plan. Free details. White's Rabbitry, Mt. Vernon, Ohio 43050.

**LIQUID** Molding rubber also liquid plastic. Free information, Chaney's, 5415-A San Jose Blvd., Jacksonville, Fla. 32207.

**COPUBLISH** "Mail Sale Advertiser." leading mailorder paper. Copy and details 25c. Vanroy Shirk, Lebanon, Pa. 17042.

**STREAMLINED** Mailorder course. Twenty-four different lessons, \$2.00 complete. Dealers wanted. Neil H. Tasker, Shamokin, Pennsylvania 17872.

**BAKE** New greaseless doughnuts in kitchen. Stores buy output. Start spare time. Profit 29¢ dozen. Small appliance. Free recipes. Montgomery Ray, Waseca, Minnesota 56093.

**BONSAI** Tiny trees. Home study course teaches you. Make beautiful prize artificial trees, arrangements. Grow valuable living miniatures too. Spare time—full time. Big profit. Free tree offer. Free fact pack. Minitree, Dept. DA, 12305 Hawthorne Blvd., Hawthorne, Calif. 90250.

**PLASTERCRAFT** Molds, liquid rubber, plasters, floccs, candle supplies. Catalog and manual free. Blue Rapids Supply, Blue Rapids, Kansas.

**VACUUM** Plastic molding & liquid plastic casting—At home! Make hundreds of full 3-D plastic products. Big profit in spare time. Free facts, samples. Nationwide Plastics, Dept. AB, 12305 Hawthorne Blvd., Hawthorne, Calif. 90250.

**EARN** Money raising fishworms for us! Write: Oakhaven-38, Cedar Hill, Texas.

**IMPORT-Export** business made easy. Complete setup service. Not just instructions. Hermes, 152 West 42, New York City, 10036.

**WORLD'S** Largest wholesale supply. Buy from 8753 American, European, Japanese wholesalers. Hongkong clothes, 123 dropship catalogs. Rockbottom prices. Automobiles. Free details. International Buyers, 216-MM West Jackson, Chicago, Illinois 60606.

**SELL** Books by mail. 400% profit. Royal, Box 450-X, Cleveland, Ohio 44127.

**BECOME** Tax consultant. Our students earn \$1,000—\$3,000 every tax season preparing returns evenings. Accredited. State approved. National Tax Training School, Monsey 2WA, New York 10952.

**IMPORT-Export** opportunity, profitable world-wide, mail-order business from home, without capital; or travel abroad. We ship proven plan, for no risk examination. Experience unnecessary. Free details. Mellinger, Dept. A701, Los Angeles 90025.

**DIFFERENT!** Outstanding Profits from high quality mailorder businesses. Complete setup service; not just instructions. Hermes Co., 152 West 42, New York City 10036.

**CONCRETE** Facts: Cement artists make big money at home. Simple equipment. Experience unnecessary. Unlimited unique pottery designs easily made without moulds. Birdbaths, wishing wells, water falls, rustic gardens, patio items, formulated chemical coloring, marbled glazing. Free illustrated brochure. Hollywood Cementcraft, 602 Athens Street, Altadena, California 91001.

**EARN BIG MONEY** Growing fishworms, crickets, giant African crawlers. Free literature. Pain's Hatchery-26, Edison, Georgia 31746.

**HUGE** Profits! Mail order importing. Free information. ITIS-PM-1, Box 454, Hollywood, Calif. 90028.

**BUSINESS** Cards embossed; 1,000 \$4.10, postpaid. Goodall, 68-N Joost, San Francisco 94131.

**READ** Progressive Mailtrade, the magazine that tells how to make money by mail. Quarter brings sample and special offer. Mailtrade, P.O. Box 357, Sheboygan, Wis. 53082.

**MAKE MONEY** IN MAIL ORDER. Sparkling new manual gets you started now at home, spare time. Easy as "A-B-C." \$1. PostPaid. Guaranteed. Daufeldt (PM), Atalissa, Iowa 52720.

**DOLLS!** DOLLS! You learn to make, repair, dress and sell dolls. Study at home. Fascinating hobby, profitable business. Certificate awarded. FREE booklet. Doll Hospital School, Dept. J-237, 2251 Barry Avenue, Los Angeles, California 90064.

**HAVE** Your own 25¢ car wash business. Minimum investment, yield handsome returns. Write Box 293, Roscoe, Illinois 61073.

**PIANO** Tuning learned quickly at home. Tremendous field! Musical knowledge unnecessary. GI Approved. Information free. Empire School of Piano Tuning, Box 327, Shenandoah Station, Miami, Florida 33145.

**YOUR** Own auto parts business! No investment. Full or spare time. Profit opportunities kit free. C. B. S., Tarentum, Pennsylvania 15084.

**OPERATE** Restaurant or diner. Free booklet reveals profitable plan. Write Restaurant Business School, Dept. EC-17, 1920 Sunnyside, Chicago, Illinois 60640.

**START** Your own business on credit. Your own boss. Hundreds of dealers making \$100 to \$300 and more weekly. We supply stocks, equipment on credit. 300 home necessities. Sales experience unnecessary. Pleasant, profitable business backed by world-wide industry. Write Rawleigh, Dept. A-LL-PPM, Freeport, Ill.

**BIG MONEY MAKER!** Custom Furniture Upholstery plus Auto Trim, Slip Covers, Drapes. Tremendous spare-full time earnings. Men, women, all ages. No experience required. We furnish everything: Easy Home Instruction, Tools, Supplies to build roomful of beautiful furniture yours to keep—sell! Send for Big FREE Illustrated Book. Modern Upholstery Institute, Box 899-JV, Orange, Calif. 92669.



CLIP Newspaper items, \$1.60-\$5.00 each. Details free. Walter, Box 1360-PA, Erie, Pa.

"MAILORDER . . . Operate cash-in-advance business!" Details. Methods, 1811, Lafayette Hill, Pennsylvania 19444.

SELL Gifts and Gadgets—All occasion greeting card assortments; Easter, Valentine, stationery, toys, jewelry. Experience unnecessary. Salable samples sent on approval. Free catalog, bonus plan. Write Hedenkamp, 361 Broadway, Dept. PM-93, New York 10013.

FREE Information. Operate profitable mail order business. Donovan's, Dept. 17, 537 Cranbrooke, Toronto, 12, Canada.

PROFITABLE Ideas for starting your own business. Free details. McGlasson's, 313-A Reynolds, Edmond, Oklahoma 73034.

MAILORDER Book tells how! Free details. (M.O.) Methods Lab., 111 Forbes Rd., Westwood, Mass. 02026.

EXPLOSIVE!!! Moneymaking business opportunities—home methods—free literature. Livingston's, Box 5332, North Charleston 1, South Carolina 29406.

TRAIN For solid high paying career in electrical repair. Experimental kits included. Free fact pack. I.T.I. Dept. 65012, 815 E. Rosecrans, Los Angeles 90059.

FREE "Franchise Profit Letter" tells how unique NFR service is helping thousands seeking profitable businesses. Write today. National Franchise Reports, W-538, 333 North Michigan, Chicago 60601.

INSTALL BURGLAR Alarm Systems. Big profit home business. Beginners start spare time, without mechanical experience or costly equipment. Free starter plan. NASCO, Dept. A701, 11071 Massachusetts, Los Angeles 90025.

LEARN Landscaping and the growing of plants. Start a profitable business part or full time. Free information without obligation. Lifetime Career Schools, Dept. A-111, 2251 Barry Avenue, Los Angeles, California 90064.

TEAR OUT THIS AD AND MAIL WITH NAME, address for big box of home needs and cosmetics for Free Trial, to test in your home. Tell your friends, make money. Rush name. Blair, Dept. 31DA Lynchburg, Va. 24505.

MAKE \$32.00 From 49¢ piece vinyl. PM-1834 Edgeland, Louisville, Ky. 40204

START Your own mailorder business. Complete set-up plan. Free details. Eljay Co. Box 356 Bartlett, Illinois 60103.

100,000 PRODUCTS Wholesale! Terrific bargains! Wholesalers, 1265-MC Broadway, New York, N.Y. 10001.

MAILORDER "Bookkeeping Cards". Sell like wildfire. Repeat like mad. 200 for \$2.00. Samples absolutely free. Neil H. Tasker, Shamokin, Pa. 17872.

QUIET Little Goldmine, unique field. Franchise protected. Granted on "Shoestring to \$150,000" guarantee. Live at home. No merchandise to buy. Self employed. One of the most exclusive and non-competitive Businesses in United States. Send for free explanatory booklet. Lorenzen & Associate, Box 9615-AM, St. Louis, Missouri 63122.

EARN Big money invisibly reweaving damaged garments at home. Free information. Eastern Reweaving, PM-72, Main, Hempstead, New York 11551.

SELL Books by mail. 400% Profit. Emerson, 113-PM1, Middle, Santa Barbara, California 93103.

HOW To finance mail-order, imports, franchises, work-at-home. Free details. Counselor-17, Harlingen, Texas.

\$75.00 DAY Manufacturing pest-proof concrete garbage can containers. Reif, 1605 Wood, Rapid City, South Dakota 57701.

MAILORDER Power! Tremendous "home-spacetime" money-getter. Details: Ellis, Box 224-PA, Prospect Heights, Illinois 60070.

EARN Up to \$1,000 monthly plus furnished apartment. Live graciously. Meet V.I.P.'s. Learn at home from APPROVED School to become professionally trained motel, hotel, resort manager. No special age requirement. Thousands job openings, men, women, couples. Free placement assistance. Free Facts. Motel Management, Dept. 606, 2433 N. Mayfair Rd., Milwaukee, Wis. 53226. No Salesman Will Call.

AMAZING New mailorder guide. Written by expert. Details. Evergreen, Box 506, Osseo, Minnesota 55369.

PROFITABLE Catalog mailorder business! Vikari's, 835-PM, First Avenue, Salt Lake City, Utah 84103

FREE Book "990 Successful, little-known businesses." Work home! Plymouth-172R, Brooklyn, New York 11218.

EARN Money mailing postcards! Work home. Particulars, 10c. Westlee, Western Springs 1, Illinois.

SELL Greeting cards—Make extra money. All occasion assortments; Easter, Valentine, stationery, gifts, toys, jewelry. Experience unnecessary. Salable samples on approval. Free catalog, bonus plan. Write Hedenkamp, 361 Broadway, Dept. PM-92, New York 10013.

EARN MONEY IN YOUR SPARE TIME repairing appliances, housewiring, motor rewinding, electrical maintenance. GI APPROVED. We show you how, send 8 trouble shooting instruments, business getting materials. FREE book. Advance Trades School, Dept. E-1403, Chicago 60631.

YOU Can be your own boss in one of the fastest growing service businesses, sponsored by the world's leading home and office cleaning system. Join hundreds of successful, independent, franchised ServiceMaster owners with unlimited growth potential because they offer a complete line of professional cleaning services—carpets, floors, furniture, walls—plus all specialty services required by insurance adjusters. Write for full information. No obligation. SERVICEMASTER, Dept. X829, Downers Grove, Illinois 60515.

SELL Champion, AC, Autolite spark plugs. Reconditioned, electroplated, guaranteed 10,000 miles. 100% profit. Free sample. Lee Plugs, 1608-A Roberts, Houston 3, Texas.

MEN-Women "Everybody Likes Fine Candy." Make professionally, details free. (Our 51st year.) Ragsdale Candies, B107, East Orange, New Jersey 07019.

BIG Profits—Operating your own plastic laminating business with low cost equipment and supplies, money making methods included. Money back guarantee. Jiffy - Box 23485P, Los Angeles, Calif. 90023.

SENSATIONAL "Talking Labels." Brand new. Samples free. Neil H. Tasker, Shamokin, Pennsylvania 17872.

MAKE Money. Do-it-yourself piano tuning kit. Musical knowledge unnecessary. Free information. Piano Tuning, Box 5637, Normandy, Missouri 63121.

## MONEYMAKING OPPORTUNITIES

OPERATE Profitable, inexpensive importing, drop-shipping, mail order business at home. Everything below wholesale! Brendell's, Waynesville, N.C. 28786.

MINK Raising information free. Lake Superior Mink Farm Inc., Superior, EE1, Wisconsin 54880.

EARN \$240.00 a month at home, spare time, doing only two \$5.00 invisible mending jobs a day. Big money paid for service that makes cuts, tears disappear from fabrics. Steady demand. Details free. Fabricon, 1532 Howard, Chicago, Ill. 60626.

BIG Money raising fishworms and crickets. Free literature. Carter Hatchery Plains, Georgia 31780.

SHARP \$\$\$ Opportunity! One low-cost machine sharpens—serrates knives, scissors, pinking shears. Earn \$6-\$9 hourly in spare time. Professional results without experience. Free details. Beaver Machine, 137C, Nielsen Bldg., Eugene, Oregon.

RAISE Rabbits and fishworms on \$500 month plan. Free details. White's Rabbitry, Mt. Vernon, Ohio 43050.

LEARN The secrets of repairing junk batteries. "Fabulous Profits" at home. Details. The Batteryman, P.O. Box 477, San Marcos, Calif. 92069.

VENDING Machines. No selling. Operate a route of coin machines and earn amazing profits. 32-page catalogue free. Parkway Machine Corporation, 715 PPM Ensor Street, Baltimore, Maryland 21203.

MAKE \$100.00 Fast, assembling belts for profit. Redikut's, Loganville 40, Wisconsin.

EARN Money evenings, copying and duplicating comic cartoons for advertisers. Adservice, Argyle-1, Wisconsin.

\$200.00 FROM Sheet 1/4" plywood (scrap). 25¢ refundable. Novelties, 610 So. 24th, Elwood, Indiana 46036.

EARN \$500.00 Monthly clipping ads at home. No investment—experience. Free information, send stamp. American, Box 56, Muncie, Kansas.

FORMULA—Enlarges, toughens worms overnight. Sample, \$2.00. Literature raising worms soilless method. Samples smoking tobacco free. Three Oaks Ranch, Dresden, Tenn. 38225.

CLIP Newspaper items, \$1.00-\$5.00 each. Details free. Walter, Box 1360-P, Erie, Pa. 16512.

GET INTO CUSTOM UPHOLSTERY. Turn Old Furniture into big \$\$\$ spare time. Reupholster chairs, divans like new. Make custom slip covers, drapes. No experience required. We supply everything. Write for Big FREE Illustrated Book on Easy Home Instruction and how we start you in big \$\$\$ home business. Modern Upholstery Institute, Box 899-JR, Orange, Calif. 92669.

\$2000.00 MONTHLY Possible. New self adhesive photo album sells itself. No paste, corners. Free details. Keating, 3524 PM-1 Brighton, Pittsburgh, Pa. 15212.

HOW To Make money writing short paragraphs. Information free. Barrett, Dept. C-27-N1, 6216 N. Clark, Chicago 60626.

MAKE Big easy profits making costume jewelry at home, spare time! Quick, easy to make; easier to sell! Details free! Don-Bar, 2934 Fullerton, Dept. A-207, Chicago, Ill. 60647.

DETECTIVES — Secret investigations. Experience unnecessary. Detective particulars free. George Waggoner, M125 West 86th, New York 10024.

"GAG" Cartoons for money! Free sample lesson and details! Magazines spend over a million dollars yearly for funny ideas! Home study course trains you to cartoon your ideas professionally, how and where to sell. State age. Evans School, Box 57, Dept. PML, Brookfield, Illinois 60513.

HOW You may now be awarded valuable U.S. Government oil and gas leases. Send \$1.00. Public Lands, P.O. Box 326, Abilene, Texas 79604.

WATCH REPAIRING. Swiss and American watches. Develop skill step by step in spare time at home. Tuition \$5 monthly. Diploma awarded. Free sample lesson. Chicago School, Dept. YNA, Fox River Grove, Illinois 60021.

AMAZING Successes through franchises! Become exclusive franchise holder in your territory. Information rushed. National Franchise Reports, WP-528, 333 North Michigan, Chicago 60601.

EXPLOSIVE!!! Mailorder moneymaker! Different! Exciting! Profitable! Details free. Global Trader, Box 4332-PM, Knoxville, Tennessee 37921.

FREE. 206 Easy ways to make money taking orders for exciting new products—spare time. Send name, age, for 3 months free subscription. Opportunity Magazine, 850 N. Dearborn, Dept. 17-AM, Chicago.

OPERATE Ad Market—Earns to \$5 hour. Sell dollar ads. By mail & phone. Convincing proof. Admart-4, Harlingen, Texas.

CREATIVE Mail Order. Success, money. Products sold only by you. Free details. Readis Books, 303B West 42nd Street, New York, N.Y. 10036.

1000 WAYS Of getting rich or Book of Knowledge. Immense collection of Money-making discoveries, information, formulas, recipes, secrets, methods. Only \$2. Di-Biano, 6050 Blvd. East, West New York 1, N.J. 07093.

HOMEWORK Pays! 75 Companies begging for spartime workers! Complete instructions, list, \$1.00. Opportunities, Box 26034-RM, Indianapolis, Indiana 46226.

MAKE BIG MONEY Taking orders for Stark DWARF Fruit Trees. Everybody can now grow Giant Size Apples, Peaches, Pears in their yards. Also Shade Trees, Shrubs, Vines, Roses, etc. Outfit FREE. Stark Bro's, Desk 30117, Louisiana, Missouri 63353.

MANUFACTURER Offers quality line of automotive chemicals. High profits, repeat sales, choice territories open. Write for catalogue and details. CLEANBRIGHT, Dept. 201, 2202 Folin Street, Bronx, N.Y., 10457.



**INCREASE Your Income.** Details, 25¢. Pretos', 252 Monroe, Warren, Ohio 44483.

**MONEY BY MAIL.** Your own business. Details. Buchwalter Sales, 834 - 175th St., Dept. 14, Hammond, Indiana 46324.

**MAKE Extra money spare time—**compile mailing lists, do addressing, become Notary Public. Particulars free SMIDT ADDRESSING SERVICE, 405-PM Richardt, Evansville, Indiana 47711.

**MADE \$10,000.00** Typing at home. Guaranteed proof. Amazing information. 15¢ Lenore Felgen, 30 Washington, Oak Park, Ill. Dept. OPM.

**MAKE Money.** Be popular. Be a Master of Ceremonies. Book 3.00. John Roby, 3703A Nassau, San Diego, California 92115.

**\$1000.00 MONTHLY** Collecting delinquent accounts by mail. Continental Associates, 1004 Grand, Des Moines, Iowa 50309.

## PROFITABLE OCCUPATIONS

**CHROME Plating.** Instructions, equipment and supplies. Platers' Supply, P.O. Box 565, Lugo Station, Los Angeles, Calif.

**YOUR Own sign shop—**Signs, 1017 W. Mulberry, Springfield, Ohio.

**FREE Catalogs.** Repair air conditioning refrigeration. Tools, supplies, full instructions. Doolco, 2016 Canton, Dallas, Texas 75201.

**AUCTIONEERING—**Resident & home study courses. Veteran approved. Auction School, Ft. Smith, Arkansas.

**RAISE Rabbits** for us on \$500 month plan. Free details. White's Rabbitry, Mt. Vernon, Ohio 43050.

**BIG Money** raising fishworms and crickets. Free literature. Carter Wormery, Plains, Georgia 31780.

**BECOME A mortgage broker,** earn \$10,000 to \$50,000 a year. Details free. United, Box 6284-C, Marietta, Georgia 30060.

**BAKE New greaseless doughnuts** in kitchen. Sell stores. Free recipes. Michael Ray, Waseca, Minnesota 56093.

**EARN \$240.00 A month** at home, spare time, doing only two \$5.00 invisible mending jobs a day. Big money paid for service that makes cuts, tears disappear from fabrics. Steady demand. Details free Fabricon, 1586 Howard, Chicago, Ill. 60626.

**SHARPEN Scissors, Pinkers.** Inexpensive equipment, tools, supplies. Blackhawk's, Sheldahl, Iowa 50243.

**INVESTIGATE Accidents.** Earn \$750 to \$1,400 monthly. Car furnished. Expenses paid. No selling. No college education necessary. Pick own job location. Investigate full time. Or earn \$8.44 hour spare time. Men urgently needed now. Write for Free literature. No obligation. Universal, CPM-1, 6801 Hillcrest, Dallas, Texas 75205.

**RAISE Pheasants** on \$100 week plan. Little capital and space can make you independent. Free details. Great Central System, Columbus 1, Kansas.

**HOW To Make Money Writing Short Paragraphs.** Information Free, Barrett, Dept. C-27-N2, 6216 N. Clark, Chicago 60626.

**MAKE Money** with your camera. Free report. Camera Arts' Exchange, Box 101-M, Hollywood, Calif. 90028.

**BIG Money** in survey and research work. Free details. Nicks, 732 Atherton Dr., Metairie, La. 70001.

**SCIENTIFIC MASSAGE: BIG EARNINGS** uncrowded profession. Learn spare time at home. Diploma awarded. Free catalog. Write: Anderson School, Dept. A-1C Princeton, Illinois.

**FREE Electronics catalog.** Tremendous bargains. Send postcard. Electrolabs, Department C-658B, Hewlett, New York 11557.

**YOUR Tape recorder + Spare Time = Profits.** Details. JBB, Box 3331, Granada Hills, California 91344.

**NET \$18.00** From a 50¢ sheet of window glass. Easy, interesting. Details, \$2.00. Frick, Box 535, Grand Blanc, Mich. 48439.

**FREE Book "990 Successful, little known businesses."** Work home! Plymouth-17R, Brooklyn, New York 11218.

**FREE Facts and descriptive bulletin.** Be an air conditioning, refrigeration, and heating serviceman. High pay, jobs open everywhere, operate your own service business. No school or correspondence necessary. Write Doolco. Trouble Shooter, 2016 Canton, Dallas, Texas.

## SALESMEN—DISTRIBUTORS

**NEGRO People** buy on sight, 100% profit. Nationally advertised cosmetics. Free sample offer. Valmor, Dept. AD, 2411 Prairie, Chicago 60616.

**JOIN An established firm.** Over 30 years with Calendars and advertising specialties. Bonuses-prizes-free pens. Fleming, 6535-A Cottage Grove, Chicago 60637.

**SELL Advertising book matches.** Write us today, we put you in business by return mail; handling complete line ad book matches in demand by every business right in your town! No investment; everything furnished free! Top commissions daily. Superior Match, Dept. M-167, 7530 S. Greenwood, Chicago 19, Illinois.

**\$1,000.00 a month** for making dramatic 3-second demonstration of amazing Lightweight Presto Fire Extinguisher. New chemical used by Airforce snuffs out fires instantly. Only \$4.95. Terrific commissions. Millions want it. Free Kit, Merlite, 114 E. 32nd, Dept. P-66G, New York 16.

**\$200.00 WEEKLY.** Every business and professional man has No-pay accounts. Send them to us for collection. We pay you for each name listed. No collecting. Dept. PM-12 General Finance Company, Pickwick Bldg., Kansas City, Mo. 64106.

**SENSATIONAL New longer-burning light bulb.** Amazing free replacement guarantee—never again buy light bulbs. No competition. Multi-million dollar market yours alone. Make small fortune even spare time. Incredibly quick sales. Free sales kit. Merlite (Bulb Div.), 114 E. 32nd, Dept. C-73G, New York 16.

**HUMIDIFIERS.** Sell and/or install in homes, make twenty-fifty dollars per unit, write for particulars. Royal Humidifier, Washington Square Building, Royal Oak, Michigan 48067.

**JOIN Moxey Industrial, Division.** Big pay. Box 8614, Jacksonville, Fla.

**MAKE Extra money** introducing new Runless Seamless Nylons at amazing low direct-from-mill price, 59¢ a pair! Friends snap them up by the dozen. Write for free sample stocking and kit. American Hosiery Mills, Dept. 134, Memphis, Tennessee 38101.

**LONG Needed invention.** Man to contact service stations. Huge profits. Cyclo Mfg., 3816 Dahlia, Dept. 100, Denver, Colo.

**EXCITING New product.** Big profits! Exclusive! Test it yourself. Sample offer. Send no money. Just your name. KRISTEE, 150, Akron, Ohio.

**3 DAYS Travel—4 days** at home. Man over 45 for short trips near home. Worth up to \$8,000 to \$12,500 in a year, plus car as bonus. Air mail D.C. Dickerson, Pres., Southwestern Petroleum Corp., 534 N. Main, Fort Worth, Texas 76101.

**GET New shirt outfit free!** \$90 weekly on 5 average orders a day. Famous quality made-to-measure dress and sport shirts at \$4.95 up, sell to all men. No experience needed. Full or part time. Write: Packard Shirt Co., Dept. 619, Terre Haute, Indiana 47808.

**NEW Car Thief Signal.** Lightning seller. Samples for trial. NORTHWEST ELECTRIC, Ave. 206, Mitchell, S. Dak.

**EARN Big Commission** full or part time. Show America's largest line low priced Business Printing and Advertising Specialties. Plus calendars in season. No experience. No investment. No collections or deliveries. On-the-spot commissions. Big Free Sales Kit samples hundreds items used daily by businessmen. Merchandise bonuses for you. Free gifts for customers. Build profitable repeat business. Start now. National Press, Dept. 70C, North Chicago, Ill. 60064.

**ANYONE CAN SELL Hoover Uniforms.** Full or spare time. Unlimited money-making opportunities. Immediate top commissions. Big market. No investment. Send for FREE Sales Kit. HOOVER, Desk K-17, New Hyde Park, N.Y. 11040.

**FREE. 206 Easy Ways** to make money taking orders for exciting new products—spare time. Send name, age, for 5 months free subscription. Opportunity Magazine, 850 N. Dearborn, Dept. 17-AS, Chicago.

## AGENTS WANTED

**ESTABLISH Your own business.** Low prices on used clothing, shoes, household goods. Unlimited profits. Free catalog. Northwestern Distributors, 2129 No. Western Avenue, Chicago, Illinois 60647.

**MAKE \$50.00 Daily** selling air operated vacuum cleaners to service stations. Free details. Inka Industries, 2401 Crocker, Houston, Texas 77006.

**PRINTING.** Advertising salesmen—Excellent moneymaking sideline selling decalcomania name plates, small quantities. Automobile initials, sign letters. Free samples. Ralco, XL, Boston, Mass. 02119.

**YOUR Own business—**Used suits \$1.50; overcoats 65¢; mackinaws 35¢; shoes 12½¢; ladies coats 30¢; dresses 15¢. Enormous profits. Catalog free. Nathan Portnoy Associates, 2109-AA Roosevelt Road, Chicago 8, Ill.

**SELL Greeting cards—**Make extra money. All occasion assortments; Easter, Valentine, stationery, gifts, toys, jewelry. Experience unnecessary. Salable samples on approval. Free catalog, bonus plan. Write Hedenkamp, 361 Broadway, Dept. CD-3, New York 10013.

**250,000 NEW Mothers** every month! Bonanza for Bronzed Baby Shoes! \$50.00 a day profit. No investment, no inventory. Full or spare time. Exciting details FREE. Sentimental, 1919 Memory Lane, Dept. 8A, Columbus, Ohio 43209.

**WILL You test new items** in your home? Surprisingly big pay. Latest conveniences for home, car. Send no money. Just your name. Kristee, 120, Akron, Ohio 44308.

**WANT TO MAKE UP TO \$100 A WEEK** spare time, and get free shoes for life, too? No investment. Rush card for free details. MASON SHOES, K-570, Chippewa Falls, Wis. 54729.

**FREE. 206 Easy Ways** to make money taking orders for exciting new products—spare time. Send name, age, for 5 months free subscription. Opportunity Magazine, 850 N. Dearborn, Dept. 17-AA, Chicago.

**\$250.00 WEEKLY.** Sensational new product eliminates ironing. Sample \$1.00. LMJ Chemical Corp., Dept. PM171, Freeport, N.Y. 11520.

**SENSATIONAL Profits** selling Princess Jewelry, free details. Vicur's, Grafton, Nebr. 68365.

**RAISE Rabbits** for us on \$500 month plan. Free details. White's Rabbitry, Mt. Vernon, Ohio 43050.

**BE The Popular Mechanics** representative in your neighborhood and earn big profits in your spare time. Write Popular Mechanics, Room 4A, 250 West 55th St., New York 19, N.Y.

## EMPLOYMENT INFORMATION

**FOREIGN And USA job opportunities** available now. Construction, all trades. Earnings to \$2,000.00 Monthly. Paid overtime, travel bonuses. Write: Universal Employment, Dept. C-1, Woodbridge, Connecticut 06525.

**TREMENDOUS Opportunities.** U.S.A., Overseas. Choose jobs-locations, transportation. Free details. Occupations, International Airport, Box 100-9, Jamaica 30, N.Y.

**BOOMING Australia** needs your skills! Government assisted passage. Write: Irv Hoyer, 1117A S.W. Columbia, Portland, Oregon.

**FOREIGN Employment.** Construction, other work projects. Good paying overseas jobs with extras, travel expenses. Write only: Foreign Service Bureau, Dept. PM, Bradenton Beach, Florida 33510.

**AUSTRALIAN Opportunities galore!** Government assisted passage. Information \$1.00 (Guaranteed!) Austco, Box 3623-E, Long Beach, Calif. 90803.

**AUSTRALIA Wants You!** Good pay. Adventure, government paid transportation allowance! Send \$1.00 for Australian Opportunities Handbook. International Services, Box 12-A1, Greenfield, Indiana 46140.



**JOBS, \$100 Weekly, beginners, men, women, "Work At Sea" Passenger ships, freighters. Enclose \$1.00. Information. Box 52, NYC 10016.**

**SECRETS** Of landing a better job. 16 page booklet "The Six Dynamics of Landing the Job You Want" written by president of one of America's largest personnel placement agencies. Contains six simple steps that may easily add tens of thousands of dollars to your lifetime income. Send \$1.00. Money back guarantee. Superior Consulting Services, 3600 Wilshire Boulevard, Los Angeles, California 90005.

## HELP WANTED

**OVERSEAS Jobs**—Europe, South America, Far East, etc. 2,000 openings in all trades. Construction, Office Work, Sales, Engineers, etc. \$400 to \$2,500 month. Expenses paid. Free information, write Overseas Jobs, International Airport, Box 536-M, Miami, Florida 33148.

## FARMS—REAL ESTATE

**400,000,000 ACRES** Government public land in 25 states. Some low as \$1.00 acre. 1966 report. Details \$1.00. Public Land, 422-PM-1, Washington Building, Washington, D.C.

**ABANDONED Timber Leaslands!** Choice 640 acre Sportsmen's paradises still available—\$20.00 plus \$6.50 Taxes yearly. Maps, pictures, \$1.00 (Refundable). Director, Erindale 4, Ontario, Canada.

**CANADA'S Finest lands, \$4.00 an acre and up.** Acquired through estate liquidations. Suitable for hunting, fishing, camps, cottages, farming, timber, minerals, investment. Small monthly payments. Free descriptive booklet, Canadian Estate Land, 2788-P Bathurst Street, Toronto, Canada.

**\$1 ACRE**—Canadian border—hundreds campsites, islands, farmlands, directly from tax authorities. (Non-profit). Lists, photographs mailed. Register, Room 303, 92 King St. E., Toronto 1, Canada.

**CANADIAN Vacation lands:** Full price \$385.00. 40 acres. \$10 month. Suitable cottage sites, hunting, fishing, investment. Free information. Land Corporation, 3768-C Bathurst, Downsview, Ontario, Canada.

**FREE Fall-Winter Catalog!** Bargains galore! Coast-to-Coast! Low prices, easy down payments! (Please include zip code). Safe-Buy Real Estate Agency, 712-PM, West Third, Little Rock, Ark. 72203.

**FLORIDA CAMPSITES**—Deep in the heart of the great Ocala National Forest—where few individuals have the privilege of owning land. Isolated yet accessible, with electricity. Good fishing, hunting, Warranted Deed, unrestricted, pitch tent, park trailer, build lodge. Free maps and photos. Howard Vernor, DeLand, Florida, AD66LS149

**BUY** Without risk for retirement, vacation, or investment—under America's only "No-Risk Purchase Plan"—in Carolina Coast multi-million dollar, 14,000-acre development. 10 year money-back guarantee. Payments less than \$5.00 monthly. Shopping center, motel, hunting, fishing, golf, country club, right on property. Private ocean beach. Write for free literature. (Not offered to residents of California, Florida, New York.) Boiling Spring Lakes, Southport 1-C, North Carolina 28461.

**CANADIAN Lands, seized and sold for taxes.** Our 50th annual series of lists, describe many choice properties, situated from coast to coast, acquired by us through Tax Sale. Priced as low as five dollars per acre, guaranteed perfect title, small monthly payments, no mortgage. Beautifully situated hunting and fishing camps, where there is real sport; summer cottage sites, heavily wooded acreages. Now is the time to invest in Canada's minerals, forests and farms. Write today for free twenty page booklet with full explanation. Tax Sale Service, Room 301D, 85 Bloor St., East, Toronto 5, Canada.

**NORTH Florida lots \$69.00.** Casper Corporation, 3970 N.W. 177th Street, Miami, Florida 33054.

**\$1.00 ACRE** Government land in U.S. and Canada. Details \$1.00. Land Service, Box P4496, Washington, D.C. 20017.

**50¢ ACRE**—Government land, most Canadian Provinces. Fishing, hunting, camping, retirement. Details. Property Information Service, Box 1365, Union, N.J. 07083.

**GOVERNMENT Lands . . . Low as \$1.00 Acre!** Millions acres! For exclusive copyrighted report . . . plus "Land Opportunity Digest" listing lands available throughout U.S., send \$1.00. Satisfaction guaranteed! Land Disposal, 222-PA Georgetown Building, Washington, D.C. 20007.

**FREE!!! NEW SPRING 1967 Real estate catalog!** Farms, ranches, homes, businesses, vacation and retirement properties coast to coast! Please use your zip code. UNITED FARM AGENCY, 612-PM West 47th St., Kansas City, Mo. 64112 PLaza 3-4212.



## FLOWERS, PLANTS and NURSERY SUPPLIES

**EVERGREEN** — Everlasting - Bunching onions, \$1.50 qt. New-largest size peanuts —40 seed start, \$2.00. Cary-B Nurseries, Inverness, Fla. 32650.

**NEW Largest size peanuts—40 seed start, \$2.00.** Free sample, Cary-B Nurseries, Inverness, Fla. 32650.

**CARY'S Wonder tree.** Exceptionally fast growing, freezeproof, hardwood shade, anywhere, anytime, comfort, appearance, improve investment fast. Free pictures. Interesting literature, 365 days return. Replacement guarantee. Write: Cary's-B Nursery, Inverness, Fla. 32650.

**WANT Greatest cash crop working for you?** Write Ginseng, Asheville 53, N. C.

**600 ASSORTED Sweet onion plants** with free planting guide \$3.00 postpaid. Topco, "home of the sweet onion", Farmersville, Texas 75031.

**DAHLIAS:** Free catalog lists 450 select varieties. DOUGLAS DAHLIAS, Dept. W-1, Myrtle Creek, Oregon 97457.

## HOME CRAFTSMEN

**FREE!** Big 80 page Leathercraft catalog. 100's of new items! MacPherson Bros., Dept. K, 730 Mission St., San Francisco, Calif. 94103. Please include your Zip Code.

**KNOCKDOWN Cedar chests,** also over fifty kits. Catalog 25¢. Giles Kendall Co., Huntsville 2, Alabama.

**2512 PLANS.** Patterns, things to make, do. Fun. Profit. World's greatest selection. Catalog 10¢. Craftplans, 18250-A Harwood, Homewood, Ill.

**CABINETMAKING MADE EASY** and "How to Make Formica Counter Tops," two excellent guides let you build kitchen cabinets and counter tops like professionals. Extraordinary guides bring master craftsmen's shortcut methods. Satisfaction guaranteed. Write: Japs, 126-P Seventh North, Hopkins, Minn. 55343.

**101 PATTERNS** Of smart gifts, novelties, shelves, action windmills plus "Make Money Jig Sawing." \$1.00. Mastercraft, 125J5M, 7041 Olcott, Chicago 60631.

**WALNUT** And Cherry tapered legs, lumber, gunstock blanks, picture frame moulding. Midland Lumber Company, Box 262, Savannah, Missouri 64485.

**PLANS** for pool table with extra two-face top for table tennis and model railroad. Blueprints B1209 and building instructions \$3.50. Popular Mechanics Service Bureau, 575-M Lexington Ave., New York, N.Y. 10022.

**PLANS.** Bird houses, feeders. Illustrated catalog 25¢. Yeager, 1665 Linden, Homewood, Ill. 60430.

**FREE!!!** "Four ways of mitering picture frame moulding." Guaranteed—moulding available. Write: Japs, 126-P, Seventh North, Hopkins, Minnesota 55343.

**STRUCTURAL ADHESIVES** To eliminate mechanical fastenings. Avoid clamps. Use liquid self-hardening plastics and rubbers for banding, casting, molding, coating and mould-making. Select desired use from chart and formulate yourself. Informative manual and catalog tells how. \$2.00 refundable with order. Polycraft, 326 E. 6th St., N.Y.C. 10003.

**BUILD Unique pool table.** Simple, complete blueprints \$3.00. Plans, Box 298-A, Excelsior, Minnesota 55331.

**BUILD** All steel wood lathe, blueprints \$1.00. Heavy duty floor model, blueprints \$2.00. Plans, Box 298-N, Excelsior, Minnesota 55331.

**WOODWORKING Catalog and Manual 25¢.** Plus free "101 Project Ideas." World's most beautiful veneers, lumber, plywood! Wood finishing, upholstery supplies. Cane. Lamp parts. Furniture hardware. Animal whittling blocks. 2,000 workshop products. Constantine, 2051-A Eastchester Road, Bronx 10461.

## DO-IT-YOURSELF

**SEVEN GREAT TOOLS** for a fraction of the normal cost for one. A fantastic COMBINATION LATHE, SANDER, SHAPER, TOOL SHARPENER, POLISHER, DRILL and PLANER. Build Multiple Tool yourself. Send \$1.50 for complete plans and materials list. MULTIPLE TOOL, Wycoff Station, Box 29, Brooklyn, New York 11237.

**AUTOMATIC Washer repair manuals** any make, model. 13 Different manuals, \$2.75 each postpaid. Dryer repair manuals for G.E., Kenmore, RCA Whirlpool, \$2.75 each postpaid. Major Appliance, 13108 Caine Ave., Cleveland, Ohio 44105.

**FREE Make 'Em and Save Leathercraft Idea Manual.** Tandy Leather Co., 1001 Foch, C57, Fort Worth, Texas.

**WILL FORMS** and instructions written by attorney. \$1.00. Research, Box 235M, Brea, Calif. 92621.

**SAVE \$10-\$25.** Exterminate your own home. Professional secret. Send \$1.00 United Pest Control, P.O. Box 205, Littlefield, Texas 79339.

**CAR** Or truck won't start in winter! Send \$1.00 for instructions on how to make an Oil Pan Heater. Simple. Write: Don Bash, Box 151, Forest, Ohio 45843.

**PAINT** Your own wall mural! Inexpensive, easy paint-by-numbers pattern kit includes oils, brushes—everything! 35 Decorator designs. Color catalog 10¢. Muralart, 4401-AZ Birch, Newport, California 92660.

**EXERCISE** At home on build-it-yourself physical fitness equipment, including bicycle exerciser, rowing machine, belt massager, and abdominal board. Send \$2.50 for blueprints B1208 and instructions. Popular Mechanics Service Bureau, 575-K Lexington Ave., New York, N.Y. 10022.

**FREE Check-list** covering more than 300 classifications of projects, plans, instructions, service and repair information detailed in Popular Mechanics famous series of instructional booklets, books, patterns, and blueprints. List covers an extremely wide variety of do-it-yourself data on home remodeling, repair and improvement, hobbies, crafts, boating, games, lawn and garden, and hundreds of others. For your free copy of this helpful list, write: Service Bureau, Popular Mechanics, 575 Lexington Ave., New York 22, New York.

## ARTS AND CRAFTS

**MAKE** Figurines, plaques, lawn ornaments, molds, plastercraft kits, liquid rubber. Sample and catalogue 10¢. Wooley Company, Box 29-B, Peoria, Illinois 61601.

**"GETTING Started in Stained Glass"** plus 2 pounds colored glass scraps, 6 feet 3/16 lead and price list—\$3.00. Whitmore-Durgin, 147 Water St., Quincy, Mass. 02169.

**2500 DIFFERENT Plastic molds,** figurines, crafts. Catalog 25¢. Steece Bros., Box 177-PM, Sioux Falls, So. Dak. 57101

## BINOCULARS, TELESCOPES, MICROSCOPES, MAGNIFIERS

**BINOCULARS** Direct from manufacturer. Finest quality, tremendous savings! Request catalog. Koyu, 3860 Crenshaw Blvd., Los Angeles, Calif.

**BINOCULAR Sale!** Free color catalog 100 models \$9.95-\$250.00. Write, United, 9043 So. Western BCAT-6708, Chicago 60620.

**BINOCULARS** Direct from manufacturer. Finest quality, tremendous savings! Request catalog. Koyu, 3860 Crenshaw Blvd., Los Angeles, Calif.

**WORLD Famous "Dynascope" Telescope.** Build your own reflector telescope; mirrors, eyepieces, tripods, accessories. Request free brochures. Criterion Manufacturing, Dept. PP2, Hartford, Connecticut.



**SCIENCE Bargains!** Lenses, telescopes, binoculars, microscopes, kits, parts, war surplus. Send \$1.50 for beginner's 10-lens kit with instruction booklet. Order Stock 2-CH. Request free 148 page Catalog CH. Edmund Scientific Co., Barrington, New Jersey.



## CAMERAS AND EQUIPMENT

**TELL** The more than 1,550,000 avid readers of Popular Mechanics about your products and services. It costs very little to place your classified message in front of these proven mail order buyers. For further details, write: C. A. Martin, Dept. 49N, Popular Mechanics, 575 Lexington Avenue, New York, New York 10022.

## PHOTO SUPPLIES

**TELL** The more than 1,550,000 avid readers of Popular Mechanics about your products and services. It costs very little to place your classified message in front of these proven mail order buyers. For further details, write: C. A. Martin, Dept. 50N, Popular Mechanics, 575 Lexington Avenue, New York, New York 10022.

## PHOTO FINISHING

**CAMERA Fans!** Expert photofinishing and free film returned: 8MM Kodachrome \$3.10; 8 Exp Kodacolor \$3.10; 35MM Kodachrome, 20 slides, \$2.85; 8 exp black & white 90c. We give you free photo stamps to redeem for gifts. Satisfaction guaranteed. Send exposed film or request mailers and complete price list. Direct Mail Photo, Box 8352-PM, Pittsburgh, Pa. 15218.

A FREE Kodak roll returned with each black and white or Kodacolor developed and printed, fast service, lowest prices, guaranteed quality send for free mailers. Economy Photo Service, Dept. P. M., Box 1111, Albany 1, N.Y.

**PHOTOGRAPHY FOR PLEASURE** or profit. Learn at home. Practical basic training. Long established school. Free book. American School of Photography, 835 Diversey Parkway, Dept. 674-011, Chicago, Illinois 60614.

**ENLARGEMENTS** Custom quality 3-5X7s, \$1.00. Valley, Box 38, Monclova, Ohio 43542.

**FAST, Hi-quality finishing.** Kodacolor rolls: eight jumbo prints \$1.98. Twelve \$2.49. Twenty \$3.49. Reprints 15c. Also low B&W prices. Custom Quality Studio, Box 4838-PM, Chicago 60680.

## COLOR SLIDES

**DIME Brings Color Slide and "Slide News"**. Eddings, 8R Roberts, Corning, N.Y. 14830.

35mm **COLOR SLIDE** Catalogue, illustrated 10c postpaid plus free beautiful foreign slide! Free "Travelogue Fun Tins"! Wolfe Worldwide, Dept. 14-17, Los Angeles 90025.

## MOTION PICTURES AND SOUND EQUIPMENT

16MM Sound films features and shorts. Bedner, 5300 So Talman, Chicago.

**FREE Catalog!** Save on 8/mm.-16mm. film and supplies. Superior, 448 N. Wells, Chicago 10.

16MM **SOUND** Shorts, cartoons, features. Cinemax Films, 10134 Perry Ave., Chicago, Ill. 60628.

16MM sound-projectors, films, new, used for sale. Free catalog. National Cinema, 333 W. 57 Street, New York City, N.Y. 10019.

8MM **MOVIES**-2"x2" Color Slides—biggest selection anywhere! Hollywood classics, great comedians, railroads, automobiles, trolleys, wars, travel, wild life, circuses, many others! 16mm. films also. Big catalog free! Blackhawk Films, 86 Eastin-Phelan Bldg., Davenport, Iowa 52808.

16MM **WANTED.** Sold, Exchanged stamp please. Macrie, Breman, Egg Harbor City, New Jersey 08215.

5,000 8-16 MM. Movie films. Free catalogues. International, Greenvale, N.Y.

## RADIO, TELEVISION AND HAM EQUIPMENT

**BRAND** New tubes. World's lowest prices on radio, TV-industrial, special purpose tubes. Write for free parts catalog. United Radio, Newark, N.J.

33c **RADIO & TV** tubes. Free list. Cornell, 4213-17 University, San Diego 5, California.

**FM** Alert Emergency Receivers. Outstanding value for business, fire, police communications. Free folder. Griffin's, 322 West State, Ithaca, New York 14850.

**CONVERTERS** For automobile radios, receive Marine, Police, Fire, 2-3, 30-50, 100-200 megacycles. Any kit \$5.00. Meshna, No. Reading, Mass. 01864.

**POLICE - FIRE - AIRCRAFT - AMATEUR CALLS** on your broadcast radio! Economical, practical! Free catalog. Salch Co., Dept. P-1, Woodboro, Texas 78393.

**TELEVISION** Camera kits. Easy-Economical-Exciting! Catalog 10c. ATV Research, Box 396-PM, South Sioux City, Nebraska 68776.

**FREE** 1967 Allied catalog. Buy from world's largest electronics headquarters, save most on: famous Knight-kits, stereo hi-fi, tape recorders, CB gear, FM-AM, AM shortwave radios, portable TV, phonographs, amateur gear intercoms, P.A., automotive electronics, test instruments, TV antennas, tubes, power tools, parts, books. No money down, 24 months to pay. Write Allied Radio, Dept. 6-AC, P.O. Box 4398, Chicago, Illinois 60680.

**FREE** Electronics catalog. Tremendous bargains. Send postcard. Electrolabs, Department C-656B, Hewlett, New York 11557.

**HOME** Radio course only \$26.95. Free brochure. Send postcard. Edu-Kits, Department 657B, Hewlett, New York 11557.

**SUPER Snooper**, printed circuit kit, \$5.95. Lectronix, Box 1067, Southgate, Michigan 48195.

**CB & Ham goodies**—New catalog free. Tepabco, Browne Blvd., Gallatin, Tennessee 37066.

## HIFI, RECORDS AND ELECTRONICS

**EXCLUSIVE** Free catalogue: extraordinary hard to find hobby party records. Record Suppliers, 300 Chelsea, Louisville, Kentucky 40207.

**FREE — Free — Free — Free — Free — Free** — Free. Send in for your Free one year subscription to Olson Electronics' fantastic value packed catalog—unheard of low, low prices on brand name speakers, changers, tubes, tools, stereo amplifiers, tuners, CB and other values. Credit plan available. If you have a friend interested in electronics send his name and address for a Free subscription also. Olson Electronics, Inc., 547 S. Forge St., Akron, Ohio 44308.

**STEREO** Tapes. Save up to 60% (no membership fees, postpaid anywhere USA). Free 60-page catalog. We discount batteries, recorders, tape accessories. Beware of slogans "not undersold," as the discount information you supply our competitor is usually reported to the factory. Saxitone, 1776 Columbia Road, Washington, D.C. 20009.

**RECORDS!** Discounts on all LP's. Free details. Citadel Record Club, 545 Fifth Ave., Dept. 2, New York 17, N.Y.

**CONVERT** Tapes to discs! Free details. Accurate, Box 2224, Muncie, Ind. 47302.

**TAPE** Recorders, hi-fi components. Sleep learning equipment, tapes. Unusual values. Free catalog. Dressner, 1523C Jericho Tpke., New Hyde Park, N.Y. 11040



## MUSIC AND MUSICAL INSTRUMENTS

**SWISS** Musical movements. Mechanical-electrical. Spielman, 131 West 42nd, New York 10036.

**SONG** Poems Wanted! Collaborate with professional songwriters equally. Share royalties. Songwriters Contact, 1619-D, Broadway, New York 19.

**SONG** Ideas wanted. Write with active professional songwriters with publisher contacts. Records made. Share royalties. Send ideas—free examination. Songwriters' Associates, 236 W. 55th, N.Y. 19-P.

**PIANO** Self-Teaching Book. Includes popular, classical, harmony, theory, chords, scales. Price \$5.00. LaPort Publishing Company, Box 606-P, Franklin, Michigan 48025.

**GUITARS.** \$11.95. Electric double pickups with tremolo bar, \$49.95. Accordions, \$125.00. Concertinas, \$350.00. Drums pearl set, \$99.00. Wind instruments \$39.95. Free catalogs. EZ, Terms, Melody Music, 4951 W. 95th St., Oaklawn, Ill. 60453.

**SONGWRITERS** Wanted! Send song material for recording consideration. Tin Pan Alley, 1650-P Broadway, New York 10019.

**POEMS** Wanted for new songs and records. Send poems. Crown Music, 49-C West 32, New York 1.

**ACCORDION** Top brands. Buy direct. Tremendous discounts. Trade accepted. Free brochure PM. Accordion-O-Rama, 874 Broadway, NYC.

**DRUMS.** Electric guitars, amps, organs. Free catalog M: A.L.A.S. Import Company, 31 East 18th Street, NYC.

**SONGS.** Poems wanted! Accepted songs published, recorded at our expense! Ted Rosen, 17-PM Longwood Road, Quincy, Mass. 02169.

**INCOME** Guaranteed two years for song-poems accepted! Free public releases! Castle's, 203PM West 46th Street, New York City 10036.

**VIOLIN** And guitar makers, send for latest Free catalogue of woods & accessories. International Violin, PM-1, 414 East Baltimore St., Baltimore 2, Md.

**ELECTRIC** Guitars, amplifiers, wholesale. Free catalog. Carvin, PMM, Covina, Calif. 91722.

**GUITAR.** Banjo Making books Plans, woods, necks, tools. List 20c. Satinwood, 510 East 11th Street, New York, N.Y. 10009.

**POEMS** Wanted for new songs and records. Send poems. Five Star Music, 6M Beacon, Boston 8, Mass.

**ACCORDION** Manufacturing, 6343 South Ashland, Chicago, Illinois 60636. Piano Accordions, Chromatics, Hohners, Concertinas, Guitars, Drums, Band Instruments. Wholesale catalogs free.

**PLAYER** Piano books. Free catalog. Vestal Press, Vestal 11, N.Y. 13850.

**NEW** Pianos and organs at discount prices! Famous make brands! Free color catalog. The Piano Warehouse, P.O. Box 228-P, Randolph, Mass. 02368.

**DORIC COMBO ORGAN RECORD** Hear the swinging sounds for 25c. Doric Organs, Box 1, Convent, N. J. 07961.

**FREE** Recording, your songpoem. For information send poems: Mustcrest, 12044 Chandler Blvd., No. Hollywood, Calif. 91607.

**ACCORDIONS, GUITARS, BAND INSTRUMENTS!** Save to 50%. Famous makes. Easiest terms. Trades accepted. Free home trial. Free discount catalog. Mention instrument. INTERNATIONAL MUSIC MART, 5535-R Belmont, Chicago 60641.

**ORGAN** Teach-Yourself! Book. Easy system. Fun. Most complete ever. Simple professional "tricks". Popular show, classical, theory, chords. Pre-publication special \$5.00. R. Best, 8459 Wetherfield, Cincinnati 45236.

**SONGWRITERS ATTENTION!** Amazing new book. Free details. Jayem, 1619F Broadway, Suite 605, New York 10019.

**SONGPOEMS** Wanted. Send poems for offer. Nashville Music Institute, Box 532-PM, Nashville, Tennessee.

**PIANO** Player actions rebuilt. Details free. Jules Shaffer, Mount Union, Penna.

## EDUCATION AND INSTRUCTION

**MINISTERIAL** Home study course. Free qualifying examination. Soms, 5955 Powdermill Road, Kent, Ohio.

**FCC** FIRST Class license in 6 weeks—Results guaranteed—Nation's Highest success rate. Write Elkins Institute, 2603D Inwood Road, Dallas, Texas 75235.

**LEARN** Auctioneering. Term soon. Free catalog. The Reich American School of Auctioneering, Inc., Box 850, Mason City 1, Iowa.



**FREE!** "Learn Fast As Geniuses!" Castle's, 203 (Q) West 46th, New York City 10036.

**DETECTIVE Training**—for free information write to: 1917M, North Kenneth Ave., Chicago, Illinois 60639.

**PROFITABLE National Camera Repair School** training at home! PM1, Englewood, Colorado.

**COMPUTER Fundamentals** at home. Pay as you learn. Course designed to meet the demand for trained personnel in the nation's fastest growing industry. Pennies daily can prepare you for higher pay. Write Gulf Computer Institute, Inc., PM1, Box 68, 1013 Caillavet Street, Biloxi, Mississippi 39533.

**PIANO Tuning** pays. Big money in spare time. Learn at home. No musical knowledge necessary. Phonograph, records, tools and instructions furnished. Electronic tuning also taught. Free catalog. Capital Tuning School, 3160 S.W. 16th Court, Ft. Lauderdale, Fla.

**MISSOURI Auction School.** Free catalog! 1330-03 Linwood, Kansas City, Mo. 64109.

**DETECTIVE Course.** Free information. Universal Detectives, Box 8180-F, Universal City, California, 91608.

**SWEDISH Massage** and Physical culture pays big profits. Learn at home. Diploma. Free catalog. National Institute, Dept. E17, 307 North Michigan, Chicago 1.

**LEARN Asleep or awake!** Records, tapes, equipment! Free catalog! Drawer, PM-400, Ruidoso, New Mexico 88345.

**AUTOSUGGESTION.** Sleep-learning headquarters! Tapes, records, books. Gigantic catalog free. Research Association, Box 24-PM, Olympia, Washington.

**PIANO Tuning** quickly learned with home study course. Diploma granted. American Tuning School, Gilroy, Calif.

**USED Courses!** Books! List 10¢. Smith's, 124 Marlborough, Salem, Mass. 01970.

**FREE Bible course.** Degree, PM. 143 South Gregg, Charlotte, N.C. 28208.

**GET A British degree.** Divinity, Philosophy, Radionics, 35 courses. Prospectus free. Brantridge Forest School, "Lodge" Brantridge Forest, Balcombe, Sussex, England.

**HIGH School diploma** at home. Licensed teachers. Send age, highest grade completed for free detail. No salesman will call. Southern States Academy, Professional Bldg., Dept. 16, Decatur, Ga.

**PENMANSHIP Corrector.** Improve poor penmanship quickly. Details free. Ozment, Box 665-34, St. Louis, Mo. 63188.

**INVESTIGATOR'S Course.** Credentials, diploma. Free information. Southwestern Institute Criminology, Box 201, Geronimo, Oklahoma.

**SWEDISH Massage.** Foot technique. Post graduate. Home study. Residential. Diploma. Dr. Swanson's Illinois Licensed School, 3809-PL Alta Vista, Chicago 60613.

**MEN Wanted.** Earn \$125 a week and up. Master a trade with a future. Learn auto diesel mechanics in our shops. You learn with tools on real equipment. Earn while you learn. Many of our graduates earn \$125 a week and up. Write for free bulletin: Dept. 256, Auto Diesel College, Nashville 3, Tenn.

**OWN Collection agency.** "Little Gold Mine!" Franklin Credit, Roanoke, Virginia.

**PROFESSIONAL Engineering,** electronics. Free prospectus. CIST, Suite 805, 263 Adelaide Street, West, Toronto, Canada.

**OIL Burner** servicing quickly learned. Free information. Mar-Lin Institute, Box 66095, Portland, Oregon 97266.

**BOOKKEEPERS.** Operate your own "Dollar-A-Week" system. Ellis, Box 200, Cedar Grove, North Carolina.

**PIANO Technology**—Electronic organ servicing, learned easily at home. G.I. Approved. Free booklet. Niles Bryant School, Dept. P, 3631 Stockton, Sacramento, California 95820.

**PENMANSHIP Manual:** Improve ornamental, flourishing, business writing. Details free. M. Tevis, Chillicothe, Mo. 64601.

**NAVIGATION:** Start your study of this ancient science with our two simplified booklets "Position Finding With The Sextant" and "True Course Setting With The Pelorus." Just \$1.00 each. Send to Davis Instruments Corp., Dept. PM2, P.O. Box 1543, Oakland, Calif. 94621.

**USED CORRESPONDENCE** courses and books sold and rented. Money back guarantee. Catalog free. (Courses bought.) Lee Mountain, Pisgah, Alabama.

**"STAMMER—Stutter—no more."** (Dr. Young.) Write: Gaucho, Box 9309-S7, Chicago 60690.

**PRE-PATENT IDEA WRITING:** Editing service. Details \$1.00, self-addressed-stamped envelope. Clifford Johnson, 1345 4th Avenue, Pm, Rockford, Illinois 61108.

**COMPLETE YOUR HIGH SCHOOL** at home in spare time with 70-year-old school. Texts furnished. No classes. Diploma. Information booklet free. American School, Dept. X145, Drexel at 58th, Chicago, Illinois 60637.

**PROPHECIES FOR THESE LAST DAYS.** From Bible, for \$1. Humanitarian, Box 203, Neah Bay, Washington 98357.

**PASS Civil service examinations.** Alena, 1513 64th Street, Brooklyn, New York 11219.

**BE A Real Estate Broker.** Big earnings. Free catalog. Weaver School of Real Estate, 3519-P Broadway, Kansas City, Missouri 64111.

**EDUCATION** Through extension. Professor Nichols, 16810 Hawthorne, Lawn-dale, California 90260.

**LEARN Civil and criminal investigation** at home. Earn steady, good pay. State age. Institute Applied Science, 1920 Sunnyside, Dept. 161, Chicago, Illinois 60640.

**WATCH REPAIRING.** Learn to repair American and Swiss watches in spare time at home. Diploma awarded. Free sample lesson. No obligation. Chicago School, Dept. YN, Fox River Grove, Illinois 60021.

**LEARN TECHNICAL WRITING**—Qualify at home for high paying prestige career not requiring college. Growing demand in all industries for tech writers now. Low monthly tuition. Easy to understand. FREE career book, sample lesson. American Technical Writing Schools, Dept. PMC-17, 5512 Hollywood Blvd., Hollywood, Calif. 90028.

**REFRIGERATION** And air conditioning at home in your spare time. Details free. Terryssam, Box 798, Miami Springs, Fla. 33166.

**ADVANCED Police-Investigator training.** Write: Criminology, Box 5014-M, Eugene, Oregon 97403.

**DRAFTSMANSHIP**—Design home study simplified. Zero Engineering, 2437 West 69th, Chicago 60629.

**GAME Warden.** Government hunter, forestry, park and wildlife services announce job openings regularly. Prepare at home for outdoor work, good pay, security. Complete information free! Write North American School of Conservation-AZ, Newport, Calif. 92660.

**MIND POWER BRINGS MONEY!** Scientific studies prove the fastest way to obtain business success, conversational ability and popularity is to simply increase your mental efficiency. Now you can earn more money and increase your mental efficiency with an amazingly simple "mental exercise" that gives you a powerhouse memory, rapid thinking, creativity, will-power. Free report describes method. Sentec-FX, 433 Ellis, San Francisco 94102.

**HELP** Wanted advertisements in newspapers nationwide prove urgent demand for draftsmen. "Quick-learn" home-study plan has helped thousands of beginners succeed. Good salary! Clean work. Drafting career kit sent Free! Write: North American School of Drafting-AZ, Newport, California 92660.

## FOR INVENTORS

**INVENTORS:** Assistance with any problem. Protection, promotion, searches. Financial assistance. Strictest confidence. Free record of inventions forms, information. New York Invention Service, Dept. 1, 160 Broadway, New York, N.Y. 10038.

**INVENTORS:** Your ideas and inventions (patented; unpatented) expertly searched, developed for commercial appeal and cash/royalty sales to manufacturers by professional Invention Developer with excellent record of experience. B.S., Industrial Engineering; United States Patent Office former Patent Examiner United States Government former Patent Advisor. Second decade reliable service! Member: United States Chamber Commerce. Free "Invention Record" and "Recommended Protection Procedure". Airmailed! Write: Raymond Lee, Invention Developer, 130-N West 42nd, New York City 10036.

**PATENT Searches.** Including copies of related U.S. patents. \$6.00. Inventors, attorneys, manufacturers use my "world-wide" airmail service! "Invention Record" form and "Information Every Inventor Needs." sent free! Miss Hayward, 1029P Vermont, Washington 5, D.C.

**U.S. Patent Office Searches,** 234 Broadway, Room 3615, New York. Free invention certificates.

**PATENT Searches** including Maximum speed, full airmail report and closest patent copies, \$6.00. Quality searches expertly administered. Complete secrecy guaranteed. Free Invention Protection forms and "Patent Information." Write Dept. 15, Washington Patent Office Search Bureau, 711-14th, N.W., Washington 5, D.C.

**PATENT** And invention development, by licensed professional patent engineer and U. S. Patent Office former examiner, and engineering specialists. Your inventions and ideas engineered for patent protection and commercial value. Inventions developed by us negotiated for cash or royalties with our nationwide contacts. Send for free protection "Invention Certificates" and further interesting, valuable patent information. George Spector, Licensed Professional Patent Engineer, Woolworth Building, New York.

**PROFESSIONAL Patent searches,** \$6.00 including official U.S. Patent Office copies of related U.S. patents! Prompt, dependable service. Certified, airmailed! For free "Invention Record Folio" and important patent information every inventor should have, write: United States Inventors Service Company, 501-P Thirteenth Street NW, Washington, D.C. 20004.

**INVENTORS** Needing help with any problem—financing, protection, securing manufacturer, searches. Contact the organization with "know-how." Be completely informed. Pioneer Invention Service, Dept. 83, 150 Broadway, New York, N. Y. 10038.

**PATENT Application Financing.** Free patent search plan. Global Patent Division, 2420 77th, Oakland, Calif. 94605.

**INVENTIONS** Needed immediately for manufacturers. For additional information write Kessler Corporation, C-51-FI, Fremont, Ohio.

**READ! COPYRIGHTED INFORMATION.** "What the Inventor Should Know." Send \$1.00 for copy to the National Inventors Club, Suite 409, Carry Building, Washington, D. C. 20005.

**INVENTORS!** Get your "Little Piggy" to market via tested, most direct route. Highest cash or royalties. Financial assistance available. New York Invention Service, Dept. 1, 160 Broadway, New York, N.Y. 10038.

**INVENTORS!** Don't sell or license your invention for cash or royalties until you receive our offer. Financing available. Free analysis. International Invention Institute, Dept. 25, 160 Broadway, New York, N.Y. 10038.

**PATENT Office drawings,** excellent workmanship; reasonable. Free engineering and booklet "How to Write Specifications." Pen-Ink, 50 East 42nd, New York 10017.

**INVENTORS:** Assistance with any problem. Searches. Applications prepared. All types. Design, chemical, mechanical. Time payment plan. Free information. Write: International Invention Service, Dept. 25; 160 Broadway, New York, N.Y. 10038.

## INVENTIONS WANTED

**INVENTORS:** Protect your ideas! Free "Recommended Procedure." Washington Inventors Service, 422F, Washington Building, District of Columbia 5.

**INVENTORS!** Don't sell your invention, patented or unpatented, until you receive our offer. Eagle Development Company, Dept. H, 79 Wall Street, New York 5, N.Y.



**INVENTORS!** We will develop, sell your idea or invention patented or unpatented. Our national manufacturer-clients are urgently seeking new items for highest outright cash sale or royalties. Financial assistance available. 10 years proven performance. For free information write Dept. 47, Wall Street Invention Brokerage, 79 Wall Street, New York 5, N.Y.

**INVENTORS Wanted:** Manufacturers need new items! Your inventions, ideas developed for cash/royalty sales. Free "Invention Record": Information. Raymond Lee, 130-P West 42nd, New York City 10036.

**INVENTORS!** Outright cash sale or royalties for your inventions. Patented. Unpatented. Active demand from our client manufacturers. Financial assistance available. Write Dept. 36, United States Invention Brokerage, 78 Wall Street, New York 5, N.Y.

**INVENTIONS Wanted, Patented:** unpatented. Tremendous manufacturers lists. Global Marketing Service, 2420G 77th, Oakland, California 94605.

**INVENTORS**—If you have an invention for sale, patented or unpatented, write for free brochure outlining manufacturer's requirements. Royalty rates. Kessler Corporation, C-51-IW, Fremont, Ohio.

**INVENTIONS Wanted immediately** by blue-chip companies. Top cash or royalties. Do nothing 'til you hear from us. Write, wire, phone: Wall Street Promotions, Inc., Dept. 42, 99 Wall Street, New York, N.Y. 10005. (212-425-2280)

**INVENTORS!** Thousands have gone from "Rags to Riches" this safe, sure way. Custom-tailored, personalized program. Contact the organization with "Know-How." Pioneer Invention Service, Dept. 83, 150 Broadway, N.Y. 10038.

**INVENTORS!** Sell your invention for cash or royalties! Our client manufacturers eagerly seek new items. Patented. Unpatented. Financial assistance if needed. 25 Years proven performance. For free information, write Dept. 15, Gilbert Adams, Invention Broker, 80 Wall St., New York 5, N.Y.

## MANUFACTURING

**MODELS**—Small lot manufacturing. Metals, plastics, etc. Milburn, Burlington, Kentucky 41005.

**YOUR IDEAS DEVELOPED. ALL INVENTOR'S SERVICES.** Models, research, manufacturing, sales. Free brochure. William Parker, 32 Westminster, Worcester, Mass. 01605.

**BIRCH Plywood**—Any size, shape, specification. Violette Plywood, Lunenburg, Mass.

## BUY IT WHOLESALE

**BARGAINS.** Buy below wholesale. Name brand merchandise. Save money, also discounts up to \$1000.00 on new automobiles. Free catalogue. Gaycraft, Dept. PM-WC, Box 826, Niagara Falls, N.Y. 14302.

**NEW 6-Color Deluxe** below wholesale catalog. Automobile catalog and others. Housewares, clothing furs, furniture, rugs, appliances, refrigerators, washers, dryers, vacuum cleaners, polishers, cookware, dinnerware, strollers, cribs, radios, stereos, phonographs, records, recorders, cameras, film, projectors, musical instruments, organs, typewriters, books, binoculars, luggage, sporting goods, bowling, golf, game tables, power/rider mowers, garden tractors, boats, motors, bicycles, clocks, watches, diamonds, jewelry. Huge discounts, hundreds name-brand products. For free list (factory prices) postcard: Selbyco-5, Decatur, Illinois 62522.

**BARGAINS!** Buy wholesale and below. Name brands. Appliances, furniture, sports equipment, televisions, cameras, watches, jewelry, thousands more. Huge discounts to \$1,000.00 on new automobiles. All makes. Free details. Write today: Worldwide Bargainhunters, Box 730-A, Holland, Michigan 49423.

**TREMENDOUS Wholesale bargains.** Half-million nationally known products. Rockbottom prices. Closeouts, bankrupts. Dropship merchandise. Automobiles. Worldwide imports. Hongkong clothes. Free details. International Buyers, 216-MM West Jackson, Chicago, Illinois, 60606.

**100,000 BARGAINS!** Wholesale! Closeouts! Imports! Wholesalers, 1265-MP Broadway, New York, N.Y. 10001.

**ELECTRIC Guitars, amplifiers, wholesale.** Free catalog. Carvin PMW, Covina, Calif. 91722.

**HEARING Aid batteries wholesale.** National Wholesale Battery Company, P.O. Box 825, Wichita, Kansas 67201.

**NATIONAL ADVERTISED MERCHANDISE:** Write: Sargent's Buying Service, 219A Pearl Street, Somerville, Mass. 02145.

**NEW Foreign wholesale directory.** Thousands of import bargains. Details free Athens, Box 9254-G, St. Louis, Missouri 63117.

**SOURCE Directory**—profitable offers. Over 100 pages. The "Magic" Of Good Information. Complete book only \$3.00. Details, 25¢. Rainbow Sales, Box 110, Irvington, New Jersey 07111, Dept. A.

## EXPORT-IMPORT

**JAPAN:** Mail-Order 26 page catalog, dolls, novelties. Manufacturers' names, addresses \$1.00; 1000 products illustrated trade directory \$3.00. Send cash. Yamagata Office, 814 Togin Bldg., Marunouchi, Tokyo.

**CULTURED Pearls** direct through major Japanese distributor. Save 50%. Free particulars. Torii Trading, DP Box 25, Salt Lake City, Utah 84110.

## FOR THE HOME

**MURALS**—Sizes \$3.95 up. Free brochure. Shriber's, 3222 Brighton, Pittsburgh 15212.

## OF INTEREST TO WOMEN

**DRIVE** New car, wear new clothes, buy color TV. Get daily cash income. Put spare hours to work. Write for 5 months free subscription Opportunity Magazine; see hundreds easy ways to make money. Opportunity, Dept. 17-AO, 850 N. Dearborn, Chicago.

**HOME Typing** . . . \$95 weekly possible. Instructions with employers list, \$1.30. Eaton Company, 543-A, Hopland, California 95449.

**\$100 WEEKLY** Possible assembling our products! United, Box 55392-D, Indianapolis, Indiana.

**\$45.00 THOUSAND.** Home addressing! Loughand, typewriter. Information, send stamped, self-addressed envelope. Brewster, Box 1626-J, Clearwater, Florida 33515.

**ART Appreciation** easily learned 19th, 20th Century Study-Slides, both centuries, \$2, single, \$1. Dr. Vernon Kendrick, 127 South 11th, La Crosse, Wisconsin, 54601.

**MAKE** Extra money. Introduce new Micro-film seamless nylons which can't run downward. Amazing low direct-from-mill price, 49¢ pair! Write for free sample stocking and kit. American Hosiery Mills, Dept. 137, Memphis, Tennessee 38101.

**FANTABULAS** New 96-page catalog now in print. Thousands of quality, name brand items at amazingly low prices. Send only \$1.00, (refundable on first order), to R. P. Williamson, 751 So. 110th, Tacoma, Wash. 98444.

**OPPORTUNITY Directory!** 100 companies begging for full and sparetime workers. \$1.00. L & K Enterprises, Box 27, Vermillion, So. Dak. 57069.

**\$100.00 WEEKLY** Possible sewing, assembling, products! Charmers, Warsaw 9, Indiana 46580.

**HOME Typing**—\$50-\$100 Weekly spare time. Immediate earnings! Employer's list with complete instructions, \$1.00. Consolidated Services, Box 593, PM1, Bettendorf, Iowa 52722.

**\$400.00 Monthly Possible** . . . Home typing! Guaranteed profitable methods, instructions, \$1.00. Pulse, Box 18177-PA, Indianapolis, Indiana 46218.

**HOME Typing**—\$100 Weekly possible! Details \$1. Litton, 33-B, Randallstown, Maryland.

**EMBED** Real flowers, butterflies, photos, coins in New Liquid Plastic. Sets hard like glass without heat. Make beautiful things at home, sell at big profits. Illustrated Booklet shows How. Send 25¢, Dept. 67-101AW, Castolite—Woodstock, Illinois 60098.

**BEAUTIFUL Skin.** New, imported Adin Soap from Israel. Send \$1.00 today! Edley Co., 51 West 35th Street, New York, N.Y. 10001.

**WOMEN!** Make big money at home. \$10.00 profit in an hour possible with invisible mending. Make holes, tears disappear from clothing, fabrics. Steady year-round demand from cleaners, laundries, homes. Details free. Fabricon, 1533 Howard, Chicago, Illinois 60626.

## WATCHES, OLD GOLD, JEWELRY

**WATCH** And clock repairing books. Free catalog. North American, Box 77-AA, Fox River Grove, Illinois 60021.

**USED** Pocket watches—as is—\$5 for \$25.00. Joseph Bros., 5 South Wabash, Chicago 60603.

**HIGHEST Cash** for Gold, Jewelry, Gold Teeth, Rings, Diamonds, Watches, Silver, Platinum. Mail articles today. Free gift with information. Chicago Gold & Precious Metals, 6 E. Monroe, Dept. 558, Chicago 60603.

**WANTED.** Gold, silver, platinum, scrap (any form), coins. Information free. Wilmot's, 1067-D Bridge St., Grand Rapids, Michigan 49504.

**OUT-Of-Pawn** Elgin and Bulova watches \$5 up. Free list. Southern Watches, 5-PM South Wabash, Chicago 60603.

**CASH** Immediately for old gold, jewelry, gold teeth, watches, diamonds, silverware, spectacles, platinum, mercury. Free information. Rose Industries, 29-A East Madison, Chicago 2.

**WATCHMAKERS** Tools, materials, supplies, watches. Catalog. Gales, Box 1000, Chicago 90, Ill.

**WATCHMAKER'S** Jewelers supplies, instructions. Catalog 50¢. Bengal's, 10717 Venice, Los Angeles 34, California.

## WEARING APPAREL

**FIRST Quality** used workclothes. Work-pants \$1.00, workshirts 75¢. Special, 3 shirts and 3 pants only \$5.00. Add \$1.00 for handling and mailing. Workclothes Store, 6643 S. Ashland Ave., Chicago, Ill. 60636.

**TELL** The more than 1,550,000 avid readers of Popular Mechanics about your products and services. It costs very little to place your classified message in front of these proven mail order buyers. For further details, write: C. A. Martin, Dept. 66N, Popular Mechanics, 575 Lexington Avenue, New York, New York 10022.



## SCIENCE AND CHEMISTRY

**CHERRY BOMB FUSE.** Water proof 25 feet with formulas, instructions \$1.00—125 feet \$4.00, postpaid. Free catalog. Zeller, Box 638, Hudson, Michigan.

**CONTACT Explosive.** Easily make torpedoes—thrown down, they explode. Complete formulas, directions, \$1.00. Technitome, Box 22, Berlin, New Jersey 08009.

**FIREWORKS** Supplies, casings, end caps, plugs, chemicals, fuse, do-it-yourself kits, send 35¢ for samples and catalogue—Ecco, Box 189, Northvale, New Jersey 07647.

**SEARCHING** For economically priced chemicals and apparatus? Gifts with catalog, 25¢. Starr Scientific, Manitowoc, Wisconsin 54220.

**ROCKETS.** Single, multi-stage kits, parts amazing Accelerometer. Illustrated catalogue 25¢ Rocket Supply, Box 51B, Tappan, New York 10983.

**ILLUSTRATED Catalog:** Chemistry, mineralogy, biology 25¢. Tracey Laboratories, Evanston, Illinois 60204.

**PROFESSIONAL** Firecracker fuse, burns, underwater, 75 feet, \$1. Fireworks, explosives formulas, free information. Edco-labs, Box 99, Berlin, New Jersey 08009.

**FIREWORKS**—Explosives—detonators. New manual reveals formulas, preparations, only \$2. Free with order, \$2 certificate for fuse. Pyrochem, Box 169, Berlin, New Jersey 08009.



**ROCKETS:** Real flying models—flights up to 2500 ft. New illustrated catalog 25¢. Single and multistage kit, cones, engines, launchers, trackers, rocket aerial cameras, technical information. Fast service. Estes Industries, Penrose 7, Colorado 81240.

**SKYROCKETS.** Firecrackers, fireworks—Make your own! 60 simple formulas \$1.00; 30 smoke formulas, 15 colors \$1.00; 10 fuse formulas 50¢. Paloma Pyrotechnics, Box 247, Auburn 5, California.

**ROCKETS!** Flight kits, testing equipment. Catalog 25¢. Rocket Development Corporation, Route 3, Seymour, Indiana 47274.

**FREE** Periodic classification of elements and conversion tables with catalog 25¢. Chemicals, apparatus, biology. Mid-States Scientific, 7053 N. Clark, Chicago, Ill.

**SCIENCE** Fair booklet—experiments, information, suggestions. \$1.00. Hagenow Laboratories, Manitowoc, Wisconsin 54220.

**AMAZING** New book of science experiments, formulas, and catalogue of laboratory supplies. Only 35¢. National Scientific Co., 18 S. Park Avenue, Dept. PM-1, Lombard, Illinois.

**BOOBY** Traps, contact explosive, tear gas. Formulas \$1.00. Import, P.O. Box 71, Pottsville, Pa. 17901.

**CHEMICALS** And apparatus for industrial, analytical, and private laboratories. Catalog 35¢. Dept. M-50, Biological Supply Co., 1176 Mt. Hope Ave., Rochester 20, N.Y.

**CANNON** Fuse 3/32" diameter, waterproof, 25 feet, 2 pull wire fuse lighters, instructions \$1.00. Postpaid. Samples 35¢. Free brochure. American Fireworks, Box 1086-C, Fairfield, Conn. 06431.

**FIREWORKS!** Rocket fuels! Explosives! Easily prepared formulas \$1.00. U.S. Pyrotechnics, Box 0234, Cedarhurst, N.Y. 11516.

**LOWEST** Prices! Chemicals, apparatus, biologicals, optical supplies. Catalog plus circular slide rule gift. 35¢ Dissect-A-Kit, Box A56, Wantagh, N.Y. 11793.

**EXPLOSIVES! NITROGLYCERIN!** Plastic! Contact! Water! Thermite! Ten complete super formulas—\$1.25. Pyrotechnico., 380 Mentor, Pasadena, California. 91106.

**UFO's** Simulated by colored light floating in air! Instructions, \$1. Metx Laboratories, Box 10211, Denver, Colorado 80210.

**FIREWORKS—Tools,** formulas, chemicals, casings, Rockets—solid, liquid, plans, equations. Lowest prices—10¢. United Pyrotechnics, 12421 Throop St., Chicago, Ill. 60643.

**DON'T READ:** Fireworks—all types. Detailed procedures, formulas, illustrations, etc., \$1.00. Pyros Limited, Box 656, Salem, New Hampshire 03079.

**LIQUID** Rocket. Plans, \$2.98. Amateur Rocketry Magazine, new issue, 50¢. Star Space Systems, PM2, Box 4353, Inglewood, California 90309.

**SKYROCKETS. CONTACT EXPLOSIVES—**Exciting new manual: 28 types (complete, detailed instructions), 75 formulas, diagrams—rocket construction, aerial displays, stars, streamers, roman candles, fountains, fireballs, colored flares, smokes, fuses, propellants, flaming balloons, contact explosives (explode with slightest touch) \$1.00. Sentec-FD, 433 Ellis, San Francisco 94102.

**CONTACT** Explosive. Explodes with touch of feather. Handled safely wet. Powerful. Applies like paint. Made from Household chemicals. Results guaranteed. Complete instructions for making both kinds only \$1.00. Franks Scientific Company, P.O. Box 156, Martelle, Iowa 52305.

## FORMULAS, PLANS, ETC.

**FOR** Proof of what you can do in specialty manufacturing get our literature. It's free! Miller, Chemist, 1517-P, Tampa, Florida 33601.

**PRODUCT** Formulas. Send \$1.00 Toni chemist, 5540 Hollywood Blvd., Hollywood, California 90028.

**ENCYCLOPEDIA** Of formulas, processes, recipes. Details free. Cassill, Box 1535, Eugene, Oregon 97401.

**LATE.** Modern manufacturing formulas. List free. Moon Chemical, Martville, New York 13111.

## PLASTICS

**LUCITE** Sheets, rods, tubes. Clear, colored, every thickness. Cut to size or pattern. Martin Plastics, 52 River Ave., Providence, R.I. 02908.

**PLASTIC** Embedders, jewelry workers. We have everything. Findings, moulds. New catalog 25¢. David Co., 861 Broad St., Dept. M. Providence, R.I. 02907.

**NEW** Liquid Casting Plastic sets hard like glass without heat. Clear, Colors. Embed real flowers, butterflies, photos, coins. Make beautiful things at home, sell at big profits. Illustrated Booklet shows How—Send 25¢. Dept. 67-101A, Castolite—67-101A, Woodstock, Illinois 60098.

**PLASTICS** for arts & crafts, fun & profit. See how easy it is to work with liquid plastics. Turn your plastics hobby into \$ for you. Send 50¢ for catalog to PMI, 1644 20th, Santa Monica, California.

## TREASURE FINDERS

**COMPLETELY** New prospecting technique developed by Relco. New transistor models detect buried gold, silver, coins, treasures. \$19.95 to \$129.50. Write for free catalog and "guide for beginners". Relco-A40, Box 10563, Houston 18, Texas

**NUCLEAR** Locators! Coins, relics! Write Howe, 811-C Kansas, Atchison, Kansas.

**POWERFUL** Metrotech locators detect gold, silver, coins, relics. Moneyback guarantee, terms. Free information. Underground Explorations, Dept. A, Box 793 Menlo Park, California.

**SAVE!** Build transistorized treasure finder. Details free. Del Research, Box 436B, Centerville, Georgia 31093.

**NEW** Revolutionary selective transistorized metal detector. Push button tuning, automatic tuning, etc. Many models. Free catalog. Gardiner Electronics Co., Dept. 9, 4729 N. 7th Avenue, Phoenix, Arizona 85013.

**TREASURE.** Gold, silver, relics. New 1967 detectors now available. Free information. Rayscope, Box 715, North Hollywood, California 91603.

**FIND** Buried coins, treasures, relics. New supersensitive, low priced detectors for land or underwater use. Free information. Sensitronix, 2225-C Lou Ellen, Houston, Texas 77018.

**TREASURE.** Find gold, silver, relics with super, powerful Detetron locators. Free information. Detetron, Dept. PM-1, P.O. Box 243, San Gabriel, California.

**METAL** Detector Kit 1966 closeout! Professional model—sensitive, lightweight; unopened cartons. Regularly \$59.95; \$34.95 while available! Order now! EDI, 2548M Colorado, Sarasota, Florida 33577.

**LOST** TREASURE GUIDE: 441 U. S. locations. Obtain valuable free items. Huge book \$1.00. Bonanza Press, Box 4491P, San Jose, California 95126.

**URECON** Metal finder, 8" head, transistorized, \$37.50 delivered. Urpa, 6304 Beechwood, Sarasota, Fla. 33581.

**FUN & PROFIT** Finding buried treasure, relics with transistor M-SCOPE, known worldwide for super-sensitivity, dependability. Guaranteed. Very easy terms. Send for FREE literature, fascinating user experiences. Fisher Research, Dept. GZ, Palo Alto, Calif. 94302

**TREASURE LOCATORS, COMPLETE LINE.** FREE INFORMATION. SEND \$1.00 FOR LIST OF HUNDRED PLACES WHERE ARE TREASURES, TESOROS. CORDOBA 97. MEXICO 7. MEXICO.

**FREE** 84 Page detector catalog. General Electronic Detection Co., Box 67, Bellflower, Calif. 90706.

**COIN-**Comber transistor treasure detector, free information. Racom, Box 13469-P, Orlando, Florida.

## PRECIOUS STONES AND MINERALS

**100** COLORFUL, Polished gemstones. \$1.00. Tumblecraft, 5401 James North, Minneapolis, Minnesota 55430.

**SEMI-**Precious uncut gems. Ten different for \$1.00. Request list 30. Prospectors Shop, 201 San Francisco, Santa Fe, New Mexico 87501.

**EARTH** Science Rockhound Magazine. Subscription \$2.50. Sample 35¢. Box-550-PM, Downers Grove, Ill. 60515.

**CRYSTALS,** Minerals, gemstones. Worldwide localities. New arrivals listed each month. Lists free. Sering, 1705 E. Michigan, Indianapolis, Indiana 46201.

**DO** It yourself jewelry kit \$2.98. Genuine faceted Smokey Quartz heart necklace \$5.00. 15 polished and 15 rough gemstones \$2.00. Hill's, PO Box 7364-A, Salem, Oregon.

**GOLD** NUGGETS. \$4.00. From miner. Moneyback guarantee. Lea, Box 1125, Mt. Shasta, California 96067.

**GET** Free catalog no serious rockhound, gem cutter, jewelry maker, hobbyist or craftsman can be without. Full of bargains, exclusive items, low prices from largest suppliers and authorities in the field. Free new catalog just off the press, yours for the asking. Write Grieger's, Dept. C-12, 1633 E. Walnut, Pasadena, California.

## CARTOONING, COMMERCIAL ART, SHOWCARD & SIGN PAINTING, TATTOOING

**CARTOONERAMA** Teaches you cartooning in a 24 lesson course. Free brochure. CFA, Box 263-1B, Branford, Connecticut 06405.

**LEARN** Profitable magazine cartooning. Free details. Hartman, Box 3097, Lincoln Nebraska 68510.

**"HOW** To Make Money With Simple Cartoons"—Everyone who likes to draw should have this book; Free. Send name, zip code. Cartoonists Exchange, 912 Pleasant Hill, Ohio 45359.

**SIGN** Painting. Fascinating system. Straley, 410 South Western, Springfield, Ohio.

**YOU** Can entertain with chalk talks. Catalog 10¢. Balda the Cartoonist, Oshkosh, Wis. 54901.

**LEARN** Sign painting at home. Free talent test. Ben Kerns, Box 812-PM, Greenville, S.C. 29601.

**PROFESSIONAL** Cartooning instruction by mail. Free booklet "Successful Cartooning" gives course details and opportunities. National School of Cartooning, Studio-H, Box 8958, Cleveland, Ohio 44336.

**LETTERING** Tricks (Deluxe edition) Airmailed, \$1.25. Harris, "Signs By Mail", Box 1567-AP, Portland, Oregon 97207.

**WANTED—**Cartoonists. Amateurs, Professionals. Over 200 markets. Information Free. Markets-4-17, 11620 Lansdowne, Detroit, Michigan 48224.

## ADVERTISING AGENCIES, ADV. SERVICE, MAILING LISTS

**MAILING** Lists most all kinds 1000 \$5.00. Free folder. Your circulars mailed \$4.00 1000. Dixie Mailers, King, N.C. 27021.

**GET** Volume mail orders for your offer from 41 mail-producing magazines delivering responsive prospects by the millions. Amazing low-cost. Hundreds of classified ads scheduled regularly, profitably. Free Details. Classified, Inc., Dept. PM-3, 100 E. Ohio, Chicago 60611.

**ADVERTISING** Ratebook leading newspapers, magazines, free. Chicago Advertising Agency, 28-E Jackson, Chicago 4.

**MAILORDER** Record Book, 30 pages. Records inquiries, orders, advertising expense, etc. Most complete. Just send dime for postage and handling. C. A. Martin, Popular Mechanics, Dept. RB7, 575 Lexington Ave., New York, N.Y. 10022.

## TYPEWRITERS, DUPLICATORS, OFFICE EQUIPMENT

**OFFSET.** Letterpresses, vartypers, typewriters, mimeograph, multigraph machines. Bargains. DixieGraph, King, North Carolina 27021.

## RUBBER STAMPS AND OFFICE SUPPLIES

**FREE** 32 Page rubber stamp catalog. Signature stamps \$3.50. Youngers Stamp Shop, Princeton, Iowa 52708.

**DESK** Name Plates, Door Signs, Free Catalog. Engraving, 34 Cora Avenue, Williamstown, New Jersey.



FREE Rubber Stamp-printing catalog. Harfmann, Box 443, Owatonna, Minn. 55060.

POCKET Rubber Stamps, three lines \$1.00 Postpaid. McAllister, P.O. Box 691, Sharon, Pa. 16146.

SEND Copy for quotation, information. Signet Stamp Company, Riverhead, N.Y. 11902.

FREE Catalog rubber stamps, supplies. Bilmar, 11117-Ewing, Minneapolis, Minnesota 55431.

ZIP Your mail. Quality rubber stamps, name address zip. Free circular. Kaltenstein, 117 Kuhn Drive, Hanover, Pa. 17331.

FREE Catalog: Rubber stamps, printing. Dowling Products, Dept. PM36, Pitts-town, N.J.

### PRINTING, MULTIGRAPHING, MIMEOGRAPHING, GUMMED LABELS

OFFSET Printing 25 to 5,000 copies 24 Hour service. Low prices. Cisco's, Atlanta, Illinois 61723.

AMAZING Business printing values. Samples. Print Shop, Box 576, Greenville, R. I. 02828.

QUALITY Printing: Lowest prices. Samples. Dowling Press, Dept. PM-36, Pitts-town, N.J.

1000 GUMMED Address labels, \$1.00. Walt's, Box 966-A, South Bend, Indiana 46624.

EMBOSS Business cards, \$2.99-1000, free samples. Gables, 405A Clifton, Glen-shaw, Pa. 15116.

FREE Literature: 1000 name, address labels \$1.00, 1000 business cards \$4.95. Printing, rubber stamps. Satisfaction guaranteed. Jordan's, 552 West O'Connor, Lima, Ohio 45801.

100 TWO Color Porcelain Business Cards \$1.25. Eslick's Craft Studio, Delavan, Wis-consin 53115.

OFFSET Printing. Quick 25 to 5000 copies. Varga, 350 State, Rochester, N.Y. 14608.

BUSINESS Printing. Catalog free. Bill's Press, 531-P Rosewood, Kirkwood, Mis-souri 63122.

1000 Name, Address Labels, 5 gold Per-sonalized pens, \$1.00. Nationwide, Box 3522, Los Angeles 90054.

SMALL BUSINESS printing: Hammer-mill, letterheads, envelopes, billheads, statements, smallforms, cards. Edwin Ham, 12A Hudson Street, Hudson, New York, 12534.

MICR Encoding. Post Office Box 190, Franklin Park, Illinois 60131.

1000 GUMMED address labels, 75¢, 3 sets \$1.50. Money refunded on \$15 reorder from catalog. Box 36114, Los Angeles, California.

FREE Booklet—"Secrets of Cutting Printing Cost." Cisco's, Atlanta, Illinois 61723.

### PRINTING & RUBBER STAMP OUTFITS—SUPPLIES

TYPE Catalog No. 11, 96 Pages. Send One Dollar. Deductible First Order. Acme Type, 732 Federal, Chicago, Illinois.

TYPE And supplies for rubber stamp makers. New wholesale price list No. 4 free. Star Stamp Supply, 732 Federal, Chicago, Ill. 60605.

RUBBER Stamp outfits, supplies. Kiewiet, 2025 Barney Road, Kalamazoo, Mich. 49007.

RUBBER Stamp manufacturers supplies. New products. Low prices. Catalog. Jackson Supply, 1433 Winnemac, Chicago, Illinois 60640.

MAKE Your own self-molding rubber stamps and printing cuts. Plexirubber. Argyle 1, Wisconsin.

PRINTING Presses, type, supplies. Lists, 5¢. Turnbaugh Service, Mechanicsburg, Pennsylvania 17055.

DO Your own printing. Save money. Simple rules. We supply everything. Print for others: good profit. Raised printing like engraving too. Have home shop. De-tails free. Kelsey Presses, V-11, Meriden, Connecticut.

CATALOG: Rubber stamp equipment, supplies. Martin, 1425S Major, Jefferson City, Missouri 65101.

NEW 1966-67 Type catalog, 200 page 9 x 12 book, packed with hundreds of new and exciting imported foundry type. Mono-type, wood type, brass type, steel type, ornaments, borders. Mazak tape for rubber stamps and hot stamping. Most complete catalog in 50 years. Send postpaid—only \$2.50. American Printing Supply Co., 42-25 Ninth Street, Long Island City, N.Y. 11101.

RUBBER Stamp presses, hydraulic operated, electrically heated. Sizes 5" x 8", 8" by 12", 10" x 15". Starting outfits, supplies. Printing Presses, Orders presses, supplied shipped day received. 1966-67 catalog low supply prices. Custom Manu-facturing, 402-P East Elm, Springfield, Mis-souri.

### REMAILING SERVICE

TIMELY Remailing 25¢. Unlimited Monthly \$3.00. Confidential Postcards. Schoen, Box 1963-P, Chicago, Illinois 60690.

SECRET Mail receiving system. Hedg-peth, 406-M South Second, Alhambra, California 91802.

SECRET Receiving and remailing. Dis-creet and confidential. Remail 25¢ single. 8050 S. Main. Houston, Texas.

MIAMI Remails 25¢. Monthly Rates. Marie, P.O.B. 1266, Coral Gables, Florida 33134.

LOS ANGELES. Hollywood, San Fernan-do Valley—25¢ single; \$3.00 monthly. Con-fidential. 10437 Lanark Street P, Sun Val-ley, California 91352.

N.Y.C. Remailing, 25¢. \$2.00 monthly. Williams, 2100 Mapes Ave., Bronx, 10460.

SO. AMERICA Registered re-airmails, \$1.00. Confidential. Genaro, Box 360, Guay-aquil, Ecuador.

MIAMI Confidential remailing 25¢ per letter. William's Box 161, Miami, (Uleta) Fla. 33164.

BILL Payers. Post Office Box 190, Franklin Park, Illinois 60131.

MEXICO Re-airmailing. Receiving, for-warding, \$1.00. Postcards. Kaylu, Apar-tado 669, Guadalajara.

REMAILS 25¢. Monthly \$3.00. Box 10027, San Diego, California 92110.

HALIFAX, Canada remails, 25¢ singles. Mitchell, 116 Bedford Highway, Rocking-ham, Nova Scotia, Canada.

SWEDEN Air mail! Send addressed with \$1.50. N.J. 25¢. Box 192, Dunellen, N.J. 08812.

HAWAII Remails, fast, confidential, 25¢. 1509 G-4 King St., Honolulu, Hawaii.

REMAILS. Forwarding, receiving. Since 1958. Ellis, 407-PM Washington, Fairfield, Illinois 62837.

NEW YORK remailings, 25¢. Other cities, 35¢. South American, European countries, \$1. Valles, Box 761, New York 10008.

REMAILING: Fast! Many services. Free details. Rucker, 909 Buena, Chicago, 60613.

### REPAIRS AND SERVICING

SMALL Appliance repair. Post Office Box 190, Franklin Park, Illinois 60131.

### SPECIAL SERVICES

WIZARD Of Odds, top major collegiate football and basketball forecaster. Fea-tured in Newsweek. Fantastic percentage. Free details. Box 67, Prescott, Arizona 86301.

INFORMATION On anything. Ferguson Research Specialists, 83-45 Vietor Ave., Elmhurst, N.Y. 11373.

LOCATING Service! Any item or prod-uct. Jake Barraco, 478 Gardner, South Beloit, Illinois 61080.

WE Locate anything you need for a rea-sonable fee. NBARS, 9325H, Menard, Oak-lawn, Ill. 60453.

### TOBACCO

TELL The more than 1,550,000 avid readers of Popular Mechanics about your products and services. It costs very little to place your classified message in front of these proven mail order buyers. For further details, write: C. A. Martin, Dept. 81N, Popular Mechanics, 575 Lexington Avenue, New York, New York 10022.

### RAZORS

YOUR Ad in this space will be read by more than 1,550,000 active mail order buyers. Join the march to greater profits, place your products and services in front of them today with a small low cost classi-fied ad. For further details, write: C. A. Martin, Dept. 82N, Popular Mechanics, 575 Lexington Avenue, New York, New York 10022.

### WANTED—MISCELLANEOUS

PROMINENT Toy Mfg. seeking new toy ideas suitable to nationwide television pro-motion. Financial arrangement open. Write: Toys, Box #574, Norwood, N.J. 07648.

STAMP Collections, accumulations. Eagle Stamp Co., 2221 Romine, Pittsburgh, Penna. 15226.

MERCURY. Gold, Silver, Platinum; Ores assayed. Wholesale Terminal, Nor-wood, Mass. 02062.

### PERSONAL

RUPTURED. Relief and comfort. No understraps, elastic or steel. Write Hand-Lock Products, Preston 4, Ont., Canada.

NEED Money? Your debts too big. Solu-tions to all financial problems. Amazing results. Free details. Licensed and bonded. Write Financial Consultants, 28 E. Jack-son, Suite 1204-PM, Chicago 60604.

BLITZ Reducing! 5 pounds overnight! Guaranteed! Bijou, Box 1727-BM, Holly-wood, California 90028.

BIBLE Questions answered. Stamped envelope. Bylon, 17167 Bentler, Detroit, Michigan 48219.

SUBCONSCIOUS Conditioning remakes personality while you sleep. Free details. Sleep-Learning, Box 24N, Olympia, Wash-ington.

LOW-COST LOANS BY MAIL. \$6.00 monthly repays \$104.50; \$56 monthly re-pays \$1,321.39. Borrow any amount. Guar-anteed fast, confidential. Write today! Bankers Investment, 67-A, Box 1648, Hutchinson, Kansas 67501.

LOANS By mail. \$100-\$1000. Anywhere. Confidential. Write Union Finance, Dept. PM, 222 W. Osborne, P.O. Box 7457, Phoe-nix, Arizona 85011.

INVESTIGATORS. Free brochure. latest subminiature electronic surveillance equip-ment. Ace Electronics, 11500-P NW 7th Ave., Miami, Florida 33168.

SURVEILLANCE Equipment. New 1966 models. Free details. Write: Security Elec-tronics-PM, 11 East 43 Street, N.Y.C. 10017.

INTELLIGENCE TEST! With answers, \$1.00 (Free details). Zorbas, Box 2224-M, Cleveland, Ohio 44109.

MEN—Bring out your best personality—gain new confidence, style your hair like movie stars do. Kit with complete instruc-tions \$5.00. diRoss, Box 1087-A Hollywood, California.

BORROW \$1,205 AIRMAIL! Repay \$47 for 36 months. State licensed. Postal Fi-nance, Dept. 17-A, 200 Keeline Building, Omaha, Nebraska 68102.

BORROW \$100 to \$1000 by mail. Quick, easy, private. No Co-Signers. Repay in 36 small monthly payments. For the amount you want write today to Dial Finance Co., 410 Kilpatrick Bldg., Dept. 1-214, Omaha, Nebraska, 68102.



**GROW Rich!** "Secret of the Ages." Details 10¢. Gemco, Box 1776, Yorktown, Virginia.

**BILL PROBLEMS?** Poor credit no trouble. Not a loan company. Send for free application. Automatic Acceptance, 318PM Broadway Blvd., Reno, Nevada or 307PM Pocasset Ave., Providence, R. I.

**"SLEEP Learning tapes"**. Write for free brochure. "What's it all about." Personalized Tapes, Box 190-PM, Quincy, Massachusetts 02169.

**NOW!** Higher income, prestige, power! 256 Page book, "Thinking Big", reveals secrets that make men rich! Send \$2.00. Deans, Box 8092, Jersey City, N.J. 07308.

**SECRET Plan** wipes out all debts. Quick. Easy. Immediate relief. Free details. Counselor-7, Harlingen, Texas.

**SAVE Money.** Preserve health. Stop smoking. New book tells how. Satisfaction guaranteed. \$2.00. Waldon Harris, 143-43 Glassboro Ave., Jamaica, N.Y. 11435.

**"SLEEP Learning tapes."** Write for free brochure. "What's it all about." Personalized Tapes, Box 190-PM, Quincy, Massachusetts 02169.

**DEDUCTIBLE Expenses** for your hobby. \$2.00. Evergreen, Box 507, Osseo, Minnesota 55369.

### MISCELLANEOUS

**LOANS** By mail. \$100-\$1000. Anywhere. Confidential. Write Union Finance, Dept. PM, 322 W. Osborne, P.O. Box 7457, Phoenix, Arizona 85011.

**BIRTH Certificates, Marriage Certificates, Diplomas!** 2 blank forms \$1.00. Sample 10¢. Standard Forms, Box 482-M, Washington, D.C. 20044.

**KILL Mosquitoes, crop destroyers.** Electronically. Free information. Box P. 204, Metamora, Michigan 48455.

**YOUR Name** sent to 1000 importers, publishers, mailers, wholesalers, etc. on our mailing list. Year \$1.00. Dixie Mailers, King, N. Car. 27021.

**WINEMAKERS.** Free illustrated catalog of yeasts, equipment. Semplex, Box 7208, Minneapolis, Minn. 55412.

**HEARING Aid** batteries wholesale. Free list. Habs, Box 51, York, Penna. 17405.

**BOOKS** On antiques and their prices. Free circular! P. Warman Publishers, Uniontown, Penna. 15401.

**SUPER Memory** overnight! Success guaranteed! Bijou, Box 1727-M, Hollywood 28, California.

**ORNAMENTAL Iron** designs. Book of 1600 beautiful, practical designs for railings, columns, etc. Free literature. Cunningham, 3881 South 3200 West, Salt Lake City, Utah 84119.

**FREE Gift** catalog. Pera, Box 1837 P, San Francisco, Calif. 94101.

**HOMEBREW Formulas!** Everything covered in this manual! \$2.25. (complete brew supplies hydrometers catalog 10¢). Research Enterprises, 29-SN35 Samoset, Woburn, Mass. 01801.

**WRITE Or DRAW** in genuine 23 karat gold using easy transfer method. Terrific for signatures. 27 sq. inches of drawing surface and instructions, \$1.00. Buckeye Novelty Products, Dept. K, Box 787, Fairborn, Ohio 45324.

**CAN'T SLEEP? NOISY?** Get comfortable Mack's Pillow Soft Earplugs, \$1.00. Shut Eye Sleep Shade, \$2.98. Guaranteed! McKeon Products Company, Dept. PM, 23220 Ithaca Street, Oak Park, Michigan 48237.

**STOP Rusting** or corrosion of your underground pipes and tanks by use of cathodic protection. Instructions \$1.00. P. Knapp, P.O. Box 854, Scottsdale, Arizona.

**MAKE Your own will.** Forms, instruction booklet \$1.00 (Guaranteed!) Formco, Box 3623-E, Long Beach, Calif. 90803.

**RIPE Garden tomatoes** in June? I do it every year in Ohio. Free details. McDonald, Box 12189-J, Whitehall, Ohio 43213.

**TAXPAYERS.** Easy directions—to help you prepare your income tax return. List of deductions often overlooked—to help you save money. Deduction forms—to make your task easier. For all this, send complete address and \$1 to Tax Aids, 3559 Laurel Court, San Bernardino, California 92404.

**ABACOOS** The first known three dimensional chart Board feet, cubic yard, cubic multiplier plus special. Four at price \$1.00. Abacoos, Box, 1401, Gray, Pa. 15544.

**YOUR Name** sent to 2000 European exporters, \$1.00. S. Piliacoutas, 2 Katalanos, Nicosia, Cyprus.

**3-D T.V. Screen.** \$4.98 PPD. Makes any television three dimensional! P.O. Box 974, Rosenberg, Texas 77471.

**RESCUE-Spray.** Instant protection against an attacker, fits in pocket or purse (Not a tear gas) Only \$2.95 Postpaid or 2 for \$4.98. Port City Trading Co., P-167, PO Box 3504, Savannah, Georgia 31404.

**RECEIVE Samples,** mailorder catalogs, magazines, moneymaking opportunities, 10¢ Directory, B-50028, Tucson, Arizona 85703.

**U.S. And Brazilian land . . .** Low as 40¢ acre! Free details. Land Digest, Box 26034-PA, Indianapolis, Indiana 46226.

**WINEMAKING . . .** Grape, Elderberry, Dandelion, Frozen Juices, etc. Brewmasters' secrets revealed! Powerful methods! Instructions, recipes, and supplies catalog, \$1.00. Continental, Box 26034-PA, Indianapolis, Indiana 46226.

**HANDWRITING** Analyzed 50¢, 5 for \$2.00. Box 36114, Los Angeles, California.

**LET Us** tell you how to turn the reading habits of your friends into profit for you. \$10.00, \$25.00 or \$50.00 can easily and quickly be made under our Popular Mechanics subscription plan. No experience needed. Write Popular Mechanics, Room 4-M, 250 West 55th St., New York 19, N.Y.

# Now Free To Inventors!

## List of 231 manufacturers looking for inventions

Thousands of inventors gladly paid \$2.00 for a copy of this valuable list compiled at great expense by The Inventor's Press. It lists the names and addresses of manufacturers in many different categories; lists the kind of inventions they will consider; and gives the name of the individual to whom to write concerning your invention. As our company has performed sales services for hundreds of inventors, we bought up a limited number of these current lists and, while they last, will send a copy free and without obligation to any inventor who wants to find a buyer for his invention.



### FREE for the Asking—Just Send Name

Send name and mailing address on the coupon and the list will be mailed to you free and postage prepaid. We will also mail, free, complete information on the sales services we have performed for other inventors. Supply is limited. To be sure of getting your free copy, write at once to Kessler Sales Corporation, Dept. D-51, Fremont, Ohio 43420.

Kessler Sales Corp., Dept. D-51, Fremont, Ohio 43420

I have an invention which I would like to sell. Please send me a copy of the list of 231 manufacturers who are looking for inventions. Also mail information concerning the sales service of your organization. No charge. No obligation, and no salesman will call on me.

Name \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_



## EARN HIGH WAGES as a HEAVY EQUIPMENT OPERATOR

Train your way to high pay in the booming construction industry! Learn the skills you need to qualify . . . NOT by correspondence, but by actual field training on machines like the ones used by the industry. Huge training grounds in North Carolina, a million dollars worth of school-owned diesel-engined machines, experienced instructors, full 220-hour and 440-hour courses. National, the original school of heavy equipment operation, is the recognized leader. Member American Road Builders Assn., Services and Supply Division. Associate Member A.G.C. Full-time Job Advisory and Counseling Director on staff. VA approved. For men ages 17 to 56. Train Now-Pay Later plan . . . other payment plans also available. Write TODAY for FREE catalog and FREE copy of school newspaper reporting news of National School graduates.

NATIONAL SCHOOL OF HEAVY EQUIPMENT OPERATION, Dept. D-83 P.O. Drawer 1686, Charlotte, N. C.

Please send me FREE illustrated school catalog and complete information. I understand there's no obligation.

Name \_\_\_\_\_ Age \_\_\_\_\_

Address \_\_\_\_\_ Phone: \_\_\_\_\_

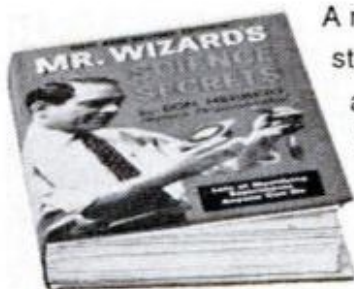
City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_



# It's going to rain today

A can, a cork and a straw can predict the weather if you know what to do with them. Your daily newspaper is great for boiling water if you're caught without a pot. And a needle and a cork make a darn good compass.

These are some of the amazing experiments you can do with household items. Why don't you try some of them yourself? Just ask Mr. Wizard, he'll show you how.



A new edition of "Mr. Wizard's Science Secrets" by Don Herbert, creator and star of the award-winning television show "Meet Mr. Wizard" is now available from Popular Mechanics Press.

Whether you have a lab or work on the kitchen table, this big handbook for the home scientist offers step-by-step instructions for experiments with the basic principles of such things as sound, light, weather and gravity. Each experiment can be done with the everyday things you find around your home.

Incidentally, if you're planning on giving Mr. Wizard's Science Secrets as a gift you'd better buy two...people who see the book just can't seem to give it away.

To order your copy of Mr. Wizard's Science Secrets simply fill-in and return the coupon below, together with \$3.95 plus .25 shipping and handling in cash, check or money order to:

POPULAR MECHANICS, BOOK DEPARTMENT  
575 LEXINGTON AVENUE  
NEW YORK, NEW YORK 10022

I have enclosed \$ \_\_\_\_\_ (plus postage) for \_\_\_\_\_ copies of Popular Mechanics new Mister Wizard's Science Secrets.

NAME \_\_\_\_\_

ADDRESS \_\_\_\_\_

CITY \_\_\_\_\_ STATE \_\_\_\_\_ ZIP \_\_\_\_\_

# My can told me so







## TEST YOUR TALENT

**AWARDED MONTHLY: \$675.00**  
Scholarship in Commercial Art

Draw the Viking in pencil—and make your drawing a different size from the picture.

If you win the art scholarship prize, you get the complete course in commercial art taught by America's leading home study art school, Art Instruction Schools. You will receive personal attention from professional commercial artists in the fields of advertising art, illustrating, cartooning and painting.

Even if you do not win, you will get a professional estimate of your talent without cost.

Entries for current contest must be in before February 28, 1967. None can be returned. Our students and professional artists are not eligible. Mail your entry in right away!

### AI / ART INSTRUCTION SCHOOLS

Studio 71-2570 • 500 So. Fourth St., Minneapolis, Minn. 55415

*Please enter my drawing in your draw-a-head contest. Also send information about your Art Course at no cost or obligation. (PLEASE PRINT)*

Name \_\_\_\_\_

Occupation \_\_\_\_\_ Age \_\_\_\_\_

Address \_\_\_\_\_ Apt. \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_

County \_\_\_\_\_ Zip Code \_\_\_\_\_

Accredited by the Accrediting Commission  
of the National Home Study Council.



# FROM THE PATENT OFFICE **NEW INVENTIONS**

BY M. J. PEDERSEN

**THE SMELL OF MONEY** won't seem so sweet to thieves in Atlanta. Banks there are treating money with an odorous chemical (such as diacetyl or dimethyl diketone) and police dogs are being trained to follow one of the distinct scents. Milton F. Allen, Decatur, Ga., was awarded patent 3,272,533.

**REDUCED GRAVITY SIMULATOR** that helps men to learn on earth how it will feel to walk on the moon earned patent 3,270,441 for Donald E. Hewes and Ames A. Spady Jr. Installed at Langley Field, Va., the simulator has been used by three astronauts. When in it, they hang sideways in a series of slings that reduce the effect of earth's gravitational pull to one-sixth normal, which is what will be encountered on the moon. The trainees have been able to jump two times farther and six times higher than otherwise.

**FUTURE STOCK BEHAVIOR** may be predicted by a mathematical model that earned 3,270,190 for John M. Lambert, Northport, N.Y. The price of common stock is thought to vary, during a relatively long period of time, in accordance with certain intrinsic variables, such as earnings, dividends paid, asset value and trading volume.

**RANDOM EVENTS** may be continuously recorded on an endless belt of phosphor-coated tape, then erased within a few minutes unless the camera is stopped to observe an event of interest. After the film image is erased with infrared light, it can be re-exposed. Edward G. DeHart, Boston, received patent 3,273,477.

**DETECTING TORNADOES** by ordinary radar sets, which then automatically sound an alarm, is possible with a method that received patent 3,271,764 for Dr. David Atlas, University of Chicago, and Roger M. Lhermitte, U.S. Weather Bureau, Norman, Okla. Within the radar beam, particles whirling in the tornado's twisting funnel will be moving both toward and away from the radar at speeds of 50 meters per second or higher. Fluctuations at this rate can be detected. And tornadoes are the only known meteorological phenomena to produce such speeds.



# It won't get tired. It just got tired of looking like a truck.



## The new 1967 Chevy pickup now looks so good and is built so well you can use it for almost anything.

We think it's about time trucks stopped looking so "trucky". After all, people use them for all sorts of things nowadays — camping trips, suburban chores, commuting, as well as for hard work.

The result of our thinking is the new '67 Chevy pickup you see above. It is designed to grace your driveway with its snappy looks. Or, with its strong construction, take on the toughest of light-duty jobs.

It's lower and sleeker with a bigger windshield. The interior

is now color-keyed to match exterior paint. New body sheet metal is put together so that it discourages rust. The sides of the pickup box are made of double-walled steel; and the tailgate latch can be operated with one hand. And there are many other good, new things.

As you can see, Chevy got tired of looking like a truck; but it won't get tired on your job. You'll learn all the reasons why when you visit your Chevrolet dealer... Chevrolet Division of General Motors, Detroit, Mich.



A BRAND NEW BREED  
FOR '67!



# WHAT'S NEW OUTDOORS

BY STUART JAMES

**EXPO 67**, the Canadian world's fair which is slated to open April 28, 1967, will make a strong bid to attract camping families. Expo officials expect to provide about 30,000 campsites within a 75-mile radius of the fair and every campground will have to meet government standards for accommodations and price.

All approved campgrounds must be high and dry and far enough from stagnant waters for comfort. They must be equipped with one faucet for potable water for every six sites, one toilet for each sex for every 12 sites, one garbage can for every four sites and one table for every tent site. Passable roads and lighting from dusk to dawn are required. The law also requires that each campsite comprise at least 1500 square feet.

Approved prices for campsites average \$2 to \$3.50 a night (some as low as \$1.50), while trailer sites average \$2.50 to \$5, with some at \$1.50 and \$2.

*PM* staffer Len Samuels went to Montreal to look the situation over and he reports that Expo 67 officials are determined to administer the campsite code to the letter.

"One campground I checked out originally sat at the foot of a small mountain," Len reported. "Only the ski lift formerly climbed the mountain, but now a road was being cut up the side into the woods above where tent sites would be built. Below, behind the office, bulldozers were leveling an area for trailers. Three small swimming pools were being revamped and electricity was being installed, not only for the trailers, but for the campsites up in the woods."

As of Oct. 1, fair officials had received 2500 reservations for campsites. For lists of campgrounds and reservations write: Logexpo, Camping Section, Expo 67, MacKay Pier, Montreal, Que.

**MORE HUNTING GROUNDS** are obviously needed nearer home when you consider that sportsmen drive from 4 to 5 billion miles a year to hunt and shoot. During the two or three months of hunting season, hunters wear out about 50,000 cars; use 300 million gallons of gas; use 4 million quarts of oil, and run smooth 860,000 tires. By the way, 5 billion miles is about 200,000 times around the earth; this, of course, is more than any single astronaut has traveled.

**WHEN MAD MAGAZINE** did a parody of *PM* one of the articles was titled: *How to Give Mouth-to-Mouth Artificial Respiration Without Becoming Emotionally Involved*. A manufacturer has finally come to our aid with the Air Rescue Breather, a plastic device that separates the mouths of victim and rescuer. It sells



for \$2 from Silver Cross Industries, 1571 Irving St., Rahway, N.J. It looks like a practical item, but I take exception to one line in the letter from Silver Cross vice-president Fred Babinski, who

writes: "It eliminates the natural revulsion to intimate mouth-to-mouth contact." Speak for yourself, Fred.

**PALSY SEEMS TO SET IN** from the time I lift a scoped rifle to my shoulder,



adjust my eye to the scope and get the cross hairs on a target. It's particularly bad when I'm concentrating on a clean lung shot that will drop an animal in its tracks, insuring that he won't run and produce a rush of adrenalin that will spoil the meat. I like to use a kneeling or prone shot for this reason, but it isn't always possible, so I welcome this rifle rest from Unique Sporting Enterprises, Box 3502, Torrance, Calif. Priced at \$14.50 it weighs seven ounces, is made of aluminum and adjusts from 12 to 38 inches.

**BAITING A HOOK** with a small shrimp causes the shrimp to curl up. The bait will look more natural with a toothpick run through the center to keep it straight.

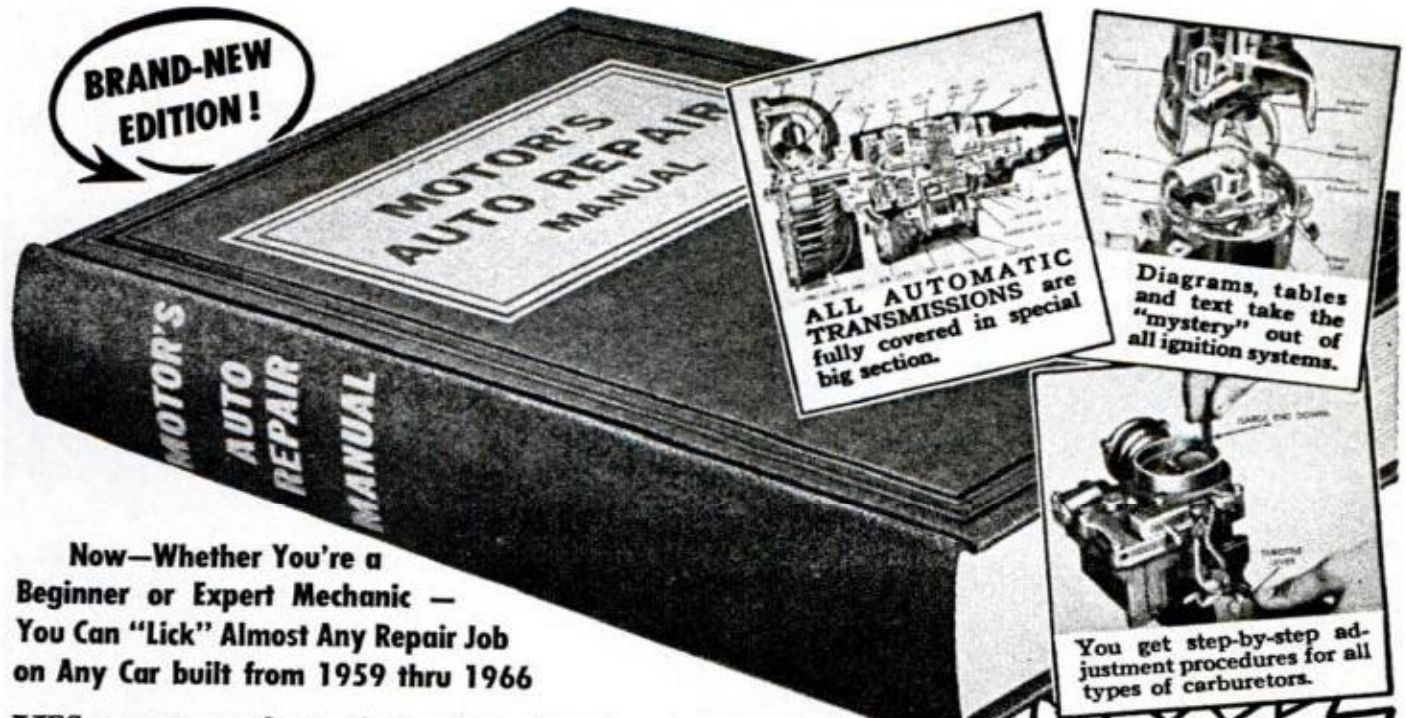


Here's the **EASY, Step-by-Step** Way to

# FIX ANY PART OF ANY CAR

Engines, Brakes, Transmissions, Rear Ends, Generators—Yes, All These Parts

**BRAND-NEW EDITION!**



Now—Whether You're a Beginner or Expert Mechanic — You Can "Lick" Almost Any Repair Job on Any Car built from 1959 thru 1966

YES, now you can fix practically ANY part of ANY car—quickly, easily, and right! From carburetor adjustment to a complete overhaul, it's easy when you have MOTOR's famous Auto Repair Manual. It's like having a staff of factory experts and MOTOR's field-trained engineers beside you, guiding you every step of the way. No wonder so many thousands of beginners and experts alike use this step-by-step, illustrated manual.

MOTOR's Manual "starts from scratch"—leads you through entire job with easy step-by-step directions, clear "how-to" pictures. Tells you WHERE to start, what TOOLS to use. You just CAN'T go wrong!

**3,800 Pictures! So Complete So Simple, You CAN'T Go Wrong!**

NEW, REVISED edition covers all you need to know to repair almost any car, 1959-1966, including all the new models! 1,350 Giant pages. 3,800 "This-Is-How" pictures lead you every step of the way. 457 "Quick-Check" charts — 55,000 essential repair specifications. Over 225,000 service and repair facts. Instructions and pictures so clear you can't go wrong!

Experts and beginners alike are amazed by the time and labor-saving methods!

The "Meat" of 300 Official Shop Manuals

The editors have put together the "know-how" from 300 Official Shop Manuals and "boiled it down" into one fully-illustrated easy-to-understand guide.

Here's ILLUSTRATED step-by-step guidance on Automatic Transmissions, Generators, Ignition, Carburetors, Fuel Pumps, Steering Gears, Rear End, Brakes, PLUS MUCH MORE.

**SEND NO MONEY**

Try Book for 10 Days FREE

Just mail coupon. (Attach it to postcard if you wish.) Test book in your garage or shop. **GUARANTEED** to pay for itself in 10 days or you owe nothing. **MOTOR Book Dept., 250 West 55th St., New York, New York**

**OVER 5 MILLION COPIES SOLD!**

**Expert Raves About**  
"Motor Manual is worth its weight in gold. I've done mechanic work for over 25 years. Motor has saved me many hours of brain-racking thinking."  
—R. Carter, N. Carolina (Mechanic)

**... So Does Beginner**  
"In technical high school where I learned the auto mechanic's trade, Motor's Manual pulled me out of some rough spots. Now I'm in the Armed Forces, attached to motor pool."  
—W. Bekemerer, Missouri (Apprentice)

**Same Offer on MOTOR'S New TRUCK REPAIR MANUAL**

Covers all gasoline engines, plus Ford, GM, Cummins, Mack, Perkins, International diesels since 1955. Over 2,000 pictures! Check coupon for FREE TRIAL.

**Brand-New—Covers All These Makes**

- |               |          |             |
|---------------|----------|-------------|
| American      | Fury     | Mercury     |
| Barracuda     | Corvette | Meteor      |
| Bronco        | Dart     | Mustang     |
| Buick         | De Soto  | Oldsmobile  |
| Buick Special | Dodge    | Olds F-85   |
| Cadillac      | Edsel    | Plymouth    |
| Chevelle      | Fairlane | Pontiac     |
| Chevrolet     | Falcon   | Rambler     |
| Chevy II      | Ford     | Studebaker  |
| Chrysler      | Imperial | Tempest     |
| Comet         | Jeep     | Thunderbird |
| Continental   | Lancer   | Valiant     |
| Corvair       | Lincoln  | Volkswagen  |
|               | Toronado | Marlin      |

**MAIL COUPON NOW FOR 10-DAY FREE TRIAL**

**MOTOR BOOK DEPT., Desk 711  
250 W. 55th St., New York, N. Y. 10019**

Rush to me at once MOTOR'S New AUTO REPAIR MANUAL. If O.K., I will remit \$2 in 10 days, \$3 monthly for 2 months and a final payment of \$1.95 (plus delivery charges and sales tax, if any) one month after that. Otherwise I will return the book postpaid in 10 days.

Print Name.....Age.....

Address.....

City.....

State.....Zip Code.....

Also send me for 10 days' Free Trial MOTOR'S New TRUCK REPAIR MANUAL. If O.K., I will remit \$11, plus delivery charge and sales tax, if any, in 10 days. Otherwise I will return book postpaid in 10 days.

Check box and save shipping charge by enclosing WITH coupon in envelope entire payment of \$9.95 for Auto Repair Manual (or \$11 for Truck Repair Manual) plus sales tax, if any. Same 10-day return-for-refund privilege applies.





## THE CHRYSLER CREW COMES THROUGH FOR YOU

*Beautiful new Chrysler Hydro-Vee runabouts!  
Spanking new, fun-engineered Chrysler outboards!  
Greatest choice ever of Chrysler inboard and I/O power!*



Hydro-Vee interiors feature swiveling-reclining bucket seats; sport-car appointments.



**New 35**—improved version of the record holder!



**New 45**—quieter version of a favorite!



**New 55**—only 2-cylinder motor in this class!

CHRYSLER OUTBOARDS  
27 MODELS  
FROM 3.5-105 HP.!







When Chrysler know-how hits the water, things happen. Fun things. Look! . . .

**All-new 14- to 23-foot Chrysler Hydro-Vee runabouts** skim you over the surface like a hydroplane, slice through heavy water like a Deep-V. They're safe—with exclusive Foam-Pac fiberglass construction. They're roomy—with more cubic feet of capacity per foot of length. See them. See aluminum and fiberglass Chrysler boats from 12 to 24 feet. They're more fun per foot!

**Fun-engineered Chrysler outboards** bring you

new fun, too. Brand-new this year are the 35-, 45-, and 55-horsepower models. You can pick from 27 beautiful Chrysler outboard models—from a spunky 3.5 to a snarling 105. And **one** is just right for you!

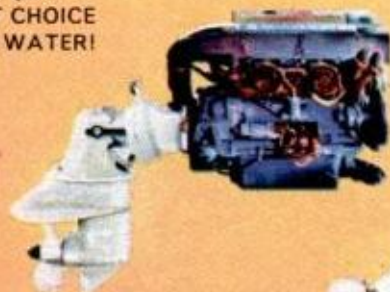
**Chrysler inboard-outdrive and inboard engines** also give you top choice in 1967. Nine different I/O's—from the popular 80- to the 290-hp. model. Inboards start at 125—go all the way to 335 horsepower.

Get in on all of the fun. Why don't you let the Chrysler Crew—the dealers who offer Chrysler marine products—put you on the water this year!



**17-foot Courier 229.** The "229" indicates hull capacity—a full 229 cubic feet, according to official B.I.A. formula! More fun per foot.

CHRYSLER INBOARDS  
AND I/O's  
WIDEST CHOICE  
ON THE WATER!



**COMPACT 80**  
fits even 14-ft. runabouts!



**NEW 175**  
a big one among boat builders!



**CHRYSLER INBOARDS**  
broadest choice,  
40 years of know-how!



# HOMEOWNERS' CLINIC

BY W. CLYDE LAMMEY

## Refinishing an antique table

*I've taken the finish off an old butterfly table. The wood is maple, but discolored and cloudy. I've used a maple stain, but the result is splotchy, even after two applications. How can I get a good finish?—A.R., Vt.*

Probably some of the old finish remained in the wood here and there, preventing the new stain from "taking" uniformly. And it isn't likely you'll ever get rid of all that old finish. But now that you've removed part of the old, along with most of the desirable patina, the only thing to do is come as near the old as possible. Try artist's colors, mixing burnt sienna and Vandyke brown; about three parts sienna to one of the brown makes a maple stain in a reddish tint. Use the colors as they come from the tube. Apply with a clean cloth folded into a pad. Rub on and rub off, continuing the procedure until you get just the shade you want. Then allow to dry for two or three weeks, depending on drying conditions. Finish with a sealer and one or two top coats. It's best to apply sealer and top coats with a spray gun. If you use a brush, flow on the coatings and don't brush them out. Rub down the final coating with 000 grade or even finer steel wool. Of course, it's assumed that the wood has been sanded smooth before any finishing materials are applied.

## New pep for run-down clock

*I've inherited a mantel-type chiming clock, not an antique. It's an 8-day movement but runs only a few hours when fully wound, then stops and won't run unless wound tight again. Also, one note of the chime does not sound. Can you tell me what's wrong?—W.E., Ore.*

The symptoms indicate several possibilities. Assuming the movement sounds the Westminster chime, the notes are sounded by tiny, leather-faced hammers striking horizontal chiming rods. If you remove the back of the case, you will see there are five rods and five hammers. A hammer may be loose on its arm or missing entirely. If so, replace it or tighten the setscrew that holds the hammer on the supporting arm. Strike the movement by

moving the minute hand clockwise to determine the correct position of the hammer. Bend the arm, if necessary, so the hammer rebounds properly.

Failure of the movement to run a few hours after winding may be caused by a rusted time spring that loses power after a short period. Or the "leaves" of the spring may be stuck together by an accumulation of hardened oil and grime, preventing normal unwinding. A drop or two of penetrating oil applied to the spring may loosen the grime and free the leaves. Still another possible cause is excessive wear of the bushings carrying the tiny spindles of the upper time train, which actuates the escapement. This could result in misalignment of the spindles causing them to bind in the bushings and overload the spring. Only a clock-repair shop with facilities for taking apart the movement can replace the bushings.

## Tilted walk

*A short section of the walk to my front door is about 2 ft. from the foundation and has settled on the side near the wall, preventing water drainage. The walk is only about 10 ft. long and I've thought of trying to level it by prying it up and filling in underneath with fine gravel. Is this practical? Or should I try leveling with a concrete patcher?—O.R., Mich.*

I wouldn't recommend either. The first means a lot of work with no assurance of a cure. The second is easier, but its permanence is questionable. Your problem is a common one with no easy, inexpensive solution. The permanent remedy is to break up the existing walk and replace it, pouring the new concrete on top of a 4 to 6-in. tamped gravel fill; or, break it up and lay mortared stone over a gravel fill. It's your choice of procedures. As a temporary repair you can level the existing walk by troweling on a topping of patcher. Place a form board along the lower edge of the walk and build up to a slight slope outward. Round the edge next to the form board with the trowel. If you wish, you can do a fair job of imprinting the divisions in the new concrete patcher by using the corner of a strip of 3/4-in. stock. Feather the outer edge of the long patch by brushing lightly with a whiskbroom.

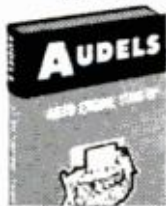
Each month Homeowners' Clinic answers your questions on home repair. If you have a problem, send a self-addressed stamped envelope to Homeowners' Clinic, Popular Mechanics, 575 Lexington Ave., New York, N.Y. 10022.



**LEARN MORE—  
EARN MORE!**

# AUDEL SKILL-BUILDING PRACTICAL GUIDES

## AUTO ENGINE TUNE-UP



**NEW**  
Complete tune-up procedures for all types of auto engines. Full adjustment data for carburetors, ignition, valves, etc. For the car owner who wants to do his own tune-up, as well as for the student or experienced mechanic. Fully illustrated. 416 pages. \$4.95

Circle No. 58 in Coupon



## AUTO GUIDE

**ALL-NEW**

biggest Auto Guide value! **\$6.95**

## FIX ANY CAR FAST!

**STEP-BY-STEP REPAIR GUIDE COVERS EVERYTHING:** Troubleshooting—unique symptoms-and-causes charts • Spark Plugs • Batteries • Tune-up • Distributors • Ignition Testing • Starters & Generators • Lighting • Tire Servicing • Brakes • Power Brakes • Front Suspension • Steering Systems • Wheel Alignment • Chassis, Springs & Shocks • Fuel Pumps • Carburetors • Cooling Systems • Lubricating Systems • Pistons & Rings • Crankshafts and Connecting Rods • Camshafts • Valves • Clutches • Automatic & Manual Transmissions • Drive Shafts & Universal Joints • Rear Axle Assemblies—**ABSOLUTELY EVERYTHING YOU SHOULD KNOW TO FIX ANY CAR!** Hundreds of illus. 736 pages. **\$6.95**

Circle No. 1 in Coupon

### Home Appliance Service Guide

How to fix refrigerators, washers, ranges, toasters, and all other electric & gas appliances. Fully illus. 608 pages. \$6.95

Circle No. 2 in Coupon

### Home Refrigeration & Air Conditioning

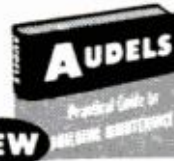
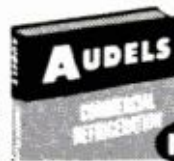
Servicing, operation and repair of all systems and machines, freezers, lockers, water coolers, etc. Illus. 576 pages. \$6.95

Circle No. 14 in Coupon

### COMMERCIAL REFRIGERATION

Practical guide and ready reference for students and workers. Covers all phases of installation, operation, maintenance and repair of commercial systems and machines. Complete coverage of electrical and mechanical work. Includes many useful tables and data. Fully illustrated. 544 pages. \$5.95

Circle No. 14B in Coupon



### BUILDING MAINTENANCE

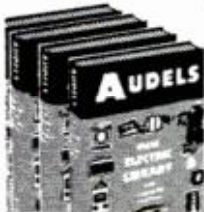
A guide for maintenance & custodial workers & building managers. Covers everything: Painting & Decorating • Plumbing • Concrete & Masonry • Carpentry • Roofing Maint. • Glazing & Calking • Elec. Maint. • Heating • Air Conditioning • Insect and Rodent Control, etc. Comprehensive; fully illustrated. 488 pages. \$4.95

Circle No. 99 in Coupon

### new Electric Library

10 volume electrical encyc. Answers questions on thousands of electrical problems. 9000 ill. 5558 pgs. Set \$25.00

Circle No. 15 in Coupon



### MACHINISTS LIBRARY

Three volumes of ready reference on all the latest shop practices for machinists and toolmakers. Vol. 1—Practical Fundamentals of Basic Machine Shop Operations. Vol. 2—Setup and Operation of all the widely used, important shop machines. Vol. 3—Toolmakers Handybook with down-to-earth data on layouts, specifications, jigs and fixtures, gear forming, cams, etc. Illus. 1310 pages. 3-Vol. Set \$13.50

Circle No. 12N in Coupon



### CARPENTERS & BUILDERS GUIDES

Four all-inclusive volumes provide latest inside trade information on modern construction. Vol. 1—Tools, Steel Square, Joinery. Vol. 2—Builders Math, Drawings, Specs. Vol. 3—Layouts, Foundations, Framing. Vol. 4—Millwork, Power Tools, Windows, Doors, Roofing, Flooring. Most practical guide available. Thousands of diagrams, charts, graphs and photos. 1616 pages. 4-Vol. Set \$16.95

Circle No. 8 in Coupon

### Practical Electricity

Complete handbook; practical, simplified ready reference on all electrical subjects. 1300 illus. 1088 pages. \$5.95

Circle No. 4 in Coupon

### TV-Radio Library

Two vols. on TV & radio circuits & how to install and repair all radio and TV including color. Illus. 960 pages. Set \$9.50

Circle No. 3 in Coupon

### Mathematics for Mechanics

A complete guide to the mastery of practical math. Simplified method makes learning fast and easy. Ill. 704 pgs. \$4.95

Circle No. 11 in Coupon

### Sheet Metal Pattern Layouts

Modern guide to all phases of sheet metal work, including pattern development. 350 layouts. Illus. 1152 p. \$7.50

Circle No. 29 in Coupon

### Blueprint Reading

For mechanics and construction men. Step-by-step explanation of how to read all types of blueprints. Ill. 416 pgs. \$4.95

Circle No. 25 in Coupon

### Electric Motor Guide

Covers hookups, control, maintenance and troubleshooting of all types of motors. Complete; 617 illus. 1062 pages. \$5.95

Circle No. 27 in Coupon

### Millwrights & Mechanics Guide

Practical information on plant installation; operation and maintenance data for foremen & workers. Illus. 1236 pgs. \$6.95

Circle No. 42 in Coupon

### Diesel Engine Manual

Complete practical guide to modern Diesel engines. Explains principles & how to maintain & oper. Illus. 544 p. \$6.00

Circle No. 9 in Coupon

### Truck and Tractor Guide

A guide for mechanics, drivers and maintenance men. Gas & Diesel repair, service and operation. Illus. 1366 pages. \$5.95

Circle No. 5 in Coupon

### Masons and Builders Guides

Four practical vols. for bricklayers, stone masons, cement workers, plasterers. 2000 illus. 1488 pages. Set \$10.50

Circle No. 26 in Coupon

### Plumbers & Steamfitters Guides

4 vols. of ready reference for plumbers, steam fitters, gas fitters, sheet metal workers. 3600 ill. 2318 pages. Set \$10.50

Circle No. 6 in Coupon

### Welders Guide

Practical guide to theory, operation. Maintenance of all types of electric, oxy-acetylene & Thermit welding. Ill. 626 p. \$4.95

Circle No. 10 in Coupon

### Foreign Auto Repair Manual

Up-to-date service data for all popular imports: English, French, German, Italian, Swedish. Illus. 592 pages. \$5.00

Circle No. 53 in Coupon

### Outboard Motor & Boating Guide

Practical details on all phases of outboard motor repair, maintenance and operation. Up-to-date. Illus. 446 pages. \$4.00

Circle No. 49 in Coupon

## 10-DAY FREE EXAMINATION

**SEND NO MONEY**—Pay the postman nothing! We are glad to send you any of the AuDel Guides for absolutely FREE examination in your own home. We take all the risks and leave all the decisions up to YOU. There is no obligation! If you decide to keep the books of your choice you may pay for them under our astounding easy-pay plan of only \$3 a month.

**HERE IS ALL YOU DO**—IT'S EASY TO ORDER: In the No-Risk Mail Order Coupon at the right just draw a circle around the number of AuDel Guides you want us to send you for FREE EXAMINATION. We will send them to you at once to help you build a brighter future by increasing your SKILL. If you are not COMPLETELY satisfied, return the books, and that will end the matter! NO STRINGS OR CATCHES TO THIS OFFER.

**THEODORE AUDEL & CO.**  
division of HOWARD W. SAMS & CO., INC.  
Indianapolis • New York

## MAIL THIS NO-RISK COUPON TODAY!

**THEODORE AUDEL & CO.—Self Improvement Publishers Since 1879—**  
4300 W. 62nd Street, Indianapolis, Indiana 46206 P-17

Please mail me for 10 days' FREE EXAMINATION the books I have circled at right. I agree to mail \$3 in 10 days on each book or set ordered, and to further mail \$3 a month on each book or set ordered until I have paid the purchase price, plus shipping costs. If I am not completely satisfied with my AuDel Guides I may return them.

|     |     |     |     |   |
|-----|-----|-----|-----|---|
| 1   | 2   | 3   | 4   | 5 |
| 6   | 8   | 9   | 10  |   |
| 11  | 12N | 14A | 14B |   |
| 15A | 25  | 26  | 27  |   |
| 29  | 42  | 49  | 53  |   |
| 58  | 99  |     |     |   |

Name \_\_\_\_\_  
Address \_\_\_\_\_  
City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_  
Employed By \_\_\_\_\_

**SAVE SHIPPING COSTS!** Check here if you enclose complete payment with order (plus sales tax, if any). We pay postage charges. You have same return privilege.

I have bought AuDel books before



# Earns its living as a truck. Doubles as a second car.



## You're ahead in a Ford.



**Rugged workhorse.** From the frames up, these Ford pickups are engineered for years of hard going . . . but are never hard on the driver. Seats are deep-cushioned, more comfortable. A swept-away instrument panel and additional shoulder room give space to spare. Twin-I-Beam suspension and a longer wheelbase give riding smoothness not thought possible in a pickup. See your Ford Dealer for a test drive, now.







## 20 WAYS TO GO IN SNOW

That wonderful white stuff is strictly bad news for motorists, but these tested tips will help keep you and your car on the go

By E. D. FALES, JR.

**A**T BREAKFAST things looked hopeless. Heavy snow had fallen, and I was waiting for the snowplow. I *had* to catch the morning train.

I waded out to have a look. A foot and a half of fresh snow had drifted against the garage door. The driveway and lane were blocked. Sure, I could charge out fast. But there's a sharp left turn in the driveway and my F-85 station wagon would never make it. In fact, it would probably bog down in the first 20 feet.

To make matters worse, the big town plow had sealed off our little road with a hard wall of snow four feet high. Even if I could get down the lane, I'd never get through this wall.

And then I remembered an old north country snow-driver's trick. In the Lake Erie blizzard country around Hamburg, N. Y., a highway engineer once showed me how he got through storms. He opened his car trunk and pointed out several hunks of heavy steel rail—real railroad rail.

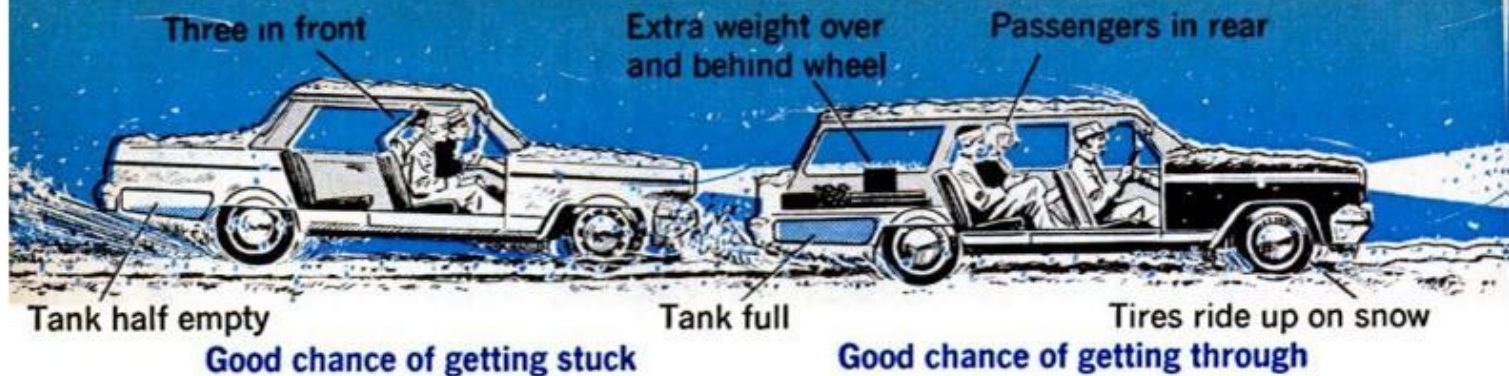
"Four hundred pounds," he said. "Suicide if I ever hit anything, but it sure works wonders if I don't."

My little wagon had lots of power—and snow tires (a must). But it's light. So I needed something like steel rails. But who keeps steel rails around?

I looked in the toolshed. I *did* have two old ¼-hp electric motors, a heavy sledge, two axes and some chopping wedges. I loaded these over the rear axle. Then I saw a box of tire chains in the garage. Chains might help, but not without weight—and there was no time to put on chains, anyway. So I dumped the box of chains into the wagon, adding 10 more pounds. Then I piled in a heavy boat-mooring chain, a box of tools, two cinder blocks, a pile of old magazines and a sack of lawn fertilizer. I put some of it *behind* the axle to lift the front wheels and get the transmission out of the snow.

The car now actually tipped backward. Silly? Sure, unless it worked.





**WEIGHT DISTRIBUTION** is an important factor if you want to go in snow. Tendency for front end to plow in should be counteracted by rear loading. Weight behind rear axle will keep added weight off front end

Fifteen minutes to go and the station two miles away. Luckily, I'd backed the wagon into the garage the previous night. I started up and let the engine warm a bit before taking off. In the first few feet I needed—above all—*momentum*; any snow-country driver knows momentum is the secret of going in snow.

The tires scorched as my little wagon blasted out, tossing snow forward and to the sides (I guess twin-grip traction would have made it easy, but I lacked it). But with all that weight aft she darted out just fine. I had speed enough to make that first hard left bend by turning the wheels and letting the snow trip them while the heavy rear end flung itself around.

Now came the big test—500 feet of straight lane. She went ahead at a crawl, nose up, knocking aside snow-laden pine branches and releasing a new storm.

Finally, I saw a big wall of snow coming at me—the pile cast up by the town plow. I poured on the coal to hit it hard. I started up the snow wall *and cut the gas* (spinning wheels would only dig in). The car went up and over like a surfboat. In a wink I was down onto the plowed highway and scooting for the train. Made it, too.

I've used this means of getting a car through deep snow several times now and it works wonders. Another deep snow trick I've learned is to load all your passengers into the rear seat and stop at the first gas station to fill up. A full tank of gas adds from 10 to 60 pounds right where you want it.

When you live in snow country you've got to learn the whole bag of snow-driving tricks. Here are more.

(But let me caution you—don't get so tricky that you ignore your own good sense of what's proper. Some tips are for emergencies only. Also, there are always hazards in the snow, so resort to tricks only when safe. And if you load the rear of your car, unload it as soon as the emergency is over, or you may find yourself involved in big skid trouble.)

- *Never wait for a storm to hit.* When one is forecast, don't run your car into the garage the usual way or you'll never get out. Back in. Then in the morning you'll have a dry acceleration lane.

If a really big storm is forecast, it may be wise not to go into your garage at all. Back into your driveway a few feet and leave your car close to the street. But not too close, or plows will bury it. You will need at least a 10-foot run in order to blast through the plow-pile (after loosening it with a shovel).

If your driveway slopes down from the street, as many do, take a tip from a New England driver. When deep snows are coming, he parks his car on the up-slope of his *lawn*. Then, come morning, he has the down-sloping lawn to help him.

- *Keep an open track.* When storms start in the valley where I live, I often run my car in and out the driveway every couple of hours, blasting out a track. This was suggested once by a plowman who told me the longer snow sets, the heavier (and harder) it gets.



"You need to bust it up while it's green," he said.

I've found this advice so good that I sometimes go out two or three times during a bad night storm to "bust" a track. Sure, I hate to get up, but I find real enjoyment in outwitting a bad storm. And come morning, I have an open driveway when the neighbors are out shoveling.

● *Build a temporary winter carport* where it does the most good. I know a man who has put one—just a roof on four nice, ornamental iron posts—right at the entrance to his driveway. Comes a storm, he backs in a dozen feet off the street and his sheltered car is ready to go next morning.

Incidentally, let me suggest that snow-driving tricks are for drivers in all states to know. That's because we all do so much winter traveling these days. Even sunburned Floridians get stuck on Christmas trips; so do Californians heading for ski lodges. And the worst snow I've hit in years fell not in Maine or Minnesota, but in North Carolina and Virginia.

● *Keep going! The No. 1 mistake drivers make in snow is that they stop when it's wrong to stop!* At the bottom of hills, for instance, some drivers get timid, stop to look the hill over—and never get started.

● *Leave planning room!* The next big mistake is that most drivers tend to

watch the fellow ahead and drive too close behind him. A good snow driver looks *ahead of the fellow ahead*. He expects him to stall out, and when the stall-out occurs he has time and room to keep going around him.

● *Never spin your wheels.* Once wheels spin, you've usually had it. The good snow-driver never lets his wheels spin for two good reasons: they get hot and form a melt which soon freezes into a slick, and they immediately dig ruts.

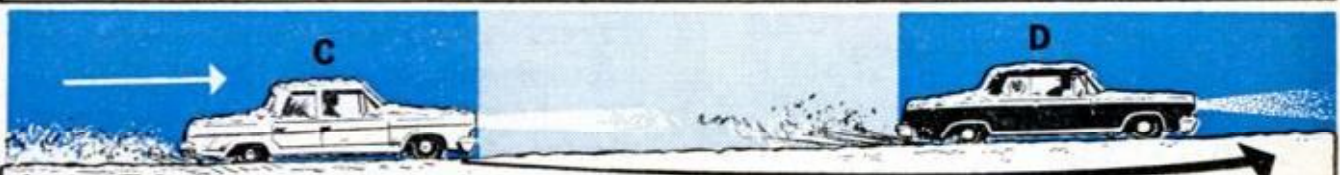
● *Keep in mind there's definitely a wrong way to enter a driveway.* Don't try to gun the engine as usual to get up the slight slope from the street. With spinning wheels, a car sometimes actually slides backward down the driveway into the street gutter—and stalls. The right way is to ease off the power and let momentum carry you in.

● *There's also a wrong way to take a hill.* Let's say there's a six-inch snow. Lots of drivers come down one hill carefully at, say, 25, approach the next hill at 25, and then (as in the driveway) try to make it by gunning the engine. They always lose. They spin crosswise, block the road and tie up traffic. If conditions are really bad, *stop on the previous hill* and wait on the downslope shoulder (if safe) until you're sure everybody ahead of you is going to get up the hill. Unless you can see a way, there's no point in trying.

Continue on down, at a safe 25 if



**TAILGATING IN SNOW** involves more than the danger of collision. If Car B slows down and gets stuck, it is certain that Car A, in losing momentum, will also become stuck



**EXPECT THE OTHER CAR TO STALL**, and you'll assume the right driving technique. Here when Car D gets stuck, the driver of Car C is far enough behind to judge the situation, slightly accelerate (if necessary) without skidding and pass without losing momentum

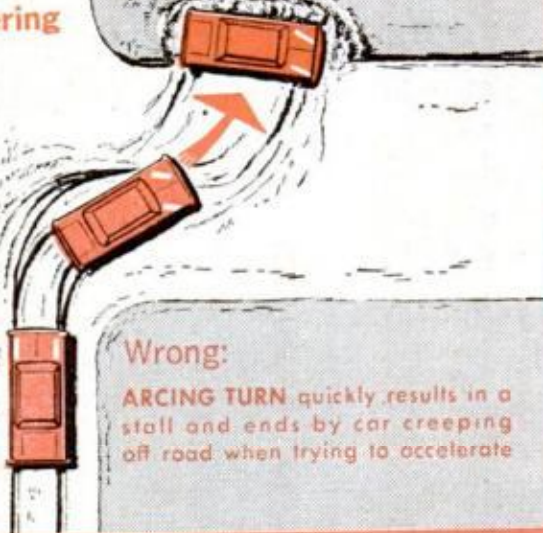




Keep wheels straight

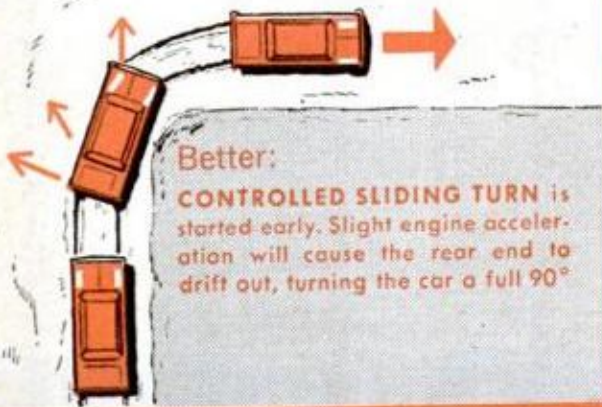
**HARD TURN** presents a large frontal area of your tires that builds snow pressure and could cause a stall as well as precipitate a skid

Cornering



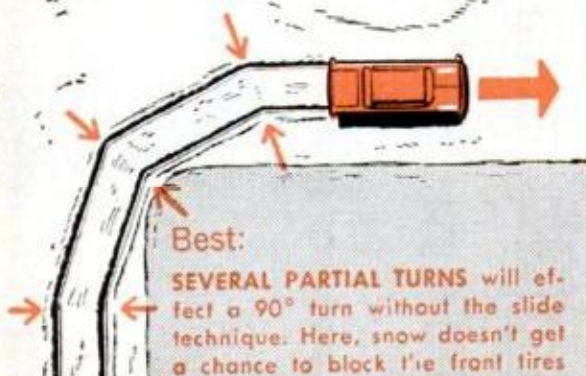
Wrong:

**ARCING TURN** quickly results in a stall and ends by car creeping off road when trying to accelerate



Better:

**CONTROLLED SLIDING TURN** is started early. Slight engine acceleration will cause the rear end to drift out, turning the car a full 90°



Best:

**SEVERAL PARTIAL TURNS** will effect a 90° turn without the slide technique. Here, snow doesn't get a chance to block the front tires

necessary, but on approaching the bottom (or on the flat between the hills), let your speed go up; make momentum work for you. Now, give yourself a *planned speed reduction*. If, for example, it was safe to accelerate to 40 at the bottom, plan to go over the top at 25. Now you have a 15-mile speed cushion. You can lose speed a little at a time, going up, whenever you sense that your rear wheels are working too hard and are trying to slip.

Of course, there are all sorts of hills and conditions and speeds vary. But this principle—giving away a little speed at a time—is a 100-percent-sure formula for getting over any hill, assuming it's passable at all.

### Big semi fine snow-buster

● *How about a hill that isn't passable?* A good snow driver "reads" every hill in advance. If one looks doubtful, he waits. If no plow comes, he waits for a big truck. Some chain-equipped semis (and even some without chains) are wonderful snow-busters. You can follow their tracks.

● *Use a starting "pad."* If you don't have a dry garage floor—if you're parked in the open—you can use a trick I've seen used in Maine. With all possible weight in the rear and under power, gingerly roll your car back *just two inches*. You need only budge it.

Now, roll forward, but not over six inches. And next, immediately, before the tires can sink in, roll back again. This time go a bit farther. Then immediately go forward once more. Do not "rock." Little by little you roll out a hard-packed pad upon which you can get needed starting momentum.

● *Where and how to shovel.* I see many drivers shoveling—hard work—and still not able to start. Often they use short-handled, back-breaking shovels that can't get under a car. And they shovel haphazardly around the wheels. Your best bet is a light, *long-handled* shovel—not a wide-bladed snow shovel, but a narrow scoop shovel of light-

*(Please turn to page 210)*





### 'Light pen' directs planes

An attack can be directed against intruding aircraft with a "light pen" that's placed on the dots of light that the hostile craft make on the screen of the Burroughs-built BUIC (back up interceptor control) System. Computers immediately calculate intercept points and guide missiles and fighters toward the invading planes.



### Zero-g martini

An upside-down martini demonstrates Aerojet's semisolid (thixotropic) mixture of fuel to put more power into rocket propellants. High-energy solid materials (represented by the olive) are placed in existing liquid propellants. The mixture is then turned into a semi-solid that's reliquified under pressure to operate the rocket. (And the martini is potable, they said.)



### Touch system—by toe

A foot control enables a British invalid (whose only controllable movement is in his foot) to operate an electric typewriter at the rate of 50 words per minute. He taps out words on the control according to a code based on the frequency of the letters.



### Rises to the occasion

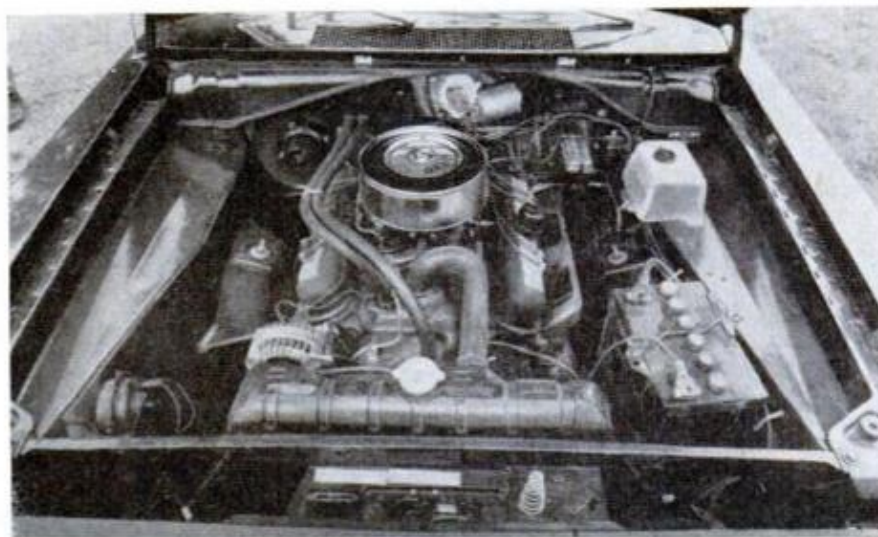
Carried in a backpack (left), an inflatable 60-foot antenna is now used by troops in Vietnam to lengthen the range of their communications. Inflated by a foot pump, the extended antenna (right) reaches above trees and hills for broadcasting. It's by Goodyear.



# DAN GURNEY TESTS PLYMOUTH'S



**STANDARD V8 ENGINE** with the Formula S package is this 273-cu.-in. Commando with single four-barrel carburetor. Barracuda I roughed up in the Mojave sported the 383 optional with the Formula S package



**S**LIDE IN, TURN THE KEY, step on the accelerator and—pow! Instant smile. That's how I met the 1967 Formula S Barracuda. The sound of a fine engine has always been the sweetest sort of music to me and I liked what I heard from Plymouth's sleek new fastback the moment I got under way on Willow Springs Raceway in the Mojave Desert of Southern California.

The 383-cu.-in. Commando powerplant responded with a husky, throaty drone as it moved quickly and easily onto the course and in the two enjoyable hours which followed I found myself repeatedly giving it full throttle from stop just to listen to that sound.



# FASTBACK '67 BARRACUDA



You couldn't say that Plymouth has performed major surgery on the Barracuda for '67 since the overall styling is still closely related to previous models. But I applaud almost all the changes that have been made and frankly feel that—particularly with the Formula S—the manufacturer has delivered something much closer to my idea of a thoroughbred modern American street machine.

The new Barracuda offers two inches more wheelbase at 108 inches, a two-inch wider front track at 57.4 inches and, in the case of the Formula S, 110 more cubes of displacement with the optional 383-incher (largest Barracuda engine previously available was 273 c.i.d.). Other equipment of note on my car included six-leaf springs, larger diameter front sway bar, wide-oval tires, front disc brakes, 10-inch-drum rear brakes (power assisted) and the special automatic transmission common to larger Chrysler products and the drag strip. The entire package checked out at about 3400 pounds—a heavy Barracuda by scales but not by the seat of the pants when coupled to the 383 engine.

To expand on a corporate phrase, if Dodge builds tough trucks, Plymouth sure builds very tough Formula S Barracudas. I pounded my test car around Willow Springs' generally unforgiving twists, turns and undulations lap after lap, then moved over to a square section

## ENGINE AND TRANSMISSION AVAILABILITY

### 6-cyl. Model

225-cu.-in. OHV  
145 bhp @4000 rpm  
Torque: 215-lb. ft. @2400 rpm  
8.4:1 comp. ratio  
Single 1-bbl. carb  
Auto or 3-speed manual

### 8-cyl. Model

273-cu.-in. 90° V8  
180 bhp @4200 rpm  
Torque: 260-lb. ft. @1600 rpm  
8.8:1 comp. ratio  
Single 2-bbl. carb  
Auto, 3- or 4-speed manual

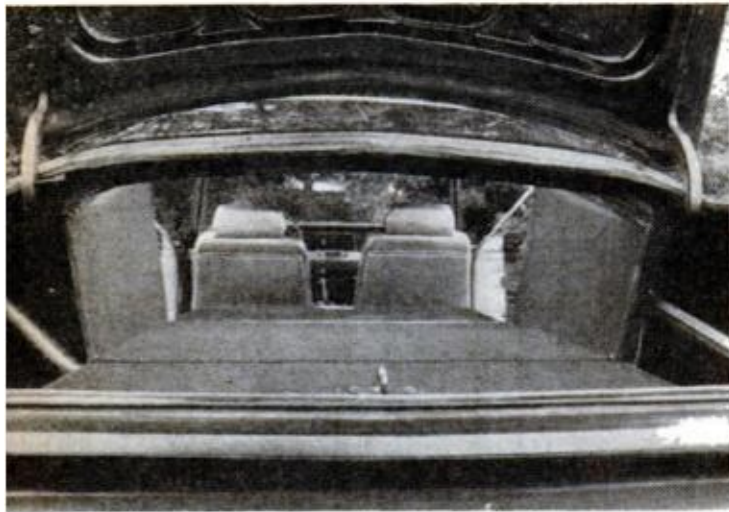
### Formula S Package

273-cu.-in. 90° V8  
235 bhp @5200 rpm  
Torque: 280-lb. ft. @4000 rpm  
10.5:1 comp. ratio  
Single 4-bbl. carb  
Auto or 4-speed manual

### Formula S Option

383-cu.-in. 90° V8  
280 bhp @4200 rpm  
Torque: 400 lb. ft. @2400 rpm  
10.0:1 comp. ratio  
Single 4-bbl. carb  
Auto, or 4-speed manual





**LOOKING THROUGH THE CAR** with back seats folded gave a view that left no doubts about luggage space

of dirt road that was as much rock as dirt and let her rip. In between, we located a straightaway of considerable length where I looked at an indicated 130 mph which felt awfully close to true speed. For good measure, there were nearly a dozen panic stops ranging from 100 mph to 50 mph.

Few passenger cars will perform those feats. Fewer will move farther afterwards without fairly extensive doctoring. But this manhandled Barracuda was fully prepared to hum its way to market with Mom, providing she be wary of sudden stops; the brakes simply weren't up to much more.

The first few laps on the race course were a little shaky at speed because of the steering which went suddenly from oversteer to understeer and back again in various corners. Upon discovering

that the tires held the normal 30 pounds of air, I inflated them to 45 in front, 40 in the rear, and the steering at fast speeds improved significantly, although the same basic conditions remained. The ratio was a little slow for what I was trying to do and, in my opinion, even a bit slow for some ordinary conditions.

Also, regardless of the extremes I was demanding, I feel the brakes could be better. The deceleration doesn't match the acceleration. Granted, when you've got that much acceleration, it's a tall order and a fault common to virtually every car of this type. I should add that while brake fade and pull developed more quickly than I felt it should have, the car always decelerated within safe limits.

After adding air to the tires and returning to the course for more hard laps I found myself growing accustomed to the slow-steering feel and noticed that, despite protests, the car was getting around fairly commendably. It isn't fair to expect a passenger car to handle or perform like a full-blown race car. And I can't think of any race cars I've driven that would be very practical for a family shopping trip. Although I didn't drive the '66 Barracuda, I endorse the idea of improving the weight distribution front-to-rear by spreading out the wheels, which is essentially what Plymouth has done in

*(Please turn to page 227)*

**THE MOJAVE COURSE** didn't have much road to burn up, but the fastback sure raised some Mother Earth!



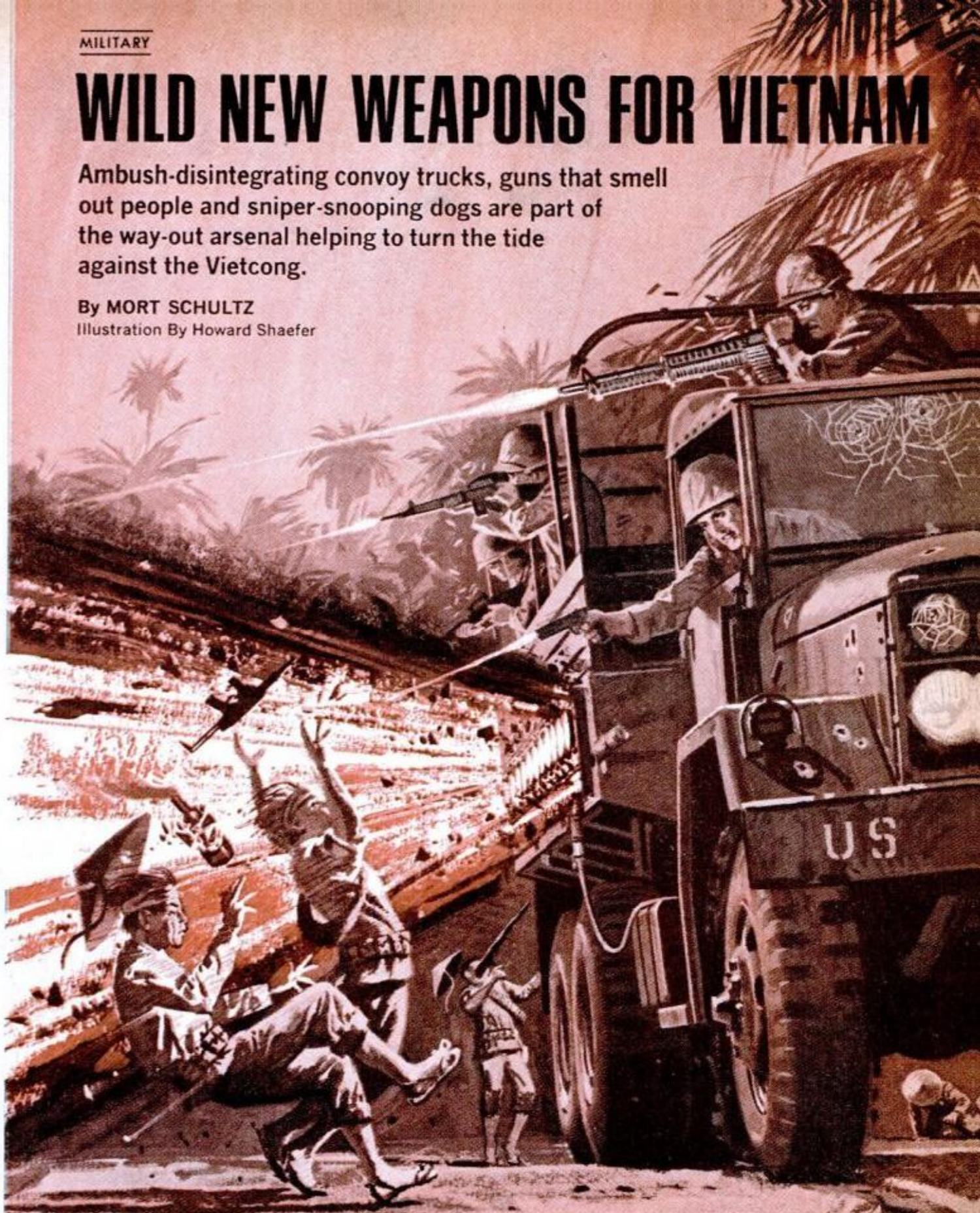


# WILD NEW WEAPONS FOR VIETNAM

Ambush-disintegrating convoy trucks, guns that smell out people and sniper-snooping dogs are part of the way-out arsenal helping to turn the tide against the Vietcong.

By MORT SCHULTZ

Illustration By Howard Shaefer



GUERRILLAS in ambush on an American truck are, in turn, "ambushed" by mines on sides of the vehicle

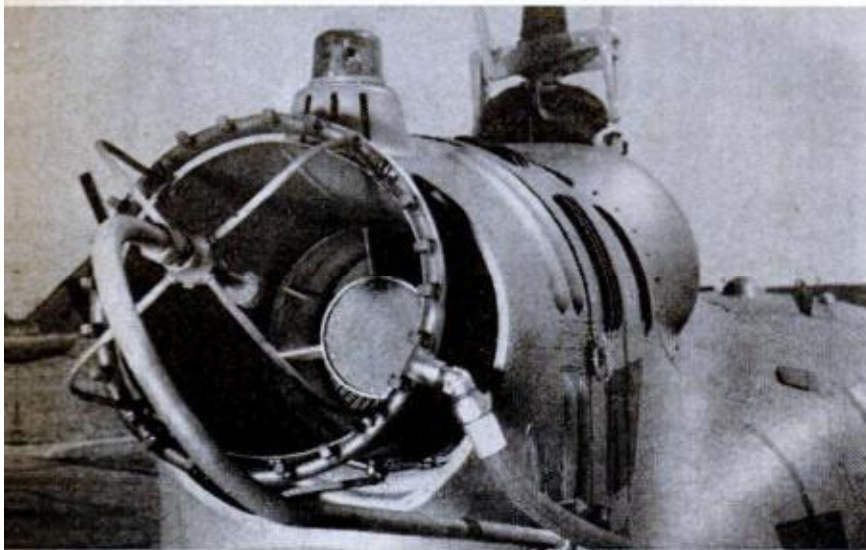
**A**LL HELL BROKE LOOSE 15 miles north of Vinh Long—a favorite ambush spot where the jungle is so thick you can't see the forest (or the enemy) for the trees. This time, though, the Vietcong were in for a deadly surprise.

Va-r-o-o-m! The American trucks shuddered as smoke belched from their sides. The blast subsided. Only the eerie sounds of the jungle were now heard. Not



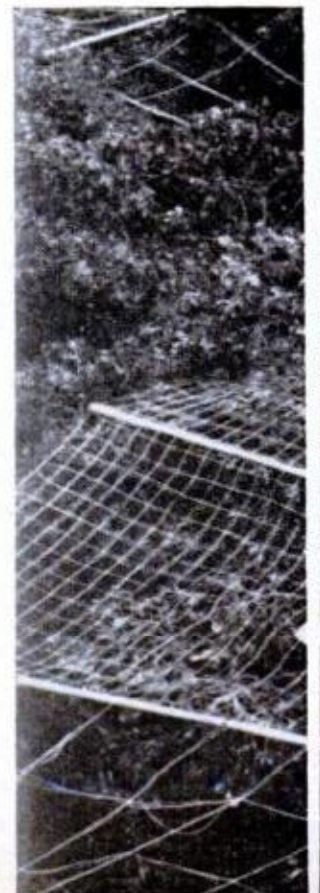
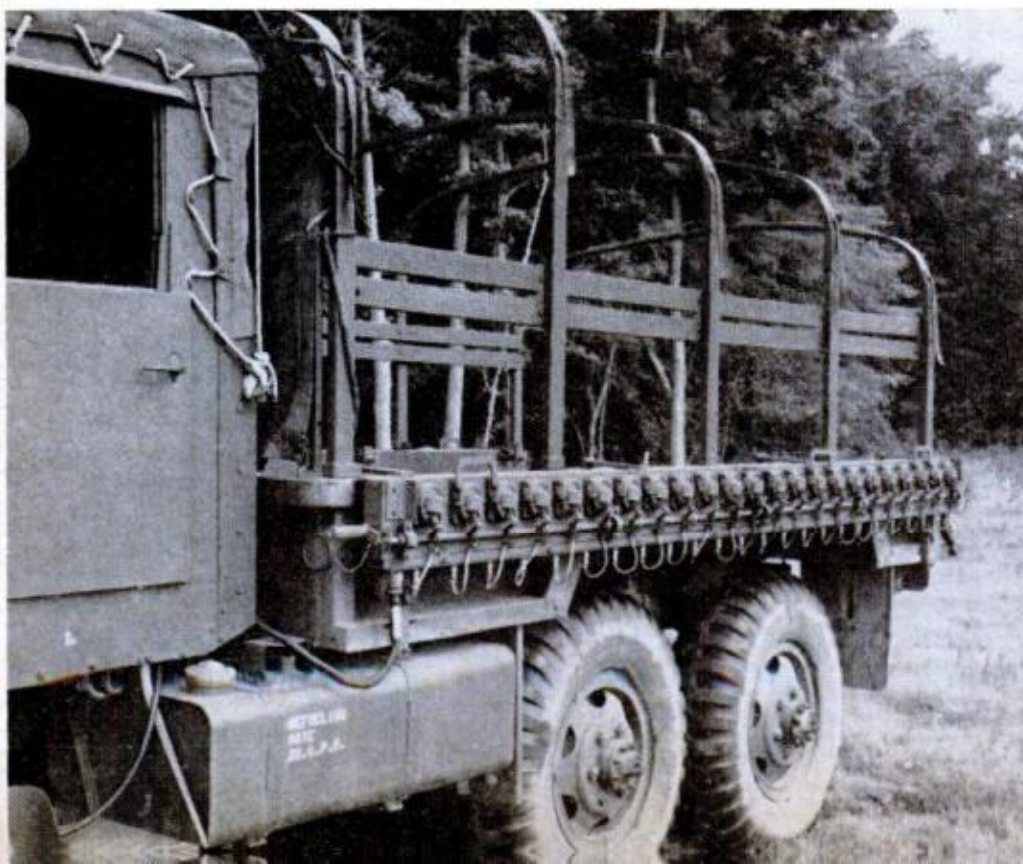


**FITTED TO A RIFLE**, a new detector can spot an unseen enemy and alert the GI by an audible signal. Not only that—the detector also is able to tell the user how far away the hidden guerilla is



**SMOKE SCREEN** (upper left) can be accurately placed in small jungle clearing for a troop landing by slow-flying helicopter. Smoke comes from a can of fog oil fed through "spider" fitted over exhaust (left)

**CLAYMORETTE** counterambush system is intended as much as psychological weapon as a killing weapon. Lineup of 23 small weapons along side of truck is shown below





one snapping Vietcong rifle remained to be silenced. In 30 seconds, what had been a concealed, safe hiding place for 12 guerrillas had turned into a defoliated chunk of Vietnam real estate holding the dead and dying.

The thing that is now turning the tables on ambushing guerrillas is a crude affair which most weapons enthusiasts would look upon with disdain.

Called a Claymorette, it is a miniaturized version of the Claymore mine and measures only 2½ by 1¼ inches. But 23 of them strung together and discharged kill everything within 50 meters and wound for 50 meters beyond.

Weapons such as this are helping GIs to "out-guerrilla" the guerrillas. They are the result of a unique coalition. For the first time, civilian scientists and engineers, comprising an outfit called the U.S. Army Limited War Laboratory, have traded the comfort of desks for the sweat and grime of the battlefield. They team up—as civilians—with fighting troops to learn from firsthand experience what the problems are. Then,

they return to solve them in the laboratory at Aberdeen Proving Ground, Md.

No problem was tougher or more costly in American lives than stopping an ambush, I was told on a visit to the lab. Now, a lurking enemy knows that American trucks will spray him with thousands of BB shot pellets—traveling 4000 feet per second—the instant he opens fire.

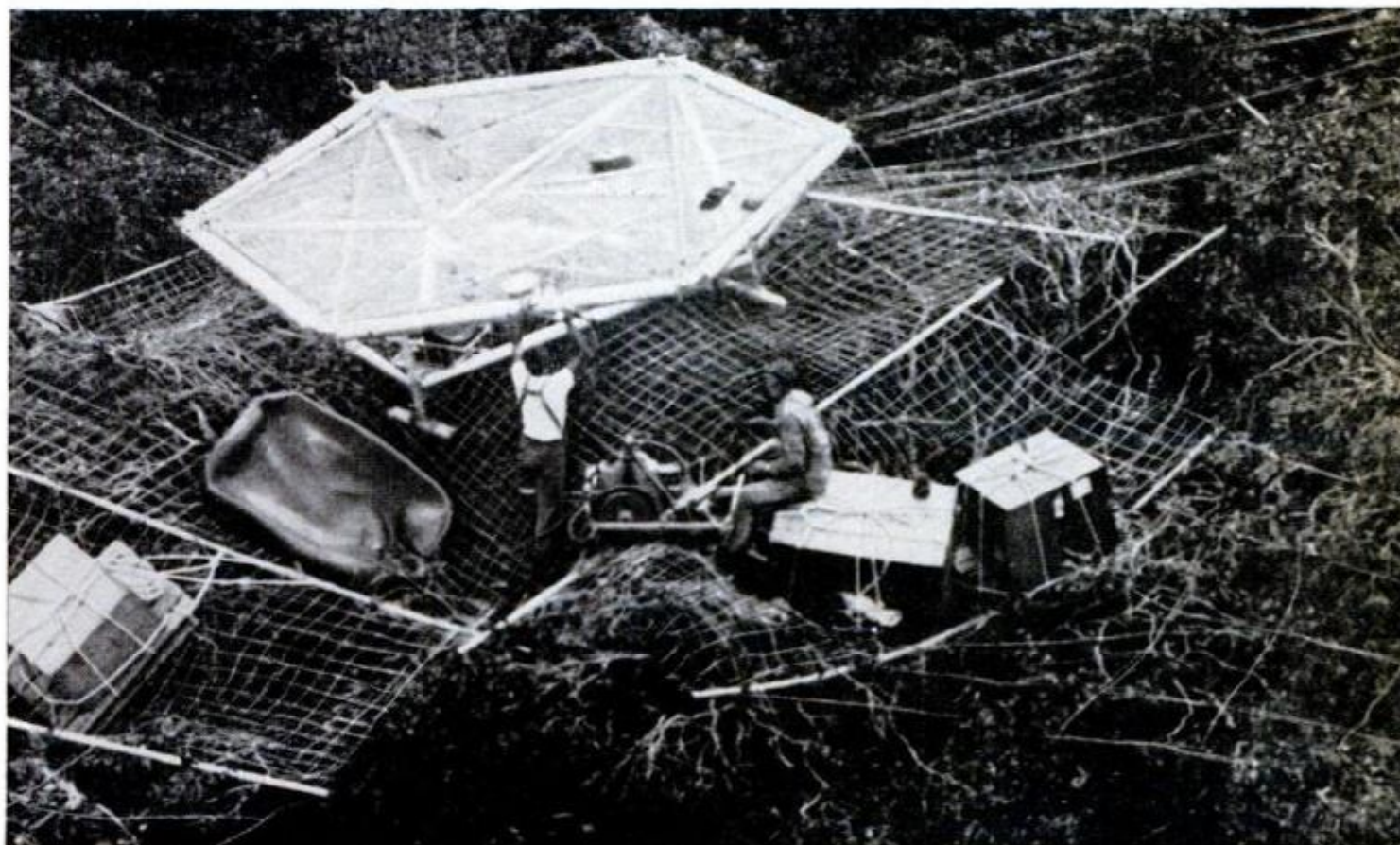
How effective is it? Lt. Col. Austin Triplet, who has been there twice, puts it succinctly: "You can't hold up a match without getting it lit by a pellet."

This weapon is just one of 28 strange devices developed by the War Laboratory since it was organized in 1962.

One of the most unusual is a plate—no larger than your car's steering wheel—that pinpoints the exact location of an enemy sniping at helicopters. If you want to get an idea of discouragement, imagine this:

You've just taken a shot at a chopper which is 100 feet in the air. You *know*

PLATFORM AND STEEL NETS, set on treetops by helicopters, hold 3 tons. Hoist lowers men, equipment





you are hidden from view. Yet, as you sight down the barrel for another shot, you see the copter heading straight for you with rocket-launching tubes ready to blast you.

What gave you away? Simply that first bullet. When it is fired, two things happen.

First, the muzzle blast hits the face of a convex dish fastened to the chopper's belly. A light immediately flares on a panel inside to tell the pilot he has been fired on.

Second, the follow-up shock wave zeros in on one of four acoustic sensors embedded in the dish. These sensors are positioned at 1, 5, 7 and 11 o'clock. The shock wave hits the one nearest the sniper, causing one of four lights to flare on the panel—showing which sensor received the shock wave. And it doesn't matter whether the bullet hits; the lights will do their work.

What do helicopter jockeys think of the bullet-detector? I asked Lt. Col. Dave Hayes, an Army helicopter pilot.

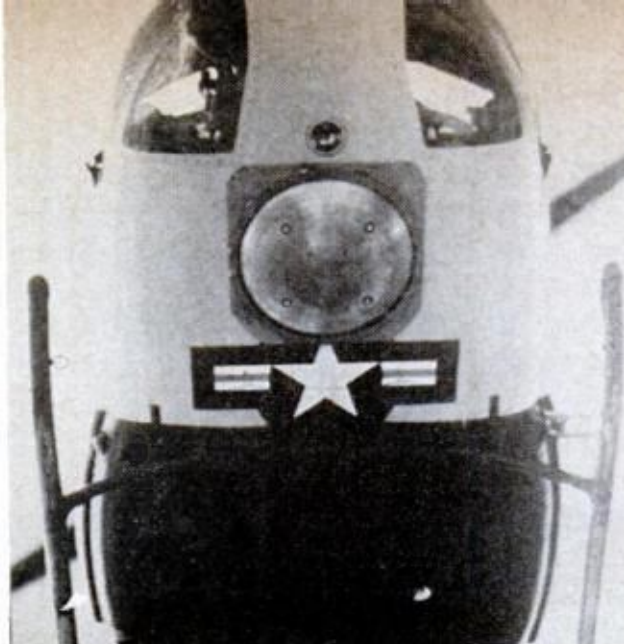
"Wish I had it when I was in Vietnam," he says purely and simply.

Hayes found out the hard way that it's no fun playing hide-and-seek when the other fellow does all the hiding and seeking. He was shot down, rescued, climbed into another helicopter and got shot down again in the same spot—all within one hour—and never saw a guerrilla.

His experiences helped War Laboratory scientists produce the equipment needed to stop nonsense of this sort. And it is continuous contact with fighting troops that makes the lab tick. At least one team member is in field at all times, providing liaison between GIs and the main body of scientists working on problems in Maryland, half a world away.

"Naturally," states Dr. Max Krauss, a lab branch chief, "finding problems is not the trouble. The trick is to solve them, and we'll use any means to do that."

And by "any means," Krauss means just that. Even dogs have become val-



DISH on copter's belly has four sensors that tell pilot he's being fired on—and from which location

uable weapons of jungle warfare.

With a transmitter strapped to his collar, a dog is set loose in the jungle. As long as he keeps moving, a signal is sent over a receiver to a GI who is part of a searching party. The dog is trained to stop only when he sniffs out a guerrilla waiting in ambush. The dog is able to creep up on a prey without revealing himself. Once he stops, the signal stops and GIs are tipped off.

An even more effective means of detection is being rushed to replace the stopgap dog measure.

The new hardware is called a man-pack personnel detector. Essentially, it's a probe fitted to the end of a rifle which is able to pick up human effluents. When the enemy is near, a signal audible to the rifleman alerts him, and a meter tells him the distance to the lurking guerrilla.

This detector was developed by the lab's communications and electronics branch. Each branch acts as a separate research and development outfit, each responsible for one phase of technology as it applies to Vietnam—for example, environment and survival, mobility, biological sciences, applied physics and munitions. Educationally well equipped for their work, the 100 or so scientists have an additional advantage—most of them have had war experiences.

In World War II, for instance, Bob

*(Please turn to page 214)*



# TOO DANGEROUS TO DRIVE!



This is an important article. It concerns auto maintenance and points up an aspect of overall traffic safety that is too often ignored in the general furor over whether or not auto manufacturers design and build safe cars, whether or not drivers know how to drive them, and whether or not various highway agencies build and maintain safe roads. No one knows exactly how many auto accidents are attributable to poor car maintenance. Yet it is a factor—a big one—in our appalling highway accident toll.

As Mr. Dawson's article proves, not only do we make little effort to maintain our cars in peak condition, but we are often unaware that unsafe conditions can and do exist. Ideally, then, PM would like to see every car owner his own vigilant "inspector."

*Robert P. Crowley*

Editor

**You may think of your car as being in tip-top shape, but this sharp-eyed veteran of the auto inspection wars knows better**

by NOEL K. DAWSON  
Chief, Vehicle Inspection Section  
Department of Motor Vehicles  
District of Columbia

**I**'LL GIVE YOU five to your two that the car in your garage is in dangerous condition from the standpoint of safety. I'll win, too. How do I know?

You skip maintenance, you let potentially dangerous faults slide, you don't pay attention to danger signals anyone can detect, and you put up with conditions you wouldn't accept for a minute





**IN NO UNCERTAIN TERMS**, stickers above call out condition of cars checked. Gauging headlights, below, quickly reveals any misalignment



**ON THE LINE** at motor vehicle inspection facility,



The quotations below, taken from spot interviews with several Washington car inspectors, give a good idea of what they see and hear during the course of a day. Some things that happen are incredible.

"... a '55 Chevy looked great, but had a bad front end. In fact, at the brake test, a ball joint jumped out and let the wheel down ..."

"... a '56 Pontiac it was, and I bet the front end hadn't seen any grease in years. When we hit the brakes, both front wheels flopped out on the floor—the A-frames had rusted right through ..."

"... guy assured me his '62 T-Bird was in perfect shape, that he'd just had it checked out by a real good man. First thing, we flunk his headlights. When I try and stop at the front end lift, my foot goes right to the floor—no brakes. Lucky it didn't happen to him on the road, but he didn't see it that way ..."





this car is lifted for a long hard look at the front end

Photos by Ken Warner

in a taxicab. If you had to bring your car in—just as it is now—for inspection, the odds are three to one it would flunk. I'll bet on it because my regular reports prove it.

In 1965 (we annually inspect every vehicle registered in the District of Columbia), we rejected over 100,000 out of a quarter-million vehicles on their first pass through.

One in 250 cars is so dangerous we won't let the driver drive it out. We slap a big "Condemned" sticker on the windshield and the owner has to have it towed. With a sticker, the car cannot be parked on a public street. Once repaired—and about 60 percent are—it has to be towed back unless the repairman obtains a permit to drive it to the test station and assumes the risk.

We are not just trying to make things rough for Washington motorists. Since 1939, we have been operating under Public Law No. 431, which grants authority to the commissioners of the District of Columbia to establish any rules they consider necessary for a tough program of highway safety.

Roughly, we insist that vehicles registered in the District be up to the manufacturer's minimum safety specs.

We check more than 6000 vehicles a week—26 items on each. Our inspectors are civil service employees with over five years' experience as automobile mechanics. Some things get by us, but not many.

For example, we once rejected a presidential limousine, in which Mr. Truman often traveled. It came in like all the rest and we found a loose wheel. It was towed out. That car had as much political pull as a car can get, yet we looked closely enough to find a rather obscure fault.

What do we look at?

First, we check the registration to make sure the card, tags and identification numbers on the car agree. We then look at the rear lights, directionals and headlamps. About 35 percent of rejections are made there, nearly half are for faulty headlamps.

I don't know why, but it seems few motorists pay much attention to their

*(Please turn to page 212)*



# KILL THAT FIRE

with the right extinguisher

New "all purpose" extinguishers can clobber gasoline, grease, electrical fires. They're light enough for the lady of the house to handle. But special types still do a job

By PAUL W. KEARNEY

THE MECHANIC DROPPED A TROUBLE LIGHT he was using under a car on the lift. It hit the floor with a loud *pop* and, almost instantly, flames were snaking across the concrete. Sparks from the lamp had set off oil and gasoline drippings!

Racing across the shop, the mechanic jerked a dry chemical extinguisher from its rack. "No, not that one!" yelled another worker. "That'll spread it." The second man swung into action with an older soda-acid tank—and the flames quickly spread across the floor and set off a bunch of oil-soaked rags. It was a healthy fire by the time the fire department arrived.

The soda-acid unit was exactly the wrong choice. It essentially is a water-base extinguisher and will spread a petroleum fire. The dry chemical should have been used.

But you can't completely fault the two mechanics in the suburban New York garage. Like millions of workers and homeowners all over the country, they didn't know much about first-aid fire extinguishers.

Still, confusion should be a thing of the past. Six years ago, the Underwriters Laboratories tested and passed the first all-purpose, or A-B-C, extinguisher. But it was some time before any hit the retail market because the military, industrial and commercial users gobbled up the supply. Today, however, a dozen manufacturers are marketing them.

I have seen how effective these units are. At one demonstration soon after they were developed, technicians used 15-pound capacity extinguishers (medium-sized portables) to put out a 30-square-foot gas-

## WATER

Class A rating—for paper, wood, cloth, rubber fires. Water cools combustibles below kindling point, wets them to prevent embers from rekindling. Pressure sources: gas from soda-acid action; stored air pressure; pump. Units shown are pressurized type. Water must be protected against freezing

## ALL PURPOSE

Class A-B-C rating. Dry chemical provides fire retardant blanket to prevent rekindling of wood, paper, etc.; has smothering action on burning oils and fats; is nonconductor, so is safe for smothering fires that break out in electrical equipment

## DRY CHEMICAL

Class B-C rating. Very good for smothering Class B fires—gasoline, oils, paints, grease; also safe and effective against Class C fires—electrical lines and equipment. Chemical may be sodium bicarbonate or potassium bicarbonate (Purple K), more effective of the two

## CARBON DIOXIDE

Class B-C rating. Gas is nonconductor, making it especially useful for "C" out-breaks; will not damage electrical equipment. Cold gas creates heavy fog that smothers burning gasoline, kerosene, grease, oil, fat and other types of Class B fires





ROARING FIRE IN TEST CRIB had seven-minute pre-burn before a technician hit it with a dry-chemical all-purpose extinguisher. Blaze was killed in 65 seconds in the test timed by *Popular Mechanics* editor





oline blaze; burning insulation in live electrical equipment; stubbornly burning rubber tires and finally, even a treacherous magnesium fire.

Up to that time, no firefighter in his right mind would have dared use any single type of extinguisher on such a variety of outbreaks. In some cases the effort would have been futile; in others, downright dangerous.

Today, there are a number of all-purpose extinguishers available. They are marketed under a variety of descriptive names: All-Purpose; All-Class; A-B-C; Multi-Purpose; General-Purpose. But whatever they're called, they're effective against the three common classes of fire:

*Class A:* wood, paper and other ordinary combustibles.

*Class B:* oil, grease, flammable liquids.

*Class C:* live electrical equipment.

But don't make the mistake of buying a unit simply because the maker calls it "all-purpose." Check the extinguisher to see if it carries a label stating that it has been rated by Underwriters Laboratories (UL) or Factory Mutual Laboratories (FM)—the two quality ratings.

These two labs are nonprofit organizations supported by insurance groups. They set rigid standards. Manufacturers voluntarily submit their products to either or both for objective evaluation and testing. Units that measure up to manufacturing and performance standards receive a UL or FM label, which is retained only for as long as the quality standards are adhered to. Either label is your assurance that an extinguisher is well made, is exactly as represented, is effective and safe when used as directed.

You frequently see advertisements—or encounter door-to-door salesmen—offering pint-size "mammoth midgets" priced at \$2.98 or so that are "guaranteed" to control every type of

fire. You can be sure these units carry no UL or FM label. And they may be worse than nothing if they lull you into thinking that they will offer real protection.

Regardless of the chemical composition of the extinguishing agent (which may be perfectly good), no midget-size unit has ever earned a UL or FM rating. Reason: its *limited capacity*. The smallest size multipurpose extinguisher presently listed by UL has a capacity of 7½ pounds of dry chemical (total weight about 16 pounds). Even if the manufacturer put the same formula in a one-pound size, it would not get a UL listing. Such a small unit could only be effective if you happened to be sitting right there with the extinguisher when the fire started. In most cases, that's not very likely.

#### Test fires are lusty

At the UL labs—and we'll restrict ourselves to a discussion of their methods—test fires are allowed to burn freely for a prescribed time to simulate a reasonable delay before extinguisher operation. This permits flames to get a good toehold. Of course, portable extinguishers are listed only for *incipient* outbreaks. They are strictly first-aid appliances. But how lusty an incipient fire can be is demonstrated by the standard UL test fires.

In its "Fire Protection Equipment List," UL grades every extinguisher model with a numeral and one or more letters. The number indicates the fire-killing potential of the unit when used by an average operator. (A trained man can handle twice as much fire with the same unit.) The letters specify the type or types of fire against which the particular unit is effective. Typical ratings are 12-B:C and 1-A:16-B:C.

Many brands carry this information on the unit's shell. If you don't find it there, look for it in the manufacturer's literature. This information is derived from carefully controlled tests, not from an ad writer's fertile imagination.



In rating extinguishers for Class A outbreaks, three different setups are used. First is the wood crib, for which the fuel is always 2 by 2-inch sticks of yellow pine, built up in layers at right angles to each other. The crib is ignited by lighting a standard quantity of gasoline in a pan underneath it. A pre-burn time of 10 minutes is required before the extinguisher is operated.

Rating figures run from 1 to 4, each indicating that in repeated tests the extinguisher put out a fire of that particular volume before it was emptied. A unit that earns a 4-A rating, then, packs four times the fire-killing power of one rated 1-A.

In addition to the crib tests, there are also tests on vertical panel fires and bundles of blazing excelsior.

For Class B test fires, white gasoline is used. Four inches of water is poured into a square steel pan 12 inches deep; this is covered with 2 inches of fuel, leaving a 6-inch free-board. Pan sizes range from 2½ to 200 square feet. Preburn time is 60 seconds. Ratings range from 1-B, for putting out the 2½-square-foot pan, to 80-B for the 200-square-foot pan.

There are no numerical ratings for Class C because this is simply an A or B fire in live electrical equipment. The only requirement is that the extinguishing agent be nonconductive, which is why water is no good.

The all-purpose unit can handle all three types of fire. Its nonconductive characteristic may be of less importance in the home than in industry, for the shock hazard of many domestic electrical fires can be eliminated by pulling an appliance plug (except with a burning TV set). But the wide use of oil furnaces and space heaters—not to mention the prevalence of the attached garage—makes a powerful Class B unit mandatory. At the same time, there's a high incidence of Class A fires in homes, so that possibility must be taken into account.

As stated earlier, UL does not list any all-purpose unit smaller than 7½ pounds capacity (although the Coast Guard, which also tests extinguishers, accepts some 2½ and 5 pounders). But it's significant that a 7½-pound all-purpose unit rated 1-A:16-B:C will handle as much Class A fire as a 2½-gallon

*(Please turn to page 226)*



**UNUSUAL WATER UNIT** (right) has fiberglass tank designed to minimize maintenance. Other extinguisher carries external pressure cartridge (under hose)



**COMPACT TYPES** are especially handy for boat and car but also are useful in the home. These units weigh only 5 pounds but carry respectable ratings







\*\*\* John Q. Adams still prowls in Statuary Hall  
 say janitors; \*\* busts of dead justices nod in the  
 small hours. \*\*\*\* From the empty tomb in the  
 crypt to its traveling giant dome, our nation's  
 capitol building abounds in mysteries beginning  
 with its lost cornerstone. \*\*\*\*\*

- 38. President's Room\*
- 39. The Marble Room
- 40. Senators' Private Lobby
- 41. Senate Chamber
- 42. Cloakrooms
- 43. Formal Office of the Vice President
- 44. Senate Reception Room\*
- 45. Office of the Vice President
- 46. Senate Majority Leader's Office
- 47. Grand Staircase-East\*
- 48. Senate Conference Room\*
- 49. Executive Clerk
- 50. Old Senate Chamber
- 51. Senate Minority Whip
- 52. Small Senate Rotunda\*
- 53-58. Senators' Private Offices

\* Open to the public



ON A SUMMER EVENING, recently, a tall, middle-aged colonel approached Sgt. Joseph H. Reid of the National Capitol Police who was on duty outside the brightly lighted Capitol in Washington, D.C.

"What building is this?" he asked.

The colonel's failure to recognize his country's Capitol is, oddly, fairly commonplace. Many Washington visitors confuse it with the White House.

Since the sixth anniversary of the signing of the Constitution, Sept. 18, 1793, when George Washington wielded a marble-headed gavel and silver trowel to lay the Capitol's first cornerstone, visitors have formed a never-ending pilgrimage to the site. It's a good thing they don't all ask to see the original cornerstone. *No living person has seen it, and no one knows where it is.*

Capitol Architect J. George Stewart hoped that dismantling the building's east front in 1958 might uncover the block, but it was not located. Its documented position is in the southeast corner of the Capitol's original north wing, below the old Senate Chamber. But today's new extension to the east front (completed in 1961) seals off that portion of the building, making it unlikely that the cornerstone will ever be located. What's more, the Capitol's original plan has been lost too!

It is little short of a miracle that the graceful building which today crowns Capitol Hill somehow escaped becoming an architectural nightmare. Its design was the work, not of an architect,

Drawing by Loomis for U.S. Capitol Historical Society

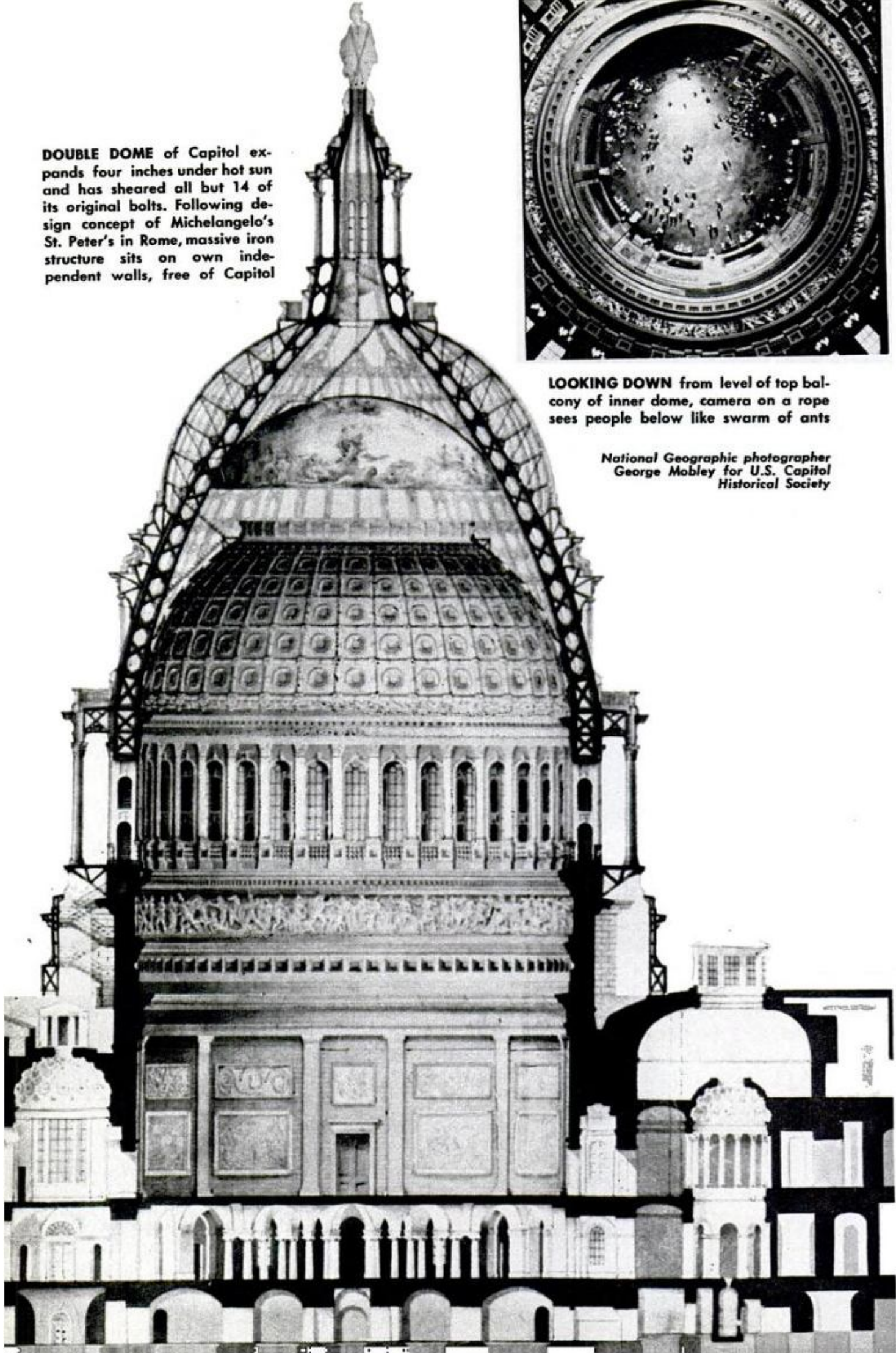


**DOUBLE DOME** of Capitol expands four inches under hot sun and has sheared all but 14 of its original bolts. Following design concept of Michelangelo's St. Peter's in Rome, massive iron structure sits on own independent walls, free of Capitol



**LOOKING DOWN** from level of top balcony of inner dome, camera on a rope sees people below like swarm of ants

*National Geographic* photographer  
George Mobley for U.S. Capitol  
Historical Society







**NODDING MARBLE** busts of deceased chief justices in the old Supreme Court Chamber gave Capitol janitors the willies, until cause proved to be swaying lamp

but of William Thornton, an immigrant, physician, inventor and painter.

During almost every phase of its construction the Capitol has been the object of jealous controversy. Certainly George Washington never foresaw its almost complete destruction by enemy action, the bombing of its Senate Chamber, a wild Civil War foray in its House of Representatives, nor the many, varied uses to which the building would be put. Since Washington's time portions of the Capitol have served as hospital, barracks, church, a hucksters' market, bakery, courthouse, mortuary, warehouse and temporary jail.

Today's Capitol is 751 feet long and covers three and a half acres. By latest count it has 540 rooms, 658 windows, 850 doors, 160 fireplaces, 24 elevators and a total of 917 employees (exclusive of Senators and Congressmen).

Beneath the Capitol's 130 acres of landscaped lawns and parks, winds a rabbit warren of subways, tunnels, air passages, communications lines and power cables. Except for its massive dome, there is almost as much of the building below its main floor as there is above it. A basement and sub-basement house the big kitchens, plus electrical, plumber's, painter's, carpenter's, elevator, sheet metal and cabinet shops and the Senate's octogenarian watchmaker—to name a few facilities.

Two huge reinforced-concrete tunnels convey steam and chilled water for



**EMPTY CRYPT**, beneath the rotunda, was planned as tomb for Washington but heirs refused. Original design opened through rotunda like Napoleon's in Paris

year-round comfort conditioning from a power plant nearly a half-mile to the south. The central refrigeration plant is one of the largest in the world, consisting of six units with a capacity sufficient to cool 5,000 five-room homes. First electrical system installed in the Capitol was used to ignite gas lights, and the first electric lights were paid for at the rate of 80 cents per light per night.

During its 173-year history, the major threats to the Capitol have resulted from fires. A providential thunderstorm in 1814 saved the building's outer walls when its interior was gutted after being set afire by invading British troops. Other fires threatened the building in 1825, 1851, 1898 and following the bombing of the Senate Chamber in 1915.

Rapid access between the House and Senate wings of the Capitol is available to senators, congressmen, their staffs and, occasionally, the public by subway.

The Senate subway opened in 1909 using two battery-powered Studebaker automobiles, known affectionately as "Peg" and "Tommy." In 1912 these were supplanted by an electric monorail, but the vintage autos were retained and used occasionally during rush hours until 1939. Today's modern 18 and 24-passenger electric cars move at 14 mph on plastic wheels over rails.

Another tunnel, less well-known, connects the Capitol with the Library of

*(Please turn to page 220)*



PHOTOGRAPHY



HOW TO  
TAKE  
PICTURES  
AT 10  
FATHOMS





**CLASSROOM ON OCEAN FLOOR** is a session in Flip Schulke's photo workshop at Underwater Explorers Club. The girl (left) uses a Nikonos for color closeup of coral formation

PHOTOGRAPHS BY WALLACE LITWIN

Snapping pictures underwater is easy to learn at this submarine photo school if you can handle a camera with boxing gloves, stay calm when the air runs out and don't mind eavesdropping barracuda.

By **STUART JAMES**

JANUARY 1967

**UNDERWATER PHOTOGRAPHY** is simple. Except for distortion, strange light conditions and the problem of focusing a moving camera on a moving object, it's just like taking snapshots on dry land.

I say this with some authority, having been there myself, as they say. After a week-long session in the photography workshop of the Underwater Explorers Club on Grand Bahama Island, I now possess several boxes of unusual photos: the underbelly of an amberjack, a school of tiny bluefish obscured by a large cloud of silt, the tail fin of a large grouper, the left arm and leg of a skin diver, to name a few.

Flip Schulke, winner of numerous press photographer awards and famed for his pictures of Namu, the killer whale, conducted the workshop.





**ADAPTING TO UNDERWATER** environment, the class practices handling a variety of cameras in a deep tank. The Nikonos (foreground) requires no housing, is best for novice

**BUOYANCY** is major difficulty underwater. When both the subject and photographer are moving it takes hours of practice to know the precise moment when to snap the shutter



"The most difficult thing in underwater photography for the beginner is adjusting to the environment," Flip said. "The only solution is to spend considerable time taking pictures underwater until you get used to it. Take lots of pictures. In photography the cheapest thing is film."

The ideal underwater camera for the novice, according to Schulke, is the Nikonos. This is a waterproof 35-mm camera that requires no special housing. It has shutter speeds from  $\frac{1}{30}$  to  $\frac{1}{500}$  second and lens openings from f/2.5 to f/22. It can be used in or out of the water, has a removable lens and can be used "bare" or with a flash attachment, which is also fully waterproofed.

When I asked him why he was using a camera in a plexiglass housing, Flip said, "I already had the camera. It was one I was used to, so I had a housing



**TYPICAL PHOTO** by the author shows the result of inexperience. Subject was moving and photographer sank out of range as shutter was snapped. Camera setting was  $f/5.6$  at  $1/100$  sec. with Plus-X film, but shooting toward the surface caused overexposure



**STUDENT PHOTO** utilizes good method to achieve correct framing. The student positioned himself against section of coral, taking time to check lighting and set camera. In a stable position he framed his background correctly and then just waited for the fish

built to accommodate it. I'm not knocking the use of a housing, but for the cost of a good housing you can buy a Nikonos, and it is much easier to use."

#### **Shallow water best**

Our first picture-taking dive was made on a shallow reef. "I seldom take pictures in water deeper than 25 feet," Schulke said. "This is where you will find the best light, the greatest variety of fish and the most colorful plant life."

The film we used was Plus-X and Tri-X for black and white, High Speed Ektachrome for color. "These are all good for shallow water," Flip said. "The important thing is to settle on a film you like and keep with it. Personally, I always use Tri-X for black and white. I know that some people complain that prints from Tri-X are too grainy, but this is easily solved in the darkroom. If

you focus on the grain with a magnifying glass you get a sharp picture with good contrasts."

A light meter is important. "If you don't have an underwater meter, put your regular meter in a tightly closed mason jar. This will give you a general idea of the light conditions and you can shoot at a variety of stops to get the right exposure."

At the end of the workshop I had learned that the difference between "dry" and "wet" photography is about the same as shooting in sunlight or fog. It takes practice. The camera and the object are moving: forget to get in close and you stir up silt with your fins.

But if you're diligent and remember that all photography is the same, you too can thrill your friends with a color slide of the right claw of a fiddler crab.

★ ★ ★





### **Dog gone! But not far. Leash extends to four feet**

Bracelet-style leash extends or retracts like a metal tape measure, allowing your dog four feet of lead or reeling him in when necessary. The nylon lead retracts into a metal case when the raised surface is pressed. It's a German invention.



### **Sculptor walkie-talkies his way to giant work of art**

It's too big for ordinary methods of hammer and chisel, so the sculptor on the Confederate Memorial now under way near Atlanta stands on ground level several hundred yards away, where he has a better vantage point, and issues instructions to the masons on the mountain via walkie-talkie radio. The giant "tapestry," when completed, will measure 190 by 305 feet. (See **They're Burning a Memorial into a Mountain**, page 134, Nov. 1965 PM.)





### Ladder in a cage

Construction engineer, working on a ladder suspended from the roof, is enclosed in a safety cage to protect him from falls. The cage allows him freedom for work and also saves the time and expense involved in erecting scaffolding. The work shown is on a pre-fabricated building being erected in London. The engineer is sealing an exterior joint with weatherproof stripping.



### Homing target

Shot down more than two years before, a Firebee target drone was found floating 3600 miles away from the spot it was hit. Normally used in exercises by Army, Navy and Air Force fighters, the drone has watertight compartments for quick recovery. Even after two years in the water, however, the electronic components are considered good enough so the Firebee may fly again.



### Sheltered peeper

Remote unit of a portable battlefield radar enables the operator to work the set from a sheltered position. He can detect personnel and vehicles at distances of more than six miles on the new instrument, made by Airborne Instrument Laboratories.



### 20th century armor

New body armor for modern soldiers was designed by Army laboratories for helicopter crews in Vietnam. It combines a ceramic facing and fiberglass backing and is considered more effective in stopping bullets and shrapnel than ordinary flak suits.

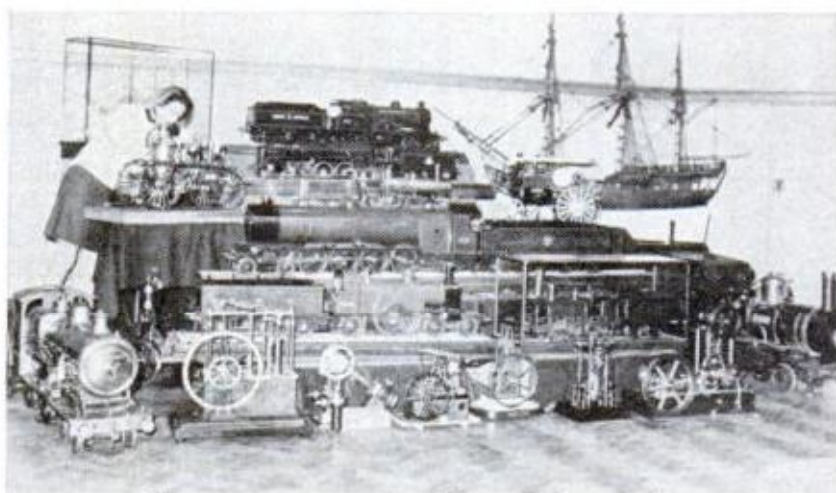
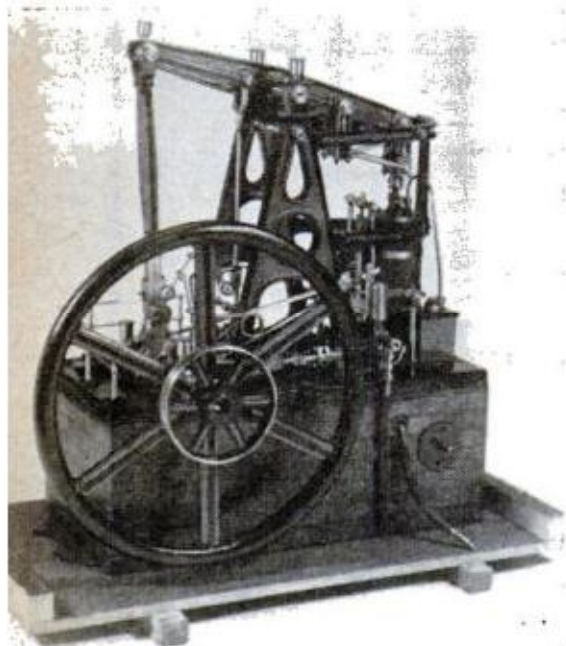


**There's something about a**

# STEAM ENGINE

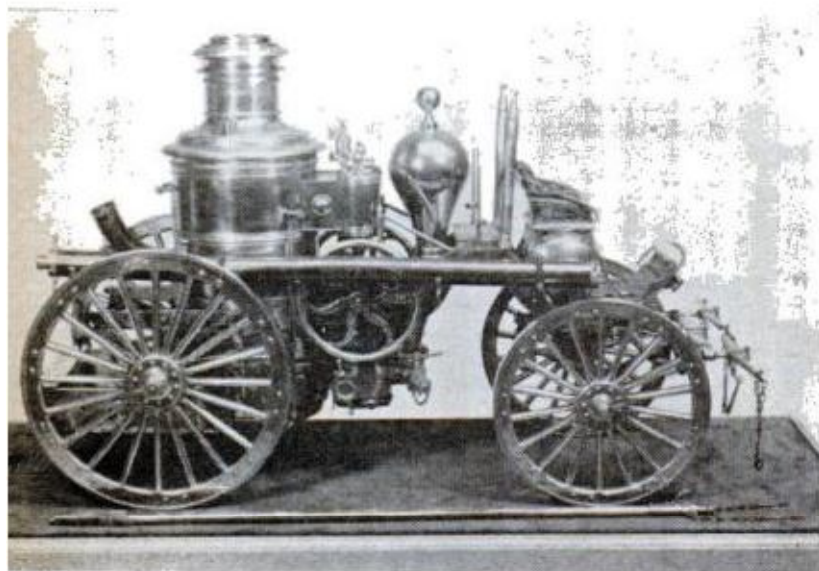
..enough anyway to make collectors pay into four figures for these modelmaker's classics

**AMERICAN 4-4-0** Rio Grande Railway locomotive model brought \$3822 at London auction. Built around 1890, it includes an early model counteracting brake gear



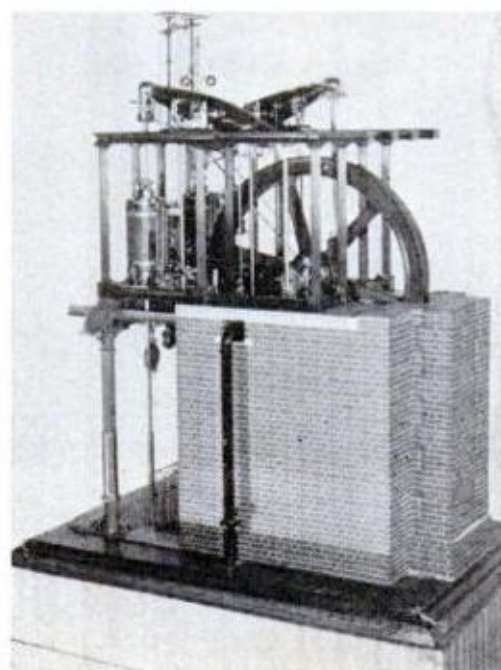
**HISTORIC STEAM ENGINES** went on block at historic Christie's, world's oldest auction house, during 200th anniversary season

**INDUSTRIAL BEAM ENGINE**, with rotating wheel, features mahogany staves on cylinder, plug-type valve, eccentric-driven pump



**AMERICAN FIRE ENGINE**, drawn by horses around 1870, was original for this model which brought \$8232 at Christie's

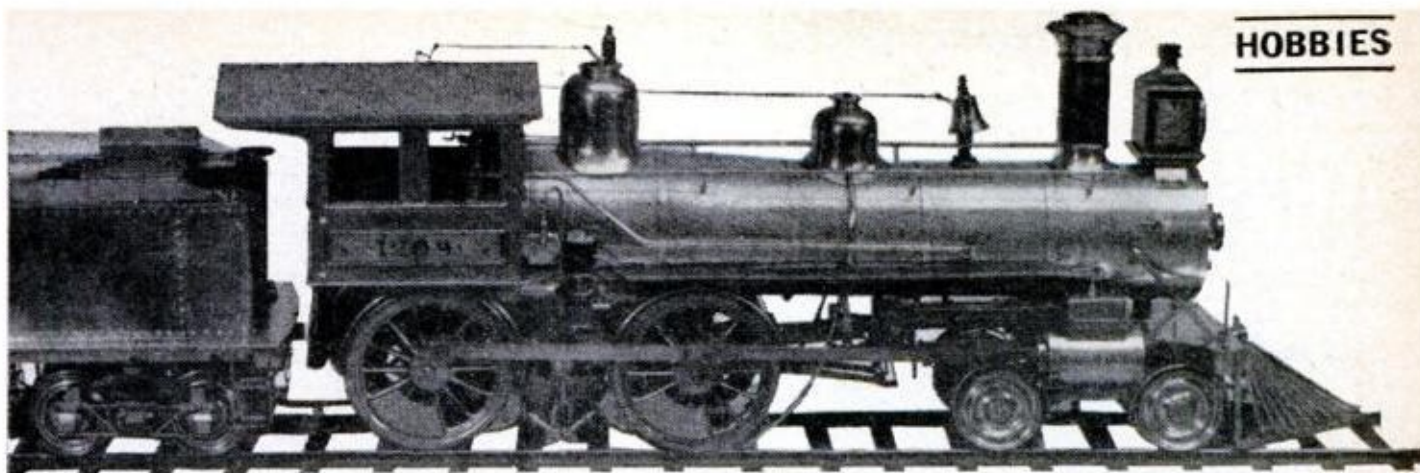
**PUMPING ENGINE** with twin cylinders and twin beams was based on original used by waterworks in Aylesbury, England



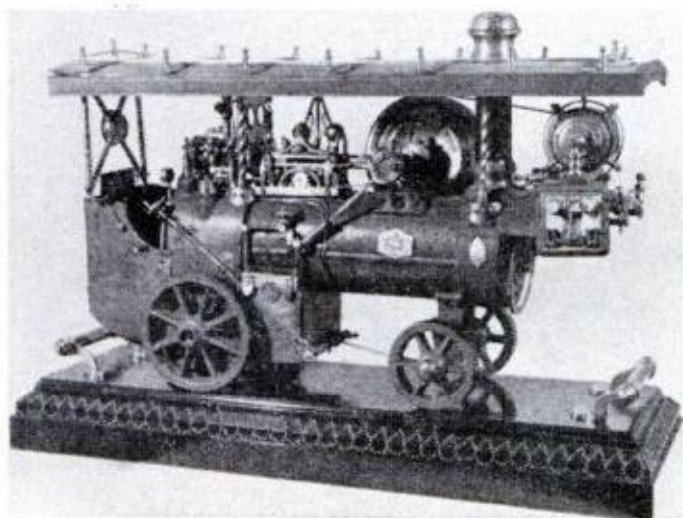
POPULAR MECHANICS

Материал, защищенный авторским правом





**INCLINED STEAM PUMP** model has two single-acting vertical pumps driven by disc cranks on main shaft



**FAIRGROUND ENGINE** in 2-inch scale has boiler test cocks, water and pressure gauges and steam whistle

**M**ODELMAKERS MUST HAVE taken smug satisfaction at what went on at Christie's recently. Now in its 200th year, London's oldest auction house—where some of the greatest art treasures in the world have gone on the block—was the scene of an auction of model steam engines. And, Lord love a duck, some of the prices they brought!

A scale model of an 1870 American horse-drawn fire engine was bought for \$8232, and another buyer paid \$3822 for a small 19th century locomotive.

"The crowd was as big as any we've had for the sales of old master paintings," a spokesman said. "We had to take some of the bidders through the back doors."

More than \$110,000 was bid for the entire lot.

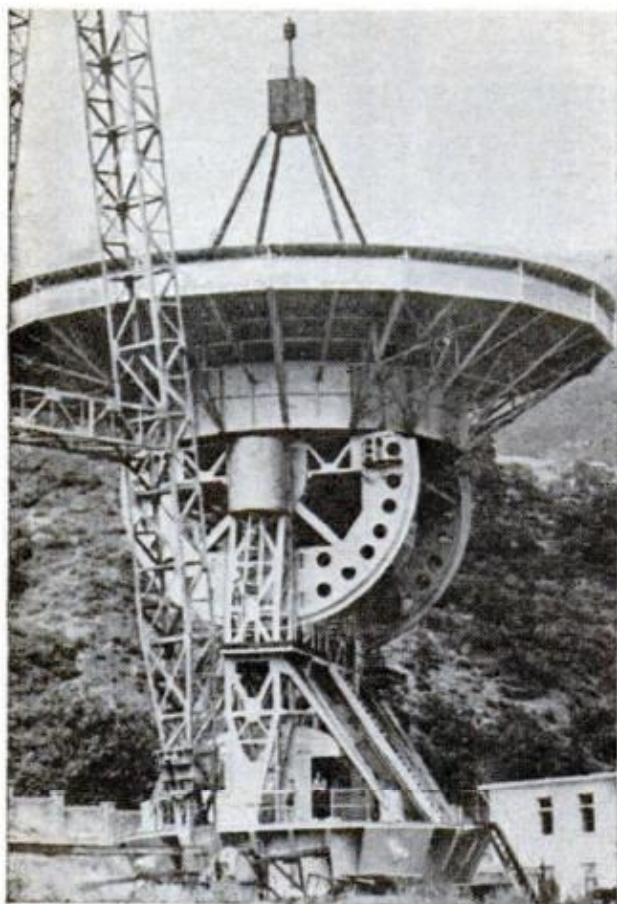
Among the offerings were 30 steam locomotives, ranging from a 1½-inch-high Russian engine to a 10-foot working model of the American locomotive, *Samson*. Nearly all are working models, some built as early as the 1840 *Stephenson 222* and as recently as the 1958 *Britannia*.

Other models are replicas of fire engines, pumping engines, beam engines agricultural and marine engines.

The fire engine which brought the highest bid, was built in 1890 by W.A.M. Scott from the original built by the Amoskeag Co. of Manchester, N.H.

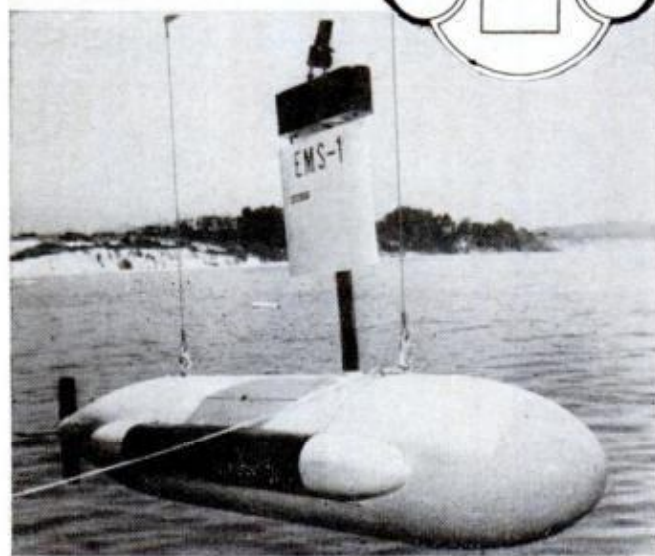
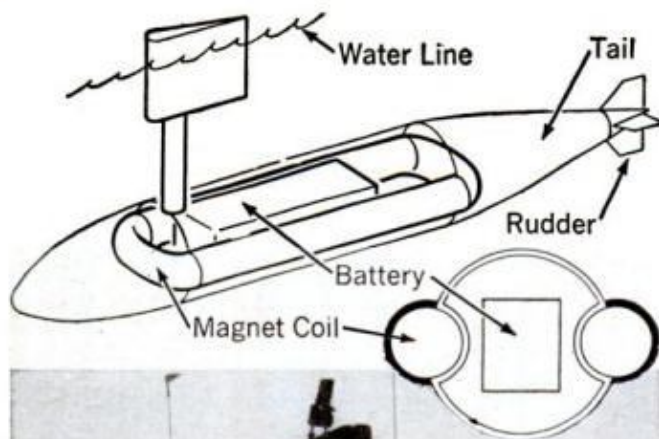
The Rio Grande 4-4-0 engine and tender model was built to ¾-inch scale for a 5-inch gauge track and stands about 11½ inches high.





### Soviet sky scanner

A powerful, new radiotelescope has been set up by the Soviets to probe the sky. The new instrument was installed for the use of the Vrimean Astrophysical Observatory near Blue Bay on the southern shores of Crimea in the Soviet Union. The telescope is controlled by a computer.



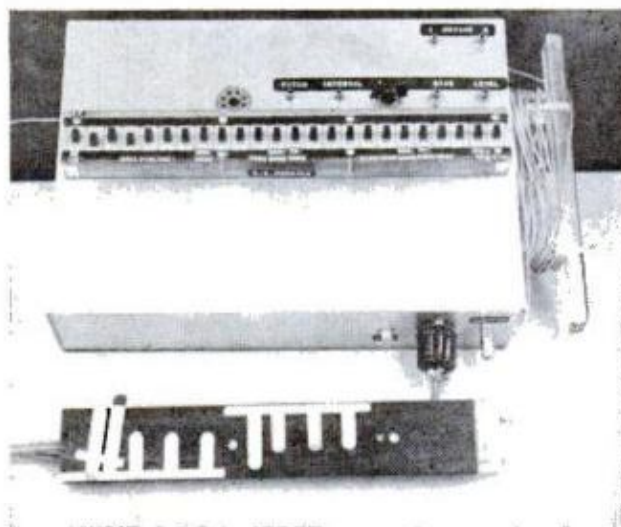
### Submarine with no prop

The University of California's 10-foot sub moves by means of electromagnetic forces. Batteries power a magnet coil that produces the magnetic field; the batteries also send current through the water, perpendicularly to the magnetic field. The resultant force drives water rearward and the boat forward.

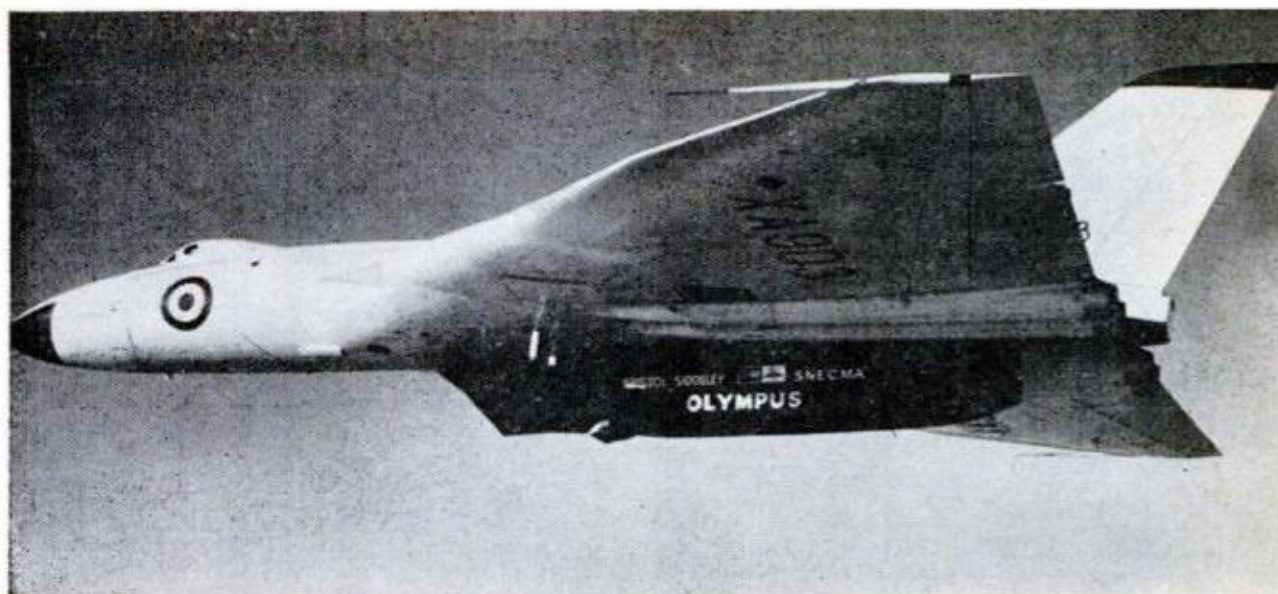


### It's an orchestra in just one instrument

It's difficult to name an instrument that can duplicate the sound of almost any other instrument, so this one still has no name. It's played like a woodwind, but the keys actuate switches that control the pitch circuits in the transistorized amplifier while the volume is controlled by the breath. E.E. Goodale invented it; General Electric plans to market it.

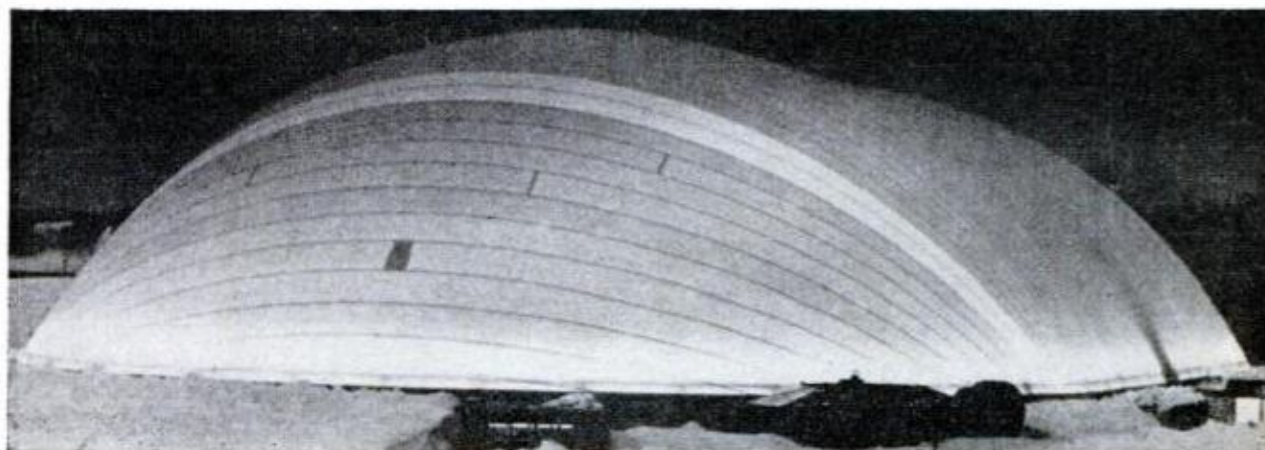






## British turn bomber into flying test bed

The Avro Vulcan V-bomber has been turned into a flying test bed for an engine that's being developed to power the new Anglo-French Concorde supersonic transport. The Olympus 593 engine is shown here slung from the bomb bay of the Vulcan. The testing includes the operation of the engine's variable-geometry inlet and exhaust ramp.



## They play inside a fiberglass bubble

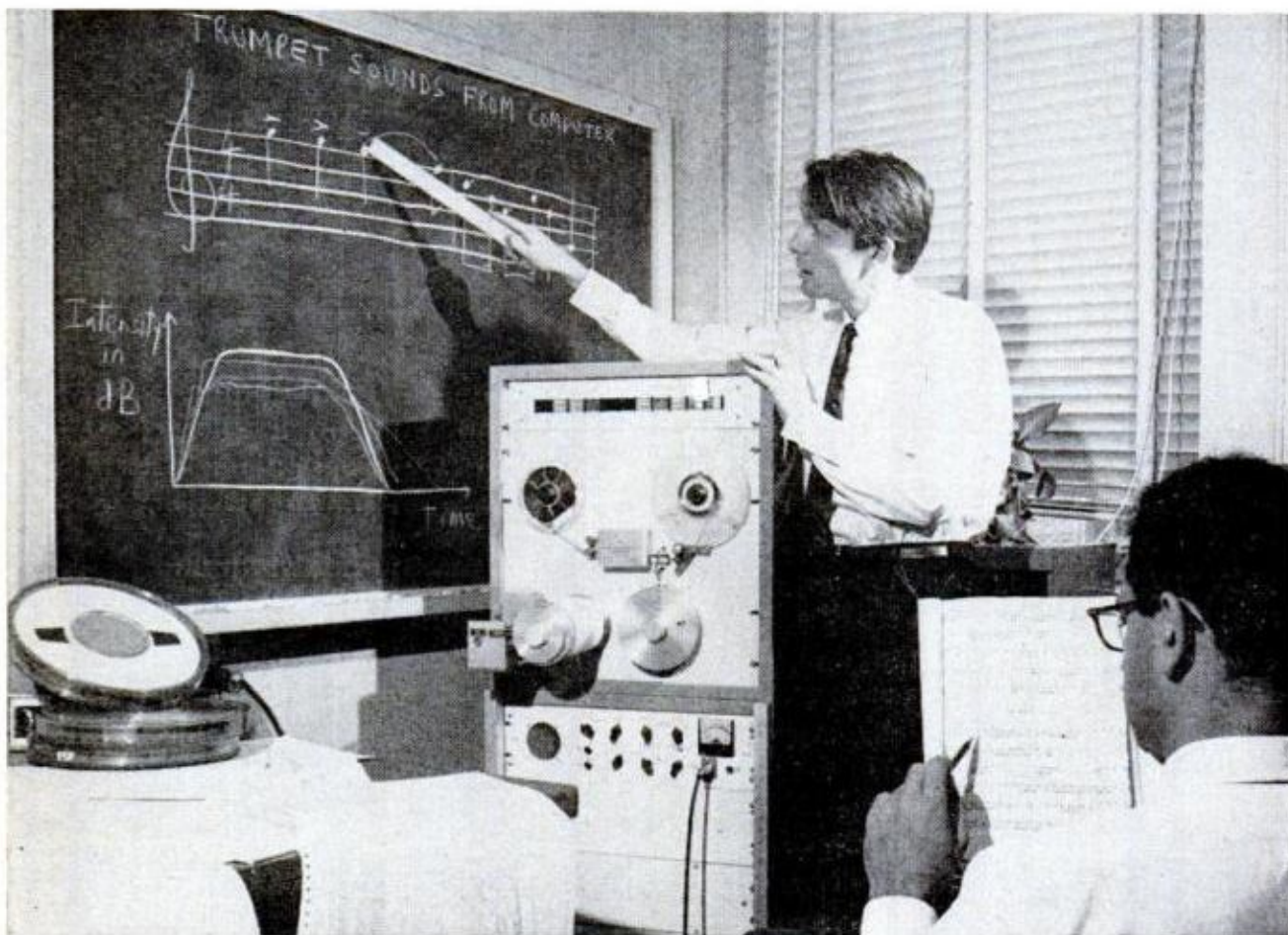
Youngsters in Hinckley, Me., pursue indoor sports all year inside an inflatable field house. A fiberglass air structure covers the play area at the Hinckley School. The translucent dome is anchored to an eight-foot concrete wall that contains entrance air locks, lighting and the like. In winter, a portable wood floor goes down to turn the field house into a basketball court. During spring, summer and fall, the floor is removed, and the students play such games as lacrosse (shown) on the dirt floor.





### Chorus gets the beat from TV picture

When the operatic society of a technical college in London staged a recent production, members found they hadn't allowed space for the chorus. Some performers had to stand in the wings as they sang. This posed a problem—how to see the conductor from the off-stage location. The technically trained singers came up with a technical solution. A TV camera in the orchestra pit relayed a picture of the conductor to a receiver placed in front of off-stage singers.



### Computer imitates trumpet to perfection

Conventional instruments may soon get real competition from computers. Three scientists at Bell Telephone Laboratories in New York have succeeded in synthesizing trumpet sounds so well that listeners can't tell them from the real thing. They taped trumpet notes and translated the tones into digital form. After analyzing sound spectrums, a computer produced numbers that, when converted into electrical signals, created perfect trumpet sounds through a loudspeaker. Above, scientist follows musical notations while tape spins out trumpet sounds.





## Quick way to haul away crash-landed planes

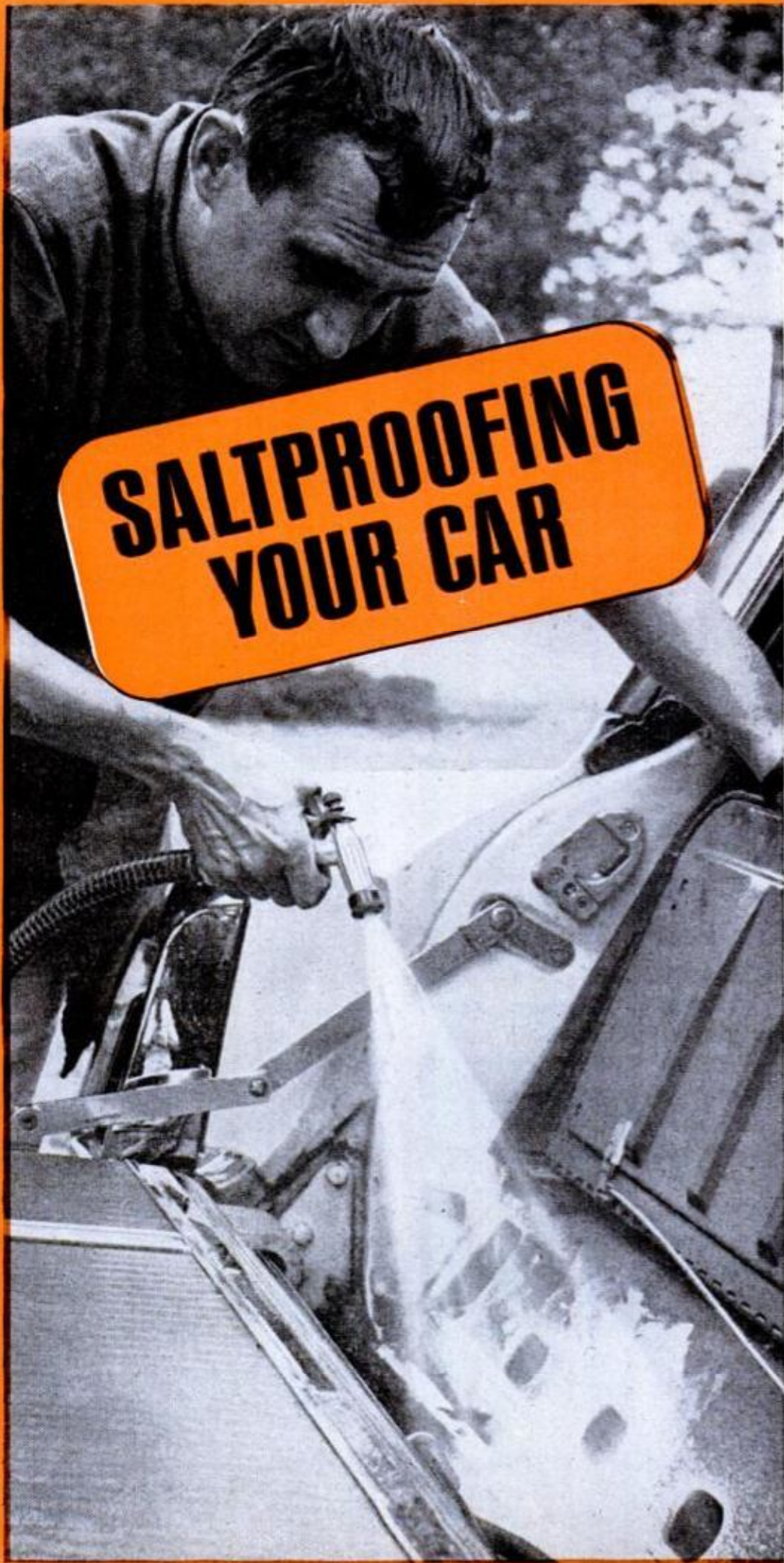
Instead of cutting a disabled plane into sections—and doing further expensive damage—the Air International Recovery system permits moving the craft in one piece. Four 35-ton cranes latch onto lifting beams placed under each wing. They lift the plane eight feet off the ground, high enough for the 40-wheeled dolly to be rolled underneath. Then the plane can easily be towed to a repair facility.



## New British car built for safety

Brainchild of a tractor maker, the Ferguson R-5 is designed for great road stability by use of a special drive train that sends power to all four wheels. It has automatic drive as well as a conventional three-speed transmission. A prototype, the car isn't in production.





**SALTPROOFING  
YOUR CAR**



## If winter comes, can the salt trucks be far behind? No, and with them comes car corrosion

By JAMES B. COLBORNE

**Y**OUR CAR is going to be attacked this winter—probably about the time you settle down with the evening paper.

The battle will proceed according to  $\text{NaCl} + \text{H}_2\text{O} + \text{Fe} \rightarrow \text{Fe}_2\text{O}_3$ . And if that doesn't strike terror in your heart, think of a really cold night and the possibility of  $\text{CaCl}_2 + \text{H}_2\text{O} + \text{Fe} \rightarrow \text{Fe}_2\text{O}_3$ ! The sum total of this attack is rust. Unfortunately, it will work from inside out; by the time you notice the brownish red spots creeping through to mar your once-lovely car's finish, the battle will have been lost.

The most common areas affected will be around the wheel wells, rear quarter panels, door sills, cowl (area behind the hood that houses the heater and fresh-air intake) and floor pans.

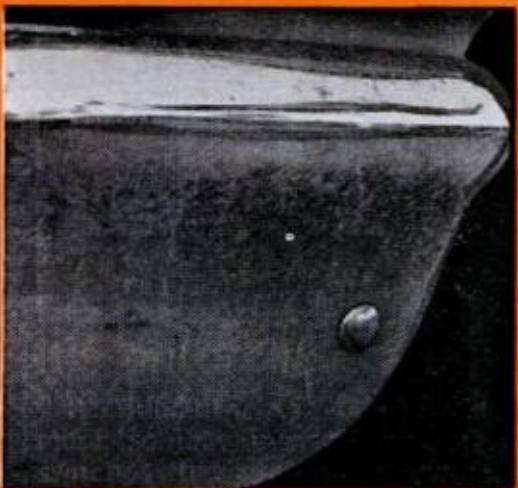
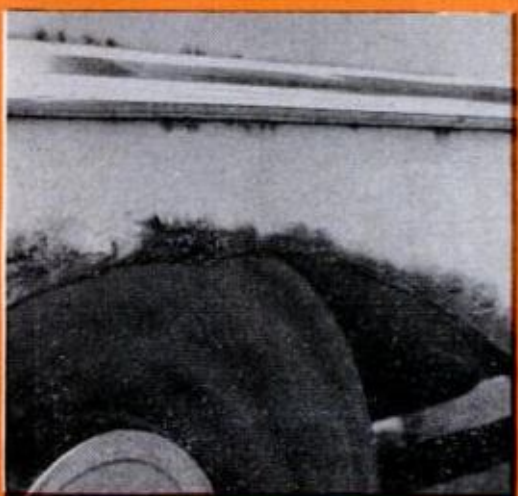
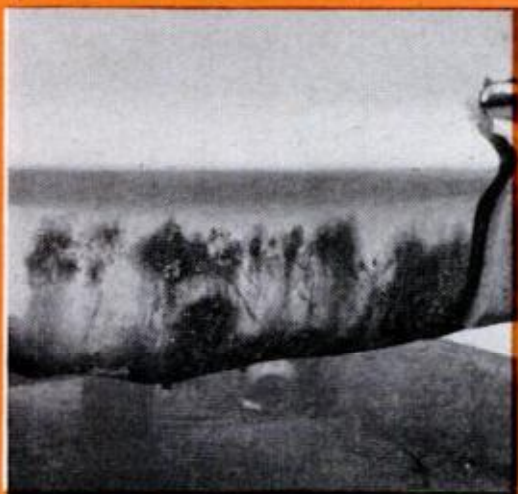
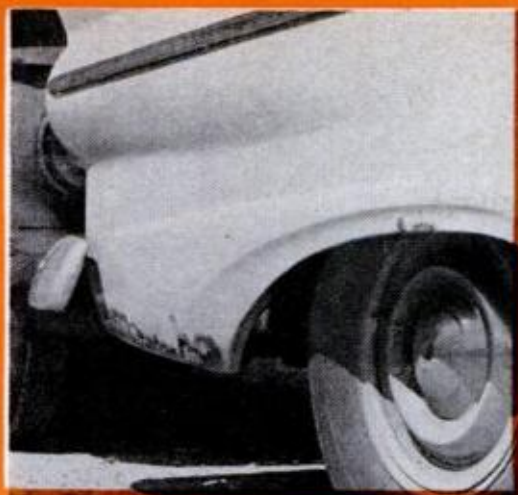
Under certain conditions, that heated, unventilated garage can be your enemy's greatest comfort. When your car is garaged for the night, the heat will cause snow and slush—picked up during the day—to melt, and a high temperature, high humidity condition will result. If any street salt is on the vehicle, the condition worsens. Heat and humidity speed up the chemical reaction between water, steel and salt.

The solution is obvious: Leave the garage door partially open to permit water vapor to escape and to reduce the temperature differential. It's good practice to have two or three ventilating slots about three or four inches long cut in the garage doors, located to produce a flow of air.

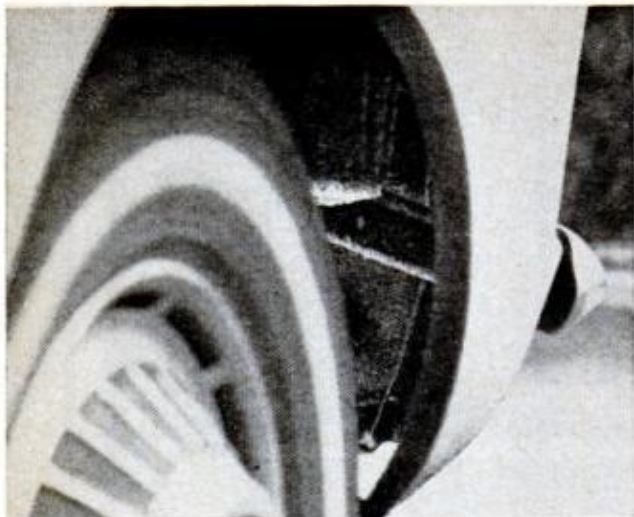
Before putting your car away for the night, brush off any snow that may have accumulated on it that day. Don't let moisture stand on the floor.

When you wash your car, do a thorough job. Hose off the underside, the wheel wells and other areas that may collect dust and salt. Clear water is about your best weapon against dust.

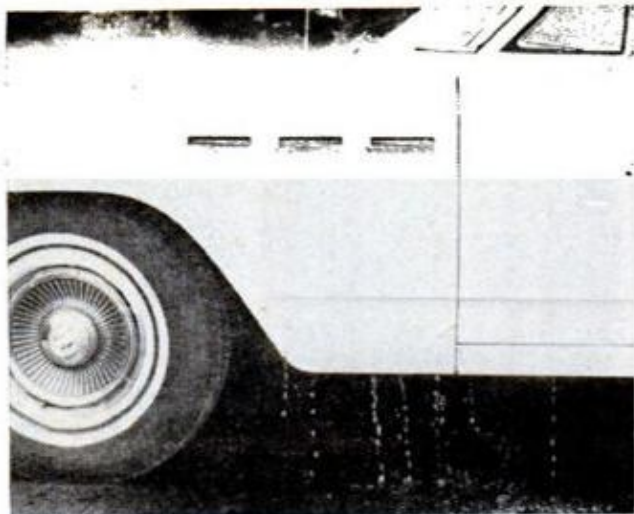
Look for places apt to collect dust on the undercarriage. Today's sculpted car bodies







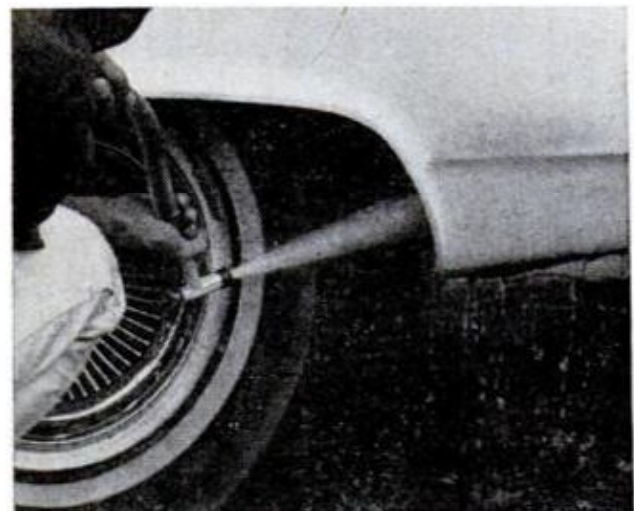
**AREAS HIGHLIGHTED** in Corvair rear-wheel well are places to watch for collected debris. You should check your car for its particular shelves and ledges



**COWL AND DOOR DRAINS** should be kept free of sludge to allow water to drain quickly and thoroughly. Water on hood runs into cowl, out underside drain



**WHEEL TURNED** in Corvair front-wheel well reveals how front panel forms ledge to collect dirt and salt. Lip around fender edge is another spot to watch



**GARDEN HOSE** equipped with jet-spray nozzle does a thorough job of cleaning the under areas of a rear quarter panel. Jack the car to reach tight spots

have many shelves and ledges on their undersides that should be cleaned regularly. Dust tends to retard the evaporation of water, exposing metal to moisture for long periods.

A severe condition that often occurs is the collection of calcium chloride on the undersurface. This attracts and holds water from the atmosphere. On a clear, dry day you can find moisture on cars in those areas that have collected this salt. Calcium chloride is used in summer on dirt roads to hold down dust, in winter when the temperature is so low that common salt is no longer effective against ice and snow.

All cars have drains along their undersides to release water that enters the doors, cowl and quarter panels. If

the drains are blocked the water will not escape and rust will exist. Periodically check the drains to make sure they are clear. Cowl and door drains are usually slots about two inches long and a quarter-inch wide. The rear quarter-panel drains are circular. On some cars, door drains are covered with a rubber one-way valve to let water out and keep dust out.

Always keep the trunk clean. If water gets in there it will run forward and out the rear quarter-panel drains. In a dirty trunk, water will carry dirt with it and may block the rear drains.

Contrary to general opinion, undercoating is primarily a sound deadener. Its ability to keep a car rustfree is debatable; at times, it can do more harm



## Laboratory Test Performance of Vehicle-Metal Anticorrosion Coatings

| TEST                                                 | COATING TYPE                  |                                     |                             |                             |
|------------------------------------------------------|-------------------------------|-------------------------------------|-----------------------------|-----------------------------|
|                                                      | Oil-base                      | Wax-base                            | Asphalt                     | Rubber-base                 |
| Road dirt pickup                                     | severe                        | none                                | none                        | none                        |
| Flammability, 30-second flame test                   | softens, runs, burns          | softens slightly self-extinguishing | melts, drips                | chars                       |
| High-temperature slump, 150° F.                      | softens, runs                 | some slumping, keeps protection     | slumps                      | none                        |
| Low-temperature flexibility, -40° F.                 | good                          | good                                | poor; severe cracking       | excellent                   |
| Low-temperature adhesion 90° F. slam test, -40° F.   | good                          | good                                | severe cracking and flaking | excellent                   |
| Resistance to sand abrasion                          | poor                          | good, but some sand adheres         | slow erosion                | excellent                   |
| Resistance to wheel-wash abrasion                    | poor                          | good                                | good                        | very good                   |
| Resistance to engine oil splash                      | poor, film completely removed | relatively poor                     | slow erosion                | good, but eventually swells |
| Resistance to salt-spray corrosion, 750-hr.          | excellent                     | satisfactory                        | satisfactory if crack-free  | satisfactory                |
| Result of temperature and humidity cycles, 1000 hrs. | slumps, but keeps protection  | good corrosion protection           | slight rust breakthrough    | slight rust breakthrough    |
| Creep to protect exposed metal from corrosion        | excellent                     | slight                              | none                        | none                        |
| Effect on automotive finish after 168 hrs.           | none                          | none                                | dulls finish                | harmful                     |

than good. If the coating was applied over dirty surfaces, it may cause a pocket to form in the coating that can collect dust, water and salt to produce a very corrosive condition. Undercoating should be applied before the car leaves the factory and is still clean.

In the fight against rust, car manufacturers are there in the forefront. To thwart this attack, car body components now are deep-dipped several times as a rust-preventive; insides of door and quarter panels and sheet-metal box sections are coated with zinc-enriched paints, and special sealants are used along body joints.

Most carmakers feel that their vehicles in normal use will suffer no rust damage for several years. But motor-

ists who live in areas of high rust incidence or who wish to keep new cars for a longer-than-average time may want to do something more.

Specialists in rust-preventive treatment spray every nook and cranny, inside and out. If you check them you will probably find as many theories about rust prevention and types of materials as companies offering the service. To determine the most effective coating, Ontario Hydro, Toronto, Ont., undertook a study. The results are in the chart above.

Finally, don't overlook the outside of the car. Touch up all chips and scratches and use a good cleaner and paste-type wax to keep all chrome trim sparkling and rust-free. ★ ★ ★



# STARCRAFT'S CARAVEL-V

with **NEW** MerCruiser 80  
Stern Drive

by Art Mikesell  
Boating Editor



*We really tore up the water on Indiana's Lake Freeman trying out this new 15-foot J.O. rig— Here's what we learned, plus an apology to a tolerant Hoosier fisherman...*

**I**T WAS LIKE roaring into a Norman Rockwell cover. A heavy old man and his grandson in a rowboat up near the bank, cane fishing poles slanting out from the gunnels, bobbers motionless—I took it all in at a glance as I came barreling around the curve.

Hauling back on the throttle too late, I set up a plowing wave which started their boat pitching crazily. What did the old man do? He just held on, grinned and waved.

Actually, I suppose he was getting used to such interruptions by then, for Starcraft's photo crew had been running boats up and down Indiana's Lake Freeman for almost a month. I was



there for the day to try out the new 80-hp IO-model Caravel-V.

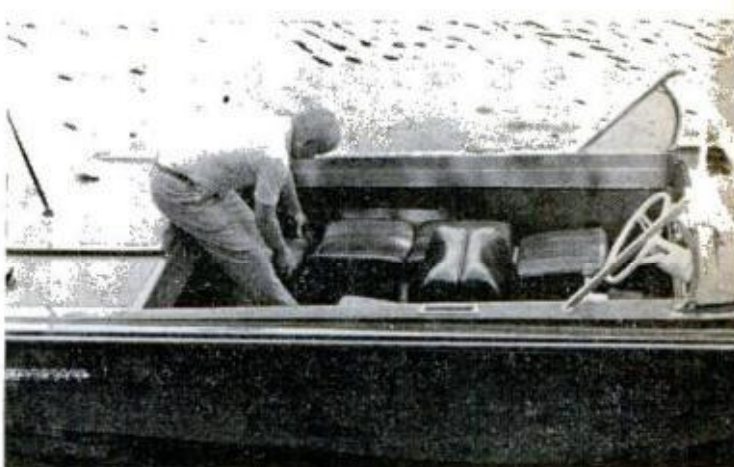
Dockside, the Caravel-V looks like everybody's idea of a modern fiberglass runabout. Except for a little extra bow flare, it's strictly conventional. The cockpit has a well-thought-out look—no rough edges or afterthoughts tacked on anywhere. It's black throughout. Starcraft rates the capacity at six people, but that's strictly by weight.

The dash carries through the functional design approach with a small instrument group in the center, an open glove box on the left and recessed trays on top just behind the windshield. Astern, that little transom-mounted MerCruiser 80 nestles in a commodious engine compartment with plenty of space for a battery box and a regular six-gallon tank (which was used with the prototype that I tested, though the production model will have a 12-gallon bow tank).

Generally, the boat's a good performer even though it's a little slow to plane. I tried half a dozen times, but couldn't get it on plane in less than five seconds. Later, during Mercury's '67 press preview in Florida, I rode



**ROOMY ENGINE COMPARTMENT** has plenty of space for battery box and extra tank of fuel to supplement 12-gallon bow tank. Vinyl curtain snaps to floor bar.



**REAR-SEAT PASSENGERS** have sufficient legroom, but there really isn't much extra space beyond that. When folded down, seats almost fill the cockpit.

**EASY ACCESS TO ENGINE** is provided by a wide hatch in the stern deck. Like the MerCruiser 60, the 80 is mounted on transom and requires no engine bed. The engine and drive together weigh only 326 lbs.





## SPECIFICATIONS

|                          |           |
|--------------------------|-----------|
| Center length .....      | 15'       |
| Beam .....               | 74"       |
| Bow depth .....          | 32"       |
| Center depth .....       | 35"       |
| Transom depth .....      | 33"       |
| Transom width .....      | 74"       |
| Seats .....              | 4         |
| Approximate weight ..... | 1050 lbs. |

### Recommended capacity:

|               |      |
|---------------|------|
| Pounds .....  | 1250 |
| Persons ..... | 6    |

### Colors:

|            |               |
|------------|---------------|
| Hull ..... | Bermuda Cream |
| Deck ..... | Burgundy Red  |

## STANDARD EQUIPMENT

80-hp MerCruiser with crank tilt; wrap-around Plexiglas windshield; back-to-back convertible sleeper seats; mechanical steering; tachometer; electric bilge pump; electric bilge blower; deck vent; 12-gal. fuel tank with deck fill; air-chamber flotation in hull plus extra flotation material under bow; vinyl floor covering; vinyl-covered side panels; vinyl trim on dash; vinyl curtain under stern deck; step pads; two transom lifting eyes; non-skid deck texture.

it with four aboard and found that it took at least half a minute to plane.

Once up, the Caravel has a soft and stable ride, though it trims out slightly bow-high. With 90 lbs. of fuel in that forward tank, however, I imagine that the bow would drop a little lower.

The hull is both directional and responsive. I tried a hands-off run going flat out, and the Caravel held a course like it was riding a rail. It lays into a tight turn easily with a minimum of skidding and comes out smoothly.

While the boat I ran had no speedometer and there was no measured mile on the lake, the Caravel-V feels like a reasonably fast boat. Merc's engineers have clocked it at 37.5 mph with driver only and 35.1 mph with driver plus 450 pounds extra weight.

To sum up, the IO-model Caravel-V is a clean-lined, well-manufactured package with nothing really extreme. That's no criticism; boats most people buy are middle-of-the-road designs.

Oh yes, whoever that Indiana fisherman may be, I hope he came home with a full string. Anybody that good-natured deserves a little luck. ★ ★ ★

## MERCUISER 80

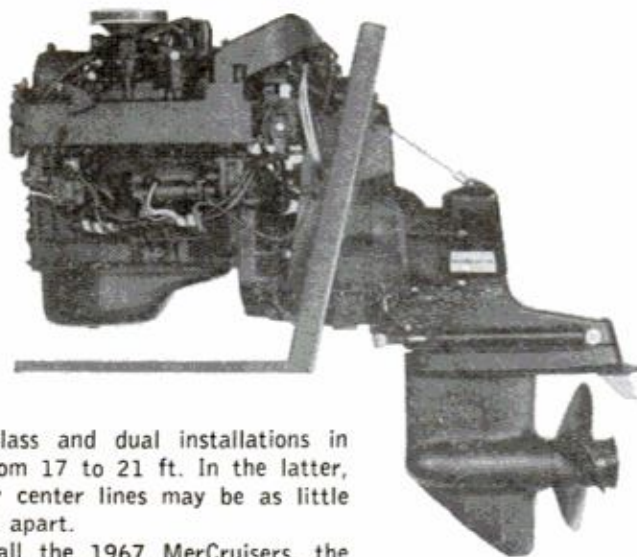
The engine in this new stern drive is an 80-hp, 89.7-cu.-in. four-in-line manufactured by Renault and modified by Kiekhaefer for marine propulsion requirements. It has a die-cast aluminum block and an aluminum cylinder head. Both intake and exhaust manifolding are combined in a single aluminum casting. Total weight of engine and drive is 326 lbs.

Since the 12-v., 20-amp. alternator is an integral part of the flywheel, drive belts and pulleys have been eliminated. The alternator is completely enclosed in the bell housing.

The cooling system is similar to that used on Mercury outboards. It drains completely when the engine is stopped.

The new drive unit designed for this package has a 2 to 1 gear ratio. It swings propellers up to 14 in. in diameter and from 9½ in. to 23 in. pitch.

The MerCruiser 80 is designed for single installations in boats in the 14 to

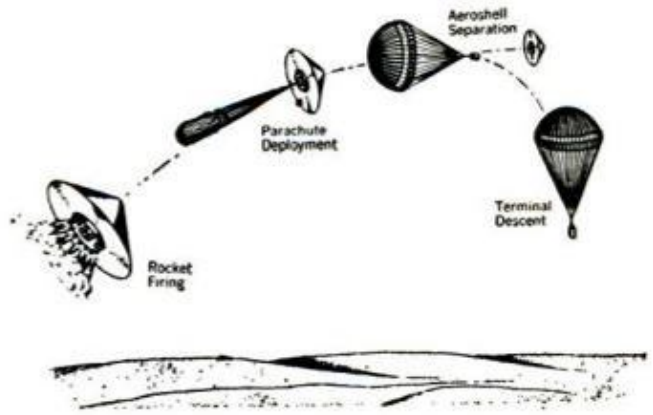
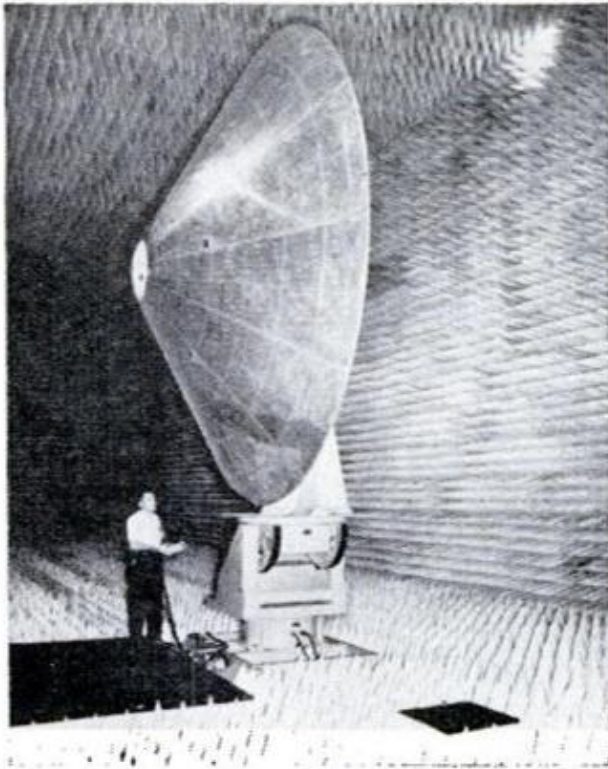


18-ft. class and dual installations in boats from 17 to 21 ft. In the latter, propeller center lines may be as little as 28 in. apart.

Like all the 1967 MerCruisers, the 80 has a quick-disconnect plug-in electrical harness which makes it virtually impossible to wire the engine incorrectly, and also largely eliminates the possibility of sparks from a loose connection.

A cable-operated tilt mechanism makes it possible to crank up the drive unit from inside the cockpit for shallow-water maneuvering, launching, loading and trailering.





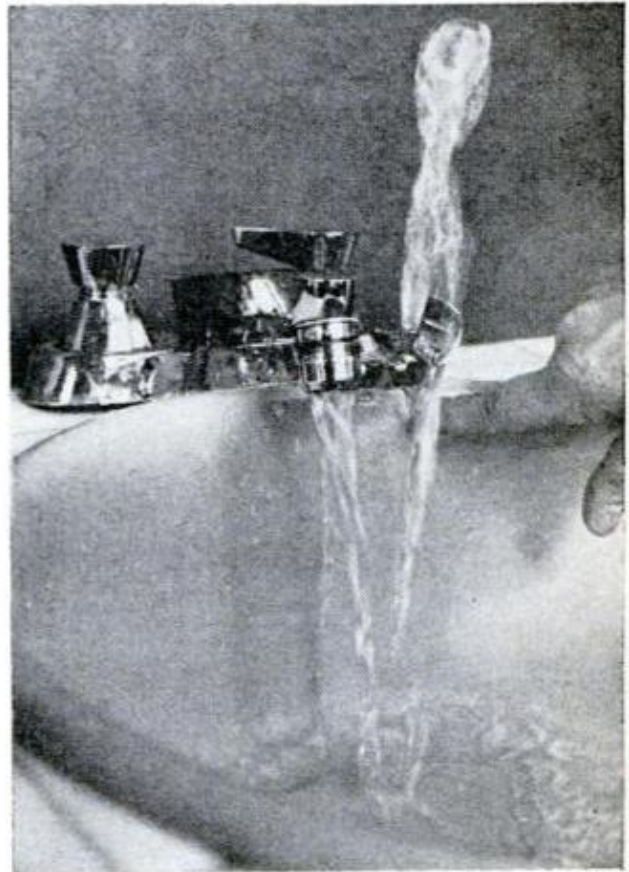
## Getting ready for Mars

Trying to find the best way to land instruments on Mars, NASA's Langley Research Center built a disc-shaped capsule that will be tested high above the earth. The capsule (shown at left having its radar checked) will be lifted 130,000 feet by balloon, released and rocketed to 850 mph in the thin atmosphere (much like that of Mars) while instruments record flight data. It'll then parachute down.



## Nuclear-warmed diver

Nuclear fuel has been proposed as the heart of a heating system for diving suits by Sanders Nuclear Corp. The isotopes thulium 170 and thulium 171 would power a thermoelectric generator and pump to circulate 110° F. water through the diver's undergarment. Hand controls would enable the diver to regulate heat.



## How to tap a tap

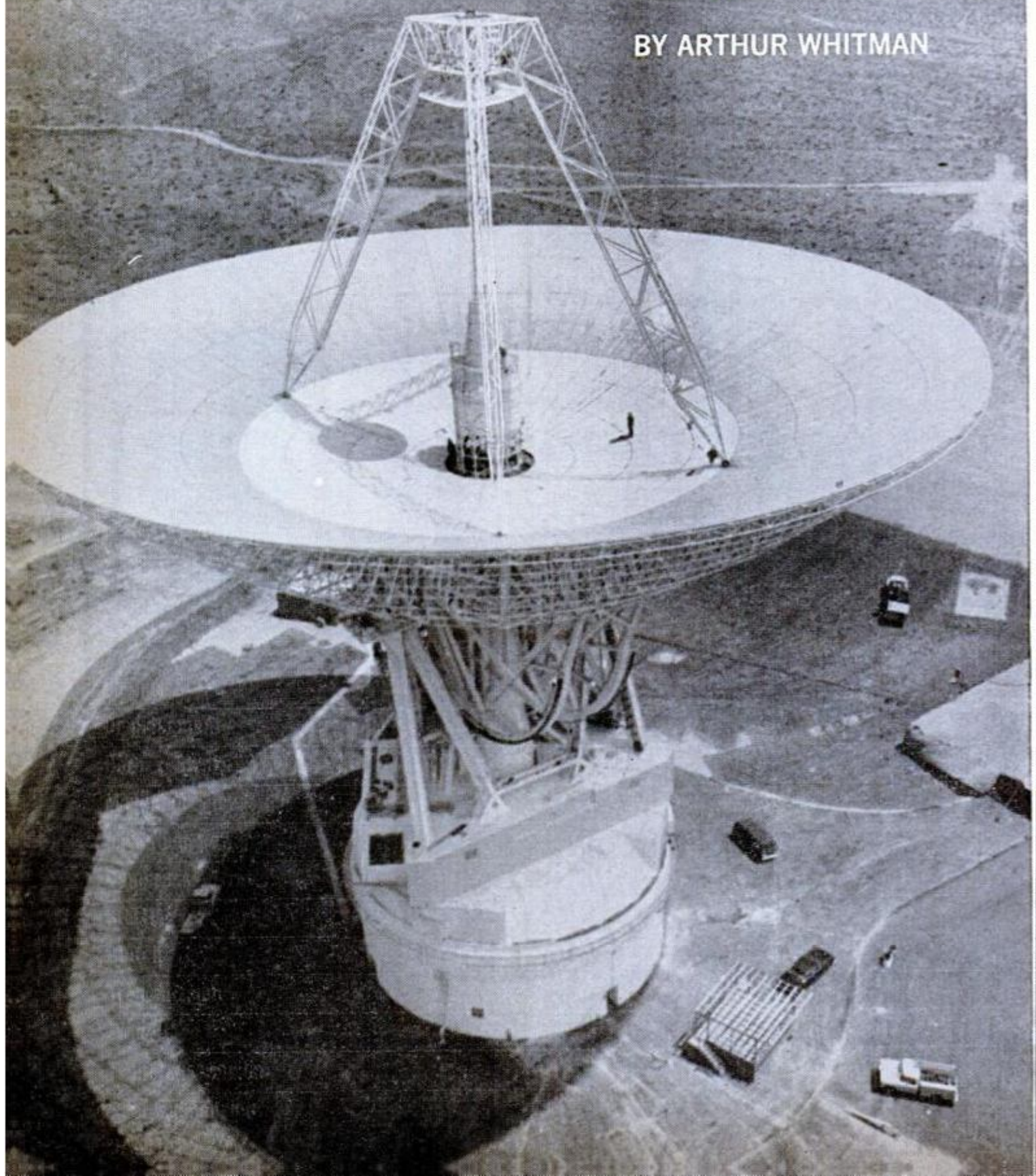
Any faucet in the house can be a drinking fountain with an attachment invented by a Seattle man. The gadget simply fits onto the water outlet, enabling the user to direct the stream upward or downward. The inventor, Thomas Slater, estimates that the fountain can be manufactured to sell for under \$5.



AEROSPACE

# Our keenest ear tunes in on space

BY ARTHUR WHITMAN





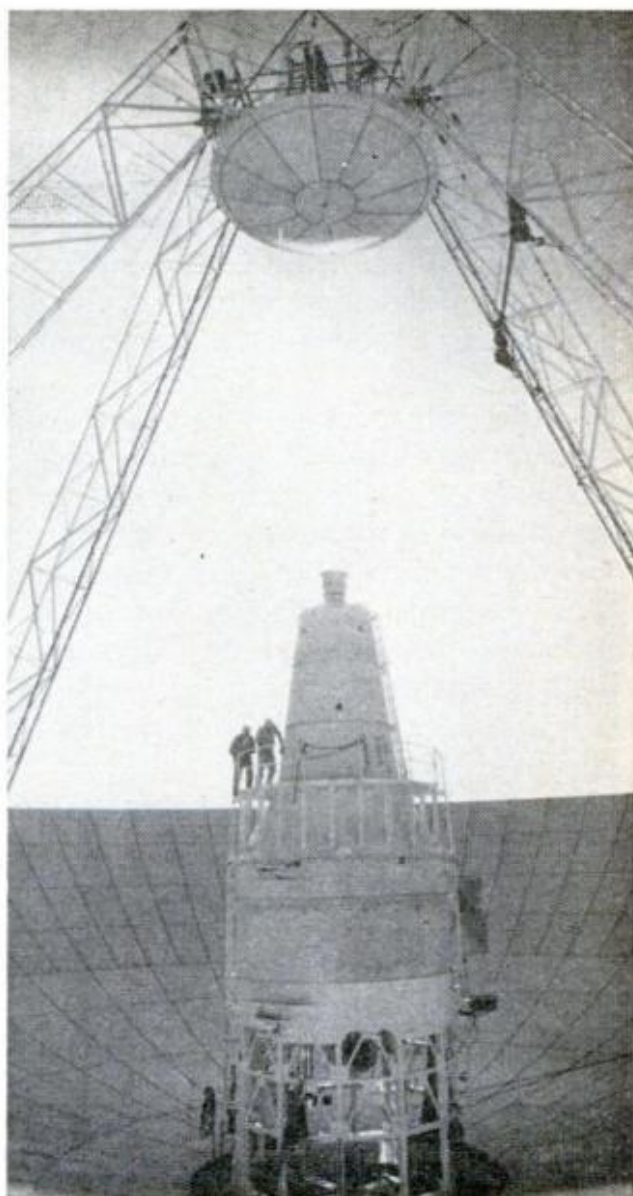
**The 210-foot dish is America's newest steerable radio telescope. It can pick up incredibly minute signals from craft in deep space, bounce radar off targets 100 million miles away**

**I**T STANDS STARK WHITE against the brown hills of the Mojave Desert. Without a needless line in its tower, its spiderweb structure or its flawlessly round dish, it looks like exactly what it is—man's newest instrument for probing deep space.

In long-winded "officialese," it's known as the Mars Station of the Deep Space Instrumentation Facility of the Goldstone Space Communication Station of the Jet Propulsion Laboratory of the California Institute of Technology, contracted to NASA. Unofficially, to those who know and love the structure, like station manager Tom Potter, it's known as "Two-Ten." It's the world's latest precision radar antenna, one of four "radio ears" grouped around a ghost town in the desert 45 miles from Barstow, Calif. Two-Ten has a paraboloid primary reflector 210 feet in diameter, which adds up to nearly an acre of receiving surface.

#### **Incredibly weak signal**

The huge dish was four years in the dreaming, three in the building. By mid-July 1966, Two-Ten was demonstrating a small part of its capability by tracking *Pioneer VI* on its trip more than 200 million miles from earth. The radio signal it received from *Pioneer* was so small it's hard to describe in words. But think of one trillionth of one billionth of a watt, and you're close. Power of that order received and stored continuously for 100 years would add up to barely enough energy to raise a grain of sand a distance equal to its own height. Nothing on earth but Two-Ten could receive a signal that tiny; yet from it, the big dish actually derived a great deal of valuable



**SIGNALS FROM SPACE** are pulled in by big dish, which focuses them on secondary reflector above it. This beams them to feed cone below and decoders



**TREMENDOUS REACH** of Two-Ten justifies operation day and night. It has proved so effective that similar telescopes are planned for other tracking sites



## **"Two-Ten is now the only thing that can possibly track vehicles at the distances they now reach."**

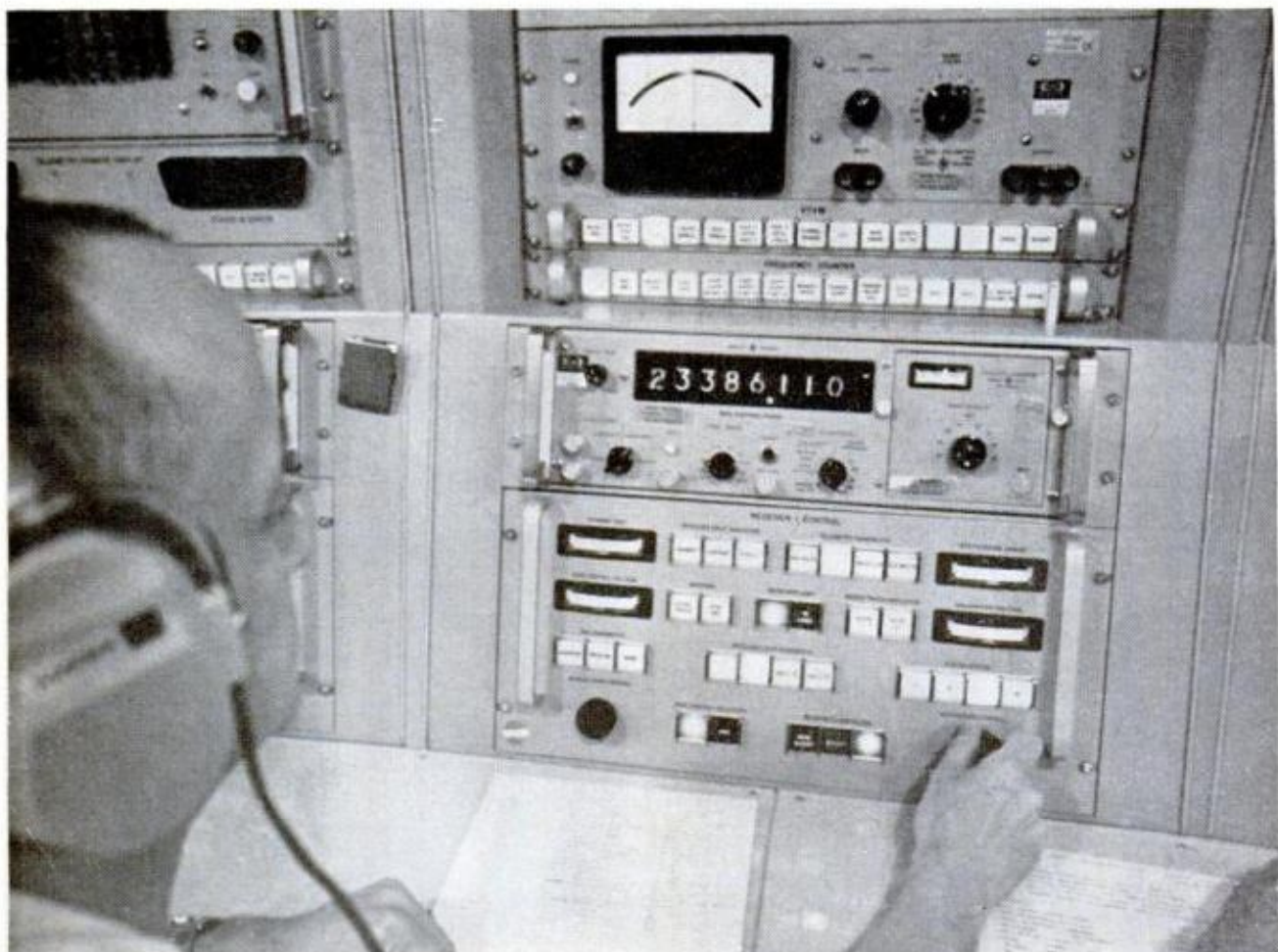
information. It learned about timing and extent of solar flares, and such elements of spacecraft performance as maneuverability, transmitter and gas bottle temperatures, battery voltages and the currents developed in its solar panels.

To do its tracking, Two-Ten can move in azimuth and elevation at the rate of  $\frac{1}{10}^\circ$  per second, turning at a rate so slow that the eye can detect no movement in its huge bull gears and other components. The angles of azimuth and elevation are measured by a "master equatorial," a precision control connected to the 9000-ton dish by a beam of light.

The antenna itself is a fairly simple structure. The dish is solid aluminum for the first 100 feet of diameter, punched aluminum the rest of the way.

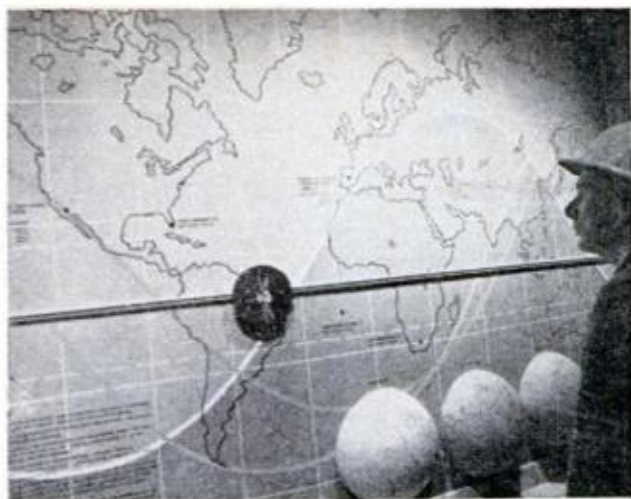
Signals reaching it are bounced upward to a carefully positioned, 22-foot secondary reflector which, in turn, beams them to a central feed cone. The feed cone relays the signals to computers housed in the Mars Station labs. These either decode the signals on the spot or feed them to microwave relays which transmit them to other Goldstone radar sites for decoding.

Since it went into partial operation in April, 1966, Two-Ten has helped track *Mariner IV* and *Surveyor I's* trip to the moon as well as *Pioneer VI*, and has devoted much of its nontracking time to radaring off the planet Mercury, 100 million miles away, as a sort of trial run for the radar astronomy work that will eventually become one of its chief functions. To bounce signals off distant planets, Two-Ten reverses



**WEAK SIGNALS FROM 200 MILLION MILES** are monitored by an operator at the receiver console. Signals may be decoded on the spot or fed to microwave relays for decoding at other Goldstone sites





**TRACKING COVERAGE** is determined at a glance from big wall map. Different "S-lines" indicate areas covered by various dishes in the worldwide network

the order of things as they occur when it is receiving, and blasts out a powerful signal.

It transmits at 20 kilowatts now. When it really gets going, it will be able to beam a signal of up to 400 kw. That's 400,000 watts, supplied by a self-contained bank of Diesel generators as well as commercial power. You get some idea of what a power blast of this size can mean in the way of possible information feedback when you realize that the information Mars has been receiving from *Pioneer VI* was carried by a 5-watt signal from the spacecraft's transmitter.

"They've been moving so fast in booster technology," says Tom Potter, "that Two-Ten is the only thing that can possibly track vehicles at the distances they now reach. As a result, we find that we're in operation with all kinds of temporary hookups, just because we must be. We find ourselves tracking at night with no staff for it."

Two-Ten has worked out so well that plans are well underway to install other big dishes in each of the Deep Space Net tracking complexes, located around the world in Woomera and Canberra, Australia; Johannesburg, South Africa; and Robledo, just outside of Madrid. All are now equipped with 85-foot antennas.

But if booster technology is developing so rapidly, is there a foreseeable

need for ground antennas even larger than Two-Ten? "Nothing is really foreseeable at the rate the space program is developing," says Potter. "But as things stand now, it's difficult to see a need for anything bigger as long as we remain in our own solar system. Two-Ten's capability is about as close to theoretical limits as it can be."

What about if—or when—we leave



**COMPLEX ELECTRONIC GEAR** lines walls of "engine room" under antenna. Controls make possible sharp aiming of 9000-ton dish at targets far off in space

our own solar system? "I wouldn't venture any predictions," says Potter, "but maybe by then we'll have solved the booster problems and be able to equip craft with enough transmitter power so they could send to something the size of Two-Ten from any distance."

It sounds impossible, of course, but then so did *Pioneer VI*, *Surveyor I* and even Two-Ten itself, not very long ago.

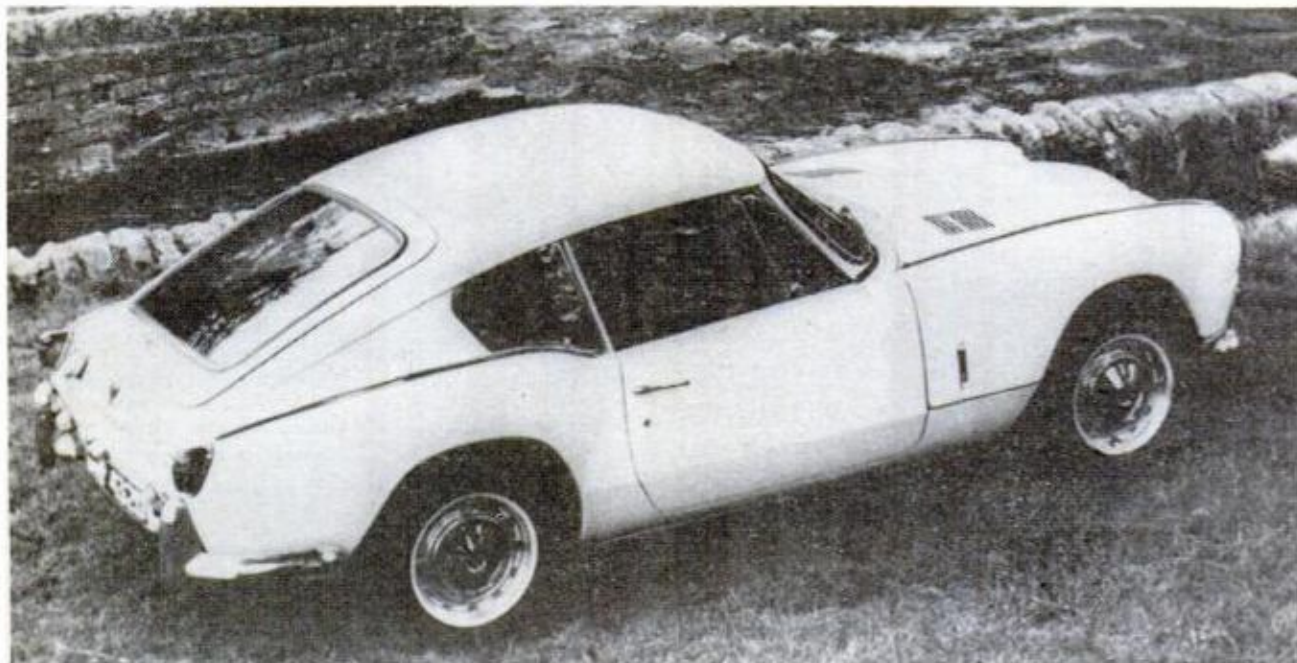
★★★





### **Grenade launcher**

The Army is getting a new grenade launcher that hooks onto the underside of an M-16 rifle and fires 40-mm missiles a quarter of a mile. A trained soldier will be able to launch from five to seven grenades a minute with it. (For other new weapons, see page 95.)



### **New Triumph combines existing elements**

If you feel that you've seen this car somewhere before, it's because you have—a part here and a part there. The generally recognizable feature of this new GT6 is the basic chassis of Triumph Spitfire fame. The grand touring body, however, is a production adaptation of that used by the team of Spitfires that competed in the LeMans 24-hour race in 1964-65. Under the hood of the GT6 is a higher performance version of the two-liter, six-cylinder engine used in Triumph's 2000 sedan. The modified engine puts out 95 bhp with a 9.5 to 1 compression ratio which drives the GT6 slightly over 100 mph. The combination of these elements is a hardtop sports car with the speed and comfort of a touring sedan.





### SOS scarf

A pretty girl with car trouble generally doesn't have any trouble getting help. But just in case passersby seem to ignore her, she can wave a new driver's scarf that carries the international distress signal—SOS—in Morse code. The scarf comes from Sweden.



### Ramses takes a ride

The face of Ramses II arrives at the new site of the Abu Simbel Temples 300 feet above the old site—soon to be covered by the waters of the dammed up Nile River (background). The \$36-million project to save the temples has been under way for three years.



### Vandal frustrator

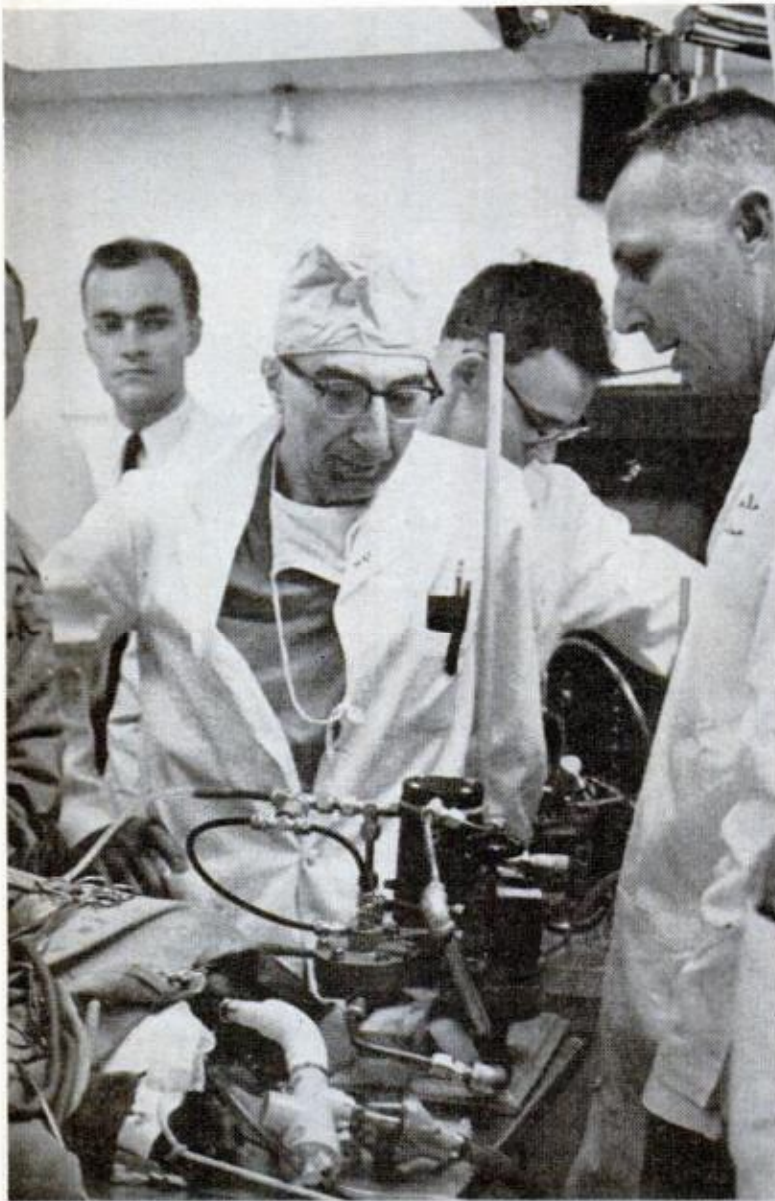
Vandals who specialize in breaking light fixtures are having a tough time of it in New York's Central Park these days. About a year ago, the old steel-and-glass lamps were replaced with General Electric's Lexan plastic globes (left). In one case, even a toppled light (above) continued to glow. GE reports that formerly about 50 glass globes were broken each night in the park. In the past year, only one globe was reported damaged among the 2000-plus fixtures that illuminate the big park.



# They're sewing plastic

Now, surgeons are making built-in heart boosters that work. While the patient's own

DeBakey



**DRIVEN** by compressed air, system devised by Dr. Michael E. DeBakey (glasses) shunts blood from the left side of the heart to big artery (aorta). Implant is designed for temporary use

By HANS FANTEL  
Illustrations by Phil Huy

**A** TINY WOMAN WITH A BROAD SMILE walked briskly out of Houston's Methodist Hospital on Sept. 6, 1966—a banner day in modern medicine. Mrs. Esperanza del Valle Vasquez, a beauty parlor assistant from Mexico City, had good reason for smiling. She was the first person whose life had been saved by an artificial heart.

Mrs. Vasquez did not go back to Mexico with an artificial heart. The device that had been pushing her blood around for 10 days was removed again before she left Houston. But during those 10 days, with the mechanical pump doing most of the work, her natural heart had a chance to rest and heal.

"We're not yet aiming at permanent replacement of damaged hearts," explains Dr. Michael E. DeBakey, who performed the daring operation. "That may come later. At present, our device is used as a temporary replacement."

A few weeks before the operation, Dr. DeBakey showed me the "heart" he had



# standby hearts in people MEDICAL

heart rests and heals itself, a 'plug-in' plastic organ pumps vital blood through the body

Kantrowitz



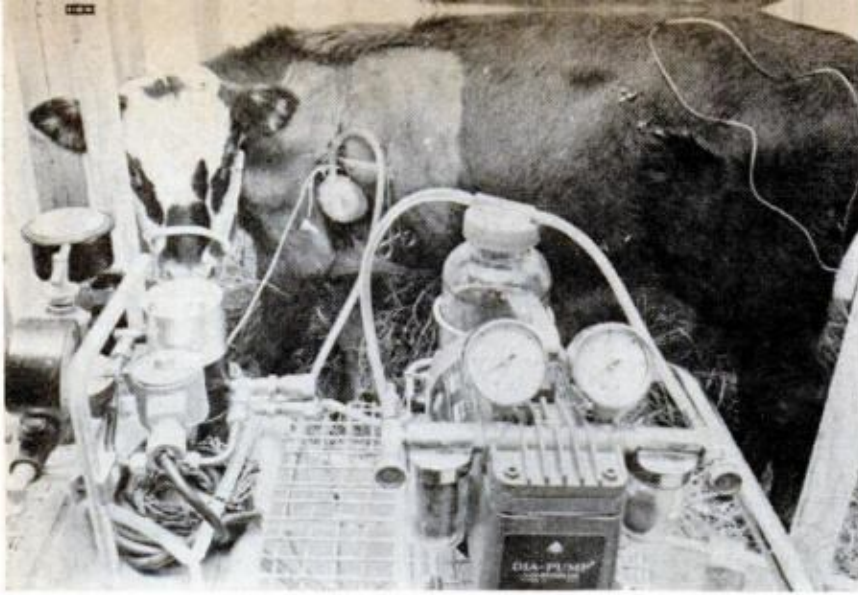
"BOOSTER" that takes load off the left side of the heart is positioned in the patient by Dr. Adrian Kantrowitz. Permanent unit fits under chest wall; power plug is only outside element

developed jointly with engineers and medical researchers from Rice and Baylor Universities. It looked just like a car's fuel pump, except that it was made of white Dacron instead of metal and had a few extra tubes sticking out.

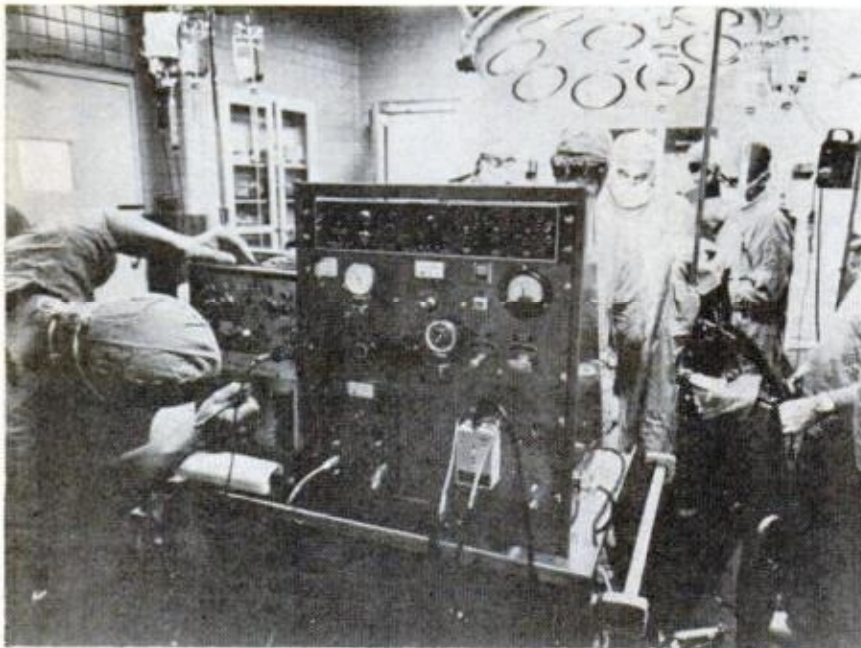
"A pump—basically, that's all it is," declared DeBakey. The present model, he explained, does not replace the entire heart—only the left ventricle, the part most frequently damaged in heart disease. That's why DeBakey doesn't like the term "artificial heart." He calls it an LVP—Left Ventricle Pump.

The natural heart, by contrast, is a double pump. The right half circulates the blood through the lungs to get it recharged with oxygen. The left half squirts the oxygenated blood out through the aorta (the big artery leaving the heart) to the rest of the body. Pushing blood through the 60,000 miles of plumbing in the human circulatory system is a tremendous effort—all done by the left ventricle. In weak or damaged hearts, the ventricle often just isn't up to the job. DeBakey's





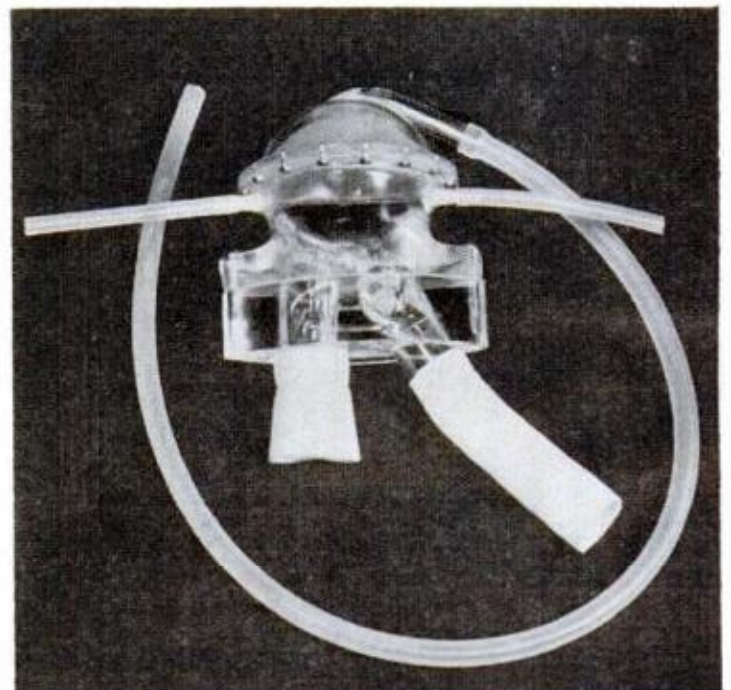
**CHEWING CUD**, calf gazes across gear needed in DeBakey system to keep booster pumping. Compressed carbon dioxide provides power, triggered by electric pulses from patient's heart



**CONTROL PANEL** and monitoring unit provides constant readings on patient's condition as operation by Dr. Kantrowitz progresses. Lives of first two patients, dying, couldn't be saved



**KANTROWITZ-AVCO BOOSTER** includes (clockwise, starting from top) electronic power unit; gas valve; gas line and electric wires; auxiliary pump unit



**LOOKING LIKE AN AUTO FUEL PUMP**, the DeBakey device fits partially inside chest. Compressed gas flows through a long tube, activating diaphragm



LVP serves as an auxiliary pump, taking over about half of the workload.

"Medically, the principle is the same as putting the patient to bed and keeping him at rest," says DeBakey.

To install the pump, Dr. DeBakey pinches off a fold in the aorta. Since no blood flows in this part, he can cut two holes in it to connect the Dacron tubes that carry blood through the LVP. "It's like installing radiator hoses on a car," says one of DeBakey's assistants. The surgical job takes about four hours but may get shorter as simpler routines are developed.

The pump sits between two of the patient's ribs. The top sticks out from the chest, looking like half an apple with a tube dangling. Through this tube the LVP gets its power from the outside in the form of compressed carbon dioxide gas. Electric pulses from the patient's own heart (his electrocardiogram currents) are used to trigger the 25-pound external power source so that each pump stroke works with, not against, the natural heart.

Synchronized with the patient's heartbeat, the gas surges back and forth, causing a diaphragm within the LVP to rise and fall. This provides the pumping action. A check valve at the intake keeps blood from backing into the heart during the power stroke.

After the heart has recovered, removing the pump is a minor operation that takes about 30 minutes.

Another method, considered even more promising by many doctors, is that of Dr. Adrian Kantrowitz, chief of surgery at Brooklyn's Maimonides Hospital. His "heart booster," or Auxiliary Ventricle as he calls it, also works by taking the load off the left side of the heart. But there the similarity ends. The whole booster fits inside the chest. Nothing sticks out except the power plug-in.

The Kantrowitz booster can be left inside a patient indefinitely. The idea is to let him go normally about his business. Whenever his natural heart needs a rest, the booster is ready for

action. All he has to do is plug in the power supply into a plastic socket in his chest.

Early last year, I watched the Kantrowitz booster being put to work. The patient—a big, black female dog called No. 1579—lay wrapped in a hypothermia blanket through which cold water circulated. Cooling reduced the oxygen demand of her body, permitting surgeons to block her bloodstream while installing the booster.

Deep anesthesia shielded No. 1579 from pain as Dr. Franz Gradel laid open her chest. Layer by layer, he cut down through skin and muscle. By clamping or tying off the big blood vessels and sealing small ones by electrocautery, surgeons reduced blood loss.

#### **Gains access to heart**

At last the ribs lay bare. With a rib spreader (like a carpenter's clamp working in reverse), Dr. Gradel pushed a pair of ribs far apart, exposing the deep red lungs, heaving slowly in response to the diminished needs of the drugged animal. Lifting the left lung, Dr. Kantrowitz gained access to the slowly beating heart and its great tree of arteries.

The plastic heart booster lay on the instrument table. Like a short, fat U-shaped sausage, it was made to fit in an arch alongside the aorta. Slitting the great artery in two places near the heart, Dr. Kantrowitz patched in his pump. No seamstress was ever handier with a needle than this great surgeon as he sutured the ends of the Dacron tubes from the pump into the arterial walls surrounding the newly made openings. A special hemostat partially clamping the aorta just beneath the incision, kept the operating site from being inundated with blood while Dr. Kantrowitz completed the stitching.

After making sure his connections were tight, the surgeon fastened two wires to the heart—to carry electric pulses to synchronize the pump action with the dog's natural heartbeat. Little

*(Please turn to page 222)*





3

# for the trail

*We slammed them over boulders, ran them through mud and deep water and flipped them on 70° slopes—for four days our crew of scramblers did everything to tear the guts from these trail bikes.*

By STUART JAMES



KAWASAKI 175 takes to the air in a flying start for a steep slope





**A TRAIL BIKE** will not swim rivers; it will not race through impassable mud or soft sand, nor will it climb cliffs or leap over fallen trees.

We have a collection of bruises, ruined clothing and three battered motorcycles to prove it.

Planning a torture test for three machines that are relatively new to these shores—two Japanese and one Italian—we borrowed the rugged terrain of the Hunter Mountain Ski Area in Hunter, N.Y., and with a crew of three experienced scramblers and road racers, besides myself, we did our best to tear the machines apart.

This was not a comparison test, because the machines are different sizes. There was a Kawasaki 175, a Benelli Cobra 125 and a Bridgestone Mountain 90. But it was impossible not to compare the advantages of size and horsepower.

On the lower slopes the three bikes performed equally well. On the almost-vertical upper slopes, however, you felt the differences. The Kawasaki can climb just about anything, but when it gets out of control you have a tiger on your hands. I took the Kawasaki up one steep slope that was broken by a



**WATERLOGGED TRAIL BIKE** is hauled from deep water that covered the saddle. Although completely soaked, the engine easily kicked over and ran smoothly

shallow ditch. After a fast running start I took the hump of the ditch at an angle; the rear started sliding away, and I tried to hit the silk. I was downhill from the machine and my only hold was on the throttle which was wide open. The bike was too heavy to

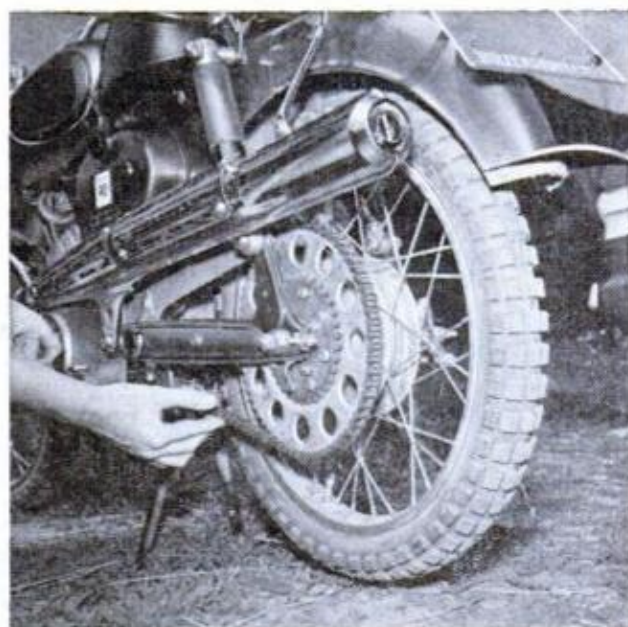
**RUNNING A DIAGONAL COURSE** up a steep rock-strewn slope off the side of a road, the Benelli Cobra 125 gets off to a fast start, but when geared down, lunges into the rocks and throws rider







**HITTING A MUD PUDDLE** after coming out of a fast downhill turn, the Kawasaki is in the lead, with the Bridgestone Mountain 90 and the Benelli Cobra 125 close behind. The three machines performed equally well, according to their size, but the Kawasaki was judged to be generally superior for trail-bike operation on all types of terrain tested



**ADDING CHAIN LINKAGE** and bolting large rear sprocket to street sprocket takes about a half hour. Knob tires and high exhaust are necessary for trail riding

**HEAVILY OVERGROWN** fields look easy, but they hide rocks and potholes that can easily throw a trail bike out of control



hold, and the rear wheel was spinning it around; it came down on top of me, and we slid down and into the ditch.

The Benelli on this slope did not have the power to climb, and it was also too heavy to hold. The lightweight Bridgestone, on the other hand, was like a toy. It couldn't make the slope, but you got off it with ease and were able to walk it diagonally up the slope with complete control of the throttle.

When we were taking them through the woods, lifting and pushing and walking them over fallen trees, the Bridgestone 90 took half the effort required for the heavier bikes.

The first two days the Benelli didn't seem to do anything right. The shift was awkward: four gears in succession and you had to kick it back into low, and half the time it wouldn't go in, but stalled out in second. Then the Benelli threw a chain, so we stopped for repairs: a new chain and new plugs all around.

Then we headed for the mud and the Benelli was a different machine. It loves to wallow in deep, sticky muck, and when it was good and dirty it seemed to have a change of heart and really competed with the Kawasaki.

We were trying fast, sharp turns in loose dirt, and here again the size of the Bridgestone 90 was a big help. It was easy to balance the machine with our feet to keep it under control in the slide. When one of the drivers came downhill at a good clip on the Benelli and made his sliding turn into the five-inch-deep loose dust, he skidded about 25 feet with the machine on top of him.

#### Diagonal obstacle course

A winding dirt road adjacent to the Hunter Ski Area was bordered by a steep, boulder-littered embankment. The drivers (I bowed out of this one) raced along the road and at a predetermined point shot diagonally up the embankment. The problem was keep up enough speed to make the climb, shift down quickly, and avoid the large boulders.

The Bridgestone was highly maneuverable, but it stalled out a quarter of the way up the slope. The Benelli did better, but it lunged and bucked when geared down, slammed into a boulder and threw the driver. The Kawasaki had the speed and power to make the climb, but it couldn't be maneuvered

*(Please turn to page 215)*

|                   | KAWASAKI 175 | BRIDGESTONE 90 | BENELLI 125 |
|-------------------|--------------|----------------|-------------|
| Engine            |              |                |             |
| Displacement      |              |                |             |
| Bore x Stroke     |              |                |             |
| Maximum speed     |              |                |             |
| Maximum power     |              |                |             |
| Compression ratio |              |                |             |
| Starting          |              |                |             |
| Clutch            |              |                |             |
| Transmission      |              |                |             |
| Weight            |              |                |             |
| Front suspension  |              |                |             |
| Rear suspension   |              |                |             |





**C**OULD KING ARTHUR really have pulled his famous sword *Excalibur* from a stone as the legend claims?

"Of course not!" scoffs Bo Randall of Orlando, Fla. Randall has enjoyed quietly debunking many such knife legends during 30 years of making what many outdoorsmen consider to be the world's best sporting blades.

Today most men are said to carry or own a knife. "Most of them, regret-

# knives for astronauts

From dinner table to outer space and the Vietnam jungle, the razor-sharp products of a hobbyist knife-maker are cleaving bones and splitting hairs the world over





tably, cannot recognize a good blade from a poor one," Randall says sadly.

"Quality of steel used is *always* of first importance. After that, depending upon the owner and not necessarily in this order, come such things as the knife's ability to do the job, the ease with which it can be handled, its bevel designs and general appearance."

High price, he warns, does not always assure high quality. The quality

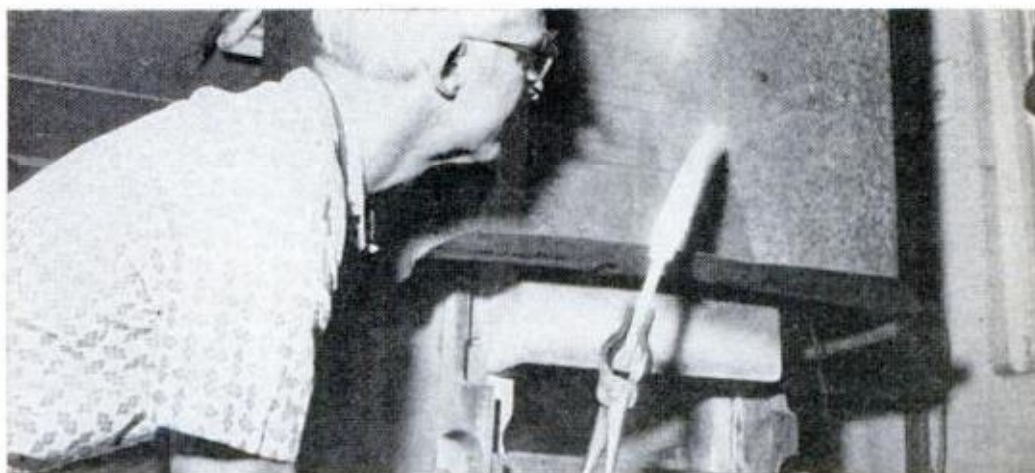
purchaser should look for fine workmanship and good "feel." A pocket-knife blade, for instance, should not be loose. It should have good spring action, opening and closing firmly with a snap, the point completely protected by the case in the closed position.

Unfortunately, he adds, you cannot tell quality steel by appearance alone.

The Florida knifemaker offers 18 different blades (but no pocketknives)

# and everyone

By GEORGE X. SAND



**RANDALL**, shown left with son, Walter, examines Astronaut Gordon Cooper's knife. Above, a hot blade is checked after removal from gas-fired forge where it is first heated

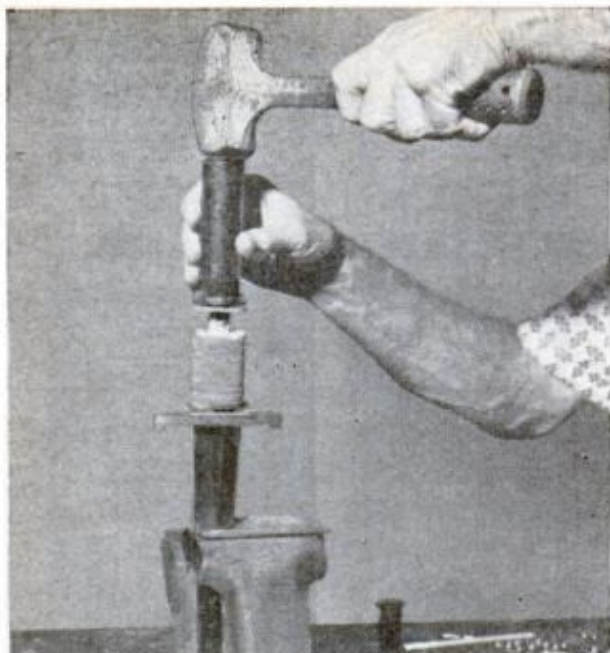


**CHERRY RED**, rough blade is hammered to general shape. Original blank of carbon-tool steel stock is used for knives



**FORGED BLADE** is now ground to size and contour wanted. It is then hardened by reheating it and immersing it in oil





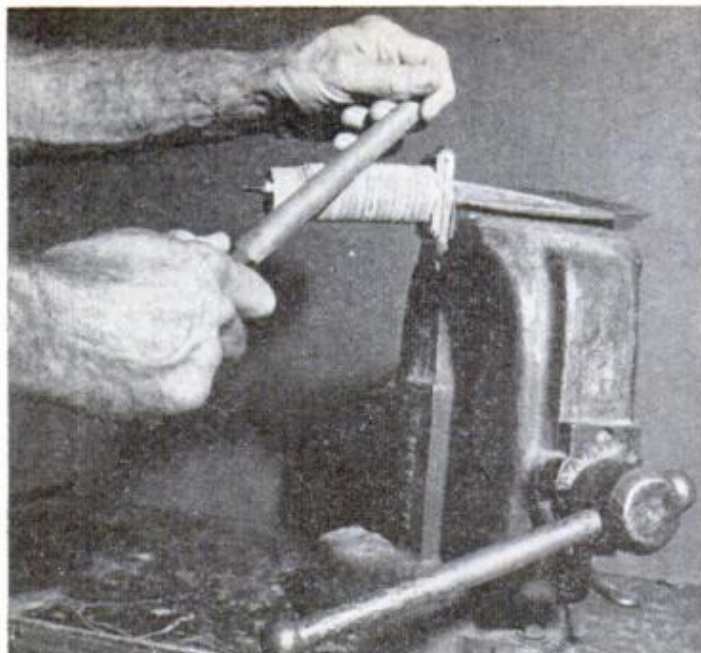
**KNIFE HANDLES** can be as different as the many men who own them. The one above is being made of leather discs that are glued and tamped together

at prices ranging from \$20 to \$65 for hunters, fishermen, divers, knife throwers, soldiers, airmen, and just plain roast carvers. These men send Bo amazing testimonials.

During World War II the famed Marine ace, "Pappy" Boyington, later shot down in the South Pacific, is said to have paid the equivalent of \$500 for a used Randall fighting knife. From Iwo to frozen Chosen, fighting men swore by these gleaming blades which have killed so often they make bowie and other more legendary knives insignificant by comparison. One infantry major sent Bo an affidavit claiming he had used his Randall "accounting for a large percentage of the 364 enemy I received credit for killing with individual arms."

Randall knives perform other incredible feats, too. It is not uncommon for one to be used to skin out and completely butcher a 1000-pound moose or bear without once needing resharpening. Or to cut quickly through a six-inch manila mooring line in an emergency. Or pry open the canopy of a downed plane and still be sharp enough to operate immediately upon the injured pilot.

Randall readily explains his own method, step-by-step, in his 33-page



**FINAL SHAPING** is accomplished with a rasp. Other materials used to make knife handles include ivory from elephant tusks and bone from antler horns

catalog which he will mail for 25 cents (write to Box 1988, Orlando, Fla.). He explains simply that it is "hard, painstaking effort that determines knife quality, not mysticism." He will, in fact, sell you a "make-it-yourself" kit of the very same materials he uses.

Here are the steps he recommends: Obtain a piece of carbon-tool steel knife stock. Heat it cherry red and hammer out the rough blade in the general shape desired. Grind the rough forged blade to size and contour.

Harden the blade by heating it cherry red again, then immersing it in tempering oil. Draw out the brittleness and internal stresses by tempering the blade at low heat until it becomes a strawish-blue color and can be cut with a new file. Grind in lines, bevels and contours and remove roughness.

Use a coarse hone and true up the cutting edge, removing any remaining waves and unevenness. Regrind the blade on a fine-grit wheel to remove scratches made by the coarse hone. Smooth the blade first with coarse and then with fine-grit emery cloth. Polish it on a glued-up coarse emery wheel.

Cut and shape the hilt from quarter-inch brass. Drill a hole and file it rectangular to fit the handle tang. Fit hilt to the blade and solder in place. Fit



handle to the tang, cutting rectangular holes in pieces of fiber, plastic or leather. Slip each of these into place and glue separately. Drill a piece of half-inch duralumin for the butt and recess it to fit the tang. Drive it on tightly and peen it into place, or thread end of the tang and use a nut. When the glue is thoroughly dry, shape the handle with a coarse file and a finer file. Smooth it with coarse and then fine emery paper. The hilt and butt are filed and sanded as the handle is shaped.

Polish the blade with a medium-grit glued-up emery wheel. Polish the hilt and butt on a muslin wheel charged with polishing compound. Sharpen the blade on a medium-grit hone. Polish the blade on a fine-grit glued-up emery wheel and again polish the hilt and butt. Give final sharpening to the blade, using a fine-grit hone.

Remove the last fine hone scratches with a hard polishing wheel. Give final polish to the hilt, butt and handle with a soft muslin wheel. Make or have made a sheath patterned to fit the blade with a stop for the hilt (so the point cannot pierce the sheath) and with splines along the sides to prevent cutting the stitches. Use a keeper strap and fasteners to hold the knife in the sheath.

Walter Doane Randall started making knives in 1938. It took him several months for the first. Bo's hunting companions thought it beautiful. But he wasn't satisfied. He let one of his friends buy the knife for a meager sum and started another. He's been trying to make each one better ever since.

Another knife fallacy which Randall is prone to expose involves the "secrets" of proper sharpening.

"A knife is made, and later resharpened accordingly, for either a long, thin bevel or a heavy bevel. You can't have both at once. That would be like using a razor blade to cut up a moose."

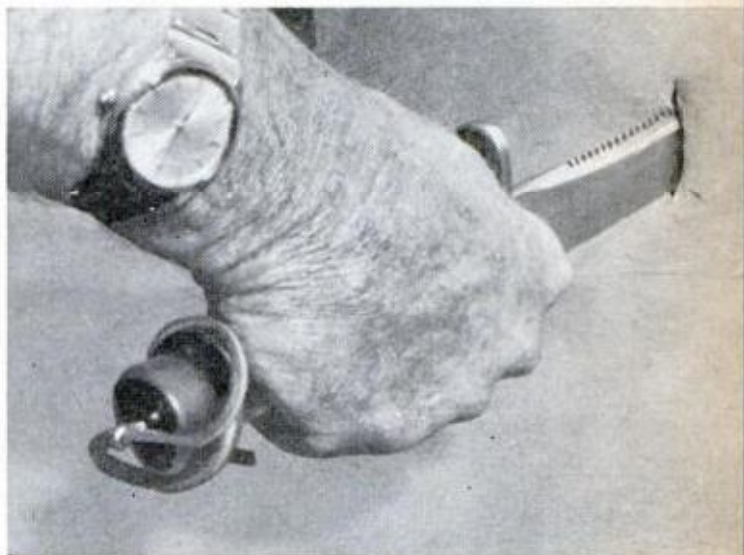
Tempering is important. Any good steel blade can be finished with a blunt,

*(Please turn to page 233)*

JANUARY 1967



**RANDALL KNIVES** can, and have, cut just about anything. Hunters use them to skin animals. One wrote he skinned Kodiak bear without resharpening knife



**VIETNAM WAR** brought requests from airmen to design knife that could cut quickly through helicopter fuselage for escape if downed in enemy territory



**RANDALL TESTS** knives on hard Florida heart pine before shipping them to customers. His knives are noted for holding cutting edge through long service



NEW FOR  
**YOUR HOME**

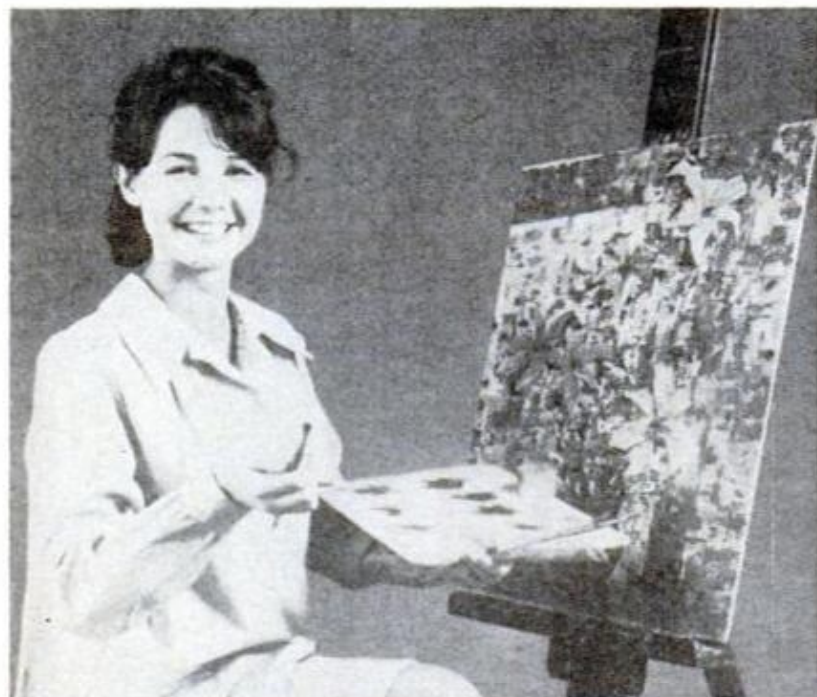
BY CAROL SCHULTZ



**PAPER CUP DISPENSER** with its contemporary silhouette, is only five inches high by three inches wide. Can be wall mounted or free standing. Unit costs 89 cents. It is made by American Can Co.



**FACIAL SAUNA** offers the home user a portable unit with the skin-care benefits of the Scandinavian sauna bath. Provides a home facial in 20 minutes. \$29.50. Health Products, 407 S. Dearborn St., Chicago, Ill.



**ARTISTS' CANVAS** is an embossed hardboard, Honespun, with a surface appearance that resembles a conventional stretched canvas. The rigidity of Honespun hardboard eliminates the problem of canvas sag. Also, being of nonabsorbent composition, it reduces the amount of paint consumed. It's available in sheets up to four by eight feet. Approximate cost of the four by eight panel is \$4.50. Manufactured by U.S. Plywood Corp.



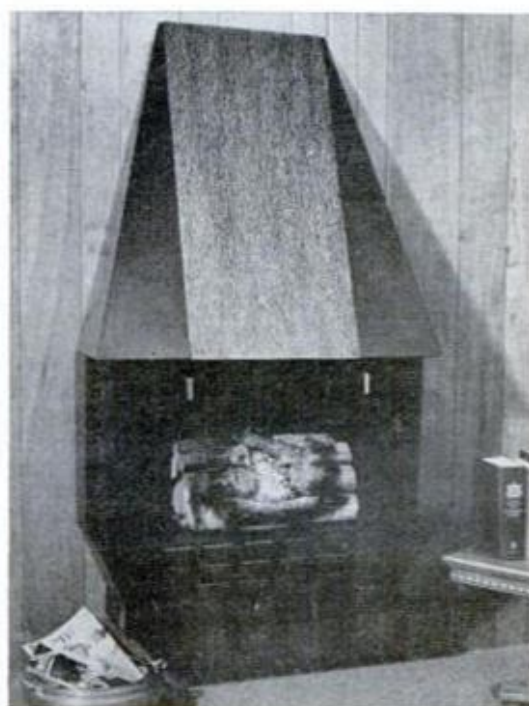




**VINYL WALL TILES** are patterned to form a continuous wall design. These three-dimensional panels are available in 29 styles and colors. Washable, waterproof, grease and stain-resistant, they are ideal for use behind kitchen counters and sinks. For instant application, pull off backing and press on wall. One box of eight panels costs \$3.79, decorates eight square feet. By the Decro-Wall Corp., 21 Saw Mill River Road, Yonkers, N.Y.



**PORTABLE WARMER** is so efficient it can also cook. It features an adjustable clean-burning butane flame. Unit may also be used with chafing-dish stand and coffee warmers, costs \$13.50. By the Ronson Corp.



**ELECTRIC FIREPLACE** is surface-mounted and heats up to three rooms. Unit measures: 35 inches wide, 12 inches deep, 60 inches high, \$235.95. By Cadet Mfg. Co., 512 N.E. 73rd St., Portland, Ore.





**BYPASSING WINDOW-DOORS** provide room with vista view of yard and convenient access to adjoining patio

## How to Use Sliding Doors

**There are many types—bypass, bifold, multi-fold—but they all slide on tracks and they are less difficult to install than you might think**

**T**RACK HARDWARE has given a new “swing” to doors. They now can be hung to bypass one another or to fold open in pairs, or ganged together to collect in groups. No longer are doors limited to mere swinging.

Available in kits, track hardware is a cinch for the do-it-yourselfer to install. In many cases, the hinges don't have to be mortised, automatic alignment makes the doors easy to adjust and a screwdriver,

drill and hammer are about all you need to install them once you have the opening framed. In fact, you can purchase bifold doors, for example, in sets in which the doors are already hinged and the pivots in place to make them require even fewer tools to hang.

Of the three types—bypass, bifold and multifold—bifold doors are preferred for wardrobe closets. Folding open in pairs, they provide full access to the closet,

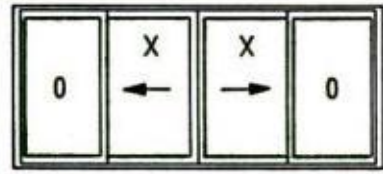
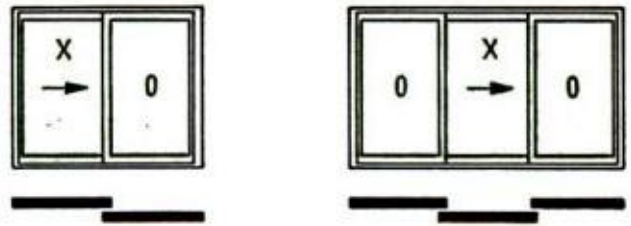




**ROUGH OPENING** should be at least  $\frac{1}{4}$  in. oversize so there's clearance for shimming and plumbing frame. Below, after panel is set in upper track, it's swung inward to rest in corresponding bottom track

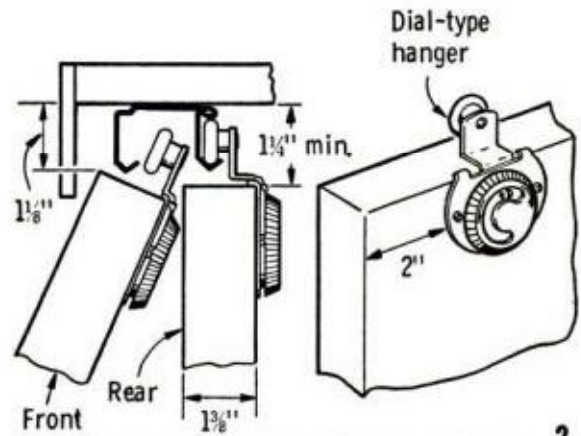


## How to hang **BYPASS DOORS**



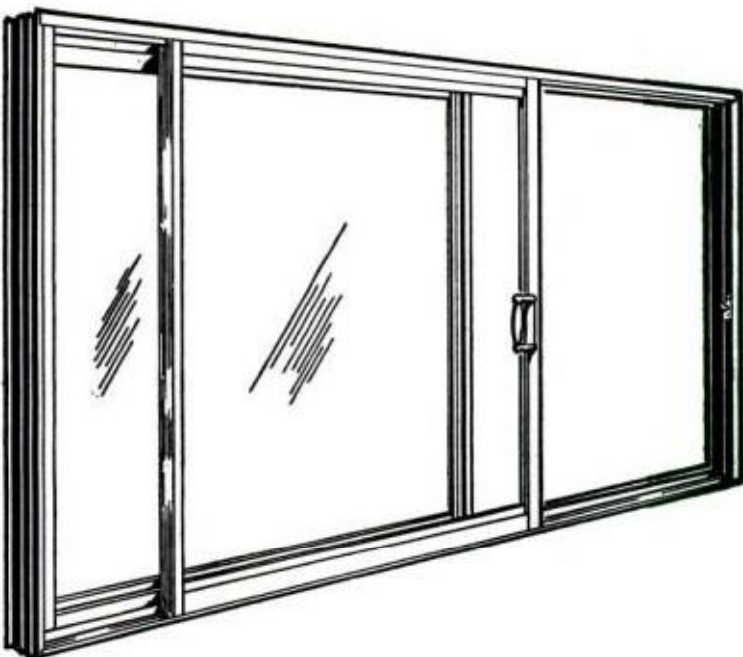
O=Fixed panel X=Moving panel  
STANDARD TYPES

1



BYPASSING CLOSET-DOOR HARDWARE

2

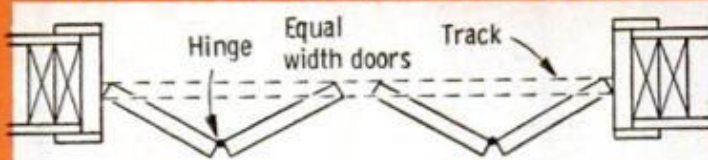


**IN THIS TWO-PANEL DOOR**, only inside panel moves; the outer one is fixed. The panels are reversible for choice of right or left-hand bypass

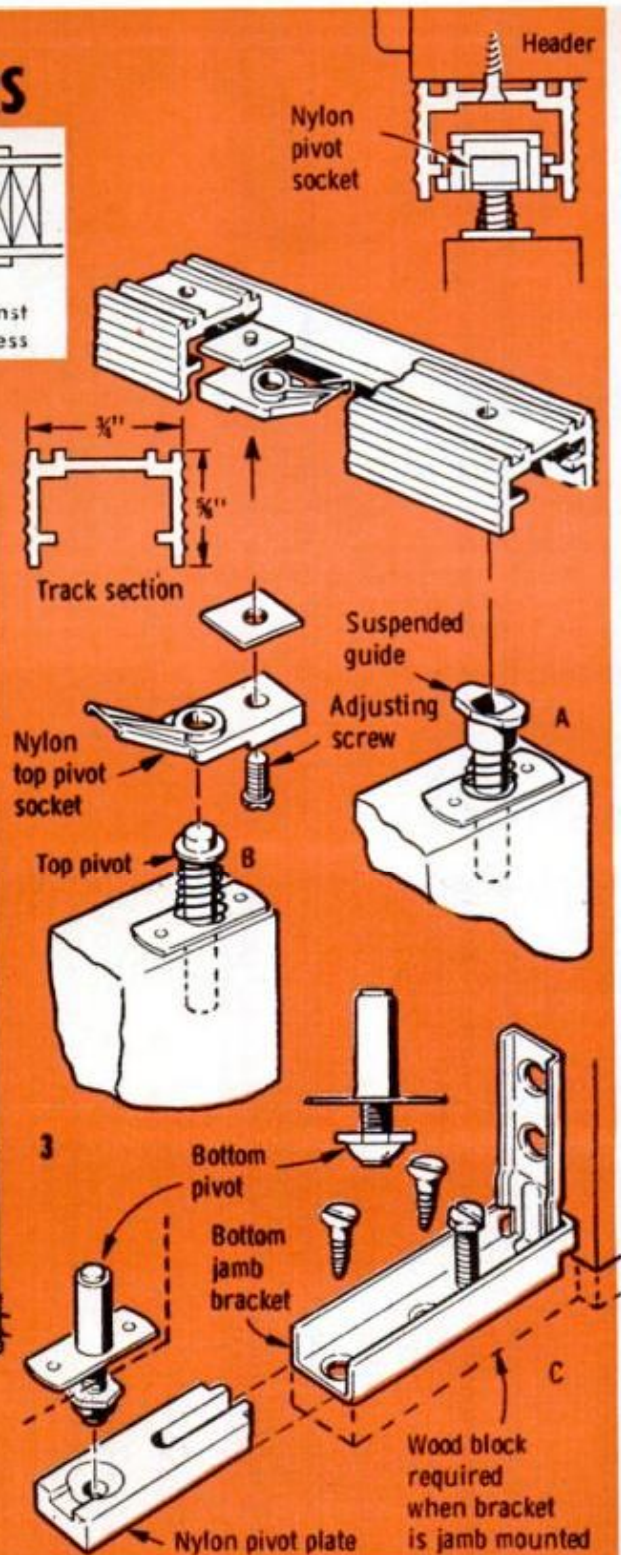
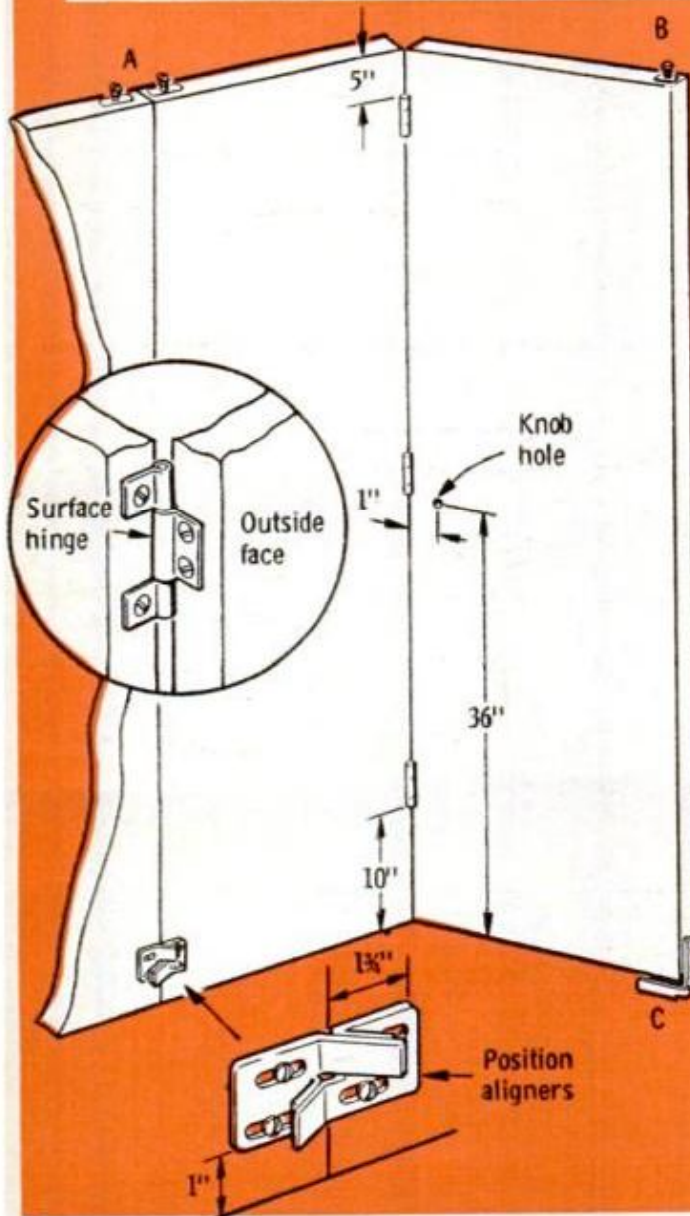
JANUARY 1967



## How to hang BIFOLD DOORS



BIFOLD DOORS slide in pairs and fold flat against door jambs when wide open. Provide full access



whereas bypassing doors have the disadvantage of always blocking half the closet.

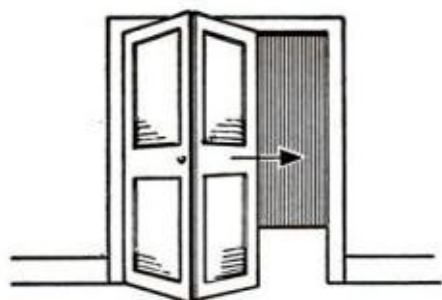
### Bypassing doors for patio

You'll find bypassing doors widely used where the passageway leads to a patio. Here they're glass, of course, supported in heavy aluminum frames and available for two, three or four-panel installations as shown in Fig. 1. A typical vertical cross section through a two-panel Stanley door is shown on page 151. As in all similar in-

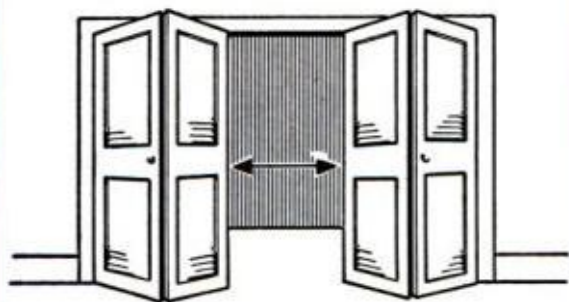
stallations, one or more panels is fixed. Here the inner panel is movable and bypasses the fixed outer one. A third panel, a screen, bypasses the fixed panel.

While bypassing patio doors are designed for do-it-yourself installation, they're ordered as a complete unit. You don't buy doors and hardware separately as you do when hanging bypassing doors on a closet. Patio doors are available in three frame depths,  $3\frac{5}{8}$ ,  $4\frac{1}{16}$  and 6 in. and in single or  $\frac{5}{8}$ -in. insulating glass.





TWO-PANEL BIFOLD DOORS



FOUR-PANEL BIFOLD DOORS

Double weatherstripping around the perimeter makes them weathertight and meeting rails mesh neatly without sticking. All makes have a night latch, some a cylinder lock, others a means of preventing accidental lockout.

#### Rear door is hung first

Bypassing closet doors roll past each other on a double track as shown in Fig. 2. Hangers fitted with nylon rollers are attached to the backs of the doors. They're usually adjustable one way or another to get the doors to hang plumb once they're up. Hangers are made to accommodate both  $\frac{3}{4}$  and  $1\frac{3}{8}$ -in.-thick doors by simply switching them, the front ones being placed in the rear track and the rear ones in the front track. The rear door is hung first then the front door, by tilting. Bypassing doors are kept from rubbing at the bottom by an adjustable nylon floor guide which is screwed in place and adjusted to provide a  $\frac{1}{16}$ -in. clearance.

Closet doors, bypassing or otherwise, come in standard sizes and you have to take this into account when framing the opening. As a rule of thumb, the width of the finished opening must be twice that of the doors minus 1 in. This provides for a 1-in. overlap at the center. As for height, the finished opening should be door height



**TWO-DOOR BIFOLDS** can be used on divided "his and her" closet as shown here or used in pairs as at left to create a four-panel door for a single closet

plus  $1\frac{1}{2}$  in. so you have  $\frac{1}{4}$ -in. clearance at the bottom and  $1\frac{1}{4}$  in. at the top for track and hangers. The  $1\frac{1}{4}$ -in. clearance is required for Stanley's No. 2850 kit which features dial-adjustment hangers, but this will vary with the particular hardware used. All kits come with full instructions.

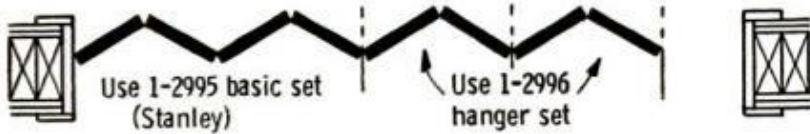
Louvered bifold doors are popular for closets, and both lumberyards and mail-order houses sell such doors in 12, 15 and 18-in. widths,  $1\frac{1}{8}$  and  $1\frac{3}{8}$  in. thick. The doors are installed in either two or four-panel combinations and are hung in pairs to fold to one or both sides of the opening. Again the opening must be framed to suit the doors. Two-panel doors require a finished opening of 24, 30 and 36 in.; four-panel doors require a finished opening of 48, 60 and 72 in. Bifold hardware is sold in two and four-door kits. In some, the track is in two lengths, in others, one.

#### Many different kits

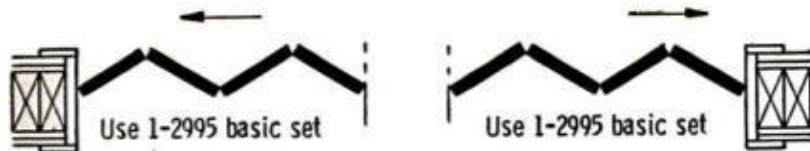
There are many different kits available, but all work similarly. On the facing page, Fig. 3 shows a typical set. Pivots in the doors engage a track at the top and sockets at the bottom, and are installed either in holes drilled in the doors or attached to the backs. Doors are hinged in pairs with



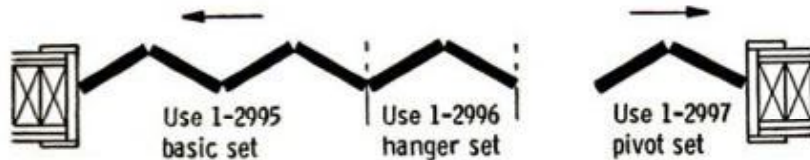
## APPLICATIONS



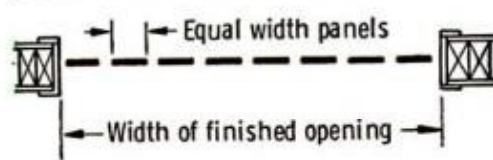
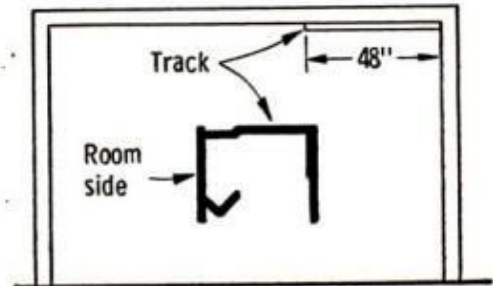
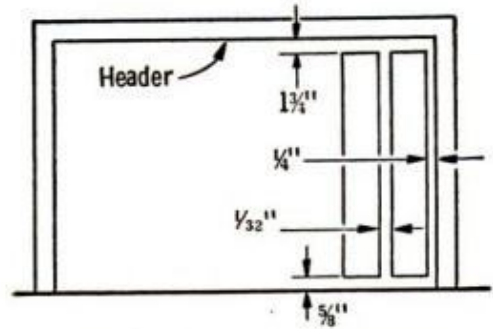
ALL PANELS COLLECTED ON EITHER SIDE



EQUAL NUMBER OF PANELS COLLECTED EACH SIDE

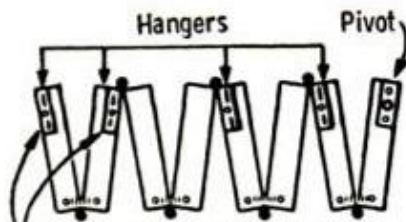
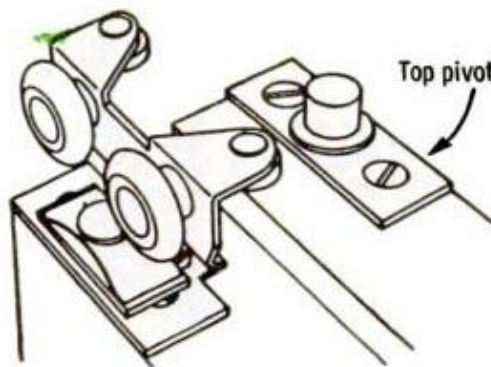


UNEQUAL NUMBER OF PANELS COLLECTED EACH SIDE



DETERMINING FINISHED OPENING

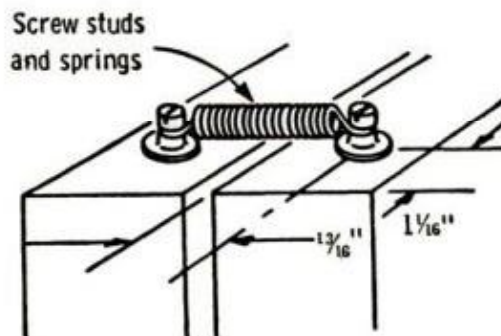
**SWIVEL** roller hangers are mounted flush with side and end of doors. One hanger is required for each pair of doors as shown below



Notice position of these two hangers to provide access way

**IN INSTALLATIONS** where all doors are hitched together, only one top pivot is required. Note locations of two door hangers at far end

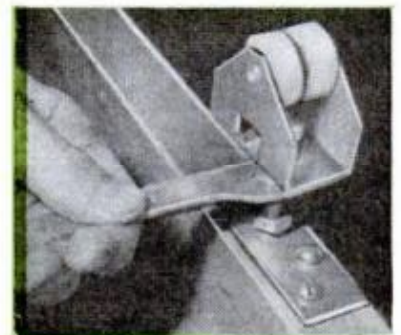
**SPRING-AND-STUD** fixtures are screwed to each pair of doors at ends opposite hangers. Springs apply tension to keep doors aligned



## How to hang



**HANGER BOLT** is screwed in place by turning fixed adjusting nut. Below, make sure hanger carrier is aligned with door surface

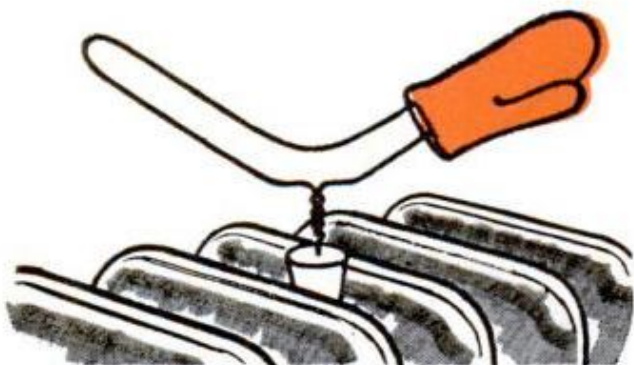




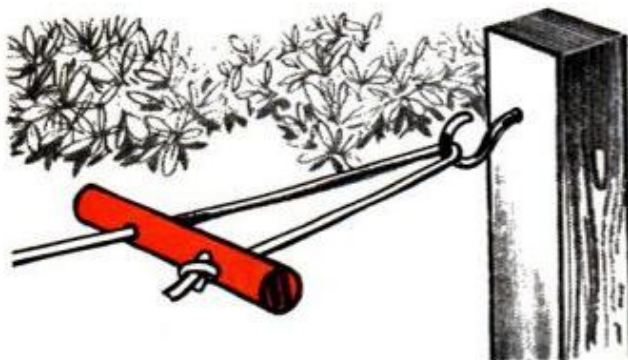




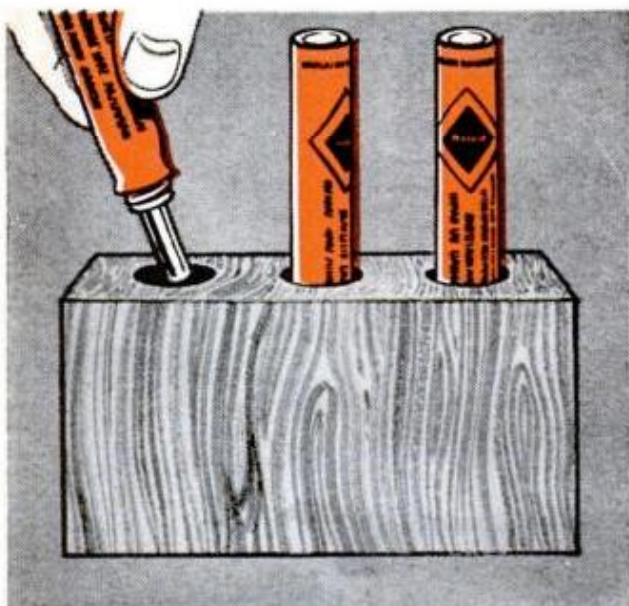
# Solving home problems



**WET MITTENS** dry quickly without danger of being scorched if dried on a coat-hanger rack stuck in a large cork that's wedged between coils of a radiator



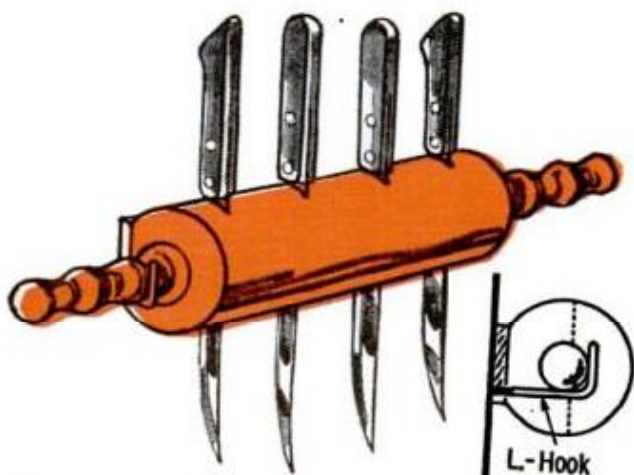
**CLOTHESLINE SLACK** can be taken up in a jiffy if you provide a self-tightener like that on tent stake. Off-set pull causes broomstick to lock itself on rope



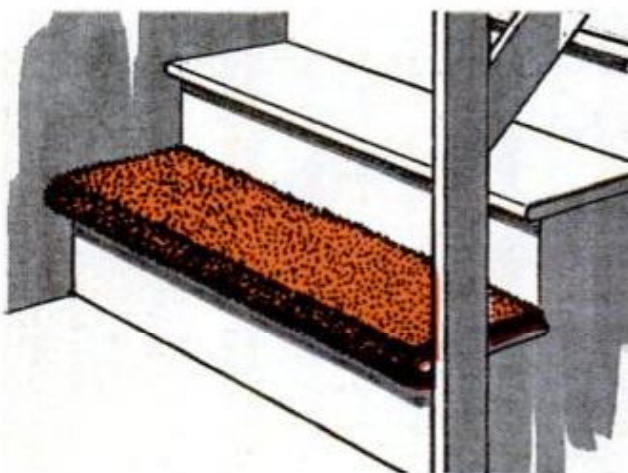
**FELT-TIP MARKERS** will keep marking to the very last drop if they are stored inverted in holes in wood block. Tip is always filled with ink, ready to write



**EVEN THOUGH** you plan to continue painting next day, you should still clean a roller rather than let it stand in water. Foil makes good overnight wrapper

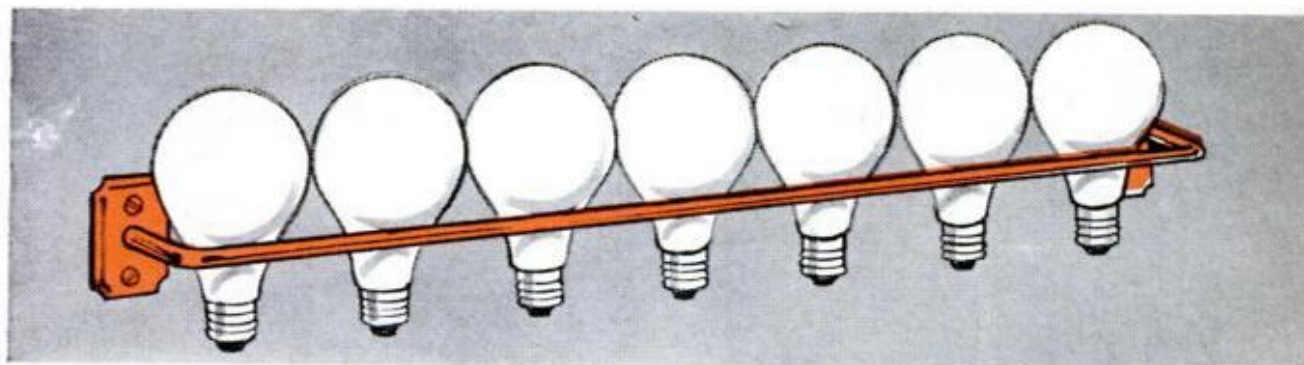


**ROLLING PIN** becomes novel knife rack by planing it flat on one side, running saw kerfs to the center and nailing strip across back. L-hooks support it



**KNOWING WHEN** you have reached the last step when carrying bulky items down basement stairs is determined by feel if the bottom tread is carpeted





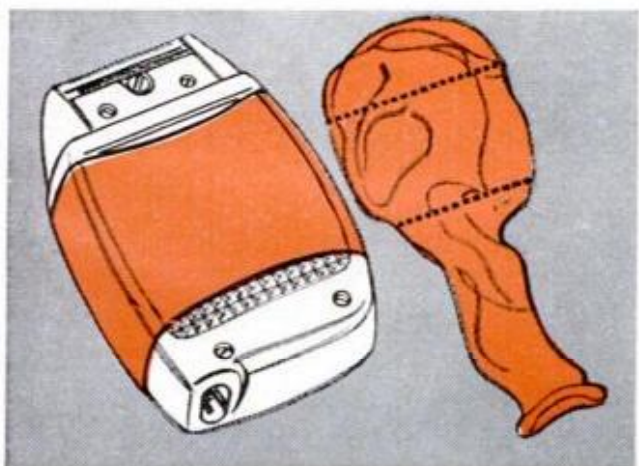
**SPARE LIGHT BULBS** can be kept extra handy in a neat rack improvised from an inexpensive towel bar. Quick glance shows when it's time to restock them



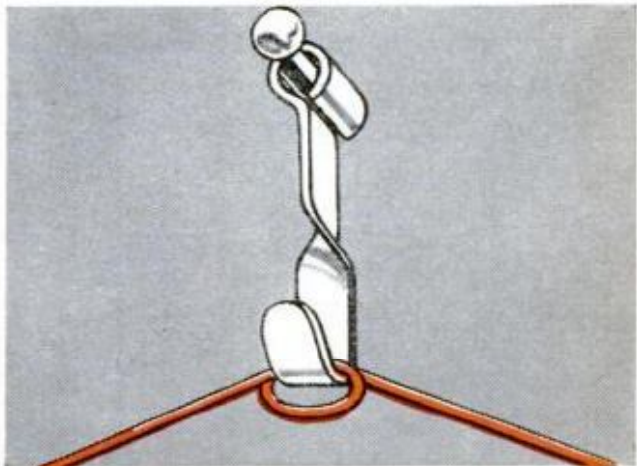
**IF YOUR DOG** delights in upsetting his water bucket, you can put an end to constant refilling by locating it under a sliding pipe that hooks inside pail



**PAINT IS QUICKLY REMOVED** from ferrule of brush after using if you first wrap it with masking tape. A yank on the tape leaves brush clean as a whistle



**THERE'S LESS CHANCE** of your electric razor slipping from your hand accidentally and falling to the floor if you cover it with a band cut from a toy balloon



**A LOOP IN THE WIRE** of a picture will keep it hanging straight for it no longer can shift on its hook and become off center through room vibration





COMBAT WINGS (inset) were worn by crew of USS *Flasher* 249, credited with sinking 21 WW II ships

## The Trick of Putting a

Sure to stump your friends as to how it was done, this intriguing novelty makes a never-ending conversation piece for your mantel

BY BILL NORTH

Technical Art by Barry A. Wiedenkiller

**YOU** NEEDN'T BE an accomplished modelmaker or a salty old fo'c'sle hand to put a submarine into a bottle. A sub shortcuts much of the labor associated with ship-model building; it's noticeably short on leech lines, clew cringles, buntline fairleads and other gewgaws that delight the traditional windjammer buff. Nevertheless, it produces a handsome result—in as little as a weekend.

Our sub-in-a-bottle is hull-deep in other practical advantages: It is impervious to dust, weather, overzealous admirers and almost any accident short of a fall on a hard floor. And like any ship-in-a-bottle, it poses that question so puzzling to the beholder and satisfying to the builder: "How on earth did you get it into the bottle?"

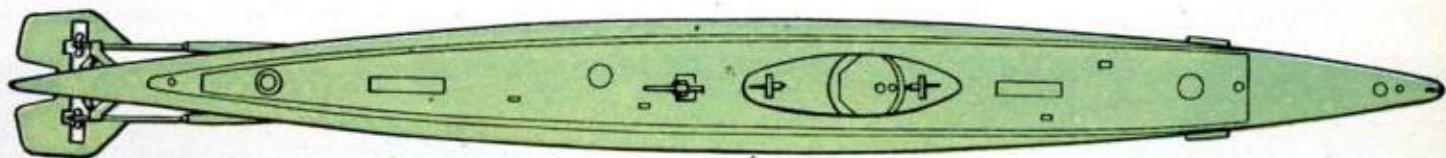
Unlike the more typical bottle boat



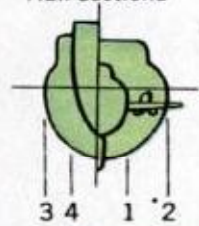


GREEN-TINTED WINE BOTTLE, plus clear plastic supports, gives illusion that sub is actually cruising under water

# Submarine in a Bottle

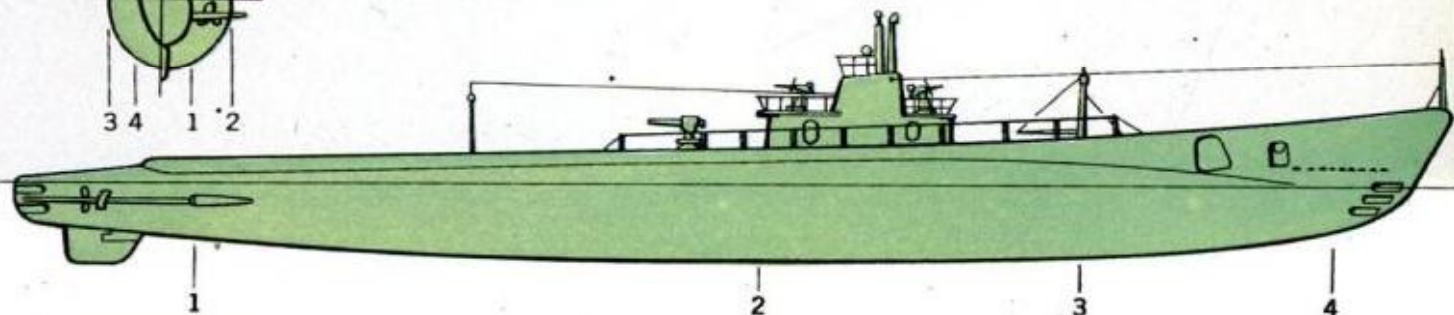


Hull sections

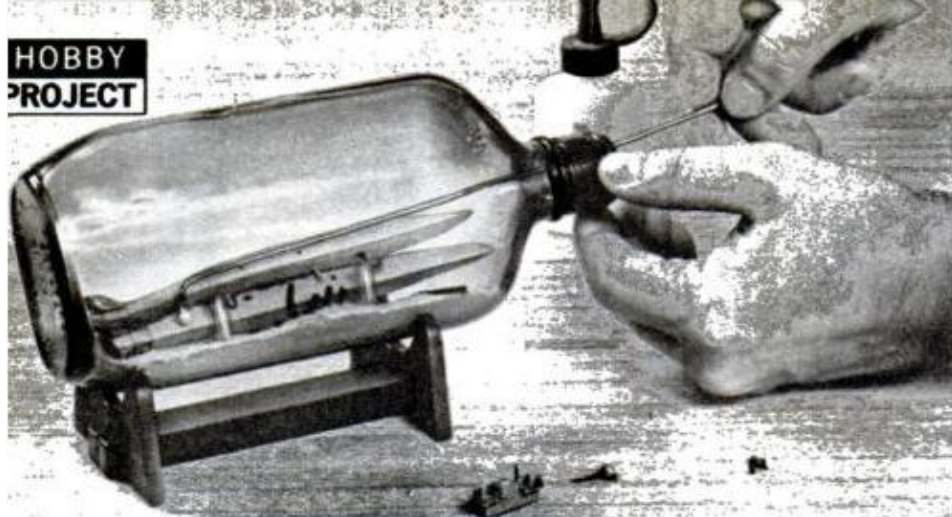


FULL SCALE PLANS

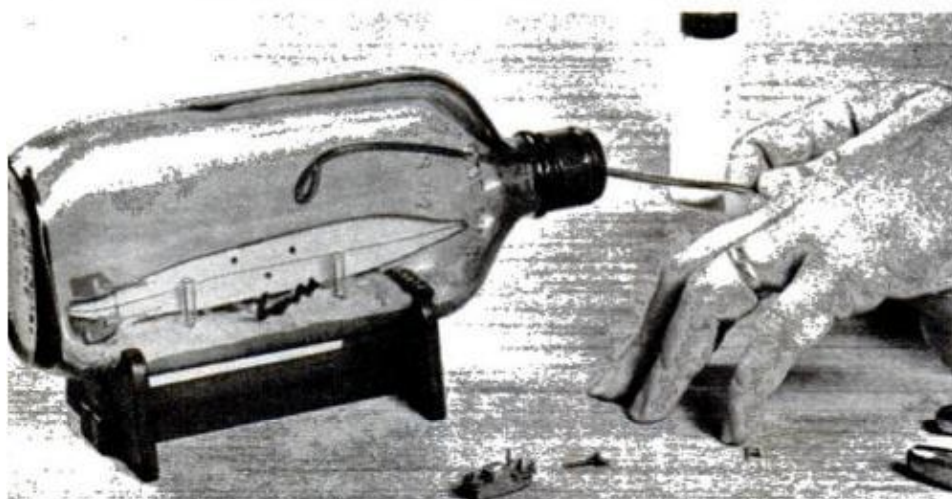
U.S.S. FLASHER







**AFTER CLAY BOTTOM** and base are in place, insert both lower quarters of the hull with special wire tool. Glue the two sections together and allow them to set. Then maneuver the glued sections onto the two plastic straw legs



which is made from the waterline up, this model has a full hull. To give a submerged effect, it stands above the ocean floor on two clear-plastic legs; a green-tinted bottle adds to the illusion.



In selecting the submarine you want to build, you have a vast choice; over the years, naval powers large and small have produced a fabulous variety of hull and conning-tower shapes and rudder assemblies. In the U.S. Navy alone, nearly 600 subs have been launched since the *SS Holland* in 1897. Shown on page 159 is my model of the *USS Flasher* (SS 249), the American submarine that sank the greatest tonnage of enemy shipping in World War II.

The bottle I used is a bright-green pint flask that originally held domestic wine. Some rum fifths and whiskey pints and half-pints also are

Broken section of double-edge razor blade wedged in slit in end of stick

Coat-hanger wire

Wire

Water-color brush

1/4" dowel

Flat metal

**SPECIAL HOMEMADE TOOLS**



**UPPER HULL SECTIONS**, complete with deck railings, are glued on next. Conning tower assembly is lowered onto the completed hull. Finally, hull and sea bottom are touched up with a remote-control brush and debris is picked up

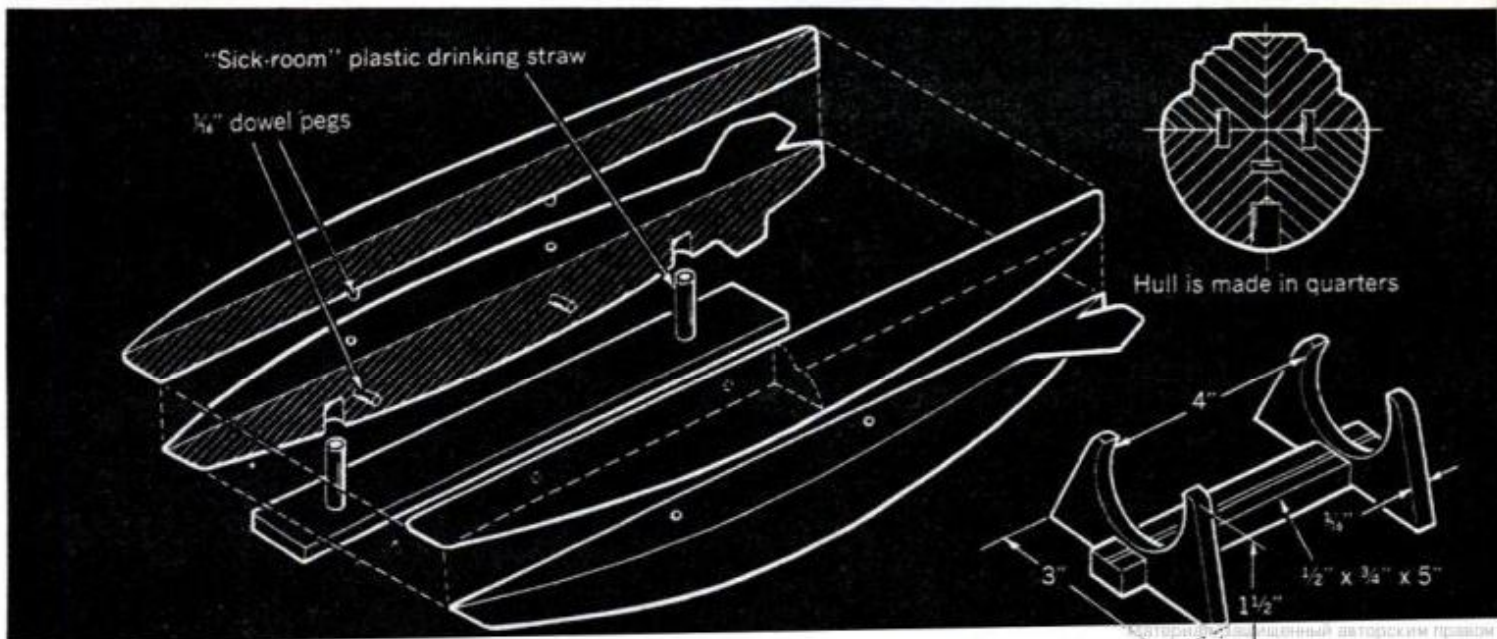
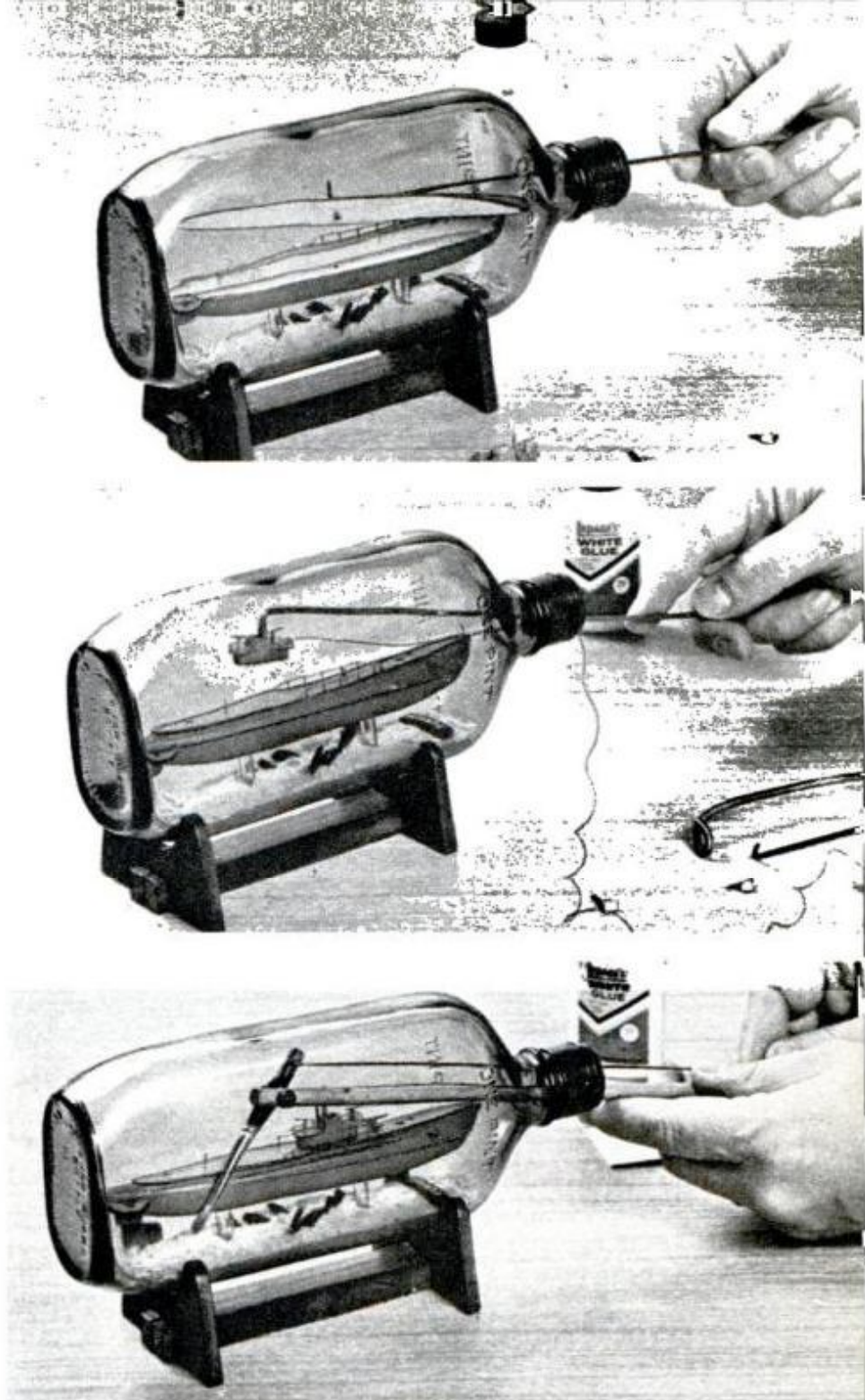
suitable. Before starting, hold the bottle up to the light and check for scratches, bubbles and other flaws.

If you make the stand for the bottle first, you'll have a sturdy platform for the model throughout construction. It can be a simple wooden frame like mine, or it can incorporate leaping dolphins or other nautical motifs to suit your taste.

The hull of the sub is made in quarters stacked lengthwise. Since each section must fit through the bottle neck, carefully measure the interior of the bottle, remembering that the glass is of unequal thickness. Watch the neck in particular; this diameter gets narrower toward the inside.

Now trace the plan and profile views which are given actual size on page 159. If you'd rather model the new nuclear-powered

*(Please turn to page 200)*





**CRAFT  
PROJECT**



# Two Ways to Add

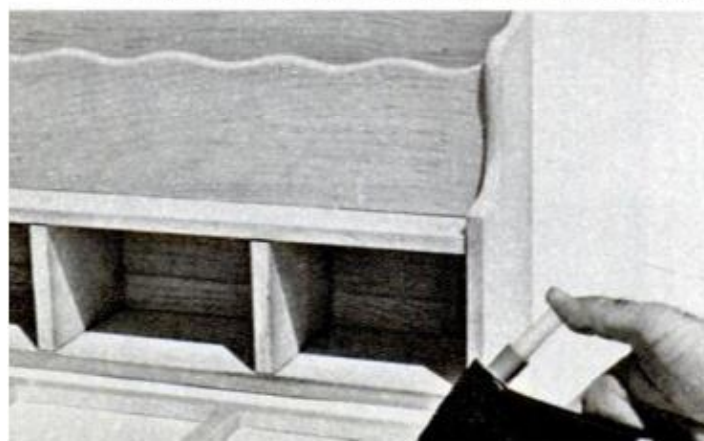
**Since variety is the spice of life, we offer a choice of racks for those spices that add zest to family meals: cozy Early American or Nautical Modern**

Technical Art by Nida Associates Inc.

**FRONT-DRAWER FACING** goes on last as you make colonial rack. Use glue alone to assemble all parts

**TWO ESSENTIAL INGREDIENTS** for a good meal are the proper spices and correct timing. Here you have them both in one of two attractive spice racks that you'll surely want to build for kitchen wall or counter. Both serve a dual function in that one contains a clock, the other a tip-out recipe file. What's more, they're quickie projects that can be made

**FAST-SETTING STICK GLUE** eliminates clamps in drawer assembly. Lay bead along edges, hold 20 seconds







# Spice to Your Life

in a weekend, possibly from scrap material in your woodbox. Gum wood and dark mahogany were combined in the nautical rack above, whereas pine, finished with a warm colonial stain, was used to make the Early American design.

Simple as they are, they'll take even less time to assemble if you happen to have an electric glue gun called Thermo-

**DAB OF MELTED GLUE** in holes secures dowel corner posts. Watch to see that rope holes are in line



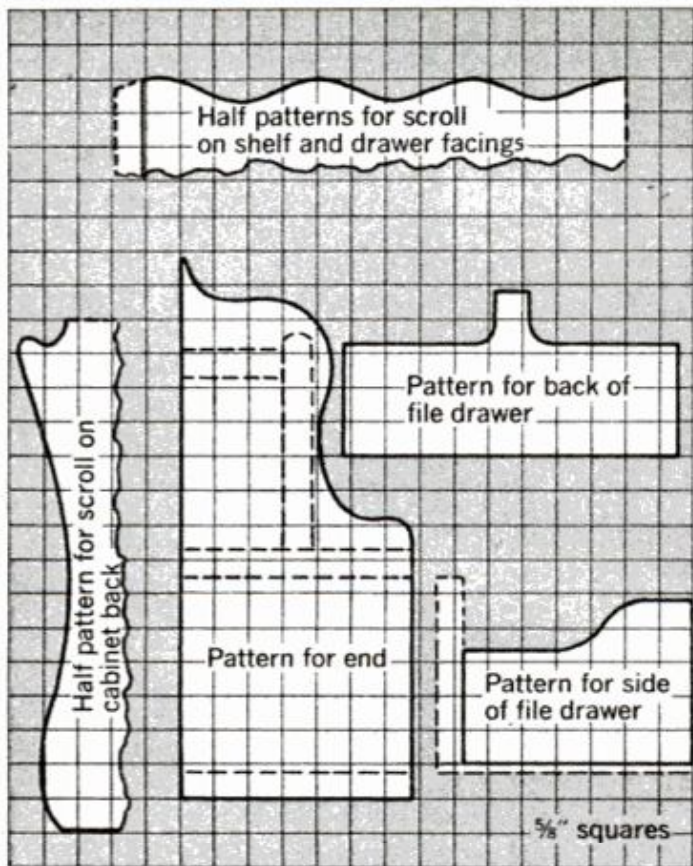
grip. Using stick glue that's almost instant-setting (it sets in 20 seconds), you're not slowed up waiting for conventional glues to dry and you don't have to bother with clamps. You simply run a bead of melted glue along the joint, press and hold for as long as it takes you to say *Popular Mechanics* 10 times.

Your jigsaw will come in handy for

**THERMOSETTING GLUE** is ideal for anchoring ends of nylon rope in holes in clock case and drawer fronts







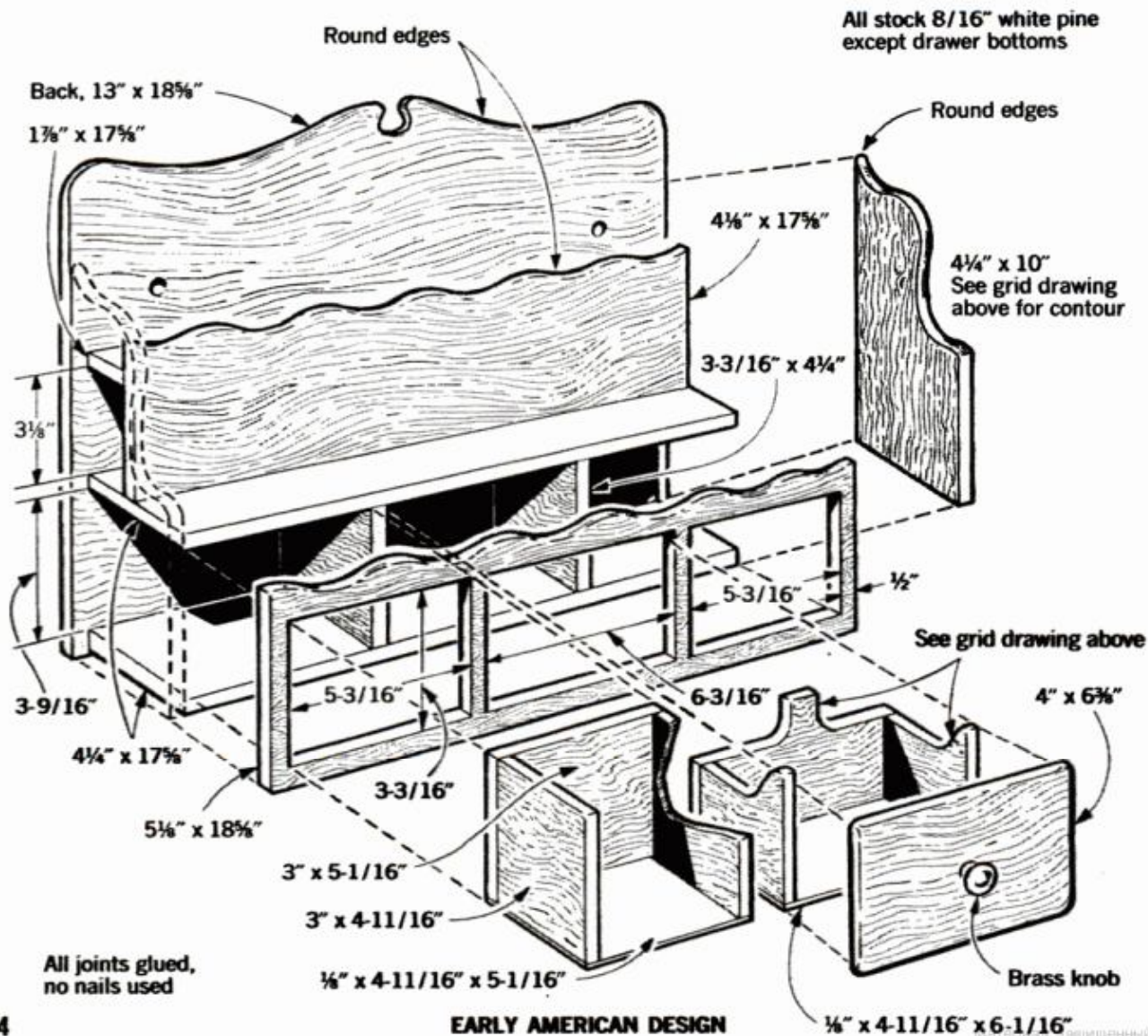
**PATTERNS FOR CONTOURS**

cutting the curved edges of the fronts, ends and back members of the colonial rack. You'll notice that the drawer openings in the front facing are actually cut from a single piece—although, if you wish, you can assemble the facing from separate strips, butting and gluing vertical ones to horizontal ones. You'll notice, too, that the front facing is made to lap the ends. This is also true of the back.

All shelf members should be cut to exactly the same length by using the stop rod on your saw's miter gauge. Then they'll fit perfectly between the ends.

Of course, you can give the rack a real professional look if you can round the curved edges with a shaper cutter. Patterns for the scroll-cut edges will have to be enlarged from the grid drawing at the left. Note how the sides and back of the center file drawer are shaped to let you tilt it to install it. The tab at the back serves as a stop so you can't pull the drawer all the way out.

The clock spice rack is equally as sim-

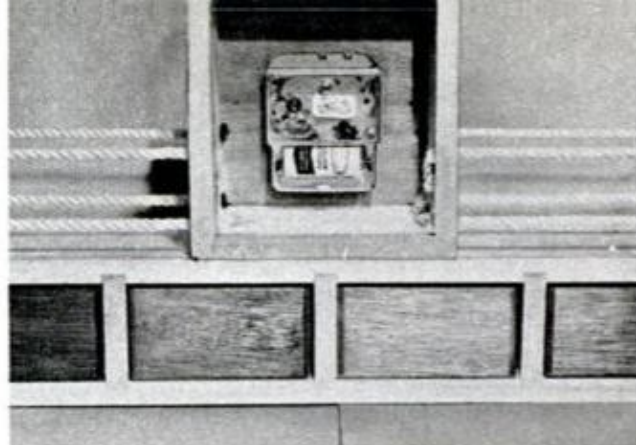




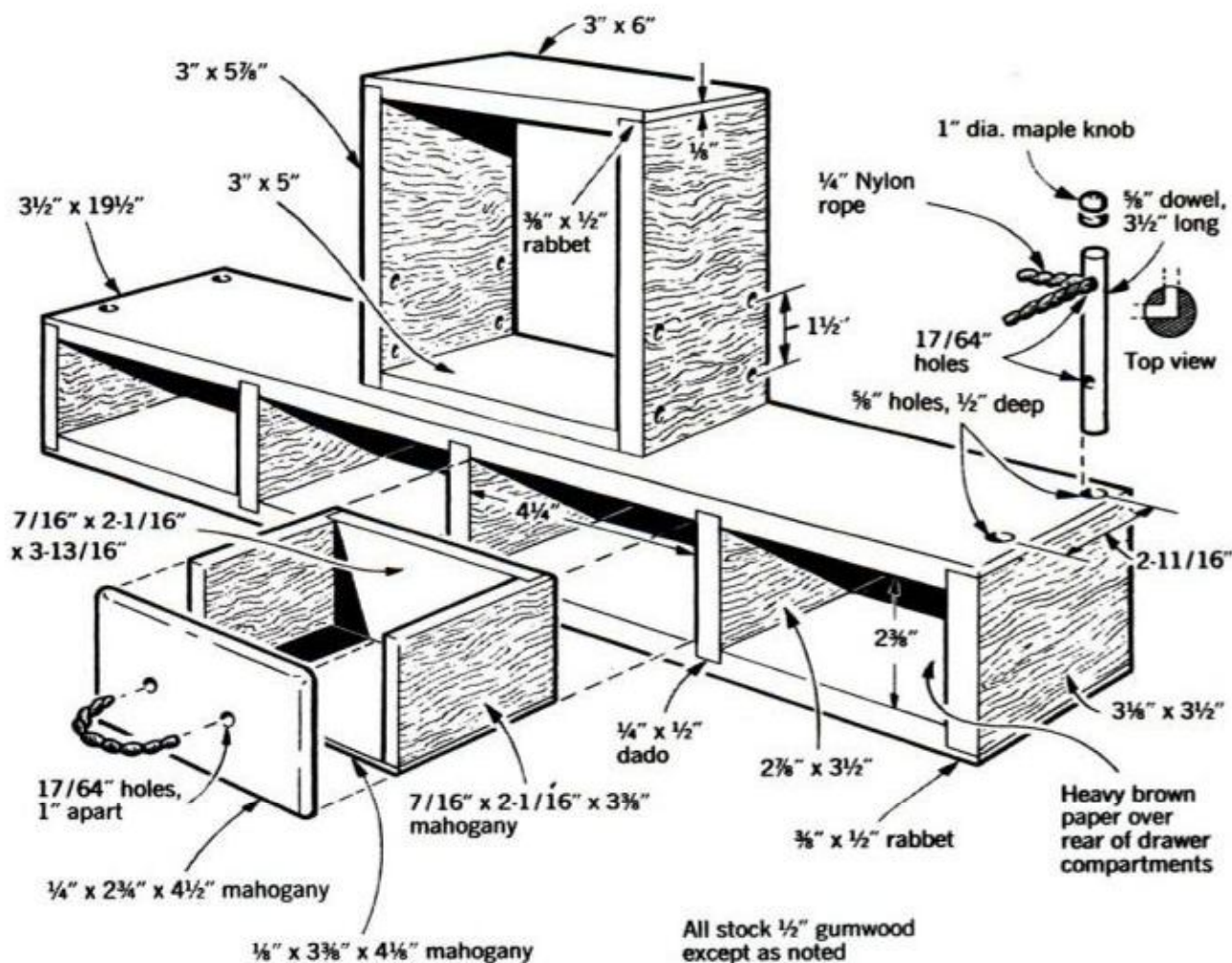
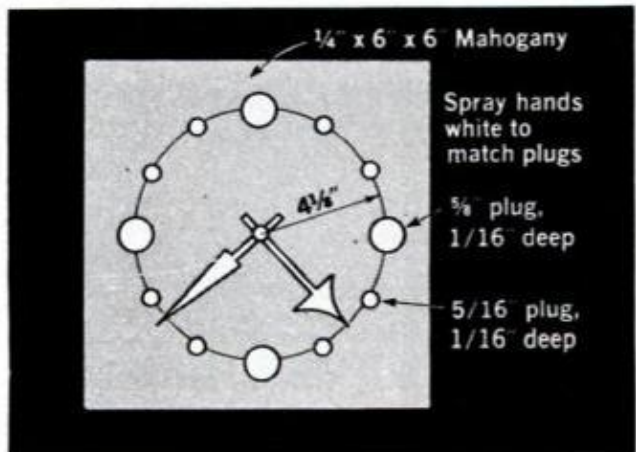
ple to make, as you can see in studying the drawing below. No facing is required for the drawer openings; the lipped drawers simply lap the edges of the compartments. The clock case is made separately and later centered and glued in place on top of the drawer unit.

The dial for the face of the clock is made by pressing slices of maple dowel in holes drilled equidistantly around a 3- $\frac{5}{8}$ -in. circle drawn on a piece of  $\frac{1}{4}$ -in. mahogany. The hands come with the clock works. The completed face laps the edges of the clock case. The rope fence and drawer pulls, as well as the knobs glued to the tops of the corner posts to simulate capstans, impart a nautical flavor.

The nylon rope ends are anchored with melted glue in the sides of the clock case after passing them through right-angle holes in the corner posts. A rounded lip on all drawers laps the edges of the openings. Thermogrip glue guns, made by United Shoe Machinery Corp., are available at most hardware stores. ★ ★ ★



IF YOU WANT TO USE same clock, you can get one for \$7.25 from Armor Co., Box 290, Deer Park, N. Y.



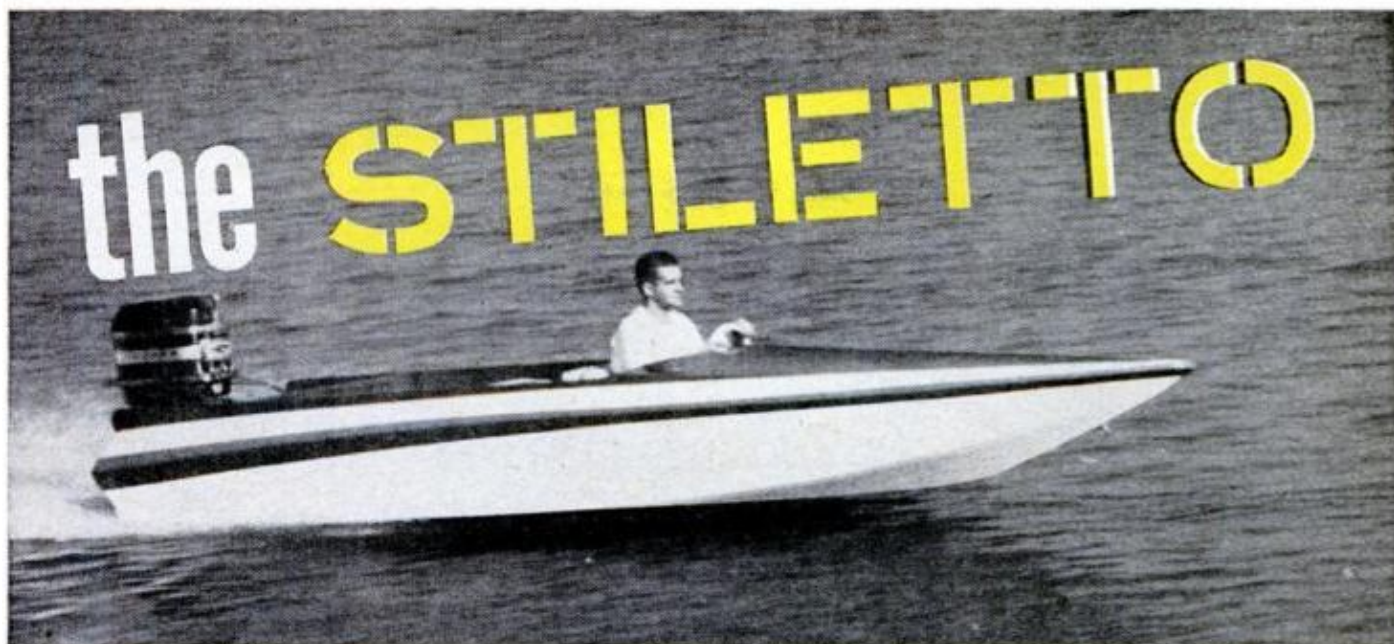


BOATING

building







With sleek SK streamlining and a super-speed bottom, it's 16 feet of high-performance boat that you can build from plans, patterns or a precut frame kit.

By ART MIKESELL

**H**ERE'S ONE OF THE BEST high-speed runabouts PM has ever presented as a boat-building project.

It's designed strictly for speed, with a minimum of compromise. That broad flat bottom is built for quick getaway and maximum go, a combination which makes this a top ski boat. On the other hand, if you want to fish, run a rough chop or carry more than four people, better shop around for something a little more tame. *Stiletto* is a frisky thoroughbred, not a workhorse.

Construction follows stock boat-building rules. All lumber over 1 in. should be "four quarters" stock finished as full as possible, which usually means from  $\frac{3}{4}$  in.

**FULL-SIZED PATTERNS** for the stem, breasthook and transom knee, as well as half sections of the transom and each of the frames, plus the original architect's plans, detailed building instructions and additional photos, are available for \$19 from Glen L., 9152 Rosecrans, Bellflower, Calif. 90707. If you desire only the patterns, the price is \$9.50. A complete frame kit, which includes all the patterned parts already cut and assembled, is available at \$103, f.o.b. the same address.

to  $\frac{7}{8}$  in. All lumber thicknesses under 1 in. should be considered net.

Use oak, mahogany or spruce if available. Otherwise, substitute any species commonly used in boat construction in your area. All plywood must be *at least* exterior grade, and preferably marine grade.

All joints should be glued with a hard-setting glue of the resorcinol or plastic-resin type. Fastenings should be hot-dipped galvanized or bronze.

All frames are fabricated from 1-in. material from dimensions given in the drawings. The transom is made from  $\frac{3}{4}$ -in. plywood with a motor board of the same material in the center portion. A framework of 1-in. lumber is used at the contact areas of side deck and planking.

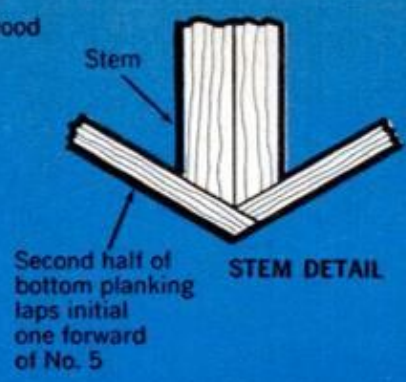
The laminated stem is laid out from given dimensions, using a batten sprung between the indicated points to draw the contour. The breasthook fits on top of the stem and acts as a blocking to connect the sheer clamp to the stem.

The building form should be set on a fairly level and smooth surface. Anchor the base member firmly so it will not

*(Text continues on page 170)*

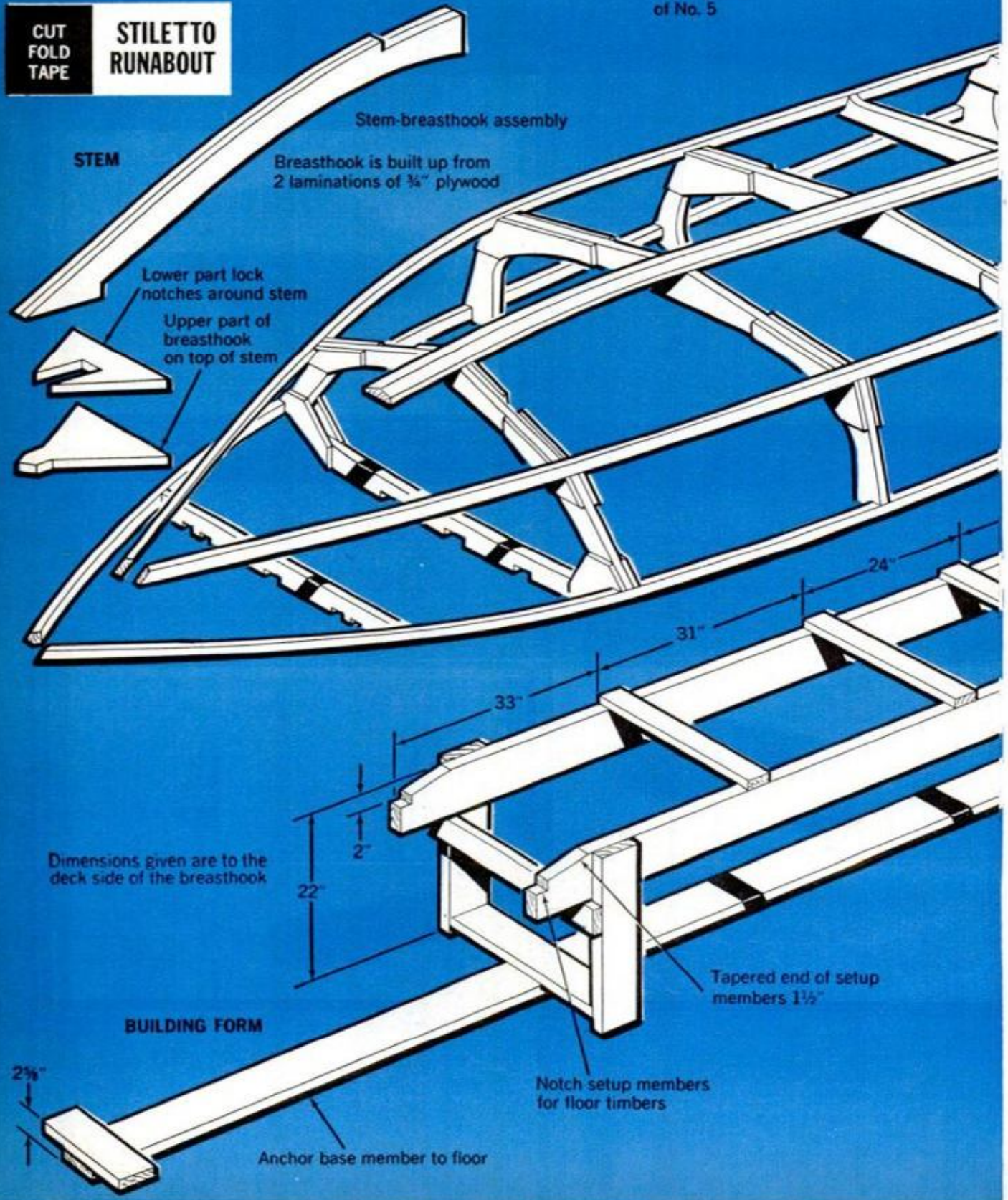


# BOATING



**CUT  
FOLD  
TAPE**

**STILETTO  
RUNABOUT**







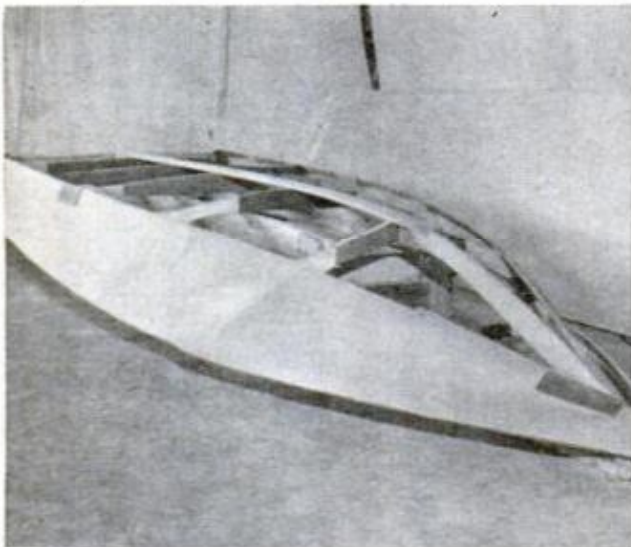




**BEVEL NOTCHES** for both sheer clamp and chine log so they will fit flat when bent over the framing



**FAIR CHINE** along line from Frame No. 5 to center of chine at stem so bow portion of planking will fit

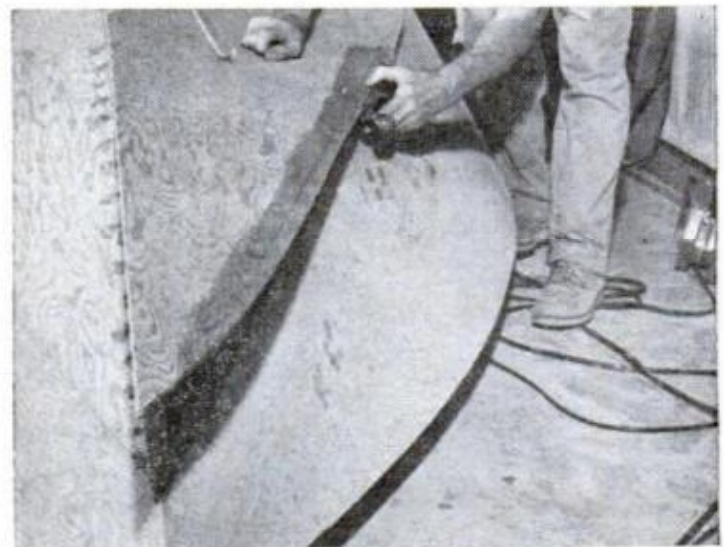


**PLANKING PATTERN** cut slightly oversize from wrapping paper helps when laying out sides on plywood

move. Each frame is mounted bottom-side-up on the form, centered and spaced according to the dimensions noted in the drawings. The position of the transom is obtained by installing the keel.

Align the stem with a chalkline exactly on the center line and block it to the height indicated. The full-length 1x4-in. keel is laminated on the inside with strips of  $\frac{1}{4}$ -in. plywood to prevent splitting. These should be glued and fastened to the keel with nails. The position of the chine on the stem is found by bending the member around the hull and allowing it to take a natural curve to join the stem. After cutting the bevel, fasten the chine at the stem first and spring it around the notches, leaving it long at the transom so you can cut it to exact length after it's fastened in place.

The sheer clamps are built up from two laminations of  $\frac{5}{8} \times 1\frac{1}{4}$ -in. lumber set in vertically from midships forward. Aft,



**WHEN PLANING** to fit butt joint in forward bottom planking, wet the plywood to prevent splintering

they may take a twist for sufficient surface to fasten decking and side planking.

Bevel the notches as you did for the chine member and fasten the first lamination to the stem and breasthook, then spring it around the hull, fitting it into each notch. Coat the initial lamination with glue and apply the second, using plenty of clamps or nails to hold the laminations until the glue sets. From Frame No. 5 forward to the breasthook, a third lamination of the same size material is laminated on the inside of the sheer.

The 1x3-in. battens should be spaced approximately as shown on the drawing, though you may vary the spacings slightly to allow the battens to take a natural curve. The battens should flow in parallel lines from No. 2 aft, viewed in profile.

All frame members must be beveled, or "faired," to allow the plywood planking to fit flat against the frame. Approximately

*(Please turn to page 224)*



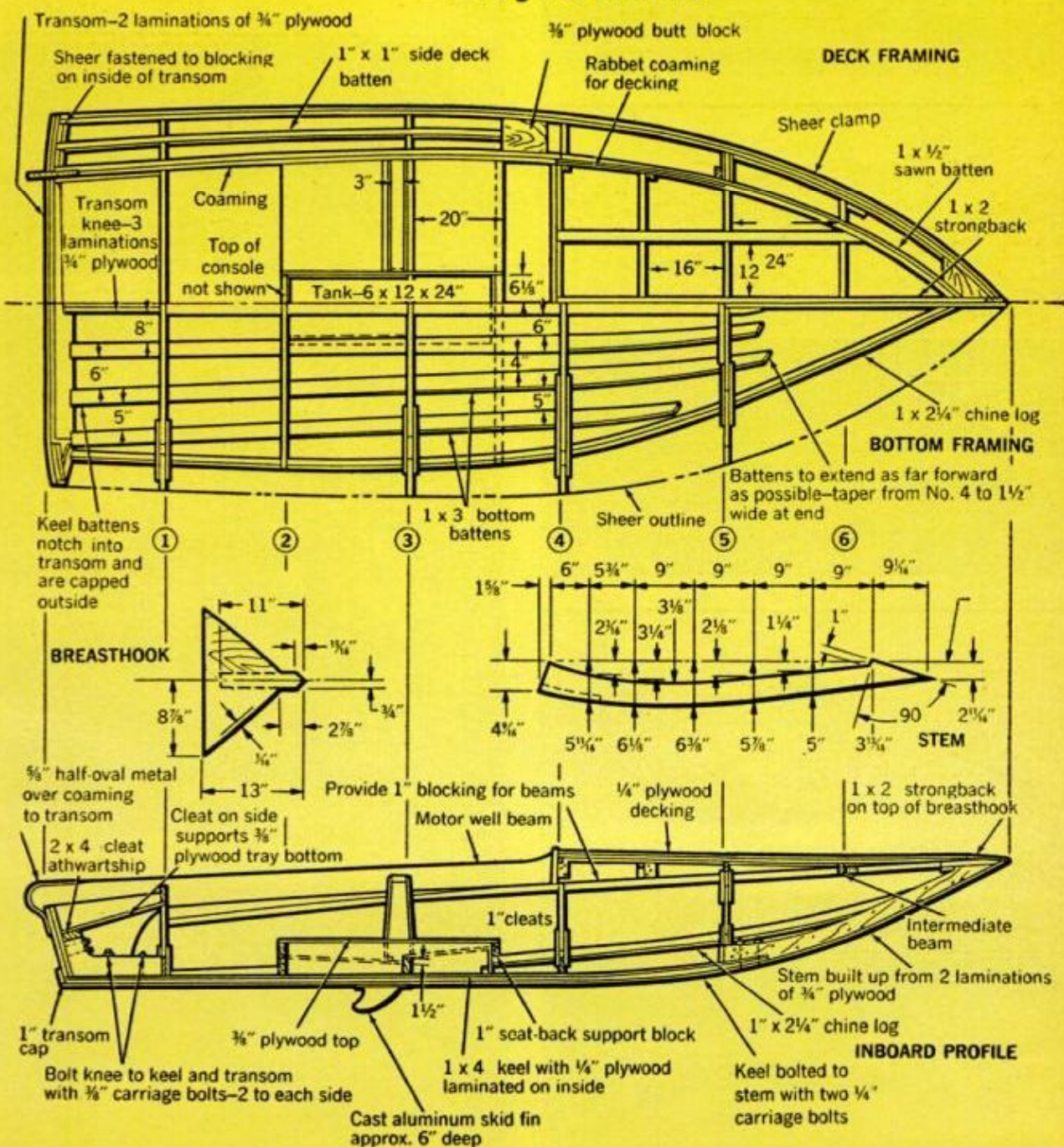


**MOTOR-WELL KNEE** fastens to carling, transom blocking and, for big motors, blocking on batten



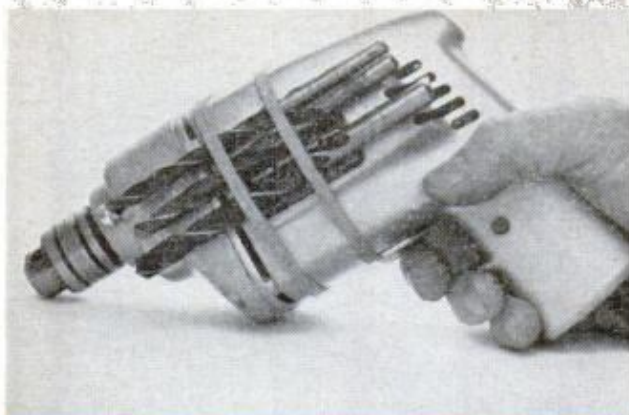
**MOTOR-WELL BOTTOM** fastens to bottom edge of well beam and to side blocking, shown here being fitted

### Building the STILETTO

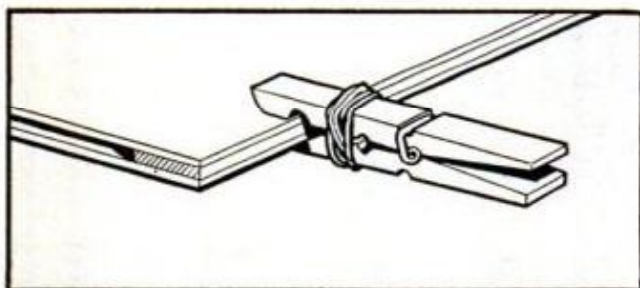




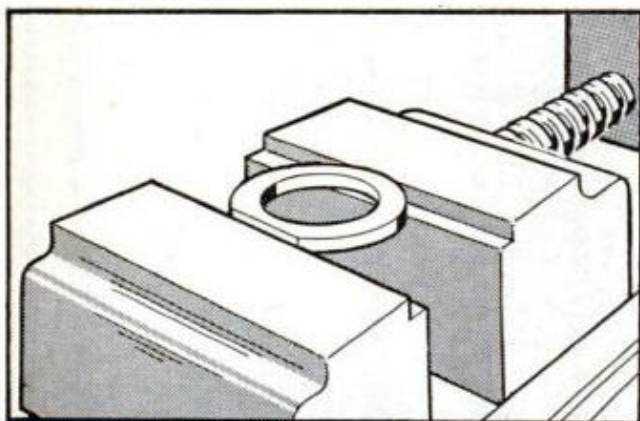
## HINTS FROM READERS



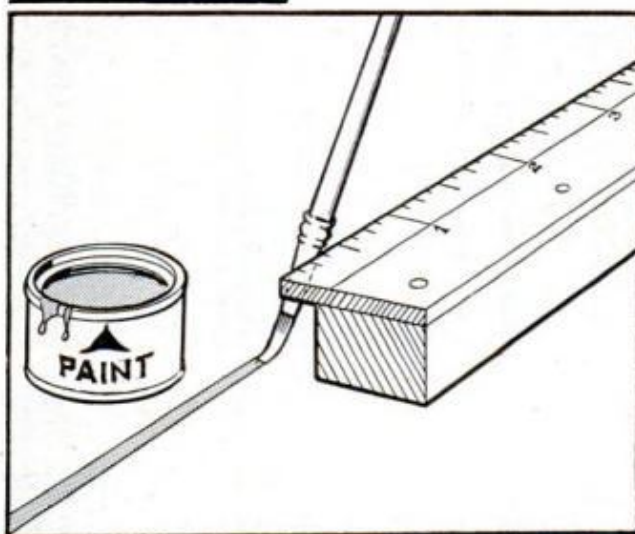
You'll know right where they are when extra drill bits are taken to the job if you "lash" them to the drill with a couple of hefty rubber bands. The bits won't interfere and they're easy to remove and replace.



Spring clothespins make fine little clamps for light work, but there are times when they'd work better if they gripped harder. Here a rubber band twisted two or three times around the jaws will do the trick.



When you want to drill out the hole in a washer, you can keep it from turning in a drill-press vise by first grinding a flat on it. Less pressure is required to hold it; thus, there is less chance of distortion.



Striping can be done with a steady hand when you're able to hold the ferrule of the brush against a straightedge having an overhanging lip. You can make one by tacking a  $\frac{3}{4}$ -in.-sq. wood strip to a yardstick.



A good substitute for a regular screwdriver bit for a hand brace is a steel washer. Pick one that fits the screw slot and clamp it tightly between the jaws of the brace. Drives husky screws with greatest of ease.



# Make a low cost slave tripper

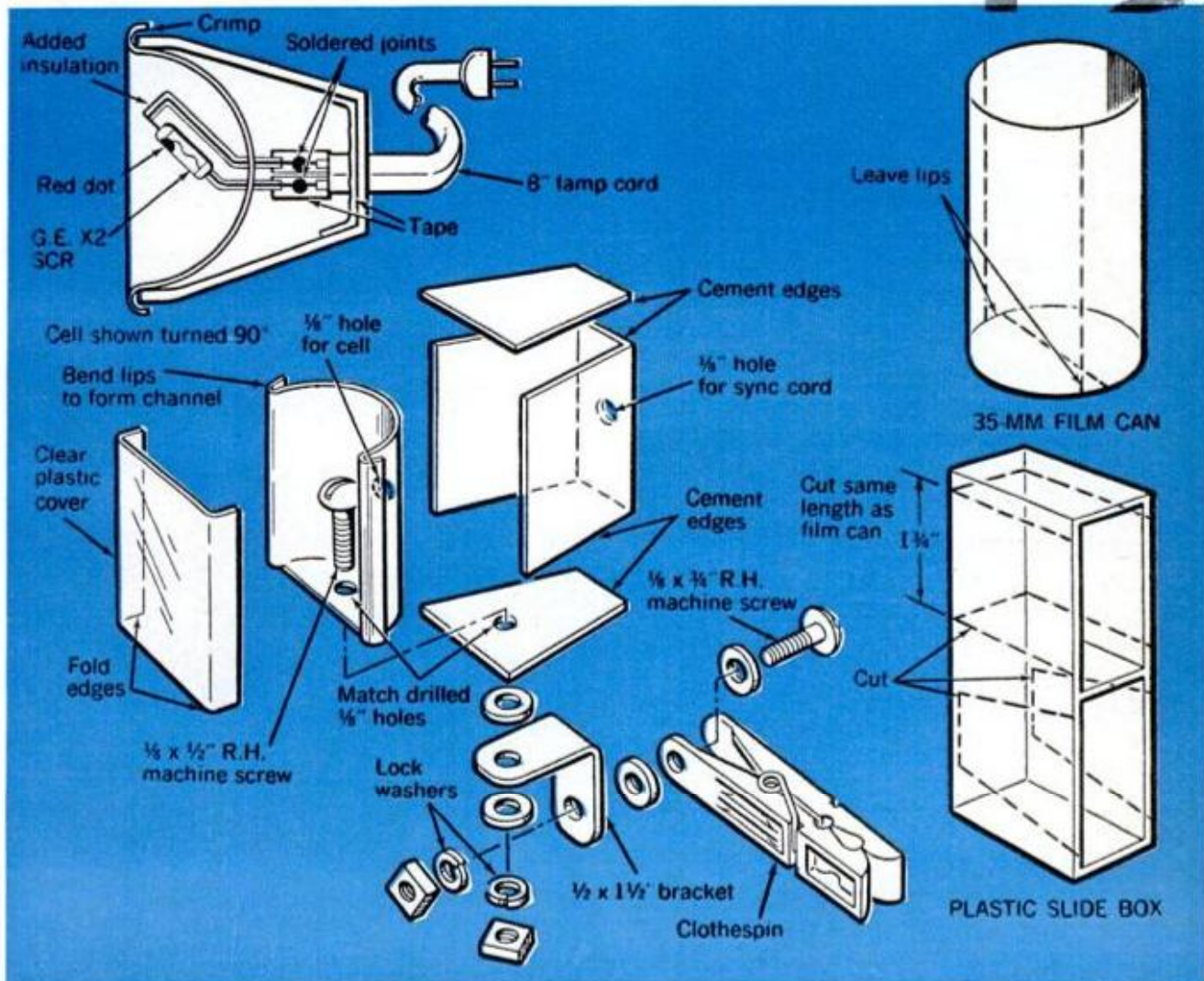
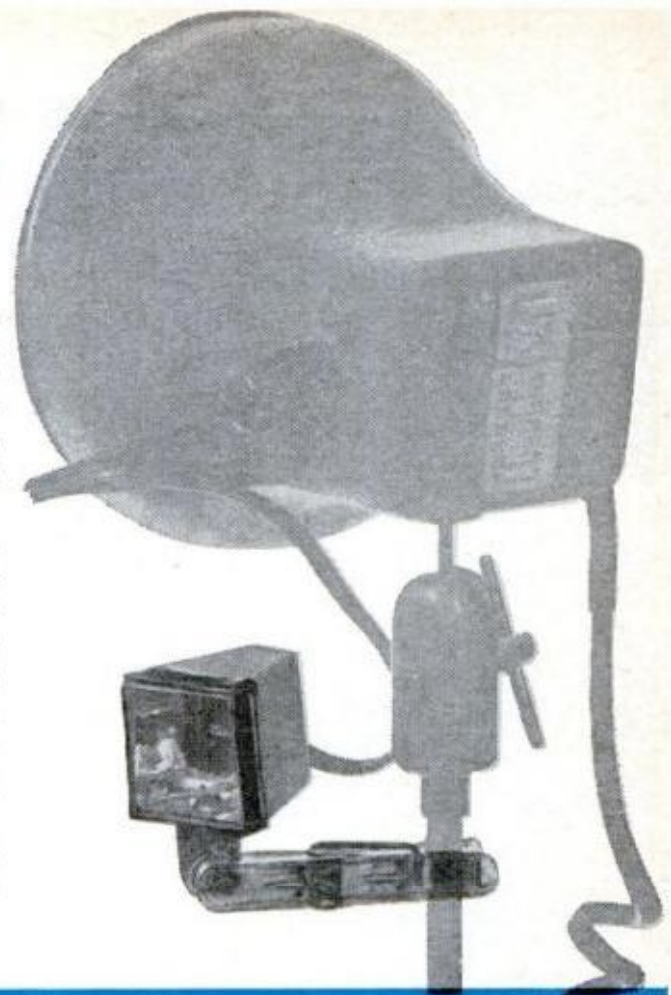
By THOMAS OWEN

IF YOU'RE THE SORT of camera buff who likes to balance his lighting for indoor shots, this slave tripper is for you. For only \$3.50 and an evening's work, you can do away with dangling sync cords.

All you need to do is connect a light-sensitive silicon-controlled rectifier, such as the GE X2 or X2A, to the slave sync outlet on your flash or strobe and you're in business. But since you'll want to house it for mechanical protection, and the use of a reflector will increase its sensitivity from two to four times, here's an easy way to package the cell.

Although almost any small clear-plastic box will do as a case, I built mine from

*(Please turn to page 232)*





# PHOTO HINTS

TO ADD TO THE FUN OF PICTURE MAKING



1.



2.

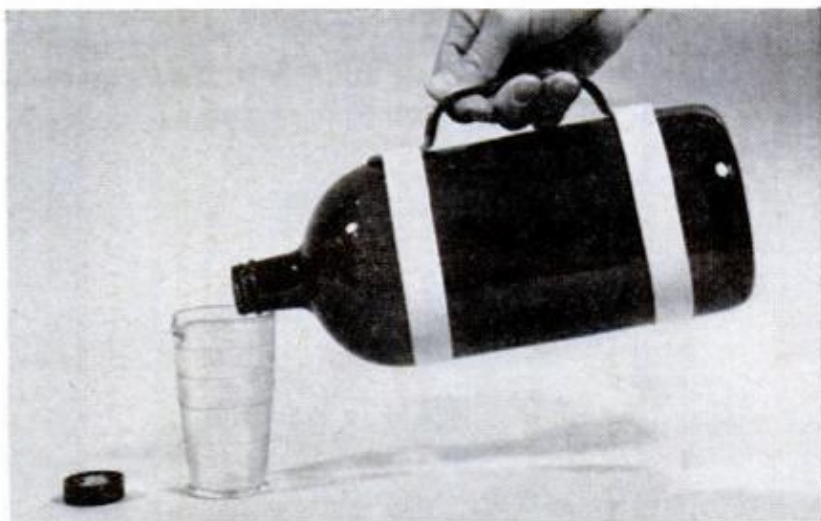
1. **BOOST THE GRIP** of your clamp-on photoflood or flash by forcing a tennis ball between its spring legs after mounting it on a thin support.

2. **CLEAN OR DRY** photographic equipment with milady's hair dryer. Fasten a rubber tube to a tapered and drilled-out wooden plug that fits the dryer's hose.

3. **EASIER POURING** and no slips are yours when you fasten a screen-door handle to a developer bottle with tape.

4. **PROTECT PHOTO TRAYS** from chipping and sticking by placing foam-plastic sheets between them. This trick also speeds drying by permitting air circulation.

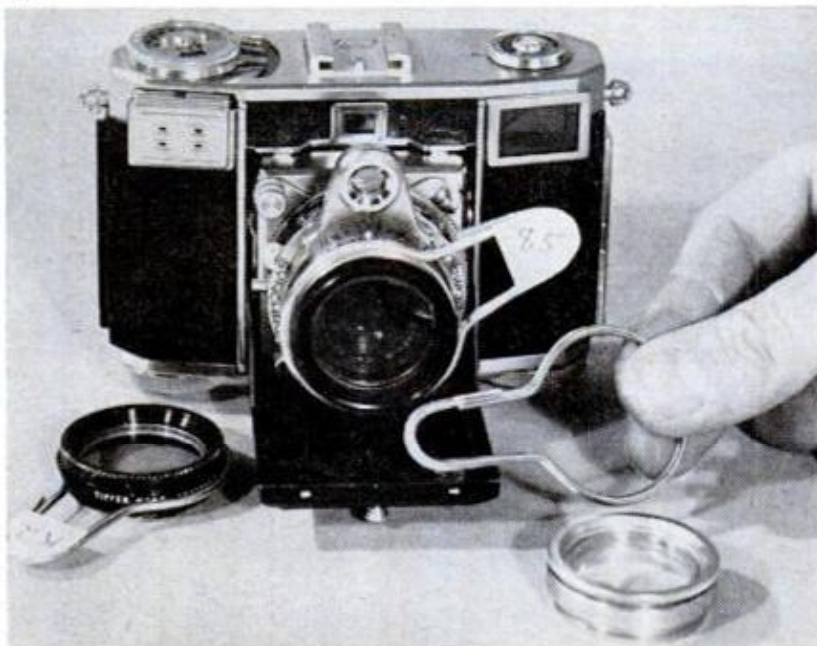
5. **SERIES 5 FILTERS** are easily identified when mounted in adapter rings fitted into shower-curtain rings with paper tabs at one end as labels.



3.



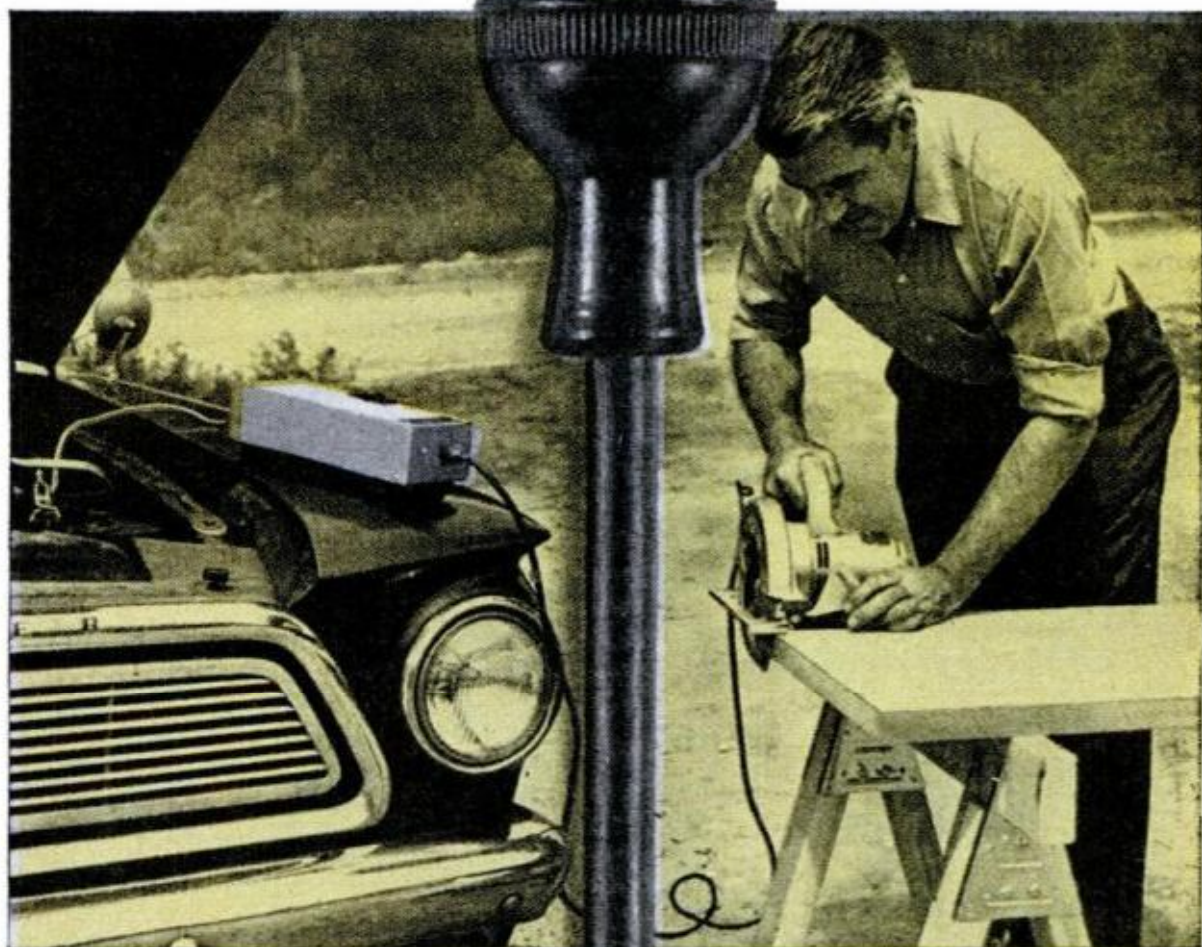
4.



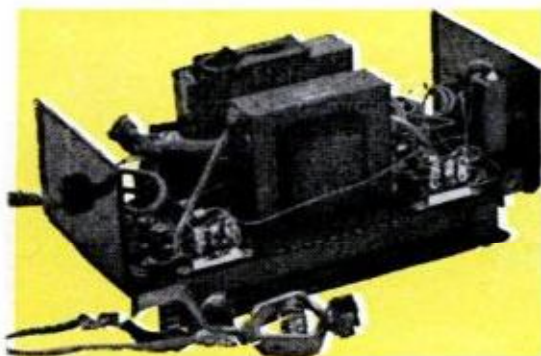
5.



# Plug in to Power Anywhere!



Now you can use power tools anywhere you can drive your car. New converter lets you run them off any 12-volt battery.



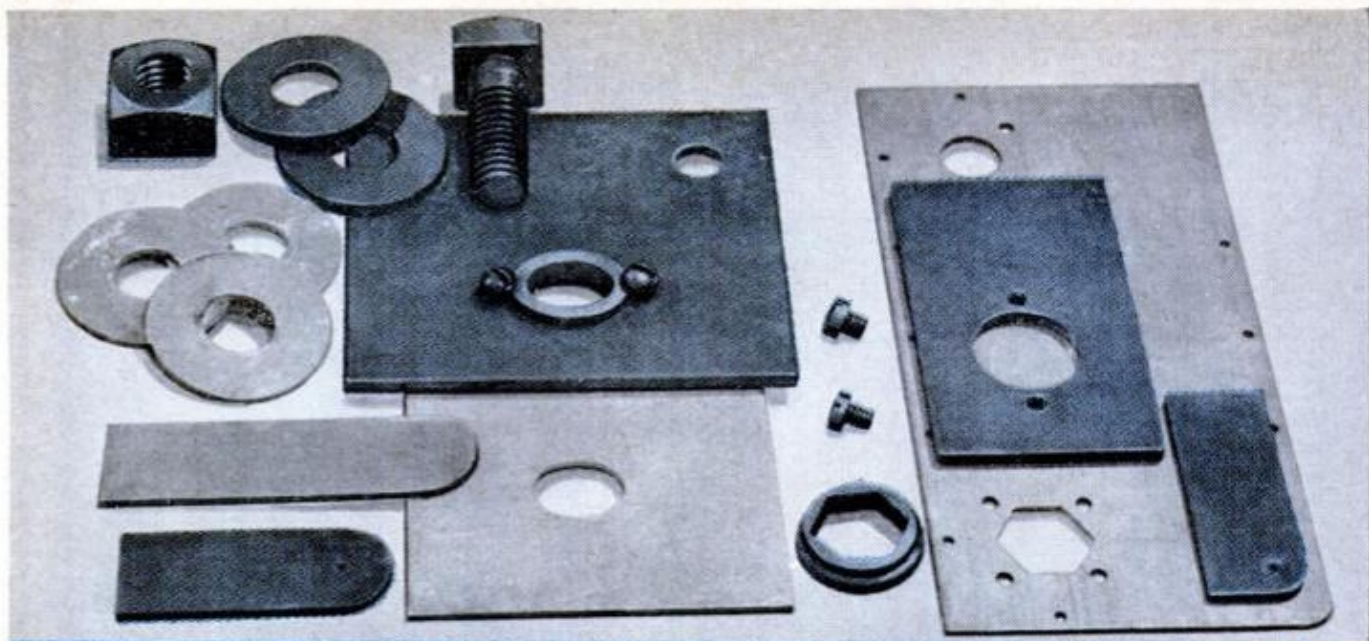
**CURRENT DRIVE** uses four 20-amp. transistors. No load means no drive current and no input current; high load means high drive current

WHEN LACK of electricity makes your power tools useless for outdoor jobs, clip this current converter to the 12-volt battery in your car, truck or tractor and plug them in.

With a healthy battery, the converter supplies as much power as an indoor a.c. outlet—enough to withstand a tool's sizable starting surge. If the capacity of the unit is exceeded or the tool stalls or fails, a resettable circuit breaker closes automatically. This unit can be left connected indefinitely; it draws current only when in use.

Dynamic Instrument Corp., 115 E. Bethpage Rd., Plainview, N.Y., sells a 4.5-amp. Power Tool Converter for \$79.95 and a 12-amp. heavy-duty model for \$109.95.





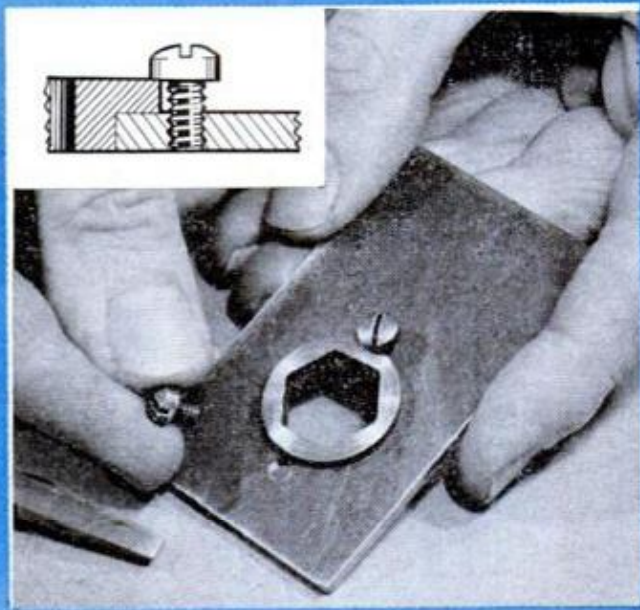
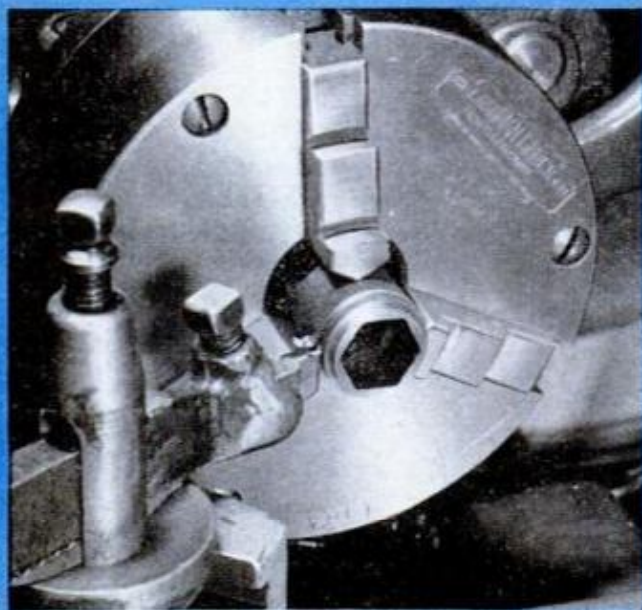
WIDE VARIETY OF SHAPES can be rendered in template form from diverse materials. Among those shown with samples of work produced from them are several templates discussed at right and below

# Templates

## Make Contour Filing Easy

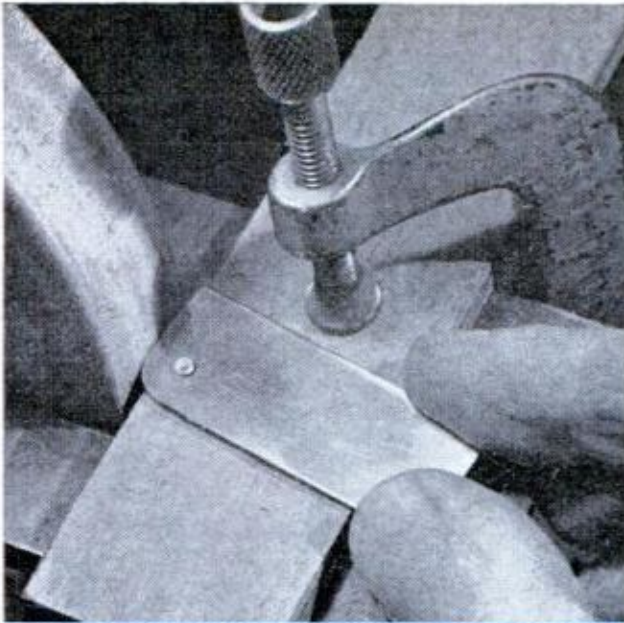
By WALTER E. BURTON

YOUR MOST USEFUL TOOLS can include templates you make yourself. They can guide files in making neat corners, notches, half-rounds, vees, dovetails, ovals, special washers, numerals and letters and many other shapes in sheet metal, plate, plastic, fiber, hardboard and wood. Templates can help duplicate blanks for brooches, trays and models; make chassis openings for electronic equipment and rounded corners to specified radii.

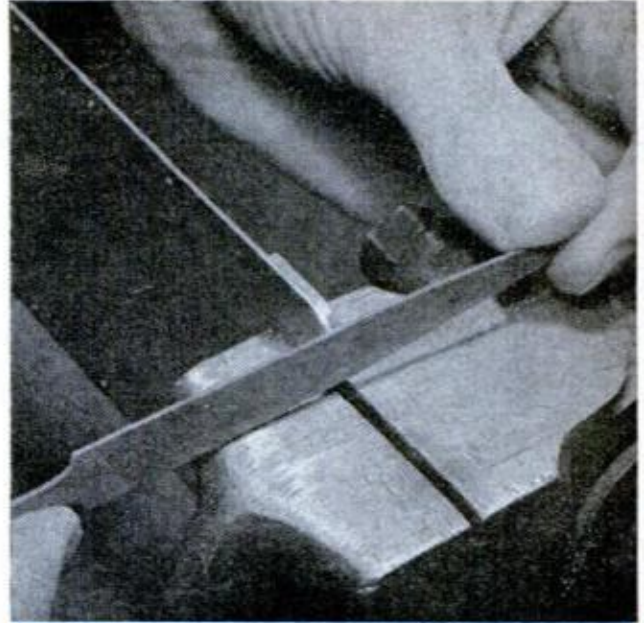


SHAPED OPENINGS can be made in steel plate, but an insert arrangement may be easier. Here, a section from a socket wrench is sliced on a lathe after a shoulder is machined on it. Tap holes in a 3/32-in. sheet of mild steel for 8-32 retaining screws on both sides of a ring opening. Case harden the ring





**RADIUS TEMPLATE** can be ground by swinging on a pivot. Inside curve is drilled and cut



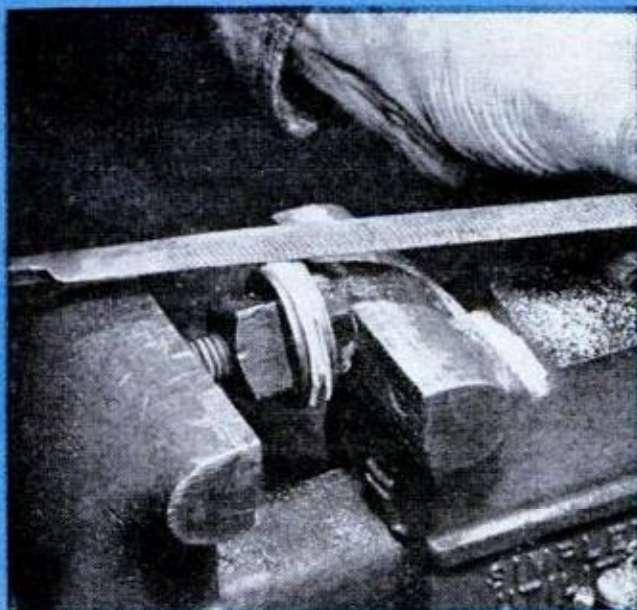
**DRAW FILE TOWARD TEMPLATE** so the work is pressed against it on the cutting stroke

The secrets to making templates for accurate contour filing are your own ingenuity and the fact that a file will cut soft metal but not hardened steel.

You can start with hardenable tool steel or low-carbon (soft) steel, usually in the form of sheet stock  $\frac{1}{32}$  to  $\frac{1}{8}$  in. thick. Sometimes discarded tools or tool parts can be shaped into templates. In this case, with the steel already file-hard, it can be shaped by grinding, with care taken not to overheat the parts.

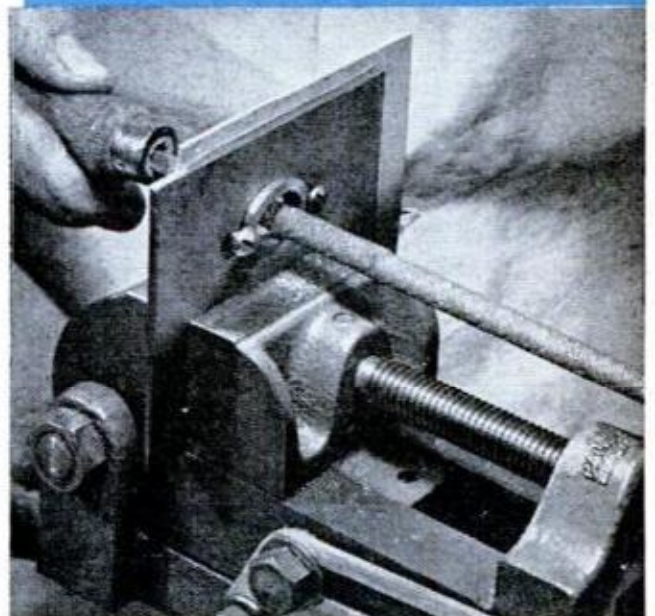
Annealed high-carbon steel can be hardened by heating and quenching. Low-carbon steel templates are case-hardened with a commercial hardening compound. When quenching the high-carbon steel, the portion of the template that the file will touch should hit the water first. Thin, flat pieces are generally dunked edge first.

Hold the file at right angles to both work and template and draw the file across the work and toward the template. A fine-tooth file is best. ★★★



**OVAL OR LARGE ROUND INSERT** is machined from cold-rolled steel bar, mounted same way. Oval is squeezed in vise before hardening

**MAKING WASHERS IS EASY.** Just use standard washers with oversized blanks sandwiched between. Drill center holes and bolt through







**BY MORT SCHULTZ**

**Illustration by Fred Mason of Worman Associates**

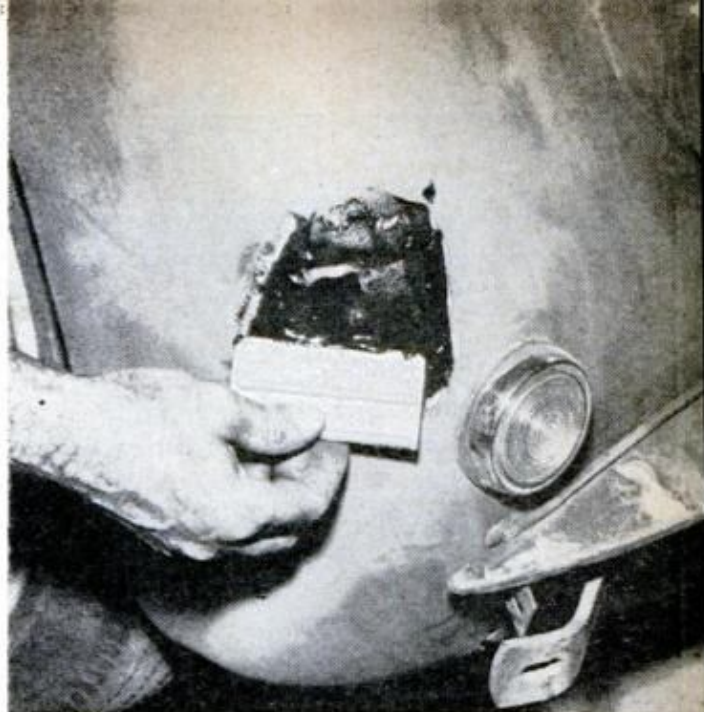
# **Go ahead, do your **own** body **work!****

**T**HINK POSITIVELY when it comes to auto body repair. The mere sight of a mangled surface on your pride and joy may produce thoughts of a brand-new fender, door panel, rocker panel or grille, but you can smooth things over more easily than you might imagine.

Most body damage, fortunately, is minor. In some cases, you'll be able to fix it yourself as good as new, from start to finish. In others, you can do the repair work and have a professional finish the job by spray painting. Even this puts you ahead of the game financially.

The four most common body repairs are: (1) removing dents, (2) restoring rotted-out areas, (3) replacing beat-up chrome strips and (4) replacing battered grilles. Let's examine each one in detail:





**1**

**START DENT REPAIR** by sanding whole area to point about one inch beyond depression

**2**

**SPREAD PLASTIC** auto-body filler thoroughly into the dent and over all metal area sanded

**3**

**SHAPE FILLER**, when it's set, to contour of panel. Surform grater does this job quickly



**Dent removal.** You can repair *any* dent in the body of your car. We're not including an area that's folded like an accordion—we mean dents of the kind a car suffers when struck by a stone or tapped by another car. The area of the dent is no obstacle, but depth is a consideration. An additional repair step will probably be necessary if the dent is more than  $\frac{1}{2}$  in. deep.

Unlike the technique used by body repair shops, your procedure doesn't involve pulling a dent back into shape. A pro uses a special puller, an expensive tool that you don't need, because you can do the job just as neatly by using an auto-body plastic filler. In other words, you *fill* the dent instead of pull it. (The filler is available at any local auto parts supply outlet.)

The surface should be prepared as carefully as if you were going to paint your house. Remove paint to the bare metal, making sure the spot you sand is at least 1 in. larger in diameter than the dent itself. Use a 16 or 18-grit sanding disc attached to an ordinary  $\frac{1}{4}$ -in. electric drill or power sander.

Now, this is important: If the dent is deeper than  $\frac{1}{2}$  in., drill  $\frac{1}{8}$  or  $\frac{1}{4}$ -in. holes through it, spacing them  $\frac{1}{2}$  in. apart. This allows the plastic filler to rivet itself firmly to the spot.

Auto-body filler comes in two parts: a black base material and a liquid hardener. Mix the hardener with the base material in the proportion specified. Use a putty knife or similar tool and apply a layer of the mixture to the entire area—that is, to



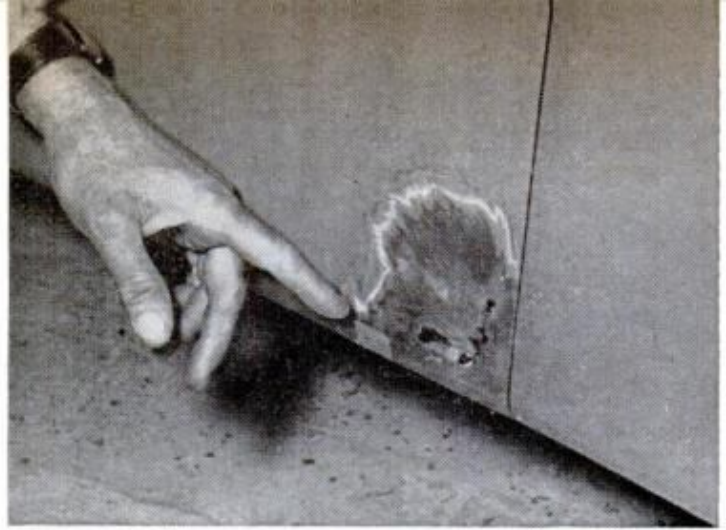
Go ahead, do your own body work!

the dent and the sanded surrounding area. Use a rubber squeegee to mold the filler to the contours of the area, kneading the material back and forth into the surface to assure a firm bond.

Now, let it harden. You can decrease the 20-minute drying time by holding your incandescent drop light near the spot. Heat should *not* be applied for longer than two minutes.

After the material hardens, scrape the area with a Surform grater to shape the patch and remove excess filler. Surform grater No. 294B, made by Stanley Tool Works and available at hardware stores, is ideal. As you scrape, the patch will lose its "blackness" and become white. This step greatly reduces the amount of sanding needed.

Now, fit a sanding block with No. 36-grit production sandpaper and sand the



**4**

**START BODY-ROT REPAIR** by breaking away weakened sections around the edges of main damage

**5**

**PRESS ON TAPE** of adhesive-backed aluminum over rotted area and smooth it with plastic filler

**6**

**READY FOR PAINT**, this sizable rotted section was easily patched solid by the tape-filler method

**7**

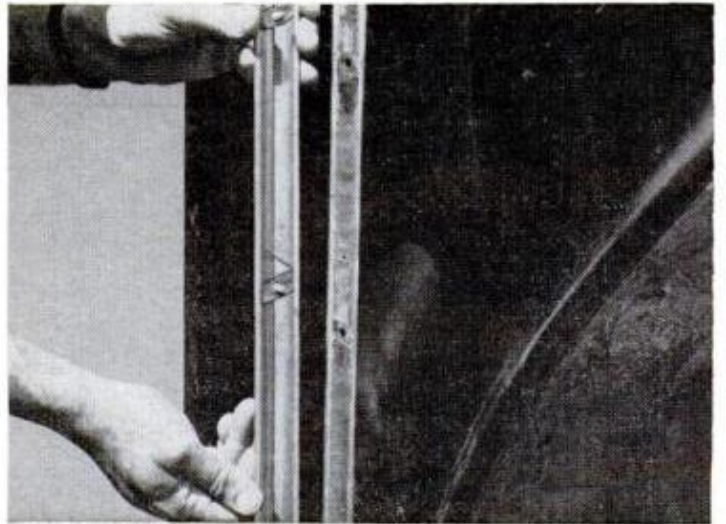
**PRY OFF MOLDING** that's held by press-on clips. Only clips damaged in the process need to be replaced

**8**

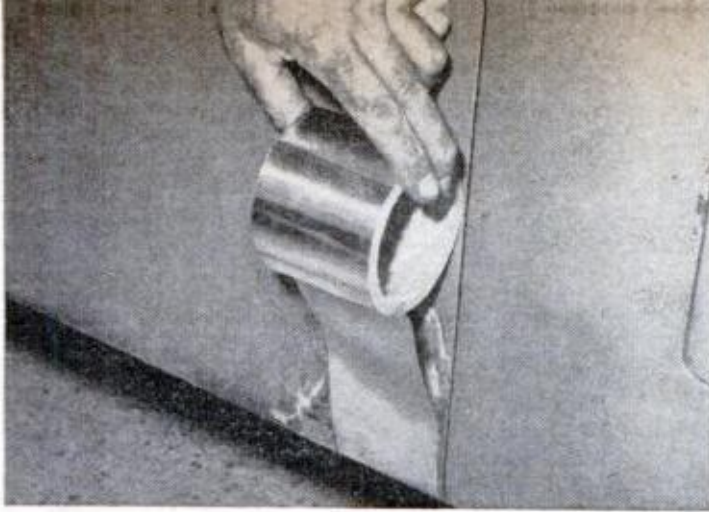
**STRIPS ON DOORS** and on quarter panels are usually held by screws at the ends and by clips in between

**9**

**AFTER REMOVING BOLTS** with a wrench, pry trim strip from fender and bolt-on clips will come with it







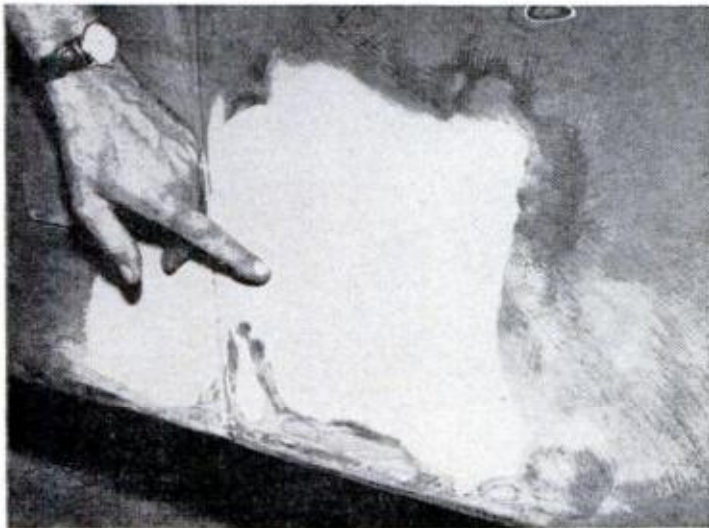
area smooth. Keep the paper dry. Follow with another sanding, using No. 80 or 100-grit dry sandpaper to prepare the patch for painting and to feather the patched area into the surrounding area.

Do the painting yourself with spray cans of primer and paint especially made for color-matched touch-up and available at an auto supply outlet. If more than a simple touch-up is needed, you'll have to take the car to a paint shop for spray painting. However, you've saved money by doing all preparatory labor yourself.

**Rotted-out areas.** There isn't a car around which is immune to body rot or, as it's called in the trade, cancer. It can pop up in the most unlikely places, but no matter where it appears there's a simple procedure to cure it. And you don't have to use expensive and hard-to-work-with lead filler as do some body repair shops. In fact, many professional shops are now using the method described here. The patch holds just as well as lead and, if the job's done carefully, can not be detected.

Again, the first step is careful preparation. Break out weakened rotted sections,

*(Please turn to page 228)*



**10** REMOVE FRAMES and other components as first step in replacing a damaged split grille

**11** START AT BOTTOM and work toward the top in cases where entire grille must be removed

**12** ONE-PIECE GRILLE is easy to take off; go down the line and remove the bolts one by one



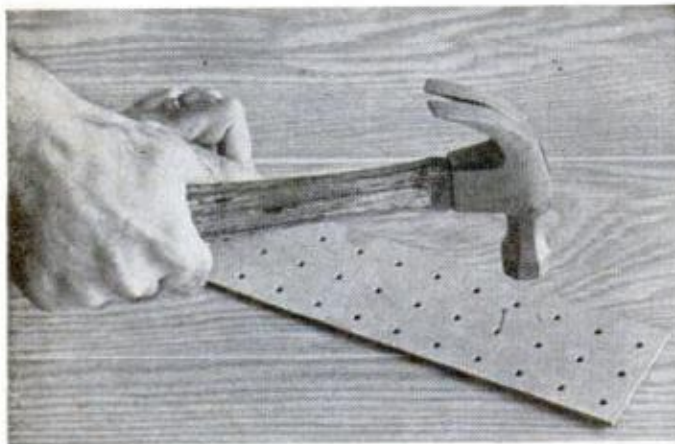


## HINTS FROM READERS



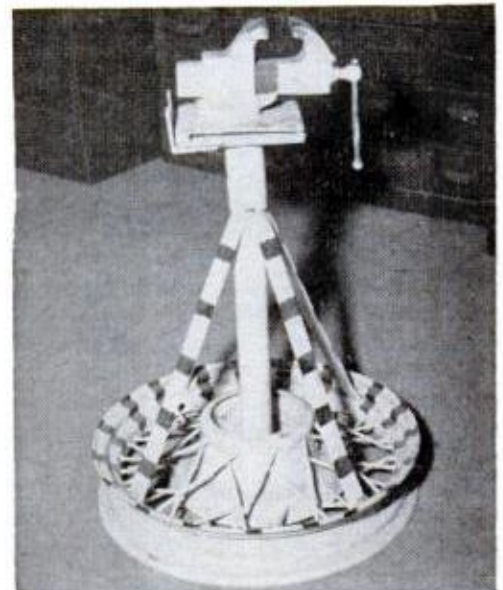
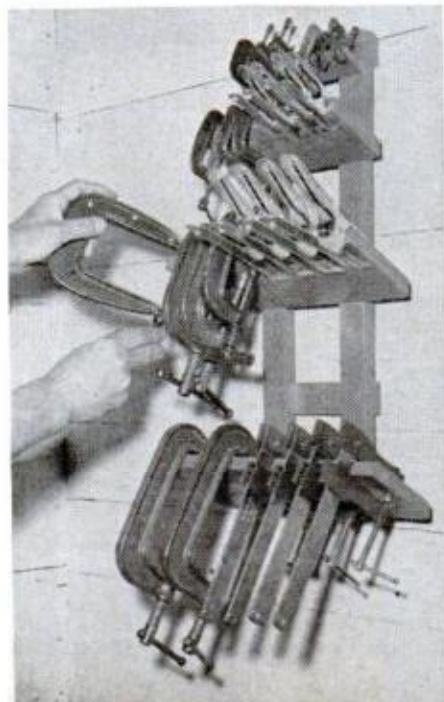
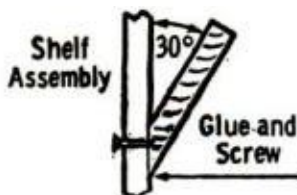
**PAINT ROLLERS WILL LAST** for years if you clean them with a wire-bristle currying brush sold in pet shops. Immediately after use, dislodge imbedded paint by combing the roller with the brush. Rinse roller thoroughly and then stroke it several times to raise the nap and eliminate matting of the pile covering

**A TOY THAT SHOTS** table-tennis balls (below) is easy to make from a plastic detergent bottle. Cut a hole in the end of a 1½-in. crutch tip, using a ¾-in. pipe as a punch. Then force the crutch tip over the bottle neck. Press the ball tightly into the tip, give bottle a quick squeeze and pop goes the ball



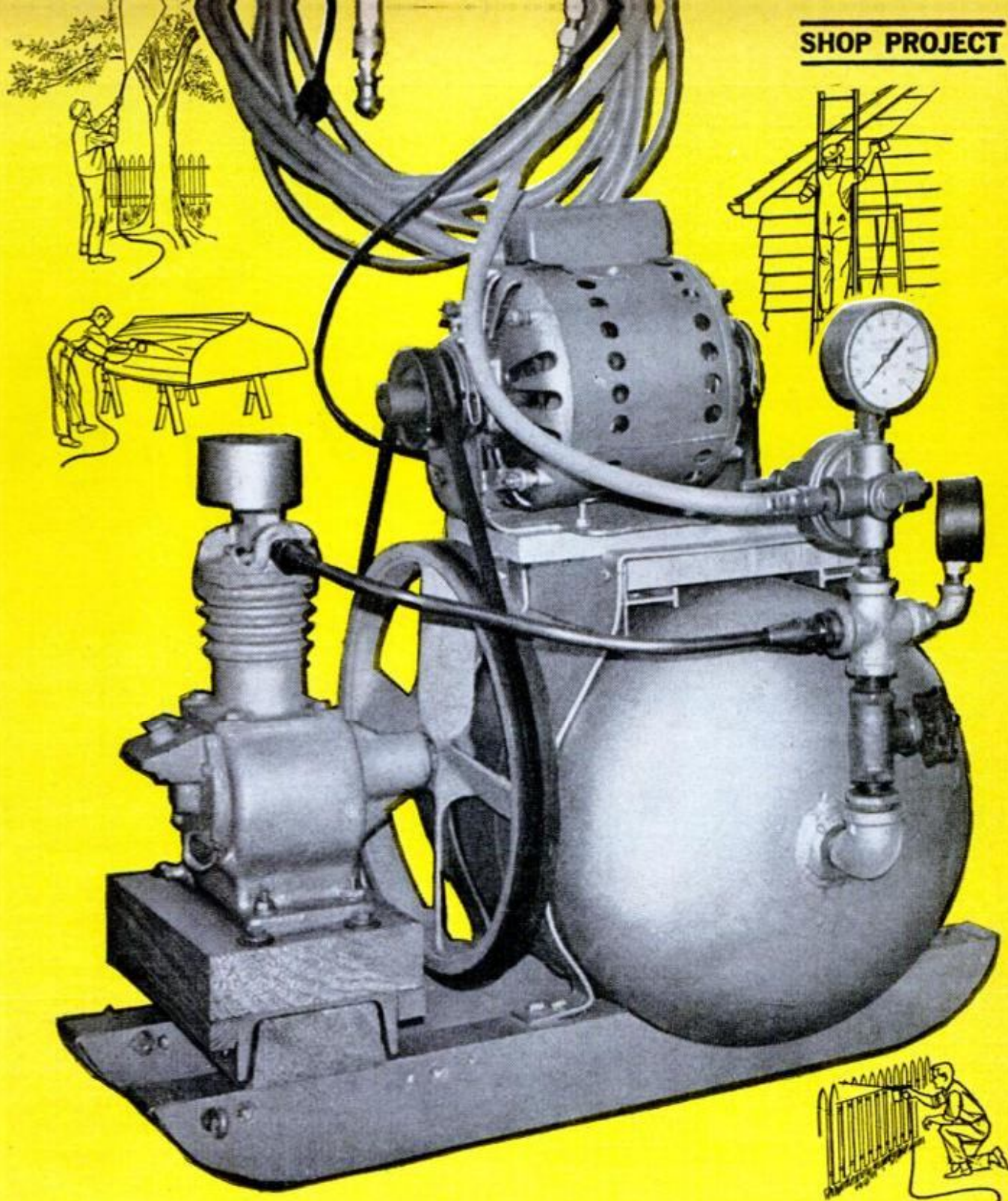
**WHEN DRIVING FINISH NAILS** in paneling and trim (left), a slip of the hammer can leave a bad dent. To avoid it, start the nail and then place a scrap of perforated hardboard over it. Drive the nail as far as you can, remove the protective scrap and finish nailing with a nailset. If you miss the nail, scrap will take blow

**CLAMP RACK** made from scrap wood mounts on wall to make selection extra handy. Slanting shelves, measuring 6½, 8½, 11½ and 13½ in., will hold more than two dozen clamps of varying sizes. The detail below shows how the shelves are attached at 30° angle to vertical members



**THIS PORTABLE VISE** is handy for shop or farm. Make the base by fitting a pipe post in an old auto wheel and bracing it with welded angle irons. Mounting vise on hinged base lets you tilt it to make it handier yet for certain jobs





# BUILD YOUR OWN AIR COMPRESSOR

By HAROLD A. DEHN

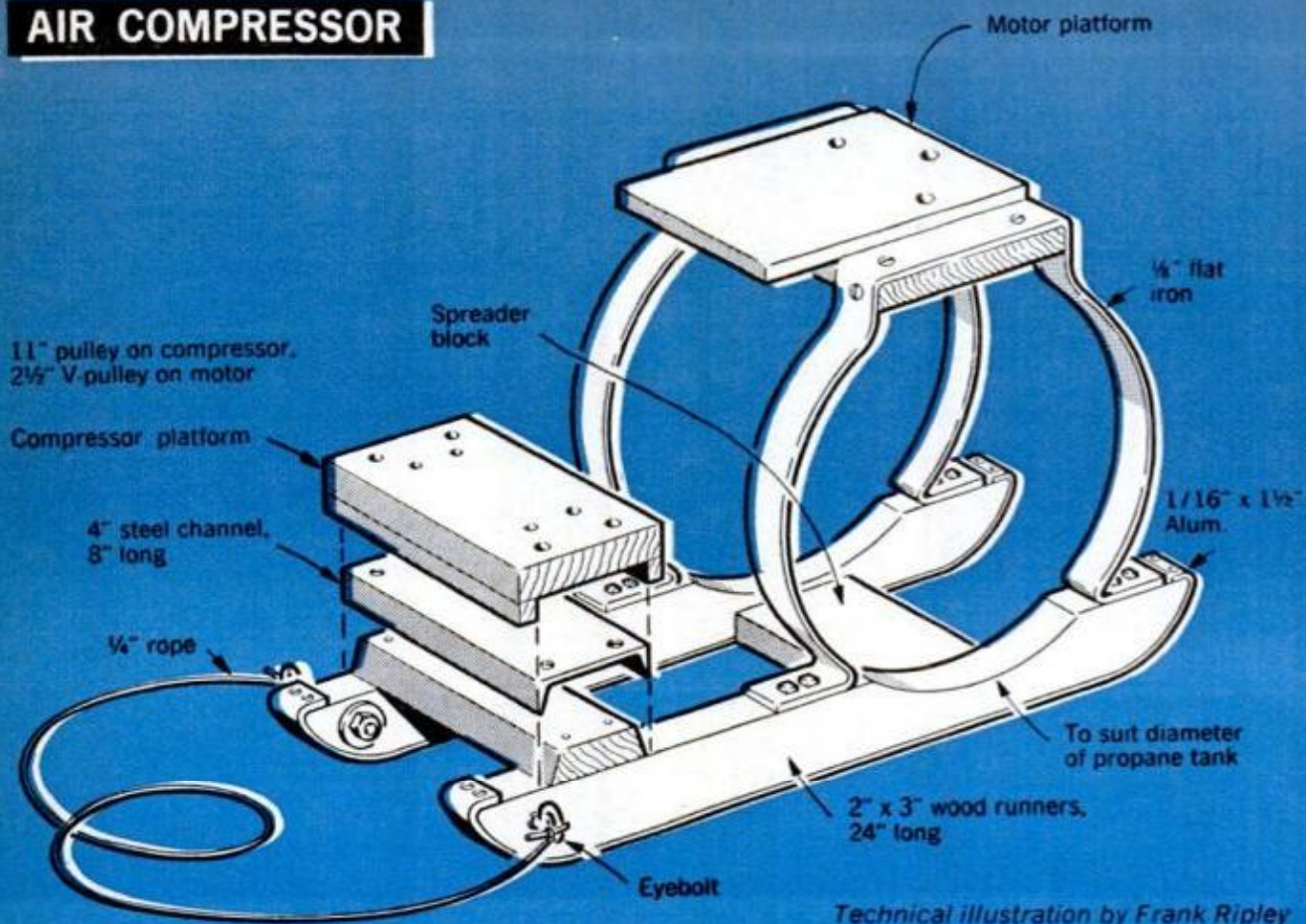
JANUARY 1967

**Y**OU'LL FIND a lot of use around the home and yard for an air compressor like this. It's well worth building if you're planning to paint your house. You can save yourself a fancy bill by being able to spray your own trees and shrubs. And if the air hose at a service station isn't the handiest at the time, you can inflate and air-clean anything right at home.

I obtained the  $\frac{1}{3}$ -hp motor from a junked washing machine. I was able to buy a used single-phase compressor from a company (see Service Station Equipment



## AIR COMPRESSOR



in the yellow pages) which takes in old garage equipment on the purchase of new. And I picked up the propane tank for a song from a service station. Most of the pipe fittings and other items were purchased from a mail-order house and the whole thing cost me about \$24.

The propane tank I used is of a size commonly found in house trailers. Such tanks are rated at 375 lbs. pressure, so from the standpoint of safety, you have pounds to spare since you need only approximately 150 lbs. of air to operate most spray equipment. The tank should be cleaned thoroughly with a strong detergent, letting it stand in the tank for a few days before draining and airing out to avoid rust accumulation.

You'll notice that I added two gauges. One registers air pressure in the tank; the other, being an adjustable gauge, provides a means of controlling air output for any given job from 10 to 150 lbs., depending on pressure required. A safety valve should be added, although I found that when the unit is operating, air pressure is constantly siphoned off at a rate

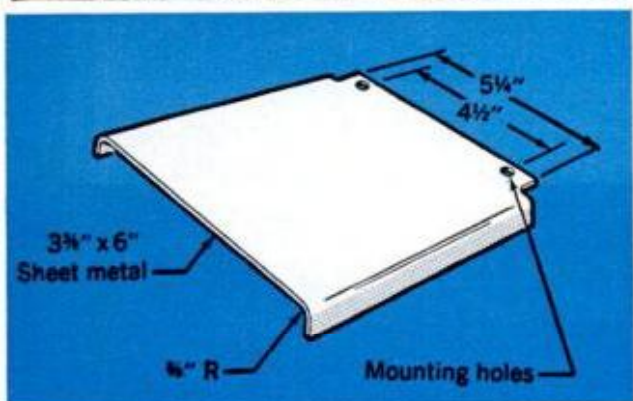
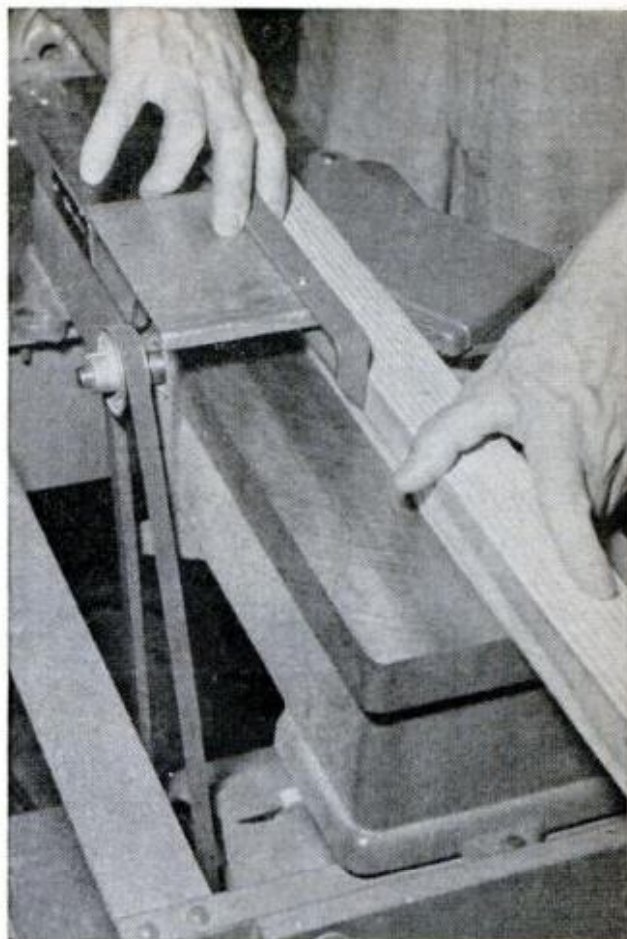
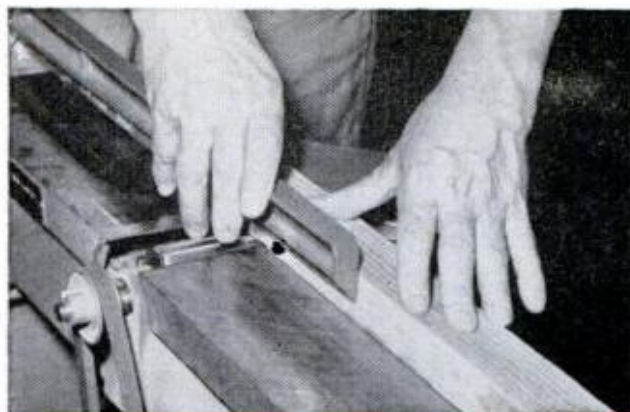
whereby it rarely exceeds 100 lbs. in the tank, giving a safe margin with a 375-lbs.-test tank. Where air pressure would be allowed to build up in the tank without being put to use, a cutoff or safety valve would be required.

The pull-apart drawing shows how the parts are assembled on wood runners. So that the 11-in. pulley on the compressor would clear the skids, I provided a sliding shoe of channel iron supported by a wood block. This also permitted the compressor to be shifted to tighten the belt.

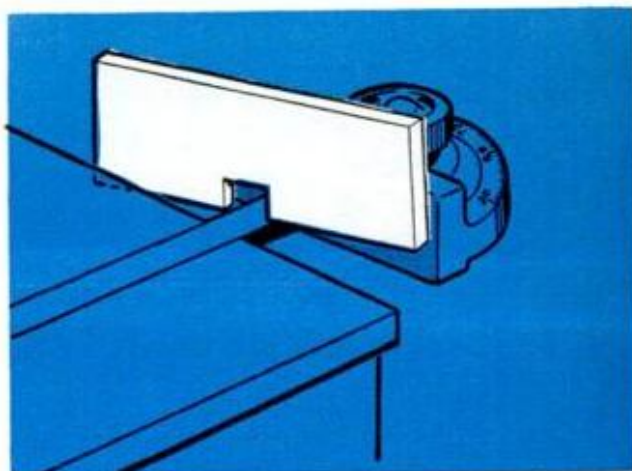
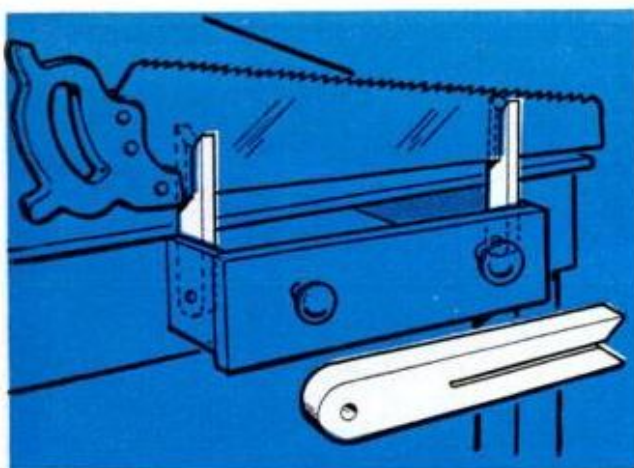
I found it helpful to maintain some air pressure in the tank at all times. In doing so, you won't have to wait each time for the pressure to build up when starting another job, so before shutting off the motor, close the shutoff angle valve. *Just be sure the shutoff valve has been opened or the pressure could burst the hose.* I made the filter you see on the intake side of the compressor from the removable top of a spray can which I soldered to a threaded thimble for screwing in place. The cap was then stuffed with glass wool. ★★★



## HINTS FROM READERS



Some jointers are equipped with dual cutter guards so that the blades are completely covered, regardless of the fence position. However, there are many jointers that have only one guard, which leaves the blades exposed behind the fence when it is moved across the cutterhead. From the standpoint of safety, it will pay you to add a second one to your machine to safeguard stray fingers when passing work along the fence. Since most fences have a flange along the top edge, all it takes to attach a sheet-metal guard is to drill a couple of holes through this flange for small stovebolts. The guard moves with the fence to keep the cutter fully covered at all times. —Harold T. Bodkin



Here's a saw vise that's a dandy in that it folds away in a drawer when not needed. It's nothing more than two slotted members, kerfed to hold the blade, which are pivoted to the sides of a workbench drawer. Pushing the drawer shut wedges them securely in an upright position. Serves the purpose fine for that occasional filing job.

Setting a miter gauge squarely with the blade in returning it to zero setting can be done in a jiffy and without bothering with calibrations if you notch a scrap block to fit over its tongue. Inserted between the table and the face of the gauge, the block automatically aligns the gauge dead square when pressed against the table.

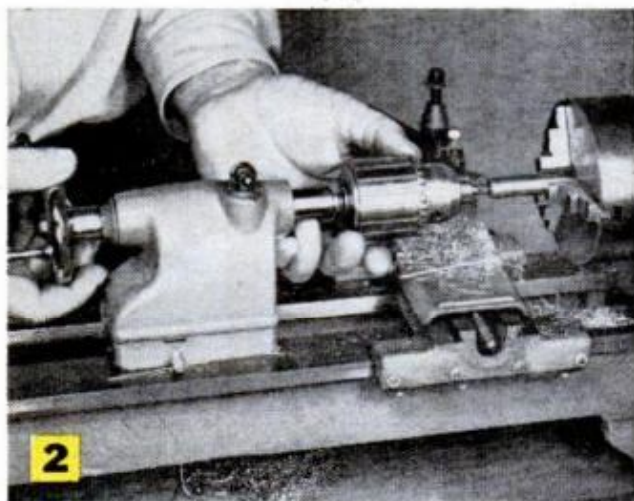
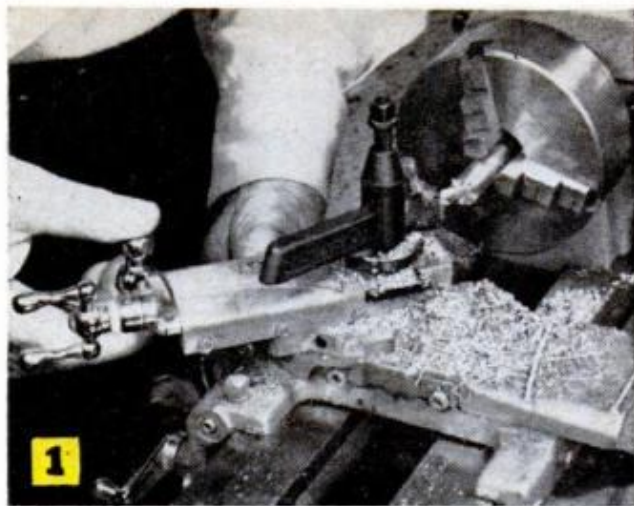
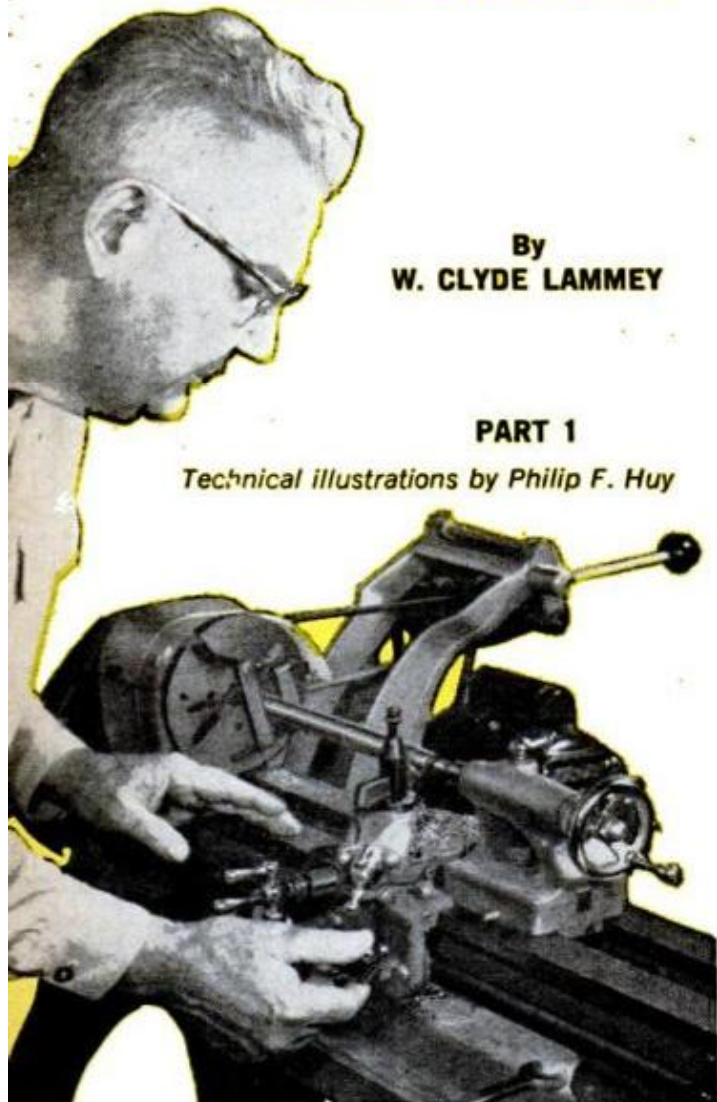


# HOW TO GET STARTED IN METAL TURNING

By  
W. CLYDE LAMMEY

## PART 1

Technical illustrations by Philip F. Huy



**M**ETAL TURNING can be as fascinating as wood turning, and while it requires using a whole new set of rules, learning to operate a metal lathe is really pretty simple when you get right down to basics.

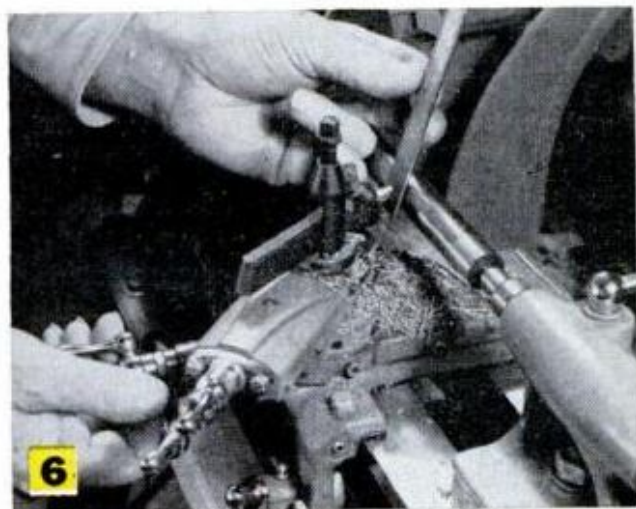
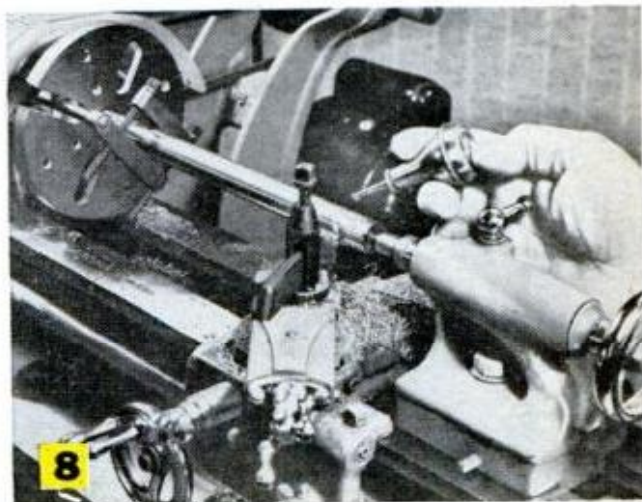
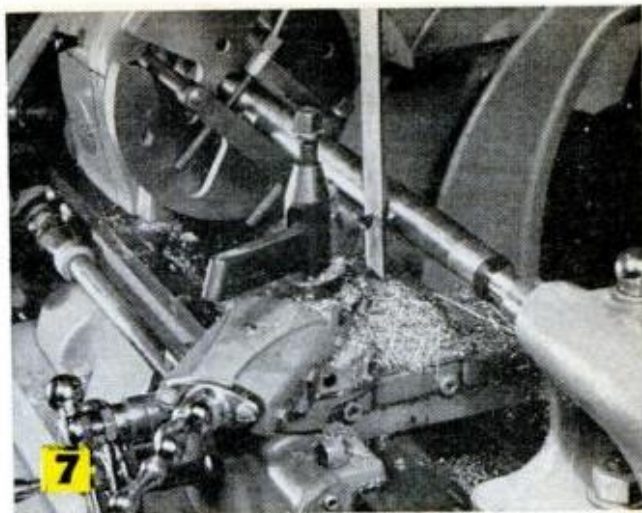
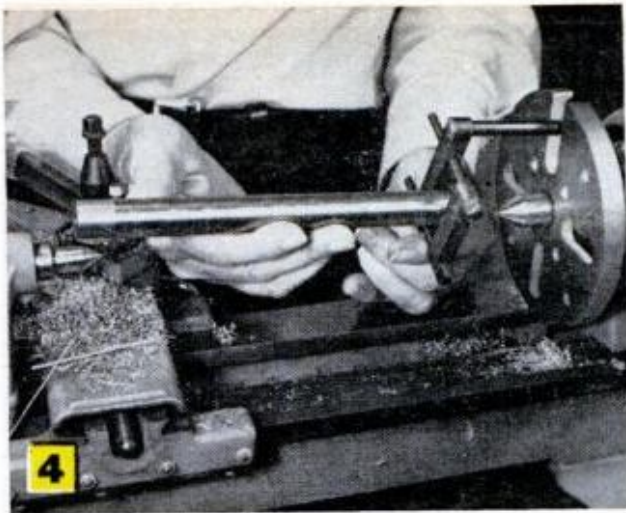
Learning how to set up work for turning between centers and on a faceplate is lesson number one.

**The first step** is to rough-cut the workpiece to length with an allowance for facing both ends, when facing is required.

For practical purposes this can be done with a hacksaw, using care to cut the ends square. Or, if the nature of the work and the material available permit, cut the workpiece over-length so that you can machine it to finish diameter and length up to the driving dog and then cut off and face the end. When measuring the length, be sure to allow for the dog.

**The next step** is centering. If the work will pass through the hollow, headstock spindle, then chuck it in the lathe's three-





jaw chuck, letting it project a minimum amount. Now face off and center-drill the ends with a combination center drill and countersink as pictured and detailed in Figs. 2, 3 and 10.

If the workpiece is too large to pass through the spindle but will drop through the hole in your drill-press table, locate and scribe the centers, using either a centering head on a machinist's combination square or a centering (hermaphrodite) caliper as detailed (Fig. 9.) Then,

JANUARY 1967

**1. FIRST STEP** in mounting between centers is facing ends of workpiece square. Indent center so center drill will start accurately

**2. WHEN WORKPIECE** will pass through lathe spindle, center-drilling is done in lathe. Chuck work and feed the center-drill slowly

**3. IF WORK** is too large for lathe spindle, chuck it and center-drill in drill press. Center-punch work first and feed drill slowly

**4. AFTER CENTER DRILLING**, attach driving dog and mount on centers. Make sure tail of dog clears and work turns freely without play

**5. WHEN TURNING** between centers, use screw or automatic carriage feed to get smoother work, prevent gouging and overloading of bit

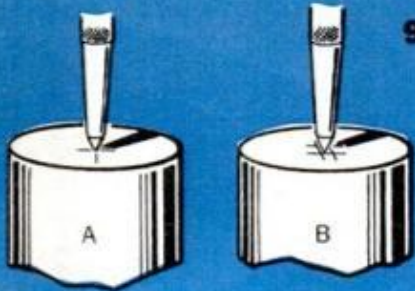
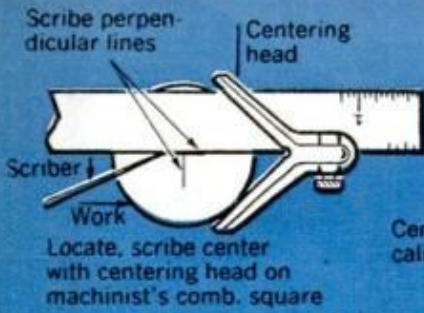
**6. USE RULE** to locate cutting tool on axis of lathe. Here, rule tilts away, indicating point set too high. Recheck and reset tool

**7. VERTICAL RULE** indicates tool is set dead on center. Some machinists prefer cutting tool set slightly above center on some work

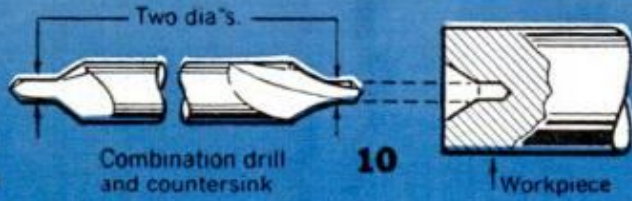
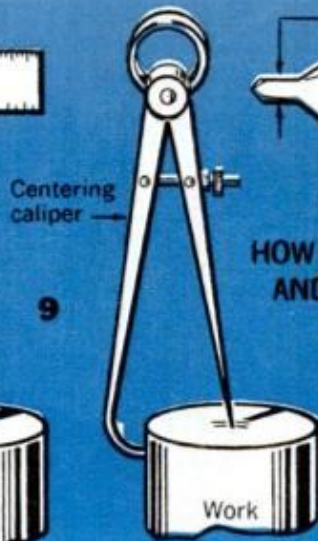
**8. WHEN TURNING** ferrous metals, an occasional drop of light oil at cutting point will give a smoother cut and prevent undue heating



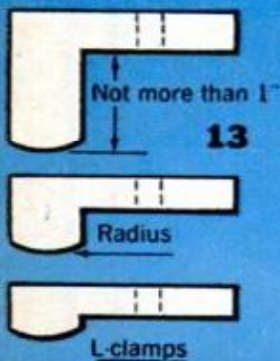
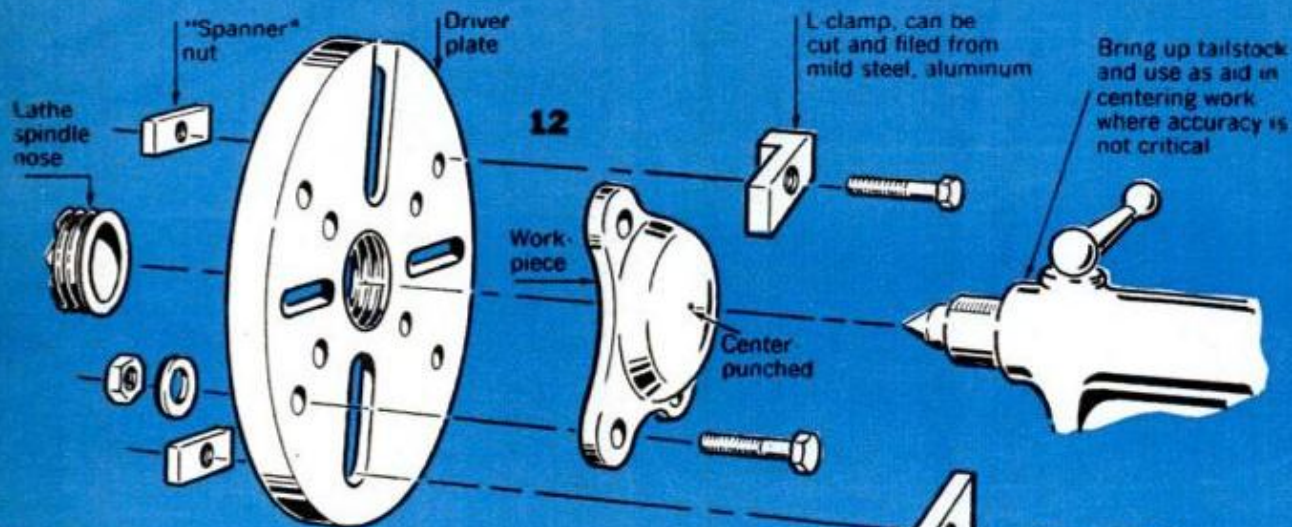
# HOW TO GET STARTED IN METAL TURNING



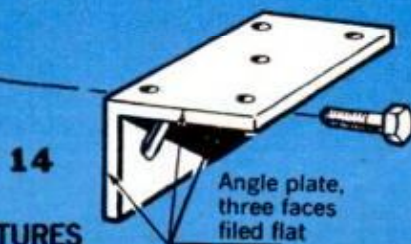
A - Center punch on intersecting lines  
B - Center the punch inside lines



## HOW WORK IS CENTERED AND CENTER-DRILLED

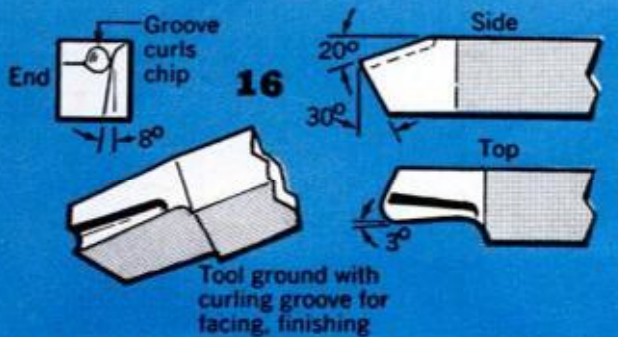
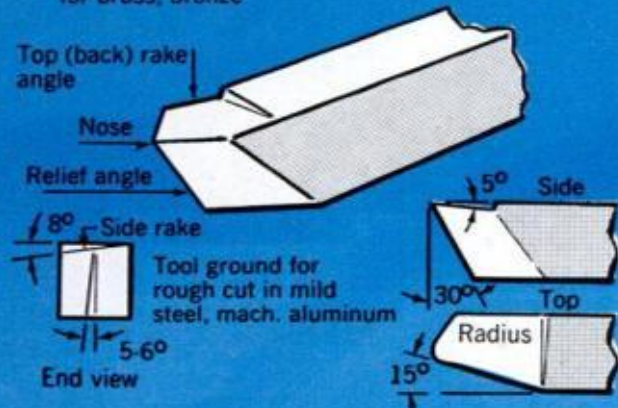
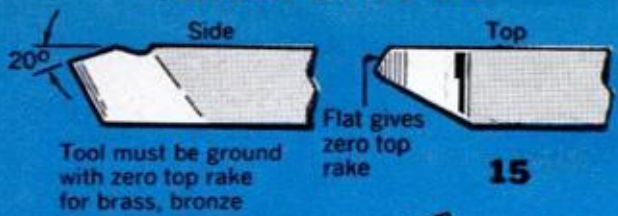


## FACEPLATE CLAMPS AND FIXTURES

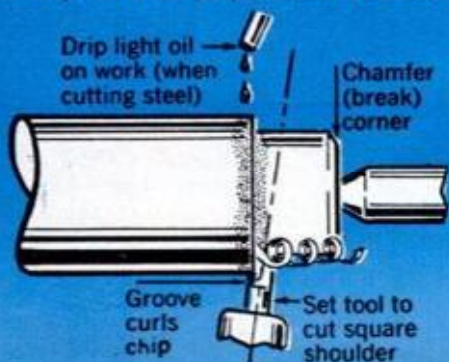
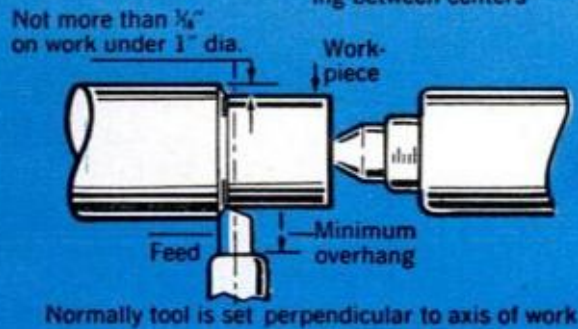
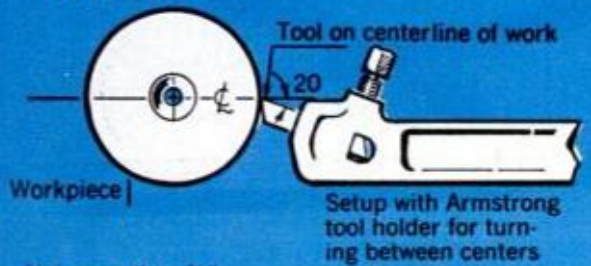




## CORRECT BIT PROFILES



## TOOL SETUPS



using the lathe chuck, hold the workpiece and drill the center with the combination drill and countersink in the drill press as pictured in Fig. 3.

If too large in diameter for either operation, lay off and scribe the centers as described, then drill and countersink in two operations as in Fig. 11. The facing cuts can be taken after the work is mounted between centers. When mounting the workpiece between centers, be sure that the tail of the dog engages the slot in the faceplate properly and that the end clears the headstock before you start the lathe. Turn the work by hand to make sure everything is in the clear.

**Small metal lathes**, under 9-in. swing, usually are supplied with one large faceplate which can serve both as a work-mounting plate and as a driving plate. Such a plate has one open-end slot for driving the dog and several closed-end slots to which work of irregular shape may be bolted or clamped for machining operations such as facing, drilling and boring. See Fig. 12.

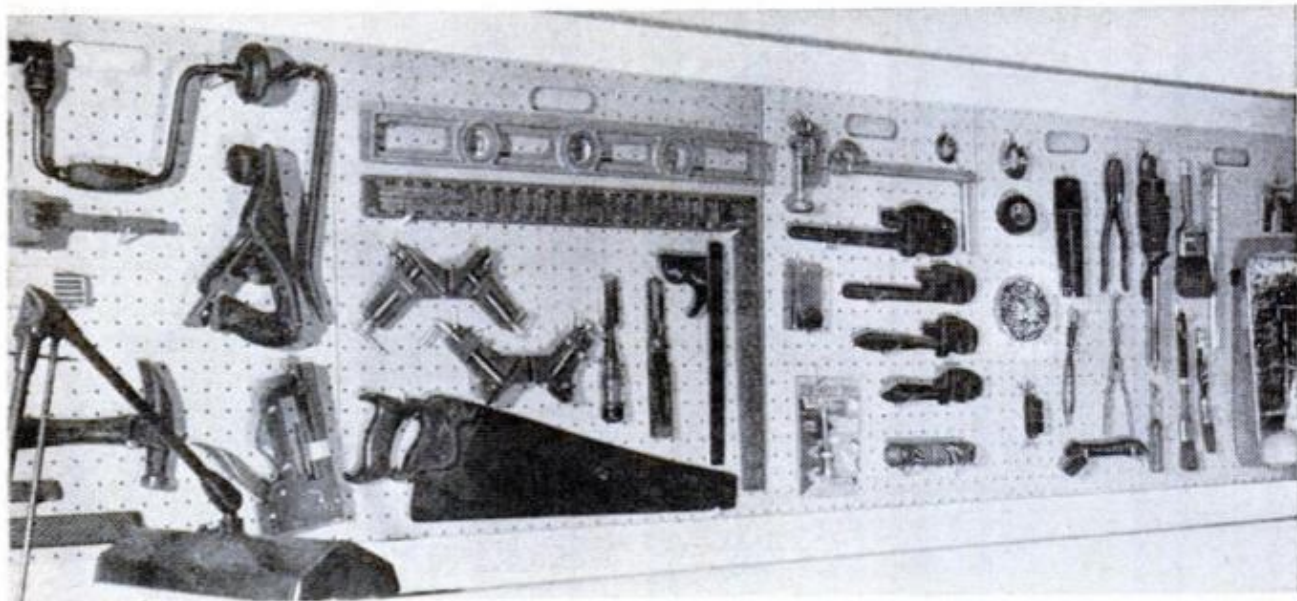
Lathes of 9-in. swing and up are usually furnished with a small plate having a single open-end slot for driving the dog. Larger plates with closed-end slots and spaced holes are supplied as accessories. Such plates are useful for mounting a wide range of workpieces of such shape that they cannot be chucked. Both types are shown in the details, Fig. 12. A typical, irregularly shaped small casting is shown, being of a shape that cannot be chucked in either a three-jaw universal chuck or a four-jaw chuck having individually adjustable jaws. Such a piece can be mounted and worked on a driving plate such as that supplied with small lathes by using two, three, or more L-clamps and bolts (Fig. 13), if the work permits, as fastenings. Although similar clamps are available ready-made, you can make them yourself, using mild steel which is easily cut with a hacksaw, filed and ground as needed. Make them in several sizes to accommodate work of varying proportions and thicknesses. If desirable, you can improvise a chuck for noncritical machining by making L-shaped chucking jaws for the faceplate.

**On large faceplates**, machinists sometimes find it convenient to mount the work on an angle plate (Fig. 14), bolted

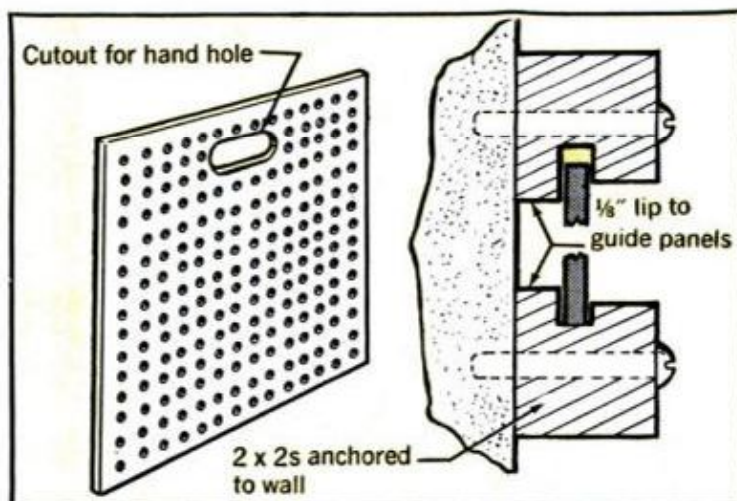
*(Please turn to page 231)*



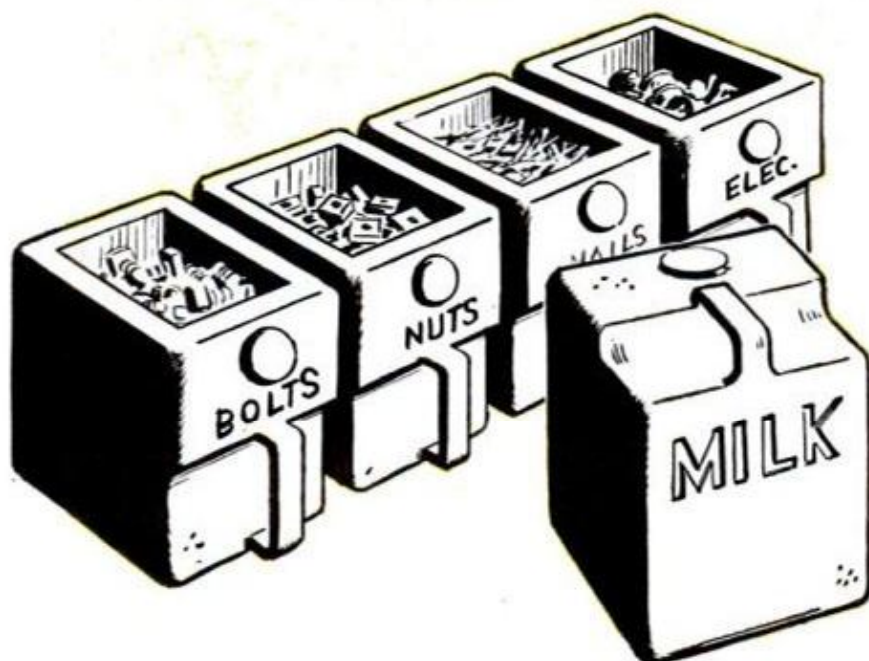
## Lift-out panels double as tool caddies



Lift-out sections of perforated hardboard, color-coded for better organization, let you carry a group of tools right to the job. Tracks for hardboard are made of 1x2s with grooves formed by a table saw. Cut groove in the upper rail deeper than in the lower rail so panels can be lifted up and out. You may need two or more passes with the saw to make grooves wide enough for a loose fit. Cut-out handles ease toting.—*Charles J. LaRobardier*



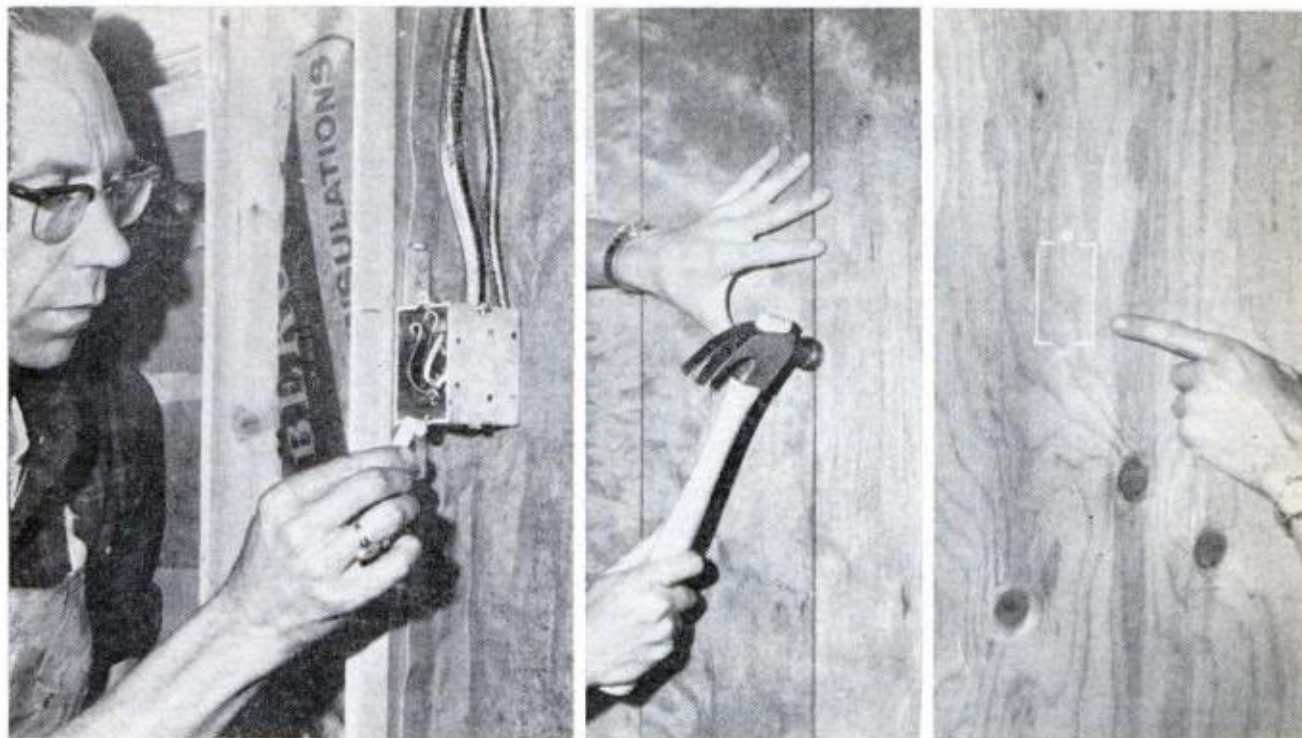
## JUGS HOLD ODD PARTS



Square plastic bottles, the handyman's friend, come through with still another practical application—this time as sturdy bins for small parts. With one side cut away, a gallon milk or water jug will keep nuts, bolts, nails, small tools and other hardware organized. The built-in molded handle makes it easy to pull the bin down from the shelf. To tell the contents of each at a glance, label the bins, using either a tape gun or felt marking pen.—*Morris G. Hulst*



## Chalk spots location of outlets when you're paneling room



IF YOU'VE EVER paneled a wall, you know what a job it is to mark accurately the location of switch and receptacle boxes so they'll be right on the button when you cut them out. Not only is there a chance for error when you measure down from the top and in from the edge, but on dark, prefinished paneling, it's hard to see a pencil line.

Bob Olson of Victor, Mont., found an easy way to do it by first rubbing the

edges of the boxes with chalk. Like transferring a pattern with carbon paper, he found that the chalk leaves a clear outline of the box on the rear side of the panel when it's placed in position and tapped lightly with a hammer. The fact that you must saw from the reverse side in following the outline doesn't matter since there is sufficient overlap on switch plates to hide any slight chipping you might make in the finished side.

### NEXT MONTH IN SHOP AND CRAFTS

**SPECIAL BOATING SECTION.** The February issue will be packed with articles to whet your appetite for the coming boating season. The new boats in blazing color, great new accessories, fun cruises all over the country, a detailed look at those new outboard ignitions, plus a handy guide to buying your first boat—you'll see all this and much more next month.

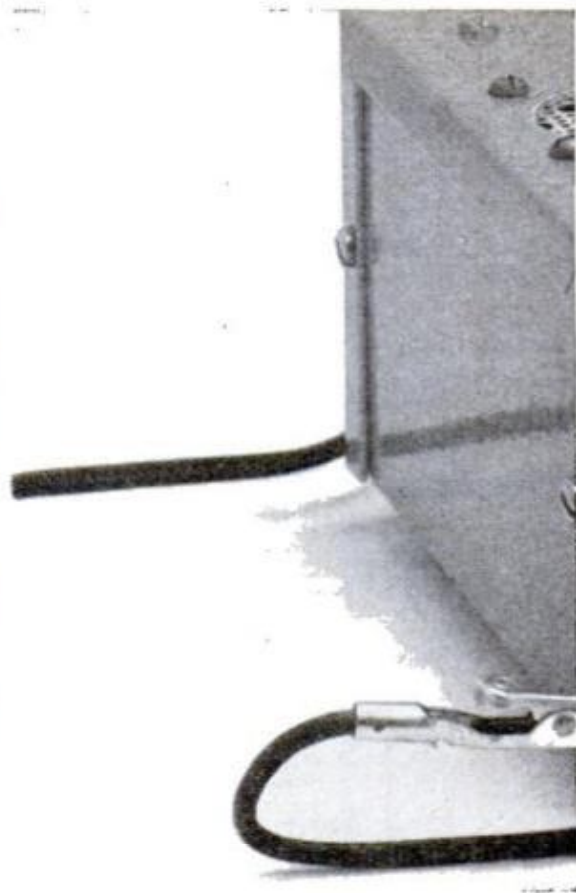
**DON'T SELL YOUR SAW SHORT.** Your table saw is one of the most versatile machines in your shop. Ripping and crosscutting are really incidental to the many other operations it can perform when you put its full talents to work. You'll get some idea of its potential from a fistful of unusual techniques pictured in a craft feature next month.

**ABRASIVE CUTOFF WHEEL.** Whether done by hand or machine, cutting metal with a hacksaw is slow work. It'll go twice as fast when you use an abrasive cutoff wheel and you can build a dandy shop machine to hold such a wheel from plans which received a design award from the Lincoln Arc-Welding Foundation.

**BUTTERFLY-TRESTLE TABLE.** Combining the warmth of maple and the charm of Early American design, here's an occasional table that will appeal to the craftsman who loves colonial pieces. A project for the well equipped shop, practically all your tools will get into the act in building it, including the lonely lathe.



# Build a ZENER REGULATED POWER SUPPLY



Whenever you need a d.c. voltage anywhere between 0 and 15, at a current up to one ampere and with low ripple, you'll have it at your fingertips

By EDWARD A. MORRIS

**T**HIS LOW-VOLTAGE POWER supply is a real workbench must! Not only is it a perfect general-purpose supply for recharging and rejuvenating batteries, powering transistor radios, providing bias voltage for radio and television servicing, and supplying power for other commonplace applications, but it also lends itself to more exotic endeavors, such as electroplating and electronics experimentation. It's an ever-ready and potent handful that will take no more than 3x4x5 inches on your workbench.

But most important—aside from the handsome and compact packaging of the unit—are the technical features:

- Continuously adjustable output, from 0 to 15 volts at one ampere;
- Electronic filtering and regulation;
- Very low ripple output;
- Dual meters that continuously monitor voltage and current output.

**The theory of operation** can be visualized by referring to the schematic diagram. The line voltage is supplied to the primary of transformer T1 through fuse F1, and on-off switch S1. Neon indicator

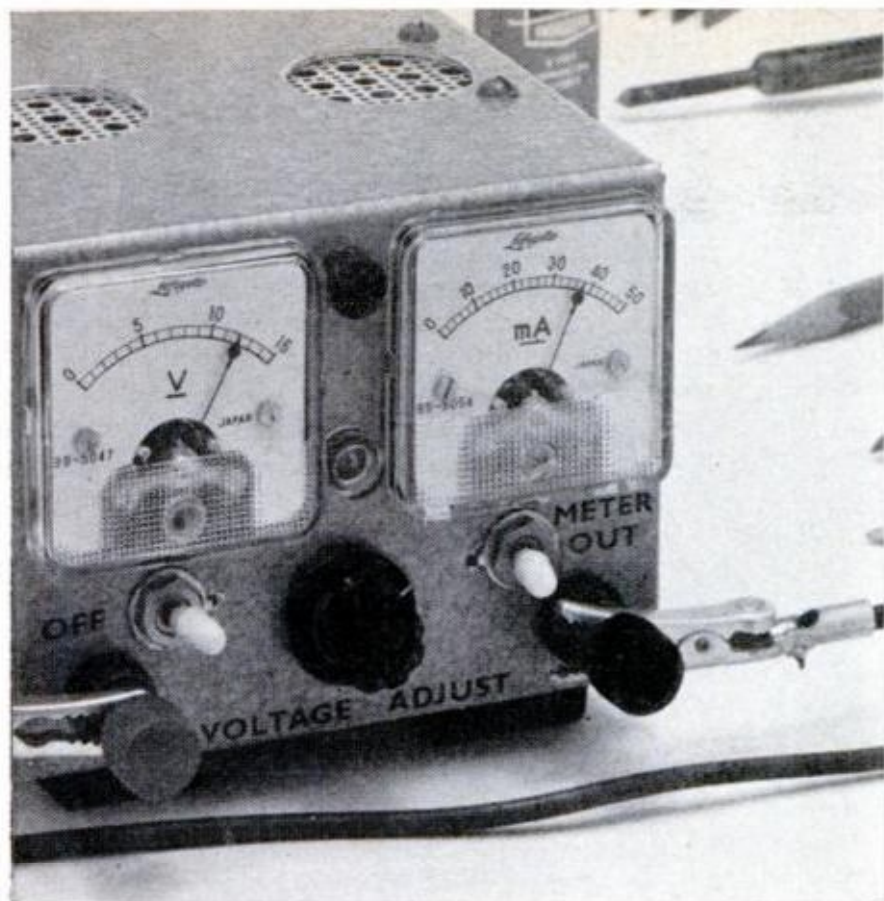
bulb I2 and resistor R2 form the power-on indicator. The blown-fuse indicator is formed by bulb I1 and resistor R1.

The output from the secondary of transformer T1, 24 v.a.c., is rectified by the action of the full-wave bridge rectifier consisting of diodes D1 through D4. Resistor R3 and the internal resistance of the secondary of the transformer limit the surge currents into capacitor C1 when the unit is first turned on. Without such protection, excessive peak current would damage the power supply.

Zener diode D5, provides a regulated reference voltage on the base of the control transistor, Q1. Current through the zener diode is limited to a safe value by series resistor R4. (Note that the control transistor is connected in an emitter-follower configuration.)

The d.c. current output from the control transistor, Q1, flows through potentiometer R5, the load for transistor Q1. Potentiometer R5 serves as a variable voltage divider which controls the bias placed on the series controlled transistor, Q2. Transistor Q2, which is also an emitter





**NEAT FRONT PANEL** of the power supply makes it easy to use, and the large voltmeter and milliammeter give voltage and current at a glance. The screened holes on the top of the unit provide ventilation for the heat sink which mounts 2N255 power transistor

follower, acts as a variable resistor in series with the load. Current flowing through the load must also flow from collector to emitter in transistor Q2. The effective collector to emitter resistance of Q2 is controlled by the amount of bias placed on the base of the transistor.

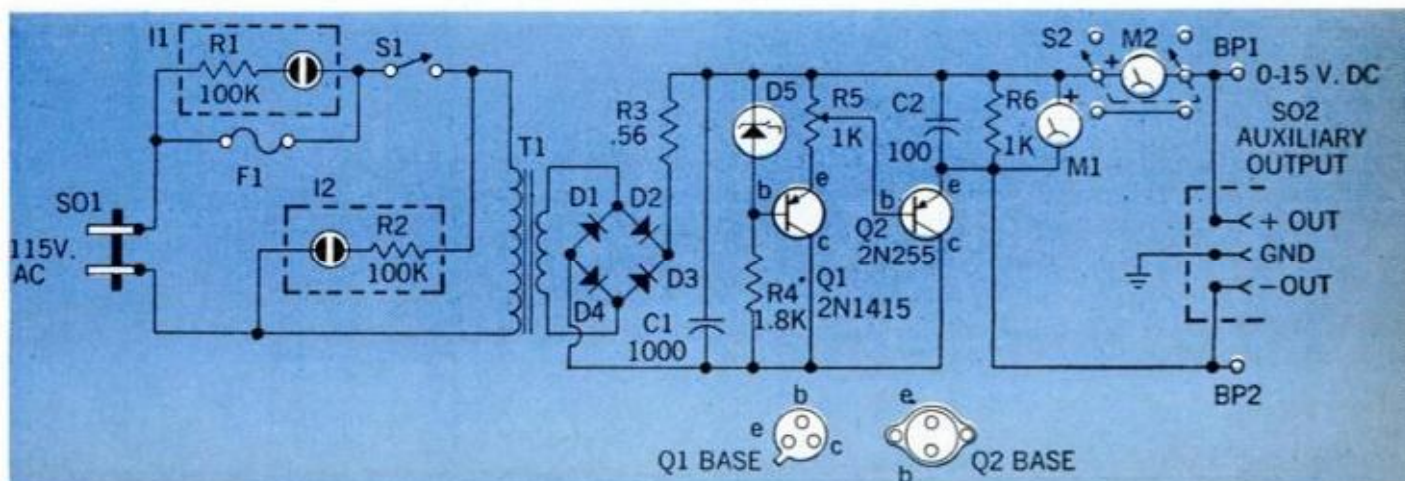
Switch S2 is a shorting switch which protects meter M2 when the current drawn by the load exceeds 50 milliamperes. Resistor R6 presents a small but constant load on the output of the supply. Capacitor C2 is a simple decoupling capacitor.

We can see now that when the load on

the output of the power supply increases, the terminal voltage of the supply will tend to decrease. Under these conditions, where the load is increasing, the control transistor Q1 becomes more forward-biased. This, in turn, increases both the voltage drop across potentiometer R5, and the forward bias on the series-controlled transistor, Q2. This reduces Q2's collector-to-emitter resistance. As we mentioned, this resistance is in series with the load. When it decreases, the terminal voltage of the power supply will return to normal.

Likewise, if the load decreases, the for-

**OPERATION OF REGULATED POWER SUPPLY**, discussed in text, can be followed on this schematic diagram. Note that the three-connector configuration of socket S02 provides output of a negative d.c. voltage





ward bias on the control transistor Q1 decreases. This action lowers the bias on the series-controlled transistor Q2, increasing its collector-to-emitter resistance. This will, in turn, tend to normalize the output of the power supply.

**Mechanical construction** of the power supply begins with a standard 3x4x5-inch aluminum chassis box. Lay out the pattern of holes to be drilled in the chassis with the aid of a T-square and scribe. Center punch and drill the smaller holes; the larger holes, such as for meters M1, and M2, can most easily be made with a hand nibbler. If you don't have a nibbler, drill a pattern of small holes within the circumference outline of the desired cutout. The jagged cutout that results can be smoothed with a file.

After you complete all mechanical work on the chassis, prepare it for painting, which must be done before mounting components. First, wash it in hot, sudsy water to remove surface dirt and grease, then rinse and dry the case. Handle it carefully to avoid placing fingerprints on the clean surface.

Several coats of spray paint may then be applied. Be sure to allow sufficient time for each coat to dry before applying the next.

After the last coat of paint is thoroughly dry, apply decals or transfer lettering to the front panel. To protect the paint job and lettering, apply several *very light* coats of a clear acrylic spray. A heavy coat may dissolve the lettering.

Rubber feet for the power supply are simply  $\frac{1}{4} \times \frac{5}{8} \times \frac{7}{8}$ -in. pieces of neoprene rubber glued to the bottom of the case. A

rubber-base contact cement, such as Pliobond, works well in this application.

**Mounting and wiring components** of the power supply begins with meters M1 and M2. Use the mounting hardware supplied with the meter. Next, mount the switches, binding posts and sockets in their respective cutouts.

Mount power transistor Q2 on the heat sink using the insulators and hardware supplied in the mounting kit specified in the parts list. Handle the mica insulators with care; they are easily cracked. After mounting, use an ohmmeter or a continuity tester to check that Q2's case is fully insulated from the heat sink.

Mount the heat sink to the case with four 8-32 x 2-in. bolts after placing a strip of perforated aluminum against the top of the case covering the ventilation holes.

To save working in tight spaces later on, wire what you have mounted up to now. In addition, wire C2 and resistor R6 directly across the terminals of meter M1. Be sure to observe polarity.

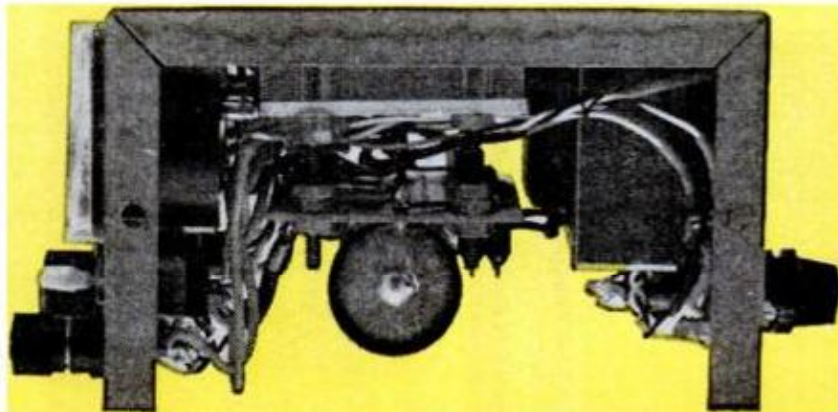
Mount and wire the neon indicators I1 and I2. The neon indicator assemblies specified in the parts list incorporate the built-in current limiting resistors R1 and R2 as shown in the schematic. If you use standard NE-2s from your scrap box as indicators, be sure to use these resistors.

The a.c. line and auxiliary output sockets and the fuse post are mounted on the rear of the chassis. The auxiliary output feature provides a convenient tap of power for a semi-permanent application so you don't have to juggle front-panel leads.

Temporarily set the main chassis aside

*(Please turn to page 230)*

ALL COMPONENTS of the power supply are mounted on the top half of the chassis box, as shown in this side view. Heat sink and perf board are piggyback mounted

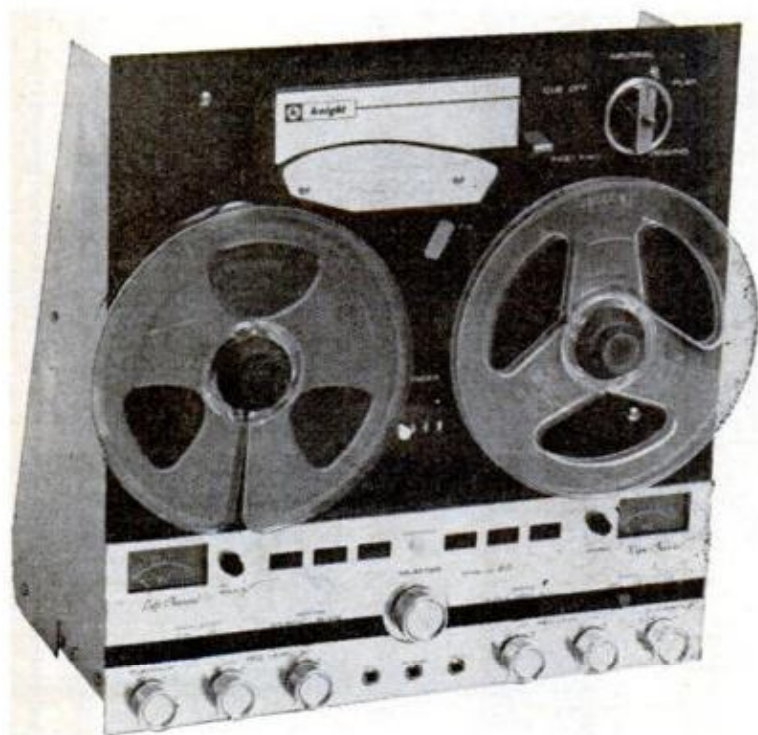








# KIT BUILDER'S REPORT



## Knight-Kit KG-415 Stereo Tape Deck

By **BILL HARTFORD**, *PM's Electronics Editor*

**B**ACK IN THE PIONEER DAYS of electronic kits, you paid your money and took your chances. Your FM tuner had no AFC, the tubes of your integrated amp stood up glowing in the dark on the top of a folded sheet-metal chassis, and there was no such thing as a tape recorder in kit form. It wasn't possible for the average guy with the electronics bug to build his own equipment at a substantial saving, increase his understanding of operation and service through building, and get *quality* on top of it all. Today the story's different, and the Knight-Kit KG-415 four-track stereo tape deck is a case in point.

When you think of adding a quality deck to your sound rig, you'll certainly start stashing aside some of that cash that normally goes for records. You know you'll be dropping somewhere between \$300 and \$600 at one throw. A quick review of the features to be expected of a deck worthy of such investment would list three quarter-track heads (with sound on sound, echo and direct monitoring), two VU meters, automatic shutoff, cue control, digital counter, reliable solid

state record and playback amplifiers, equalization at  $7\frac{1}{2}$  and  $3\frac{3}{4}$  i.p.s., and an impressive set of technical specifications. The Knight-Kit machine checks out on every one of these counts. True, the transport doesn't have three motors; it has only two—a four-pole induction motor for the capstan and a separate motor for the take-up reel. But the quality count is high and the \$249.95 dollar count is low.

In addition to expected features are a few of special interest to the kit builder. Six printed-circuit boards, containing the circuits for the record and playback amplifiers, record and erase voltages and headphone amplifier circuit, comprise an easy-to-build modular design.

Together with the separate playback head, the headphone amplifier allows monitoring during the record mode. The monitoring feature also provides a check of your wiring of a built-in 1kHz oscillator. The oscillator test signal is not only used during construction for checking your work, but for adjusting bias and erase signal levels. The oscillator and VU meters provide for complete test and adjustment of the deck without the need for



any additional test equipment.

The recorder "electronics" wired without a hitch, and a number of well placed cable clamps made for easy routing of wires and a very neat chassis. The Viking transport mechanism that Allied Radio Corp. provides with its tape deck is completely preassembled so all that's necessary is securing it in place on the chassis.

The reward of two dozen hours at your workbench is achieved when you make the final connections to your hi-fi amplifier and tuner (without a mike handy at the time, I started by recording FM program material off the air). Flicking on the power switch is always the moment of truth—no matter how many kits you've built. Before recording, I ran the selector switch through its play and record positions, and had slight heart seizure when the "Record Right" panel did not light with the switch in that position. Expecting the worst, I was ready to dig into the right channel record module circuits to find a mistake that—after using Knight's detailed assembly manual—would have to be a result of my own carelessness. After a few seconds of head scratching and some logical troubleshooting, the problem resolved itself. The answer was as simple as a defective indicator bulb! That bulb proved the lone bugaboo of an otherwise flawless construction.

### Recording stereo from tuner

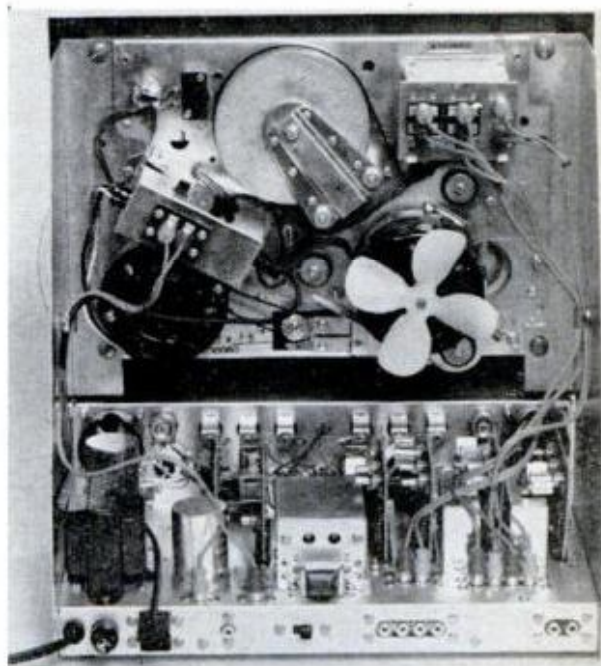
Using the tape deck to record stereo from the FM tuner through the "line input" couldn't be easier. The furnished cables can be left permanently connected between tuner or receiver and the rear chassis of the 415. The recorder can then be switched on, ready to record any program in a few seconds. Tape transport is initiated by turning the inner control to the right to "Play." Turning it to the left sets the transport in "Cue Off" where the tape is free to move across the heads for editing or cueing. The outer knob controls fast forward (1200 feet in 60 seconds) and rewind (1200 feet in 90 seconds). The center pushbutton on the control must be depressed to record.

The selector switch is set to "Record Stereo" and the monitor switch to "Source" for headphone monitoring of the FM signal. The level of the signal being monitored is set using the source control

next to the VU meter for the appropriate channel. Then, with the equalization switch set to the tape speed at which you're recording, and the special switch set to "Norm," the record level control for "Line" is adjusted for an average—between minus 10 and minus 7 VU. With microphone input, the "Mic" control would be set for the same level.

Playback of the FM stereo program material through a Scott 260 and a pair of Ampex 1115s could—to an unknowing listener—have been the original broadcast. And that's an earful! ★ ★ ★

**REAR VIEW OF CHASSIS AND DECK** reveals enormous flywheel on the capstan drive. The drive is via flutter-filter belt from the bladed capstan motor

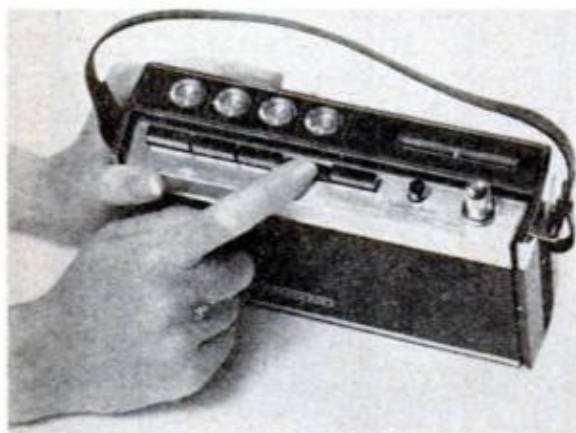


**INTERMEDIATE CHECKING** during construction with signal from 1kHz oscillator ensures that circuit boards for left and right channels are functioning





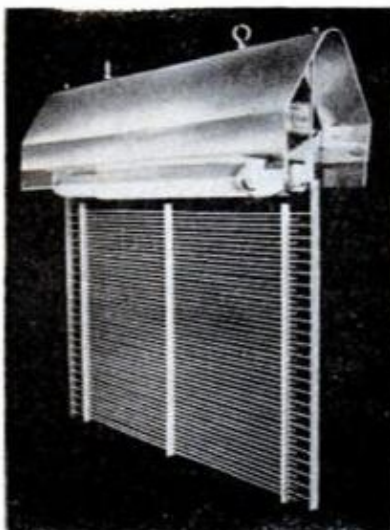
# NEW IN ELECTRONICS



**Pushbutton memory tuning** saves hunting around the dial on Panasonic's new portable. The R-1500 AM model uses capacitor elements in conjunction with four dials that are preset to the desired frequency which is thereafter selected by pushbutton. Battery powered portable is \$39.95.



**Weather frequency band** doubles up with AM broadcast band in this \$19.95 portable from Nova-Tech, Inc. The weather band tunes the Federal Aviation Agency's countrywide network of weather-reporting stations. These broadcasts, mainly directed to pilots, provide accurate forecasts.



**Electronic bug control** is the function of this strange looking device called the Klenatron. Ultraviolet tubes attract mosquitoes and black flies to charged grid which disintegrates them on contact. The unit, from E.I.C. Distributors, is \$159.95; it's effective over an acre.



**Dimming control** is built into this metal shell lamp socket from Leviton Manufacturing Co. The full-range (0 to 100 percent) dimming circuit is rated at 150 watts, 115 v.a.c., and has positive on-off positions. No. 6151 socket is less than \$8, with a three-year warranty.



**Base station adapter** is an option unique to 100-milliwatt "Range Master" walkie-talkie-type transceiver from Claricon. The \$39.95 transceiver, boasting second RF stage and 200 mw. of audio, is set into the \$19.95 adapter which includes talk lever and 115-v.a.c., 9-v.d.c. converter.



# The first electric starting chain saw.



PUSH  
THE BUTTON!

Here's the chain saw that's practical for every man. Called the MAC 3-10E, it's completely self-contained, cordless, starts automatically and recharges its own batteries as you cut. Oils itself automatically too. **Lightweight?** It's lighter than many other saws with ordinary starting. **Safe?** The safest. Starts so easily there's no longer any reason to carry or climb with the engine running. **The chain?** Special steels give this McCulloch chain a smooth bite that outcuts, outlasts others. The revolutionary new MAC 3-10E is one of a complete line of chain saws from McCulloch... best for any cutting need. Start right now. Call Western Union Operator 25 for your nearest McCulloch dealer, or for literature write McCulloch Corp., Los Angeles, Calif., 90045.

*It had to be a McCulloch.*



## SUBMARINE IN A BOTTLE

(Continued from page 161)

*Flasher*, sistership of the ill-fated attack submarine *Thresher*, full-size patterns for it are given at the right. You can buy a great variety of submarine plans for under a dollar each from Edward Wiswesser, 405 North 25th St., Pennside, Reading, Pa. A valuable time-saver in working from a large plan is to have it photostated down to fit your bottle. Six inches is about right for a pint, flask-type bottle.

The model is pegged together, so when you calculate the clearance in the bottle neck, allow an extra  $\frac{1}{8}$  in. for the peg in each model section.

Actual construction begins with the sea floor and plastic legs. Drop small balls of beige or tan Plastalene clay and, with homemade wire tools, spread it into a thin coat to form the ocean bed area. Cut two clear-plastic legs about  $1\frac{1}{4}$  in. long from a plastic drinking straw (sold by drugstores for sickroom use); these legs will fit holes drilled in the bottom of the hull and in the small wooden base, which will be buried in the clay. This base provides support for the legs and keeps them properly spaced to fit the hull.

Insert the base, making sure it's placed so the sub will fit the bottle fore and aft. Work the plastic legs into the base and build up the clay so it covers the base, giving the appearance of a sea bed. Wreckage or other detail can be added.

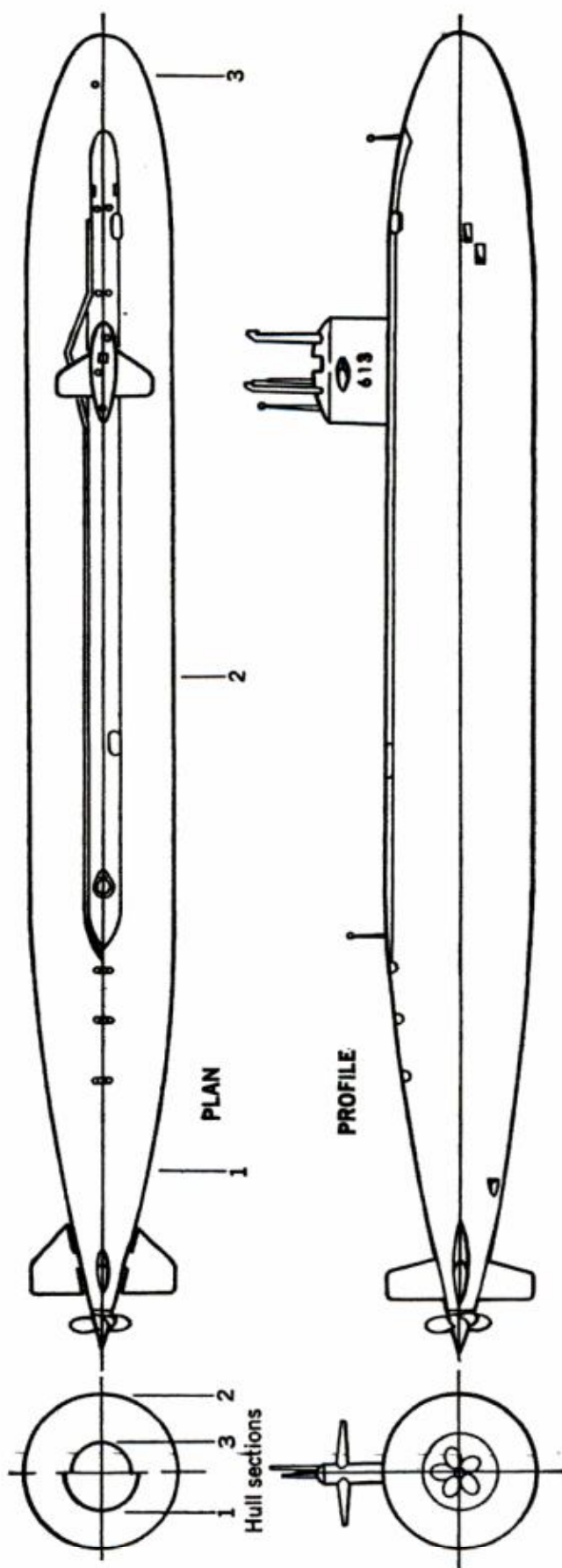
The sections of the hull are made from perfectly straight pieces of wood such as the  $\frac{1}{2}$ -in.-square strips sold by hobby stores for mounting gasoline engines in model airplanes. Cut four lengths  $6\frac{1}{2}$  in. long and stack them together to make a 1-inch square. The 4 parts can be held together with rubber bands in the early steps. The way these strips fit determines how well the finished model will join together.

Before shaping the hull, peg the strips; drill completely through the male strip and part-way through the female, and insert pegs made from round wooden toothpicks. Drill holes for the plastic legs after the hull is carved.

Shaping the hull is time-consuming but not complicated. Transfer the lines of the hull from the full-size magazine patterns to the wood and then begin whittling and sanding. A hand-held hobbyist's power tool, such as a Moto-Tool or a Handee, saves time here.

The rudder assembly is made of bristol board and wire and is attached to appropriate quarters of the stern. The conning tower is made of wood, paper and

(Please turn to page 204)



FULL-SIZE PATTERNS FOR THE U.S.S. FLASHER

ATOMIC SUBMARINE  
**U.S.S. FLASHER**



# SOWING PENNIES

## to Harvest Dollars when they are needed

**How hundreds of far-sighted men are using spare hours now to assure themselves of a ready made income in the event of lay-offs or recessions that might affect their jobs.**



All over the country it's happening. You may even know some of the men who already have started home operated businesses of their own in their spare hours. They keep their jobs. The "boss" doesn't know they are planning for independence. They do not have any heavy investments in equipment or inventory, because they buy their raw materials as they are needed. They have no overhead expense because they operate their businesses from their homes.

Yet hundreds are quietly developing a second source of income—an extra income right now for their spare hours; and a business that can be quickly expanded if it were ever necessary to look to it for complete support.

These "little" home businesses are little only in the sense that they require little capital to start and run, and they require little time on the part of the owner. The margins of profit in some of them are so fantastic as to be almost unbelievable—far greater than those usually enjoyed by big investment manufacturing.

And, there are many kinds and types. For the man who is mechanically inclined there are businesses in which he can use his hands as well as his head. For those who have no aptitude with tools there are small manufacturing operations that are almost automatic in their production methods.

One of the features found in many of these businesses is a wide and ready market for the product. Usually it is a product too small in total national market to attract the attention or envy of the big investors. So, the danger of competition from big operators is absent. Usually it is a product that enjoys a neighborhood demand so that good markets are found in any size community from the small town to the neighborhoods of the big city. Usually the cost of the raw materials is only about one tenth the selling price. One such product costs 11c for raw materials, yet sells readily for \$1.00. Another sells for \$18.95, yet the raw materials cost only 55c. Still another returns \$2.75 for each 27c worth of raw materials.

In the same way that history had its "Minute Men," quietly trained and ready at a moment's notice, so today, we have a constantly growing number of "Ready Men." They are working at steady jobs in offices, stores, factories, gas stations. They have a regular income *now*—an income that only a few months ago was considered both *regular* and *dependable*. But when the signs went up, they started quietly to prepare for independence. They are ready. They have mastered the details of their businesses. They have been making twenty, thirty, forty, or more dollars a week as *extra* money—now—

some times with others in the family helping. They have established the outlets for their products. But, more important than their present extra income, they are ready, overnight, to give their full time and to expand their businesses into full-fledged operations at increased income.

The fear of layoffs is gone from their hearts. The worried look induced by threats of recession has vanished from their faces. They face the future with confidence because they have sown the pennies that will be reaped as dollars when more dollars are needed—they have attained a sense of personal independence that puts them above worry and fear.

What are these businesses? There are a number. One that is especially interesting and that you can own outright for less than \$300.00 is the manufacture of a product used in quantity in every office and factory in the nation—and by millions of individuals.

The product is light in weight and can be delivered to customers by mail for just the cost of a few stamps. And 27c worth of material, to which you add nothing but your own time, brings back \$2.75 in cash at retail. The entire "factory" takes so little space that it can be operated on a table top in any spare room, the basement or garage and it is such a simple process that even the junior members of the family can help. The equipment is supplied by The Warner Electric Company who also give seven different methods of selling the output and give financial help to the men who want to start. The sales methods include a plan by which others sell your product so there is no canvassing needed on your part; another plan by which you sell by mail.

Complete information concerning this and other businesses is free. Information is mailed, postage prepaid, to anyone who is interested. There is no obligation and, since the company has no salesmen, you are not bothered by anyone trying to "sell" the equipment. On the basis of the information mailed, you decide in the quiet of your own home whether you are interested.

It is not necessary to write a letter. Just send your name and address on a postcard and say you want complete free information on various home businesses offered by Warner Electric Company. Address your card to Warner Electric Company, at 1512 Jarvis Ave., Dept. R-2-AT, Chicago, Ill. 60626. You may want to plan a degree of security for the future that is not experienced by men who depend upon the ups and downs of others' businesses for their livelihood.





**This is a GM Original:  
It keeps a delicate balance.**



**This is a GM Replacement:  
It's just as nimble.**

GM Originals and GM Replacements look, act, and *are* the same.

GM wouldn't have it any other way. And neither would you, when it's time to replace something as important as the carburetor float. This part keeps just the right amount of gasoline in the carburetor bowl at all times. A delicate job—especially over bumpy roads or on steep grades.

GM Parts, in GM and United Delco packages, are available all over the USA. Go where they use them. Good service goes with good parts.

## GENUINE GENERAL MOTORS PARTS



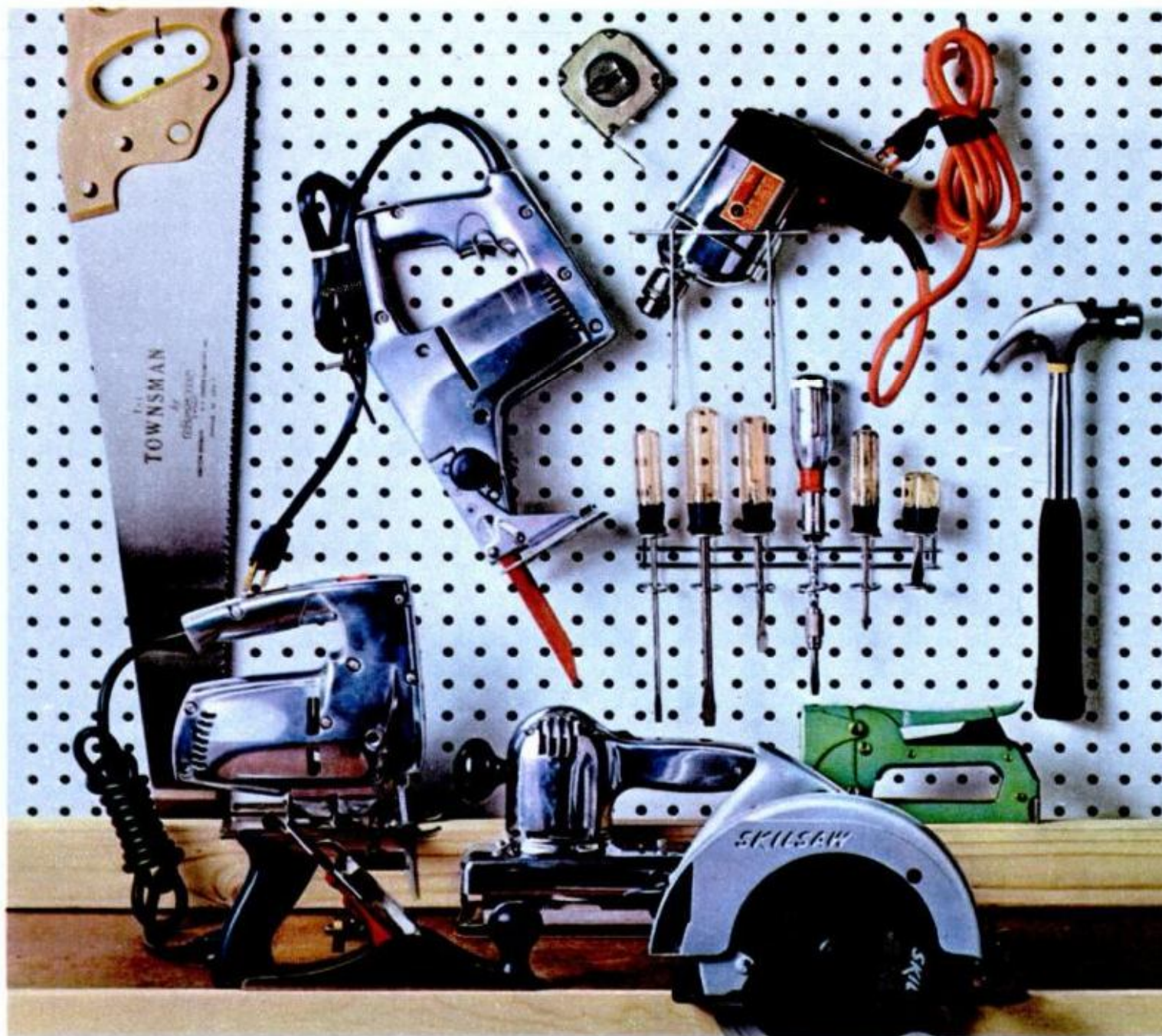
CHEVROLET • PONTIAC • OLDSMOBILE  
BUICK • OPEL • CADILLAC • GMC TRUCKS

United  
Delco





The most  
versatile tool  
in your workshop



An S&H Green Stamp is your most versatile tool. Because with S&H Green Stamps you can get practically every other tool you need, from basics like hammers and screwdrivers to a large collection of modern power tools. You can even get a complete Black and Decker "de Walt" power shop. So shop where you get S&H Green Stamps. And when you want to build something, all you have to do is put together a few S&H Green Stamps.

Treat yourself with S&H Green Stamps.





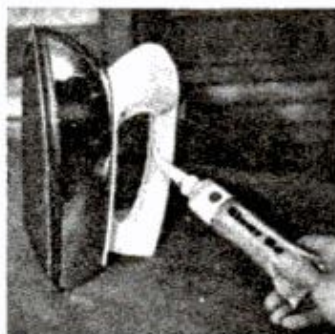


# "Silicone Seal saved me a \$25 repair job..."



"... Over six months ago, I used it to fix a ripped rubber seal in our washing machine. No leaks since. Saved \$25 replacement cost."

H. C. Bellman  
San Fernando, Cal.



"Repaired a broken iron handle with Clear Silicone Seal. It wears and wears. Also repaired a broken lamp. I wouldn't be without it."

A. Zubuss  
Philadelphia, Pa.



"I used Silicone Seal to cushion the noise of sliding closet doors. Placed dabs near top and bottom to stop bumping and rattling."

B. Crompton  
North Kingstown, R. I.



"After trying every other caulk without success, and replacing tile over the tub four times, we finally solved our caulking problem with Silicone Bathtub Seal."

G. E. Dawes  
Owatonna, Minn.

**SUPER GLUE!** Silicone Seal bonds to glass, ceramic, wood, metal, fabric, leather and other hard-to-glue materials.

**PERMANENT CAULK!** Silicone Seal is permanently waterproof and flexible, won't crack or shrink. Use indoors or out.

**"DO-IT-YOURSELF" RUBBER!** Silicone Seal makes flexible door bumpers, protective strips, gaskets, noise and vibration dampeners.

**FOUR COLORS.** Transparent, white, aluminum, black.

Tell us about your unusual use for Silicone Seal. If we use it in ads, we'll pay you \$10. All ideas become our property. Write: Section BS-A...., Silicone Products Department, General Electric Co., Waterford, N. Y.



3 oz. and 1 oz. tubes.

**GENERAL ELECTRIC**

## SUBMARINE IN A BOTTLE

(Continued from page 200)

wire and sits on a peg in the deck. Deck fittings, guns and periscope are attached after the hull is in the bottle.

Railings are tricky. The easiest method is to stretch thread across wire stanchions set into the deck. For more realism, first wrap the thread around a wooden frame of the right size, then shape and shellac it. When the thread is dry, cut it out with scissors and glue it to the deck and gun platforms. Before inserting the model, assemble it without glue, paint it and disassemble the pieces.

Sections go in one at a time and are worked into place with long wire tools devised for the job. In our quartered hull the two lower sections were glued together and allowed to set before being mounted on the plastic legs. Other sections were then stacked in order.

The final construction details are the aerials and jumper stays (cables from conning tower to deck). Make these by fastening gray thread to the sub deck fore and aft with enough slack so it can be lifted taut across the conning tower. Or run the line through a pinhole in the bow. Pull the line taut, glue it and cut it off with a blade on the end of a dowel. ★★

## HOW TO HANG SLIDING DOORS

(Continued from page 155)

on the door tops keep them aligned when shut and closely stacked when open.

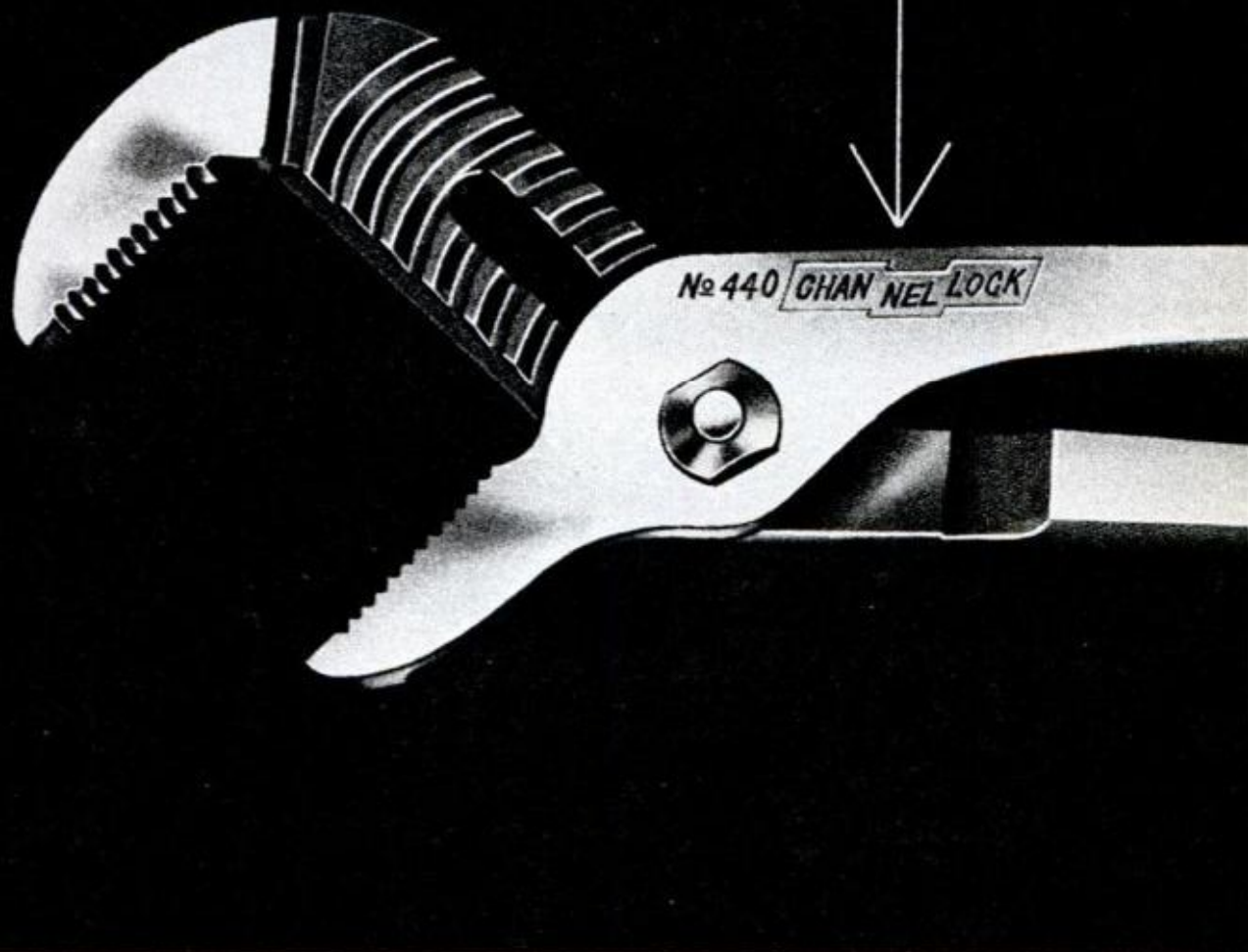
Maximum-width door for home installation is 24 in. Minimum thickness is 1 in.; maximum, 1 3/4 in. However, standard 1 3/8 x 18-in. flush doors are a good average size to consider. While butt hinges are furnished with the kit hardware, continuous hinges make a far neater installation.

Multifold track comes in 2 and 4-ft. sections to suit the size of the opening, whether is be a full room or a doorway. Top and bottom pivots support the starter door or doors, and these are installed after you have one section of track screwed in place. Then the doors, one by one, are all hung in this one section of track before the rest of the sections are added end to end. The hinges of course, would all have been fitted beforehand and removed while placing the doors in the track. Instructions come with the hardware.

While there is multifold hardware that's designed to support doors weighing up to 35 lbs., you can buy heavy-duty, multifold hardware to support doors weighing as much as 175 lbs. (refer to page 155). Here the track is I-beam or channel shape and comes in 16-ft. lengths. ★★



# This Plier Has 8 Exclusive Features ...You Need Remember Only 1

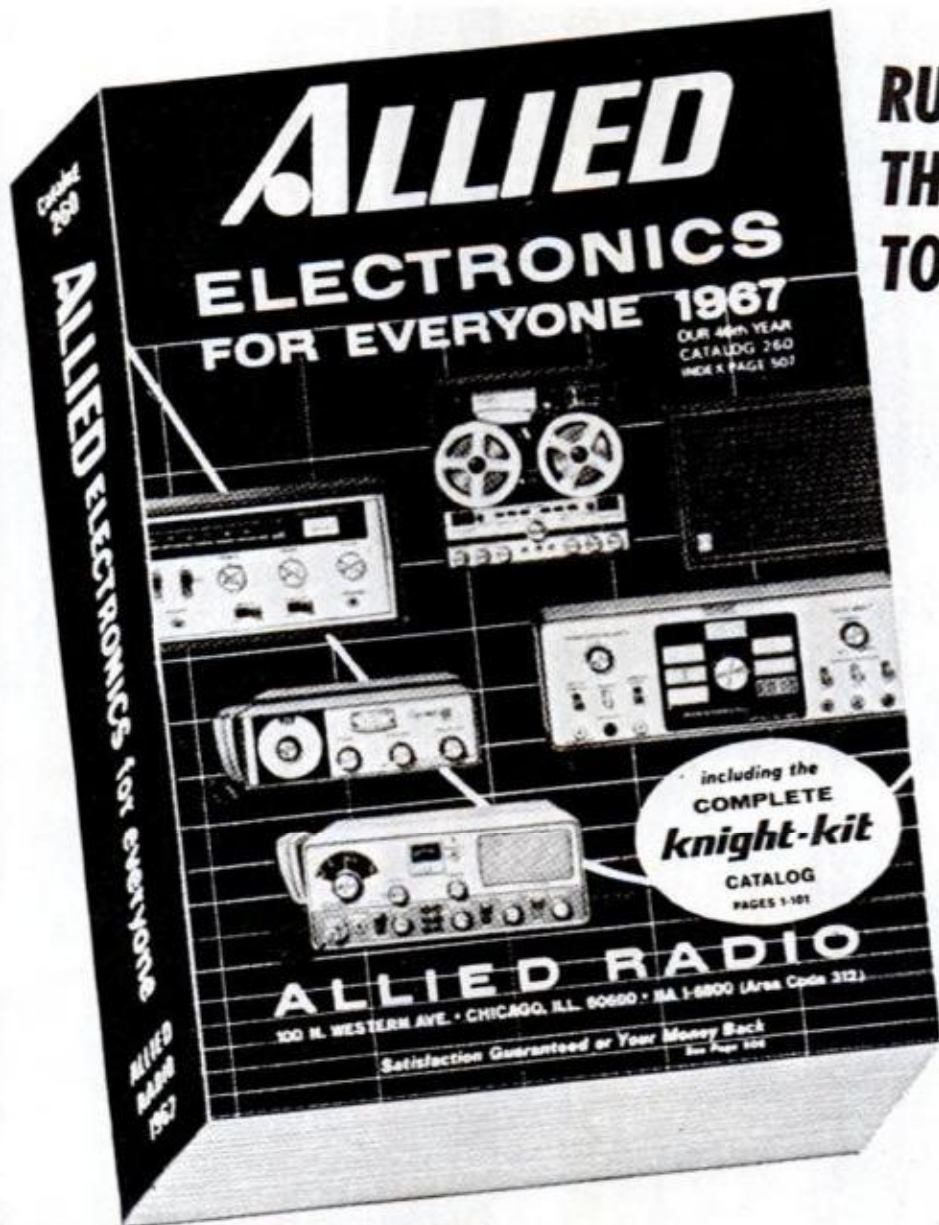


The most versatile plier ever made . . . unmatched in all 'round performance. *Who says so?* The hundreds of thousands of tool users who every year buy Channellock, the ORIGINAL tongue and groove plier. *Does Channellock have imitators?* Yes, but since when has an imitation been as good as the

genuine? *How do you identify the original genuine Channellock?* Just look for the trademark on the handle. If this mark isn't there, it isn't a genuine Channellock. *What are the other 7 exclusive Channellock features?* You'll find them graphically detailed in our catalog. Let us send you a copy, no charge.

TOOLS BY  
**CHAN NEL LOCK**<sup>®</sup>  
MEADVILLE, PA.





**RUSH  
THIS CARD  
TODAY**

# FREE NEW 514-PAGE 1967 ALLIED CATALOG

**TOP SAVINGS ON THE BEST IN ELECTRONICS FOR EVERYONE . . .**

**Famous Knight-Kits • Stereo Hi-Fi • Tape Recorders & Tape • CB 2-Way Gear • Walkie-talkies • FM-AM & AM Radios • Short Wave Radios • Portable TV • Phonographs • Amateur Gear • Intercoms & P.A. • Automotive Electronics • Test Instruments • TV Antennas & Tubes • Power Tools • Hardware • Parts • Tubes • Transistors • Batteries • Books**

**FREE!**

Send for new 1967 ALLIED Catalog

ALLIED RADIO, Dept. 6-A  
P.O. Box 4398, Chicago, Ill. 60680

Send FREE 1967 Allied Catalog

Name \_\_\_\_\_  
PLEASE PRINT  
Address \_\_\_\_\_  
City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

*Plus* hundreds more new and exclusive items, and scores of special Allied values!

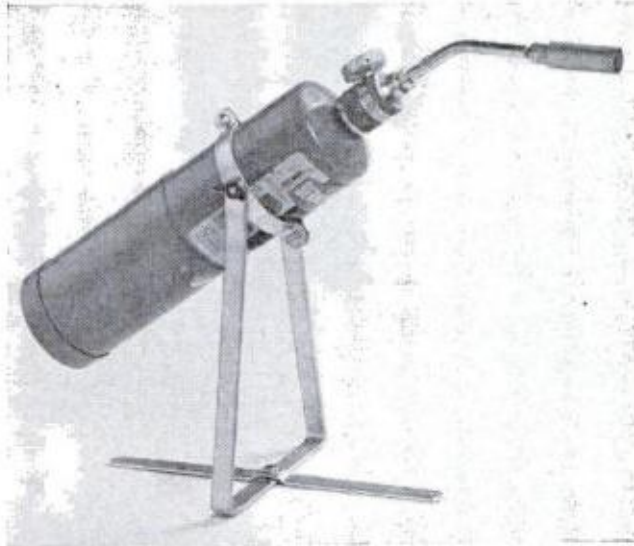
**NO MONEY DOWN! 24 MONTHS TO PAY!**  
Enjoy the things you want now, while you take 24 months to pay for them on the convenient, easy-on-the-budget Allied Credit Fund Plan.

## ALLIED RADIO

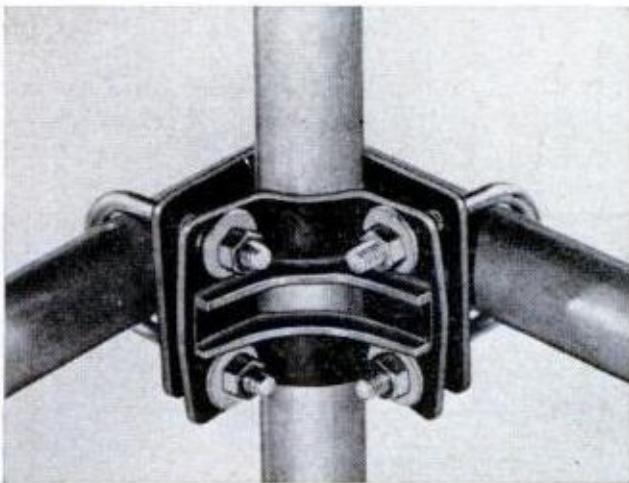
P.O. Box 4398, Dept. 6-A  
Chicago, Illinois 60680



EXCITING  
**NEW  
PRODUCTS**



Handy as an extra hand, this propane-torch holder leaves hands free to hold work. Band clamp fits standard torch tank, while wing-nuts permit quick removal of both band and tank from stand for normal use, also permit tilting torch. Comes ready to assemble for \$1.49 ppd. from Torch Holders, Box 1134, Union, N.J.



Like an Erector set—that's how you use these 4000-lb.-capacity pipe clamps, along with threadless 1 or 1½-in. pipe, to build racks, benches, tables, scaffolds, railings and other temporary or permanent structures. Contoured clamp plates held by U-bolts keep the pipe rigid, eliminating need for diagonals or other sway bracing. Available from Sicco Co., 708 Mosedale St., St. Charles, Ill.

**Bond Street**  
is  
*almost*  
**matchless**



A product of Philip Morris Inc.



Try the  
great tasting  
pipe tobacco  
that stays lit.

The secret is Bond Street's Old English cut—a combination of flakes for even burning and cubes for slower burning. You'll enjoy a whole pipeful of pleasure, on one match.

**PORTABLE ELECTRIC ARC WELDER!**



**ELECTRIC  
WELD BRAZE,  
SOLDER, CUT  
ALL METALS**  
New 1967 Model

Works on ANY 110 volt "Plug In." Welds up to 1/4" steel with 3/32" rods. SPECIAL EXTRA twin ARC TORCH (shown) develops terrific heat for BRAZING—SOLDERING—HEATING etc. A MILLION uses—Thousands in use for CAR—HOME—FARM. No experience needed—FREE welding book tells HOW! Sturdy Design—Should last for YEARS! If it EVER "burns out"—just return for free repair.  
**SEND ONLY \$3.00** (Cash, Ck., MO) and pay postman \$16.95 COD pstg. or send \$19.95 for PP del. in USA. COMPLETE—READY TO USE with generous supply of ALL materials needed. "DARK" eye goggles given, if you order from this ad. COMPARE with ANY other welder costing up to TWICE as Much.  
**MIDWAY WELDER Dept. LPM-1 Kearney, Nebraska**



## 20 WAYS TO GO IN SNOW

(Continued from page 90)

weight metal. (Carry this in the car.)

Remove snow from front and back of each wheel. But don't, as many drivers do, allow the shovel to dig under the tread. This simply drops the tire that much deeper with the result it's going to have to climb a little hill to get out.

Clear axles and rear end and then shove the shovel (or even a rake or hoe) far under the end to loosen the snow that sometimes forms beneath the engine pan and transmission. This pack is seldom a problem if you have been parked, but it is a great problem if your car has been bogged down while moving.

● *Leave wheels on small mounds.* I said it is wise *not* to dig under the treads. Often I purposely chisel away snow fore and aft, and then leave each tire standing on top of its own small monument of compressed snow. Then, when I'm ready to drive, the car will instantly roll off the mound (backward or forward) and I at least have *movement* started. With quick work I can capture the first small impulse and keep going.

### Stop only if necessary

● *How to keep going, once you've started.* Next to lightweight rear ends, which cause loss of traction, the biggest cause of stalling in snow is *needless stopping*. Avoid red traffic lights. Time your speed to hit the lights safely on what experts call a "new green." Your eyes must work rapidly, reading the traffic far ahead, plotting a safe way to keep going.

The next big cause of stalls is—*turning*. Remember that your front wheels obligingly cut a track for your rear wheels. No

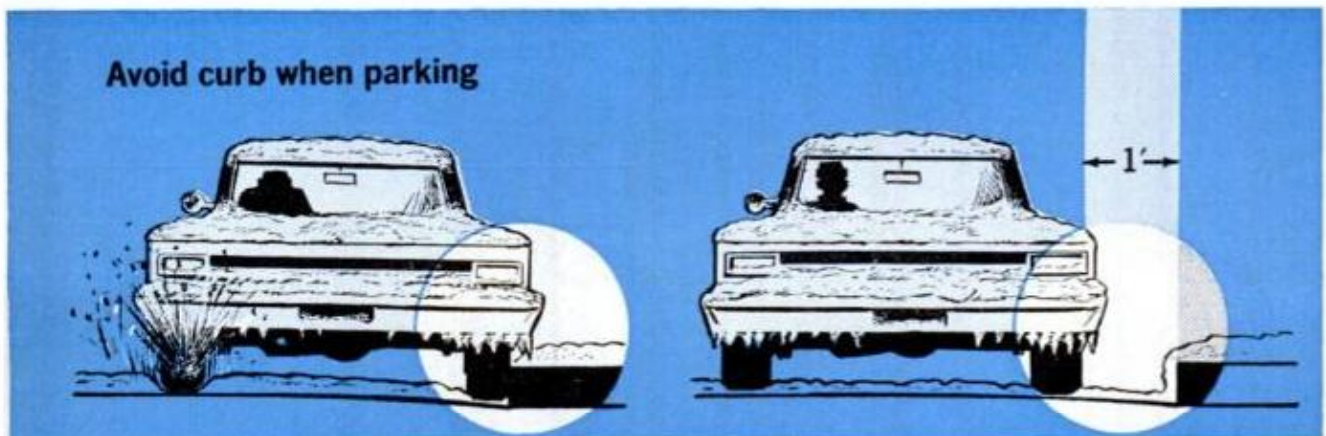
one, however, cuts a track for them. They are pushing constantly against a snow wall. As long as you can keep them straight, they knife into the wall easily. But when you turn them they present a wider area—the sidewalls—to snow. And snow shoves back—hard. This throws a blocking force against the front that overloads the rear driving wheels, causes loss of traction, and can spin you into immobility. So, to keep going in deep snow, never turn your front wheels if you can avoid it.

● *How to take turns without stalling.* A good snow driver steers *with his rear wheels*. Let's say it's a 90° right corner. Quiet road. No traffic. Snow up to the axles. Speed, say, 20. He won't make the usual dry road turn, which would stall him. That is, he won't "square" his turn. He will cut into the turn sooner with a very slight turn of the wheels. Then he straightens his wheels. As the car angles closer to the corner he feathers the gas, feeding just a trace to throw the rear end into a very slight left drift. He may now cut his front wheels right and deliberately let the weight of snow block the front of the car for an instant. This helps swing the rear end out.

When the car has turned itself perhaps 45°, the experienced snow driver brings the front wheels nearly straight again while the rear-wheel drift continues until the car has swung the full 90°. He has completed the turn with no bogging down, skidding or loss of traction.

Don't misunderstand me. This isn't cowboy stuff. The rear wheels must *not* spin and it takes a good driver to accelerate them just a trifle faster than normal rotation for a turn.

● *How to get out of a parallel parking*



**WITH REAR WHEELS AGAINST CURB** car is hopelessly stuck. The friction of the wheel against the curbstone holds the wheel while the left wheel is free to spin. Your only recourse is several shovelfuls of sand, salt—or a push!

**WHEN PARKING IN SNOW** or before the threat of snow, always leave a good foot between car and curb. First starting effort always shifts car toward curb. With fair distance between wheel and curb, you get traction before wheel hits curb



place. How many times have you heard the angry buzz of tires when a parked car is stuck against a curb? Let's stipulate that if a plow has walled your car in, you've got to dig out. But often cars get stuck that aren't walled in at all. There are several ways to get out.

First, when snow is due, try to avoid parking between two other cars. Find a spot near a crosswalk.

Second, don't park against the curb. Keep your wheels at least one foot away because it's almost impossible to unpark a car whose right tires have touched the curb—sidewall friction holds the car.

Third, if you must jockey back and forth between two other cars, get out and study your tires, the snow and any ruts. Know exactly what the problem is.

Fourth, feed gas very gently. Quit trying if you hear your wheels spinning.

### Keep those wheels straight

And again, *don't turn your front wheels!* This is what usually causes all the trouble in that turned wheels also create resistance for cars that are parked. Jockey patiently back and forth, giving the wheels only an occasional, very slight twist.

● *What about angle parking?* In most cases involving slippery going, getting unparked from an angle-parking space is a problem because, one, the street slopes toward the curb and you'll have to back uphill, and two, other parkers, spinning their wheels have created an ice slick.

The trick is to not run the nose of your car close to the curb. Park with front wheels three or four feet back. Now, if you have trouble, you can let your car roll forward quickly, letting the front wheels bounce sharply back from the curb. As they do, go into reverse, catch your car on the rebound and back out.

● *How to rock a car with manual transmission.* Don't keep shifting from forward to reverse. Shift to reverse, creep back an inch or two (until you feel a mound of snow formed behind the wheels), then kick out the clutch and let the car roll forward an inch or two. Let the clutch take it back in reverse again. When you've built a good forward-backward rocking rhythm, quickly shift to low gear and go.

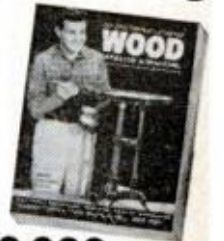
● *With automatic transmission,* my advice is: Don't try to rock. Use the "starting pad" technique already described.

● *Stay out of slush.* At any speed over 35, many front wheels get no response in slush. They just slide straight ahead.

● *And stay off the superhighways when there's slush.* Buses and trucks passing you can toss tons of solid slush, sand and salt on your windshield and mirror. ★ ★ ★

## 20 WOOD SAMPLES with woodworkers Catalog

ENJOY woodworking more! Let Constantine's big picture-packed Catalog-Manual help you build new furniture — refinish, restore beat-up cabinets, chairs, chests, tables, etc. Find instantly whatever you need. Buy at money-saving prices from world's largest catalog source for imported and domestic woods. Cabinet lumber, carving blocks, veneers, plywood, pipe briar, inlays and more! Newest Catalog features new tools, materials, shop devices. Fabulous all-purpose clear finish. Glue that needs no clamps. Inlay picture kits, 99¢. Needed products found nowhere else. Plus woodworking instructions, plans, patterns!



**Catalog & Wood Samples Only \$1**  
Dollar Fully Refunded on First Order  
Accept this offer to own fascinating set of 20 2x4 specimens of world's glamorous veneers — Rosewood, Satinwood, Lacewood, Teak, etc! Compare! Then instantly identify finest woods wherever you go. Send only \$1 for Wood Samples and Woodworkers Catalog. Dollar refunded on first order. Est. 1812

**2,000**  
PRODUCTS FOR SHOP & HOME  
Woods — Veneers — Finishes  
Furn. Hardware — Lamp Parts  
Cane — Upholstery — Tools  
Picture Molding — Clock Kits

**FREE WITH CATALOG**  
"101 PROJECT IDEAS"

**ALBERT CONSTANTINE AND SON, INC.**  
2050 Eastchester Rd. Bronx N.Y. 10461 Dept. A-5

Enclosed \$1 for Wood Samples & Woodworkers Catalog. (\$1 refunded)  Catalog only 25¢



Name \_\_\_\_\_

Address \_\_\_\_\_

Zip \_\_\_\_\_

## \$\$\$ IN ELECTRICAL REPAIR!

Thousands more trained men needed every year in electrical repair. You've seen it yourself. How many times has a trained electrician repaired something in your own home for \$5, \$15, \$35! It is so easy when you know how. One of the fastest trades to learn in spare time. We give you the information to repair anything, washers, clocks, stoves, switches. Do inside and outside wiring, work on new homes. Repair power tools, telephones. Hundreds of fascinating different high paying jobs. We give you all the tools and equipment. It costs you nothing to find out! Send for big 5-piece valuable fact pack. Absolutely free. No obligation.



**ITI** Chicago • Los Angeles  
Write Dept. 65026, 815 E. Rosecrans, Los Angeles 90059

## FREE MUSCLE COURSE!

Trade in that skinny scrawny, milk toast or overweight body of yours for a new Weider Jet-Charged body, rippling with mountains of muscles loaded with energy, drive and virility, the envy of every man and admiration of every woman, now! In 15 minutes I'll prove you can slap on 4 inches of muscles to your chest,—3 inches to each arm—give you life-guard shoulders, trim your waist to athletic size—give you speedy athletic legs. I don't care if you're short or tall, (skinny or fat) young or not so young, expect a muscle building miracle when you send for my FREE course. Send only 25 cents to cover postage and handling and write to the Trainer of "Mr. Universe", "Mr. America", "Mr. Europe".



**JOE WEIDER, Dept. 38-17D**  
531 32nd St., Union City, N. J.



## TOO DANGEROUS TO DRIVE!

(Continued from page 101)

headlights. We see them all the time, so badly out of line they are dangerous. Either they blind oncoming drivers or fail to light the street for the driver. If Washingtonians didn't spend time and money on their headlights just before an examination, our rejection rate would be astronomical. In part, this situation is not a car owner's fault. It is very easy to throw the adjustment out of whack—a little parking tap can do it, or a really good thump in a pavement hole.

We look at glass all round, check wipers, and such vision obstructions as baby shoes and tourist stickers. Our standards on glass are high. You fail with a scored, cloudy or "blistered" windshield, or with a four-inch crack anywhere except in a corner. You fail with more than one crack, or with big blisters, in front side windows and vents. We allow a little more leeway in rear and rear side windows. With these, plus mirror and horn faults, we get 12 percent of rejections.

Steering alignment and operation faults provide 15 percent of rejections. We don't allow over 30-feet-per-mile sideslip (certainly generous). Caster and camber and toe-in, toe-out have to hit the manufacturer's specs. We look at wheels for warping and bending, also check hub rivets, studs and nuts, wheel wobble, bearings, kingpins, tie rods and steering wheel travel and slack. We look for broken or sagging springs and welding on the front axle and linkage. We check A-frames for damage or repairs, engine mounts and shocks. In other words, we check the whole front end.

We don't often reject because of poor tires—there is no official standard for tread depth. If we see body cords, breaks or bulges in sidewalls, we reject. Otherwise, we can only inform the owner. An awful lot of cars run on unsafe tires.

We're not much interested in engine condition, but we're particular about exhaust systems. For damaged mufflers and tailpipes, too much noise or putting out a smoke cloud, we reject nearly 9 percent.

We give the brake system a good going over. We want the car to stop in 30 feet from 20 mph, with properly equalized brakes and no more than 70 percent of the effort on the front wheels. We want the system to work without loose parts, unanchored lines or leaky hydraulic systems. Over 12 percent of the cars flunk the brake exam.

Just to check ourselves last year, we pulled the wheels on a number of cars after they had passed our examination. Out

of 200 wheels, only 10 had questionable linings. I thought that was pretty good.

We look at a lot of other things, too. All doors and window mechanisms have to operate properly; hood latches have to be good, and body sills, pillars and posts must be sound. Fenders have to be all there and tight, without ragged edges; body moldings must be without tears or sharp projections. We require bumpers, fore and aft, and don't allow broken or missing brackets or bolts or damaged bumpers that stick out.

All this seems to me to make plain, common sense. It may be tough, but it sure isn't unreasonable.

### Dollar fee worth it

On the other hand, we do offer motorists something worthwhile. For one dollar—part of their tag fee—we give a thorough check on their car's condition. It would cost plenty to get such an inspection in a good service station—more in an agency service department. And we've developed two special driver types—those who work hard to get their car through inspection the first time and those who cheerfully accept a rejection, drive straight to the mechanic, and get it fixed. They *plan* to see us twice.

Perhaps the most unhappy people we deal with are those with new cars. We reject about 20 percent on first inspection—usually for head, tail or brake lights.

Sometimes new car problems are more serious. We have found definite design faults. For example, we must check high-performance cars carefully; often brakes aren't up to even low-speed performance.

Occasionally a really strange thing happens. Recently a car in the line was found to have a bad front end. It passed the brake test with flying colors. Yet when driven up to get a sticker, its brakes failed and we had an accident right there in the testing station.

To make driving safer in the District of Columbia, we permanently remove more than 1000 totally unsafe vehicles from the streets each year. We also keep 250,000 vehicles in relatively safe condition.

As a by-product, we just don't have car-theft rings operating in the District because all numbers on a car are checked every year. And we are educating drivers on auto maintenance. Slowly, the standard is rising. We are looking harder and finding fewer flaws than we used to.

I'd say, however, there still is something wrong with a system where 40 percent of the driving population has to be jogged into keeping their cars up to snuff. You have to face it: *you're not taking care of your car.* I know. ★★



Master Mechanic Everlite Battery Charger  
**DON'T BUY BATTERIES**  
**SAVE \$ - RECHARGE THEM**

Over and over up to 15 times or more

- By far the best
- Charges 6 batteries at once
- Charges 3 times faster
- Charges all types of batteries.

Only Everlite charges tiny hearing aid batteries as well as big lantern batteries.

Only Everlite charges flashlight, toys, radio, telephone, hearing aid, cameras—yes, even mercury cells. Save money and have the convenience of fresh batteries. Simple, safe, foolproof and unbelievably efficient. Plugs into any 115 volt outlet. Free battery tester included. Guaranteed for one year.

2 MODELS—The Everlite #75 for all Dry Cell Batteries up to 12 volts. .... Send

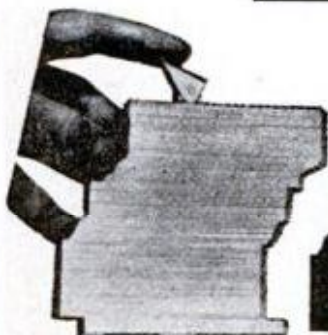
**\$6.95**  
plus \$ .65  
for shipping.

The Everlite #76 for all Dry Cell Batteries plus a special charge for Car Batteries to assure fast starts on cold mornings. .... Send

**\$8.95**  
plus \$ .75  
for shipping.



**"Copy any Contour Instantly"**



**NEW IMPROVED**  
**Contour Copy**  
 Copies exact outline  
 of any object!

Save dollars—save material. Can pay for itself on one job. The perfect tool for fitting in against door casings, bath fixtures, moldings, pipes, sinks, masonry, etc. A real boon to pattern makers, sheet metal mechanics, tool makers, body men, linoleum and floor tile men, etc. **EASY TO USE**—Just push the gauge leaves against any contour and lock. A perfect template every time. Works against any surface or material.



TEMPLATES

DOOR CASINGS



Made of hardened aluminum alloy.

Size 1#—4¼" x 4¼" ..... **\$6.90**

plus \$ .65  
for shipping.

Will retain its accuracy forever.

Size #2—7½" x 4¼" ..... **\$9.90**

plus \$ .75  
for shipping.



**ROYAL CONTINENTAL | DANISH TELEPHONE**

We import these distinguished looking telephones from Copenhagen. Used in the Royal Palace and in Danish Castles, these serviceable Magneto phones will add a unique continental atmosphere to any home or office. Two or more may be connected together and used as a private intercom or telephone system. May also be converted to work as answering extension phone on your standard Bell Telephone System. Instructions included.

Item #357, Danish Phone Wt. 11# ..... **\$18.95**

Item #357A, Danish Phone, converted for use on Bell System with wall plug attached ..... **\$22.95**

**STANDARD DIAL TELEPHONE**

Western Electric and other standard phones same as used by all telephone companies. Easily installed as extension phone on any system. Readily adapted for private intercoms. Cost \$40.00 new. These phones are guaranteed in excellent condition.  
 Item #855NC  
 Wt. 8#



**\$8.45**

**COLORED DIAL TELEPHONE**

Smart modern looking colored desk phone. Beautifully finished in french grey, beige, ivory or blue. Please specify. Easy to connect. Use as extension on any system.  
 Item #1281  
 Wt. 8#

**\$12.95**

**STANDARD DIAL WALL PHONE**



A modern compact dial phone which hangs on the wall out of the way. Works with any phone system. Easy to install.

Item #1266. Wt. 8# ..... **\$12.50**

**Important**

10 day money back gty. on all items. Send check or money order. Prompt shipment assured. Send 10 cents for 100 page catalogue. Send \$1.00 for C.O.D. shipments.

**25 FT. PHONE EXTENSION CORD**

Lets you use your phone anywhere. Equipped with standard plug and jack to extend phone to any room.  
 Item #1253  
 Wt. 3#

**\$2.95**

**STANDARD TELEPHONE PLUGS**

Make your phone moveable. Male plug (attaches to phone)  
 Item #1251 ..... \$1.00  
 Female Jack (attaches to wall)  
 Item #1252 ..... \$1.25  
 Item #1251 plug, attached to any phone.... \$2.00

**MASTER MECHANIC MFG. CO.**

Dept. A167

Box A, Burlington, Wis.

Box 65, Sarasota, Fla.

Send orders to nearest office.



## WILD NEW WEAPONS

(Continued from page 98)

Woodbury (chief of the environment and survival branch) was on a recovery team rescuing downed fliers from the jungle. He noticed that when a plane went down, it usually stayed in the treetops.

This experience has resulted in hardware that now lets GIs get quickly to an area where Vietcong are. Just as important, it is getting wounded troops out of the jungle and back to a hospital five times faster than evacuation took place in the wide-open territory of Korea.

Instead of walking through jungle, troops are flying in helicopters that land on treetops as high as 150 feet off the ground. The "landing field" consists of two 180 by 20-foot steel nets, folded accordion style in the belly of a chopper. The nets are played out, crisscross fashion, across the treetops. Then, a platform is plunked down in the middle. This all takes 7 to 10 minutes.

Once troops and supplies are unloaded from choppers, which are able to put 45 percent of their weight on the platform, they are lowered via ropes to the jungle floor by a motor-driven hoist.

A major weapon in Vietnam is the helicopter. And jobs previously done by other weapons soon fall to the helicopter.

### Smoke screen missed

A few months ago, for example, a platoon of GIs was flown into a small jungle clearing by helicopter. Preceding landing, a jet fighter laid a smoke screen. The smoke missed the clearing by 300 yards, and the incoming troops were shot to pieces.

Two months later, another platoon was ordered into the area. Same clearing, same tactics—except that before the landing took place a helicopter laid a perfect smoke screen. Result: no casualties.

The tactic came from a War Laboratory scientist who sat in on a bull session in which troops were griping about the lack of smoke support from jets. His idea was simple. Get a slower aircraft—and that meant a helicopter. Then he adapted the chopper's rocket launcher to carry and release smoke grenades.

This, however, was a stopgap measure which worked fine until a more effective (and cheaper) method could be found (smoke grenades cost \$7 each). That solution, now in use, has a "smoke" helicopter equipped with a 16-gallon can of fog oil and a spider fitted over the chopper's exhaust. The result is a perfect screen over a 1000-meter area.

As this incident points out, getting answers into the field in quick time saves

lives. That's why the mission of the War Laboratory calls for a solution to a problem within 18 months.

"Up to now," states Ralph E. Bolgiano (chief of communications and electronics), "we've averaged nine months."

One of the quick-reaction projects Bolgiano cites as an example came from his shop. Developing a new inertia microphone for use by helicopter crews took just eight months.

As Vietnam veteran Maj. Leroy Stevenson knows, trying to communicate over a conventional boom mike is difficult-to-impossible—because of wind and rotor noise. Stevenson, assigned to the lab, gives an example of what happened in combat.

Troops were being unloaded into a battle zone. The crew chief was directing operations from the door. Suddenly, a band of Vietcong let loose with withering fire toward the rear of the chopper. Only the crew chief could see it.

"Let's get out of here," he yelled into his boom mike. There was no response from the pilot. The noise from the spinning rotor was distorting the crew chief's plea. The outcome was the loss of two crew members and the helicopter.

War Lab scientists designed a helmet with the microphone inside, touching the top of the head. The vibration of the skull enables the listener to hear.

There aren't many problems which escape War Laboratory surveillance. Sometimes the solution calls for a wild scheme. That's why the lab has set up its "GNI" (generation of new ideas) concept.

No idea of a lab member is given the brush as farfetched until it is bled dry. If a scientist can convince his boss that an idea has even some particle of worth, he is given \$2000 in expense money (usually spent for travel to and from the battle zone) and 90 days to develop a feasibility plan. At the end of the period, he meets with a board of fellow scientists to decide whether the idea is worthwhile.

Scientist Bob Abercrombie, for example nearly floored the board one day when he announced, "We're going into the sausage business." This was the problem:

As helicopters hovered 50 feet above the ground to lower cans of water to troops, they were making swell targets.

"Get us up to 500 feet," copter pilots told the lab, "or there won't be a helicopter left." But to do this, water would have to be dropped, free fall.

Metal cans split at the seams . . . rubber balloons burst . . . even materials used for tire inner tubes didn't survive impact.

But sausage wrapping does. Eight specially made bags of this polyurethane ma-

(Please turn to page 226)



### 3 FOR THE TRAIL

*(Continued from page 143)*

quickly enough and it slammed into a rock, tossing the rider over the handlebars.

For a water test, we raced them through large mud puddles, and except for dirty machines and riders, it was uneventful. Then we headed for a narrow, rocky stream.

I had picked a spot that would be difficult to maneuver, because of the rocks, but it looked like a good ford.

"Looks a little deep out there," the first rider said.

"Try it," I said. "It won't hurt to get a little wet."

He went. It was tough getting the Kawasaki over the rocks. He had to jerk up the front wheel and throttle, and there was little traction for the rear. But he managed to slowly work his way across. He reached a section that was free of boulders. Then he sank up to his waist.

It took three of us to haul the Kawasaki out of the water, and when the engine was clear we tried to start it. The electric start would not function, but with just about a dozen tries with the kick starter the engine fired. It had been thoroughly soaked for at least five or ten minutes,

and except for some sputtering at first, it roared as smoothly as before.

The others took a different route. The Benelli got hung up on rocks and an extra man was needed to get it across. The Bridgestone made it because one man could easily drag it over the rocks and walk it through shallow water.

Our finale was a climb, at top speed, to the top of the mountain—3200 feet.

The Bridgestone, already pushed beyond endurance, lost all the rubber bushing in the rear wheel and was out. The Benelli did admirably, but the driver was exhausted from being thrown, hauling and pushing, and he gave in about a thousand feet short of the goal. The Kawasaki made it to the top.

The consensus was that all three machines are good trail bikes. We gave them more punishment than they would ever receive in normal trail riding, and they responded like mules.

It was generally agreed that the power of the Kawasaki, aside from its ruggedness, gives it the edge as a trail bike for all sorts of terrain. The Benelli is a good workhorse, and the Bridgestone, despite the lack of power, has the advantage of easy handling and would be sufficient for most trail riding. ★★★

## Have a good flight.

This 15' modified vee lapstrake fiberglass hull has been precisely mated to an 80 h.p. MerCruiser stern drive.\* Take-off is instant. Riding is the level best. Performance is top flight with the engine and hull working in perfect harmony. ■ Get all the facts about the Caravel and 51 other Starcraft power boats—largest selection in America. Write Starcraft Corporation, Dept. 7PM-1, Goshen Indiana, for your free copy of the new 1967 Power Boat and Sailboat Catalogs. Camper Catalog also available

\*Outboard model also available.

**Take off  
like a  
STARCRAFT**

Cruisers, Sportabouts, Runabouts, Fishing Boats, Sailboats... and Campers





**ACCOUNTING**

Accounting for Business  
 Programmers  
 Accounting (Canadian)  
 Auditing  
 Business Law  
 Cost Accounting  
 C.P.A. Review  
 Estate & Trust  
 Accounting  
 Executive Accounting  
 Federal Tax  
 General Accounting  
 Industrial Accounting  
 Junior Accounting  
 Legal Accounting  
 Office Accounting  
 Personal Income Tax &  
 Social Security  
 Practical Accounting  
 Public Accounting  
 Small Business  
 Accounting  
 Starting & Managing a  
 Small Bookkeeping  
 Service

**ARCHITECTURE  
AND BUILDING**

Architectural Drawing &  
 Designing  
 Architecture  
 Building Contractor  
 Building Estimator  
 Building Inspector  
 Building Maintenance  
 Carpenter-Buildler  
 Carpentry & Millwork  
 House Planning & Interior  
 Design  
 Mason  
 Painting Contracts  
 Reading Arch. Blueprints  
 Review in Arch. Design &  
 Practice  
 Review of Mech. Systems  
 in Buildings

**ART**

Amateur Artist  
 Commercial Art  
 Commercial Cartooning  
 Interior Decorating  
 Oil Painting for Pleasure  
 Show Card & Sign  
 Production  
 Show Card Writing  
 Sign Painting & Designing  
 Sketching & Painting

**AUTOMOTIVE**

Automatic Transmission  
 Specialist  
 Automobile Body  
 Rebuilding & Refinishing  
 Automobile Electrical  
 Technician  
 Automobile Engine Tune-Up  
 Automobile Technician  
 Automotive Mechanics  
 Diesel-Gas Motor Vehicle  
 Engines

**BUSINESS**

Advertising  
 Basic Inventory Control  
 Business Administration  
 Business Management &  
 Marketing  
 Business Management &  
 Production  
 Canadian Business Courses  
 COBOL Programming  
 Condensed Business  
 Practice  
 Direct Mail & Mail  
 Order Advertising  
 Industrial Psychology  
 Magazine & Newspaper  
 Advertising  
 Managing a Small Store  
 Marketing  
 Marketing Research  
 Modern Executive  
 Management  
 Office Automation  
 Office Management  
 Programming for Digital  
 Computers  
 Programming the IBM 1401  
 Computer  
 Purchasing Agent  
 Retail & Local Advertising  
 Retail Business  
 Management  
 Retail Merchandising  
 Retail Selling  
 Systems and Procedures  
 Analysis

**CHEMICAL**

Analytical Chemistry  
 Chemical Engineering  
 Chemical Engineering Unit  
 Operations  
 Chemical Laboratory Tech.  
 Chemical Process Operator  
 Elements of Nuclear Energy  
 General Chemistry  
 Instrumental Laboratory  
 Analysis

**CIVIL ENGINEERING**

Civil Engineering  
 Construction Engineering  
 Highway Engineering  
 Principles of Surveying  
 Reading Highway  
 Blueprints  
 Sanitary Engineering  
 Sewage Plant Operator  
 Structural Engineering  
 Surveying and Mapping  
 Water Works Operator

**DRAFTING**

Architectural Drafting  
 Design Drafting  
 Drafting Technology  
 Electrical Drafting  
 Electrical Engineering  
 Drafting  
 Electronic Drafting  
 Introductory Mechanical  
 Drafting  
 Mechanical Drafting  
 Pressure-Vessel and Tank  
 Plant Reading  
 Sheet Metal Layout for  
 Air Conditioning  
 Structural Drafting

**ELECTRICAL**

Electric Motor Repairman  
 Electrical Appliance  
 Servicing  
 Electrical Contractor  
 Electrical Engineering  
 (Power option or  
 Electronic option)  
 Electrical Engineering Tech.  
 Electrical Instrument Tech.  
 Industrial Electrical Tech.  
 Power Line Design and  
 Construction  
 Power Plant Operator  
 (Hydro or Steam Option)  
 Practical Electrician  
 Practical Lineman  
 Reading Electrical  
 Blueprints

**CAST  
 YOUR  
 BALLOT  
 FOR  
 A  
 SUCCESSFUL  
 FUTURE!**

**253 I.C.S.**

**Convenient Payment Plan**

Special in-plant training programs for industry

New! Special Package for Women



I.C.S. is the oldest, largest school of its kind. Over 200 courses for men and women. High school, business, secretarial, interior decorating, engineering. One for **you**. Direct, job-related. Bedrock facts and theory plus practical

application. You learn from experts. Diploma to graduates.

Clip and mail the coupon **now**. You'll receive, absolutely FREE, 3 valuable booklets that have helped thousands. But don't delay. Cast **your** "ballot" today!





**ENGINEERING  
(Professional)**

Chemical  
Civil  
Electrical  
Industrial Management for Engineers  
Mechanical

**ENGLISH AND WRITING**

Better Business Writing  
Free Lance Writing for Fun & Profit  
Introductory Technical Writing  
Modern Letter Writing  
Practical English  
Short Story Writing

**HIGH SCHOOL**

High School Business  
High School (Canadian)  
High School College Prep. (Arts)  
High School College Prep. (Engineering & Science)  
High School General  
High School Mathematics  
High School Secretarial  
High School Vocational

**LANGUAGES**

(Edited by Berlitz)  
French  
German  
Italian  
Spanish

**LEADERSHIP**

Basic Supervision  
Industrial Foremanship  
Industrial Supervision  
Personality Development  
Personnel-Labor Relations

**MATHEMATICS**

Advanced Mathematics  
Mathematics and Mechanics for Engineering  
Mathematics & Physics for Technicians  
Mathematics and Physics for Engineering  
Modern Elementary Statistics

**MECHANICAL**

Aircraft & Power Plant Mechanic  
Industrial Engineering  
Industrial Instrumentation  
Machine Design  
Mechanical Engineering  
Quality Control  
Safety Engineering Tech'gy  
Tool Design  
Value Analysis

**PETROLEUM**

Natural Gas Production & Transmission  
Oil Field Technology  
Petroleum Production  
Petroleum Production Engineering  
Petroleum Refinery Operator  
Pipeline Engineering

**PLASTICS**

Plastics Technician

**PLUMBING, HEATING, AIR CONDITIONING**

Air Conditioning  
Air Conditioning Maintenance  
Domestic Heating with Oil & Gas  
Domestic Refrigeration Heating  
Heating & Air Conditioning with Drawing  
Industrial Air Conditioning  
Industrial Heating  
Plumbing  
Plumbing & Heating  
Practical Plumbing  
Refrigeration  
Refrigeration & Air Conditioning  
Steam Fitting

**PULP AND PAPER**

Paper Machine Operator  
Paper Making  
Pulp Making  
Pulp & Paper Engineering  
Pulp & Paper Making

**SALESMANSHIP**

Creative Salesmanship  
Real Estate Salesmanship  
Sales Management  
Salesmanship

**SECRETARIAL**

Clerk-Typist  
Commercial  
Legal Secretary  
Medical Secretary  
Professional Secretary  
Shorthand  
Stenographic  
Typewriting

**SHOP PRACTICE**

Drill Operator  
Foundry Practice  
Industrial Metallurgy  
Lathe Operator  
Machine Shop Inspection  
Machine Shop Practice  
Machine Shop Practice & Toolmaking  
Metallurgical Engineering Technology  
Milling Machine Operator  
Multicraft Maintenance Mechanic  
Practical Millwrighting  
Reading Shop Prints  
Rigging  
Tool Engineering Tech'gy  
Tool Grinder  
Toolmaking  
Turret Lathe Operator  
Welding Engineering Technology

**STEAM AND DIESEL POWER**

Boiler Inspector  
Industrial Building Engineer  
Power Plant Engineering  
Stationary Diesel Engines  
Stationary Fireman  
Stationary Steam Engineering

**TEXTILES**

Carding  
Carding and Spinning  
Dyeing & Finishing  
Loom Fixing  
Spinning  
Textile Designing  
Textile Mill Supervisor  
Textile Technology  
Warping and Weaving

**TRAFFIC**

Motor Traffic Management  
Railway Rate Clerk  
Traffic Management

**TV-RADIO-ELECTRONICS**

Communications Techn'gy  
Electronic Fundamentals  
Electronic Fundamentals (Programmed)  
Electronic Fundamentals with Electronic Equipment Training  
Electronic Instrumentation & Servo Fundamentals  
Electronic Principles for Automation  
Electronics and Applied Calculus  
Electronics Technician  
First Class Radiotelephone License  
Fundamentals of Electronic Computers  
General Electronics  
General Electronics with Electronic Equip. Trng.  
Hi-Fi Stereo and Sound Systems Servicing  
Industrial Electronics  
Industrial Electronics Engineering  
Industrial Electronics Engineering Technician  
Practical Radio-TV Eng'g  
Practical Telephony  
Principles of Radio-Electronic Telemetry  
Principles of Semiconductor-Transistor Circuits  
Radio Servicing with Equipment Training  
Radio & TV Servicing  
Radio & TV Servicing with Equipment Training  
Second Class Radiotelephone License  
Sound Systems Specialist  
Telephony, Electronics and Radio Communications  
TV Receiver Servicing  
TV Technician

# COURSES

In Hawaii: P. O. Box 418, Honolulu

In Canada: I. C. S. Canadian, Ltd.

Clip coupon—and take your first big step to real success! I. C. S., Scranton, Penna. 18515

In other countries: I. C. S. World, Ltd.

**FREE! THE I.C.S. SUCCESS KIT!**

Three valuable booklets sent to you free when you mark and mail the I.C.S. coupon. No obligation.

1. "How to Succeed"—A new, exciting booklet that lets you evaluate yourself and your future in an entirely different way!
2. Complete catalog outlining job opportunities and outlook in your field of interest.
3. Sample lesson to demonstrate the success-proved I.C.S. method of spare-time study.

Accredited Member, National Home Study Council

**INTERNATIONAL CORRESPONDENCE SCHOOLS ICS**

Box 23960M, Scranton, Penna. 18515

Without cost or obligation, send me "HOW to SUCCEED," the opportunity booklet about the field I have indicated below, and a sample lesson.

Course in which I'm interested: \_\_\_\_\_  
(Select from listing above)

Name \_\_\_\_\_ Age \_\_\_\_\_

Address \_\_\_\_\_  
(Indicate Mr., Mrs., or Miss)

City \_\_\_\_\_ State \_\_\_\_\_ Zip code \_\_\_\_\_

Occupation \_\_\_\_\_ Working hours \_\_\_\_\_ A.M. to \_\_\_\_\_ P.M.

Employed by \_\_\_\_\_  I am in the U.S. Armed Forces.  
Tell me about special low rates.



## THE CAPITOL NOBODY KNOWS

*(Continued from page 109)*

Congress. Through this tube moves an endless chain which supports a number of wire baskets. One terminus is in the library's main reading room; the other in a small room off Statuary Hall in the Capitol. Books requested by telephone from the library and dropped into baskets there, are thus delivered to readers.

Few visitors are aware that the Capitol's gleaming white exterior is made up of three different types of building material. The new House and Senate wings, the recently extended central section, terraces and steps are of white marble quarried at Lee, Mass. The older mid-section was of brownish-gray sandstone from Aquai Creek, Va. This soft sandstone has to be painted white to match the marble wings.

The third material, cast iron, makes up the 4500-ton dome, topped by its 19½-foot bronze Statue of Freedom. Resting solidly on a cylindrical base built up from ground level, the dome would remain intact even if the remainder of the Capitol were removed. Its cast-iron sections are bolted together and painted a gleaming white to match the rest.

The twin-shelled dome's metal construction makes it extremely susceptible to the sun's heat, and on a warm summer day it has been found to expand and recede as much as four inches out of line.

In 1956, when a critical inspection of the dome was made, it was discovered that this repeated movement, abetted by almost a century of weathering, had fractured all but 14 of the original iron bolts which anchored the dome to its support structure. A new anchoring system was designed and installed, secured by stainless steel bolts 1½ inches in diameter, and a one-inch stainless steel cable.

The 7½-ton bronze Statue of Freedom atop the dome was cast in five sections from a plaster original executed by Sculptor Thomas Crawford in Rome. Oddly, she faces east, with her back toward the White House because it was believed the eastern sector of town would become the business section. It didn't.

An interesting story, not generally known, concerns the unoccupied "tomb" in the crypt, directly below the Capitol's rotunda. Originally the tomb was to have been viewed through a wide circular opening in the rotunda's floor. It was planned to transfer the remains of George and Martha Washington from Mount Vernon to the Capitol in 1832, the centennial of the first president's birth. But, although Martha Washington's heirs agreed, her

husband's would not, and the plan was abandoned. Now the crypt contains only the black velvet-draped wooden catafalque upon which have rested the remains of Abraham Lincoln and other honored dead who have since lain in state there. Some, like John F. Kennedy, lay in the rotunda.

While the tomb inside the Capitol remains unoccupied, a former senator has achieved the peculiar distinction of being the only man known to rest forever on Capitol Hill. He was Henry Clay Hansbrough, senator from North Dakota, who served several terms until defeated for reelection in 1909.

One fall morning in 1933, the 85-year-old Hansbrough walked into the office of a later successor, Senator Gerald P. Nye, to enlist his help in carrying out one last request. A month later Hansbrough died. His ashes were delivered in an ordinary shoebox to Senator Nye's office. Late in the afternoon of Nov. 18, 1933, Senator Nye and his staff solemnly scattered the ashes of Henry Clay Hansbrough beneath an elm tree on Capitol Hill, exactly as the former senator requested.

It was inevitable that the Capitol would acquire a reputation for being "haunted." There have been many reports of ghosts. Favorite haunt of spirits is said to be Statuary Hall, the old House of Representatives Chamber, where John Quincy Adams suffered a fatal stroke in 1848 and where his specter is still said to walk.

For many years janitors refused to enter the old Supreme Court Chamber after sundown, claiming that the busts of former chief justices which line its walls swayed back and forth and nodded to each other in the dimly-lit chamber. This mystery was solved when it was discovered that a large electric light, suspended on a long chain outside a window, cast eerie shadows on the walls behind the statuary when moved by the wind. They appeared to move.

Capitol guides, like Capitol policemen, become used to hearing odd tales about their domain. Mrs. Janet McCormick was guiding a group of visitors through the Capitol one afternoon, and at the conclusion of their tour she volunteered, as usual, to answer questions.

"Is it true," one lady visitor inquired, "that the statue on the dome is pregnant?"

Mrs. McCormick, who thought she knew all the legends associated with the building, was at a loss to recall any such rumor. "No," she told the lady. "I don't think so."

"Well," the visitor declared indignantly. "That certainly proves you can't trust a cab driver. One of them told us that it was a pregnant Indian put there to symbolize the Birth of the Nation." ★ ★ ★



# Shrinks Hemorrhoids New Way Without Surgery Stops Itch - Relieves Pain

For the first time science has found a new healing substance with the astonishing ability to shrink hemorrhoids and to relieve pain - without surgery.

In case after case, while gently relieving pain, actual reduction (shrinkage) took place.

Most amazing of all - results were so thorough that sufferers made astonishing statements like "Piles have ceased to be a problem!"

The secret is a new healing substance (Bio-Dyne®) - discovery of a world-famous research institute.

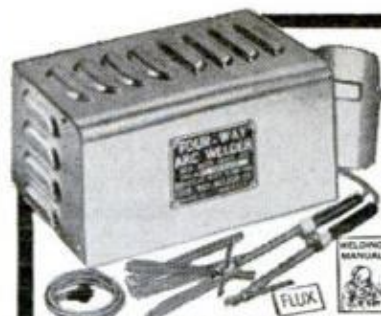
This substance is now available in suppository or ointment form under the name Preparation H®. Ask for it at all drug counters.

## ENROLL—EARN YOUR DEGREE

of Bachelor of Bible Philosophy (B.Ph.B.), Master of Bible Philosophy (M.Ph.B.), Graduate of Bible Philosophy (G.Ph.B.), Doctor of Metaphysics (Ms.D.), or Doctor of Divinity (D.D.). Chartered by State, Correspondence Courses only. Please write for FREE BOOKLET.

### AMERICAN BIBLE INSTITUTE

Dept. PM, 408A W. 75th St., Kansas City, Mo. 64114



**FOUR-WAY**  
BEST LOW COST  
ARC WELDER  
YOU CAN BUY  
**\$14.95**  
Complete

WELD, BRAZE, SOLDER, CUT. Tops in performance and value. Ideal gift, educational, profitable, enjoyable. No experience needed. Use 1/8" welding rods and 1/4" carbons to make or repair auto bodies, fenders, trailers, boats, toys, furniture, farm equipment, garden tools, anything of metal, even aluminum. Operates on 110 V. line. Produces to 11,000°. Complete ready to use. **WORLD'S GREATEST WELDER VALUE. BRAND NEW. YOU CAN PAY MORE BUT YOU CAN'T GET A BETTER LOW COST WELDER.** Over 500,000 in use by home owners, farmers, hobbyists and mechanics. **5 YEAR UNCONDITIONAL GUARANTEE.** Simply return. We will repair or replace and ship free of charge. You Get: **FULL FACE SHIELD**, heavy metal cabinet, ground clamp, 12 ft. heavy cables, **SPECIAL** combination carbon arc torch & rod holder, carbons, welding and brazing rods, flux, solder, welding manual. **ORDER TODAY ON 10-DAY UNCONDITIONAL MONEY BACK TRIAL.**

**SEND ONLY \$2.00** and pay \$12.95 plus C.O.D. charges on delivery, or send only \$14.95 for postpaid shipment in U.S.A.  
**FREE** Order from this ad & receive extra **FREE** \$2.00 gift of rods, flux and solder.

### FOUR-WAY WELDER CO.

1810 South Federal St., Dept. R2-A, Chicago, Illinois 60616

**DEEP FACE Hard Type**  
for better **RUBBER STAMPS**  
10 pt. and 12 pt. 20th CENTURY 605D  
BUY DIRECT FROM MANUFACTURER **20% OFF** LIMITED TIME  
COMPLETE SUPPLIES  
STAMP MACHINES \* RUBBER \* BOARD  
SEND FOR FREE BROCHURE  
**BARCO TYPE Mfg.** 237-A S. EVERGREEN  
BENSENVILLE, ILLINOIS 60106

# FOLBOT

fits in every home or car

CHOICE of CHAMPIONS  
belongs to You

**Most inexpensive too**

GENUINE Folbot RECREATION for just ONE small investment, WITHOUT the continuous burdens of complicated 'big rig' operation. You GO CAREFREE anytime with COMPACT Folbot . . . rocky streams, lakes, marsh, surf & open sea. Superior non-sinkable designs provide SAFEST low gravity center, balanced low & high seating, substantial construction, protective decks & EXCLUSIVE swivel-back COMFORT. ALL within your reach. In handy Folbot YOU GLIDE smoother, faster & NOISELESS with paddles, oars, or sails and ride softly w. 1 to 10 HP. motors. Many styles & sizes from 1 to 4 seaters, FOLDING or rigid PORTABLE come in PREFAB KIT, or expertly FACTORY BUILT

**NATIONAL SAFETY RECORDS**  
**WORLD RECORD FISHING**

**NOW at SPECIAL SAVINGS**  
YACHT-SMART large DACRON Sail Rig \$99

**PREFAB from \$49**

**NEW Fabulous 16 foot \$107**  
Factory BUILT  
Folding from \$165 Factory finished

**FREE ACTION CATALOG**

Mail coupon or address to: FOLBOT CORP., Dept. PM-67  
Charleston, S. C. -29405

Name \_\_\_\_\_  
Address \_\_\_\_\_  
City \_\_\_\_\_ State \_\_\_\_\_

**for YOUR SPORT & FAMILY FUN**



## STANDBY HEARTS IN PEOPLE

(Continued from page 139)

remained but to prime the pump with saline solution and put the dog together.

I saw No. 1579 again seven months later. She was a cheerful, rather rambunctious dog that nearly knocked over Dr. Kantrowitz with her enthusiastic greeting. She had been living "on the pump" for 10 hours each day; at other times she was free to romp about, living on her well-rested heart.

But shortly after, No. 1579 died. It wasn't the booster's fault. The gadget worked fine, but the dog liked to nuzzle her connecting plug. The resulting infection spread and proved fatal.

The doctor has tried his booster on two humans. In each case, it worked well, but the patient died of unrelated causes. For example, 63-year-old Mrs. Louise Ceraso died of a stroke 12 days after her heart had been healing with the booster's help.

"When you operate on patients who are dying," says Dr. Kantrowitz, "they usually die." In testing experimental devices, he points out, you choose patients who are likely to die in any case. But he believes his device may now be used on patients with a real chance of survival.

"By the time your magazine hits the stands," Dr. Kantrowitz told me, "someone may be walking in this city with a permanently installed heart booster."

Like DeBakey's LVP, the Kantrowitz booster is powered by pressurized gas. Within the rigid outer wall of the fiberglass sausage, a flexible balloon made of Silastic is alternately blown up and deflated through a tube from an external power supply. Blood flows from the heart into the vacuum left by the deflation. The next inflation wrings the blood out of the sausage into the arteries.

The Kantrowitz booster has no valves. Backflow is checked by the heart's own aortic valve and by putting a tourniquet on the aorta in the bypassed stretch.

According to Dr. Kantrowitz, valveless design has three important advantages over the Texas valve job: There's no chance of sticking or leaking; no site where there might be clotting, and there is the possibility of passive operation.

DeBakey's LVP must remain constantly connected to its power supply. By contrast, the Kantrowitz booster may be disconnected and left in the body as a passive bypass. This is the key to long-term use by chronic heart patients.

Working closely with Dr. Adrian Kantrowitz on technical problems is his brother Arthur, a physicist who heads Avco-Everett Research Laboratory near

Boston. The two stocky, gray-haired men like to recall the knottier problems. Clot formation was one they solved by what Dr. Arthur calls "sophisticated fluid mechanics"—shaping the flow channel to cut down turbulence and stagnation.

"We made sure that unavoidable stagnation points are transient," he explains. "They move all over the surface. Any point where blood has stagnated for a fraction of a second will have a vigorous flow over it a moment later."

The other big problem was to prevent hemolysis—a disturbance of the blood chemistry that destroys red cells on contact with a foreign substance.

Brother Arthur is now thinking about designing a power supply no bigger than a camera, that the patient can carry at all times. "It's a matter of miniaturizing the bedside power supply we have now," he predicts confidently.

"Then comes the next step," he says with a faraway look. "No hole in the chest. You implant the whole works." One possible power source: the body's own fluids to run a fuel cell.

"But for the time being," he adds soberly, "an external power pack would be more practical. The internal power source would have excessive reliability requirements. You couldn't fix it without opening up the patient."

How many lives could be saved? Predictions are based on an awesome figure: half a million Americans die of heart attacks each year. Some die at once; but many linger for days. During this period, the damaged heart must heal itself and also pump enough blood to keep the body alive. If a booster heart is added, chances of survival are greatly increased, as exemplified by the case of Mrs. Vasquez.

If enough boosters become available and enough surgeons become qualified to install them, an estimated 150,000 lives may be saved every year.

When artificial hearts are made on a production basis, the unit cost may be as low as \$3000—hardly an exorbitant price for a life. The main problem is not hardware, but installation.

"This type of surgery is still far from a clinical routine," says Dr. DeBakey. "It may yet be a long time until techniques are developed to the point where it can be more widely applied. At this stage, not everybody with heart trouble is a candidate for an artificial ventricle."

Dr. Kantrowitz, though equally cautious in his predictions, likes to look beyond the era of initial problems. "Ultimately, there is no technical reason why artificial hearts shouldn't be as commonplace as artificial legs. ★ ★ ★



# PICTURE THIS

By Leonard Samuels

**BOON OR BANE?** Although you may not be aware of it, there's a controversy over automatic cameras. It's not one that will ever be settled—you just note it and go your own way. The professionals seem to have a "that new-fangled gadget" attitude. Perhaps they harbor a secret fear that camera automation will strip them of their jobs and make expertise among novices as common as dust. But is it mechanical expertise that makes a photographer, any more than technical competence with the media makes an artist? It's creativity with camera, lighting and subject. I wonder how they'd react if automatic focusing was considered economically feasible and was introduced.

These professionals say that the amateur might just as well buy an inexpensive box camera. For some, this is true. But when I want to snap a birthday party for the record or scenery when I'm vacationing or snare a fleeting expression or event regardless of conditions, I want to squeeze off shots without fiddling with readings. With a box camera, you're limited to a fine day or flash.

And I want a camera that will permit me to alter settings, depending on how I want to view a scene. No, to me, these cameras mean greater versatility, and to the simple-camera fan, the automatics mean better pictures under more conditions with box-camera simplicity. For the latter class, there are some excellent compromises, such as in the Instamatics, all the way up to the sophisticated model 804, and the Agfa Isomats and Optimas.

**KODAK** recently launched Improved High-Speed Ektachrome, Type B, designed to provide better color reproduction, sharpness and less granularity indoors for 35-mm slides. You'll find the colors cleaner, with yellows and flesh tones freer of a greenish cast.

**THE FIRST CUSTOM-PROCESSING** in the East for Anscochrome, apart from the factory at Binghamton, N. Y., has been opened in New York City. An independent outlet, VIP Color Lab, 222 E. 46th St., is set up to maintain processing quality with the help of the manufacturer. The lab offers one-day service.

## THE FAMOUS CHILTON AUTOMOTIVE HANDBOOKS



Not even the manufacturers provide service guides so detailed, so thoroughly illustrated, so easy to follow!

Use this form to order. Please enclose payment. Return book(s) within 10 days if not delighted. Full refund guaranteed.

- Glenn's Auto Repair Manual 1967 (U. S. Cars). \$9.95
- Glenn's Foreign Car Repair Manual (Revised Ed.). \$17.50
- Glenn's Auto Troubleshooting Guide. \$2.95
- Glenn's Foreign Carburetors & Electrical Systems Guide. \$8.50
- Automatic Transmissions. By Walter B. Larew. \$7.95

### GLENN'S REPAIR & TUNE-UP GUIDES:

- |                                                         |                                                           |
|---------------------------------------------------------|-----------------------------------------------------------|
| <input type="checkbox"/> Alfa-Romeo. \$5.50             | <input type="checkbox"/> Peugeot. \$4.50                  |
| <input type="checkbox"/> Austin, Austin-Healey. \$4.50. | <input type="checkbox"/> Renault. \$3.95                  |
| <input type="checkbox"/> Fiat. \$4.50                   | <input type="checkbox"/> Sunbeam Hillman. \$5.95          |
| <input type="checkbox"/> Jaguar. \$5.95                 | <input type="checkbox"/> Triumph. \$4.50                  |
| <input type="checkbox"/> MG, Morris, Magnette. \$4.50   | <input type="checkbox"/> Volkswagen. \$3.95               |
| <input type="checkbox"/> Mercedes-Benz. \$6.95          | <input type="checkbox"/> Volkswagen (Spanish Ed.). \$3.95 |
| <input type="checkbox"/> Volvo. \$4.50                  |                                                           |

### CHILTON'S REPAIR & TUNE-UP GUIDES:

- B.M.C. Minicar. By Staton Abbey. Paperbound, \$1.95
- Honda. By OCee Ritch. \$4.95
- Mustang. By OCee Ritch. \$4.95
- Chilton's Motorcycle Troubleshooting Guide. By OCee Ritch. \$4.95

### DELIGHTFUL AUTOMOTIVE HISTORIES FROM CHILTON:

- My Days with the Diesel. By Clessie L. Cummins. \$5.95
- My Father Mr. Mercedes. By Guy Jellinek-Mercedes. \$5.95

### CHILTON BOOKS

Dept. PM 1-7  
401 Walnut St., Philadelphia, Pa. 19106

Name.....

Address.....

City..... State..... Zip.....

Check  Money order enclosed.  
(N. Y. and Pa. residents please add sales tax.)



## BUILDING THE STILETTO

(Continued from page 170)

from Frame No. 5 aft, the bottom planking will lap the side planking. Forward of this point a transition is made where the bottom planking ceases to lap the side planking, and from this point forward the side and bottom planking meet on the chine in a butt joint.

### Check the fairing

Use a short length of plywood to check the fairing, working from the transom forward. The sheer clamp, particularly the forward section close to the breasthook, will resemble a triangle.

The side planking is preferably full-length 1/4-in. marine AA plywood. If shorter panels are used, locate the butt joints between frames.

The contour of the planking is obtained by laying the panel against the hull side and temporarily holding it in place with screws or clamps while the shape is roughly marked around the contour. Remove the planking and cut to shape with a fine-tooth hand or power saw. The only place close fitting is required is from the transition point forward. All other edges may be left long for trimming after the planking is fastened permanently in place.

The bottom planking is 3/8-in. plywood, preferably full-length, though shorter, butt-joined panels may be used by fitting butt blocks between the bottom battens.

Fit the bottom as you did the side planking. Roughly mark the stem area

and cut away as much material as possible to make the bend easier. To fit the butt joint at the side planking, start at the transition point and fit progressively forward to the stem. After coating the initial panel with glue and fastening it in place, trim the planking flush with the stem from 12 in. forward of Frame No. 5.

The second half of the bottom planking will butt-join the first panel along the keel aft of this point. Forward of this point the second panel will lap the first. After planking the bottom, the hull should be righted and blocked level.

The carlings are 1-in. longitudinal members that form the side extremities of the cockpit. Crown each one to follow the contour of the side frame members.

The coaming fits inside the carling and is notched up between Frame No. 1 and the transom so the side of the motor well can be fastened to the lower 1 1/2 in. of the carling. This member also forms the cowl, which is the raised portion of the forward deck. The decking in this area rabbets into the coaming.

### Dash beam after decking

The beam at Frame No. 6 is fastened to blocking on the inside of the sheer clamps. The dash beam at No. 4 and the intermediate beam between Nos. 4 and 5 have the same contour as the No. 5 deck beam. These beams are fastened to blocking on the coaming. The dash beam is fastened in place after the decking is installed.

The sawn batten extends from the No. 5 deck beam to land on to of the breast-

### "STILETTO" FASTENING SCHEDULE

| MEMBERS                             | SIZE      | TYPE       | NO. REQD. OR SPACING |
|-------------------------------------|-----------|------------|----------------------|
| Gussets to frames                   | 1"        | Nails      | 5 each member        |
| Floor timber to frames              | 1 1/2" #8 | Screws     | 4 each member        |
| Transom lamination                  | 1 1/4" #8 | Screws     | 8" apart             |
| Frame to transom                    | 1 1/2" #8 | Screws     | 4" apart             |
| Stem laminations                    | 1 1/4" #8 | Screws     | 6" apart             |
| Breasthook laminations              | 1 1/4" #8 | Screws     | 8 required           |
| Keel laminations                    | 3/4"      | Nails      | 6" apart             |
| Chine blocking to stem              | 2" #10    | Screws     | 2 required           |
| Frame #5 to stem                    | 2" #10    | Screws     | 2 required           |
| Transom knee laminations            | 1 1/2" #8 | Screws     | 4" apart             |
| Transom knee to #1 frame            | 2" #10    | Screws     | 2 required           |
| Transom knee to keel and transom    | 3/8"      | Car. Bolts | 4 required           |
| Keel to stem                        | 1/4"      | Car. Bolts | 2 required           |
| Keel to frames                      | 2" #10    | Screws     | 2 each junction      |
| Battens to frames                   | 2" #10    | Screws     | 2 each junction      |
| Sheer to frames                     | 2" #10    | Screws     | 1 each junction      |
| Chine to frames                     | 2" #10    | Screws     | 1 each junction      |
| Capping member to transom           | 1 1/2" #8 | Screws     | 4" apart             |
| Side planking at chine              | 3/4" #8   | Screws     | 3" apart             |
| Side planking at sheer              | 3/4" #8   | Screws     | 4" apart             |
| Side planking at stem and transom   | 1" #8     | Screws     | 2" apart             |
| Bottom planking at keel and chine   | 1" #8     | Screws     | 3" apart             |
| Bottom planking at battens          | 1" #8     | Screws     | 4" apart             |
| Bottom planking at stem and transom | 1 1/4" #8 | Screws     | 2" apart             |
| Intermediate beams to blocking      | 1 1/2" #8 | Screws     | 2 each               |
| Carling to frames                   | 2" #10    | Screws     | 2 each               |
| Strongback and battens to frames    | 1 1/2" #8 | Screws     | 1 each               |
| Coaming to carling                  | 1 1/2" #8 | Screws     | 6" apart             |
| Decking at edges                    | 1"        | Nails      | 2" apart             |
| Decking at butt block               | 3/4" #8   | Screws     | 2" apart             |
| Athwartship brace to transom        | 3" #14    | Screws     | 6" apart             |
| Athwartship brace to knee           | 3" #14    | Screws     | 2 required           |
| Motor well side to cleats           | 1" #8     | Screws     | 3" apart             |
| Motor well bottom to all members    | 1" #8     | Screws     | 3" apart             |
| 1" blocking to 1" members           | 1 1/2" #8 | Screws     | as required          |



hook. The batten is used as a backing member for the junction of the side and forward decking. (Optionally, this batten may be made from two laminations of  $\frac{3}{4}$  x  $\frac{3}{4}$ -in. material sprung into position around the hull.)

The deck battens and the strongback are notched into each of the beams. The battens end up against the sawn batten, while the strongback rests on top of the breasthook. Add pine blocking on the breasthook to provide solid bearing from strongback to sheer.

Deck framing must be faired as you did the bottom and sides. It will be necessary to fair the batten for the side decking, but little if any fairing should be required for the forward side decking.

The fore decking is put on in two parts and butt-joined over the strongback. Fastenings are required only around the outer extremities of the panels.

The transom is gusseted to the carling with  $\frac{3}{4}$ -in. plywood knees fastened to the carling and blocking on the transom. A 2x4-in. brace extends between these members across the transom and is fastened to the gusseted knee as well as the center knee and transom.

#### Modifications for big motors

For motors in excess of 65 hp, extend the  $\frac{3}{4}$ -in. knees from the carling all the way down to the bottom battens. Fasten 1-in. blocking on top of these battens and use screws to secure the knees.

The control console between the seats must be tailored to hold the gas tank which you plan to use. The built-in tank measures 6x12x24-in. and is made of 20-ga. terneplate.

Seat treatment is a matter of choice. In the prototype a semibucket seat was made by extending uprights at the side portion of the seats. Upholstery was installed by an auto customizing shop.

A cast aluminum skid fin approximately 5 in. deep, is located with the front edge at Frame No. 3. Fasten in place with eight  $1\frac{1}{4}$ -in. No. 8 screws.

All screw holes and minor imperfections should be filled with a hard-setting putty. Fiberglass covering is optional, and if used, should be a single layer of 6 or 8-oz. cloth double-lapped at the seams. All plywood surfaces not fibreglassed should be coated with a plywood sealer and given adequate primer sanded between coats to hide the grain. Finish with a minimum of two coats of a good marine enamel. All surfaces to be given a natural finish should be stained (and filled, if required) to the desired color and given a minimum of three, and preferably five, coats of marine varnish. ★ ★ ★



**Pipe just can't slip when it's in the steel jaws of a RIDGID Bench Vise.**

Nothing grips pipe like a RIDGID vise. Our full width, tool-steel jaws have specially cut hardened teeth that positively anchor the work.

Malleable iron base and yoke can't break or warp. And when the work's finished, your RIDGID releases instantly. Integral bender and rear pipe rest make everything easy.

RIDGID Bench Yoke Vises come in 8 sizes,  $\frac{1}{8}$ " through 6", can be set up for fast right or left hand opening.

See and buy one at your Dealer's. He carries a complete line of Work Saver Tools from The Ridge Tool Company, Elyria, Ohio 44035.

**RIDGID**



Apply a heavy coat of remover for best results



#### **STRYPEEZE** Nonflammable Paint Remover

Paste-type remover with strong cutting action for tough jobs. Nonflammable quality and low toxicity makes it ideal for indoor paint and varnish stripping.



"Where Paint is Sold"

**SAVOGRAN**  
NORWOOD, MASSACHUSETTS





## KILL THAT FIRE

*(Continued from page 105)*

soda-acid extinguisher or as much Class B as 16 1-quart CBMs. (CBM stands for chlorobromomethane, a vaporizing liquid agent that has lost favor because of toxicity.) Nearly all of the 10-pound capacity, all-purpose types have a 2A: 20-B:C rating. That's a lot of fire-snuffing potential in one package.

The original dry-chemical types use sodium bicarbonate (baking soda) for the extinguishing agent, with some other chemicals added to keep the powder free-flowing. Called "Ordinary Dry Chemical," they're still used and offer good protection. A 10-pound capacity unit, for example, is rated 16-B:C. Compare that with a 10-pound-capacity carbon dioxide extinguisher: It is rated only 4-B:C and weighs 8 pounds more than the bicarb unit.

The newer potassium bicarbonate, also dry chemical, was developed by the Navy and nicknamed "Purple K." (K is the chemical symbol for potassium; purple is the color the flames become on contact with it.) Although this type is about 25 percent more expensive than a sodium unit, it will control nearly twice as much Class B fire per pound. In other words, where a sodium bicarb unit of five pounds capacity will extinguish a 25-square-foot gasoline blaze, the same size Purple K job will knock down at least 40 square feet.

The extinguishing agent in the all-purpose types contains a monoammonium phosphate base and special additives. On hitting flame, the powder forms a glaze coating over the combustible. That is what makes it an effective weapon against Class A outbreaks that have become deep-seated, thus rounding out its potential as an all-purpose first-aid appliance.

### How to figure cost

Now we come to the cost of adequate fire protection. Without a basic knowledge of what an efficient extinguisher can do, the bargain hunter is likely to be shaken up by the price tag. You can readily determine what you're getting for your money by dividing the price of an extinguisher by its UL rating. This gives you *cost per unit of fire-killing potential*.

Let's consider extinguishers of 10-pound capacity that are UL rated for Class B:C outbreaks and compare their list prices and "fire power." (We aren't necessarily recommending units this heavy for women. Using this weight simplifies making comparisons.) As explained earlier, one unit of Class B fire is a blaze involving

2½ square feet of gasoline 2 inches deep. An extinguisher that handles this gets a 1-B rating. On that basis, this is how four different types of 10-pound capacity units compare:

**Carbon Dioxide:** total weight, 28 pounds; UL rating, 8-B:C; list price, \$65; price per unit of fire, \$8.

**Sodium Bicarbonate:** total weight, 19-25 pounds; UL rating, 16 B:C; list price, \$60; price per unit of fire, \$3.75.

**Potassium Bicarbonate:** total weight, 20 pounds; UL rating, 20-B:C; list price, \$75; price per unit of fire, \$3.75.

**Multipurpose :** total weight, 25 pounds; UL rating, 2-A: 20-B:C; list price, \$75; price per unit of fire, \$3.75.

These types, of course, come in smaller sizes that have proportionately lower ratings and prices. A 7½-pound capacity all-purpose unit retails for about \$40. In sizes smaller than this, you don't get the Class A rating. But you still get protection against Class A fires of the surface variety. A typical 2½-pound capacity unit that sells for about \$15 has a 6-B:C rating. It's light enough for your wife to handle easily in the kitchen, and ideal protection for your boat or car.

But always consult the ratings before you decide on a particular extinguisher. Make your choice on the basis of its *proven firefighting power*. That's what you're buying, isn't it? ★ ★ ★

## WILD NEW WEAPONS

*(Continued from page 214)*

terial are used. The inside bag is filled with three gallons of water, tied and placed inside another bag. This one, too, is tied and placed inside still another bag and so forth. All bags, except the center one filled with water, are used for protection against impact.

The idea has been in use for four months now. Results are remarkable. The water bags have proved 85 to 95 percent effective—depending on the terrain.

Col. Robert McEvoy, commanding officer of the Laboratory and a man with some 20 years of Army ordnance experience, is continually amazed by the ideas of his civilian colleagues.

"These people," he states, "could be basking in the glamour of space research and futuristic weapons development. Instead, they are content to go unnoticed except for an occasional 'thank you' from a GI fresh from a firefight where one of their unromantic novelties saved his life.

"I guess, though," McEvoy adds reflectively, "that's all the publicity people such as these really need." ★ ★ ★



## PLYMOUTH FASTBACK '67

(Continued from page 94)

this 1967 model Barracuda.

The laps around the dirt roads were all-out punishment. All the corners were 90°, and I was running in a long rectangle, about 250 by 100 yards, sliding through the corners as much as possible, spinning the rear wheels almost nonstop between the slides. It was the roughest sort of surface, covered with rocks of all sizes and shapes, with a sand and gravel base. I made a dozen laps, stopped to take on a passenger, then a dozen more. Slow steering becomes even more of a problem when you're trying to do something as far out as this, but again, you adjust and make compensations.

When we stopped, it wasn't because the car was begging off. It seemed ready and capable of infinitely more, despite the fact that this was hardly the kind of driving for which it was designed. The workout turned up no previously undiscovered weaknesses or even provoked any rattles or noises when I returned to normal street driving.

Logging in over six feet, I find many cars uncomfortable, both from the standpoint of room and seating position. I liked the seating position in the Barracuda, however, and feel that it's a well proportioned car,

inside and out. The interior styling is in good taste, the dashboard intelligently arranged. Maybe it's just me, but I didn't care for the new type flush-to-door safety handles on the door. Twice when I attempted to open a door from the inside I caught the handle in a way that felt as if it were cutting my fingers. Trunk space in this model is the expected minimum when the folding rear seat is up for passengers, but it increases handsomely when the seat is down.

Exterior styling of the Formula S Barracuda, is, I feel, extraordinarily well executed; it imparts an aura of performance in a way that doesn't prevent someone not particularly interested in performance from appreciating it from an outright good looks standpoint. The lines are striking, but clean, particularly from a side view.

Despite my mostly hard-driving approach, fuel consumption was not noticeably high for an engine of 383 cubic-inch displacement. It's a good, smooth, versatile car of unusual acceleration and toughness. It felt a bit on the heavy side at times, but I was informed the car I drove was an early prototype, slightly heavier than the production models.

To sum up, it stood up well under a hard workout—and the sound of the four-barrel 383 is enough for any enthusiast. ★★

**New!** **2 LB. MAGNET lifts 125 LBS.**

Revolutionary new non-electric magnet has double the power of Alnico 5. Full power lasts forever without a keeper. Won't demagnetize. Pulls 125 lbs. on steel block. Wt. 2 lbs. /4" x 2-1/2" x 1" No. X-125, \$8.95 postpaid.

**ALNICO 5 SPECIALS / WE PAY POSTAGE / MONEY-BACK GUARANTEE**

|          |                                                           |                |
|----------|-----------------------------------------------------------|----------------|
| No. MN25 | Tiny retriever assembly pulls over 25 lbs. ....           | \$3.95         |
| No. GP3  | Electric guitar pickup rod, 3 16" dia. x 1" .....         | 10 for \$1.95  |
| No. GP5  | Electric guitar pickup rod, 5 16" dia. x 1-1/2" .....     | 12 for \$3.95  |
| No. C9   | Superpowered rod, rounded ends, 1 2" dia. x 3" .....      | \$1.25         |
| No. MM30 | Small bar, polished, 1/8" x 3 16" x 1" .....              | 10 for \$1.00  |
| No. SC20 | Science experiment & hobby kit. 10 assorted magnets ..... | \$2.00         |
| No. RM6  | Flexible strip magnet, 3/16" thick x 5 16" wide .....     | 24" for \$1.00 |

SAMPLE PAIR SMALL BAR MAGNETS & BARGAIN CATALOG 25c

No. X-125  
MAGNA MAGNETICS, 7777 SUNSET BLVD., LOS ANGELES, CALIF. 90046 Dept. M



## EARN UP TO \$50 A WEEK IN YOUR SPARE TIME AS A TYPEWRITER REPAIRMAN

Great demand for trained men. Over 25 million typewriters need service and repairs! Cash in on 300 million dollar market. Now you can get industry-approved training at home. Easy to learn. Low Cost. Qualify quickly in spare time for a high paying job or a business of your own. Earn while you learn. Real typewriters, sub-assemblies, visual aids, and professional tools provided at no extra cost. Simple, clear illustrated lessons. Expert teachers personally guide you all the way. Fully licensed, accredited, and approved school. State authorized diploma. Vet. Approved. Mail coupon today. Typewriter Repair School, 3-110-017, Little Falls, N.J.

**TYPEWRITER REPAIR SCHOOL**  
DEPT. 3-110-017  
Little Falls, New Jersey 07424

FREE BOOK

Send FREE BOOKLET describing unlimited opportunities for Typewriter Repairmen. No obligation. No salesman.  Check Here For Vet. Information.

Name.....  
Address.....  
City..... State..... Zip.....

EVERY NEIGHBOR IS A CUSTOMER

## Earn \$5 An Hour

during spare time in profitable

## Lawn Mower SHARPENING BUSINESS OF YOUR OWN



**Complete Shop in One Machine**

No experience needed to start—anyone can operate it—and it turns out professional jobs every time.

**Start Spare Time Business**

An ideal spare time business—alho many find it so profitable, they devote full time to it. For complete fact-filled booklet telling you how to start and how others have succeeded, send coupon. No salesman will call.

Foley Mfg. Co., 107-7 Foley Bldg., Mpls. 18, Minn.  
Send information on Lawn Mower Sharpening business.

Name.....  
Address.....  
City..... Zone..... State.....



## DO YOUR OWN BODY WORK

(Continued from page 181)

and then sand the entire area to a point slightly beyond the damaged portion, using No. 16 or 18 grit paper. What do you do with that gaping hole? Here's the trick! Available at auto supply outlets is adhesive-backed aluminum tape that sticks to a car's metal. (A leading manufacturer of the tape is the 3M Co., St. Paul, Minn.) Simply cut a length of tape to cover the damage and make sure that the edges are pressed firmly into place. Now, cover the area with auto-body plastic filler—in the same manner as for filling dents—let harden, scrape and sand.

If one area of a car is subject to body rot more than any other, it's rocker panels. When one rots out, it may be easier to buy a rocker panel slip-on made for your specific car. The new panel slips over the rotted-out panel and is secured by sheet-metal screws. Spray it to match your car or attach a chrome slip-on.

**Beat-up chrome molding.** Chrome trim on fenders and doors is subject to dents and pitting. When these moldings really get beat up, you may want to replace them. This can be rough and time-consuming, depending on the method of attachment on your car.

Moldings are held to fenders by bolt-on retainer clips or pressed-on clips. Where pressed-on retainers predominate, there is usually a bolt-on clip at either end of a molding.

How can you tell what you have? Usually, bolt-on clips are used in places where you can get at them for removal. Pressed-on clips are normally used along those areas, such as doors, which are covered in back and prevent access. To check which type you have, run your hand behind a front fender. If you touch threaded bolts, the clips are bolt-ons. If not, they're pressed on. For a rear fender, lift the trunk lid and check along the sides behind the trunk liner. You'll see the bolts if the clips are bolt-on types.

To remove a battered chrome molding of the bolt-on variety, simply take a wrench to the bolts. After all bolts have been removed, pry the molding off with a screwdriver.

The bolt-on clips will come off with the molding. If they're in good shape, you can reuse them. If not, a bag of clips usually accompanies new chrome moldings. You can get replacement molding from your auto dealer or from parts and accessories dealers like J. C. Whitney & Co., 1917-19 Archer Ave., Chicago, Ill., 60616.

To replace the chrome, slip the clips into the molding channel, line up the threaded

shanks with the holes in the fender and bolt the strip into place.

To remove a chrome molding from pressed-on clips, pry it off with a screwdriver. The clips will usually be damaged and have to be removed and replaced. Insert a screwdriver in each damaged clip and pry it out. Insert each new clip by pressing in the prongs with a pair of pliers and inserting it into the fender hole. After all clips are positioned, line up the new molding and tap it onto the clips.

Most door and quarter-panel moldings use press-on clips. Therefore, you do not have to remove the inside panels to get the molding off. The strip is held by Phillips-head screws on each end. Loosen these screws first, then simply pry the molding off.

Cars that have heavy-duty, die-cast molding strips on doors and quarter-panels often do not use the press-on-clip method of attachment. These moldings are usually held by threaded retainers. To get them off, the inside panels must first be removed and the clips approached from the rear. Needless to say, this is a pretty rough job and, luckily, one encountered by only a few car owners.

**Battered grille.** There are one-piece and split grilles, and you're lucky if you have the former. One-piece grilles present no problem. They're often held in place by as few as 10 bolts. Replacing a split grille, however, can be a monumental job. Not that it's so tough, but it is time-consuming, painstaking work. Scores of attaching bolts have to be found and removed. In some cars, you have to remove the bumper and drill out rivets.

To give you some idea of the job, let's list the major steps that you will have to perform with most cars. One word of advice: If you decide to do this job, I suggest you make a sketch of the front end. As you remove each bolt, note its location on the sketch. This will save lots of groping when you install the new grille.

1. Remove the headlight frames.
2. Remove the grille extension molding by reaching in back and disconnecting the bolt-holding clips.
3. Remove all bolts securing the grille, starting at the bottom. If you remove the top ones first, the grille could flip around while working on the bottom. Remember to remove the hood-adjuster stops.
4. Before the grille comes off, you'll have to pull the headlights from their housings. Then the guide support will come with the grille, because the two are usually riveted together. The rivets have to be drilled out, and the new grille attached to the guide support with stove bolts prior to installation. ★ ★ ★





## BUILD YOUR OWN POWER TOOLS

**METAL PARTS KITS AT LOW FACTORY DISCOUNT PRICES FOR: \$50 OR MORE**

- 10-IN. TILT/ARBOR SAW
- COMB. DRILL PRESS-LATHE
- 12-IN. BAND SAW
- 18-IN. BAND SAW
- 6-IN. BELT SANDER
- SPINDLE SHAPER

**PLANS \$1.00 EACH DEDUCTIBLE**  
Full Size Patterns

Kits from \$15.50 to \$39.95. Satisfaction guaranteed. Built and sold for 20 years. 48,000 units in use. Send for Plans today!

FREE CATALOG

GILLIOM MFG. CO

Dept. PM-1

St. Charles, Mo.

## If You Can Draw A Straight Line (with a ruler) WE CAN TEACH YOU DRAFTING

Growing consumer and defense industries can't get enough trained draftsmen.

Our new teaching methods let you learn in your spare time at home. You learn more, learn faster. Step up the wage ladder with a white collar skill that leads to the top. Send for sample lesson and course outline. Resident course also available on our Chicago Campus. Established in 1934—60,000 graduates.

**AMERICAN INSTITUTE OF ENGINEERING & TECHNOLOGY**  
1125 Fullerton Pkwy—Chicago, Ill. 60614



## Build This Beautiful Grandfather Clock

We show you how at price you can afford. Send only \$1.00 for complete plans and instructions plus information-packed catalog of clock movements, dials, blueprints and kits for constructing Grandfather, Grandmother, Terry and other fine clocks.

**MASON & SULLIVAN CO.**  
DEPT. PM OSTERVILLE, MASS.

## MAKE BIG MONEY

**MAKING COSTUME JEWELRY AT HOME!**

Thrilling spare-time, MONEY-MAKING hobby! Make newest, beautiful jeweled earrings, necklaces, bracelets, pins, pendants, cuff links, tie clips! Quick, easy to make—easier to sell to friends, neighbors, stores, at big profit! Details FREE!

**DON-BAR CO., Dept. A-197**  
2934 W. Fullerton Ave., Chicago, Ill. 60647



## NOW! WARN OVERDRIVE gives 'Jeeps' more Go!



New approved accessory cuts engine RPM 33% at any speed, reduces noise, vibration so you can drive your Jeep 4-w.d. comfortably at freeway speeds. Amazing synchromesh OD lets you shift up or down, on the go, anytime, in any gear, at any speed. Adds six forward speeds, two reverse. At Jeep dealers, or write us.

**WARN SALES CO., Inc.**  
9050-A Empire Way South  
Seattle, Washington 98118

## BOAT PLANS FULL SIZE PATTERNS • FRAME KITS

Over 60 sail, inboard and outboard designs . . . catamarans, houseboats, dragsters, hydros . . . "Glen L" has the most complete selection of build-it-yourself boats from an 8' dinghy to a 35' cabin cruiser. And, only "Glen L" includes written and pictorial step-by-step instructions and material listings specially prepared for amateurs with most Plans, Patterns and Frame Kits.

Send for new 80-page catalog completely illustrating the full selection of over 60 boats.

MAIL 50¢ TO:

**GLEN L—9152T Rosecrans, Bellflower, Calif. 90707**

# NEW! jet-spray GUMOUT



Now you can get the famous cleaning action of GUMOUT in a pressurized can equipped with a special extension nozzle. The unique plastic tube sprays GUMOUT with pin-point accuracy into spots you can't reach by usual cleaning methods—even sprays around corners. GUMOUT penetrates instantly, dissolves and cleans away grime and gum—right down to the bare metal. Perfect for cleaning exterior carburetor surfaces and linkage. Frees sticking manifold heat control valves in seconds. Get Jet-Spray GUMOUT at your auto supply store. Price is \$2.19. If your store doesn't have it, order direct-from:

**GUMOUT DIVISION**  
Pennsylvania Refining Co., Cleveland, Ohio 44104



# QUICK CASH!

## EARN \$50 - \$100 - \$250 WEEK

### PART OR FULL TIME

**NO INVESTMENT! NO EXPERIENCE!**



**FREE SALES KITS**

Now! Earn BIG MONEY and bonus gifts—part time, full time, any time. Simply take orders from stores, offices, businessmen, others, for business cards, letterheads, statements, service forms, advertising specialties, etc., at lowest prices in nation. Plus free gifts for customers! You collect big cash commissions on the spot. No bill collecting or delivering. Re-orders mount up. Orders also count towards transistor radios, calendar watches, color TV, other lavish bonus gifts for you.

**SEND NO MONEY FOR FREE DETAILS**

We start you immediately with big money-making outfit, including giant 350-page Business Printing kit, bulging with samples; 114-page Advertising Specialties catalog; 88-page Business Necessities catalog—everything you need for a lifetime, part or full time business of your own paying thousands of dollars. MAIL COUPON TODAY FOR FREE DETAILS.

**National Press, Dept. 704, North Chicago, Ill. 60064**

Home Office, National Press, Inc., Dept. 704, North Chicago, Ill. 60064

Yes, I want your big line of BUSINESS PRINTING, BUSINESS NECESSITIES, AND ADVERTISING SPECIALTIES FREE AND POSTPAID so I can earn extra money week after week in my spare time.

Name \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ ZIP \_\_\_\_\_

**BUILD YOUR OWN RUFF-RYDER** Goes over rocky, sandy, hilly, wet or dry terrain.

Build New Off-Road Vehicle with wide-track Terra Tires. Use Ruff-Ryder for hunting, fishing, exploring, run fence or power lines, prospecting, beach buggy, golf cart, etc. Hauls 1000 lbs. Get materials & parts locally or from us. Complete Easy-To-Follow Plans, 2-Wheel Model \$3.00 3-Wheel Model \$4.00 Literature on factory models, prefab kits and parts list included. Both Plans (\$7 value) ONLY \$5 — credited on first parts order.

**ROBLAW ENGINEERING 347 No. 20th Street Jacksonville Beach, Florida 32050**

**U.S. GOV'T EQUIPMENT SURPLUS**

**DIAL TELEPHONE**

• (ITEM #715) -- Same type phone used on all telephone systems. Use as extension to main phone or on private systems. Excellent condition. Shipping weight 8 lbs. Cost \$25.00.

**FOB \$5.95**

**12-VOLT BATTERY WINCH**

• (ITEM #318-A) -- Powerful 12-volt gear reduction winch. Full reversing. Use on truck or auto, 2000 lb. capacity. Holds 195 ft. 1/2" cable. Size 10" x 8" x 7". Shipping weight 68 lbs. Motor cost gov't over \$275.00.

**FOB \$66.95**

**AIR COMPRESSOR EQUIPMENT**

• For farm, home, industry at terrific savings. Gauge \$1.85, Compressor \$18.49, Tank \$4.95, Complete Kit \$30.50

• **Electronic Surplus** -- Many marvelous buys. Relays, motors, switches, recorders, walkie-talkies, Homestudy Course, Kits, etc.

**Send 25c Coin Or Stamps For 3 Main Catalogs**

**SURPLUS CENTER**

**DEPT. PM-017, LINCOLN, NEBR. 68501**

## ZENER POWER SUPPLY

(Continued from page 194)

and wire the perforated board subassembly. Capacitor C1, diodes D1 through D5, resistors R3 and R4 and transistor Q1 are mounted on the board. For the parts layout and interconnections, refer to the pictorial drawing and schematic diagram. Use flea clips and hollow eyelets as terminal points and parts anchors on the perforated board.

Check your wiring on the subassembly paying special attention to polarity. Bolt the subassembly under the heat sink and complete the interconnecting wiring.

**Fire up the power supply** after inserting fuse F1. The power-on indicator light I2 should light.

By rotating voltage-adjust potentiometer R5, you will be able to vary the output of the supply from zero to 15 v, as indicated on meter M1. Connect a 470-ohm, 1/2-watt resistor across the output, and set the power supply at 10 volts. Under this load, meter M2 should read approximately 21 milliamperes.

Meter out switch, S2, is a shorting switch used to protect current meter M2. When the load current is within the usual zero to 50 milliamperes, M2 allows an accurate reading. With load currents above 50 milliamperes, however, just switch the meter out of the circuit. ★ ★ ★

### PARTS LIST

- BP1, BP2—Binding posts, red and black respectively (\*Lafayette 32C6463C)
- C1—1000-mfd., 50-w.v.d.c. electrolytic capacitor (\*Cornell-Dubilier BR 1000-50)
- C2—100-mfd., 25-w.v.d.c. electrolytic capacitor (\*Lafayette 34C8463)
- D1—4—100 PIV, 1-amp. silicon diode (\*Motorola 1N4002)
- D5—16 volt, 1-watt zener diode (\*International Rectifier 1ZF 16T10)
- F1—3/10 amp. fuse
- I1, I2—Neon pilot lamps [Lafayette 34C5203, and 34C5206, red and white, respectively (R1 and R2 incorporated)]
- M1—Zero to 15 v.d.c. miniature voltmeter (\*Lafayette 99C5047)
- M2—Zero to 50-ma. miniature milliammeter (\*Lafayette 99C5054)
- Q1—\*2N1415 transistor
- Q2—\*2N255 transistor
- R1, R2—100,000-ohm, 1/2-watt resistors (incorporated in I1 and I2, respectively)
- R3—0.56-ohm, 1-watt resistor
- R4—1800-ohm, 1/2-watt resistor
- R5—1000-ohm linear potentiometer (\*Mallory U-4)
- R6—1000-ohm, 1/2-watt resistor
- S1, S2—D.p.d.t. miniature toggle switches (\*Lafayette 99C6162)
- S01—Interlock-type line socket (\*Lafayette 18C2718)
- S02—3-pin, chassis-type socket (\*Cinch Jones S-303-AB)
- T1—Power transformer, 110-v. primary, 24-v. 1-amp. secondary (\*Lafayette 99C6266)
- Line cord and plug assembly, cheater type (\*Lafayette 18C4904)
- Miniature fuse post (\*Lafayette 13C1193)
- Aluminum heat sink (\*Lafayette 19C1527)
- Power transistor mounting kit (\*Lafayette 19C1531)
- 5x4x3" aluminum chassis box (\*Premier PMC 1005)
- Misc.—Wire, solder, decals, hardware, knob, plastic tubing, perforated board, flea clips, perforated aluminum screw, transistor socket, neoprene rubber

\* Or equivalent



## METAL TURNING

(Continued from page 189)

to the faceplate. Like the L-clamps, angle plates are available ready-made, but you can make one suitable for noncritical work from a short length of ordinary steel angle. This should be filed or ground, or both, on three faces as indicated, with special care taken to maintain the outside angle at 90° and all surfaces flat.

When you're mounting work on an angle plate—or, in some instances, clamping work to the faceplate—it is necessary to provide a counterbalancing weight. These are easily made from round steel stock by cutting and machining discs of varying diameters and thicknesses and center-drilling to take a small bolt for attachment. After mounting the counterbalance, make short test runs to make sure the setup is in close balance.

**Correct grinding, honing and mounting the tool in the toolholder and on the toolpost come next.** To cut properly in ferrous metals, such as ordinary steels and certain machining aluminums, the tool should be ground with a top (back) rake, side rake and relief angle as detailed (Fig. 15). The angles given are used in general practice, but some machinists vary these slightly for certain purposes.

For common nonferrous metals, such as brass and bronze, the cutting tool should generally be ground with a negative, or zero, top rake and little, if any, side rake. In all cases, except for threading, the nose should be ground with a very slight radius. Use a medium-fine grinding wheel (preferably a vitreous wheel) and be careful not to overheat the cutting edge. Carbide-tipped tools must be ground on a specially made wheel.

For finishing cuts, tools may be ground with a round-bottom chip groove as detailed (Fig. 16). Properly ground (this is, of course, rather difficult on tools less than 1/4-in. square), such a tool leaves a smooth finish, as it curls away a continuous chip, generates somewhat less heat when cutting and requires less power. Although shown with negative top rake, some machinists prefer it ground with a slight top rake.

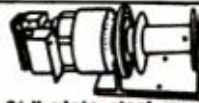
Lathe tools generally will cut more smoothly if honed on a fine oilstone, such as a hard Arkansas stone. Be careful not to alter the rake angles when honing. Tool settings are those common for ordinary work. Tools ground with a chip groove should generally be set to cut a square shoulder. Don't permit any tool to undercut; it may tend to dig in without warning and damage the work. ★ ★ ★

(To be continued next month)

**GOVT. SURPLUS AND OTHER BARGAINS SAVE UP TO 90%**

### HEAVY DUTY AC GEAR MOTOR

Rated 1/4 HP @ 1725 RPM's. Runs on 115 V. AC, 60 cycle, single phase. Continuous duty. Reversible. 3/4" keyed output shaft 120 RPM. All metal gear case construction. Exc. for conveyor belts, garage door openers, any heavy duty-low speed use. 11 3/4" L x 7 3/4" W x 6" H. Shpg. wt. 24 lbs. NEW. Special purchase. Specify model VW120. A \$52 value. Now \$24.50.



### HEAVY DUTY BATTERY WINCH

Rugged, deluxe winch with ball bearing construction throughout motor & gear train. High gear reduction. Rated cap 3000 lb. pull. Contains reversing switch. Rugged 3/8" plate steel mounting base with outrigger support. 22" L x 9" W x 8" H. Handles 250' of 1/4" cable. Built for 12 V battery operation: also operates on 6 V at reduced cap. & speed. A must for Scouts, Jeeps, Trucks, Boat loading trailers, etc. Shpg. wt. 80 lbs. Approx. GOVT COST \$490. NEW. 90-day guarantee. Model E-D \$79.50

### DC JET GENERATOR ARC WELDING KIT

complete with GE Type CM Gen (30 V. D.C., 400 AMP, 3000 RPM: ampere rating is for continuous duty, intermittent amperage is 500 to 600 amps). Also 2 rheostats, 1 voltmeter, 1 voltmeter, 1 electrode holder, 1 welder's mask, 1 toggle switch, 10 lb. vacuum packed 1/8 in. welding rods, pair welder's gloves & spline coupling. All units guaranteed pre-tested. Wt. 110 lbs. Approx. GOVT COST \$700. All items \$64.50



### NEW! BIG! 1967 CATALOG

Send 25c for amazing catalog with 1000's of bargains in hydraulics; electrical, marine, automotive items, etc. Order from ad. Prices FOB 50% deposit for COD. Must include your zip code number. Satisfying mail order customers thru-out the world since 1945.

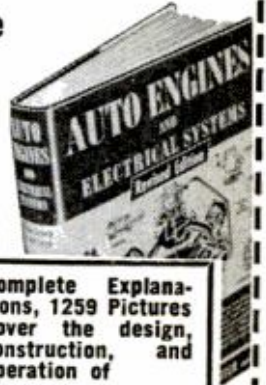
**AIRBORNE SALES CO.** Dept. PM167

8501 Stellar Dr. • Box 2727 • Culver City, Calif. 90230

Here is the basic knowledge

You Need to Understand

## AUTO ENGINES AND ELECTRICAL SYSTEMS



Like an Expert!

All the vital fundamentals both expert and novice mechanic need today! Big, new edition of **AUTO ENGINES AND ELECTRICAL SYSTEMS** explains, illustrates with 1259 pictures and diagrams: physical principles . . . design and construction . . . how to check for breakdowns . . . newest developments in engines, carburetors, electrical units . . . latest transistorized ignitions, alternators. Packed with the *why* and *how* you want! **FREE 10-DAY TRIAL.** Then pay \$3 in 10 days, \$2 monthly for 2 months, then \$1.50 (plus delivery charge and sales tax if any), or return book postpaid. **SAVE** delivery charge by enclosing \$8.50 (plus sales tax, if any) as payment in full; same return-for-refund privilege applies. Mail this ad with name and address *now* to **MOTOR BOOK DEPT., Desk 711X, 250 West 55th St., New York, N.Y. 10019.**

**Complete Explanations, 1259 Pictures cover the design, construction, and operation of**

**Engines  
Valve System  
Piston System  
Bearing System  
Cooling System  
Fuel System  
Electrical System  
Ignition System  
Transistorized Ignition  
Alternators  
Generators  
Voltage Regulators  
Starting Motors  
Starting Switches  
Batteries**

**TRY BOOK FREE FOR 10 DAYS**

Print Name ..... Age.....  
Address .....  
City and State..... Zip Code.....



**NEW** **DYNAMIC** MARK 88  
80 AMP INDUSTRIAL TRANSFORMER ARC WELDER

IDEAL GIFT — EDUCATIONAL, ENJOYABLE, PROFITABLE

ANYONE CAN WELD, BRAZE, CUT, SOLDER, HEAT STEEL, BRASS, ALUMINUM, AND OTHER METALS.

Build and repair anything of metal. Save time & money with this **BRAND NEW, PROFESSIONAL ARC WELDER!** Rugged metal cabinet, baked Hammerloid finish. Ideal for home, shop, farm and industrial use. Expert work on **FIRST** job. **POWERFUL** glass insulated transformer welds  $\frac{1}{4}$ " metals with  $\frac{1}{8}$ " rods. 4 heat settings 20 to 80 amps. Operates on 110 Volt AC line

fused for 30 amps. Complete with fibre glass helmet, electrode holder, ground clamp and cables, solder, assorted rods and simplified welding manual. **DOUBLE PROTECTION GUARANTEE.** 10 day money back trial plus full 5-yr. warranty. If inoperative return prepaid, we will repair or replace without charge.

**ORDER TODAY, ONLY \$47.50 COMPLETE (220 V. \$49.50)** SEND ONLY \$6.00. Pay balance plus C.O.D. charges on delivery or write for easy "PAY AS YOU WELD" Low Down Payment Plan. Welder details FREE.

**DYNAMIC WELDER CO.** 1808 SO. FEDERAL ST. Dept. D2-A CHICAGO, ILL. 60616



**SLAVE TRIPPER**

(Continued from page 173)

one of the plastic boxes that processors use to return your 35-mm color slides.

Cut the 35-mm film can as shown, with the sides extending beyond the bottom. Cut off the threaded portion and use this reflector as a guide to the size of the plastic case. Cut the U-shaped segment and the top and bottom plates. Spread the "U," insert the reflector and glue the top and bottom in place with plastic model cement. After the cement has set, drill the  $\frac{1}{8}$ -in. clamp hole through the plastic bottom and the bottom of the reflector.

Remove the reflector and drill a  $\frac{1}{8}$ -in. hole through its middle and the back of the plastic case to pass the cell's leads and the sync cord. Bend the lips of the reflector back to fit over the sides of the case and glue foil to its inner face.

Slide bits of hookup-wire insulation over the leads and solder the leads to 8 in. of lampcord. Since this is a sensitive element, use pliers as a heat sink between the splices and the cell. Then tape the splices.

Insert the sync cord through the case and secure it against the case with tape as a strain relief. Push the cell through the reflector and crimp the reflector lips to the case. Then position the cell with the red dot on it facing outward and the leads bent so that the cell stands at a 45° angle. Then, mount a nonpolarized line plug on the cord and mark it for proper polarity after testing. You can use a piece of clear plastic, like the cover from the cell's box, folded over the front of the case and taped in place.

The tripper's mount consists of a  $\frac{1}{2} \times 1\frac{1}{2}$ -in. sheet-metal angle bolted to the case and a plastic clothespin with  $\frac{1}{8} \times \frac{1}{2}$ -in. roundhead screws, washers, lockwashers and nuts.

Now, all you have to do is plug it into the slave sync and aim it at your main flash or strobe. It will work well with either at slow shutter speeds. It's advisable, though, to unplug it before reloading flashbulbs. ★★★

**Lifesaving Vampires**

A new substance derived from the saliva of vampire bats may soon play an important part in saving human life.

The substance, given the name of desmokinase, has been found to dissolve blood clots which cause heart attacks.

It was discovered by Dr. Christine Hawkey and her research team working for the Nuffield Institute of Comparative Medicine at the London Zoo.

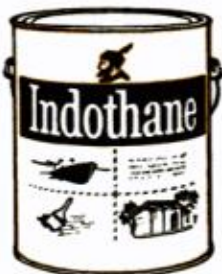
**FREE**  
**MUSCLE BUILDING**  
**INFORMATION**  
Sensational New Isometrics  
Less Time—Less Effort—Better results  
**BODY-TONE**, Box 638, North Miami, Fla. 33161

**PROTECTS FLOORS**

**INDOTHANE**  
**Polyurethane**  
**Clear Wood Finish**

Outlasts conventional varnishes 2 to 1. Gloss or Satin finish. Never needs waxing. So tough it resists scuffs. Best indoors for floors, doors, stairs.

Best outdoors for natural wood siding, picnic tables, wooden lawn furniture. Sold at leading hardware, building supply, paint and specialty stores.



**DAP**

DAP INC., Dayton 31, Ohio  
SUBSIDIARY OF *Abough, Inc.*



## KNIVES FOR ASTRONAUTS

(Continued from page 147)

tough V or bevel (similar to a chisel) and be used to hack through the bones of big game animals, cut tent poles and firewood and even cut through other steel. This would make such a knife unfit, of course, as a weapon. So the blade is made more flexible accordingly by changing the tempering. But this sacrifices toughness.

It will probably surprise you to learn that all knives cut the same way, regardless of how expensive or well-sharpened. Under a microscope even the finest edge resembles jagged saw teeth. That's what the blade does: saws its way through.

### 'Make me a fighting knife'

During World War II Randall was working alone late one night. A young soldier from a nearby training camp knocked hesitantly at the door. "Mr. Randall, I want you to make me a knife," he explained, apologizing for the late hour. "A fighting knife."

Bo refused, explaining that he knew only how to make sporting knives. There was a fatalistic urgency about the young soldier, however, that made Randall reconsider and he listened quietly to this boy who was being sent to the Pacific. The youngster sensed that this would be largely a foxhole war of sudden, silent, jungle death. If he could only take with him a strong knife fashioned after the bowie, but lighter, faster. . .

Thus came into unexpected existence the deadly No. 1 Randall fighting blade.

Bo never heard from the young soldier again. Meanwhile, word spread and orders arrived by the thousand, hastily written on letterheads with insignia of uniformed men throughout the world. (Randall has a huge stamp collection as a result.) One soldier's acknowledging postcard carried simply the word "WOW!" in large red letters. Many knives were returned, the box marked "Deceased."

Twenty years later another man walked into Bo's now enlarged shop: one of the original astronauts. He, too, requested a special knife made. Bo made seven of these, presented one to each. The blade that made 23 orbits was returned to Bo in appreciation by Gordon Cooper. Randall prizes it: the first knife in space.

Perhaps the Ohio farmer summed up the Randall knife story as well as anyone when he wrote: "We butchered a three-quarter-grown bull calf and after cutting and skinning through a lot of muscle, gristle and tough tendons that knife was still able to shave the hairs from my arm—dry!" ★ ★ ★

## Pound-for-pound the world's most powerful working turbine engine



## and you can build it yourself!

For the past four years, Turbonique's compact, new-breed gas turbine engines have been setting fantastic power-output records everywhere.

They're being applied to hundreds of split-second response applications. Like powering a VW to 183 mph in the quarter mile. Or providing a solid 500 hp accessory equipment boost to a giant off-shore drilling rig.

Gas turbine experts here and in Europe have been amazed by their hp-to-weight ratio, their simplicity and reliability.



Complete make and build instructions for a variety of kits plus detailed engineering drawings, are included in our Technical Manual.

Our new 1966 catalog describes 29 STANDARD MODELS WITH OUTPUTS FROM 45 TO 850 HP. With all the latest performance data, application ideas, and kit and factory-assembled engine facts and prices. Send for your copy today. You'll be getting to know the hottest product in gas-turbine history.

\$1.00 Encl. for new 36 page catalog 66A.  \$5.00 Send technical manual.  \$5.00 Send 8mm x 85 ft. color demonstration film, or  \$10.00 Send everything. All money refunded first order.

Name \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_

**turbonique, inc.**

20 North Kent St., P.O. Box 8641, Orlando, Fla. 32805



# FANTASTIC VALUES WITH THIS COUPON

**AMERICAN MACHINE & TOOL CO., Dept. PM17, Royersford, Pa. 19468**  
Please send me the units checked. Payment in full enclosed \$.....  
or \$3 deposit each item enclosed, balance C.O.D.  I MUST BE FULLY  
SATISFIED OR WILL RETURN UNIT WITHIN 10 DAYS FOR FULL REFUND.  
No questions asked.

|                                                            |                                                                           |
|------------------------------------------------------------|---------------------------------------------------------------------------|
| <input type="checkbox"/> 8" Power Saw at \$14.95           | <input type="checkbox"/> Jointer-Planer at \$19.95                        |
| <input type="checkbox"/> Standard Rip Fence #354 at \$3.50 | <input type="checkbox"/> Lathe at \$9.85                                  |
| <input type="checkbox"/> Long Rip Fence #354C at \$4.50    | <input type="checkbox"/> Set of 3 High Speed<br>Turning Chisels at \$4.95 |
| <input type="checkbox"/> Belt Sander at \$14.95            | <input type="checkbox"/> Drill Press at \$29.95                           |
| <input type="checkbox"/> Mitre gage for Sander at \$1.95   | <input type="checkbox"/> Disc Sander at \$7.95†                           |

½ hp GE Motor {  \$14.80 (purchased with other item)  
                           \$18.95 (if purchased separately)

NAME .....

ADDRESS .....

CITY ..... ZONE/ZIP ..... STATE .....

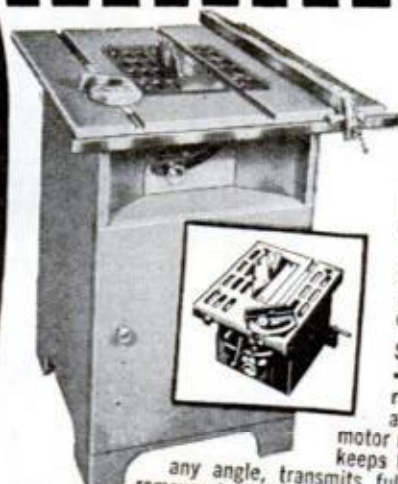
SAVE AS MUCH  
AS...  
**80%** WITH  
QUALITY   
POWER TOOLS

**DIRECT FACTORY OFFER AND REVOLUTIONARY PATENTS** decrease costs, increase efficiency. Full scale power tools of heavy duty 100% cast iron and steel. Streamlined design reduces weight, cuts material and production costs. Special patents provide added efficiency, accuracy, savings. Parts made, assembled, tested, packed right in our own factories shipped direct... save store profits.

**ENDORSED BY AMERICA'S TOP MAGAZINES...** Here is what the editors say: "A good bit of sound—imaginative—engineering." Popular Science; "(saw) boasts many features of bigger brothers." Popular Mechanics; "Amazingly versatile." Workbench; "Highly substantial construction, sturdy enough for production line use." Industrial Woodworking. And Workbench awarded these tools their coveted "Work Tested" Seal. **OVER A MILLION USERS** confirm their precision, versatility and rugged performance.

**\*10-YEAR FULL SERVICE GUARANTEE...** Any part or parts of any AMCO power tool (except motor) which may become inoperative for any reason within ten years after the purchase date will be repaired or replaced by the factory without cost to the purchaser. Your only cost: for postage.

**UNCONDITIONAL MONEY BACK 10-DAY GUARANTEE**  
You must be fully satisfied. If not, return in 10 days, freight collect. Money promptly refunded in full.



## 8" TILT ARBOR POWER SAW

**DOES WORK OF \$75 BENCH SAW** as is. Converts easily to equal any \$300 floor model cabinet units! Crosscuts, rips, mitres, cuts compound angles, dados, makes coves and mouldings.

**\$14.95** f.o.b. factory. Wt. 25 lbs. Includes completely assembled cast iron and steel 8" saw with ground cast iron table... less blade. **RIP FENCE**, if desired, for easier work alignment, \$3.50 add'l.

**SAW BLADE TILTS... TABLE STAYS LEVEL** - Locks securely at any angle up to 50°, raises, lowers 0°-2¼". Patented tilt mechanism, accurate etched scale. Patented motor mount takes std. ¼ h.p. or larger motor, keeps belt tight, assures perfect alignment at any angle, transmits full power. Takes std. blade, saw insert removes to take dadoe heads, cutters, etc. (not incl.). Accurate mitre gauge assembly. Ground spindle. Enclosed steel base. "Compo" bearings. Accessories available at factory prices. **RIP FENCE**, if desired for easier work alignment: Std. size (for bench saw) \$3.50; larger fence (for cabinet base, as ill'd.) \$4.50.

**FREE CABINET BASE PLANS** Use as portable bench saw as received (inset photo) or transform easily and inexpensively into floor model (as shown) guar. to do work of floor models costing \$300. **FREE plans...** all you'll need are a sheet of ¾" plywood and 3-4 hours. Use your AMCO saw for cutting. Plans provide 27" x 24" work surface, 33" height, tool storage compartment.

**10-YEAR FULL SERVICE GUARANTEE\***



**6" SWING 3-FOOT LATHE** \$985 f.o.b. factory Wt. 14 lbs.

Optional faceplate for turning bowls, trays, lamp bases, rosettes, etc. \$2.50. Set of 3 high speed turning chisels, \$4.95 add'l. **DOES THE WORK OF \$40 UNITS...** with same precision and speed. Turns wood, plastic. Sturdy cast iron with tubular steel bed. Ball thrust cup center, spur center, T-rest assembly, lever action tail stock, 2-speed pulley. Fits any motor. **10-YEAR FULL SERVICE GUARANTEE\***



**PRECISION 4" x 36" BELT SANDER** f.o.b. factory. Wt. 15 lbs. \$1495

†Disc Sander attachment incl. disc bracket, ground cast table (tilts 0-45°): \$7.95 add'l. **DOES WORK OF \$50 SANDERS...** The world's most talented belt sander. Heavy cast sander incl. 4" x 36" sanding belt, V-pulley drive, multi-purpose drive spindle. Changes from horizontal to vertical sanding in secs. Uses ½ hp or larger motor. **10-YEAR FULL SERVICE GUARANTEE\***

## FULL 22" LONG, 4 1/8" JOINTER-PLANER

**\$1995** f.o.b. factory. Wt.: 19 lbs. Complete as shown.

**DOES THE WORK OF \$60 UNITS...** Professional power planing at a hand tool price. Make faster, more accurate joints, rabbets, bevvels for windows, doors, drawers, square tapered legs—Adjustable precision ground cast iron tables. Patent-pending design holds knife to table clearances at any depth. Rabbett depth ¾". Fence adjustable 0°-50°. Hardened, ground high-speed steel knives. Dual cutter guards. Balanced cutter head. **10-YEAR FULL SERVICE GUARANTEE\***

## 32" RADIAL DRILL PRESS

All cast iron and steel f.o.b. factory \$2995 Wt. 30 lbs. ½" cap. Jacob's chuck incl.

**DOES WORK OF \$90 UNITS...** and much more. Industrial quality precision unit with all standard features, many extras. Head raises, lowers. Depth of throat up to 16". Pre-set to any angle for on-or-off table drilling, even horizontal drilling. **10-YEAR FULL SERVICE GUARANTEE\***

**BRAND NEW 1/2 H.P. MOTOR...\$14.80**

F.O.B. FACTORY / FOR ANY OF ABOVE MACHINES. WT. 17 LBS. PURCHASED SEPARATELY, \$18.95





**Don't try this  
with any other motor  
in the 10 hp class**

We've spilled a lot of coffee trying to do this on other motors. And that includes our own last year's Sportwin.

You wouldn't buy a motor just to park a coffee cup on. But it does show how much smoother this new 9½ hp Sportwin is.

Here are a few reasons why the Sportwin has become the best-selling

fishing motor on the market today:

It's compact — only 34" top to prop. You can work a lure or play a fish right over it without lifting your rod. It's short enough to tuck easily into a compact car trunk.

In spite of its bantam size, it's hefty enough to plane a load of three at a 20-mile clip.

It has 16 quick-adjust tilt positions — 8 for running in weeds, shoals, or shallows.

The Sportwin is deluxe all the way — full gearshift, slip-clutch propeller, long-range fuel tank — and fully sound-sealed.

It's so quiet you can hear the coffee gurgle as you pour it.

**EVINRUDE**  
first in  outboards  
Div. of Outboard Marine Corp.

See the Sportwin and other fishing motors at your Evinrude dealer, listed in the Yellow Pages. Catalog free. Write Evinrude Motors, 4061 N. 27th St., Milwaukee, Wisconsin 53216.



# Have your Ford Dealer tell you about his selection of sound systems.

**(It will be music to your ears)**

Sound is an ever-changing kaleidoscope. It can be red-hot in excitement . . . picture the green coolness of spring . . . be anything you want. Your Ford Dealer can give you the sound you love best . . . in your car.

He has radios up to the smoothness and fullness of Stereo FM. Or, if you have strong personal preferences . . . see him about a Stereo-Sonic unit. You can select from tape cartridges for music from opera to Dixieland

to symphonies to your favorite "five."

For those who have to "see" their sound, he has a portable TV for back-seat viewing.

He has sound systems for business as well. Two-way radios keep you tied to home base wherever you are. For the ultimate in mobility, try our handy walkie-talkie.

For anything or everything you want in sound systems . . . your Ford Dealer is a musical maestro.

